NORTH Dakota Be Legendary. | Teachers' Fund For Retirement
RETIREMENT & INVESTMENT

ND TFFR Board Meeting
Thursday, March 23, 2023, 1:00 p.m.
WSI Board Room (In Person)
1600 E Century Ave, Bismarck, ND
Click here to join the meeting

Updated AGENDA

I. CALL TO ORDER AND ACCEPTANCE OF AGENDA

    A. Welcome of Communications and Outreach Director
    B. Executive Summary

II. ACCEPTANCE OF MINUTES (January 26, 2022) - *Board Action*

III. Education (45 minutes) - *Informational*

    A. Public Sector Retirement Plans – Mr. Strom, Segal

IV. GOVERNANCE (45 minutes) - *Informational*

    A. 2023 Legislative Session Update – Ms. Murtha
    B. Pioneer Project Update – Mr. Roberts
    C. 120 Day Waiver Review – Ms. Murtha

(Break)

V. REPORTS (90 minutes) - *Board Action*

    A. Annual Retirement Trends Report (6/30) - Mr. Roberts
    B. Quarterly Investment Report (12/31) - Mr. Anderson
    C. Quarterly TFFR Ends Report (12/31) - Mr. Roberts
    D. Quarterly Audit Services Report (12/31) - Ms. Seiler
    E. Executive Limitations/Staff Relations Report – Ms. Murtha

VI. POSSIBLE CONSENT AGENDA – 120 Day Waivers[1]

VII. OTHER BUSINESS

    A. Board Reading Materials – Material References Included
    B. Next Meeting:
        1. TFFR Regular Board Meeting – April 27, 2023, at 1:00 p.m.

VIII. ADJOURNMENT

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[1] Executive Session possible if Board discusses confidential member information under N.D.C.C. 15-39.1-30.

EXECUTIVE SUMMARY
TFFR Regular Meeting
March 23, 2023 – 1:00pm CT

I. **Agenda:** The **March Board meeting will be in person at the WSI board room**, a link will be provided so that Board members and the public may join via video conference. The board member video link is included in the email with the Board materials.

- Welcome new Communications & Outreach Director

II. **Minutes (Board Action):** The January 26, 2023 Board meeting minutes are included for review and approval.

III. **Board Education – Public Sector Retirement Plans (Information):** Representatives from our fund actuary Segal will provide the Board with education on public sector pension plans.

IV. **A. Governance - 2023 Legislative Session Update (Information):** Ms. Murtha will present to the Board bills under consideration by the legislature that may have an impact to the TFFR program.

B. Pioneer Project Update (Information): Mr. Roberts will provide an update on staff efforts related to implementation of the Pioneer Project.

V. **Reports (Board Action):** Staff will provide reports on annual retirement trends, quarterly investment performance, audit activities, and TFFR Ends, and executive limitations/staff relations.

Adjournment.

NORTH DAKOTA TEACHERS' FUND FOR RETIREMENT
MINUTES OF THE
JANUARY 26, 2023, BOARD MEETING

BOARD MEMBERS PRESENT: Dr. Rob Lech, President
    Mike Burton, Vice President
    Kirsten Baesler, State Supt. DPI
    Thomas Beadle, State Treasurer
    Cody Mickelson, Trustee
    Mel Olson, Trustee
    Jordan Willgohs, Trustee

STAFF PRESENT: Jayme Heick, Retirement Programs Spec
    Missy Kopp, Exec Assistant
    Denise Leingang-Sargeant, Member Specialist
    Jan Murtha, Exec. Dir.
    Emmalee Riegler, Contracts/Records Admin.
    Chad Roberts, DED/CRO
    Sara Sauter, Supvr. of Internal Audit
    Rachelle Smith, Retirement Assistant
    Stephanie Schilling, Retirement Programs Spec
    Dottie Thorsen, Internal Auditor
    Tami Volkert, Compliance Specialist
    Denise Weeks, Retirement Program Mgr.

OTHERS PRESENT: Dean DePountis, Atty. General's Office
    Tanya Dybal, Segal
    Brad Ramirez, Segal
    Matt Strom, Segal
    Paul Wood, GRS
    Dana Woolfrey, GRS
    Members of the Public

CALL TO ORDER:

Dr. Lech, President of the Teachers' Fund for Retirement (TFFR) Board of Trustees, called the meeting to order at 1:00 p.m. on Thursday, January 26, 2023. The meeting was held virtually.

THE FOLLOWING MEMBERS WERE PRESENT REPRESENTING A QUORUM: MR. BURTON, DR. LECH, MR. MICKELSON, MR. OLSON, AND MR. WILLGOHS.

ACCEPTANCE OF AGENDA:

The Board considered the agenda for the January 26, 2023, meeting.

IT WAS MOVED BY MR. OLSON AND SECONDED BY MR. MICKELSON AND CARRIED BY A VOICE VOTE TO APPROVE THE AGENDA AS DISTRIBUTED.

AYES: MR. BURTON, MR. MICKELSON, MR. WILLGOHS, MR. OLSON, AND DR. LECH
NAYS: NONE
ABSENT: SUPT. BAESLER & TREASURER BEADLE
MOTION CARRIED

MINUTES:

The Board considered the minutes of the November 17, 2022, TFFR Board meeting.

IT WAS MOVED BY MR. BURTON AND SECONDED BY MR. OLSON AND CARRIED BY A VOICE VOTE TO APPROVE THE NOVEMBER 17, 2022, MINUTES AS DISTRIBUTED.

AYES: MR. MICKELSON, MR. OLSON, MR. BURTON, MR. WILLGOHS, AND DR. LECH
NAYS: NONE
ABSENT: SUPT. BAESLER & TREASURER BEADLE
MOTION CARRIED

Treasurer Beadle and Supt. Baesler joined the meeting at 1:03 p.m.

EDUCATION:

Pension Plan Archetypes:

Mr. Ramirez, Segal, presented on retirement plan risk perspectives. Mr. Ramirez reviewed the objectives of a retirement program and the risks facing pension plans. Defined Benefit (DB) plans have been facing increasing scrutiny because the plans were originally designed for long careers when many careers lasted 45 years. The ratio of work to retirement has changed with people working fewer years and a longer life expectancy. Mr. Ramirez discussed the drivers of DB plan costs and the continuum of retirement plan risk sharing and compared DB and Defined Contribution (DC) plans. Mr. Strom discussed hybrid retirement plan risk levels and hybrid plan types including Variable Benefit Accrual, Variable Annuity, and Cash Balance Plans. The degree of portability varies with the different types of plans. Board discussion followed.

GOVERNANCE:

2022 GASB Report:

Mr. Ramirez and Mr. Strom, Segal, reviewed the Governmental Accounting Standards Board (GASB) 67 and 68 report for fiscal year 2022. The GASB report is used by TFFR participating employers and their auditors to fulfill certain accounting and disclosure requirements for their financial statements. Board discussion followed.

Actuarial Audit:

Ms. Woolfrey and Mr. Wood, GRO, presented the results of the TFFR Actuarial Audit of the July 1, 2021, Actuarial Valuation. The purpose of an actuarial audit is to determine if the funding results are reasonable, check for bias in the current actuarial model, determine if the reports meet standards, and if there are potential risks on the horizon. Based on the review of the census data, experience study documents, liability replications, and actuarial valuation report, GRS believes the 2021 actuarial valuation is reasonable for the purpose of determining the sufficiency of the current contribution rates, based on reasonable assumptions and methods, and the report generally complies with the Actuarial Standards of Practice. GRS made a recommendation on projections and associated communications. If the time to full funding is a key metric for decision making, then communication should use smoothed assets. Mr. Strom shared that Segal staff have looked at the recommendations and ways to incorporate them into the next valuation and experience study. Board discussion followed.

IT WAS MOVED BY TREASURER BEADLE AND SECONDED BY MR. OLSON AND CARRIED BY A VOICE VOTE TO ACCEPT THE 2022 GASB AND ACTUARIAL AUDIT REPORTS.

AYES: MR. WILLGOHS, MR. BURTON, MR. MICKELSON, SUPT. BAESLER, MR. OLSON, TREASURER BEADLE, AND PRES. LECH
NAYS: NONE
MOTION CARRIED

Actuarial Services Request for Proposal (RFP) Review & Approval:

Mr. Roberts discussed the RFP for actuarial and consulting services for the period of July 1, 2023, through June 30, 2025. The scope of work includes the next experience study, actuarial valuations, GASB 67 and 68 reporting, legislation analysis, and consulting services. A timeline for the RFP process was provided. Board discussion followed.

IT WAS MOVED BY MR. MICKELSON AND SECONDED BY TREASURER BEADLE AND CARRIED BY A ROLL CALL VOTE TO APPROVE THE ACTUARIAL SERVICES RFP AS PRESENTED.

AYES: MR. OLSON, MR. MICKELSON, SUPT. BAESLER, MR. WILLGOHS, TREASURER BEADLE, MR. BURTON, AND PRES. LECH
NAYS: NONE
MOTION CARRIED

Dr. Lech welcomed Ann Nagel who moved from the Investment Accountant position to the new Retirement Accountant position.

The Board recessed at 3:00 p.m. and reconvened at 3:10 p.m.

Pioneer Project Update:

Mr. Roberts provided an update on the progress of the development of the new pension administration system. The project is currently on time and on budget. Staff are participating in many hours of meetings for the project. The system is still projected to go live in the fourth quarter of 2024. During the elaboration process, staff identified some necessary interfaces with other state agency software solutions. The vendor has determined that those interfaces are within the scope of their contract and will not result in additional cost. Board discussion followed.

Legislative Update:

Ms. Murtha reviewed the bill tracking process that RIO staff have used. The bills that staff testify on are all included, but there are other bills staff are monitoring and are included because they may be of interest to Board members. All testimony that staff have provided was included in the meeting materials. HB 1219 is the TFFR technical changes bill that was sponsored by Representative Kempenich. The first hearing took place last week and staff testified in support of the bill and answered questions from the committee. HB 1271 would allow retired teachers returning to service to opt out of paying TFFR contributions. Staff testified in opposition. The actuarial analysis indicated that as a result of this bill, TFFR would never reach a full funding status. The bill received a do not pass recommendation from the

committee and failed in the House. HB 1150 would allow veterans with at least 20 years of military service to opt out of TFFR for their first year. Staff testified in opposition and the committee recommended do not pass, but the bill passed the House. Staff will reach out to Senators to make them aware of the issues with this bill. SB 2258 expands the scope of Critical Shortage area qualification for rehired retirees. Staff have spoken with the bill sponsor about HB 1219 and the desire to make both bills consistent. SB 2070 extends the length of time non-certified teachers can be permitted. Staff provided data to the actuaries to analyze the impact of changing the definition of a teacher for TFFR. Once we have the analysis, the Board could choose to suggest an amendment to the bill to change that definition. HBs 1040 and 1486 both close the PERS DB plan. Staff have testified as neutral on HB 1040. Board discussion followed.

REPORTS:

Annual TFFR Ends Report:

Mr. Roberts reviewed the annual TFFR Ends report. The report summarizes and provides metrics for performance of the TFFR program to demonstrate that the program is adhering to policies and expectations. Key areas covered by the report are membership data and contributions, member services, account claims, and trust fund evaluation.

Executive Limitations/Staff Relations Report:

Ms. Murtha gave an update on staffing at RIO. The Retirement Accountant position was filled by an internal candidate which created a vacancy for an Investment Accountant. That position has been posted. The new Chief Risk Officer and Sr. Investment Officer have accepted offers. The new Accounting Intern started in December 2022. The Communications and Outreach Director position was recently vacated, and staff are working on filling that opening. Current projects include the Legacy Fund Asset Allocation Study, Pioneer Project, Northern Trust initiative, and Audit Consultant project. Ms. Murtha shared the results of the 2022 Gallup Engagement Survey for the RIO agency and the plan to address engagement each month at division meetings. Board discussion followed.

IT WAS MOVED BY MR. MICKELSON AND SECONDED BY MR. BURTON AND CARRIED BY A VOICE VOTE TO ACCEPT THE ANNUAL TFFR ENDS AND EXECUTIVE LIMITATIONS/STAFF RELATIONS REPORTS.

AYES: MR. BURTON, MR. WILLGOHS, MR. OLSON, TREASURER BEADLE, MR. MICKELSON, SUPT. BAESLER, AND PRES. LECH
NAYS: NONE
MOTION CARRIED

ADJOURNMENT:

With no further business to come before the Board, Pres. Lech adjourned the meeting at 4:22 p.m.

Prepared by,

Missy Kopp
Assistant to the Board

North Dakota TFFR

Alternative Plan Designs

Board Education Presentation

March 23, 2023

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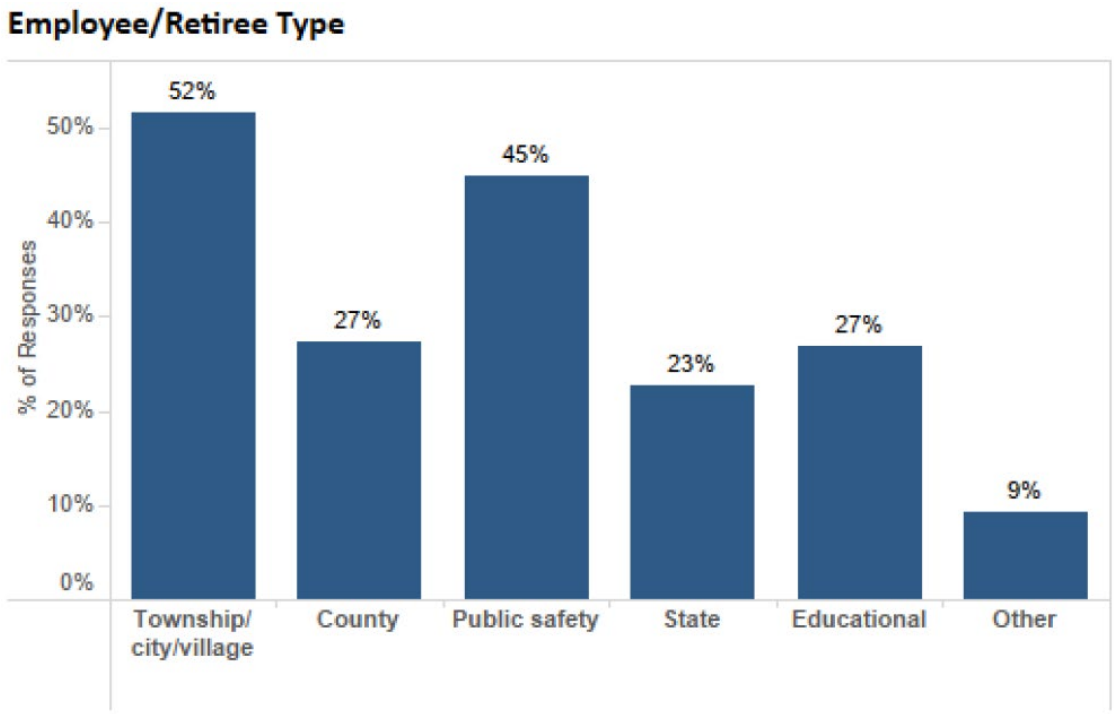
Segal

Agenda

Background

Continuum of Risk Sharing in Retirement Plans
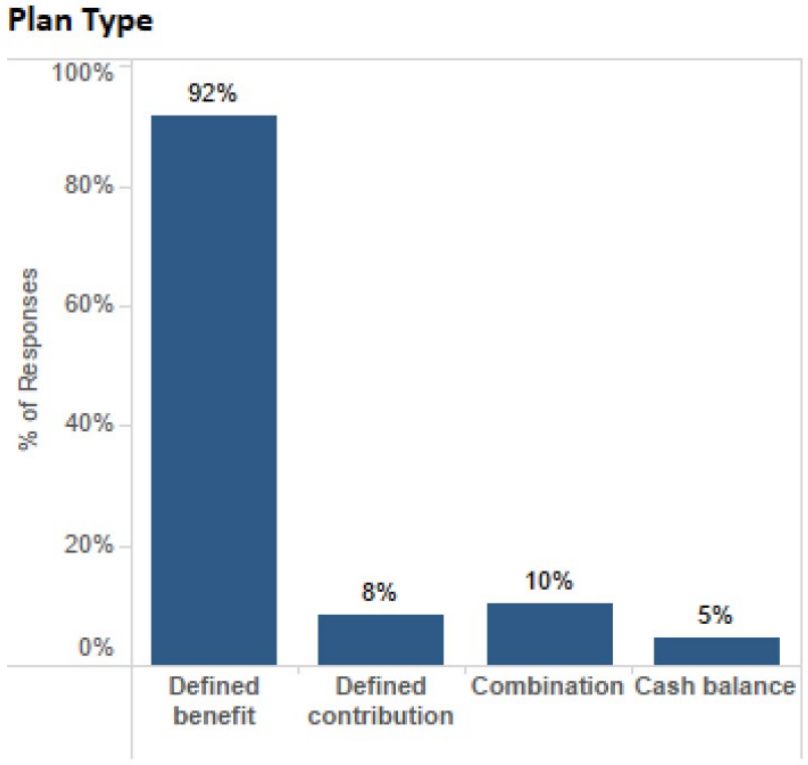
Case Studies of Non-traditional Plan Designs

Public Plans Overview – Plan Type

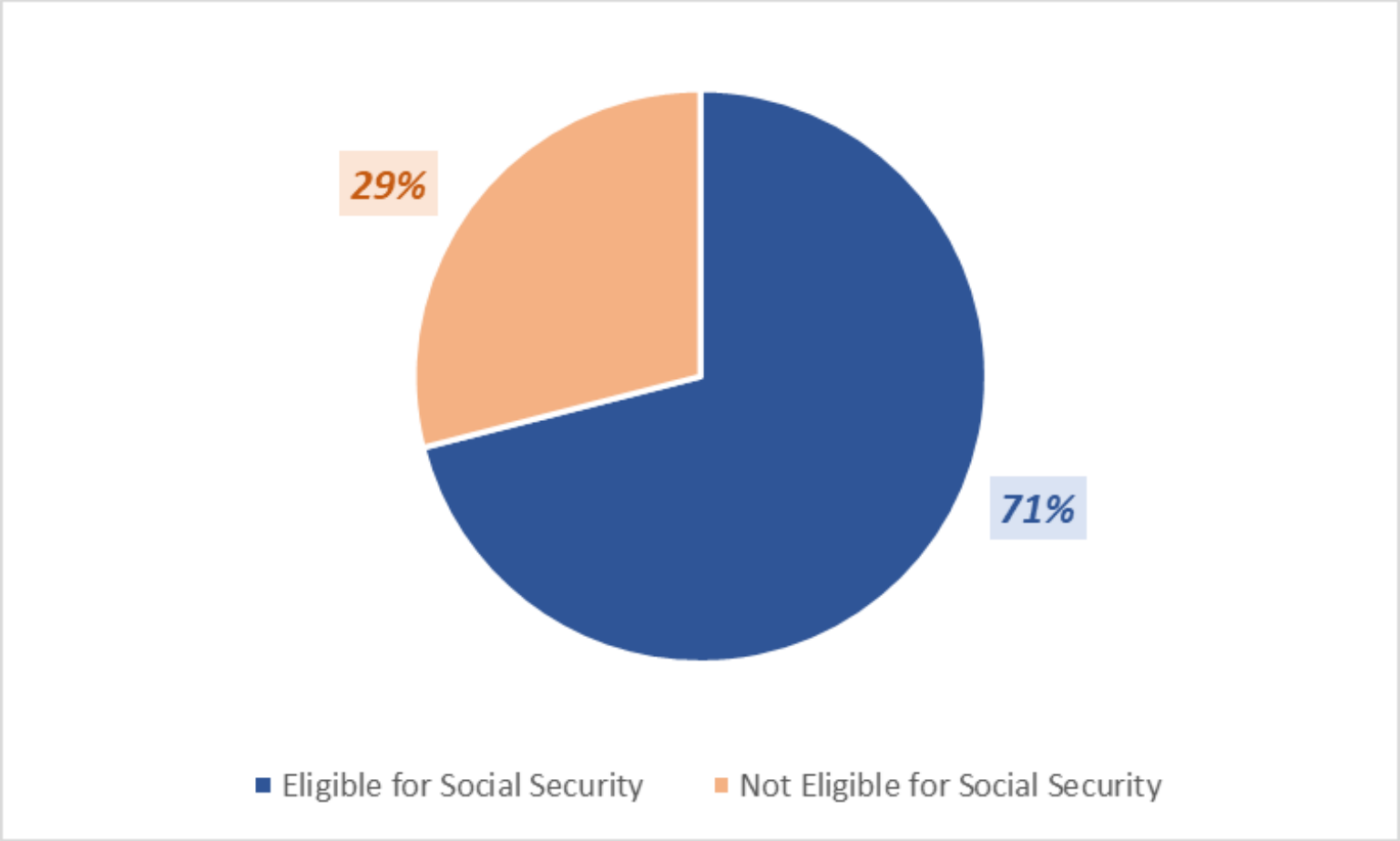An NCPERS 2023 survey of public retirements systems had 195 funds respond.

Source: NCPERS 2023 Public Retirement Systems Study

Source: NCPERS 2023 Public Retirement Systems Study

Public Plans Overview – Social Security

The NCPERS 2023 survey found that over 70% of public plan members are eligible for Social Security

Funds whose members are not eligible for Social Security tend to offer higher levels of benefits to make up for the loss of income typically supplemented by Social Security.

All Defined Benefit Plans Are the Same…Or Are They?

Funded Actuarially

Contribution rates calculated annually

Period* to pay off Unfunded Actuarial Accrued Liability (UAAL) is known and affects contribution rates

Rate is made up of:

1. Normal Cost

2. Amortization Payment of UAAL

*Closed periods target reaching fully funded status
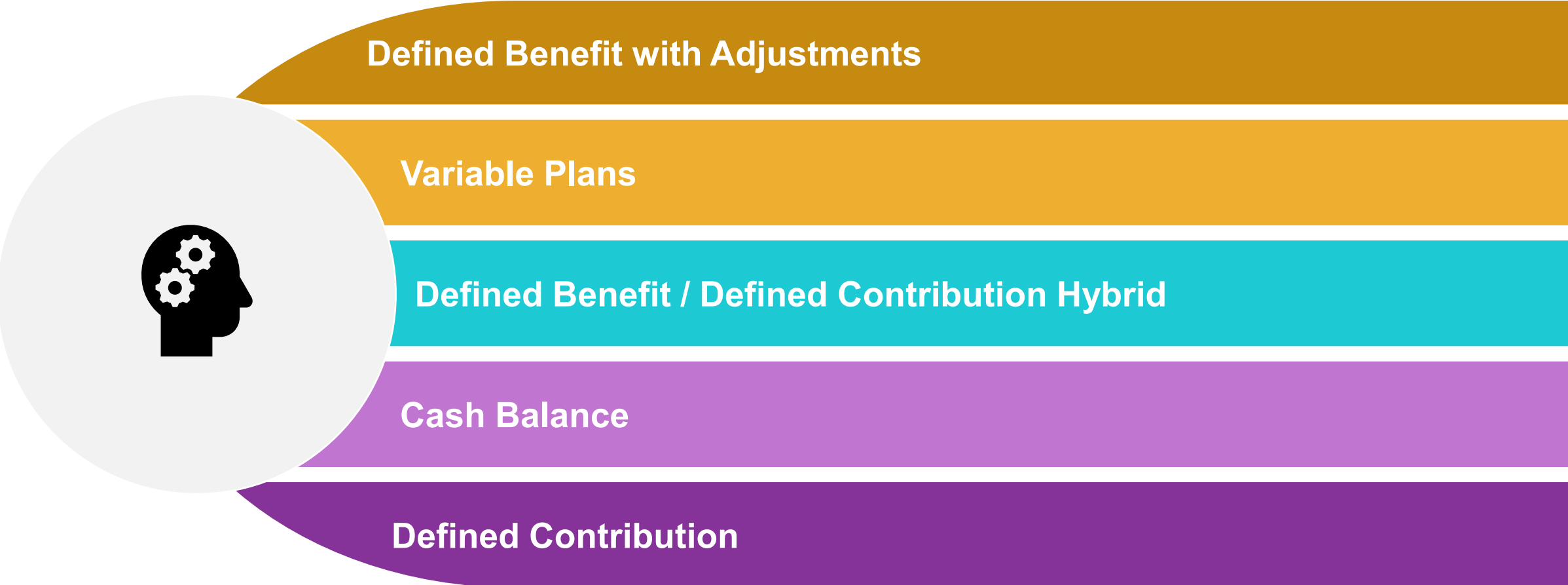
Funded by Fixed Rates

Contribution rates are fixed

Rates are predictable, which helps for budgeting purposes

Period to pay off UAAL ends up being solved for with fixed rate contributions

These plans take longer to react to funding pressures

Other Approaches to Retirement

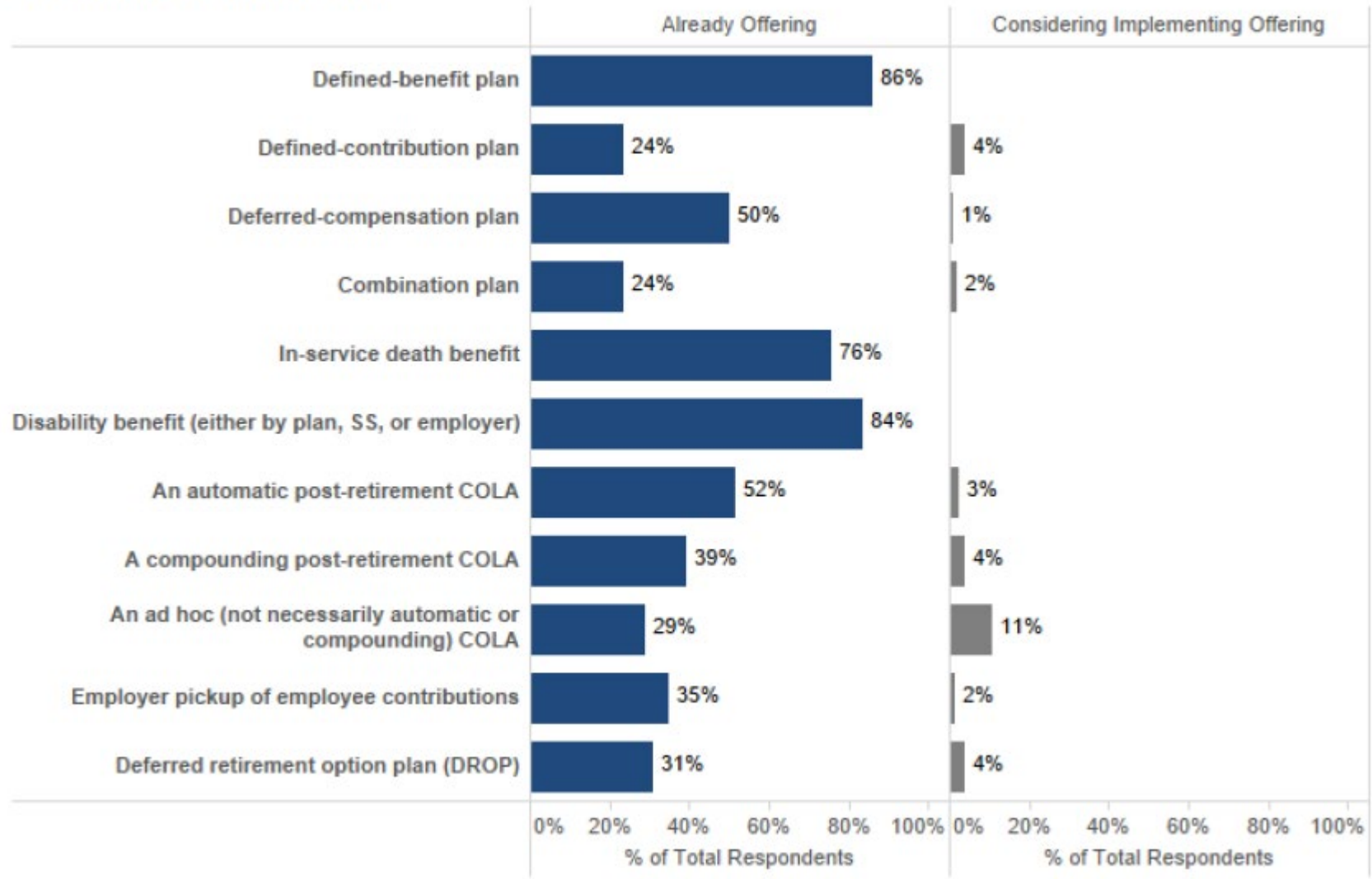**Defined Benefit with Adjustments**

Variable Plans

Defined Benefit / Defined Contribution Hybrid

Cash Balance

Defined Contribution

What Types of Plans – And Plan Components – Are Being Utilized? (*NCPERS 2023 Survey*)

2022 Retirement Benefits
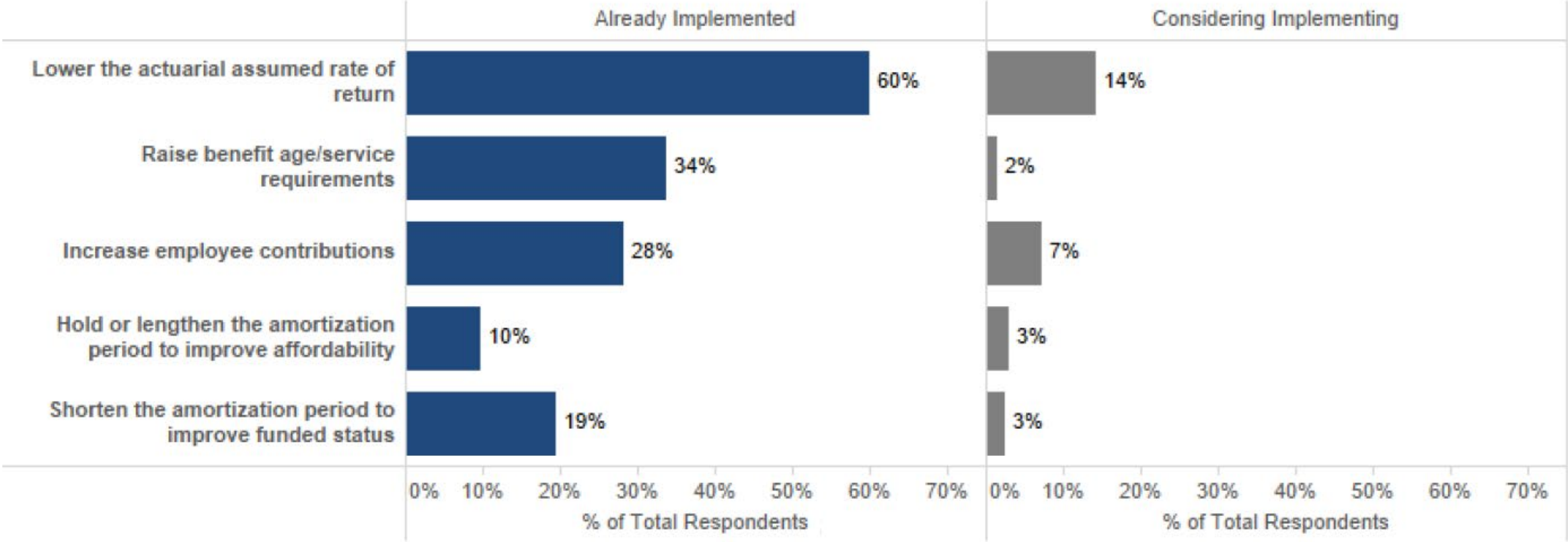
Notable changes from 2021 survey:

- Defined Benefit Plan was 95%
- Defined Contribution was 19%
- Automatic post-retirement COLA was 62%
- DROP was 41%

What Types of Changes are Being Considered and Implemented? (*NCPERS 2023 Survey*)

2022 Retirement Plan Changes

|	Already Implemented	Considering Implementing
Lower the actuarial assumed rate of return	60%	14%
Raise benefit age/service requirements	34%	2%
Increase employee contributions	28%	7%
Hold or lengthen the amortization period to improve affordability	10%	3%
Shorten the amortization period to improve funded status	19%	3%

% of Total Respondents

Notable changes from 2021 survey:
Lowering the assumed rate of return is down from 70% (as some may have actually lowered it) and increasing employee contributions decreased from 37%

COLAs in the Public Sector (*NCPERS 2023 Survey*)

Overall Cost-of-Living Adjustment Offerings
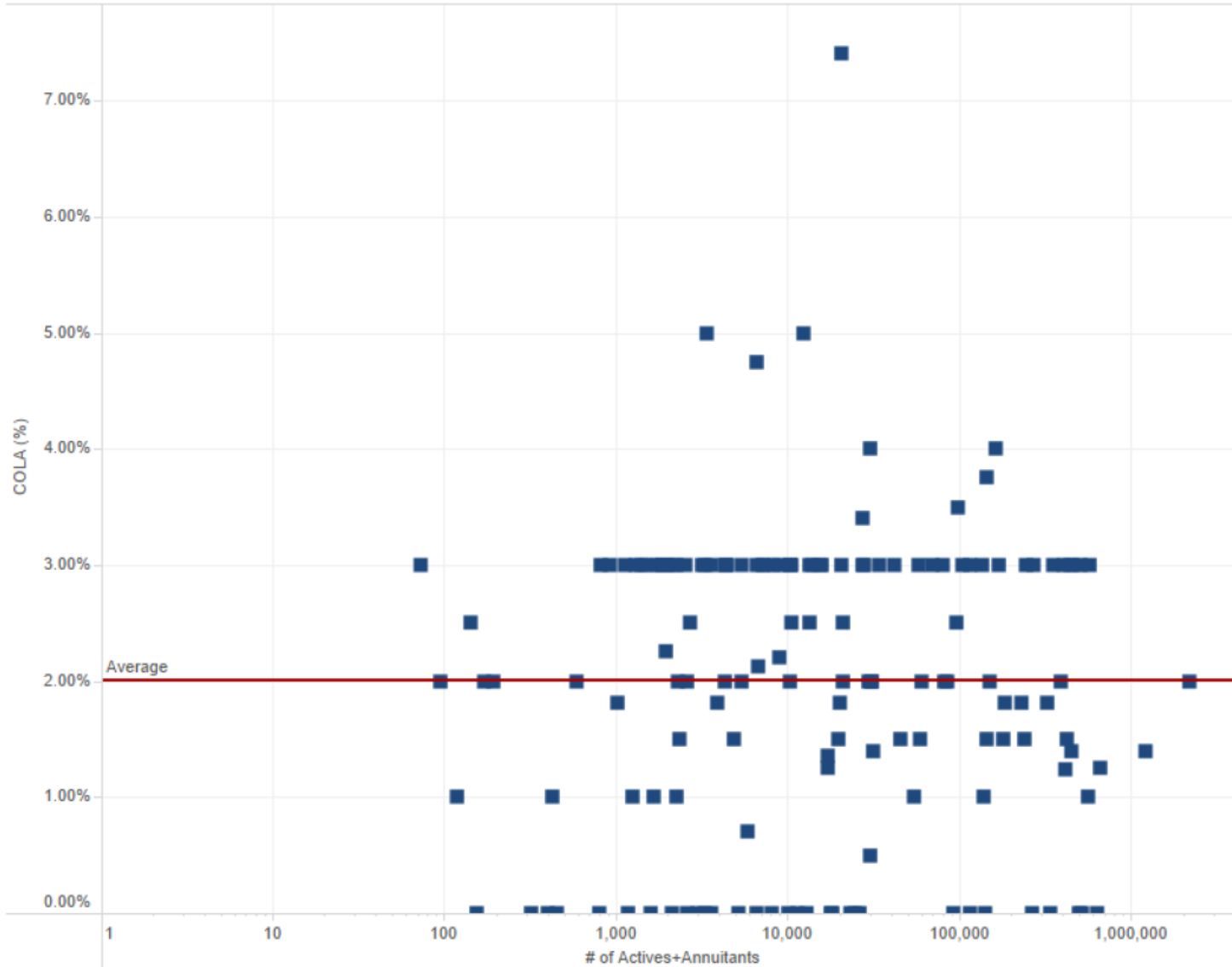
This chart shows the distribution of funds offering Cost of Living Adjustments.

