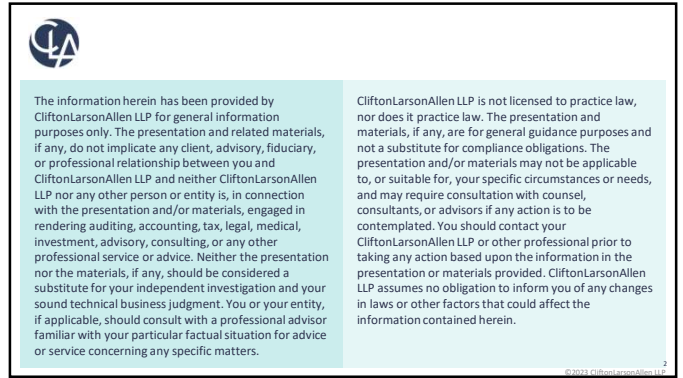
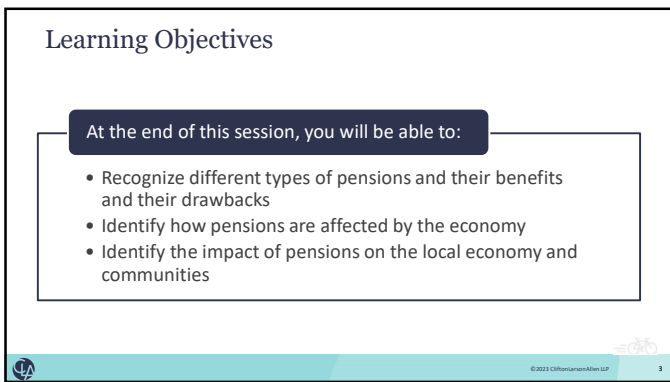




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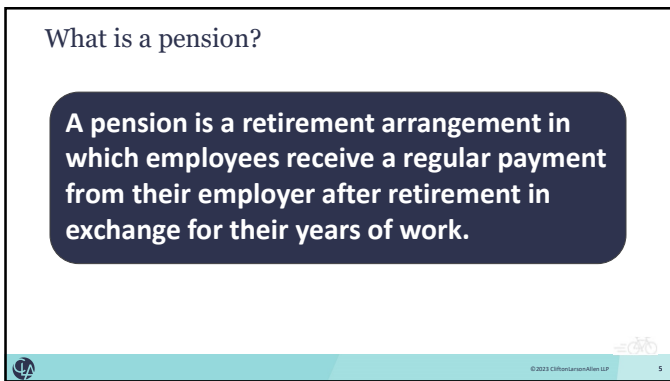
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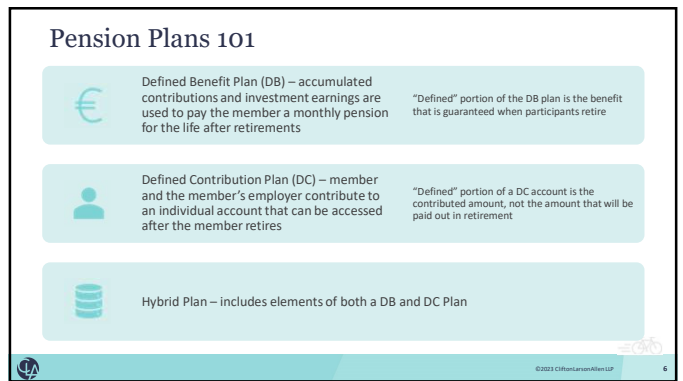
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Source: NASRA

## Pension Plan Design

Plan design refers to the framework of a retirement plan, defined by such characteristics as participation requirements (mandatory or optional); required contributions by the employer and employees; vesting requirements; benefit levels; methods of benefit distribution; and others.

A 2008 study by the National Institute on Retirement Security, updated in 2014, found that defined benefit plans are 48% more cost efficient than defined contribution plans when measured at any level of retirement benefit.