The average COLA was 2.0% (up from 1.7% the prior year).

Social Security Effect
Funds with members not eligible for Social Security tend to offer higher COLAs (2.5% compared to 1.8% for Social Security eligible members).

Size of the Fund
Small funds tend to offer slightly higher COLAs than large funds (by approximately 0.25%).

Source: NCPERS 2023 Public Retirement Systems Study

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Case Study #1

- Colorado PERA has aspects of a traditional plan design – much like TFFR – but includes unique elements to help manage costs

Defined Benefit with Adjustments: Public Employees' Retirement Association of Colorado (PERA)

Unlike traditional defined benefit plans, PERA has what is referred to as the Automatic Adjustment Provision (AAP)

- The AAP adjustment is determined using the Blended Total Contribution Amount divided by the Blended Total Required Contribution. If the resulting ratio falls within an acceptable corridor (98% to 119%), no adjustments are made. If the resulting ratio does not achieve a minimum benchmark (i.e., is less than 98%), adjustments are applied in an equitable manner of impact.

- The automatic adjustment occurs under a series of conditions

- The AAP defines the limited amounts of total adjustment available and also the increments of adjustments that can occur in any one year. Multiple steps over multiple years are allowed for a required adjustment as is necessary, but cannot exceed the ultimate limits as set forth in statute

Defined Benefit with Adjustments: Public Employees' Retirement Association of Colorado (PERA)

An additional non-traditional defined benefit plan feature is the Annual Increase Reserve (AIR)

- A portion of the employer contribution (currently 1% of the salaries of affected members) is accumulated in the Annual Increase Reserve to be paid out in annual increases each July 1, to the extent affordable. A separate annual actuarial valuation determines the affordability and the percentage of annual increases to the eligible members within the groups previously defined. The maximum annual increase awarded, if any, by the PERA Board is the least of:

- a) 1.00% of current benefits,

- b) The average of the annual CPI-W increase determined each month published for the preceding calendar year, and

- c) An increase that will exhaust 10% of the year-end market value of the Annual Increase Reserve.

- Annual increases are subject to change as a result of the Automatic Adjustment Provision.

Defined Benefit with Adjustments: Public Employees' Retirement Association of Colorado (PERA)

- The Automatic Adjustment Provision (AAP) is intended to keep PERA on track to achieve full funding in 30 years (from December 31, 2017)

- The four components listed adjust automatically if PERA is ahead or behind the 30-year schedule:
  - The maximum AI rate ("AI cap")
  - Employer contribution rates
  - Member contribution rates
  - Direct distribution from the State

AAP Ratio:

Ratio of the Blended Total Contribution Rate to the Blended Total Required Contribution

Component	AAP Ratio < 98%	AAP Ratio > 120%
AI cap	Decrease by up to 0.25% in one year, not to fall below 0.5%	Increase by up to 0.25% in one year, not to exceed 2%
Employer contributions	Increase by up to 0.5% in one year, not to exceed an additional 2%	Decrease by up to 0.5% in one year, not to fall below 2018 levels
Member contributions	Increase by up to 0.5% in one year, not to exceed an additional 2%	Decrease by up to 0.5% in one year, not to fall below 2018 levels
Direct distribution from the State	Increase by up to $20 million in one year, not to exceed $225 million	Decrease by up to $20 million in one year

Defined Benefit with Adjustments: Public Employees' Retirement Association of Colorado (PERA)

- Automatic changes are triggered when the ratio of the Blended Total Contribution Rate to the Blended Total Required Contribution is less than 98% or greater than 120%
  - Recent valuation showed that this ratio is equal to **98.21%** so no changes to contribution rates or the AI cap are required

	Item	State Division	School Division	Local Government Division	Judicial Division	Denver Public Schools Division	Total Weighted Average
1	Unfunded actuarial accrued liability as of December 31, 2021 ($ in millions)	$9,780.3	$16,083.6	$654.4	$68.8	$608.8	$27,195.9
2	Member contribution rate	11.08%	11.00%	9.01%	11.00%	11.00%	10.98%
3	Employer contribution rate	19.99%	19.80%	13.06%	23.33%	9.00%	19.47%
4	Actuarially determined employer contribution rate	20.71%	21.13%	9.20%	13.83%	6.77%	20.35%
5	Direct distribution rate						0.32%
6	Blended total contribution rate: **2 + 3 + 5**		*AAP calculation detail from the actuarial valuation as of December 31, 2021*				30.77%
7	Blended total required contribution: **2 + 4**						31.33%
8	Ratio of blended total contribution rate to blended total required contribution: **6 ÷ 7**						**98.21%**

What would this look like for TFFR?

1. Member rate — 11.75%
2. Employer rate — 12.75%
3. ADC rate — 12.12%
4. Total rate (1+2) — 24.50%
5. Required rate (1+3) — 23.87%
6. Ratio of total rate to required rate (4÷5) — 102.6%

Case Study #2

- The South Dakota Retirement System includes a stated funding objective of maintaining a market value funded ratio of 100% or more

- A primary mechanism for accomplishing this goal is a COLA provision that adjusts based on affordability

Defined Benefit with Variable component and COLA: South Dakota Retirement System

SDRS is a defined benefit plan operated with fixed, statutory contribution rates, with two groups

Foundation Members	Generational Members
Joined SDRS prior to July 1, 2017	Joined SDRS after June 30, 2017

- Members of SDRS include full-time employees of public schools, the State, the Board of Regents, city and county governments, and other public entities.

- Stated goal is for SDRS plan to replace approximately 55% of pay for career members, 85% when combined with Social Security and personal savings.

- Variable Retirement Account is available to Generational Members only and individual member account is credited with 1.5% of pay each year with an annual investment credit.

Defined Benefit with Variable component and COLA: South Dakota Retirement System

- The amount of the annual COLA is established by the SDRS Board of Trustees. The COLA is equal to inflation, with a minimum of zero percent and a maximum of 3.5 percent so long as that range is affordable. When not affordable, a restricted maximum COLA applies.

- The SDRS COLA equals the percentage increase in the third calendar quarter average CPI-W for the prior year, no less than 0% and no greater than 3.5%. However, if the Fair Value Funded Ratio (FVFR) assuming the long-term COLA is equal to the baseline COLA assumption (currently 2.25%) is less than 100%, the maximum COLA payable will be limited to the increase that if assumed on a long-term basis, results in a FVFR equal to or exceeding 100%.
  - The 2021 increase in the CPI-W of 5.92% was greater than the 2021 maximum COLA of 3.50% therefore July 2022 monthly benefits were increased by 3.50%.
  - The 2022 increase in the CPI-W of 8.75% is greater than the maximum COLA of 2.10% and therefore July 2023 monthly benefits will be increased by the maximum COLA of 2.10%.

Cost-of-Living Adjustment: 10-Year History

Effective Date	COLA %
07/01/2023	2.10%
07/01/2022	3.50%
07/01/2021	1.28%
07/01/2020	1.56%
07/01/2019	2.03%
07/01/2018	1.89%
07/01/2017	2.10%
07/01/2016	3.10% (Foundation)
07/01/2015	3.10% (Foundation)
07/01/2014	3.10% (Foundation)

Defined Benefit with Variable component and COLA: South Dakota Retirement System

COLA calculation detail from actuarial valuation as of June 30, 2022

Table 2.1 – Determination of SDRS COLA Payable Next July		
Valuation Date	**June 30, 2022**	**June 30, 2021**
Fair Value of Assets (Table 4.1)	$ 14,126,069,868	$ 14,632,199,039
Actuarial Accrued Liability – Baseline COLA Assumption (2.25%)	$ 14,331,997,342	$ 13,865,352,058
Preliminary Fair Value Funded Ratio – Baseline COLA Assumption	98.6%	105.5%
Actuarial Accrued Liability – Future COLAs assumed to be 2.10% in 2022/ 2.25% in 2021	$ 14,116,661,375	$ 13,865,352,058
Actuarial Accrued Liability – Future COLAs assumed to be 2.11% in 2022[1]	$ 14,130,850,814	N/A
Restricted Maximum COLA (Largest COLA resulting in Actuarial Accrued Liability that is less than the Fair Value of Assets)[1]	2.10%	None: Full 0% to 3.5% COLA Range is affordable
Fair Value Funded Ratio (Assumed COLAs = 2.10% for 2022; 2.25% for 2021)	100.1%	105.5%
Increase in most recent Third Calendar Quarter Average CPI-W over prior period	8.75%	5.92%
Minimum SDRS COLA	0.00%	0.00%
Maximum SDRS COLA	2.10%	3.50%
SDRS COLA Effective next July	2.10%	3.50%

[1] The June 30, 2022 Fair Value of Assets is greater than the Actuarial Accrued Liability assuming 2.10% future COLAs. The June 30, 2021 Fair Value of Assets was greater than the Actuarial Accrued Liability assuming 2.25% future COLAs.

Defined Benefit with Variable component and COLA: South Dakota Retirement System

In addition to the unique COLA provision, SDRS operates with several other stated goals designed to enhance the retirement plan "experience"

- **Goal**: SDRS will educate members of the need for additional savings and will encourage members to accumulate personal savings of at least 100% of annual pay at retirement.
  - Member education efforts tout the advantages of participating in the supplemental savings plans

- **Goal**: Provide enhanced portability through equitable benefits for short-service members who terminate employment before retirement.
  - Early vesting with COLA paid on deferred benefit, plus continued growth of Variable Retirement Account
  - Or members can instead opt for a lump-sum payment of 85% of employer contributions (50% if less than three years of service) plus 100% of member contributions, with credited interest.

Case Study #3

- The Texas Municipal Retirement System is a cash balance defined benefit retirement plan for cities in Texas

- TMRS allows participating cities the flexibility to choose from a menu of options to design a retirement program to meet its needs
  - Each City can prospectively modify its benefits to control costs

Cash Balance Plan: Texas Municipal Retirement System

- A percentage of a member's gross compensation is deducted and deposited into an individual account – either 5%, 6% or 7% depending on plan provisions the municipality selected

- City matches contributions and interest at a rate chosen by the city: 1:1, 1.5:1, or 2:1

- Notional account balances grow by crediting interest and contributions

- Unlike 401(k) balances, crediting rate is guaranteed to be at least 5%
  – Traditional defined contribution accounts can lose value based on performance

- Members can take benefits in the form of an annuity at retirement

Cash Balance Plan: Texas Municipal Retirement System – Examples

Illustrative detail from the actuarial valuation as of January 1, 2022

	Corinth	Corpus Christi	Corrigan
SUMMARY OF ACTUARIAL INFORMATION			
1. Actuarial Accrued Liability			
a. Contributing Members	$25,884,076	$396,516,395	$833,708
b. Noncontributing Members	10,584,758	56,519,717	196,549
c. Annuitants	17,143,712	520,539,886	879,603
2. Total Actuarial Accrued Liability	$53,612,546	$973,575,998	$1,909,860
3. Actuarial Value of Assets	47,466,784	850,516,877	1,954,619
4. Unfunded/(Overfunded) Actuarial Accrued Liability: (2) - (3)	$6,145,762	$123,059,121	($44,759)
5. Funded Ratio: (3) / (2)	88.5%	87.4%	102.3%
6. Annual payroll	$11,966,584	$151,865,039	$1,205,421
CITY CONTRIBUTION RATES FOR 2023			
Retirement			
Normal Cost	11.49%	8.57%	3.67%
Prior Service	3.54%	7.98%	-0.14%
Full Retirement	15.03%	16.55%	3.53%
Supplemental Death Benefit	0.29%	0.00%	0.44%
Combined Contribution	15.32%	16.55%	3.97%
Phase-In Rate (Minimum Contribution), Incl. Supplemental Death	N/A	N/A	N/A
Statutory Maximum Rate (Total Retirement Only)	N/A	N/A	11.50%
ADDITIONAL INFORMATION			
Equivalent single amortization period as of 1/2023	21.9 years	13.5 years	N/A
Number of Annuitants	104	2,449	15
Number of Active Contributing Members	158	2,571	27
Number of Inactive Members	156	1,605	45
Average age of Contributing Members	42.3 years	43.8 years	43.6 years
Average length of service of Contributing Members	12.9 years	9.8 years	6.9 years

- **TMRS is a multiple employer defined benefit retirement system**

- **Each participating city is allocated their own share of assets, which can only be used to pay benefits of that city**

- **Effectively, a separate actuarial valuation is performed for each participating city in TMRS**

Cash Balance Plan: Texas Municipal Retirement System – Examples

City of Corinth

- **Member deposit rate: 7%**
- **City match: 2:1**
- **Retirement eligibility: 60/5 or Any/20**
- **COLA: 70% of CPI**

Assumptions

- **Interest crediting rate: 5%**
- **Salary increases: 3.5%**
- **100% J&S optional payment form conversion factor: 13.21**

Age	Salary	Member Deposit	City Match	Interest Credit	End of Year Account	Retirement Annuity
40	50,000	3,500	7,000		10,500	
41	51,750	3,623	7,245	525	21,893	
42	53,561	3,749	7,499	1,095	34,235	
43	55,436	3,881	7,761	1,712	47,588	
44	57,376	4,016	8,033	2,379	62,017	
45	59,384	4,157	8,314	3,101	77,588	
46	61,463	4,302	8,605	3,879	94,375	
47	63,614	4,453	8,906	4,719	112,452	
48	65,840	4,609	9,218	5,623	131,902	
49	68,145	4,770	9,540	6,595	152,807	
50	70,530	4,937	9,874	7,640	175,259	
51	72,998	5,110	10,220	8,763	199,351	
52	75,553	5,289	10,577	9,968	225,185	
53	78,198	5,474	10,948	11,259	252,866	
54	80,935	5,665	11,331	12,643	282,506	
55	83,767	5,864	11,727	14,125	314,222	
56	86,699	6,069	12,138	15,711	348,140	
57	89,734	6,281	12,563	17,407	384,391	
58	92,874	6,501	13,002	19,220	423,114	
59	96,125	6,729	13,458	21,156	464,456	
60					**÷ 13.21 ÷ 12 =**	**2,930**

$464,456 notional account balance can be converted to an annuity of $2,930 at retirement

This amount will increase each year with 70% of CPI COLA adjustment

- **E.g., 1.75% when CPI equals 2.50%**

Cash Balance Plan: Texas Municipal Retirement System

- Some cities choose to add a supplemental defined benefit plan to:
  - Enhance the benefit (e.g., 0.70% times Final Average Pay times Service)
  - Give traditional ancillary benefits like Death and Disability

- Employer likely to pay for entire supplemental plan

- Supplemental plan also needs full spectrum of valuation plan services such as:
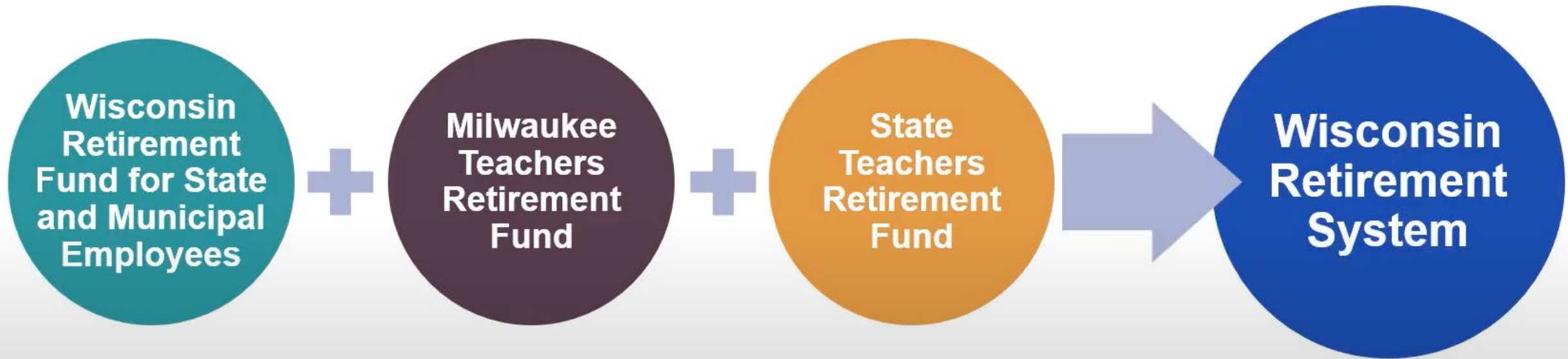 - Funding Valuation
  - GASB reporting
  - Annual Statements

Case Study #4

- The Wisconsin Retirement System (WRS), administered by the Department of Employees Trust Funds provides benefits accrue based on a variable money purchase calculation, with a traditional formula method provided as a floor calculation

- Cited by Pew Charitable Trusts as "…*one of three public employee pension plans that has maintained high funded ratios at predictable costs over the past 20 years…*"

Variable Plan: Wisconsin Retirement System

- Established 1982
- Merger of several smaller plans

Wisconsin Retirement Fund for State and Municipal Employees + **Milwaukee Teachers Retirement Fund** + **State Teachers Retirement Fund** → **Wisconsin Retirement System**

Variable Plan: Wisconsin Retirement System

- It is a hybrid defined benefit plan with two funds: **Core** and **Variable**

- Two calculations are compared to arrive at a member's retirement benefit
  - *Money Purchase (DC)* (Account Balance & Age)
  - *Formula (DB)* (Years of Service, 3 Highest Salaries, Category, Age)

- Member gets the higher of the two values

- Reduced Retirement available at 50 (Protective Service), 55 (All Others) and can take payments as lump sum (small balances) or annuity (large balances)

- Members receive a Statement of Benefits every year

Variable Plan: Wisconsin Retirement System

Investing goals of each fund:

- **Core** Fund – Earn the best long-term return while taking acceptable risks. A balanced, diversified portfolio.

- **Variable** Fund – Achieve returns equal to or above that of similar stock portfolios over a market cycle. Only invested in Domestic and International equities.

Composition of total fund assets:

- As of December 31, 2021, assets in the Variable Fund accounted for 8.7% of total fund assets, up from 8.3% the year before

Variable Plan: Wisconsin Retirement System

- Employees are automatically enrolled into the Core Fund and must elect to move to the Variable Fund.

Core Fund

- Automatic enrollment for all employees
- Diversified portfolio
  - Guaranteed minimum annuity payment
  - 5-year smoothing

Core + Variable Fund

- Optional 50% of contribution
- All-stock portfolio
  - No guaranteed minimum annuity payment
  - No smoothing

Variable Plan: Wisconsin Retirement System

- Annuities in payment status are adjusted based on the market results of the prior calendar year

- Annuity adjustments can be positive or negative
  - Some years an annuity will receive a positive adjustment
  - Those gains can be taken away by market losses at a later time
  - However, the **Core** Fund portion of annuity cannot be reduced below the final calculated Core amount of the annuity at commencement
  - There is no limit to the amount the **Variable** portion of an annuity can be reduced

- For the **Core** Fund portion, only investment returns above 5% are available to pay Core increases

Variable Plan: Wisconsin Retirement System, Comparison of Returns
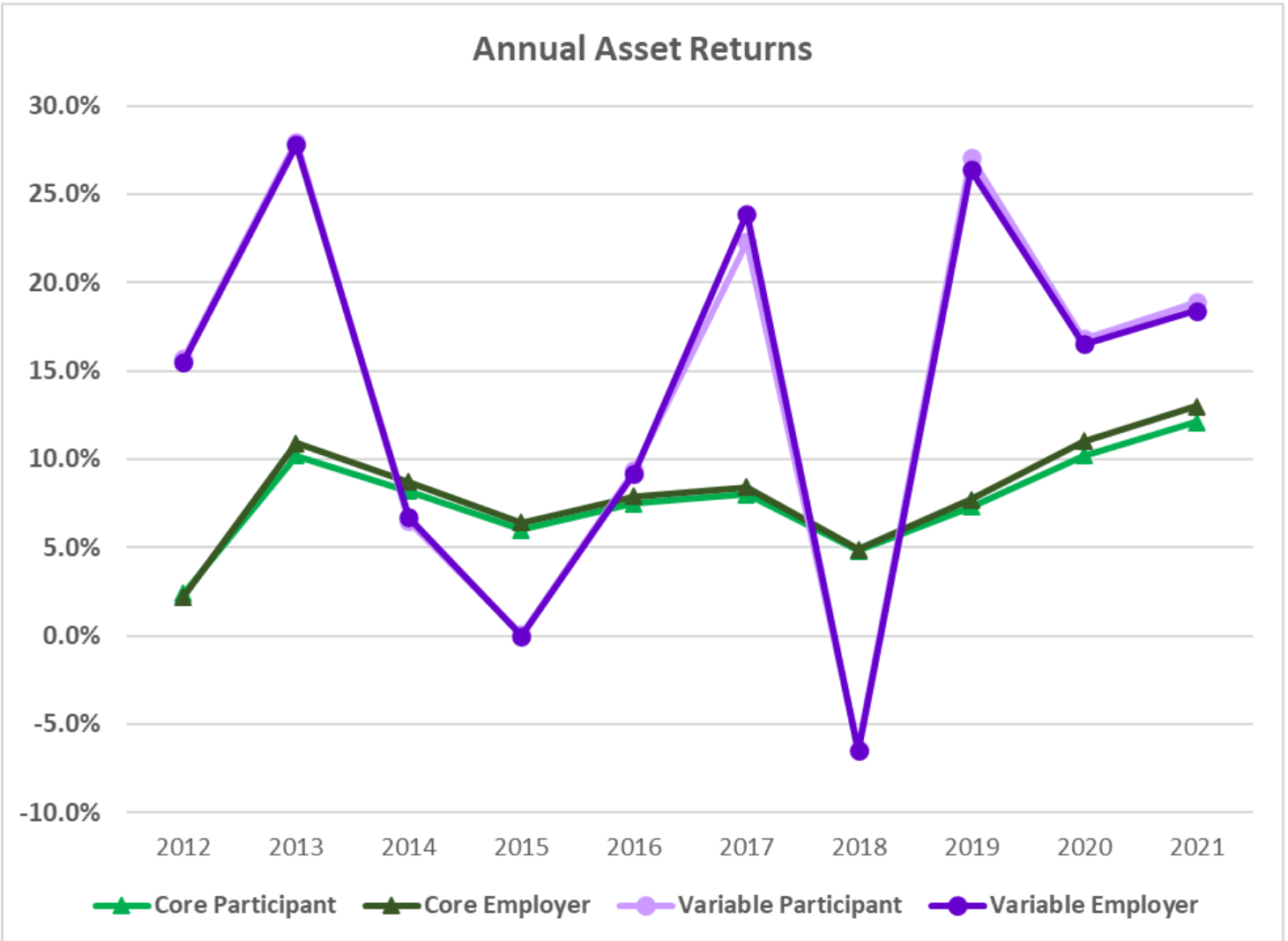
Core Fund returns are smoothed over five years

Variable Fund adjustments are not smoothed

Annual Asset Returns

Legend: Core Participant · Core Employer · Variable Participant · Variable Employer

	Core		Variable	
	Participant	**Employer**	**Participant**	**Employer**
2021	**12.1%**	**13.0%**	**18.9%**	**18.4%**
2020	10.2%	11.0%	16.8%	16.5%
2019	7.3%	7.7%	27.1%	26.4%
2018	4.8%	4.9%	-6.4%	-6.5%
2017	8.0%	8.4%	22.3%	23.9%
2016	7.5%	7.9%	9.4%	9.2%
2015	6.0%	6.4%	0.1%	0.0%
2014	8.2%	8.7%	6.5%	6.7%
2013	10.2%	10.9%	28.0%	27.8%
2012	2.4%	2.2%	15.7%	15.5%

Based on 2021 performance:

Core Fund portion would increase by 8.0%

Variable Fund portion would increase by 18.4%

Case Study #5

- The newest tier of membership in the Utah Retirement Systems (URS) accomplishes multiple objectives:
  - Install a cap on the level of employer contribution
  - Provide additional flexibility to membership through a hybrid design with a floor defined benefit and additional 401(k) component

Hybrid Plan: Utah Retirement Systems

URS Tier 2 Hybrid Retirement System

- Combines a pension and a possible employer 401(k) contribution, depending on the pension contribution rate.

- "If you choose the [Hybrid Option](#), the pension contribution rate directly impacts the benefit you get. If it's lower than the set amount your employer contributes, you receive the difference in an employer-paid 401(k) contribution. **If the pension contribution rate is higher than the employer contribution, you may have to contribute from your paycheck to fund your benefit**."

- New members default into the Tier 2 Hybrid Retirement System unless they make an irrevocable choice to be in the DC plan

Hybrid Plan: Utah Retirement System (URS)

- Service formula based upon years of service x 1.5% of highest five years earnings

- Eligible at:

Age 65, 4 Years Service	Age 62, 10 Years Service
Age 60, 10 Years Service	Any Age, 35 Years Service

Reductions below age 65 with less than 35 years service

- Up to a 2.5% COLA possible

- 401(k) employer contribution is equal to 10% minus the Hybrid DB Plan Rate and is vested after four years

- You are required to pay the amount, if any, of the certified contribution rate for the DB portion that exceeds the 10% (or 14% for Public Safety) contribution rate

Hybrid Plan: Utah Retirement System

Rate History *(Public Employee System)*

Year	Contribution Rate (varies year-to-year)	Required Employer Contribution	Employer contribution to your 401(k) (percentage of your salary)	What you must pay to fund your benefit
2022/23	9.82%	10%	0.18%	0
2021/22	9.32%	10%	0.68%	0
2020/21	9.11%	10%	0.89%	0
2019/20	8.97%	10%	1.03%	0
2018/19	8.85%	10%	1.15%	0
2017/18	8.42%	10%	1.58%	0
2016/17	8.22%	10%	1.78%	0
2015/16	8.22%	10%	1.78%	0
2014/15	8.22%	10%	1.78%	0
2013/14	8.41%	10%	1.59%	0
2012/13	8.41%	10%	1.59%	0
2011/12	7.59%	10%	2.41%	0

Contribution rate detail from the actuarial valuation as of January 1, 2022

Hybrid Plan: Utah Retirement System

Rate History *(Public Safety & Firefighter System)*

Year	Contribution Rate (varies year-to-year)	Required Employer Contribution	Employer contribution to your 401(k) (percentage of your salary)	Percentage of your salary you must pay to fund your benefit
2022/23	16.59%	14%	0	2.59%**
2021/22	16.27%	14%	0	2.27%**
2020/21*	16.27%	14%	0	2.27%**
2019/20	11.30%	12%	0.70%	0
2018/19	11.26%	12%	0.74%	0
2017/18	10.74%	12%	1.26%	0
2016/17	10.67%	12%	1.33%	0
2015/16	10.67%	12%	1.33%	0
2014/15	10.67%	12%	1.28%	0
2013/14	10.91%	12%	1.09%	0
2012/13	10.91%	12%	1.09%	0
2011/12	10.45%	12%	1.55%	0

*In 2020/21, by legislative act, the Tier 2 Public Safety and Firefighter System benefits were enhanced to increase the pension multiplier from 1.5% to 2% and the employer contribution increased from 12% to 14%.