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## Plan Design Changes

- Nearly every state has made changes in recent years to their retirement plans.
- DB plans remain the most common for government retirement plans, but hybrid plans are gaining popularity
- There is a lot of variety of retirement plan design out there

*No single design will address the cost and risk factors of every state or local government*


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## Advantages and Disadvantages for DB Plans



### Advantages

- Provides guaranteed lifetime income to retirees
- Motivates employees to continue in service
- Outside service credit may be recognized
- Cost-of-living protection after retirement may be provided
- Investment management fees typically lower than DC plan




### Disadvantages

- Not designed with portability in mind
- Difficult for employees to understand how much the employer is contributing on their behalf


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## Advantages and Disadvantages for DC Plans



### Advantages

- Contribution amount is easily determined and usually constant from year to year
- Account balances may be transferred to next retirement plan at termination
- Opportunity for higher benefits if financial experience is superior






### Disadvantages

- Financial risk of outliving accumulated assets
- Financial risk of poor investment return
- Retirees are more likely to take a lump-sum benefit than a periodic payment for life

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Source: National Institute on Retirement Security

## DC vs DB Investment Cost

	Average cost of DB plan as a % of payroll: 16.3%	
	Average cost of DC plan as a % of payroll: 23.0%	Increase related to less balanced portfolio and no longevity risk pooling
	Average cost of individually directed DC plan as a % of payroll: 31.3%	Even higher increase related to lower returns/higher fees without same economies of scale

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## Key Economic Factors

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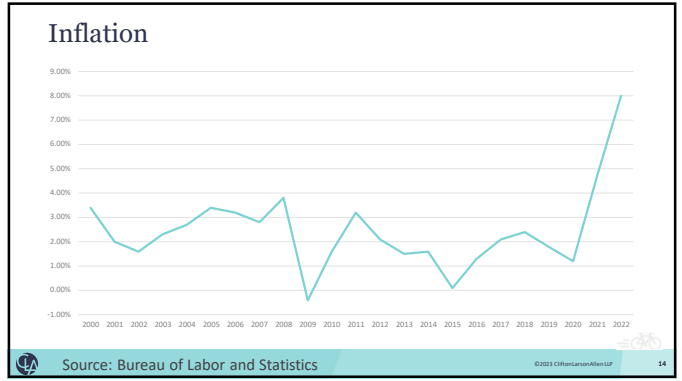
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### 2023 Economic Outlook Predictions

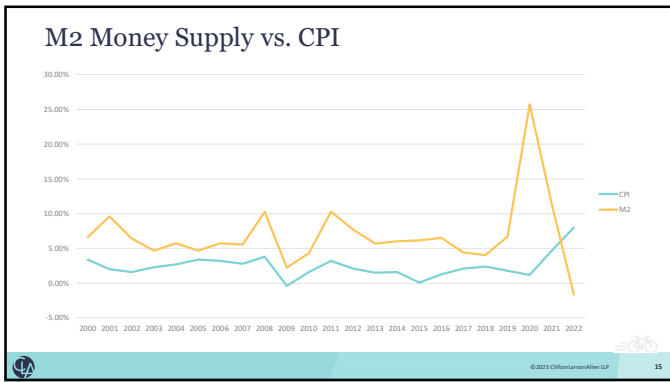
- Looming mild recession in U.S. and Euro area
  - China notable exception with reopening of its economy
- Persistently restrictive monetary policy
- May increase focus on investment in bonds over stocks
- Investors to remain cautious on risk assets

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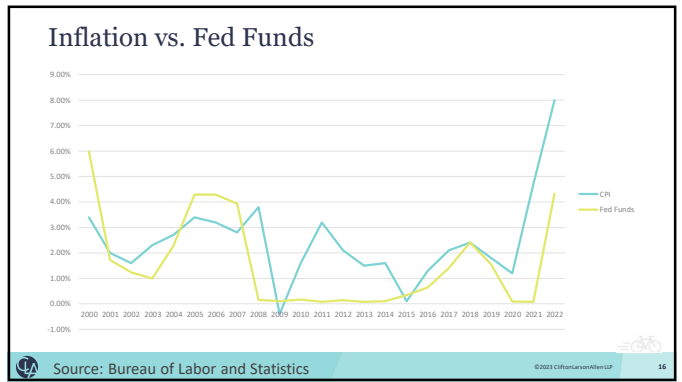
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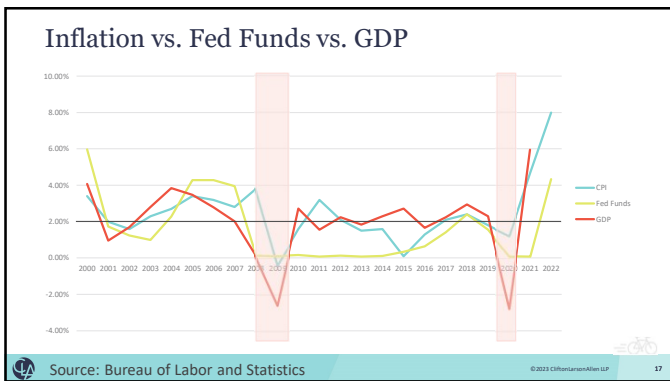
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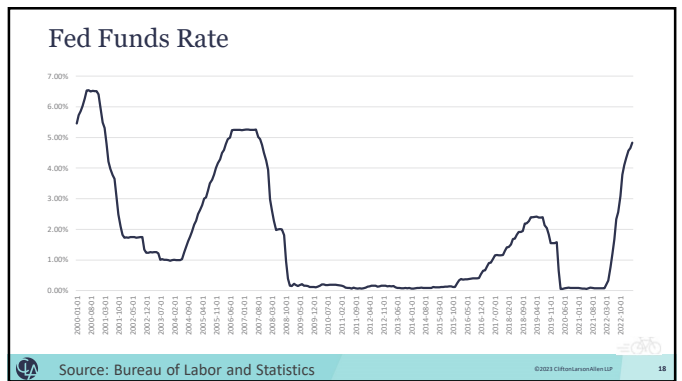
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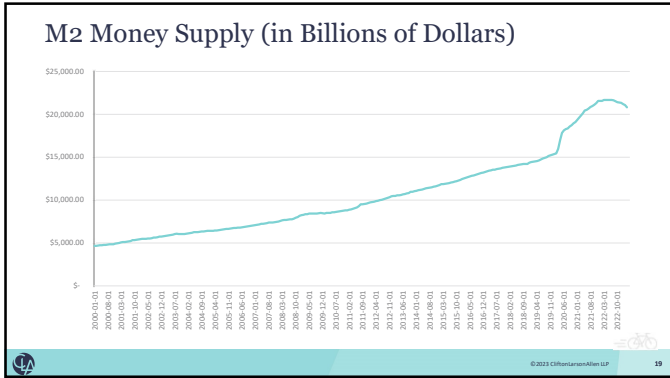
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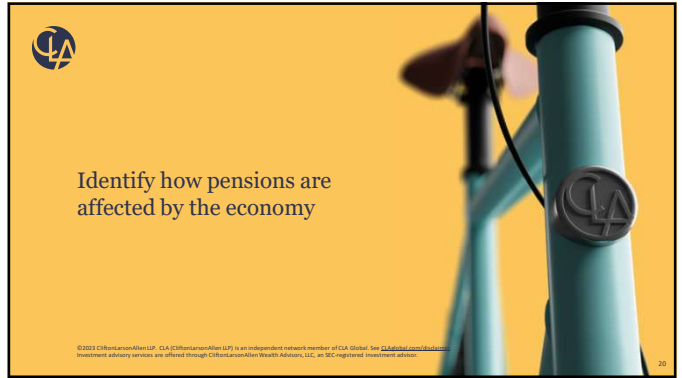
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### Key Economy Impacts

- Pressure to keep contribution rates down from employers and state lawmakers in times of financial pressure
- Large increase in baby boomer retirements adding strain to pension operations and payments
- High inflation rates creating pressure to approve COLA's for retirees
- 2008 recession sparked a shift toward pension reform

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### Pension Reform

Source: NASRA

- To accommodate changing needs and fiscal landscapes, modifications to retirement plan designs and financing structures are necessary

States that increased employee contribution rates since 2009

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Source: NASRA

### Pension Reform (continued)

States that reduced pension benefits since 2009

NASRA

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### Pension Reform (continued)