**Your employer may pick-up these costs on your behalf.

Contribution rate detail from the actuarial valuation as of January 1, 2022

Segal   36

Other Resources

- Wisconsin Legislative Council – Comparative Study of Major Public Employees Retirement Systems

  – Most recent study dated November 2021

- https://docs.legis.wisconsin.gov/misc/lc/comparative_retirement_study

2023-2025 Legislative Session RIO Bill Tracker

Bill #	Topic	Description	Sponsor	Hearing Date	Committee	Status	Position
HB 1040	Closing DB Plan	Closing DB Plan (eff. 12/31/24)	Legislative Management: Weisz, Bosch, Boschee, Lefor, Mitskog, Vigesaa, Burckhard, Klein, Piepkorn, Schaible, Wanzek	3/9 -10:30 a.m.	Senate State & Local	Passed House 2/22 77 yeas / 16 nays	Neutral
HB 1088	SIB	SIB Membership changes	SIB			Amended by House.Reduced experts to 1 from 2, changed experience language; Legacy Advisory Board would be a voting member; and two legislative members. Passed House 1/25 80 yeas/ 11 nays. 2/8 Senate I&B amended to original version except making Legacy Advisory member voting member and an amendment to replace the Insruance Commissioner with the OMB Director on the Advisory Board. Senate I&B passed amendment 5-0-0. Passed Senate 3/10 46 yeas / 0 nays **Return to House 3/13**	Support - Original Version
HB 1150	Veteran Exemption for TFFR	Allows veterans with at least 20 years of military service to opt out of the TFFR in their first year of teaching	Thomas, Bekkedahl, Heinert, Meyer, O'Brien, Pyle, Richter, Ruby, Schaible, Schreiber-Beck, Vedaa			Passed House 1/19 54 yeas/ 37 nays- 2/13 Referred to Senate State & Local **Passed Senate 03/14 27 yeas / 18 nays Returned to House 3/15**	Oppose
HB 1183	PERS retirement for law enforcement	Amends description of participants.	Rep. Porter, Sen. Axtman, Rep. Dockter, Rep. Heinert, Rep. Karls, Rep. Kasper, Sen. Larson, Rep. Louser, Rep. Motschenbacher, Rep. Ostlie, Rep. Ruby, Rep. Schauer	3/9 - 10am	Senate State & Local	2/22 Passed House 84 yeas 7 nays	Monitor
HB 1216	ND Development Fund	Commerce Dept. funds to promote economic development.	Rep, Nathe			Passed House 1/25 91 yeas 0 nays. Passed Senate 3/9 45 yeas / 1 nay **Returned to House 3/10**	Monitor
HB 1219	TFFR	TFFR Changes	Reps. Kempenich, Conmy, Kreidt Sen. Schaible	3/9 - 9:30am	Senate State & Local	Passed House 2/7 94 yeas/0 nays. 2/13 Do Not Pass 3/10 Rereferred to Senate State&Local 3/15	Support

Bill	Subject	Description	Sponsors	Hearing	Committee	Status	Position
HB 1227	Legacy Fund	Requiring a cost-benefit analysis for a measure or policy affecting the Legacy Fund.	Reps. Kempenich, Bosch, Cory, Mock, Swiontek, Thomas, Vigesaa Sens. Klein, Meyer, Patten	3/7 - 10:45am	Senate I&B	Passed House 1/20 89 yeas/ 0 nays. Passed Senate 3/10 47 yeas / 0 nays **Sent to Governor 3/15**	Neutral
HB 1278	SIB	Requiring contracts with custodians/managers include required written support of fossil fuel and ag industries in state.	Reps. Satrom, Grueneich, Headland, Lefor, S. Olson, Ostlie, Schauer, Steiner Sens. Conley, Wanzek	3/15 - 11am	Senate I&B	Passed House 2/20 92 yeas / 1 nays. Amended to support investment program.	Oppose original Version; support amended version.
HB 1285	Agency	Prohibiting executive branch agency bill submissions without legislator or legislative committee sponsor.	Reps. Toman, Christensen, Heilman, Henderson, Prichard	**3/24 - 9:20 a.m.**	Senate State & Local	Passed House 2/21 80 yeas / 14 nays	Monitor
HB 1309	PERS	Plan design changes for law enforcement	Rep. Boschee, Sen. Braunberger, Sen. Cleary, Sen. Dever, Rep. Heinert, Rep. Martinson, Rep. Nathe, Sen. Roers, Rep. Ruby, Rep. Schneider	3/9 - 2pm	Senate State & Local	Passed House 2/21. 87 yeas, 7 nays.	Monitor
HB 1321	PERS Board	Changing PERS Board makeup	Reps. Kasper, Dockter, Lefor, Louser, D. Ruby, M. Ruby, Steiner, Vigesaa, Weisz Sen. Hogue	3/13 - 9am	Senate I&B	Passed House 2/21 79 yeas / 15 nays	Monitor
HB 1345	Procurement	State may give priority to companies that support state's ag & energy industries when procuring contracts.	Reps. Satrom, Grueneich, Hagert, Headland, Kiefert, Ostlie, Steiner Sen. Conley, Erbele, Lemm, Wanzek	3/16 - 9:45am	Senate Ag & Veterans Affairs	Passed House 2/20 85 yeas / 8 nays	Monitor with other ESG bills; amended to reduce impact to investment program
HB 1368	Investments	Prohibiting investments and contracts with companies that boycott Israel.	Reps. K. Anderson, Bellew, M. Ruby, Strinden, Timmons, Tveit Sens. Clemens, Kannianen, Myrdal	3/15 - 10am	Senate I&B	Passed House 2/20 86 yeas / 7 nays	Oppose original Version; support amended version.
HB 1379	Legacy Earnings Streams	Modifies Legacy Fund Earnings streams	Reps. Lefor, Bosch, Dockter, Headland, Nathe, Novak, O'Brien Sens. Bekkedahl, Hogue, Rummel, Sorvaag	**3/22 - 8 a.m.**	Senate Approps	Passed House 2/22 77 yeas / 16 nays	Monitor
HB 1429	SIB	ESG Boycott/ Contract Restrictions/SIB list	Reps. Novak, Koppelman, Louser, J. Olson, S. Olson, M. Ruby, Thomas, Sen. Elkin, Magrum, Rummel	3/15 - 10:30am	Senate I&B	Passed House 93 yeas / 0 nays	Oppose original version; support amended version.
HB 1532	TFFR	Bill provides funding for private school attendance; **Louser has proposed amendments incorprating private school teachers in to TFFR**	Reps, Cory, Kasper, Kempenich, Lefor, Nathe, Porter,Strinden, Sens. Beard, Burckhard, Meyer, Wobbema, Hogue	03/14 - 9:00 a.m.	Sen Education	Passed House 2/21 54 yeas / 40 nays	
SB 2015	Budget bill	OMB Budget Bill	Senate Appropriations	**3/22 - 8:30 a.m.**	House Approps	Passed Senate 2/21 40 yeas / 6 nays	Monitor
SB 2022	Budget bill	RIO's Budget	Senate Appropriations	**3/23 - 3:30 p.m.**	House-Approps	Passed Senate 2/20 45 yeas / 2 nays	Support

Bill	Title	Description	Sponsors	Hearing	Committee	Status	Position
SB 2070	Teacher Permitting	Extends the length of time non-certified teachers can be permitted	Senate State and Local Govt - Roers, Barta, Braunberger, Cleary, Estenson, Lee		House Education	Passed Senate 1/26 47 yeas / 0 nays **HE reported back, Do Not Pass, Place on Calendar 03/15**	Monitor
SB 2164	PERS Board	Changing how legislative members of PERS Board are appointed	Sen. Dever Reps. Brandenburg, Hatlestad, D. Johnson, Monson, Schauer	3/3 - 9am	House GVA	Passed Senate 1/30 47 yeas / 0 nays	Monitor
SB 2165	Energy Commission	Funds to clean sustainable engery fund/ BND	Sen. Patten, Rep. Bosch, Sen. Kannianen, Sen. Kessel, Rep. Novak, Rep. Porter			Passed Senate 2/21 40 yeas / 6 nays **Passed House 3/15 93 yeas / 0 nays**	Monitor
SB 2196	Infrastructure Revolving Loan Fund	Resets terms of the infrastructure revolving loan fund.	Sen. Patten, Sen. Beard, Sen. Bekkedahl, Sen. Kannianen, Rep. Olson, Rep. Richter	3/3 at 9am	House Energy & Natural Resources	Passed Senate 1/23 47 yeas/ 0 nays	Monitor
SB 2233	BND	Auditing practices of certain funds under management of BND	Sen. Klein, Sen. Bekkedahl, Sen. Hogue, Rep. Lefor, Rep. Vigesaa	3/13 - 9am	House IBL	Passed Senate 1/24 46 yeas/ 0 nays **House IBL reported back 3/13, do pass, place on calendar**	Monitor
SB 2239	PERS Plan	Changing PERS contribution rates and appropriating $250M to the fund	Sens. Cleary, Dever Rep. Boschee	3/10 - 9am	House GVA	Passed Senate 2/21 34 yeas / 13 nays	Support
SB 2258	TFFR	Expands scope of Critical Shortage area qualification for rehired retirees	Sens. Paulson, Beard Reps. Heilman, Hoverson, Louser	3/6 - 3pm	House Education	Passed Senate 2/1 47 yeas 0 nays	Neutral
SB 2330	Legacy Fund	Legacy earnings definition and change in Legacy Fund IPS percentages.	Sens. Klein, Hogan, Meyer Reps. Bosch, Kreidt	3/14 - 10am	House Finance & Taxation	Passed Senate 2/15 43 yeas / 3 nays	Support
HCR 3033	Legacy Fund	Legacy fund earnings definition constitutional amendment	Reps. Mock, Hagert, Ista, Kempenich, Kreidt, Schatz Sens. Cleary, Meyer	**03/20 - 9:00 a.m.**	Senate I&B	Passed House 3/14 67 yeas / 24 nays	

MEMORANDUM

TO: **TFFR Board of Trustees**
FROM: **Chad R. Roberts, DED/CRO**
DATE: **March 3, 2023**
RE: **March 2023 Pioneer Project Update**

Project Status

Pilot 1 elaboration meetings were completed on December 16, 2022. Pilot 1 contained modules of the system such as employer enrollment and service credit purchase. The modules from Pilot 1 are in the development phase with the vendor engineering team and are being reviewed by TFFR staff as each section of the software is developed. Once developed, the modules enter the testing phase during which the vendor tests all aspects of the build prior to sending to TFFR staff for in-house testing.

Pilot 2 elaboration began on January 9, 2023. This elaboration phase is projected to last through May 18, 2023. In addition to the design of modules such as dual member enrollment and service retirement benefit calculation, the vendor and TFFR staff are also conducting meetings to develop the new file scanning and document management process for the system.

Pilot 3 elaboration is tentatively scheduled to begin April 3, 2023. As Pilot 2 is not scheduled to conclude until May 18, 2023, this creates approximately six weeks of overlap of design and elaboration sessions for Pilot 2 and Pilot 3 and an increased workload on staff beyond even the added workload of normal duties and Pilot 2 sessions. We are working to accommodate the overlap to keep the project on schedule and avoid any development delays further in the project schedule. Pilot 3 is scheduled to be complete on July 10, 2023. Pilot 3 and Pilot 4 are not expected to have an overlap period affording TFFR staff more capacity to handle the surge in end of year business activities.

There are four total pilot phases of the elaboration stage of the project with the last pilot scheduled to be complete in the 4th quarter of 2023. The project is still planned to "go live" in the fourth quarter of 2024.

Budget Status

Presently the project is still within budget, however an additional $23,800 cost unforeseen in the project development phase was approved by the ESC at the March meeting. That additional cost is further explained in the next section.

Unanticipated Issues

During development of the data integration and migration plan for the existing historical records in our FileNet system, an additional cost of $47,600 was put forward by the vendor. The vendor and TFFR disagreed as to the interpretation of a requirement in the RFP process that led to this cost

increase from the vendor. After negotiation, the vendor agreed to reduce the cost by 50%, resulting in an additional cost of $23,800 for the State. After evaluation by staff of the advantages and disadvantages of not using the approach recommended by the vendor and presentment to the ESC, a decision was made to use this approach with the additional cost. It is possible that savings can be identified through the remainder of the project to recoup the cost through other areas where efficiencies can be identified.

BOARD ACTION REQUESTED: Acceptance

MEMORANDUM

TO: **TFFR**
FROM: **Jan Murtha, Executive Director**
DATE: **March 23, 2023**
RE: **120 Day Waiver Review**

I. Background

Staff continues to review processes related to implementation of the pension administration system. One such process related to waiver the 120 waiting period for processing refund of account requests. In reviewing this process staff observed that there was a lack of clarity in the plan governing documents relating to the 120 waiver rule and seeks guidance from the Board regarding the application of policy in processing these requests.

II. 120 Day Waiver Governing Authority

A. North Dakota Century Code

The authority for the 120 waiver rule is found under NDCC 15-39.1-20 which states:

15-39.1-20. Withdrawal from fund. When a member of the fund ceases to be eligible under the terms of this chapter to participate in the fund, the member may, after a period of one hundred twenty days, withdraw from the fund and is then entitled to receive a refund of assessments accumulated with interest. <u>The one-hundred-twenty-day requirement may be waived by the board when it has evidence the teacher will not be returning to teach in North Dakota.</u> The refund is in lieu of any other benefits to which the member may be entitled under the terms of this chapter, and by accepting the refund, the member is waiving any right to participate in the fund under the same provisions that existed at the time the refund was accepted regardless of whether the member later repurchases refunded service credit. A member or a beneficiary of a member may elect, at the time and under rules adopted by the board, to have any portion of an eligible rollover distribution paid directly in a direct rollover to an eligible retirement plan specified by the member or the beneficiary to the extent permitted by section 401(a)(31) of the Internal Revenue Code, as amended.

B. North Dakota Administrative Rules

The 120 waiver rule is revisited under North Dakota Administrative Rule 82-03-01-01 which states:

82-03-01-01. Teachers' withdrawal from fund - Refund. When a teacher terminates covered employment, the teacher may claim a refund of assessments paid to the fund during membership. A teacher wishing to claim a refund of assessments must request an application from the administrative office, complete the form, and return it for processing. Once the application has been processed, the refund will be paid the first day of the month following the expiration of one hundred twenty calendar

days from the last date of covered employment.

The waiting period may be waived by the board if the teacher produces evidence that the teacher will not be returning to covered employment in North Dakota. The following written evidence is required before the board will grant a waiver:

1. Proof of resignation or nonrenewal of contract;
2. Proof that the teacher's employer has accepted the resignation, i.e., letter or copy of official school board minutes; and
3. Proof that the individual has either accepted noncovered employment or permanently relocated out of state, or a medical statement from a medical doctor attesting to nonemployment during the upcoming school year for medical reasons. No refund can be issued to a teacher who has terminated a teaching position only for the summer months or for a leave of absence.

C. TFFR Governance Manual

In Section II.D.7 of the TFFR Governance Manual the Board has adopted the following policy:

1. *Payment of Benefits*

It shall be the policy of the TFFR Board of Trustees to distribute payments for benefit claims (annuities, refunds/rollovers) once per month. Distributions will be mailed on the last working day of the previous month payable on the first working day of each month.

In order for a teacher to assure receipt of a benefit payment on the first working day of the month, the required information and forms must be filed with the administrative office at least ten working days prior to the distribution date.

The Deputy Executive Director/Chief Retirement Officer may authorize special payments to pay benefit claims due to unforeseen circumstances that delay the processing of the claim.

Payments to a teacher approved for a refund/rollover will include all contributions and interest paid by a teacher for the purchase and repurchase of service credit. This is in addition to the entitled refund of member contributions plus interest. The Deputy Executive Director/Chief Retirement Officer may waive the 120-day waiting period for refunds/rollovers based on necessary documentation.

III. Interpretation and Application Questions

Both the North Dakota Century Code and North Dakota Administrative Code indicate that the Board shall make determinations regarding 120 day waivers. The Board has adopted a policy that the Deputy Executive Director – Chief Retirement Officer shall make determinations regarding waivers. This difference in these documents raise the following questions:

- Does the Board wish to confirm its intent that review and approval of the waiver requests should be delegated to the Deputy Executive Director – Chief Retirement Officer?
- If so, a process will need to be created to allow for appeals of denials by the DED-CRO of the waiver to the TFFR Board so that members can receive due consideration

as authorized by the statute.
- If so, staff recommends that amendments to the administrative code be pursued by the Board subsequent to legislative session.
- If so, staff will bring forward policy amendments that clarifies this is a delegated authority.
- If not, does the Board wish to retain the authority to review all 120-day waiver requests?
- If so, recent waiver requests have been provided to Board members via a secure link for review and approval.

ACTION REQUESTED: Provide staff guidance on interpretation and application of this provision. Review waiver requests as appropriate.

FY2023 RETIREMENT TRENDS REPORT

Chad Roberts, MAc
Deputy Executive Director/Chief Retirement Officer
March 2023

NORTH
Dakota Be Legendary.

Teachers' Fund For Retirement
RETIREMENT & INVESTMENT

RETIREMENT: NOW OR LATER?

The decision to retire is prompted by both financial and non-financial reasons.

- Financial considerations:
  - Salary vs. Retirement benefits
  - Health insurance benefits – rising cost of medical care
  - Second career opportunities
  - Economic factors such as inflation and other investments performance

- Non-financial considerations:
  - Health of teacher (and spouse)
  - Family matters (spouse, children, parents)
  - Personal reasons (job satisfaction vs. job stress)
  - Legislative and regulatory factors affecting teaching

TFFR MEMBER CATEGORIES

TFFR member categories are based on DPI title codes and presented according to teacher and administrator categories defined in NDCC 15.1-02.13.6.

- Teachers
- Special Teachers
  - Special Ed Teachers
  - Guidance & School Counselors
  - Speech Language Pathologists
  - Social Workers
  - School Psychologists
  - Library Media Specialists
  - Technology Coordinators

- Superintendents
- Other Administrators
  - Assistant Superintendent
  - Assistant Director
  - Principal
  - Assistant Principal
  - County Superintendent
  - Other administrative positions

TFFR MEMBERSHIP BY TIER AS OF FEBRUARY 2023

TFFR Members	Tier 1G	Tier 1NG	Tier 2	Total
Teachers	607	2,232	6,751	9,590
Special Teachers	92	377	1,045	1,514
Superintendents	23	59	57	139
Other Administrators	59	285	283	627
Inactive Vested	201	1,070	815	2,086
Total	982	4,023	8,951	13,956

TODAY   TFFR MEMBERSHIP BY TIER 2014-23

TODAY CURRENT ACTIVE TFFR MEMBERS ELIGIBLE

Previously Eligible for Retirement
614
5%

Newly Eligible for Retirement
204
2%

Not Yet Eligible for Retirement
11,052
93%
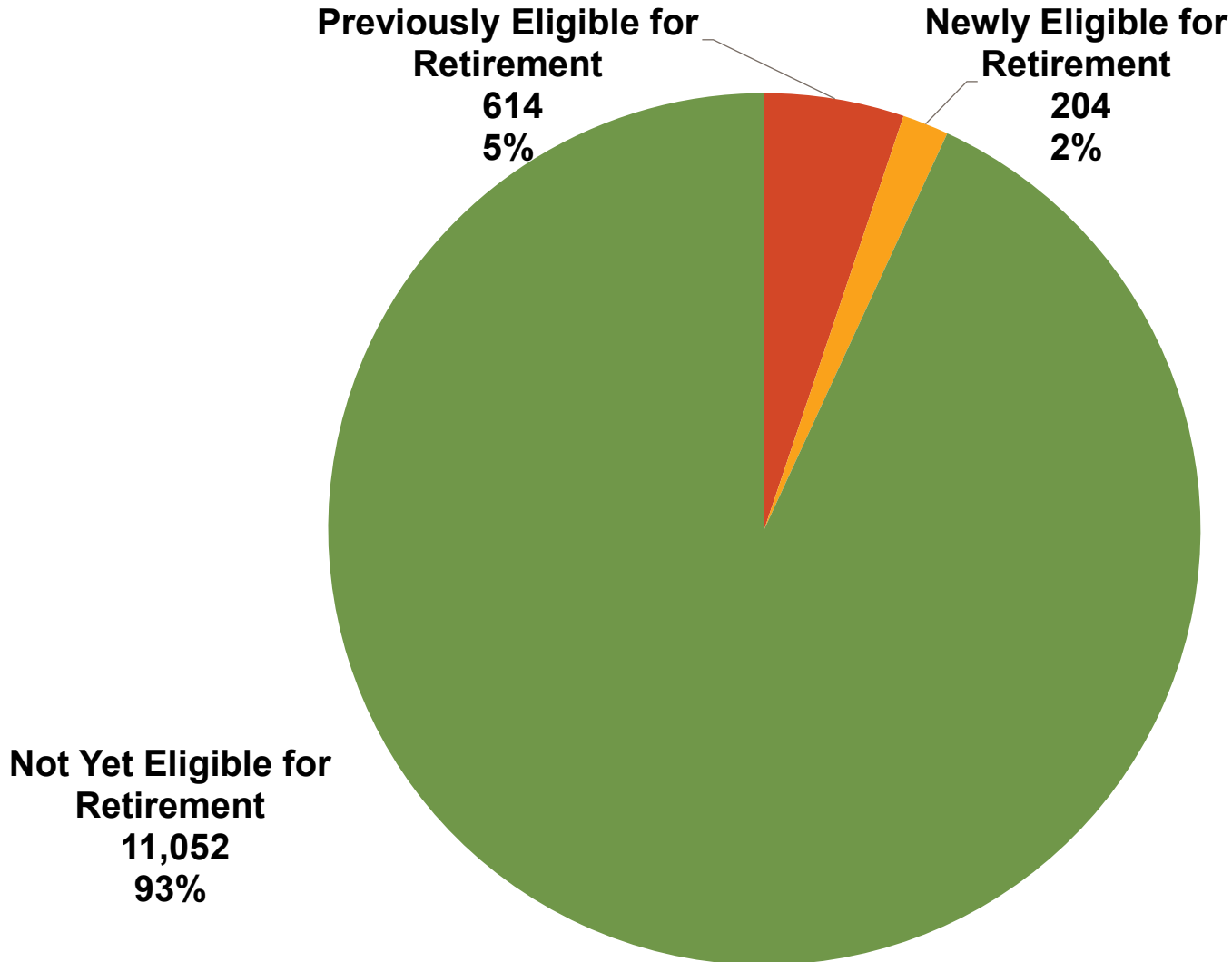
Of the 11,870 active TFFR members, 818 members are currently eligible to retire (7%) either under the Rule of 85, Rule of 90/Min age 60, or age 65.

Of the 818 active TFFR members eligible to retire, 75% are previously eligible and 25% are newly eligible in 2022-23.

■ **Previously Eligible for Retirement**

■ **Newly Eligible for Retirement**

■ **Not Yet Eligible for Retirement**
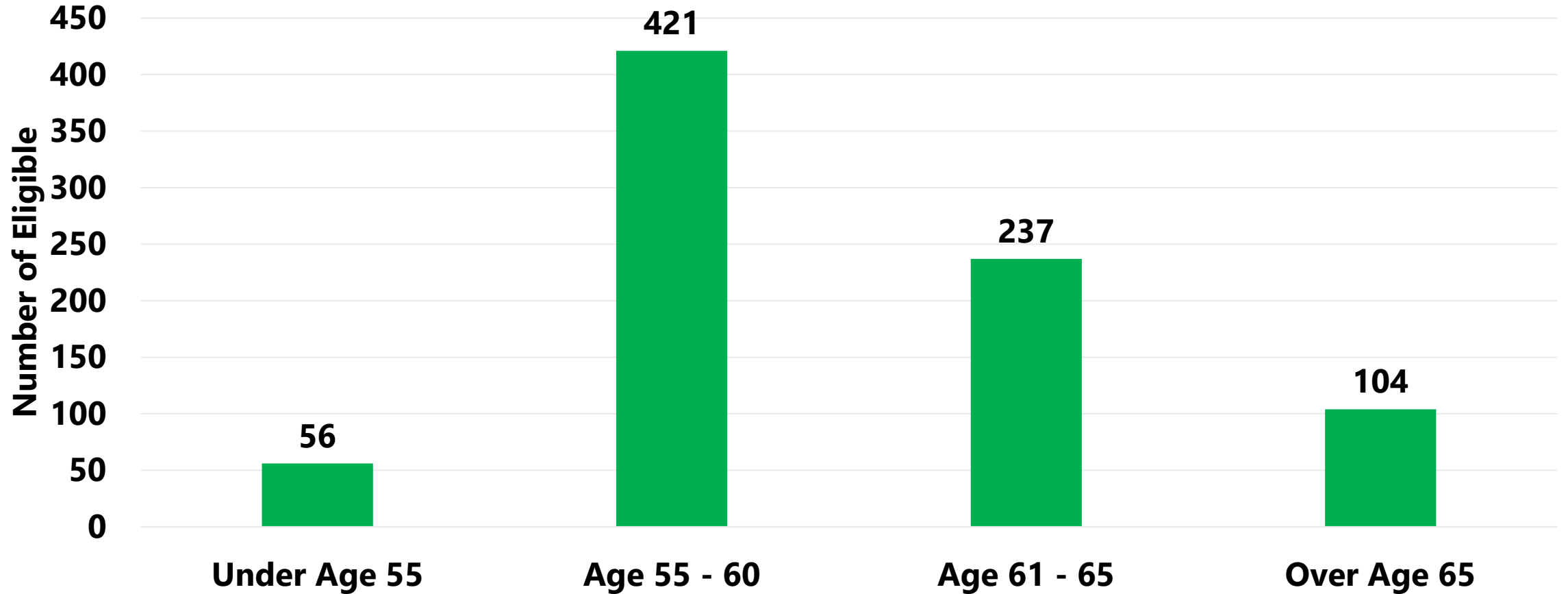
YESTERDAY

ACTUAL RETIREES & TOTAL ELIGIBLE
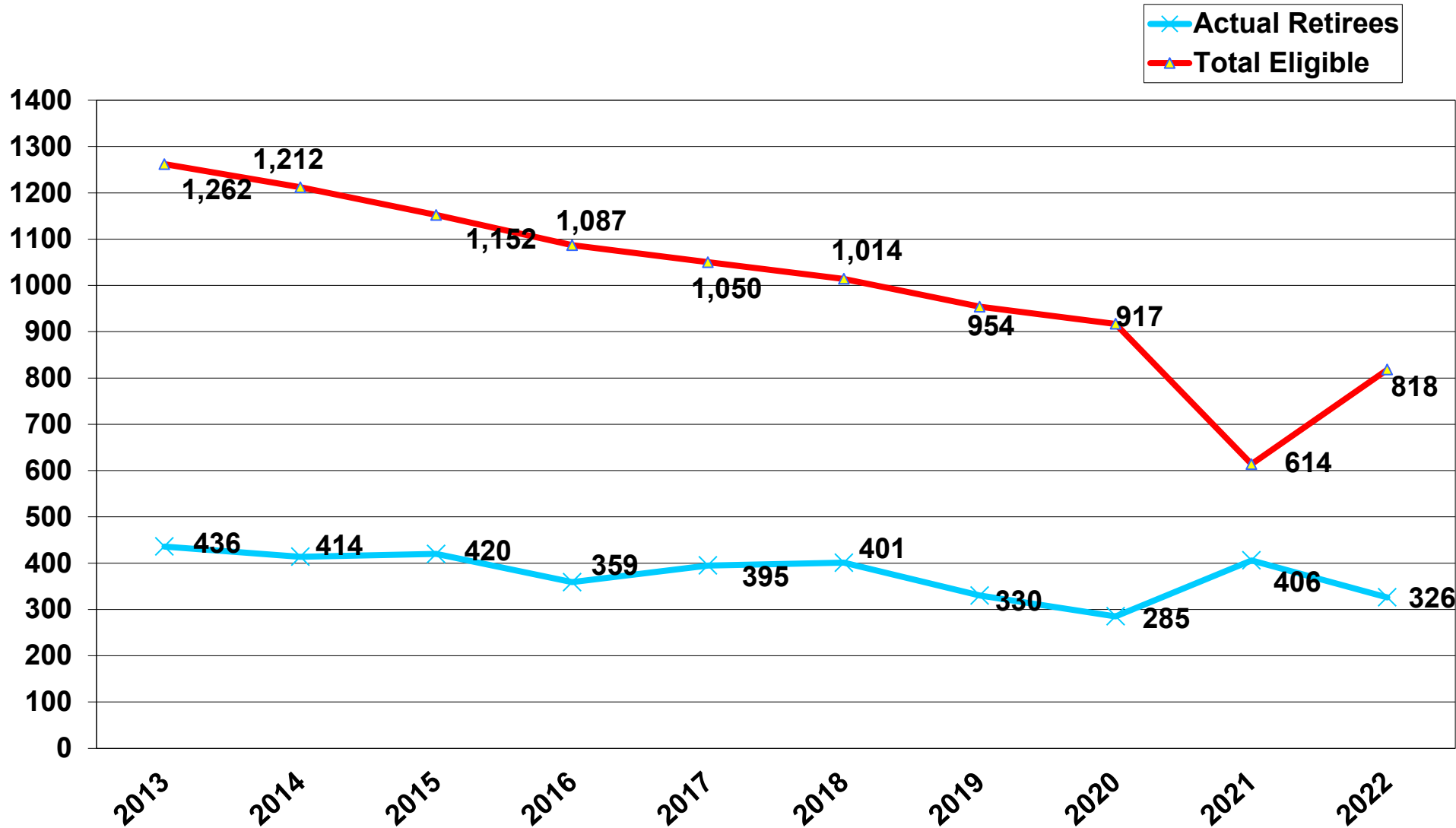
10 Year History 2013-2022

On average, 1,008 teachers have been eligible to retire each year over the last 10 years.

On average, 377 teachers actually retired each year, or total of almost 3,772 for 10- year period.

Approximately 37% of eligible members actually retired over the past 10 years.