States that reduced automatic COLAs since 2009

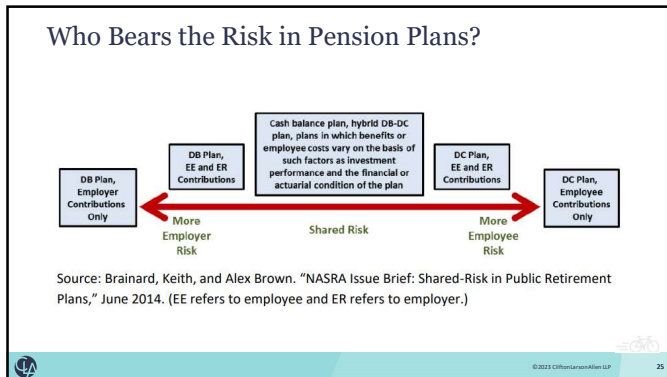
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Source: NASRA

- Affecting New Hires Only
- Affecting Current Employees & New Hires
- Affecting Retirees

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### Hybrid Plans

Hybrid plans are a form of risk-sharing plan design that allocate risk between employers and employees. Public retirement plan risk exhibits primarily in three forms: investment risk, longevity risk, and inflation risk.

€ The term hybrid generally refers to plans that combine elements of both defined benefit and defined contribution plans to generate participants' benefit upon retirement.

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### Common hybrid plan designs

- Cash balance plans
- Defined benefit-defined contribution (DB-DC) combination plans

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### Cash Balance Plans

- Elements of traditional pensions and individual accounts
- Usually, employees on a "notional" account where both member and employer contributions are deposited
  - Accounts are pooled for investment purposes
- Accounts accrue an interest rate specified by the plan (not lower than zero, and typically between four and seven percent)
- Future cash balance is somewhat uncertain, as it depends partly on future investment performance.

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### Cash Balance Plans (continued)

- After retirement, depending on the plan design, any portion of the member's notional cash balance account can be converted into an annuity, which is a fixed monthly benefit guaranteed for life.
- The annuity value is dependent on the size of the cash balance account and the discount rate used
- Retirees in payment status may be eligible for benefit increases (COLA's) based on plan's investment performance.

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### DB-DC Combination Plans

- Two accounts:
  - One traditional DB plan account typically funded by employer contributions
  - One individual defined contribution retirement savings account typically funded by member contributions:
    - Usually mandatory or default participation
    - Typically, more strict rules around member contribution rate changes than what we see for 401(k)'s
    - At retirement, this member contribution account could be used to purchase a higher annuity or is more flexible on withdrawal at retirement than a traditional DB account

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### Impacts of Pensions on Retired State Employee Workforce

- Stable income for elderly population
- 90% of workers retire to their home state on average
- Stable inflows back to the local economy
- Assists with keeping elderly above the poverty line
- Allows for family planning to support descendants depending on plan options selected

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### Economic Effects of Pensions


- Recent studies reveal that public pension benefits have positive effects on state and local economies. In 2019, SLG retirement systems in the U.S. distributed \$155 billion more in benefits than they received in taxpayer-funded contributions. Personal income from SLG pensions exceeds the personal income derived from the nation’s farming, fishing, logging, and hotel/lodging industries combined.

Source: NASRA

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### Pension Plan Revenues and Expenses



**Funding sources:**

- Contributions
  - Employee
  - Employer
- Investment earnings



**Pension costs:**

- Benefit Payments
- Investment management fees
- Administrative expenses

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### Risk Assessment

- Public pension plans manage a variety of risks, including those relating to investments, operational issues, and the funding or financing of pension benefits
  - Stress testing is an analysis or simulation designed to measure the effect on the plan of various projected investment and actuarial events
  - Sensitivity testing examines the effect on the plan of different actuarial assumptions and methods

Source: NASRA

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### Actuarial Assumptions


- Actuarial assumptions are projections of future events that affect the cost and funding condition of a pension plan
  - Demographic assumptions – i.e. rate of retirement and mortality, frequency of turnover, rates of marriage and divorce, and age
  - Economic assumptions – i.e. inflation, wage growth, and the investment return on the plan’s assets

Source: NASRA

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### System Actuarial Policies and Practices



**Actuarial Valuation** – estimate of a plan’s financial position at a specific point in time

Most systems must conduct an actuarial valuation on an annual basis

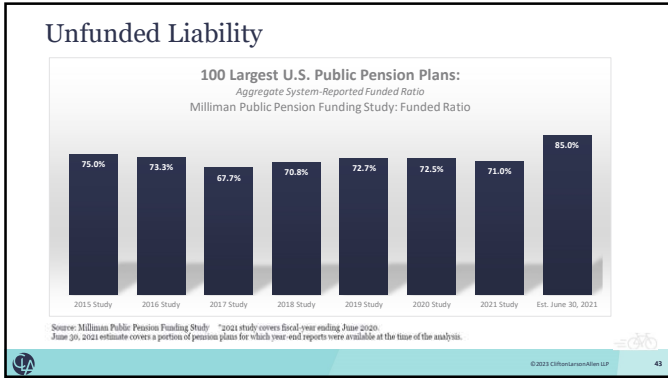


**Experience Study** – looks back at the actual experience of the plan compared to demographic and economic assumptions and looks forward using demographic, economic, and capital market projections

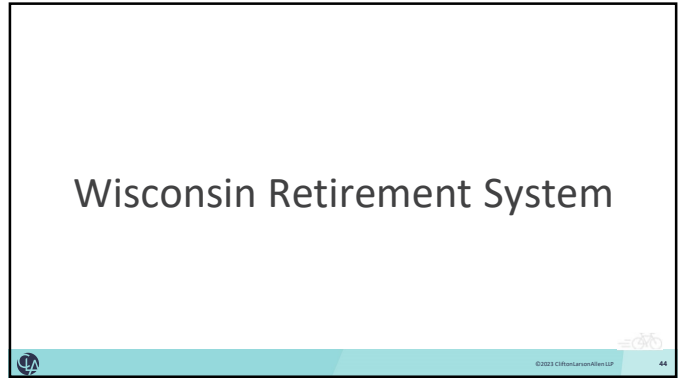
Most systems conduct an experience study every five-years

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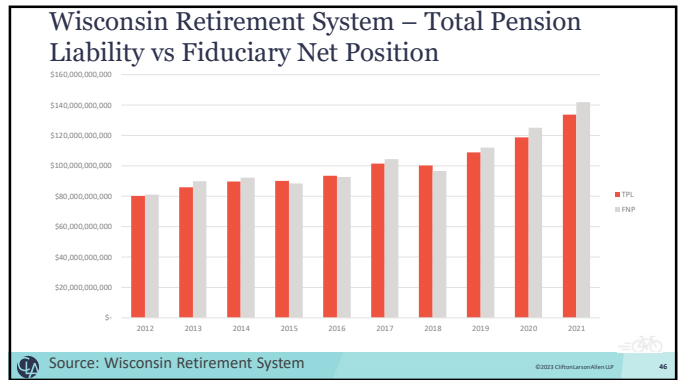


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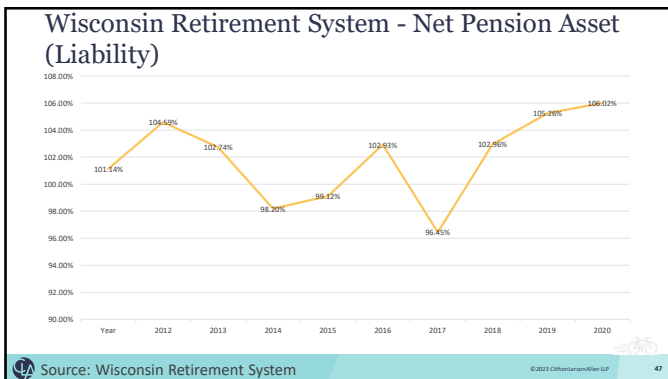
### Wisconsin Retirement System – Significant Methods and Assumptions