The percentage of eligible who actually retired has increased 3% for the ten year period since the 2022 report

TFFR ACTIVE MEMBERSHIP RETIREMENT ELIGIBILITY PROFILE – 20-YEAR PROJECTION
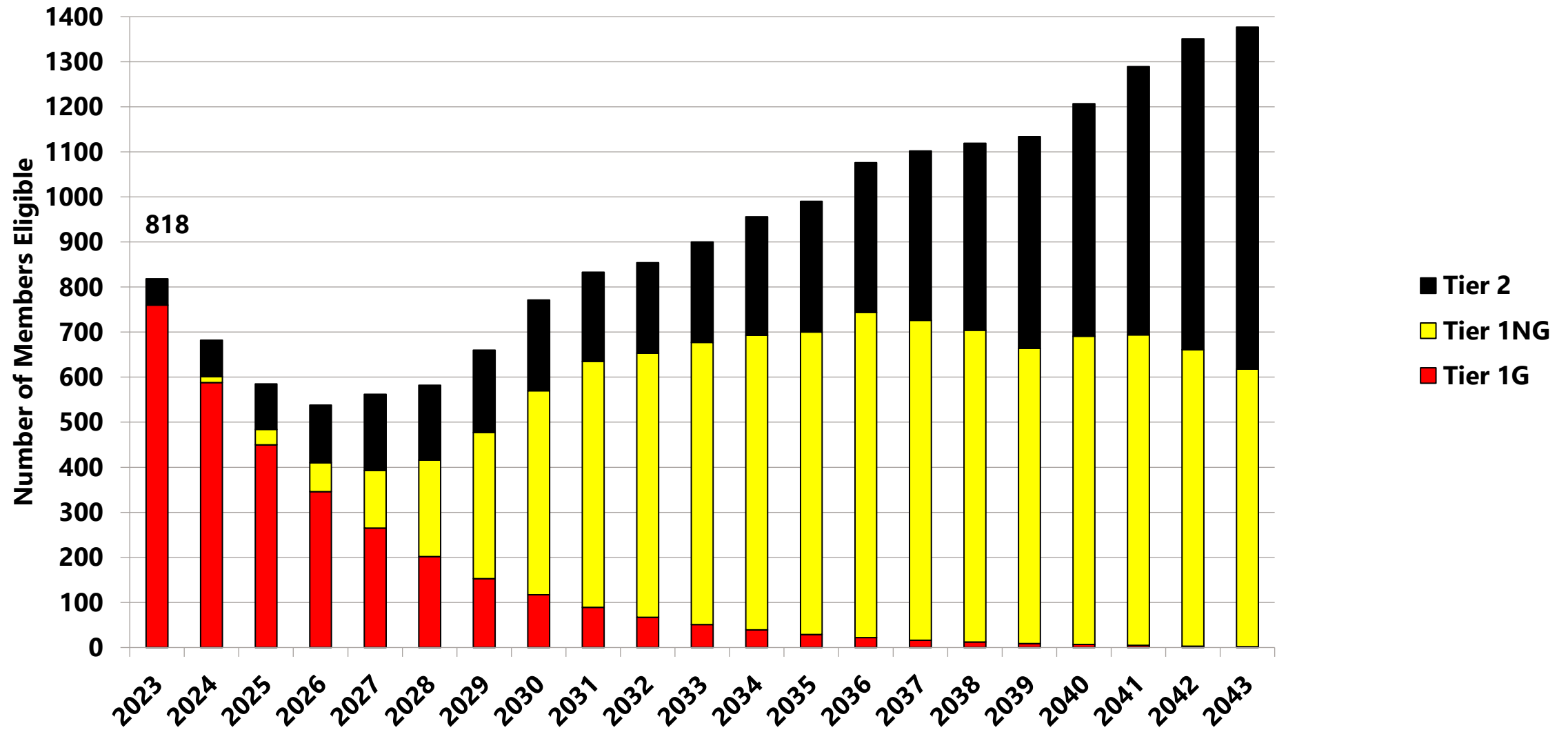
TOMORROW

PROJECTED RETIREES – TEACHERS

TOMORROW
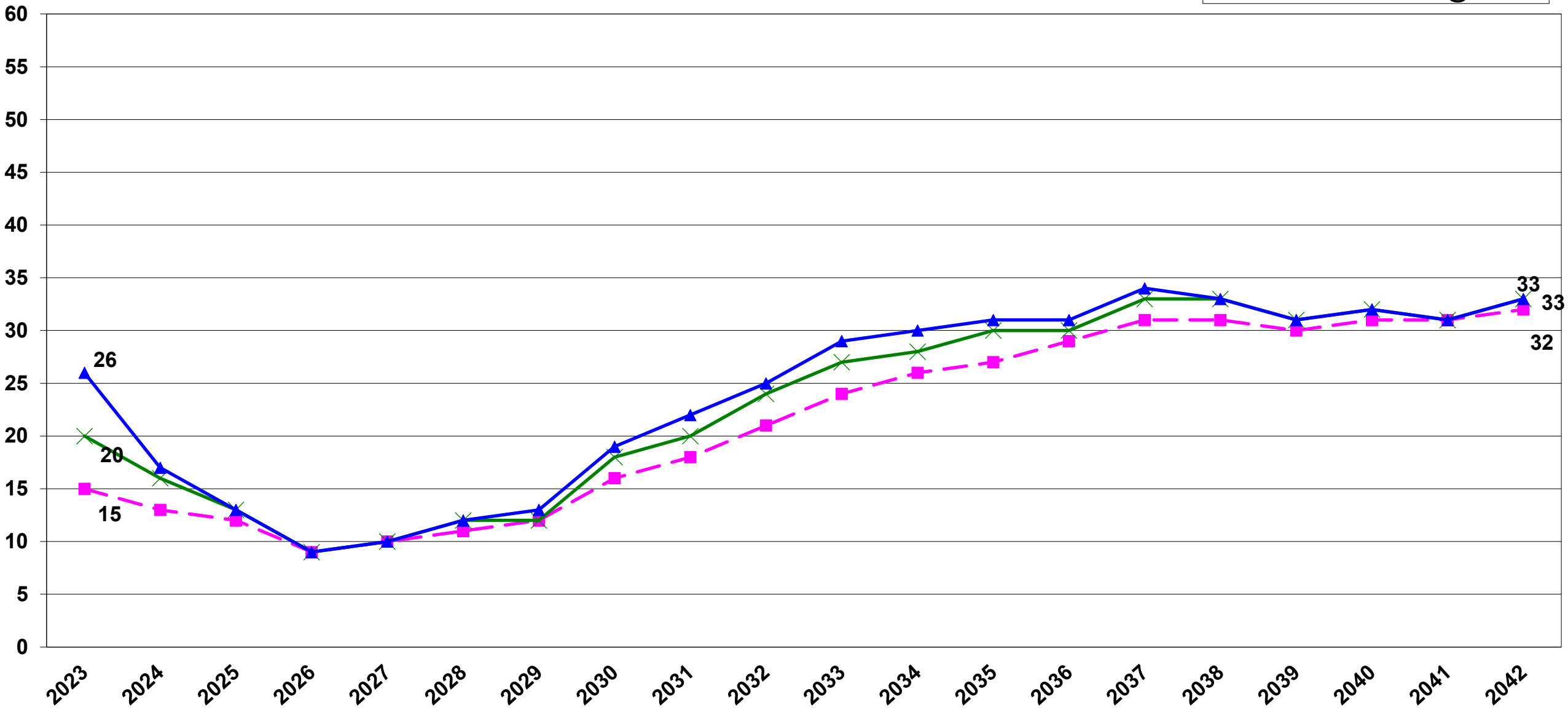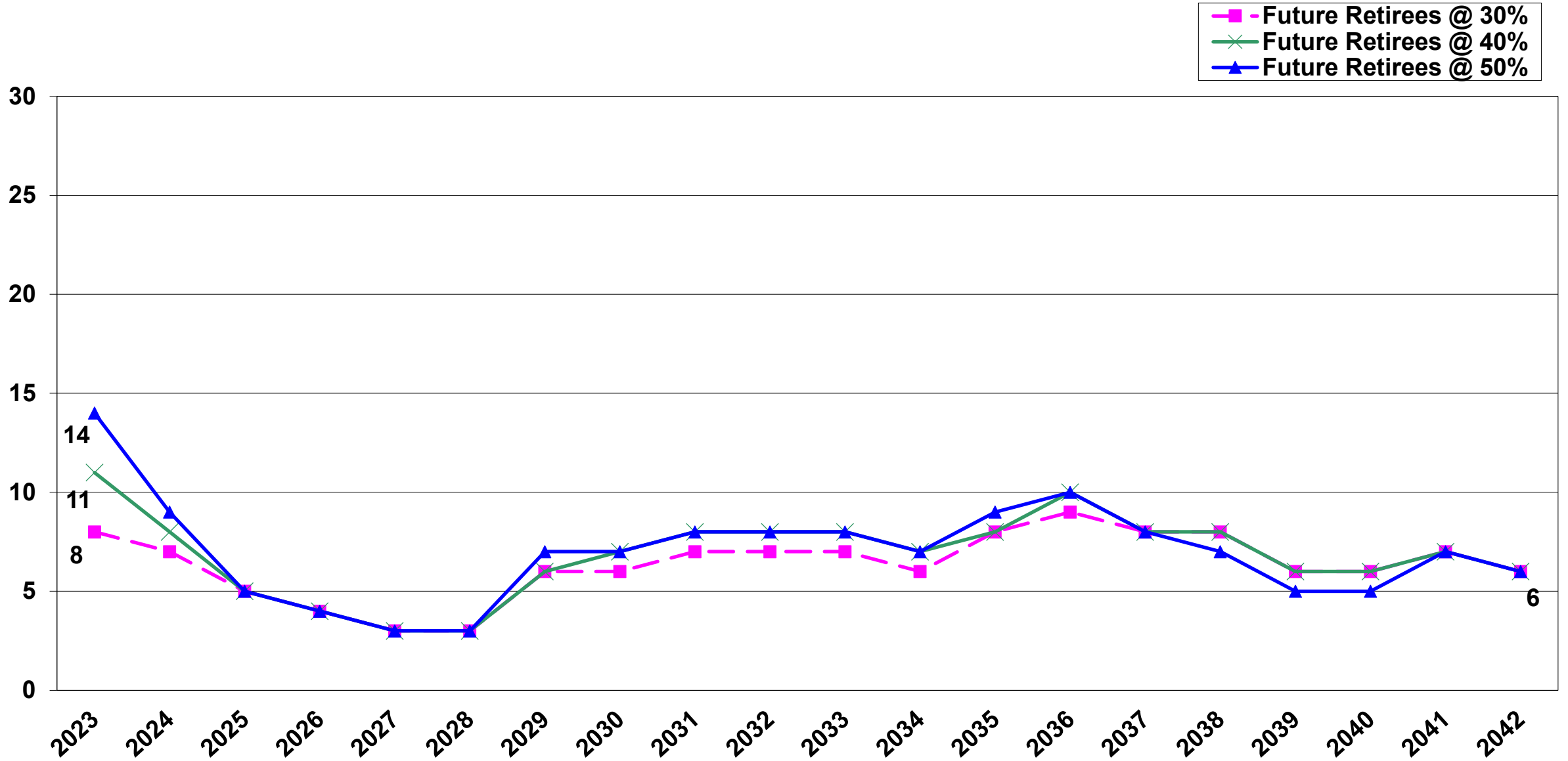
PROJECTED RETIREES – ALL ACTIVE
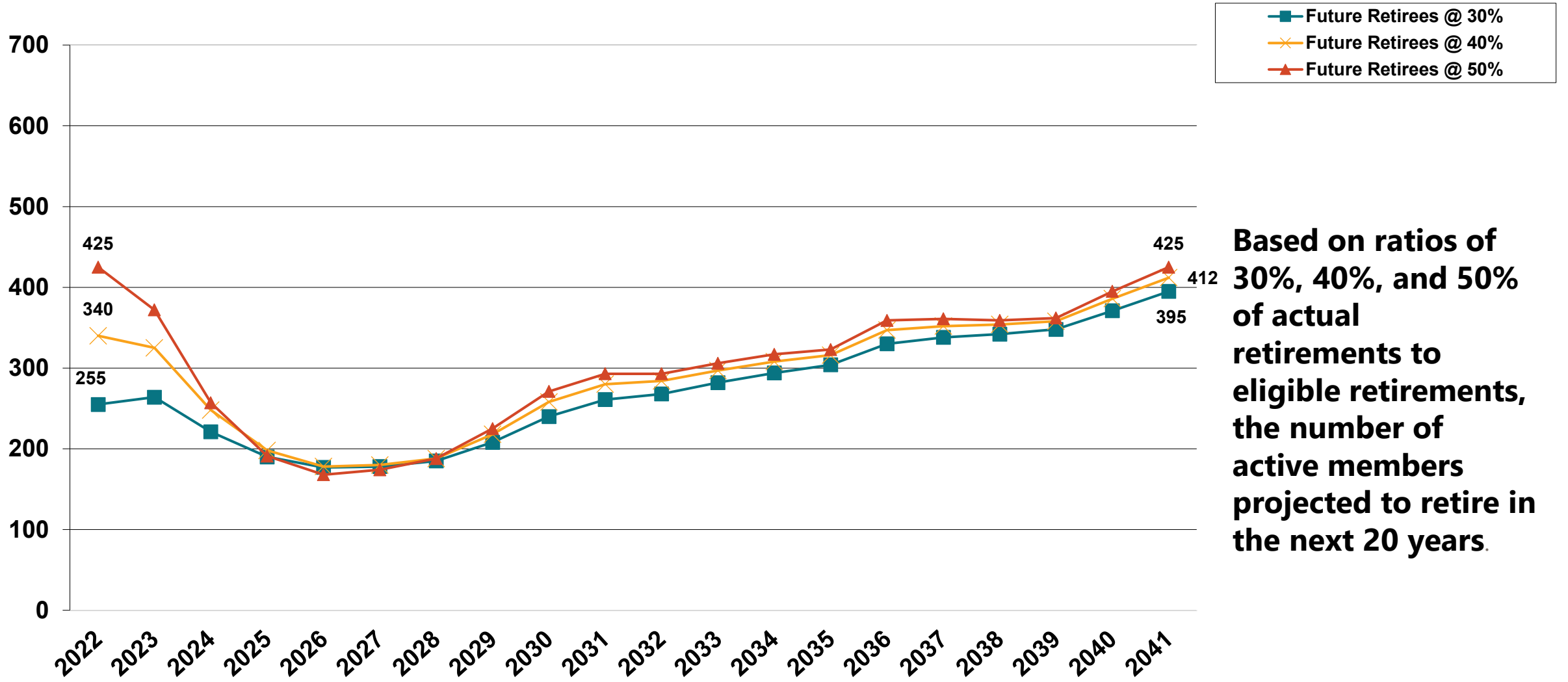
Based on ratios of 30%, 40%, and 50% of actual retirements to eligible retirements, the number of active members projected to retire in the next 20 years.

SUMMARY

Based on ratios of 30% and 40% of actual retirements to eligible retirement, approximately 2,000 to 2,200 active members are projected to retire in the next 10 years which averages about 230 per year.

	Total Retirees Over 10 Years		Average Retirees Per Year	
Ratio	**30%**	**40%**	**30%**	**40%**
Teachers	1,975	2,190	198	219
Superintendents	64	68	6	7
Other Admins	140	155	14	16
Total Active Members	2,179	2,413	218	241

Note: All retirement projections are estimates only.

PERFORMANCE REVIEW

INVESTMENT STAFF
MARCH 23, 2023

NORTH
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THE S&P 500 HAS TRACKED DISCOUNT RATES[1]
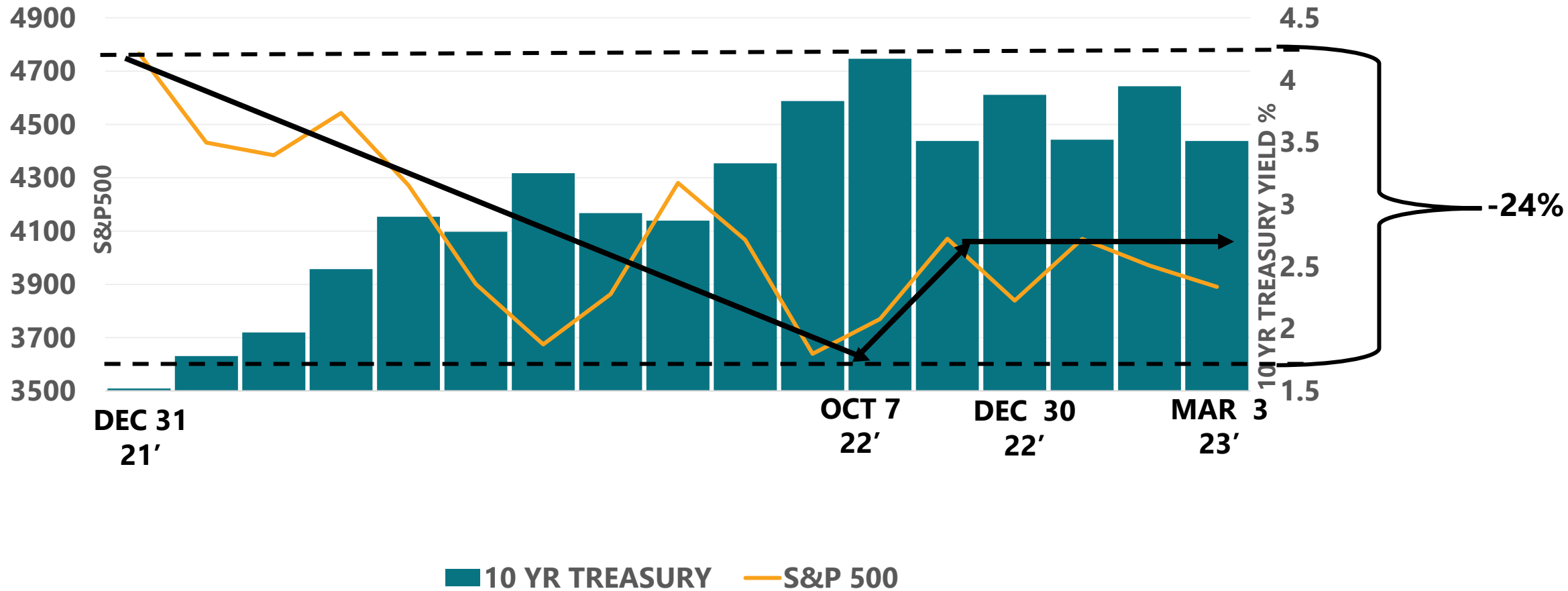
1. FRED (Federal Reserve Bank of St. Louis)
Investment Team, Performance Review, March 24, 2023

PERFORMANCE – BENCHMARK INDICES

Summary of Returns
December 31, 2022

Benchmark Indices (% change, annualized)	YTD	1 Yr	5 Yr	10 Yr	10 Yr Volatility
Russell 1000	-19.1%	-19.1%	8.9%	12.4%	17.7%
Russell 2000	-20.4%	-20.4%	3.9%	9.0%	22.2%
S&P 500	-18.1%	-18.1%	9.2%	12.6%	17.6%
MSCI ACWI IMI Net	-18.4%	-18.4%	5.0%	7.9%	14.2%
MSCI World ex US	-14.3%	-14.3%	1.8%	4.6%	14.3%
MSCI Emerging Markets	-20.1%	-20.1%	-1.4%	1.4%	15.7%
Bloomberg Aggregate	-13.0%	-13.0%	0.1%	1.1%	4.1%
Bloomberg Gov/Credit	-13.6%	-13.6%	0.3%	1.2%	4.5%
Bloomberg US High Yield	-11.2%	-11.2%	2.3%	4.0%	5.0%
NCREIF Property Index (12/31/2022)	5.5%	5.5%	7.5%	8.81%	3.2%

10 YEAR NOTE YIELD UP AND BOND RETURNS DOWN
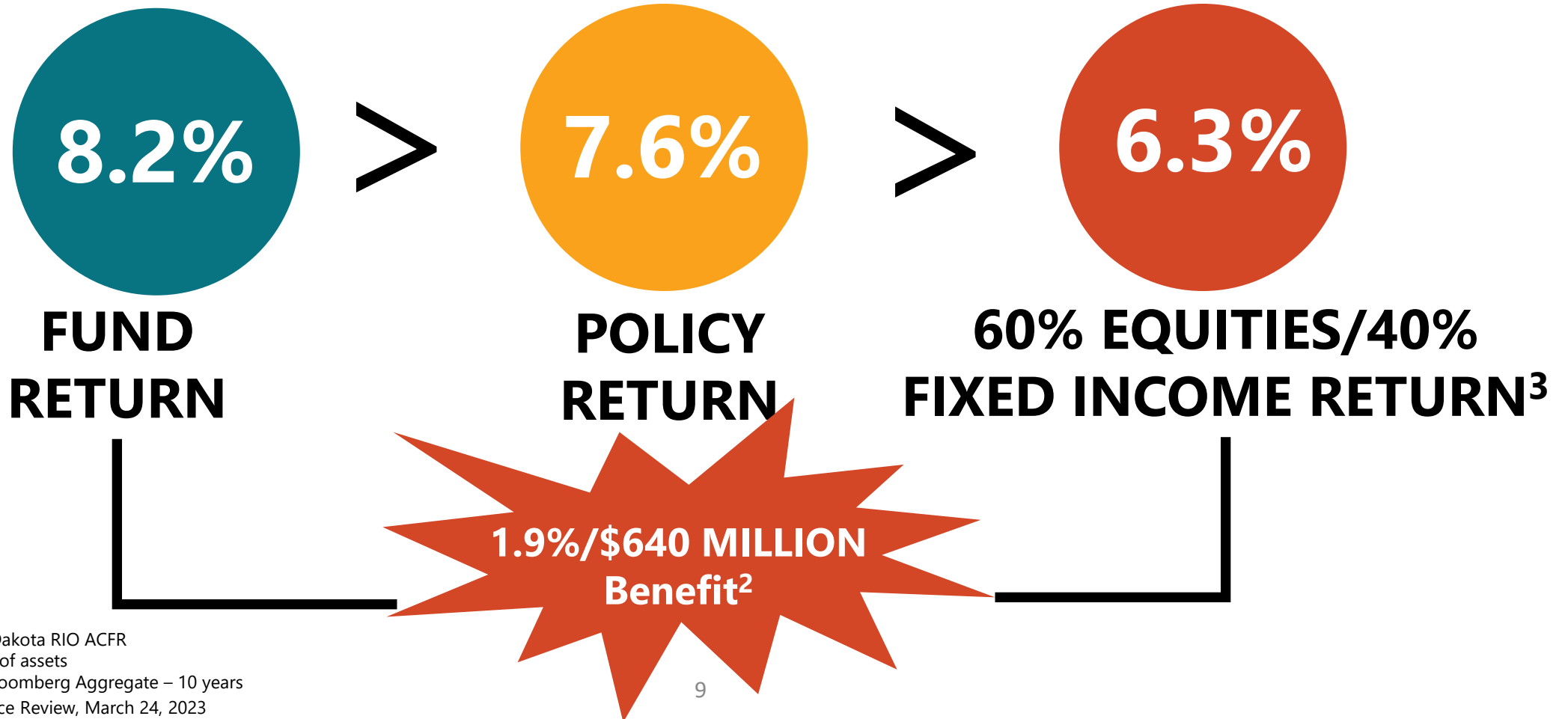
Investment Team, Performance Review, March 24, 2023
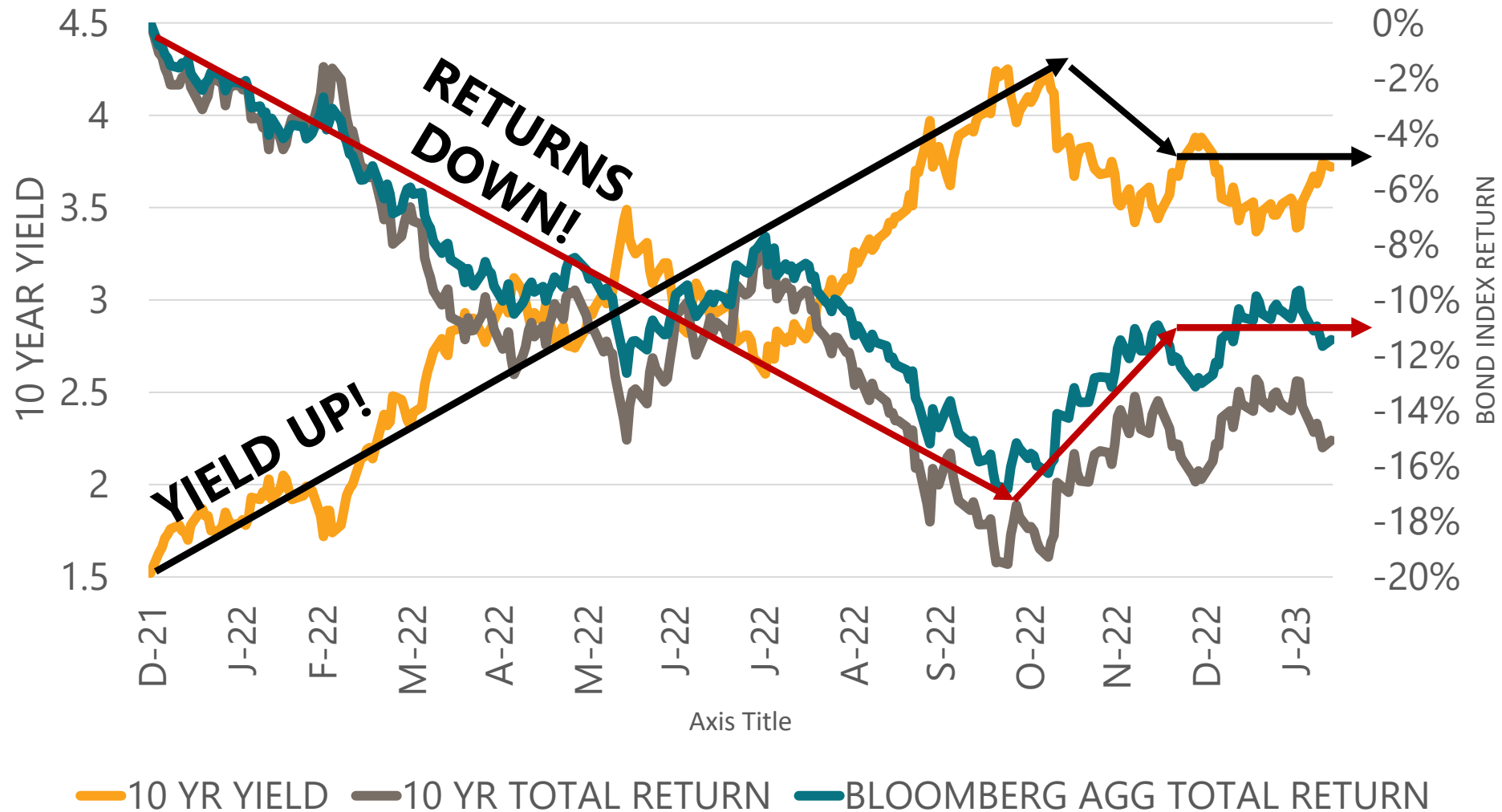
BLOOMBERG AGG YIELD[1]: 4.4%

BEST GUESS FOR FUTURE BOND RETURN!

1. Fixed income benchmark; yields are the best estimate of future bond returns.

PERFORMANCE – TFFR[1]

AS OF DECEMBER 31, 2022

TFFR ($3.1 BILLION)	YEAR TO DATE	1 YEAR	3 YEAR	5 YEAR	RISK (5 YEAR)
TOTAL FUND RETURN	-10.5%	-10.5%	5.2%	5.7%	9.9%
POLICY BENCHMARK	-10.0%	-10.0%	5.5%	5.9%	10.0%
TOTAL RELATIVE RETURN	-0.5%	-0.5%	-0.3%	-0.2%	

1. After fees performance

One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	23%	(19.52%)	(19.32%)	(0.06%)	(0.44%)	(0.50%)
World Equities	8%	7%	(25.07%)	(27.84%)	0.33%	0.09%	0.42%
International Equities	13%	15%	(19.29%)	(15.99%)	(0.51%)	0.07%	(0.45%)
Private Equities	11%	10%	0.27%	0.27%	0.00%	0.01%	0.01%
Domestic Fixed Income	26%	26%	(10.67%)	(12.39%)	0.48%	(0.04%)	0.44%
Real Estate	11%	9%	11.05%	5.53%	0.50%	0.03%	0.52%
Timber	1%	1%	(1.53%)	12.90%	(0.17%)	(0.02%)	(0.19%)
Infrastructure	5%	8%	6.67%	7.91%	(0.04%)	(0.49%)	(0.52%)
Cash & Equivalents	1%	1%	1.68%	1.46%	0.00%	(0.05%)	(0.05%)
Residual Holdings	0%	0%	-	-	0.00%	0.00%	0.00%
Total			**(10.32%) =**	**(10.01%) +**	**0.54% +**	**(0.84%)**	**(0.31%)**

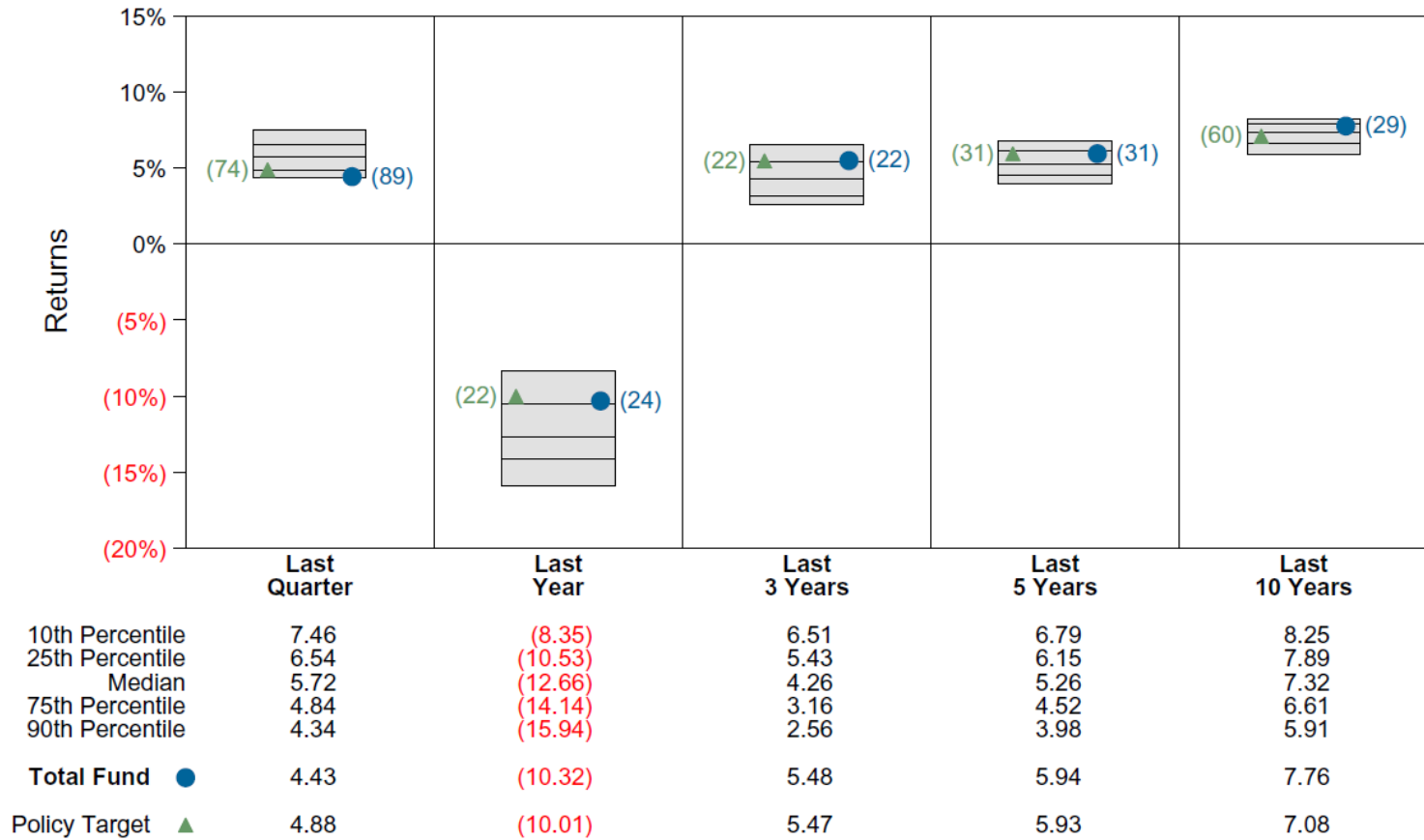## Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equities	23%	22%	9.64%	8.12%	0.33%	(0.07%)	0.25%
World Equities	13%	13%	1.33%	3.50%	(0.36%)	(0.00%)	(0.37%)
International Equities	15%	15%	1.86%	0.96%	0.15%	(0.01%)	0.14%
Private Equities	6%	8%	14.85%	14.85%	0.00%	(0.32%)	(0.32%)
Domestic Fixed Income	25%	24%	1.90%	0.76%	0.30%	(0.06%)	0.24%
International Fixed Inc.	0%	0%	-	-	0.01%	0.01%	0.02%
Real Estate	10%	10%	8.81%	7.46%	0.14%	(0.04%)	0.10%
Timber	2%	2%	2.48%	5.37%	(0.04%)	(0.02%)	(0.05%)
Infrastructure	5%	6%	7.44%	6.00%	0.08%	(0.08%)	(0.00%)
Cash & Equivalents	1%	1%	1.29%	1.26%	0.00%	(0.00%)	(0.00%)
Residual Holdings	0%	0%	-	-	0.00%	0.00%	0.00%
Total			**5.94% =**	**5.93% +**	**0.61% +**	**(0.60%)**	**0.00%**

PERFORMANCE – TFFR[1]

Callan Public Fund Sponsor Database

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	7.46	(8.35)	6.51	6.79	8.25
25th Percentile	6.54	(10.53)	5.43	6.15	7.89
Median	5.72	(12.66)	4.26	5.26	7.32
75th Percentile	4.84	(14.14)	3.16	4.52	6.61
90th Percentile	4.34	(15.94)	2.56	3.98	5.91
Total Fund ●	4.43	(10.32)	5.48	5.94	7.76
Policy Target ▲	4.88	(10.01)	5.47	5.93	7.08

MEMORANDUM

TO: TFFR Board of Trustees
FROM: Chad R. Roberts, DED/CRO
DATE: March 14, 2023
RE: TFFR Ends Report 2nd QTR 2023 ending December 31, 2022

This report highlights exceptions to the normal operating conditions of the TFFR program for the period spanning October 1, 2022, through December 31, 2022.

The newly created position of Communications and Outreach Director was filled in November of 2022.

The position of Accounting Intern was filled in December of 2022. The intern will participate in the internship through the end of the Spring 2023 semester. The intern will be assisting in areas such as employer reporting and compliance projects.

Pilot 1 of the third phase of the "Pioneer" Project was completed on December 16, 2023. The pilot finished on schedule.

A new NDIT Applications Support resource for the Retirement and Investment Office was hired and onboarded in November of 2022. This position was vacated by a resignation from NDIT in September of 2022.

The actuarial audit started in October of 2022 and is expected to be complete and presented to the Board in January 2023.

The TFFR staff conducted a full review of all participant deaths and retirements occurring in FY2021 and FY2022. This review was based on a recommendation from Internal Audit. This review was the first compliance project conducted by TFFR staff outside of Internal Audit. In additional to resolving the few issues identified by Internal Audit, it allowed TFFR to develop procedures that will be used in the new compliance role going forward.

In November of 2022, the TFFR GPR Committee began review of recommended changes and edits to the TFFR Manual. The Review will continue through the 2023 fiscal year with all recommended changes and edits to be presented to the full TFFR Board at the completion of the manual review.

BOARD ACTION REQUESTED: Board Acceptance.

MEMORANDUM

TO: **TFFR Board**

FROM: **Sara Seiler, Supervisor of Internal Audit**

DATE: **February 15, 2023**

SUBJECT: **Audit Activities Quarterly Update**

The SIB Audit Committee will meet on February 15, 2023. The SIB Audit Committee reviewed and approved the second quarter audit activities and an update on current audit activities.

The following will be presented:
1. Executive Limitations Audit
   a. Internal Audit is sufficiently satisfied that the Executive Director was in compliance with SIB Governance Manual Executive Limitation Policies A-1 through A-11
2. Employee Exit Review
   a. RIO creates a general email address for media and open request inquiries. The email address is monitored by multiple employees to ensure there is no disruptions in responses when staff is out or if there is staff turnover.
   b. Create an internal policy that staff members cannot add anyone outside the agency to any internal RIO Teams Channels without prior approval from the Executive Director or Deputy Executive Director.
   c. On an annual basis, the State Investment Board and Teachers' Fund for Retirement Board receives training on board governance, focusing on governance structure (e.g., authority retained versus delegated, communications with staff, etc.)
3. GASB 68 Schedules Audit
   a. Schedule of Employee Allocations as of June 30, 2022
   b. No Material Findings
4. Internal Audit Business Process Review
   a. Weaver & Tidwell, LLP has been reviewing:
      - Audit Charter
      - Audit Documentation
      - Current State Analysis
      - Future State Development
      - Investment Internalization Plan
   b. On track to be completed and presented in May 2023.

The following link has the committee materials that were presented for your reference:

https://www.rio.nd.gov/sites/www/files/documents/PDFs/SIB%20Audit/Board/Materials/sibauditmat20230215.pdf

MEMORANDUM

TO: **SIB**
FROM: **Jan Murtha, Executive Director**
DATE: **March 17, 2023**
RE: **Executive Limitations/Staff Relations**

Ms. Murtha will provide a verbal update at the meeting on agency efforts to address current and future organizational risk through strategic planning. Including updates on the following topics:

1. **Retirements/Resignations/FTE's/Temporary Assistance**:

Employee Title	Status
Investment Accountant	Vacancy due to team member accepting Retirement Acct. position. Posting extended through 3/20/23.
Legal Intern - Summer	Interviews Scheduled.

2. **Current Project Activities/Initiatives:**

- **TFFR Pioneer Project** – The TFFR Pioneer Project continues with implementation consistent with the project plan. Currently the project is in an elaboration phase involving review of system components. The amount of time spent on the project by various staff members currently varies from 5 to 25 hours or more per week.

- **TFFR Actuary RFP** – An RFP for actuarial consulting services for the TFFR program has been issued. Finalists will present to the TFFR Board in April.

- **Legacy Fund Asset Allocation Study –** RVK continues its work on the Legacy Fund Asset Allocation Study. The changes to the Investment Policy Statement recommended by RVK were approved by both the Advisory Board and the SIB in December 2023. At the last meeting, it was discussed that RVK and the Advisory Board intend to meet in Q2 2023 to review recommendations for updates to the Legacy Fund asset allocation and discuss a pacing schedule. Legislation relating to the asset allocation of the Legacy Fund is being monitored by staff. RVK has offered neutral testimony related to SB 2330.

- **Northern Trust Initiative** – In an effort to enhance the infrastructure for the investment program the Investment and Fiscal teams are leading an initiative to coordinate with Northern Trust for additional functionality/capabilities.

- **Audit Consultant RFP:** In September staff issued an RFP for Audit consultant services to assist with the development of additional internal audit business practices to support program evolution consistent with the agencies strategic plan. Procurement concluded, the contract is finalized, and work is currently underway with the expectation that recommendations will be presented to the SIB Audit Committee in May 2023. Weaver Consultants was awarded the contract.

- **ERCC Committee update:** The SIB Executive Review and Compensation Committee is beginning the process for the annual review of the Executive Director. Surveys will be sent

to SIB and TFFR Board members. The ERCC is also collecting survey data related to the performance of the Chief Investment Officer from the SIB, and the Deputy Executive Director- Chief Retirement Officer from the TFFR Board. This survey data is collected to assist the Executive Director in the performance review of these positions.

3. **Board & Committee Presentations February 17, 2023 through March 24, 2023**

Staff provided or is scheduled to provide the following presentations to Boards and Committees during the above referenced time period:

- **Testimony on: HB 1040, HB 1088, HB 1150, HB 1219, HB 1227, HB 1278, HB 1368, HB 1429, SB 2022, SB 2239, SB 2258, SB 2330, and HCR 3033.**
- **SIB Investment Committee – 3/10/23**
- **SIB Executive Review and Compensation Committee – 3/15/23**
- **SIB Securities Litigation Committee – 3/21/23**
- **SIB GPR Committee – 3/22/23**
- **TFFR Board – 3/23/23**
- **SIB meeting – 3/24/23**

BOARD ACTION REQUESTED: Board Acceptance.

NORTH Dakota
Be Legendary.™ | Retirement and Investment

MEMORANDUM

TO: TFFR Board of Trustees
FROM: Chad R. Roberts, DED/CRO
DATE: March 3, 2023
RE: March 2023 TFFR Board Reading Materials

Summary

Attached to this memo are three articles and studies related to defined benefit, defined contribution and hybrid retirement plans. The articles and studies address various considerations and consequences of the differing types of plans and the effect of changing of plans.

Journals, Reports, and Articles

1. How Much Do Teachers Value Compensation Deferred for Retirement? Evidence From Defined Contribution Rate Choices
2. Unintended Consequences: How Scaling Back Public Pensions Puts Government Revenues at Risk
3. Workplace Retirement Plans: By The Numbers

References

Employee Benefit Research Institute. (2023, January 19). *Employee Benefit Research Institute Research Publications.* Retrieved from Employee Benefit Research Institute: chromhttps://www.ebri.org/docs/default-source/by-the-numbers/ebri_rsrc_facts-and-figures_011923.pdf?sfvrsn=9b6b392f_8

Holden, D. G. (2022). How Much Do Teachers Value Compensation Deferred for Retirement? Evidence From Defined Contribution Rate Choices. *Educational Researcher*, 80-90.

Michael Kahn, P. (2020). *How Scaling Back Public Pensions Puts Government Revenues at Risk 2020 Update.* Washington: National Conference on Public Employees Retirement Systems.

BOARD ACTION REQUESTED: None

How Much Do Teachers Value Compensation Deferred for Retirement? Evidence From Defined Contribution Rate Choices

Dan Goldhaber[1,2] and Kristian L. Holden[1]

How much do teachers value compensation deferred for retirement (CDR)? This question is important because the vast majority of public school teachers are covered by defined benefit pension plans that "backload" a large share of compensation to retirement relative to the compensation structure in the private sector, and there is scant evidence about whether pension structures are consistent with teacher preferences for current compensation versus CDR. This study examines a unique setting in Washington State, where teachers are enrolled in a hybrid pension system that has both defined benefit and defined contribution components. We exploit the fact that teachers have choices over their defined contribution rate to infer their revealed preferences for current versus CDR. We find that teachers on average contribute 7.23% of salary income toward retirement; 62% in fact elect to contribute more than the minimally required contribution of 5%. This suggests that teachers value CDR far more than suggested by prior evidence.

Keywords: descriptive analysis; educational policy; policy; statistics; teacher research

How much do teachers value dollars that are set aside for retirement (which we refer to as compensation deferred for retirement or CDR)? The answer to this question is of fundamental import to designing a teacher compensation structure that makes teaching a desirable profession. Understanding teacher preferences for different compensation structures is important but also challenging since, in most states, the amount that teachers defer for retirement is determined through a political process where policymakers, as opposed to individual teachers, make decisions.

The vast majority of public school teachers are served by defined benefit (DB) pension plans (National Education Association, 2010) that "backload" a disproportionate share of compensation to retirement (relative to the compensation structure in the private sector).[1] There are good theoretical arguments for why a backloaded teacher compensation structure might be optimal for student achievement. Ippolito (2002), for instance, suggests that backloaded compensation may be desirable to higher quality employees, who tend to prefer higher rates of saving for retirement. It is also possible that a backloaded compensation lowers attrition and shirking behavior of employees

(Costrell & Podgursky, 2009; Gustman et al., 1995; Lazear, 1979; Lazear & Moore, 1984).[2,3]

An alternative, however, is that compensation backloading reflects rent capture and not efficiency. One theory, proposed by Glaeser and Ponzetto (2014), suggests that DB pensions could shroud benefits from public notice so that policymakers can increase total teacher compensation by more than would be possible if benefits were transparent. It is also possible that compensation is backloaded due to the greater influence of experienced teachers relative to novices. For example, Monk and Jacobson (1985) suggest that the increased backloading of salary schedules during the 1970s could be due to effective bargaining by teachers' unions on behalf of more experienced teachers. Similarly, Lankford and Wyckoff (1997) find that the majority of districts have allocated disproportionally large shares of salary increases to veteran teachers that appear to have little impact on retention.

Much of the literature on teacher pensions is focused on the fiscal sustainability of state systems (e.g., Biggs, 2015; Novy-Marx

& Rauh, 2011). This is certainly warranted given that a number of states' pension systems are judged to be inadequately funded in the sense that the current liabilities in the system far exceed the current assets (e.g., Pew Charitable Trusts, 2019). There is also concern about the degree to which the funding of pension promises is eating into current schooling expenditures; the share of per-pupil expenditures going to pensions has, for instance, risen from about $500 in 2004 to over $1,500 in 2020 and accounts for 11.1% of total per-pupil expenditures (Costrell, 2020).

Far less research has focused on the extent to which teacher pension structures are consistent with *teacher preferences* for CDR.[4] Some precision with language is necessary for this discussion: When we say "compensation deferred for retirement (CDR)" we are referring specifically to funds set aside for retirement that cannot be accessed prior to reaching retirement and drawing a pension.[5] By "current compensation" we are referring to money that individuals receive in the form of salary or wages, which may be used for consumption or savings (though not savings that receive special tax deferred benefits).

Two recent studies attempt to shed some light on teacher preferences for CDR relative to current compensation; both find that teachers under a DB pension system tend not to value dollars set aside for pension upgrades anywhere close to the cost of providing them (Fitzpatrick, 2015; Johnston 2020).[6] But there may be reason to question these results because the studies are based on complex methods that require a number of assumptions (Fitzpatrick, 2015) or rely on stated preferences (in surveys) rather than revealed preferences (Johnston, 2020).

In this article, we contribute to the body of evidence on this topic by considering an alternative to estimating demand or asking teachers to consider alternatives. Instead, we exploit the fact that a significant share of teachers in Washington state are enrolled in a hybrid pension plan that has both DB and defined contribution (DC) components, and teachers have to choose a contribution rate under the DC component. This allows us to infer how much teachers value current compensation versus CDR by using a simple approach that does not require any complex estimation (as in Fitzpatrick) and is motivated by revealed preferences (as opposed to stated preferences as studied by Johnston, 2020).

As a specific example of our assumption about teacher preferences, we infer that those teachers who choose to set aside 7% of their current consumption for retirement, rather than the default 5%, reveal that they prefer setting aside these dollars toward additional retirement income more than the forgone current consumption.[7] Thus, the key to our analysis is the fact that the teachers enrolled in Washington's hybrid DB–DC pension system can choose to contribute between 5% and 15% of their current compensation into the DC portion of the system and earn market rates of return (more on the limits of their choices in the Contribution Rate Choices and Teacher Preferences in Washington State section). Washington is one of a small number of states where a teacher's primary pension plan provides a DC component, and it is one of only two states that grant teachers discretion over contribution rates.

We find that about 62% of teachers in Washington actively choose to set aside more than the minimum required compensation toward their retirement; on average they set aside 7.2% from each paycheck. This average contribution rate figure is roughly consistent with research on average contribution rates in private sector DC plans, where research finds that employee contribution rates average between 5% and 7% (Holden & VanDerhei,2001; Huberman et al., 2007; Munnell et al., 2002).[8]

Importantly, the average contribution rate masks the considerable heterogeneity across teachers. About 10% and 13% of teachers actively choose high contribution rates of 10% or 15%, which greatly exceed the average, and about 38% of teachers choose to contribute the minimum amount of 5%. This heterogeneity in preferences for CDR suggests one virtue of DC pension plans: Teachers can choose contribution rates that are more tailored to their own preferences. This contrasts with DB plans, where members contribute the same amount to retirement, and conditional on age, years of service, and salary receive the same expected retirement compensation.

But just because Washington teachers contribute an average of 7.2% does not mean that they *value* these dollars at the same rate because of minimum required contributions. Yet even under very conservative assumptions about how much teachers value those contributions, such as assuming that those in the minimally required 5% contribution plan would rather not contribute salary toward retirement, we find teachers are willing to trade current compensation for CDR. This finding stands in sharp contrast to Fitzpatrick (2015) who suggests that teachers only value money set aside for their retirement at a faction of the cost of the providing retirement benefits. We conclude by discussing possible explanations for this difference and policy implications.

Contribution Rate Choices and Teacher Preferences in Washington State

We argue that contribution rate choices allow us to directly observe teacher preferences for current compensation versus CDR. Teachers with strong preferences for current compensation will choose to contribute little of their salary to their DC account, and teachers with strong preferences for CDR will contribute more of their current salary. We illustrate this idea in Figure 1 by presenting a simple theoretical model of teacher preferences for current versus deferred compensation.[9] As mentioned above, "CDR" refers specifically to funds set aside for retirement that cannot be accessed for consumption spending prior to retirement, and "current compensation" refers to money that individuals receive in the form of salary or wages, which may be used for consumption or savings (that does not receive special tax benefits).

In Figure 1, individuals choose contribution rates that are best suited to their preferences. Increasing a contribution rate, for example, from the state required minimum of 5% (represented by the vertical line) to 8%, represents a tradeoff between current compensation and CDR.[10] Individuals will choose the rate that maximizes their utility by choosing a contribution rate that balances increases in retirement compensation with decreases in current compensation. This balance is depicted by
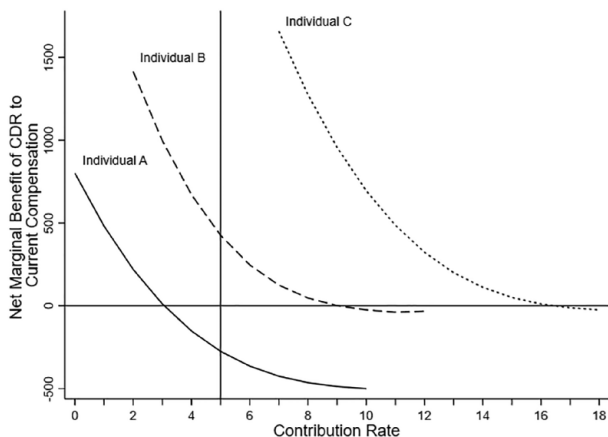
FIGURE 1. *The net marginal benefit of CDR relative to the marginal benefit of current compensation.*
Note. CDR = compensation deferred for retirement.

the net marginal benefit (MB) curves, which represent individuals' preferences for current compensation versus CDR. The values on the vertical axis show the utility measured in dollars associated with different retirement contribution rates. The curves for Individuals A, B, and C show the net marginal benefit—that is, the MB of current compensation, MB_C, less the MB of CDR, MB_R.

Now consider the three Individuals A, B, and C, who are deciding whether or not to contribute more or less than 5% of their current compensation toward retirement. At a 5% contribution rate, the net MB is negative for Individual A, that is, $MB_C > MB_R$. Individual A can improve her utility by decreasing savings and increasing current compensation, so would opt to contribute less than 5%. But Individuals B and C have positive net MBs, that is, $MB_C < MB_R$ at a 5% contribution rate; they will opt to save more. Each individual optimizes savings where $MB_C = MB_R$, which is a contribution rate of 3% for Individual A, a contribution rate of 9% for Individual B, and a contribution rate of 16.5% for Individual C.

This model illustrates how contribution rates are directly related to an individual's preferences for current compensation and CDR. If teachers place a low value on retirement compensation, they will have net MB curves similar to Individual A and will choose to contribute low levels of current compensation. Alternatively, teachers could resemble Individual B or C and would wish to contribute higher levels of current compensation. The bottom line is that contribution rate choices reveal teacher preferences for CDR.

The simple model is also useful for illustrating three censoring issues due to the discrete nature of contribution rate plans in Washington State.[11] Teachers choose one of six contribution rate plans, where four plans have fixed contribution rates: 5%, 7%, 10%, and 15%. The other two plans allow for increasing contribution rates according to age: 5% to 7.5% and 6% to 8.5% with increasing age. Teachers may have preferences to save less than 5% (which we call left censoring), preferences to save more than 15% (right censoring), or preferences to save in between the percentage values offered by Washington State (interval censoring). Individual A in Figure 1 would prefer to contribute less than 5%,

but must contribute at least 5%—their contribution rate choice is left censored, and a naïve examination of their contribution rate decision will overstate their true preferences for CDR as they would have chosen a contribution rate of 3%. Individual B is interval censored, because they must choose between contributing 7% or 10%, while they would in fact prefer to contribute 9%. Finally, Individual C is right censored as they would prefer to contribute 16.5% but must choose the maximum rate of 15%.

We address the censoring issues described above, providing lower bound estimates of what contribution rates imply for teacher preferences for CDR. We deal with the three types of censoring issues as follows. In the case of teachers selecting the 5% contribution plan, we make the very cautious assumption that teachers, such as Individual A, who contribute the minimally required 5% would prefer to contribute zero. This clearly provides a lower bound on the valuation for retirement contributions for those in the 5% plan since there would be some individuals who prefer to contribute some value between zero and 5%. For teachers such as Individual B, whose contribution rate preferences fall between 7% and 10%, we assume that they would prefer to contribute at one rate plan below what they actually chose. For instance, suppose that Individual B chooses to contribute 10%, which we know exceeds their preferred choice of 9%. We can infer that choosing 10% indicates they would prefer to contribute at least at a rate of 7%. Finally, for teachers, such as Individual C, who would prefer to contribute more than 15% and are right censored, we simply note that these choices will understate their preference for CDR as they would choose to set aside a higher amount given the option (e.g., 16.5%, as mentioned above).

Evidence From Washington State Contribution Rate Decisions

In 1995 the Washington legislature passed legislation that created Teacher Retirement System 3 (TRS3), a hybrid retirement plan with a DB component funded by employers and a DC component funded by employee contributions. We examine teacher preferences for CDR by using data on each teacher's pension plan, membership dates, and contribution rate choices, recorded by the Washington Department of Retirement Services (DRS). These administrative data contain 157,515 teacher-level records between 1997 and 2010.

We focus on the contribution decisions of TRS3 teachers who may choose one of six different contribution rate plans described in Table 1. A teacher who does not indicate a preference within 90 days is defaulted into the lowest contribution rate plan, Plan A, at 5% of earnings.[12] Prior research suggests that default options can greatly influence the pension choices of individuals (Goda & Manchester, 2013).[13] This suggests that, in our setting, some of the 38% of individuals enrolled in Plan A would likely have chosen a different option if they had more information about their retirement options. This will tend to understate the value that teachers place on retirement benefits relative to a fully informed population of teachers.

One important consideration when examining contribution rates is whether teachers actively chose to enroll in TRS3. Enrollment into TRS3 consists of three types of members—(1)

Table 1
Contribution Rate Choices, Average Rates, and Lower Bound Estimates for Teacher's Preferred Choices

	All TRS3 Teachers	TRS3 Transferred	TRS3 Mandated	TRS3 Choice
Panel A: Percent of teachers choosing contribution rate plan choices				
Plan A, 5%	37.8	28.3	43.7	39.1
Plan B, age adjusted 5%–7.5%	12.6	8.4	14.8	18.8
Plan C, age adjusted 6%–8.5%	14.3	15.7	13.5	14.3
Plan D, 7%	12.8	20.5	8.2	8.2
Plan E, 10%	12.8	15.2	11.4	11.9
Plan F, 15%	9.7	11.9	8.6	7.7
Choosing				
To defer more compensation than the minimum requirement	62.2	71.7	56.4	60.9
Panel B: Average age, average contribution rate, predicted contribution rate, and lower bound				
Average age	39.5	45.0	36.4	33.1
Average contribution rate	7.2	7.9	6.9	6.8
Predicted contribution rate at age 40 years	7.2	7.4	7.2	7.2
Lower bound estimate on desire to contribute at age 40 years	4.3	5.0	3.8	4.1
Observations	76,643	28,203	45,500	2,929

Note. Calculations are based on the most recent observation of teachers in each category to capture changes in contribution rates in the flexibility period or due to changes in employer. Average contribution rates are calculated using the fixed values of 5%, 7%, 10%, and 15% for teachers who choose plans A, D, E, and F, respectively. We use data on teacher age for contribution rate plans that vary by age to determine the level of contribution. Lower bound contribution rates set Plan A 5% contribution rates to zero, and adjust all other contribution plans down one level—see discussion in the Contribution Rate Choices and Teacher Preferences in Washington State section. Proportion choosing to defer more compensation than the minimum requirement is calculated as the proportion of teachers choosing plans other than Plan A. Predicted contribution rates control for age and group interactions and are evaluated for teachers at age 40 years. All predictions are statistically significantly different from zero, and jointly different from each other, at the 0.001 level. TRS3 = Teacher Retirement System 3.

employees already employed in the state as of July 1996, who had been enrolled in a traditional DB system (known as TRS2) and transferred to TRS3 when the plan was created; (2) employees who were hired between July 1996 and July 2007 and were mandated into TRS3; and (3) employees who were hired after July 2007 who opted into TRS3 rather than TRS2 when given the choice as a new employee—we refer to these groups as Transferred, Mandated, and Choice, respectively.[14]

We present results for all teachers in TRS3, but also for each group individually. Exploring differences between the Transferred and Choice groups relative to the Mandated group provides evidence on how self-selection into TRS3 may be related to preferences for CDR.[15]

The first column of Table 1 shows the percentage of TRS3 teachers choosing each contribution rate plan for all teachers in TRS3, and as described above, the next three columns present results for Transferred, Mandated, and Choice teachers. The first column indicates that, overall, about 38% of teachers contribute at the lowest rate of 5%,[16] and about 62% of teachers choose to contribute more than 5%. About 27% of teachers choose contribution rates that increase with employee's age (e.g., 5%–7% and 6%–8.5% plans), and about 23% of teachers are willing to contribute very high levels of compensation, at 10% or 15%.

Not surprisingly, and consistent with prior research (Goldhaber & Grout, 2016b), the older and more experienced Transferred teachers have the lowest enrollment in Plans A and B (5% contribution and 5%–7.5% contribution by age) relative to the

Mandated and Choice groups. Put another way, Panel B shows that the teachers who self-selected into the hybrid plan mid-career tend to save significantly more for retirement *on average*, 7.9%, than either those teacher mandated into the hybrid pension system at 6.9%, or those who select in at the beginning of their careers at 6.8%.

The above evidence suggests that selection into TRS3 is related to preferences for CDR. But these different groups of TRS3 teachers also vary along other important dimensions. In particular, because enrollment in TRS3 by group depends on date-of-hire, the average age of the teachers across the three groups differ. To account for this, we explore contribution rates by age graphically and then estimate a simple model at the individual teacher level in which contribution rate is a function of age.

Consistent with the evidence mentioned above, we show in Figure 2 that average contribution rates tend to rise for teachers with age, where the vertical line represents the mean age of teachers (about 40 years). There is also evidence that there are somewhat different retirement savings patterns by teacher group (Transferred, Mandated, and Choice). In particular, between ages 30 and 45 years, contribution rates are fairly comparable. For instance, Transferred teachers who are age 40 years tend to contribute an average of 7.4%, which is quite similar to 40-year-old Mandated and Choice teachers who contribute about 7.3% and 7.2%, respectively. There are some small differences—for example, older Transferred teachers and Mandated teachers have less than a 1 percentage point difference in average contribution
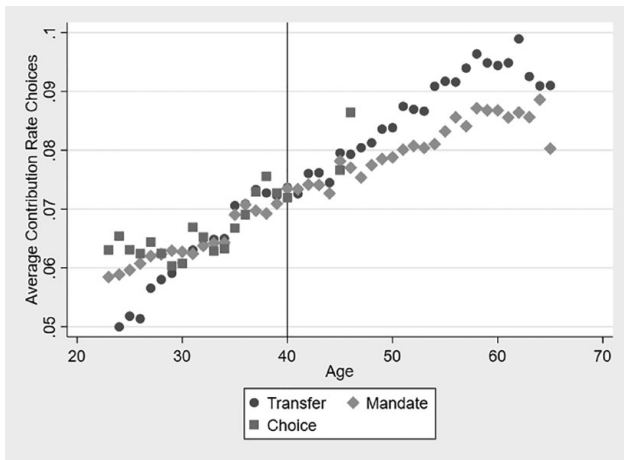
FIGURE 2. *Variation in contribution rate decisions by age and TRS3 group.*
Note. TRS3 = Teacher Retirement System 3.

FIGURE 3. *Standard deviation of contribution rates by age and group.*

rates. This could reflect the fact that Transferred teachers tend to have more experience than Mandated teachers. Interestingly, there is a somewhat larger difference in contribution rates for young teachers—Mandated teachers have contribution rates that are about 1 percentage point higher than Transferred teachers.

Given the apparent differences shown in Figure 2, we report predicted contribution rates in Table 1 Panel B that control for a quadratic in age interacted with group indicators (Transferred, Mandated, Choice) to account for nonlinearities in contribution rates by age and group.[17] These predictions are estimated for teachers who are aged 40 years (corresponding to the vertical line in Figure 2, which is the mean age for all teachers). These results suggest that controlling for age leads to very similar rates across groups—7.4%, 7.2%, and 7.2% for Transferred, Mandated, and Choice groups, respectively. This is consistent with the notion that, conditional on age, teachers are willing to contribute a large share of their current compensation toward retirement, and the consistency across groups suggests that self-selection into TRS3 does not greatly affect our estimates of contribution rates.[18]

As described above, contribution rate plans in Washington State do not allow for contributions less than 5%, or for individuals to freely choose any rate; they must choose one of the six rate plans specified in Table 1. Thus, we report lower bound estimates of the valuation of CDR (according to the assumptions described at the end of the Introduction section). These calculations are shown in Table 1 Panel B. The lower bound valuation of CDR is 4.3%. Finally, we do see small, but statistically significant differences in valuation across the different teacher groups; consistent with the findings reported in Panel A of the table, the Transfer Group values CDR more than the Mandated or Choice groups (whose valuation is similar).[19]

Last, we present results on the heterogeneity of preferences for TRS3 teachers. As previously shown in Table 1, Panel A, there is a great deal of variation in the rate plans chosen in Washington State. For instance, while nearly 40% of teachers choose to contribute as little as possible, over 20% choose very
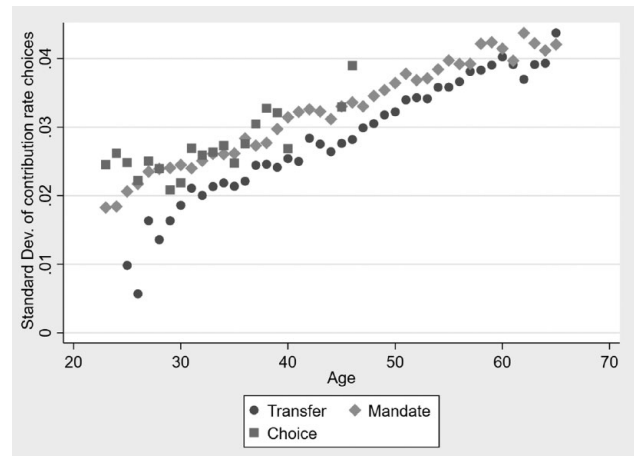
high contribution rate plans of 10% or 15%. Why do teachers differ so much in their choices? One source of heterogeneity is clearly teacher age, because as previously shown in Figure 2, contribution rate choices are positively correlated with age; but our models suggest that age explains only about 10% of the variation in contribution rates. So, to what degree is there heterogeneity among similarly aged teachers? Figure 3 explores this issue by presenting the standard deviation of contribution rate choices by age and group (Transferred, Mandated, Choice). Variation in contribution rates shows a clear correlation with age; young teachers appear to choose very similar contribution rates while older teachers have a greater spread.[20] That said, the larger point is that there is considerable heterogeneity in contribution rate choices even controlling for age. This means a retirement plan that forces teachers into a single rate of CDR will poorly reflect the heterogeneity of preferences.

Comparing Washington With Prior Research

We are aware of only three papers that estimate teacher preferences for current salary versus CDR. In a well-cited and influential paper, Fitzpatrick (2015) considers a unique setting in Illinois where teachers were offered the option to purchase an upgrade to their DB pensions, providing the opportunity to evaluate the extent to which teachers tradeoff current salary against greater retirement benefits. Based on her analysis, Fitzpatrick (2015) reaches the provocative conclusion that "employees are willing to trade just 20 cents of current compensation for each expected dollar of future compensation" (p. 179) and that "teachers' valuation of the increased pension benefits was much less than their cost" (p. 185).

Two new working papers explore preferences for current compensation versus CDR using discrete choice experiments that ask people to choose between hypothetical jobs with randomly selected attributes (e.g., salary, retirement plan generosity, DB vs. DC). Johnston (2020), analyzes survey responses from teachers in a large school district in Texas and finds that "teachers value an additional ten-point replacement rate in pension equivalent to a $1,730 salary increase, somewhat less than its cost of $2,870 per

year" (p. 16).[21] Johnson notes that his findings are consistent with Fitzpatrick, but we believe while consistent in the sense that teachers value increased CDR at less than the cost of providing them, the magnitude of the difference with Fitzpatrick is quite large. In particular, the ratio between valuation of benefits and cost of provision is much larger than what Fitzpatrick estimates. Johnston's results imply a ratio of about 0.60 ($1,730 divided by $2,870)—which is much higher than Fitzpatrick's estimates of 0.20.

Fuchsman et al. (2020), another new working paper, like Johnston, uses a discrete choice stated preferences experiment as part of a nationally representative survey of teachers to estimate willingness to pay for many different retirement plan characteristics. They find that "a one percentage point replacement rate increase in retirement is equivalent to a 1.6 percent salary increase." (p. 22). With an average salary of about $63,000, this implies a willingness to pay of about $1,015 for an increase in the replacement rate that is one tenth as large as the one specified in Johnston (2020). That said, it is challenging to compare these estimates to the above studies because Fuchsman et al. do not provide an estimate of the cost of providing the 1 percentage point increase in replacement rates.[22]

As we describe in more detail below, our findings in Washington appear most at odds with Fitzpatrick's Illinois-based analysis, given the low valuation she finds teachers place on monies set aside for retirement compensation. So how does the magnitude of the findings in Washington State compare to those in Illinois? Putting the findings on the same metric is challenging because both the cost (to the state) and the benefits are known (given assumptions about retirement ages and life expectancy) in the Illinois context, whereas in Washington the benefits of setting aside funds for retirement compensation depend on rates of return on those set aside funds. Recall, however, that the advantage of examining teacher choices in Washington is that no sophisticated estimation is required to assess the value teachers place on CDR. A teacher clearly values the tradeoff of current compensation today for contributions toward future retirement compensation if they choose to make a contribution that is above the mandated 5%.

In Washington we can put a lower bound on the value teachers place on getting a dollar toward deferred compensation by examining the tax implications of setting aside a dollar toward retirement. The cost of deferring a dollar of compensation for retirement is less than a dollar given that teachers would have paid tax if they had received the compensation in the form of salary, but do not if they set it aside toward retirement. For the sample period of our data, the highest federal marginal tax rate faced by most teachers is 28%, so that each dollar set aside only reduces current compensation by 72 cents.[23] Given that we observe 62% of Washington teachers setting aside at least some compensation above what is minimally required, it suggests that these teachers value the dollars set aside for retirement compensation at a rate of at least 72 cents on the dollar.[24] We know that at least 62% of Washington teachers opt for this current compensation versus CDR tradeoff (see Table 1 and accompanying discussion). Even if the remaining 38% of teachers do not place any value on their required contribution, we can infer an average value of at least 45 cents on the dollar that is set aside for retirement (i.e., 0.62 * $0.72 + 0.38 * $0 = $0.45),

or more than twice the 20 cents on the dollar suggested by Fitzpatrick (2015).

From one perspective, our findings do not appear to be that different from what Fitzpatrick reports about teachers purchasing the upgrade in Illinois. Specifically, the pension upgrade Fitzpatrick examines is quite generous: an income stream that is likely worth about $97,000 in current compensation has a price of about $15,000 (Fitzpatrick, 2015), and as such, it may not be surprising that 70% to 78% of teachers purchase the upgrade.[25] Nevertheless, her analysis leads her to the conclusion that teachers only value these additional dollars set aside for retirement at about 20 cents, which is less than half of what we report above.

What might explain the contrast between the findings in Washington and Fitzpatrick's in Illinois? We discuss a number of possible explanations. First, even if one knows the exact benefits and prices that teachers face, there are reasons to think that Fitzpatrick's estimates may be biased. In particular, demand is challenging to estimate in the Illinois context Fitzpatrick examines given that both the benefits and the cost of purchasing those benefits (the pension upgrade offered to teachers) are functions of a teacher's salary. As such, income effects are likely to influence the estimates of demand, and call into question the validity of these estimates. In Supplemental Appendix A (available on the journal website), we illustrate the econometric challenges of estimating teacher demand for the pension upgrade (and hence valuation of the upgrade) using a simple model and discuss their implications in more detail.[26] Moreover, recent work by Ni et al. (2020) suggests that Fitzpatrick's approach of using historical retirement patterns to calculate these benefits and prices are problematic because of unobserved heterogeneity in teacher preferences for work versus retirement (many teachers who did not purchase the upgrade worked long enough to reach the Illinois pension cap anyway), and because the policy itself changed retirement patterns. The bottom line is there are good reasons to be skeptical that the 20 cents on the dollar is an accurate estimate of the value teachers place on the investment in their pensions.

But let us assume that Fitzpatrick's 20 cents on the dollar estimate is correct. A second explanation for the divergent findings is that teachers across the two contexts could have very different perspectives about the returns they will see from those set aside dollars. If, for instance, teachers in Washington have very high expectations for the investment returns on their DC contributions, we would expect them to value dollars set aside more than teachers in the Illinois context, where the benefit stream of the set aside is known because it is based on a DB formula. But how high would these expectations need to be to make the DC account more appealing than the DB benefit upgrade in Illinois? As mentioned above, the Illinois upgrade is quite generous with a ratio of price to present value of benefits at 6.37 or 637% (Fitzpatrick, 2015). Washington teachers would need to expect an *even greater* rate of investment returns to explain the behavior we see in Washington State. While individuals might have unreasonably optimistic assumptions about the returns they might see, it is hard to believe that Washington teachers hold such widely optimistic assumptions about the rates of return for this to explain the dichotomy between the Washington and Illinois findings.

Third, differences in valuations could be due to differences in overall retirement wealth between Illinois and Washington teachers. Economic theory suggests that the marginal utility of retirement wealth is decreasing—said simply, if teachers in Illinois start with higher retirement wealth, they will be less willing to pay for increases relative to Washington teachers. Evaluating and comparing total retirement wealth is quite challenging because Washington teachers are contributing toward one of their primary investment vehicles whereas Illinois teachers are choosing whether to purchase a supplement. While the pension upgrade in Illinois is clearly a marginal contribution, to some extent, DC contributions to TRS3 are also marginal in the sense that it funds only half of the plan—DB benefits are not affected by these contribution rate decisions. Moreover, deciding to contribute 5% or 7% has relatively little impact on the total annual allocation toward the Washington teacher's pension, changing the total annual contribution by about 10%.[27] By comparison, Illinois teachers who decide to purchase the upgrade tend to pay slightly less, about 6 to 7%.[28] The bottom line is that these figures are somewhat different so it is possible that teachers are making decisions on different margins—but it seems unlikely that it is large enough to explain the difference in valuation that we see in Washington relative to Illinois.[29]

Related to the above point, a fourth potential difference could be the influence of retirement wealth from other sources which would also affect relative marginal willingness to set aside funds for retirement. In fact, one important contextual feature is that teachers in Illinois do not participate in social security but Washington do; if plan generosity is comparable between these states, theory would suggest that Illinois teachers should be willing to contribute more, not less (as is suggested by Fitzpatrick's results).[30] Thus, it also appears that the differences across the two states in terms of pension plan setting are unlikely to explain the differences in findings.[31]

Finally, teachers may simply have different preferences for DB versus DC retirement plans. J. R. Brown and Weisbenner (2014) find that individual's preferences for risk, financial literacy, and expectations of returns are important factors when individuals choose between DB and DC pension structures. DC pension plans can provide teachers with greater control over their investments, both in terms of the quantity of compensation to set aside and how those funds are invested, and individuals may derive utility from managing and following their investments (Keller & Siegrist, 2006; Wärneryd, 1996). It is also possible that there are different views about the extent to which pension assets can be bequeathed; it tends to be easier to provide for inheritance of pension assets under a DC plan (Poterba et al., 2007), though this is more complicated in the case of public pensions.[32]

Teachers in Washington were surveyed prior to the design of the hybrid pension plan (TRS3), and the survey responses suggested that teachers viewed the previous pension plan, which was a pure DB, as somewhat inflexible, and believed that they would not have a good return on their contributions if they left before the age of 65 years (HB 1206, Laws of 1995). DC pensions are also more portable across employers and state lines (Goldhaber et al., 2015) and provide higher benefits for teachers who separate midcareer (Costrell & Podgursky, 2009). All this

may suggest that Washington State teachers could choose to contribute larger proportions of their current compensation for their hybrid-DC plan because they value these features of DC plan structure more than DB plans.

Conclusion

Our findings suggest that Washington teachers willingly set aside more of their current compensation than is required for CDR—and in some cases—quite a lot. This willingness to participate appears to contrast with prior research suggesting that teachers do not value these benefits anywhere near the cost of providing them. This is important since having compensation structures that reflect the preferences of teachers is crucial to the desirability of the teacher workforce. Our revealed preference findings in Washington are quite different from the prior published work in this area in that a large share of teachers in a hybrid pension system that includes a DC component elect to save more than is required by the system. As we discussed above, there are a number of potential explanations for the divergent findings, but the fact that they diverge, suggests the need to be cautious about interpretations of teachers' valuation of CDR. We believe more research is needed on this important topic, especially in light of the fact that the underfunding of pensions will likely put pressure on making structural changes to pension systems in the not too distant future.

We also find that Washington teachers vary greatly in how much compensation they choose to set aside. The heterogeneity in contribution rate choices reveals a potentially important advantage that DC pension systems have over DB systems: DB pension systems are not well suited to addressing such differences in retirement preferences as they provide the same retirement benefits to all individuals with a given level of experience, age, and final average salary. Consequently, they may lead to inefficiencies in terms of compensation packages that make teaching less desirable to individual teachers than would be possible if the same level of compensation were allocated differently.[33] Providing teachers choice about how much compensation to defer to retirement is a means of better aligning teacher compensation structures with teacher preferences. But while it is natural to think of DC plans as providing more flexibility, not all do. For example, Ohio teachers who participate in a DC plan are required to contribute 14%, regardless of their preferences (Aldeman, 2020). And, as with the case of the Illinois pension upgrade, DB systems could potentially offer teachers with choices about CDR.

That many teachers are enrolled in the default rate plan of 5% raises questions about what is the appropriate default in a system that offers contribution rate choices. A growing body of work suggests that default choices could explain a great deal of behavior, from participation in 401(k) plans (Madrian & Shea, 2001) to decisions between DB and DC pension plans (Goda & Manchester, 2013). While we cannot determine how many Washington teachers are in the 5% rate plan due to default rules or because they prefer it, there is no obvious reason to favor the lowest contribution rate as the default. Given concerns about retirement security (Aldeman & Robson, 2017) and findings

that individuals tend to save less than they would prefer (e.g., Laibson, 1998), there seems little downside to setting a higher default contribution rate but allowing teachers to select into plans with lower contributions.

Last, our findings clearly demonstrate a positive relationship between savings for retirement and age. While teachers in Washington could once adjust their contributions as they age, a 2013 change in IRS (Internal Revenue Service) rules limited the ability to do this (except when teachers change jobs). While there may be good reasons to do this from a tax revenue perspective, the inability to adjust contributions is clearly out-of-step with the way DC systems in the private sector function and limits the extent to which public sector teachers can align their preferences for retirement compensation with actual contributions.

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NOTES

[1]Public school teachers typically earn over 10% of their total compensation through retirement benefits (not including employee retirement contributions), which is nearly twice the rate of the average private sector employee (Aldeman, 2016).

[2]There is evidence that the churn of teachers is itself harmful for student achievement (e.g., see Ronfeldt et al., 2013), which means that a backloaded compensation structure could be a net positive for student achievement even if the structure of compensation is not optimized to make teaching as desirable as possible for new entrants. For this to be the case, the benefits of reduced churn associated with backloading would need to offset any reduction in the quality of new teacher entrants associated with backloading.

[3]Apart from workforce quality/student achievement effects, there are other arguments favoring backloaded compensation and DB pensions in particular. One is that teachers, left to their own devices, would save too little for retirement as they may not fully understand the features of their retirement plans and/or are not generally sophisticated about retirement planning (J. R. Brown & Weisbenner, 2014; Chan & Stevens, 2008; Laibson, 1998; Laibson et al., 1998). In addition to potentially correcting undersaving, one frequently referenced benefit of DB pensions is that they protect teachers from investment risk and that DB pension plans may have better investment returns relative to DC plans (National Education Association, 2016). That said, these issues are contentiously debated; many researchers find that many teachers exit the profession prior to the accumulation of meaningful retirement benefits (e.g., see Costrell & McGee, 2010; Johnson et al., 2014 Koedel et al., 2013).

[4]Related issues are the degree to which DB pensions affect attrition (Goldhaber et al., 2017; Koedel & Xiang, 2017), retirement timing (K. M. Brown, 2013; Costrell & McGee, 2010; Costrell & Podgursky, 2010; Ni & Podgursky, 2016) or teacher quality (Koedel et al., 2013).

[5]Or more generally, the funds cannot be accessed without incurring significant financial penalties, such as those associated with withdrawing funds from a 403B account prior to reaching retirement age.

[6]Johnston (2020) considers a large set of employment characteristics in addition to the value teachers place on CDR, though the inclusion of costs of pension upgrades allow us to compare these estimates to other studies. Closely related work by Fuchsman et al. (2020) uses a similar stated preferences experiment and focuses primarily on the tradeoffs of different types of pension systems, finding that teachers slightly prefer DB pension plans and these preferences differ depending on age which informs our estimation as described below.

[7]In particular, we do not need to model pension wealth or identify exogenous variation in prices in order to obtain estimates of teacher preferences for current compensation versus CDR.

[8]In the private sector employees individuals have more flexibility to choose rates that fall below federally mandated maximums that are age dependent (in the Washington hybrid system, describe in more detail below, teachers must choose among specific plans with defined rates and there is more limited flexibility to adjust between plans over time).

[9]This figure can be derived from the traditional two product constrained utility maximization problem where the products depict the tradeoff between current compensation and CDR and the budget constraint is determined by the rate of return on investments and marginal tax rates.

[10]Not illustrated explicitly, this model is built on the fact that the interest rate received for retirement contributions determines the amount of retirement income. Moreover, in practice, the decision to set aside current compensation for retirement is moderated by national and state tax laws that provide incentives to save by reducing taxable income and deferring tax payments on retirement contributions until retirement. Last, individuals could decide to set aside current compensation into other forms of savings for future consumption.

[11]Another type of censoring is related to when we observe individuals in the sample. For example, we do not observe the final contribution rate decisions of teachers hired in 2010—only their initial election. That said, we are not particularly concerned about this because most teachers do not change their rate choice (Goldhaber & Grout, 2016b) and in fact, a 2013 IRS rule change described below greatly limited teacher's ability to change rate plans (apart from changing jobs).

[12]Initially, TRS3 members could change contribution rate plans only if changing employers. However, in 2000 the DRS submitted TRS3 to the IRS for qualification and added a provision allowing members to change rate plans during an adjustment period occurring in January of each year. TRS3 was qualified by the IRS in 2002, and in 2003 state statutes were amended to include rate flexibility (Chapter 156, Laws of 2003). The first January adjustment period occurred in 2004. TRS3 members were informed of the opportunity to change contribution rates in a memo prepared by the DRS in December 2003. In 2013, rate flexibility was removed as part of an IRS requirement for the requalification of TRS3.

[13]See Aldeman (2020) for a discussion of default rules in pension plan choice (e.g., choosing between DB and DC plans) for Ohio teachers.

[14]For more detail about the choice by teachers between TRS2 and TRS3 (see Goldhaber and Grout, 2016a).

[15]They do, of course, self-select into and out of the Washington public school teacher workforce so it is possible that they could differ from teachers who would have entered or exited the workforce under an alternative pension structure.

[16]Note that this is the default rate plan so, for this rate choice, we cannot determine that employees are actively choosing 5% as the most optimal plan. Our data includes a default flag, but we cannot rule out that individuals are aware of the default rule and prefer the minimum 5% contribution rate, and choose not to actively select the default plan.

[17]Formally, we estimate the following regression models:

$$rate_i = \alpha_0 + \alpha_1 age_i + \alpha_1 age_i^2 + \sum_{j=0}^{2} \beta_j age_i^{\,j} * 1\left(Mandated = 1\right) +$$

$$\sum_{j=0}^{2} \delta_j age_i^{\,j} * 1\left(Choice = 1\right) + \varepsilon_i, \text{ where } rate_i \text{ is the observed rate cho-}$$

sen by teacher i, and the omitted group is Transferred teachers. We have also estimated linear models with age and group interactions and find very similar results.

[18]We note that all predictions are statistically significant from zero and that the predicted contribution rate for Transferred teachers is statistically significantly different from that for Mandated teachers (F test of equality, $p < .001$). Though, this appears to have little practical difference in the magnitude (e.g., 0.2 percentage points), and the difference between Mandated and Choice teachers is not statistically significant (F test of equality, $p = .534$).

[19]Left censoring is much more of a concern for Mandated and Choice teachers because, as reported above, they are far more likely to be enrolled in Plan A and therefore have their 5% contribution (conservatively) adjusted to a valuation of zero.

[20]This could be because circumstances change as individuals age in ways that are likely to affect retirement savings—for example, marriage, children (Knoll et al., 2012; Munnell et al., 2017). While outside the scope of this article, we believe this issue merits more investigation.

[21]A replacement rate is the percent of salary that a teacher will receive in retirement (e.g., a DB plan with a 50% replacement rate will provide half of a teacher's final average salary in retirement each year).

[22]Fuchsman et al. and Johnston could have estimates that are consistent with each other if there is strong diminishing marginal utility; in other words, each additional percentage point increase sharply decreases a teacher's willingness to pay. In this case, Fuchsman et al. measure the increases with the highest valuation while Johnston measures the value for the total increase.

[23]There is no state income tax for Washington, so we only need to be concerned about the implications of federal taxes. We use reported federal tax brackets in 2010, and pick a conservative bracket that represents the highest marginal tax rate faced by most teachers at 28%: single filers making between $82,401 and $171,850. Using data from the DRS, we calculate that more than 98% of teachers make less than $171,850 in 2010. Of course, different filing status or family income levels could push teachers to higher marginal tax rates, such as 28%, 33%, or 35%. Moreover, CDR is taxed when it is withdrawn in retirement; rather than model this, we use a more conservative figure by ignoring taxable income in retirement.

[24]Note that we would not expect a rational teacher to value a dollar set aside for employer-sponsored retirement plans at a dollar (or more) given that the dollar set aside is constrained in the sense that they cannot easily use it without incurring financial penalties. Put another way, if setting aside a dollar of current income did not cost less than a dollar, we would expect individuals to simply take the dollar in current compensation and make their own unconstrained savings decisions—in fact, tax deferral is one method to encourage retirement savings by providing a more favorable vehicle (Bernheim, 2002; Yoo & De Serres, 2004).

[25]Recent work by Ni et al. (2020) reexamines the upgrade decisions of the same cohort of Illinois teachers using recent data and finds that, by 2019, almost all them have purchased the upgrade (87%).

[26]There are other potential challenges in estimating demand in this context. As noted by Fitzpatrick, the Illinois setting requires out-of-sample estimates for high-valuation individuals and thus, strong assumptions about the slope of the demand curve. And DB pensions require assumptions about expected benefits via retirement dates,

survival probabilities, and end-of-career salary, and these may differ systematically across teachers who choose to purchase or not purchase the upgrade.

[27]For instance, based on the average salary of about $70,000 for teachers in 2010, a change in the contribution rate from the 5% plan to the 7% plan represents only about a 10% increase percent of the total annual allocation toward a Washington teacher's pension ($1,400 additional contribution/$10,000 employer contributions + $3,500 employee contributions under the 5% plan).

[28]In Illinois teachers purchasing the upgrade contribute a one-time payment of 20% of their salary for the upgrade (about $15,000 of $75,000 salary), and spread over the 8 to 10 years between the purchase and retirement for Fitzpatrick's sample of teachers, this works out to about $1,500 to $1,875 per year. This value should be compared to total contributions in Illinois—state actuaries calculate that employer and state contributions should be about 25% of payroll (much of this is intended to offset the massive amount of unfunded liabilities from years of underfunding) and about a 9% employee contribution rate (see https://www.trsil.org/sites/default/files/documents/2010ValuationRept.pdf). Thus, purchasing the upgrade is about a 6 to 7% increase in total annual allocations toward the Illinois DB pension ($1,500 for upgrade over 10 years/$18,750 in employer/state contributions + $6,750 employee contributions without the upgrade).

[29]It also seems plausible that teachers are at different margins in terms of their retirement investments, due to age. Fitzpatrick focuses on an older sample of teachers (e.g., age 61 years) while we consider a younger sample of teachers in Washington (e.g., age 40 years). Given that age is likely to be closely related to retirement savings choices, one might expect this to explain some of the differences in contribution rate decisions. To explore this possibility, we consider teachers who are on a similar margin of retirement savings—those who are near the end of their career and choosing how much more to contribute to their retirement. Specifically, we use models discussed above that control for age and group interactions (Transferred, Mandated, and Choice), to predict the contribution rate of teachers at age 61 years (the average from Fitzpatrick's sample)—consistent with Figure 2, we actually find that average contribution rates are higher for this age, at about 9%, relative to the average Washington teacher. Thus, age does not appear to explain the differences in findings across contexts.

[30]Of course the relative generosity of the pension plans also matters. It may be that Illinois pension plans are designed around the fact that teachers do not participate, and tend to provide larger benefits to compensate. At best, one can roughly calculate that the TRS3 DB annuity plus social security benefits, which suggests that the Washington setting is slightly more generous than the Illinois DB plan and would tend to cause Washington teachers to contribute less. For a teacher who does not purchase the upgrade in Illinois, the replacement rate at 30 years of service is 54%. The DB portion of TRS3 provides a replacement ratio of 30%, while social security contributes an additional 27.1% (see Clingman et al., 2016, for high earnings group who attain age 62 years in 2013).

[31]Note that we cannot account for other unobserved factors could also play a role. For instance, if Washington teachers place virtually no value on the DB portion of their retirement wealth, or on their social security benefits, then total wealth looks much lower in Washington relative to Illinois. And it could also be the case that DC accounts and social security could affect private savings, either crowding out private savings or by encouraging it (Attanasio & Rohwedder, 2003; Lehmann-Hasemeyer & Streb, 2018). The bottom line is that we cannot know definitively that total wealth (or perceived total wealth) in both settings is comparable.

[32]Many states like Washington give annuity options for DB plans to provide for survivors.

[33]But, on the other hand, some argue that DB pension plans have lower administrative costs, and that participants in DC plans may earn lower investment returns and pay higher fees relative to individuals in DB plans (Boivie & Weller, 2012; Fornia & Rhee, 2014; Munnell et al., 2011). Thus, it does not immediately follow that DC plans would increase overall teacher welfare.

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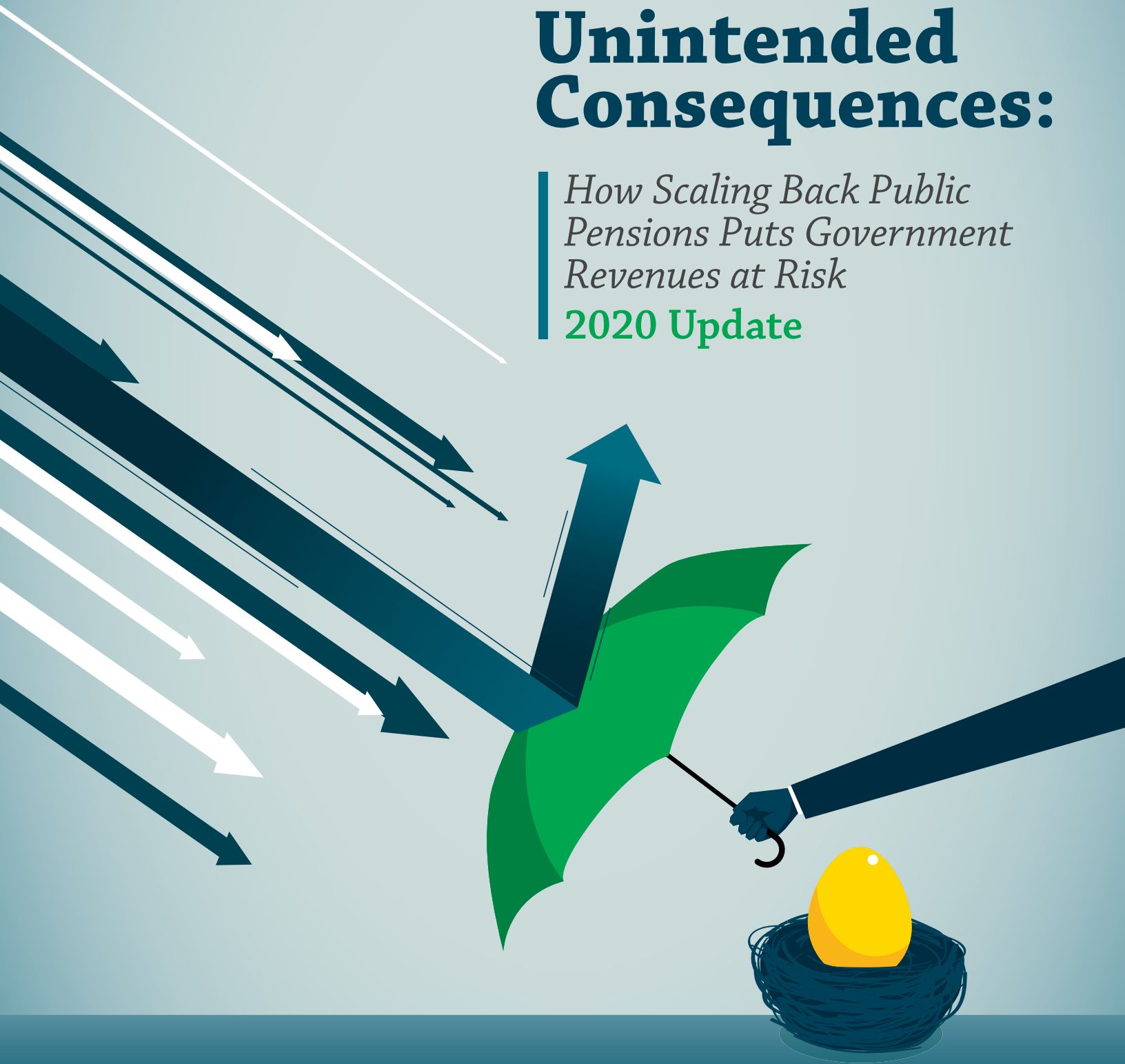
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Unintended Consequences:

How Scaling Back Public Pensions Puts Government Revenues at Risk

2020 Update

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Endorsement of the 2018 Edition

"**This is the first study of its kind** that examines the impact of investment of pension fund assets and spending of pension checks by retirees on state and local economies and revenues. It shows that pension funds play an important role in our economy and are net revenue producers. If there were no public pensions, taxpayers will have to pay more to receive the same level of services. Legislators should think twice before they convert public pensions into do-it-yourself retirement plans."

—Robert Reich, Chancellor's Professor and
Carmel P. Friesen Chair in Public Policy, Goldman School of Public Policy, UC Berkeley.

Unintended Consequences:
How Scaling Back Public Pensions Puts Government Revenues at Risk 2020 Update

EXECUTIVE SUMMARY

In 2018, NCPERS' landmark Unintended Consequences study documented the beneficial ripple effects that occur in communities and states due to retirees' spending their pension checks and because of investments made by pension funds. This biennial update continues to quantify these effects as well as to demonstrate what is at stake if state and local governments buckle under to short-term policy pressures with ill-advised efforts to "reform" public pensions.

Our study shows that the benefits pensions confer on communities grew between 2016 and 2018, the years covered by the 2018 and 2020 studies, respectively. Overall, when we add the impact of investment of assets and spending of pension checks by retirees, public pensions in 2018 contributed $1.7 trillion to the US economy and $341.4 billion to state and local tax revenues. Compare these results with those of our earlier study, which found that in 2016, public pensions contributed $1.3 trillion to the economy and $277.6 billion to state and local revenues.[1] The positive impacts of public pensions on the economy and revenues became more pronounced between 2016 and 2018.

We undertook both the 2018 and 2020 studies against the backdrop of sustained attacks on public pensions. Unfortunately, the argument that taxpayers cannot afford public pensions continues to sway some policy makers despite a woeful lack of empirical evidence to support it. Legislators across the nation are contemplating options for the future funding of public-sector worker retirement benefits at a time when competition for finite state and local resources is fierce. The reasons are familiar: The lingering effects of recession, misguided budget priorities, and a regressive revenue structure have taken a toll. Time and again, defined-benefit pensions for firefighters, police officers, teachers, and other public servants are placed at risk, even though

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1   *Unintended Consequences: How Scaling Back Public Pensions Puts Government Revenues at Risk* (Washington, DC: NCPERS, 2018), https://www.ncpers.org/files/NCPERS%20Unintended%20Consequences%20Report_2018_Aug_v1.pdf.

plan participants have consistently held up their end of the bargain. Changes proposed or enacted in the name of "reform" are often thinly disguised efforts to dismantle public pensions rather than reckon with correcting decades of short-sighted government decisions to withhold funding.

As the positive effects of public pensions increase, it only stands to reason that the risks of dismantling pensions are rising, too.

The question we asked is this: How does the payment of defined pension benefits and the investment of pension assets impact state and local economies and revenue generation? It is common sense that consumer spending and investment fuel the economy, which in turn expands tax revenues. We hear this all the time in the context of tax cuts. Yet opponents of public pensions seem to believe that pension spending and investment do not grow the economy. True, the pension money comes from taxpayers, but it should be understood that it is part of the compensation of workers providing public services. If these services were privatized, they would cost taxpayers more for the simple reason that the goal of private companies is to make profit, whereas the goal of a public service is to ensure the public good. In addition to yielding economic benefits, pensions play an important role in the recruitment and retention of a quality public workforce to ensure our collective good.[2]

Previous research has shown that pension beneficiaries bolster the economy by feeding resources back into the local communities where they live and spend their pension checks. However, research on how state economies and tax revenues grow when pension funds invest their assets is very limited. Our research fills this

gap. We examine the broader question of state and local revenues generated by public pensions, and whether these revenues exceed taxpayer contributions to the pensions. We hypothesize that the joint impact of spending of retirement checks and investment of pension fund assets exceeds taxpayer pension contributions in most states.

Our original methodology draws on historical data from various public sources, including the US Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics. These data span the years 1977 to 2018. The analysis was done in three steps. First, we developed an econometric model to estimate the impact of investment of pension fund assets on state and local economies and revenues. Second, we estimated the impact of spending of pension checks by retirees on state and local economies and revenues. Third, we assessed whether the total revenues generated by public pensions exceed taxpayer contributions to those pensions, and if so, how much taxpayers would have to pay in additional taxes if public pensions were not there.

We measured the economy in terms of personal income. We found that the economy grows by $1,362 with the investment of each $1,000 of pension fund assets. This amount may seem small, but due to the size of the pension fund assets, $4.3 trillion in 2018, the effect on the economy and revenues is significant. The results show that investment of pension fund assets contributed $872.4 billion to the US economy, which in turn yielded $178.8 billion in state and local revenues, in 2018. Similarly, the results show that $335.2 billion paid to retirees in pension checks during 2018 contributed $836.9 billion to the economy and $162.6 billion to state and local tax revenues.

2   Laura D. Quinby, Geoffrey T. Sanzenbacher, and Jean-Pierre Aubry, "How Have Pension Cuts Affected Public Sector Competitiveness?" State and Local Pension Plans no. 59 (Boston: Center for Retirement Research at Boston College, 2018), http://crr.bc.edu/wp-content/uploads/2018/04/slp_59.pdf.

Are public pension funds net revenue generators? The results show that in 2018, pension funds generated approximately $341.4 billion in state and local revenues. The taxpayer contribution to pension plans in the same year was $162 billion. In other words, pension funds generated $179.4 billion more in revenues than taxpayers contributed to the pension funds. The state-by-state results indicate that pensions in 40 states were net revenue positive – revenues generated by public pensions were more than taxpayer contributions. In the remaining 10 states, pensions were revenue neutral or taxpayer contributions were heavily subsidized by state and local revenues generated by public pensions.

The data that underpin our conclusions forcefully rebut the argument that taxpayers cannot afford public pensions. The evidence we present here shows that if public pensions did not exist, the burden on taxpayers would rise by about $179.4 billion just to maintain the current level of public services. This "no pensions" taxpayer burden is now 30.1 percent higher than the $137.3 billion noted in the 2018 *Unintended Consequences* study. **In short, the consequences of dismantling pensions have become more severe.**

The implication of our findings is clear: Taxpayers cannot afford continued assaults on public pensions. Instead, policy makers must preserve and enhance public pensions, building on this time-honored method of ensuring a dignified retirement for those who have dedicated their lives to public service, including firefighters, police officers, and teachers.

In other words, the question isn't whether governments can afford to support public pensions; the question is whether they can afford not to.

Unintended Consequences:
How Scaling Back Public Pensions Puts Government Revenues at Risk 2020 Update

INTRODUCTION

This 2020 biennial update of NCPERS' *Unintended Consequences* study quantifies the impact of pension policy actions on state and local economies and revenues. Such policy actions are often made in reaction to short-term pressures to dismantle public pensions. Now that we have two more years of data, the update also examines whether the impact has become more severe since our first such study in 2018.

The argument that taxpayers cannot afford public pensions has taken hold with an almost mythological force, seeping into public opinion as an accepted truth. Opponents of public pensions have advanced an us-versus-them storyline in their concerted efforts to undermine and ultimately dismantle public pensions. The fervor with which they argue their case underscores the ideological imperatives that drive them. Factual information, however, has been in short supply.

NCPERS has a long history of providing reliable and verifiable data and analysis on public pensions, which are fundamentally a long-term investment, not a short-term budget issue.

Using state and local data for the last 41 years, this study sets out to examine the following questions:

- How much state and local tax revenue is generated as a result of the mere existence of public pensions?

- Do these revenues exceed taxpayer contributions to public pensions?
- How much would taxpayers have to pay in additional taxes if public pensions were dismantled?

Public pensions generate state and local revenues in two ways. First, when retirees spend their pension checks in local economies, the overall economy benefits. When the economy grows, tax revenues increase. Second, when pension funds invest their assets in the economy, the economy grows, and tax revenues grow. While invested assets flow into both national and international companies, significant economic and revenue impacts accrue to states and local communities. It is logical to expect that the total state and local revenues generated by the spending of retiree checks and the investment of pension fund assets would exceed taxpayer contributions to these pensions in most states, if not all of them.

Policy makers are steadily seeking to undermine and even dismantle public pensions based on misleading information from opponents of public pensions. These opponents disseminate huge "unfunded liability" numbers arrived at by distorting various assumptions. To make matters worse, they then compare these already distorted 30-year numbers with one-year state and local revenues instead of 30-year revenues. Further, they overlook the positive role pensions play in

economic and revenue growth. Based on these flawed assumptions, they argue that taxpayers cannot afford public pensions, proposing that public pensions be converted into do-it-yourself retirement savings plans or that benefits be cut and employee contributions increased. Policy makers often fail to think beyond the current budget cycle—or election cycle—and thus do not recognize that dismantling public pensions would actually increase the tax burden on their constituents.

Poor policy decision making has strong potential to harm state and local economies. Our earlier study showed that dismantling public pensions increases economic inequities and slows economic activity.[3] If all public pensions were dismantled overnight, our economy would suffer a loss of about $3 trillion by 2025.[4] The present study again examines the revenue impact of pensions for each of the 50 states so that policy makers can see how much additional revenue they would need to raise if they stayed on a path toward dismantling public pensions.

The study is divided into four sections. Section 1 examines the existing literature on the relationship between pensions and economic and revenue growth. Section 2 describes the data and methodology. Section 3 presents results, and Section 4 offers concluding remarks.

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3   *Income Inequality: Hidden Economic Cost of Prevailing Approaches to Pension Reforms* (Washington, DC: NCPERS, n.d.), www.ncpers.org/files/NCPERS%20Income%20Inequality%20Paper_Web(1).pdf.

4   *Economic Loss: The Hidden Cost of Prevailing Pension Reforms* (Washington, DC: NCPERS, 2017), www.ncpers.org/files/NCPERS_2017%20Economic%20Loss.pdf.

Section I

LITERATURE REVIEW

The main purpose of this study is to estimate state and local revenues generated through the spending of pension checks by retirees and the investment of pension assets, and then compare these revenues with taxpayer contributions to public pensions. In the end, we want to determine whether public pensions are net revenue positive, revenue neutral, or revenue negative. In order to do so, as discussed further in Section 2, we must first examine how much economic gr owth is attributable to spending by retirees and investment of pension assets. We can then determine how much state and local tax revenue is generated by this economic growth, by examining the relationship between economic growth and revenues.

Until we produced our 2018 research, literature on whether public pensions in the United States are revenue-positive, -neutral, or -negative was severely lacking. A few studies had partially explored the economic and revenue impact of public pensions, mainly by measuring revenues generated by spending of retiree checks. Studies on the impact of the investment of pension fund assets on the economy and revenues, however, were practically nonexistent. In this section we review literature on the relationships between the economy and revenues; between pension assets and the economy; and between pensions, the economy, and revenues.

The Economy and Revenues

Most of the literature in this area has focused on the debate about whether tax cuts grow the economy and hence tax revenues. According to a 2015 *National Tax Journal* article, "The Relationship between Taxes and Growth at the State Level: New Evidence," the effects of state tax policy on economic growth, entrepreneurship, and employment remain controversial.[5] While conservatives argue that tax cuts grow the economy, most of the literature and data do not support this finding.

It is common sense that when governments cut taxes, they will have less revenue. When they have less revenue, they must cut programs or borrow money. The expected positive impact of tax cuts on the economy is thus wiped out by the negative impact of spending cuts and/or borrowing. More often than not, the net effect of tax cuts on the economy is negative. Consider the fact that as president from 2001 to 2009, George W. Bush presided over two major tax cuts, yet the outcome was the Great Recession, which lasted from December 2007 to June 2009.

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5   William Gale, Aaron Krupkin, and Kim Rueben, "The Relationship between Taxes and Growth at the State Level: New Evidence," *National Tax Journal* 68, no. 4 (December 2015): 919–942.

In a 2003 *New York Times Magazine* article titled "The Tax-Cut Con,"[6] economist Paul Krugman described what was already a well-established conservative strategy of bait-and-switch. First, lawmakers would ram through huge tax cuts for corporations and the wealthy, claiming that lower taxes would actually increase revenue via the magic of supply-side economics. Then, when budget deficits soared, they would declare that the nation's dire fiscal straits demanded draconian cuts in social programs, such as safety net programs, health care, and education.

Krugman noted that given how many times this tax-cut con job has been tried, one might reasonably expect that conservatives would eventually take a different tack. But it turns out to be an unkillable zombie of a political strategy. Early in President Trump's term, even before the 2017 tax cut was passed, Krugman predicted that it would blow up the deficit and Republicans would then revert to the pretense of being deficit hawks, demanding cuts in Social Security, Medicare, and Medicaid.[7] We can see that happening now, in the years since President Trump signed the 2017 tax-cut legislation passed by the Republican-controlled House and Senate.

Remember the argument that tax cuts will grow the economy? In return, it says, tax revenues will grow, and the tax cuts will be a wash. Unfortunately, the outcome has not matched that argument; instead, it has been consistent with the previous tax-cut experiences described by Krugman. The 2017 tax cut has increased the federal deficit to more than a trillion dollars, and the economy has slowed down after an initial bump in 2018. Figure 1 shows the nation's real gross domestic product

Figure 1. U.S. Real GDP Growth, 2017–2021
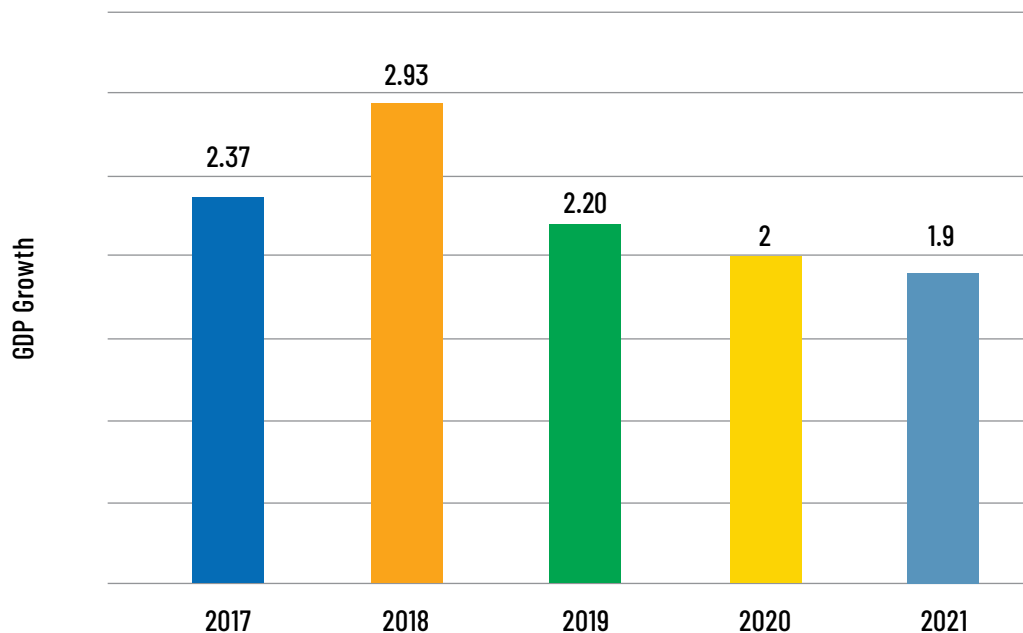
6   Paul Krugman, "The Tax-Cut Con," *The New York Times Magazine*, Sept. 14, 2003, www.nytimes.com/2003/09/14/magazine/the-tax-cut-con. html?te=1&nl=paul-krugman&emc=edit_pk_20200211&campaign_id=116&instance_id=15901&segment_id=21170&user_id=e45ca3b58a87d7b-9b3ca0ad74e0fdea9&regi_id=6911078020200211.

7   Paul Krugman, "The Biggest Tax Scam in History," *The New York Times*, November 27, 2017, www.nytimes.com/2017/11/27/opinion/senate-tax-bill-scam.html?partner=rss&emc=rss&te=1&nl=paul-krugman&emc=edit_pk_20200211&campaign_id=116&instance_id=15901&segment_id=21170&user_id=e45ca3b58a87d7b9b3ca0ad74e0fdea9&regi_id=69110780edit_pk_20200211.

(GDP) growth from 2017 to 2021. Between 2017 and 2018, the economy grew from 2.37 percent to 2.93 percent. But in 2019, it grew by only 2.20 percent. Growth is projected to be 2.00 percent in 2020 and 1.90 percent in 2021.[8] History has taught us that the best way to grow the economy is through a progressive tax system and investment in education and infrastructure, as we did during the post–World War II period.

On the question of what drives revenues, there is again a dearth of literature. Among the few recent studies addressing the question is one by the Tax Foundation.[9] Based on data from *The Economist*,[10] this study implied that economic growth is a key driver of revenues – when the economy is doing well, tax revenues grow, and vice versa. For example, the study noted that during the mid-1980s to late 1990s the economy grew. So did tax revenues. On the other hand, during 2007 and 2009, the economy declined. So did revenues.

Another study that looked at this question at the state level was conducted by the Oklahoma Council of Public Affairs.[11] Mainly focusing on income tax revenues, it showed that economic growth, as measured by job growth, drives revenue growth.

Our own analysis, however, shows that state and local revenues lag economic growth. If the economy grows by 1 percent, state and local revenues grow only by about 0.8 percent. That is because state and local governments have made their revenue systems more regressive by cutting stable and progressive taxes, such as income and property taxes, in good economic times and filling the revenue shortfall in bad economic times through risky revenue schemes such as casinos and excise taxes.[12]

Pension Assets and the Economy

Do pension fund assets contribute to economic growth? The literature on this subject is in short supply. One study that has addressed this question focused on 38 countries, including both European Union countries and emerging economies. Published as a discussion paper of the Economics and Finance Section, School of Social Sciences, Brunel University, London,[13] the study found a positive correlation between growth in pension fund assets and growth in the economy.

Another study that showed a positive correlation between pension assets and economic growth focused on 69 industrial sectors in 34 Organisation for Economic Co-operation and Development (OECD) countries over the decade of 2001–2010.[14] The authors of this study concluded that a higher level of pension assets has a significant impact on economic growth through growth in the sectors in which the assets are invested.

8   Kimberly Amadeo, "US Economic Outlook for 2020 and Beyond: Experts Forecast Steady Growth," *The Balance*, March 3, 2020, www.thebalance.com/us-economic-outlook-3305669.

9   Andrew Lundeen, "Economic Growth Drives the Level of Tax Revenue," Tax Foundation, October 25, 2014, taxfoundation.org/economic-growth-drives-level-tax-revenue.

10   Buttonwood, "Is There a Limit to Revenue-Raising?," The Economist, October 13, 2014, www.economist.com/blogs/buttonwood/2014/10/tax-policy-and-economy.

11   Curtis Shelton, "What Drives Income Tax Revenues: Tax Rates or Economic Growth?," Oklahoma Council of Public Affairs, March 27, 2017, www.ocpathink.org/post/what-drives-income-tax-revenues-tax-rates-or-economic-growth-2.

12   *Peaceful Coexistence: The Facts about Pensions and Education Funding* (Washington, DC: NCPERS, 2019), www.ncpers.org/files/NCPERS_peaceful-coexistence_revised_pages%20for%20web.pdf.

13   E. Philip Davis and Yuwei Hu, "Is There a Link between Pension-Fund Assets and Economic Growth? A Cross-Country Study," Public Policy Discussion Papers 04-23 (London, UK: Economics and Finance Section, School of Social Sciences, Brunel University, 2004), abstract at ideas.repec.org/p/bru/bruppp/04-23.html.

14   Michiel Bijlsma, Casper van Ewijk, and Ferry Haaijen, "Economic Growth and Funded Pension Systems," CPB Discussion Paper 279 (The Hague: CPB Netherlands Bureau for Economic Policy Analysis, 2014), www.cpb.nl/sites/default/files/publicaties/download/cpb-discussion-paper-279-economic-growth-and-funded-pension-systems.pdf.

Studies examining the relationship between pension fund assets and economic growth in individual countries are even rarer. A study focusing on Kenya[15] took an in-depth look at data on the growth of pension fund assets and economic growth during the period 2002–2011. It found a positive relationship between pension assets and economic growth.

Pensions, the Economy, and Revenues

One of the best-known studies that regularly assess the impact of pensions on the economy and revenues is conducted by the National Institute on Retirement Security (NIRS).[16] This study, popularly known as "Pensionomics," assesses the economic and revenue impact of benefits paid to retirees by public and private defined-benefit pensions in the United States. In 2016, the NIRS study found, about $578 billion was paid in pension benefits to 26.9 million retirees, generating $1.2 trillion in total economic activity. This economic activity, in turn, generated $202.6 billion in federal, state, and local revenues. The NIRS study also assessed the impact of public pensions on a state-by-state basis. However, it did not assess the economic and revenue impact of investment of pension assets.

Several individual pension plans conduct economic impact studies for their respective states. For example, the Teacher Retirement System of Texas does such a study on a regular basis. The 2019 study showed that the system paid $19.1 billion in retirement benefits to more than 420,000 retirees, which contributed $22.4 billion to economy and generated $1.6 billion in state and local revenues.[17]

Similarly, a 2018 study conducted by the Colorado Public Employees' Retirement Association (PERA) showed that the system provides significant economic benefit to Colorado. This economic benefit amounts to more than $6.5 billion, which in turn generates $343 million in tax revenue for state and local governments.[18]

The foregoing review of studies on the economic and revenue impact of public pensions suggests that these studies focus on only part of the equation – benefits paid to retirees – and omit the economic and revenue impact of investment of pension fund assets. Two pension plans, however – the California Public Employees' Retirement System (CalPERS) and the California State Teachers' Retirement System (CalSTRS) – have conducted studies on the economic impact of investment of their assets on the California economy. In an earlier Research Series paper, we used the economic impact data from the CalPERS and CalSTRS studies to estimate the revenue impact of such investments.[19]

In the absence of studies such as those done by CalPERS and CalSTRS, from other states or the nation as a whole, it is necessary to develop a methodology to assess the economic and revenue impact of investment of pension fund assets as well as pension benefits paid to retirees for all 50 states. The next section describes the methodology used in this report.

15 Wanjala Christopher Mungoma, "The Relationship between Pension Fund Assets and Economic Growth in Kenya," master's thesis, School of Business, University of Nairobi, 2013, erepository.uonbi.ac.ke/bitstream/handle/11295/58501/The%20Relationship%20Between%20Pension%20Fund%20Assets%20And%20Eco¬nomic%20Growth%20In%20Kenya?sequence=3.

16 Ilana Boivie, "Pensionomics 2018: Measuring the Economic Impact of Defined Benefit Pension Expenditures," National Institute on Retirement Security, January 2019, www.nirsonline.org/reports/pensionomics-2018-measuring-the-economic-impact-of-defined-benefit-pension-expenditures/.

17 https://www.trs.texas.gov/TRS%20Documents/trs_value_brochure.pdf#search=impact%20annuity%20payments%20by%20trs

18 https://www.copera.org/sites/default/files/documents/pacey.pdf

19 "Public Pensions Are a Good Deal for Taxpayers," NCPERS Research Series (Washington, DC: NCPERS, August 2017), www.ncpers.org/files/NCPERS%20Research%20Series_2017%20Public%20Pensions%20Are%20A%20Good%20Deal%20for%20Taxpayers_Web.pdf.

As the foregoing review suggests, there is a dearth of studies addressing the revenue and economic impact of pensions. Some studies, such as those by NIRS and by the retirement systems of Texas and Colorado, partially address the economic and revenue impact, as they focus only on the impact of the spending of retiree pension checks. We sought to fill this gap by conducting the first series of nationwide studies to assess the economic and revenue impact of pension assets. We developed our methodology from scratch to study the total impact of public pensions, including pension checks plus pension assets, on the economy and revenue of all 50 states.

We drew together historical data from various public sources, including the US Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics. These data span 1977 through 2018 in most instances. With each year's data constituting one observation, the total number of observations was 41. Our analysis was performed in three steps. First, we estimated the impact of investment of pension fund assets on state and local economies and revenues. Second, we estimated the impact of spending of pension checks by retirees on state and local economies and revenues. Third, we assessed whether revenues generated by public pensions exceed taxpayer contributions to those pensions. If so, how much would taxpayers have to pay in additional taxes to maintain the current level of services in the event public pensions were dismantled?

Estimating the Impact of Pension Fund Assets on State and Local Economies and Revenues

Pension fund assets constitute an important source of capital for start-up and existing businesses. Growth in these businesses grows jobs, income, and consumer spending, which in turn grow the economy and tax revenues. We estimate the impact of pension fund assets on state and local economies and revenues as follows:

- Using historical data, we develop a model to examine the contribution of investment of public pension fund assets to the economy at the national level, controlling for other variables that also impact the economy. We measure the economy for the purposes of this study in terms of personal income (the dependent variable in the model). The other variables used in the model include the following:

  - Education spending on K–12
  - Education spending on higher education
  - Multifactor productivity
  - Infrastructure spending
  - Pension fund assets
  - Income inequality

All variables are measured in thousands of dollars except multifactor productivity and income inequality. Multifactor productivity is measured as an index, and income inequality

is measured as the ratio of income in the top quintile to that in the bottom quintile.

- Next, we apply the beta value for the pension assets variable in the model to the pension fund assets of each state to estimate their contribution to the state economy. The beta coefficient measures the change in the economy for a unit change in a variable used in the model.

- We then adjust this contribution to the state economy by taking into account the multiplier effect and the size of the state economy in relation to the national economy. We use the multiplier effect of 2.5 in our analysis.[20] This figure should probably be higher, as most Americans spend 80 cents of every dollar of their income. However, we choose to use 2.5 in our analysis based on some of the studies cited in the literature review section. The adjustment for the size of the state economy is made by multiplying the contribution to the state economy by the ratio of the state and national economies.

- To convert the contribution of pension assets to the economy into state and local revenues, we use historical data to develop a model to estimate a revenue quotient for each state by examining the relationship between the economy (personal income) and state and local revenues since 1977.

- We apply this revenue quotient to the adjusted contribution of pension assets to the economy to estimate state and local revenues attributable to pension assets.

Estimating the Impact of Pension Checks on State and Local Economies and Revenues

The impact of spending of retirement checks on state and local economies and revenues is estimated as follows:

- We consider the pension payments made by state and local pension plans as a direct contribution to the economy (in the form of personal income).

- We then adjust this contribution to the economy by using the multiplier effect specified above.

- To convert this adjusted contribution to the economy into state and local revenues, we use the revenue quotient specified above.

Assessing Whether Revenues Generated by Public Pensions Exceed Taxpayer Contributions to Those Pensions

The assessment of whether revenues generated by public pensions exceed taxpayer contributions is done as follows:

- We estimate the total state and local revenues by adding the revenues generated through investment of pension fund assets and those generated through spending of pension checks by retirees.

- We then compare the total state and local revenues with taxpayer contributions to determine whether these revenues exceed taxpayer contributions.

- This comparison also allows us to determine how much additional revenue taxpayers would have to make up to receive the current level of services if public pensions were not there.

The data and analysis show that state and local revenues generated by the mere existence of public pensions far exceed taxpayer contributions to those pensions. Taxpayers would have to pay additional taxes to receive the current level of services if public pensions did not exist. Details of these findings are discussed in the next section.

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20 The marginal propensity to consume (MPC) is equal to $\Delta C / \Delta Y$, where ΔC is change in consumption and ΔY is change in income. For example, if consumption increases by 80 cents for each additional dollar of income, then MPC is equal to $0.8 / 1 = 0.8$. If the MPC is equal to 0.8, then the multiplier can be calculated as follows: Multiplier = $1 / (1 - MPC) = 1 / (1 - 0.8) = 1 / 0.2 = 5$.

The discussion of results is organized as follows. First, we describe the results of the econometric model to measure the economic impact of pension fund assets, taking into account other variables that also impact the economy. Second, we examine the impact of pension fund assets on the economy and the tax revenues of each state. Third, we measure the impact of spending of pension checks by retirees on state economies and tax revenues. Fourth, we evaluate the total impact of pensions (pension assets plus retiree spending) on state and local revenues. Finally, we compare state and local revenues with taxpayer contributions to examine whether or not pensions are net revenue generators, and if they are, how much more taxpayers would have to pay to receive the current level of services if there were no public pensions.

The US Economic Impact of Investment of Pension Assets

Due to lack of research focusing on the economic impact of investment of public pension assets, we have developed a new model and methodology – let us call it the NCPERS model. The purpose of the model is to estimate the economic impact, as measured by personal income, of pension assets, controlling for other variables such as investment in education, infrastructure spending, multifactor productivity, and income inequality (this model combines the elements of both supply-side economics and modern Keynesian economics).

All of these variables have significant impacts on the economy.

The results of our model are shown in Table 1. This table shows the beta coefficients for various variables used in the model. The model is highly predictive of economic impact, with an *R*-squared of 0.99, which means that the model explains 99 percent of variations in the economy. Since we are using the entire population, all 50 states, and all available data, we need not worry about sampling statistics such as the level of significance of the beta coefficient. Nevertheless, the beta coefficients of all variables in the model are significant, at 0.05 or better.

Table 1

Coefficients of variables used in the NCPERS model to estimate the impact of each variable on the economy, 2018

Variable	Coefficient
Intercept	7,422,302,510
Investment in Infrastructure	-8.792
Investment in K–12 Education	1.235
Investment in Higher Education	44.263
Multifactor Productivity	-32,178,727.52
Pension Assets	1.362
Income Inequality	-391,763,953.2

Table 1 shows that while investments in education and pension assets have a positive impact on the economy, multifactor productivity, infrastructure investment, and income inequality have a negative impact. In the past, when labor unions were strong and income inequality was low, productivity and infrastructure used to have a positive impact on the economy. With rising income inequality and declining influence of labor unions, these relationships are reversed. Most of the economic growth resulting from productivity growth and infrastructure investment now goes to the top 1 percent of income earners. Another reason infrastructure investment may not have a positive impact is that a great deal of current expenditure is on mere maintenance that does not truly merit being called "investment" that spurs new economic activity.

Table 1 shows that the investment of pension fund assets has a positive effect on the economy. This impact is relatively small compared with that of other variables in the model, but due to the size of the country's pension fund assets, $4.3 trillion in 2018, the magnitude of the effect on the economy and on tax revenues is significant. The results in Table 1 show that the economy grows by $1,362 for each $1,000 of pension fund assets invested.

Contribution of Investment of Pension Fund Assets to State Economies and Revenues

Using the methodology outlined in Section 2 and the beta coefficients from Table 1, we have calculated the impact of pension assets on state economies and revenues. The results are shown in Table 2. Column 2 in this table shows state-by-state pension assets, column 3 the contribution of these assets to the economy, and column 4 the revenues attributable to investment of pension assets. The results in Table 2 show that in 2018, overall, $4.3 trillion in pension assets contributed about $872.4 billion to state economies, which resulted in about $178.8 billion in state and local revenues.

Table 2

Impact of investment of pension assets on state and local economies and revenues, 2018 (all data are in $1,000s)

State	Pension Assets	Contribution to State Economy (Personal Income)	State & Local Revenues Attributable to Investment of Pension Assets
Alabama	$40,425,517	$1,595,365	$307,906
Alaska	$15,474,855	$129,617	$32,275
Arizona	$52,817,295	$3,209,693	$545,648
Arkansas	$30,490,331	$759,407	$145,806
California	$911,200,593	$437,905,902	$92,836,051
Colorado	$58,455,358	$3,720,257	$647,325
Connecticut	$45,417,216	$2,371,400	$355,710
Delaware	$11,000,363	$106,784	$21,784
Florida	$201,654,896	$41,108,081	$6,988,374
Georgia	$109,554,224	$10,239,654	$1,679,303
Hawaii	$16,668,130	$250,817	$51,919

Table 2 *(continued)*

Impact of investment of pension assets on state and local economies
and revenues, 2018 (all data are in $1,000s)

State	Pension Assets	Contribution to State Economy (Personal Income)	State & Local Revenues Attributable to Investment of Pension Assets
Idaho	$16,803,769	$247,369	$42,795
Illinois	$185,339,489	$25,656,602	$4,720,815
Indiana	$30,369,043	$1,831,604	$337,015
Iowa	$35,985,290	$1,088,186	$226,343
Kansas	$21,662,798	$620,550	$114,181
Kentucky	$33,482,586	$1,214,242	$227,063
Louisiana	$53,284,092	$2,194,832	$401,654
Maine	$14,556,823	$182,130	$34,058
Maryland	$75,992,716	$5,561,038	$861,961
Massachusetts	$85,767,439	$8,111,483	$1,354,618
Michigan	$93,770,614	$8,675,970	$1,622,406
Minnesota	$70,002,382	$4,318,452	$816,187
Mississippi	$29,105,921	$628,647	$136,416
Missouri	$80,582,509	$4,505,727	$811,031
Montana	$11,638,374	$112,347	$19,548
Nebraska	$18,729,249	$367,892	$75,418
Nevada	$41,248,292	$1,176,544	$211,778
New Hampshire	$9,118,199	$144,915	$20,868
New Jersey	$77,924,537	$9,054,709	$1,575,519
New Mexico	$29,223,486	$487,048	$106,177
New York	$533,598,384	$136,875,025	$33,671,256
North Carolina	$98,216,028	$8,990,246	$1,672,186
North Dakota	$5,853,521	$47,160	$11,271
Ohio	$191,252,703	$20,828,277	$4,457,251
Oklahoma	$33,272,398	$1,159,457	$193,629
Oregon	$80,324,193	$3,271,509	$706,646
Pennsylvania	$110,594,796	$15,222,664	$2,709,634
Rhode Island	$10,190,119	$112,964	$21,576
South Carolina	$32,143,412	$1,365,191	$288,055
South Dakota	$12,858,169	$113,225	$16,984
Tennessee	$61,955,161	$3,760,285	$639,249

Table 2 *(continued)*

Impact of investment of pension assets on state and local economies and revenues, 2018 (all data are in $1,000s)

State	Pension Assets	Contribution to State Economy (Personal Income)	State & Local Revenues Attributable to Investment of Pension Assets
Texas	$281,017,674	$77,635,783	$12,654,633
Utah	$32,335,757	$905,045	$175,579
Vermont	$4,647,668	$30,143	$5,787
Virginia	$95,980,567	$9,032,408	$1,436,153
Washington	$95,574,091	$8,539,003	$1,554,098
West Virginia	$16,252,072	$229,296	$49,987
Wisconsin	$115,775,463	$6,637,729	$1,247,893
Wyoming	$8,512,277	$56,743	$14,072
United States	$4,338,904,372	**$872,389,415**	**$178,853,891**

State-by-state data in Table 2 show that the economic and revenue impacts of pension assets in the four largest states by population – California, Texas, Florida, and New York – are very significant. In California, for example, state and local pension fund assets of $911.2 billion resulted in a $437.9 billion contribution to the economy and $92.8 billion to state and local revenues. Similarly, in New York, state and local pension fund assets of $533.6 billion contributed $136.9 billion to the economy and $33.7 billion to state and local revenues. The economies and revenues of even small states, such as Vermont, South Dakota, and Wyoming, benefited significantly from investment of their pension fund assets. For example, Vermont added $30.1 million to its economy and $5.8 million to state and local tax revenues through investment of $4.6 billion in pension assets.

Contribution of Spending of Pension Checks to State Economies and Revenues

The impact of spending by retirees has a direct and significant impact on the economy and on state and local revenues because of both the dollar-for-dollar addition to personal income and the multiplier effect. Table 3 shows the state-by-state impact of the spending of pension checks on the economy and revenues. Column 2 shows the dollar amount of the pension checks paid to retirees in each state. Column 3 shows the contribution of spending these checks to the economy, and column 4 shows state and local revenues attributable to pension checks.

Table 3

Impact of spending of pension checks on state economies and state and local tax revenues, 2018 (all data are in $1,000s)

State	Pension Checks	Contribution to Economy (Personal Income)	State & Local Revenues Attributable to Pension Checks
Alabama	$3,775,108	$9,437,770	$1,821,490
Alaska	$1,344,014	$3,360,035	$836,649
Arizona	$4,979,774	$12,449,435	$2,116,404
Arkansas	$2,107,288	$5,268,220	$1,011,498
California	$59,336,581	$148,341,453	$31,448,388
Colorado	$5,682,652	$14,206,630	$2,471,954
Connecticut	$5,196,905	$12,992,263	$1,948,839
Delaware	$772,777	$1,931,943	$394,116
Florida	$12,907,687	$32,269,218	$5,485,767
Georgia	$7,891,830	$19,729,575	$3,235,650
Hawaii	$1,489,496	$3,723,740	$770,814
Idaho	$1,002,195	$2,505,488	$433,449
Illinois	$21,113,989	$52,784,973	$9,712,435
Indiana	$2,963,596	$7,408,990	$1,363,254
Iowa	$2,431,021	$6,077,553	$1,264,131
Kansas	$2,019,878	$5,049,695	$929,144
Kentucky	$4,443,610	$11,109,025	$2,077,388
Louisiana	$5,018,902	$12,547,255	$2,296,148
Maine	$1,082,981	$2,707,453	$506,294
Maryland	$6,061,046	$15,152,615	$2,348,655
Massachusetts	$8,430,605	$21,076,513	$3,519,778
Michigan	$9,570,957	$23,927,393	$4,474,422
Minnesota	$5,161,801	$12,904,503	$2,438,951
Mississippi	$2,974,606	$7,436,515	$1,613,724
Missouri	$6,233,876	$15,584,690	$2,805,244
Montana	$935,996	$2,339,990	$407,158
Nebraska	$1,200,736	$3,001,840	$615,377
Nevada	$2,521,786	$6,304,465	$1,134,804
New Hampshire	$832,290	$2,080,725	$299,624
New Jersey	$11,167,736	$27,919,340	$4,857,965
New Mexico	$2,499,874	$6,249,685	$1,362,431
New York	$35,340,483	$88,351,208	$21,734,397

Table 3 *(continued)*

Impact of spending of pension checks on state economies and state and local tax revenues, 2018 (all data are in $1,000s)

State	Pension Checks	Contribution to Economy (Personal Income)	State & Local Revenues Attributable to Pension Checks
North Carolina	$6,788,423	$16,971,058	$3,156,617
North Dakota	$450,517	$1,126,293	$269,184
Ohio	$16,531,965	$41,329,913	$8,844,601
Oklahoma	$2,643,575	$6,608,938	$1,103,693
Oregon	$6,109,410	$15,273,525	$3,299,081
Pennsylvania	$13,183,490	$32,958,725	$5,866,653
Rhode Island	$1,312,354	$3,280,885	$626,649
South Carolina	$4,391,477	$10,978,693	$2,316,504
South Dakota	$605,484	$1,513,710	$227,057
Tennessee	$3,547,256	$8,868,140	$1,507,584
Texas	$18,852,829	$47,132,073	$7,682,528
Utah	$1,612,865	$4,032,163	$782,240
Vermont	$387,161	$967,903	$185,837
Virginia	$6,265,164	$15,662,910	$2,490,403
Washington	$5,169,816	$12,924,540	$2,352,266
West Virginia	$1,397,040	$3,492,600	$761,387
Wisconsin	$6,429,551	$16,073,878	$3,021,889
Wyoming	$616,500	$1,541,250	$382,230
United States	$335,252,843	**$836,967,383**	**$162,612,744**

Results in Table 3 show that in 2018, $335.2 billion was paid to retirees in pension checks. Spending of these checks contributed $836.9 billion to the economy and $162.6 billion to state and local revenues. Table 3 also shows that the economy and revenues in states such as California, New York, Ohio, and Texas benefit greatly from retirees' spending of their pension checks.

Are Public Pensions Net Revenue Positive?

Opponents of public pensions often argue that taxpayers cannot afford them. Common sense will tell us, however, that investment of pension fund assets and spending of pension checks by retirees must have a positive impact on the economy and revenues. The results shown in Tables 2 and 3 support this commonsense contention. Next we examine whether public pensions are net revenue generators. By net revenue generators we mean that the tax revenues generated by public pensions are greater than taxpayer contributions to the pensions.

Column 4 (the sum of columns 2 and 3) in Table 4 shows the total state and local revenues generated by investment of pension assets and spending of pension checks, column 5 shows the taxpayer contribution, and column 6 shows the net revenues attributable to public pensions (column 6 = column 4 - column 5).

Table 4

State and local revenues attributable to spending of pension checks and investment of pension fund assets, compared with taxpayer contributions to pension funds, 2018 (all data are in $1,000s)

State	State & Local Revenue from Investment of Pension Assets	State & Local Revenue from Spending of Pension Checks	Total State & Local Revenue from Public Pensions	Taxpayer Contribution to Public Pensions	Net State & Local Revenue Attributable to Public Pensions
Alabama	$307,906	$1,821,490	$2,129,395	$1,337,817	$791,578
Alaska	$32,275	$836,649	$868,923	$546,796	$322,127
Arizona	$545,648	$2,116,404	$2,662,052	$2,167,909	$494,143
Arkansas	$145,806	$1,011,498	$1,157,304	$900,116	$257,188
California	$92,836,051	$31,448,388	$124,284,439	$39,298,208	$84,986,231
Colorado	$647,325	$2,471,954	$3,119,278	$1,799,050	$1,320,228
Connecticut	$355,710	$1,948,839	$2,304,549	$3,438,172	-$1,133,623
Delaware	$21,784	$394,116	$415,900	$297,415	$118,485
Florida	$6,988,374	$5,485,767	$12,474,141	$4,667,231	$7,806,910
Georgia	$1,679,303	$3,235,650	$4,914,954	$3,918,975	$995,979
Hawaii	$51,919	$770,814	$822,733	$851,041	-$28,308
Idaho	$42,795	$433,449	$476,244	$391,897	$84,347
Illinois	$4,720,815	$9,712,435	$14,433,250	$12,672,553	$1,760,697
Indiana	$337,015	$1,363,254	$1,700,269	$2,026,067	-$325,798
Iowa	$226,343	$1,264,131	$1,490,474	$818,194	$672,280
Kansas	$114,181	$929,144	$1,043,325	$922,876	$120,449
Kentucky	$227,063	$2,077,388	$2,304,451	$2,364,334	-$59,883
Louisiana	$401,654	$2,296,148	$2,697,802	$2,810,937	-$113,135
Maine	$34,058	$506,294	$540,352	$398,926	$141,426
Maryland	$861,961	$2,348,655	$3,210,616	$2,973,058	$237,558
Massachusetts	$1,354,618	$3,519,778	$4,874,395	$3,300,079	$1,574,316
Michigan	$1,622,406	$4,474,422	$6,096,829	$4,763,021	$1,333,808
Minnesota	$816,187	$2,438,951	$3,255,138	$1,445,130	$1,810,008
Mississippi	$136,416	$1,613,724	$1,750,140	$1,052,134	$698,006
Missouri	$811,031	$2,805,244	$3,616,275	$2,251,460	$1,364,815
Montana	$19,548	$407,158	$426,707	$319,477	$107,230
Nebraska	$75,418	$615,377	$690,795	$503,505	$187,290
Nevada	$211,778	$1,134,804	$1,346,582	$1,718,876	-$372,294
New Hampshire	$20,868	$299,624	$320,492	$442,398	-$121,906
New Jersey	$1,575,519	$4,857,965	$6,433,485	$4,436,931	$1,996,554
New Mexico	$106,177	$1,362,431	$1,468,608	$737,277	$731,331

Table 4 *(continued)*

State and Local Revenues Attributable to Spending of Pension Checks and Investment of Pension Fund Assets Compared with Taxpayer Contributions to Pension Funds, 2016 (All Data Are in $1,000)

State	State & Local Revenue from Investment of Pension Assets	State & Local Revenue from Spending of Pension Checks	Total State & Local Revenue from Public Pensions	Taxpayer Contribution to Public Pensions	Net State & Local Revenue Attributable to Public Pensions
New York	$33,671,256	$21,734,397	$55,405,653	$17,716,399	$37,689,254
North Carolina	$1,672,186	$3,156,617	$4,828,802	$2,164,333	$2,664,469
North Dakota	$11,271	$269,184	$280,455	$224,815	$55,640
Ohio	$4,457,251	$8,844,601	$13,301,853	$4,291,670	$9,010,183
Oklahoma	$193,629	$1,103,693	$1,297,322	$1,236,861	$60,461
Oregon	$706,646	$3,299,081	$4,005,727	$1,591,841	$2,413,886
Pennsylvania	$2,709,634	$5,866,653	$8,576,287	$7,098,641	$1,477,646
Rhode Island	$21,576	$626,649	$648,225	$714,326	-$66,101
South Carolina	$288,055	$2,316,504	$2,604,559	$1,547,849	$1,056,710
South Dakota	$16,984	$227,057	$244,040	$145,423	$98,617
Tennessee	$639,249	$1,507,584	$2,146,832	$1,942,666	$204,166
Texas	$12,654,633	$7,682,528	$20,337,160	$8,290,155	$12,047,005
Utah	$175,579	$782,240	$957,818	$1,136,539	-$178,721
Vermont	$5,787	$185,837	$191,625	$204,760	-$13,135
Virginia	$1,436,153	$2,490,403	$3,926,556	$3,245,282	$681,274
Washington	$1,554,098	$2,352,266	$3,906,365	$2,770,519	$1,135,846
West Virginia	$49,987	$761,387	$811,373	$737,049	$74,324
Wisconsin	$1,247,893	$3,021,889	$4,269,782	$1,167,701	$3,102,081
Wyoming	$14,072	$382,230	$396,302	$203,232	$193,070
USA	**$178,853,891**	**$162,612,744**	**$341,466,636**	**$162,001,921**	**$179,464,715**

The results in Table 4 show that in 2018, pension funds generated approximately $341.4 billion in state and local revenues. Taxpayer contributions to state and local pension plans in the same year totaled $162.0 billion. In other words, pension funds generated $179.4 billion more in revenues than taxpayers contributed to them. The state-by-state results indicate that state and local pensions in 40 states were net revenue positive. In the remaining 10 states, pensions were almost revenue neutral or taxpayer contributions were significantly subsidized by state and local revenues generated by public pensions.

Overall, the data in Table 4 refute the argument that taxpayers cannot afford public pensions. The data show that if public pensions were dismantled, the burden on taxpayers would rise by about $179.4 billion to sustain the current level of services.

Obviously, if there were no defined-benefit plans, some money would move to defined-contribution plans. This is unlikely to affect the findings of our study. Even original proponents of 401(k)-type defined-contribution plans now agree that defined contribution is a failed experiment.[21] Our own analysis shows that the shift to defined-contribution plans increases income inequality and slows the economy.[22] Furthermore, the econometric model used in this study shows that a unit increase in income inequality will shave off $392 billion from the economy. In the end, the economic and revenue impact of the shift of money from defined-benefit to defined-contribution plans will be a wash.
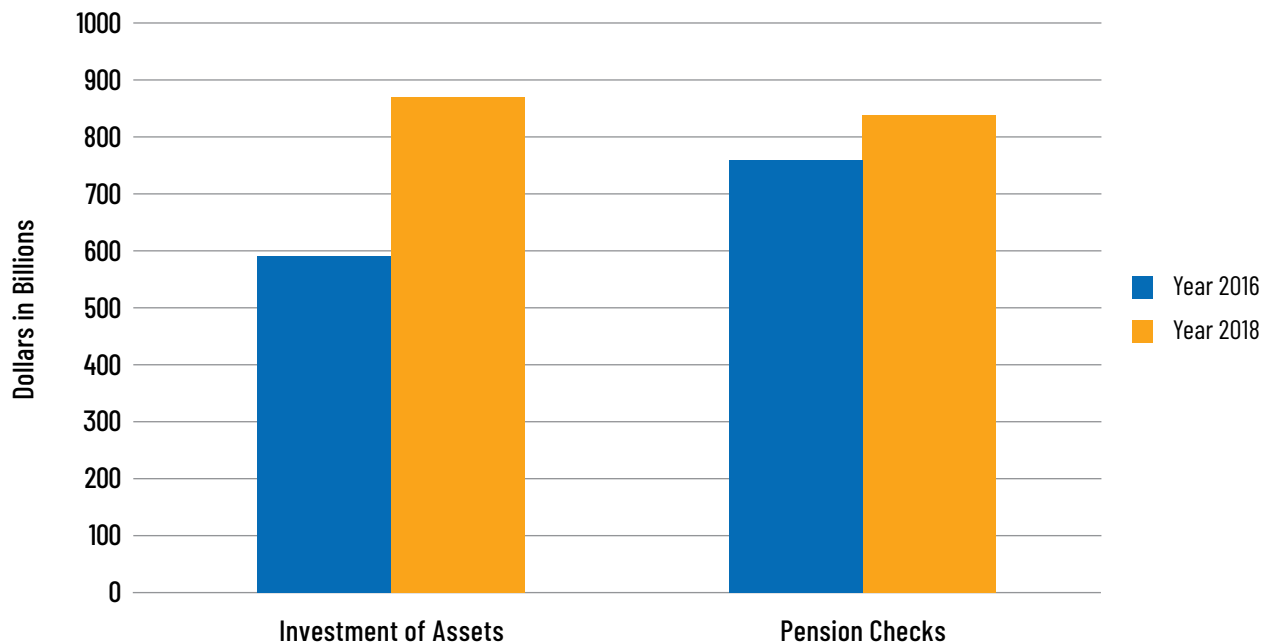
Trends in the Economic and Revenue Impacts of Public Pensions

Now that we have conducted the *Unintended Consequences* study twice using the latest data available each time – 2016 data in 2018 and 2018 data in 2020 – we are able to examine the trends.

As mentioned earlier, the impact of pension fund investment on the economy increased between 2016 and 2018. In 2016, the economy grew by $1,088 for each $1,000 investment of pension fund assets. In 2018, the same figure is $1,362 – a 25 percent increase. This increase may reflect the size of pension fund assets and changes in the relative impact of other variables in the model.

Trend in economic impact: Figure 2 compares the economic impact of investment of pension fund assets and spending of pension checks in 2018 versus 2016. It shows that in 2018 the impact on the economy of both investment of assets and spending of pension checks was greater than it was in 2016. The growth in the impact of investment of assets was especially significant. In 2016 the impact of investment of assets on the economy was $587.8 billion, and in 2018, the same figure was $872.4 billion, a 48 percent increase. The impact of spending of pension checks on the economy was also greater in 2018 than in 2016 ($837.0 billion versus $757.8 billion).

Figure 2. Economic impact of public pensions, United States, 2018 versus 2016

21 https://www.wsj.com/articles/the-champions-of-the-401-k-lament-the-revolution-they-started-1483382348.

22 *Income Inequality*, www.ncpers.org/files/NCPERS%20Income%20Inequality%20Paper_Web(1).pdf.

Trend in revenue impact: Figure 3 compares the state and local tax revenue impact of investment of pension fund assets and spending of pension checks in 2016 versus 2018. In 2018 the impact of investment of assets as well as spending of pension checks on state and local revenues was greater than in 2016. The difference in the impact of investment of assets between the two years was especially significant. In 2016 the impact of investment of assets on state and local revenues was $125.7 billion, and in 2018, the same figure was $178.8 billion, a 42 percent increase. The impact of spending of pension checks on revenues was also greater in 2018 than in 2016 ($162.6 billion versus $151.9 billion).

Trend in states' net revenue positions: Figure 4 shows the number of states whose public pensions were net revenue positive in 2016 and 2018. By net revenue positive we mean that pensions in those states produced more in revenues than taxpayers contributed to the pensions. In 2016, 38 states were net revenue positive and 12 states net revenue negative. In 2018, the number of net-revenue-positive states increased to 40 and the number of net-revenue-negative states decreased to 10. Beyond the aggregate picture shown in the figure, our analysis shows that the majority of the 40 states that were net revenue positive in 2018 became more revenue positive during the 2016–2018 period.

Figure 3. Revenue impact of public pensions, United States, 2018 versus 2016
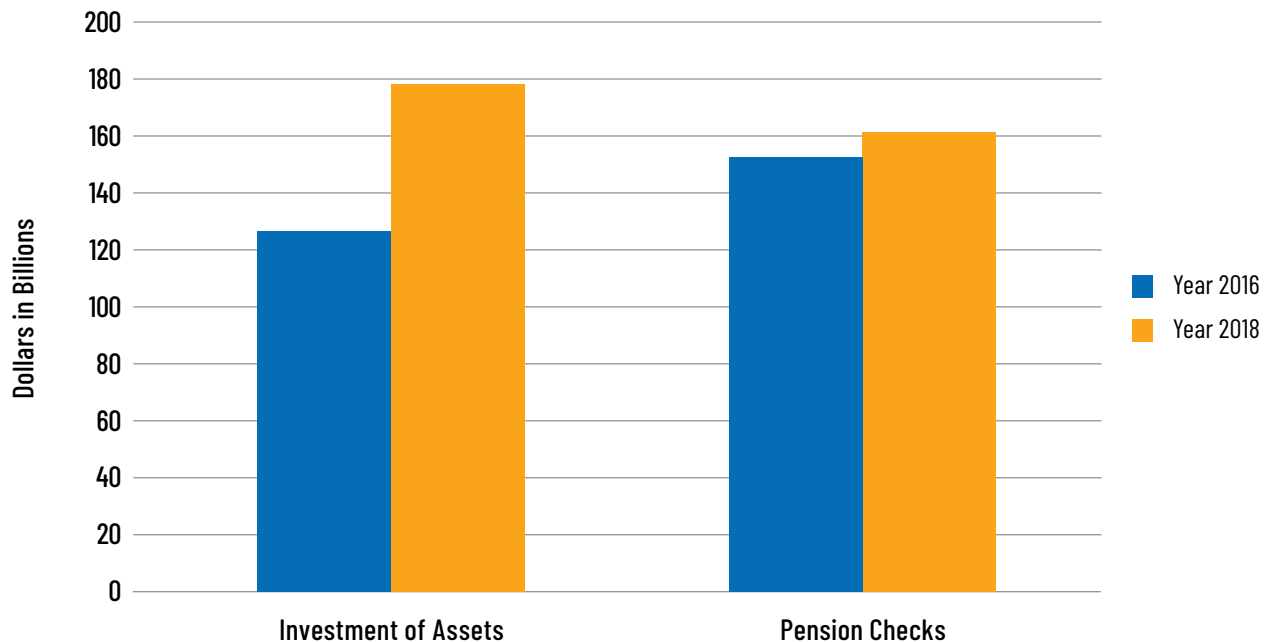
Figure 4. Number of States Net Revenue Positive and Net Revenue Negative, 2018 versus 2016
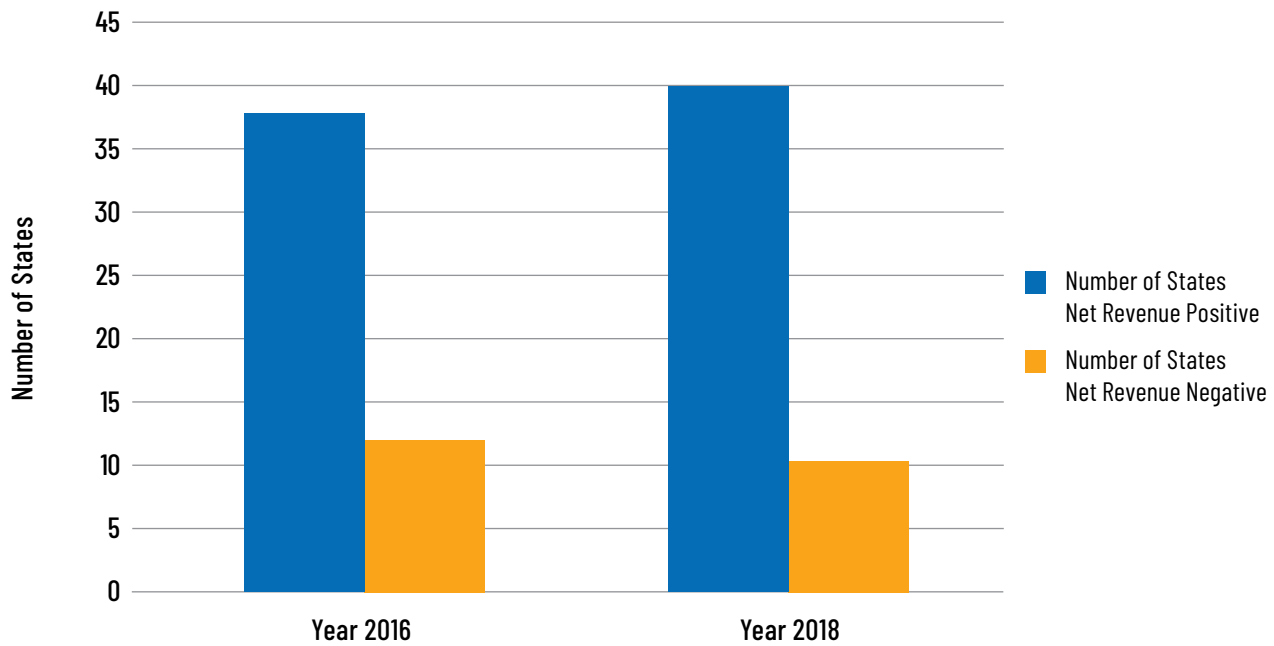
The analysis also shows some changes in states' net revenue position between 2016 and 2018. Four states – Kansas, Maryland, Oklahoma, and West Virginia – that were net revenue negative in 2016 became net revenue positive in 2018. Two states – Kentucky and Vermont – that were net revenue positive in 2016 became net revenue negative in 2018. Eight states – Connecticut, Hawaii, Indiana, Louisiana, Nevada, New Hampshire, Rhode Island, and Utah – continued to be net revenue negative from 2016 to 2018, although in all but two cases, the gap between revenues generated by pensions and taxpayer contributions to those pensions has narrowed.

Section IV

CONCLUSIONS

Most policy makers across the country have had to wrestle at one time or another with whether to scrap public pensions and move forward with retirement savings plans that shift the investment decisions to employees, as well as whether to cut benefits and increase employee contributions. But they have been pondering these choices in an information vacuum, because they have not reckoned with the ripple effects of discarding a time-tested method of providing workers with a secure retirement. Our research demonstrates that public pensions have beneficial effects on state and local economies. Shutting them down would ultimately increase taxpayer burdens, and harm state and local economies and tax revenues.

Detrimental "reforms" have been justified on the basis of misguided and misleading information put forth by those who would like to see public pensions go away. Their weapons in this disinformation war include manipulated assumptions, distorted data about unfunded liabilities, and apples-to-oranges comparisons that grossly understate future funding sources. As just one example, they compare 30-year unfunded liabilities with one-year state and local revenues instead of fairly comparing them with 30-year state and local revenues.

Our analysis shows that in 2018, public pensions contributed $1.7 trillion to the US economy and $341.4 billion to state and local tax revenues. Of the $1.7 trillion contribution to the economy,

$872.3 billion came from investment of pension assets and $836.9 billion from spending of pension checks by retirees. Similarly, of the $341.4 billion contributed to state and local revenues, $178.8 billion came from investment of assets and $162.6 billion from spending of pension checks.

The argument that taxpayers cannot afford public pensions does not ring true and is not supported by data. As mentioned above, pension funds generated $341.4 billion in state and local revenues in 2018. During the same year, the taxpayer contribution to public pensions was $162.0 billion. In other words, pension funds generated $179.4 billion more in revenues than taxpayers contributed to the pension funds.

The fact is that dismantling public pensions carries a grave cost. Far from easing the perceived burdens on taxpayers, pursuing this path would actually increase the burden on taxpayers by $179.4 billion. Taxpayers cannot afford continued dismantling of public pensions.

Policy makers need to preserve and enhance public pensions. To address short-term budget problems, they need to bring their revenue structures in sync with the economy. They also need to look at the tax subsidies and loopholes through which taxpayer money flows out of US states to overseas tax havens. In short, they should think, understand the research, and think again before taking actions that undermine public pensions.

![EBRI Employee Benefit Research Institute]

Workplace Retirement Plans: By the Numbers
Provided by EBRI's Retirement Security Research Center

> EBRI thanks the following companies for their support of the Retirement Security Research Center: Ameriprise Financial, BlackRock, Capital Group, Empower Retirement, J.P. Morgan Chase, Mercer, PGIM, Principal Financial Group, SS&C Technologies, and Transamerica Retirement Services.

Retirement Savings Plan (Defined Benefit Pension Plans, Defined Contribution Plans, and Individual Retirement Accounts) Participation

- There were 142.3 million total participants in private pension plans (defined benefit and defined contribution) in 2020, representing $11.9 trillion, including 97.3 million who were active participants.[1] In 2022, 52 percent of private-industry workers participated in a retirement plan.[2]

  - There were 31.9 million defined benefit (DB) plan participants in 2020, including 12.01 million private-sector workers who are active participants in a DB plan.[3]

  - Forty-eight percent of private industry workers participated in a defined contribution (DC) plan in 2022.[4] There were 85.3 million private-sector workers who were active participants in a DC plan in 2020. This includes 72.2 million private-sector workers who were active participants in 401(k) plans.[5]

  - Despite the large quantity of small (fewer than 100 employees) DC plans, which consist of 84 percent (584,864) of the total DC plan number, these small plans contain only 13 percent (12.7 million) of the total participants and 13 percent ($1.0 trillion) of the total assets.

  - On the contrary, large employers (more than 10,000 employees) comprise a smaller percentage of the total DC plan provider number (1,234 and less than 1 percent). But more than 42 percent (42.1 million) of the participants and 46 percent ($3.6 billion) of assets are in these large DC plans.

  - Similarly, in the DB space, 80 percent (35,931) of the plans are small employer plans, which hold 4 percent (473,000) of participants and 2 percent ($63.6 trillion) of assets. Less than 1 percent (384) of the DB plans are large employer plans, which manage more than 67 percent (13.3 million) of participants and 69 percent ($1.9 trillion) of assets.

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[1] https://www.dol.gov/sites/dolgov/files/EBSA/researchers/statistics/retirement-bulletins/private-pension-plan-bulletins-abstract-2020.pdf

[2] https://www.bls.gov/ncs/ebs/benefits/2022/home.htm

[3] https://www.dol.gov/sites/dolgov/files/EBSA/researchers/statistics/retirement-bulletins/private-pension-plan-bulletins-abstract-2020.pdf

[4] https://www.bls.gov/ncs/ebs/benefits/2022/home.htm

[5] https://www.dol.gov/sites/dolgov/files/EBSA/researchers/statistics/retirement-bulletins/private-pension-plan-bulletins-abstract-2020.pdf

Distribution of Plans, Participants, and Assets,
by Type of Plan and Number of Participants, 2020

	Plan Count Single Employer Plans			Participant Count (thousands) Single Employer Plans			Assets (millions) Single Employer Plans		
	Total	DB	DC	Total	DB	DC	Total	DB	DC
Total	739,381	45,032	694,349	119,844	19,814	100,029	$10,479,148	$2,691,972	$7,787,176
None or Not Reported	29,685	3,612	26,073	—	—	—	7,750	5,760	1,990
2–9	253,437	22,346	231,091	1,290	104	1,187	208,625	28,105	180,520
10–24	184,727	8,661	176,066	2,883	129	2,754	260,417	14,485	245,933
25–49	107,056	2,921	104,135	3,740	100	3,640	266,503	8,486	258,017
50–99	75,575	2,003	73,572	5,296	140	5,156	332,395	12,560	319,835
100–249	46,686	1,656	45,030	7,165	272	6,893	441,550	31,842	409,708
250–499	19,170	1,033	18,137	6,687	367	6,320	418,466	42,186	376,280
500–999	10,349	844	9,505	7,191	600	6,591	481,174	82,753	398,422
1,000–2,499	6,913	838	6,075	10,672	1,341	9,331	802,923	161,710	641,213
2,500–4,999	2,700	476	2,223	9,431	1,685	7,746	836,238	209,402	626,836
5,000–9,999	1,463	257	1,206	10,115	1,789	8,325	945,865	230,642	715,223
10,000–19,999	868	197	671	12,091	2,764	9,327	1,158,652	363,399	795,253
20,000–49,999	539	125	414	16,507	3,816	12,691	1,779,637	526,792	1,252,846
50,000 or More	211	62	149	26,776	6,706	20,070	2,538,952	973,851	1,565,101

Percent Conversion

	Plan Count Single Employer Plans			Participant Count Single Employer Plans			Assets Single Employer Plans		
	Total	DB	DC	Total	DB	DC	Total	DB	DC
Total	100%	6%	94%	100%	17%	83%	100%	26%	74%
None or Not Reported	4	8	4	—	—	—	0	0	0
2–9	34	50	33	1	1	1	2	1	2
10–24	25	19	25	2	1	3	2	1	3
25–49	14	6	15	3	1	4	3	0	3
50–99	10	4	11	4	1	5	3	0	4
100–249	6	4	6	6	1	7	4	1	5
250–499	3	2	3	6	2	6	4	2	5
500–999	1	2	1	6	3	7	5	3	5
1,000–2,499	1	2	1	9	7	9	8	6	8
2,500–4,999	0	1	0	8	9	8	8	8	8
5,000–9,999	0	1	0	8	9	8	9	9	9
10,000–19,999	0	0	0	10	14	9	11	13	10
20,000–49,999	0	0	0	14	19	13	17	20	16
50,000 or More	0	0	0	22	34	20	24	36	20

Source: Private Pension Plan Bulletin, Abstract of 2020 Form 5500 Annual Reports,
https://www.dol.gov/sites/dolgov/files/EBSA/researchers/statistics/retirement-bulletins/private-pension-plan-bulletins-abstract-2020.pdf

- The percentage of civilian workers participating in any retirement plan was 52 percent in 2022, while 48 percent participated in a DC plan.[6]

- The number of taxpayers participating in an individual retirement account (IRA) in 2019 was 62.8 million.[7]

- 12.4 percent of all families owned an IRA and any type of DC plan in 2019, whereas 33.1 percent of families with any type of DC plan also had an IRA.[8]

401(k) Account Balances[9]

- The average 401(k) balance at the end of 2020 was $87,040. The median was $17,961.

401(k) Plan Account Balances Increase With Participant Age and Tenure
Average 401(k) plan account balance by participant age and tenure, 2020

Age Group	Years of Tenure					
	0 to 2	>2 to 5	>5 to 10	>10 to 20	>20 to 30	>30
20s	$5,667	$13,579	$21,865			
30s	13,690	26,386	49,311	$79,172		
40s	24,986	42,967	76,091	140,203	$198,711	
50s	38,620	58,776	94,806	162,966	279,626	$361,315
60s	59,771	67,945	95,323	140,512	225,259	351,174

Note: The average account balance among all 11.5 million 401(k) plan participants was $87,040; the median account balance was $17,961. Account balances are participant account balances held in 401(k) plans at the participants' current employers and are net of plan loans. Retirement savings held in plans at previous employers or rolled over into IRAs are not included. The tenure variable is generally years working at current employer and thus may overstate years of participation in the 401(k) plan.
Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

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[6] https://www.bls.gov/ncs/ebs/benefits/2022/home.htm
[7] https://www.irs.gov/statistics/soi-tax-stats-accumulation-and-distribution-of-individual-retirement-arrangements
[8] Employee Benefit Research Institute (EBRI) estimates of the 2019 Survey of Consumer Finances
[9] Holden, Sarah, Steven Bass, and Craig Copeland, "401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2020," *EBRI Issue Brief*, no. 576, and *ICI Research Perspective*, vol. 28, no. 11 (November 2022).

Average 401(k) Balance by Number of Plan Participants

401(k) Plan Characteristics by Number of Plan Participants, 2020

Number of Plan Participants	Average Account Balance
1 to 10	$111,135
11 to 25	97,668
26 to 50	89,652
51 to 100	80,455
101 to 250	75,106
251 to 500	74,893
501 to 1,000	71,008
1,001 to 2,500	75,820
2,501 to 5,000	87,670
5,001 to 10,000	92,949
>10,000	95,369
All	**87,040**

Note: The median account balance at year-end 2020 was $17,961.
Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

Average 401(k) Balance by Plan Assets, 2020

Plan Assets	Average Account Balance
$0 to $250,000	$14,155
>$250,000 to $625,000	29,722
>$625,000 to $1,250,000	46,415
>$1,250,000 to $2,500,000	57,268
>$2,500,000 to $6,250,000	69,229
>$6,250,000 to $12,500,000	70,929
>$12,500,000 to $25,000,000	69,187
>$25,000,000 to $62,500,000	71,384
>$62,500,000 to $125,000,000	72,082
>$125,000,000 to $250,000,000	70,398
>$250,000,000	109,263
All	**87,040**

Note: The median account balance at year-end 2020 was $17,961.
Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

401(k) Plan Allocation Trends

Average Asset Allocation of 401(k) Plan Accounts by Participant Age
Percentage of account balances,[1] 2020

Age Group	Equity Funds	Balanced funds		Bond Funds	Money Funds	GICs[3,4] and Other Stable Value Funds	Company Stock[3]	Other	Unknown	Memo: Equities[5]
		Target Date Funds[2,3]	Non-Target Date Balanced Funds							
20s	33.5	50.2	5.5	4.9	0.3	1.7	0.9	1.3	1.4	84.3
30s	38.1	44.0	4.5	5.3	0.5	2.2	2.0	1.9	0.9	82.9
40s	45.9	32.4	2.4	7.1	0.7	3.4	3.7	2.4	1.0	76.7
50s	43.4	28.4	2.9	9.1	0.9	5.8	4.4	2.5	0.9	66.2
60s	37.8	28.2	3.7	11.2	1.3	8.4	3.6	2.8	1.0	56.2
All	41.8	31.0	3.7	8.7	0.9	5.6	3.7	2.5	1.0	68.5

[1]Percentages are dollar-weighted averages.

[2]A target date fund typically rebalances its portfolio to become less focused on growth and more focused on income as it approaches and passes the target date of the fund, which is usually included in the fund's name.

[3]Not all participants are offered this investment option (see Figure A7).

[4]GICs are guaranteed investment contracts.

[5]Equities include equity funds, company stock, and the equity portion of balanced funds.

Note: Funds include mutual funds, bank collective trusts, life insurance separate accounts, and any pooled investment product primarily invested in the security indicated.

Source: Tabulations from EBRI/ICI Participant-Directed Retirement Plan Data Collection Project

Job Tenure and Defined Contribution Portability

- The median tenure of wage and salary workers ages 20 and older was 4.8 years in 2022. When examining tenure by gender and age cohort among older wage and salary workers (ages 45–64), the oldest female wage and salary workers (ages 60–64) were the most likely to have 10 or more years of tenure in 2022, with 53.5 percent doing so. The youngest female wage and salary workers (ages 45–49) were the least likely to have 10 or more years of tenure, with only 36.1 percent having a job tenure of that length.[10]

Point-of-Retirement Trends

- In an examination of job terminations from 2008 to 2017, 22 percent of people ages 60 or older kept their entire balance in the plan, 34 percent rolled their money over to another vehicle, 31 percent cashed out, and 14 percent had a combination of activities (e.g., partial distribution).[11]

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[10] Copeland, Craig, "Trends in Employee Tenure, 1983–2022," *EBRI Issue Brief*, no. 578 (Employee Benefit Research Institute, January 19, 2023).

[11] https://www.napa-net.org/sites/napa-net.org/files/Alight_distribution_in_DC_plans_2019.pdf

- Because people with small balances are most likely to cash out, a different picture emerges when examining this on an asset-weighted basis: 38 percent of funds stayed in the plan, 48 percent were rolled over, and 14 percent got cashed out.[12]

- The median age of the owners of IRAs receiving a rollover in 2017 was 48.0, meaning that many are rolling their assets over well ahead of retirement.[13]

Labor Force Participation Trends

- The labor force participation rates and the percentage of employed U.S. civilians decreased in 2020 across all genders, ages, and races/ethnicities.[14]

- Still, Black Americans stood out as being particularly hard hit during 2020: Black American males and females had the largest percentage decline in the number employed from 2019 to 2020.[15]

- Female Hispanic Americans in 2020 had a similarly large percentage decline in their labor force participation rate compared with that of female Black Americans.[16]

- While the decline in the number of employed males in 2020 was slightly larger than that of females, the percentage reduction in the number employed was larger for females.[17]

- Overall, the age/gender distribution of the labor force was nearly identical between 2019 and 2020. There were only two changes of more than 0.1 percentage points in this distribution: for females ages 25–34 and males ages 35–44.[18]

- The age/gender distribution of those employed showed more changes than the labor force, but the changes were still modest: Those ages 55 or older and females were most negatively impacted in 2020.[19]

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[12] https://www.napa-net.org/sites/napa-net.org/files/Alight_distribution_in_DC_plans 2019.pdf
[13] EBRI IRA Database
[14] https://www.ebri.org/publications/research-publications/issue-briefs/content/labor-force-participation-and-the-pandemic-making-sense-of-the-changes
[15] https://www.ebri.org/publications/research-publications/issue-briefs/content/labor-force-participation-and-the-pandemic-making-sense-of-the-changes
[16] https://www.ebri.org/publications/research-publications/issue-briefs/content/labor-force-participation-and-the-pandemic-making-sense-of-the-changes
[17] https://www.ebri.org/publications/research-publications/issue-briefs/content/labor-force-participation-and-the-pandemic-making-sense-of-the-changes
[18] https://www.ebri.org/publications/research-publications/issue-briefs/content/labor-force-participation-and-the-pandemic-making-sense-of-the-changes
[19] https://www.ebri.org/publications/research-publications/issue-briefs/content/labor-force-participation-and-the-pandemic-making-sense-of-the-changes