	2021	2020	2019	2018	2017	2016	2015	2014	2013
Valuation Date:	December 31, 2019	December 31, 2018	December 31, 2017	December 31, 2016	December 31, 2015	December 31, 2014	December 31, 2013	December 31, 2012	December 31, 2011
Actuarial Cost Method:	Frozen Entry Age	Frozen Entry Age	Frozen Entry Age	Frozen Entry Age	Frozen Entry Age	Frozen Entry Age	Frozen Entry Age	Frozen Entry Age	Frozen Entry Age
Amortization Method:	Level Percent of Payroll-Closed Amortization Period	Level Percent of Payroll-Closed Amortization Period	Level Percent of Payroll-Closed Amortization Period	Level Percent of Payroll-Closed Amortization Period	Level Percent of Payroll-Closed Amortization Period	Level Percent of Payroll-Closed Amortization Period	Level Percent of Payroll-Closed Amortization Period	Level Percent of Payroll-Closed Amortization Period	Level Percent of Payroll-Closed Amortization Period
Amortization Period:	30 Year closed from date of participation in WRS	30 Year closed from date of participation in WRS	30 Year closed from date of participation in WRS	30 Year closed from date of participation in WRS	30 Year closed from date of participation in WRS	30 Year closed from date of participation in WRS	30 Year closed from date of participation in WRS	30 Year closed from date of participation in WRS	30 Year closed from date of participation in WRS
Asset Valuation Method:	Five Year Smoothed Market (Closed)	Five Year Smoothed Market (Closed)	Five Year Smoothed Market (Closed)	Five Year Smoothed Market (Closed)	Five Year Smoothed Market (Closed)	Five Year Smoothed Market (Closed)	Five Year Smoothed Market (Closed)	Five Year Smoothed Market (Closed)	Five Year Smoothed Market (Closed)
Actuarial Assumptions:									
Net Investment Rate of Return:	5.4%	5.4%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%
Weighted based on assumed rate for:									
Pre-retirement:	7.0%	7.0%	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%
Post-retirement:	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Salary Increases:									
Wage Inflation:	3.0%	3.0%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
Security Benefit:	0.1%-0.6%	0.1%-0.6%	0.1%-0.6%	0.1%-0.6%	0.1%-0.6%	0.1%-0.6%	0.1%-0.6%	0.1%-0.6%	0.1%-0.6%
Post-retirement Benefit Adjustments*:	1.9%	1.9%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%

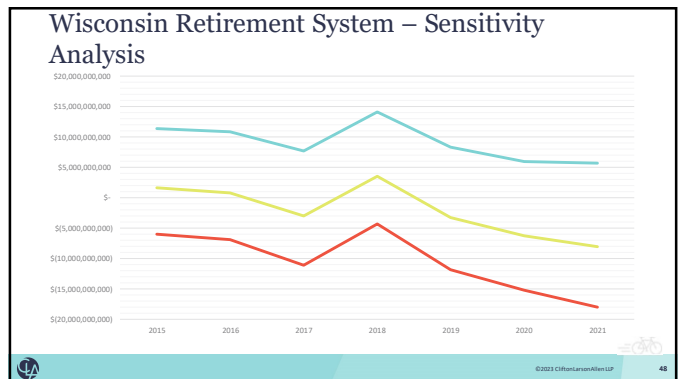
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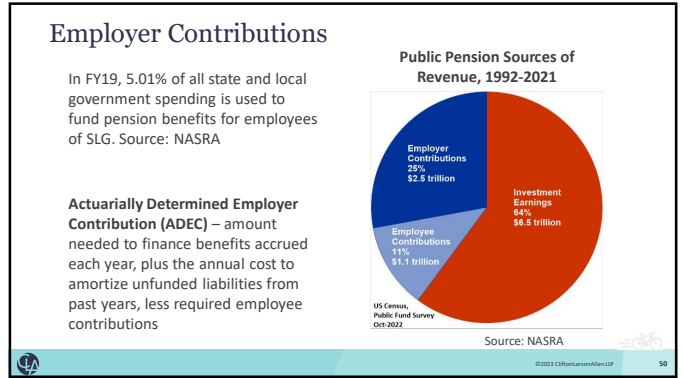


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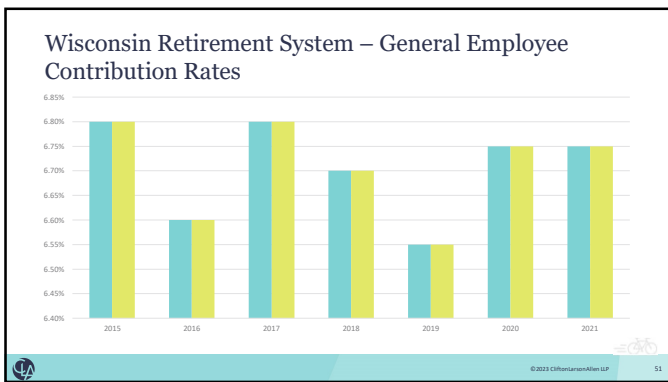




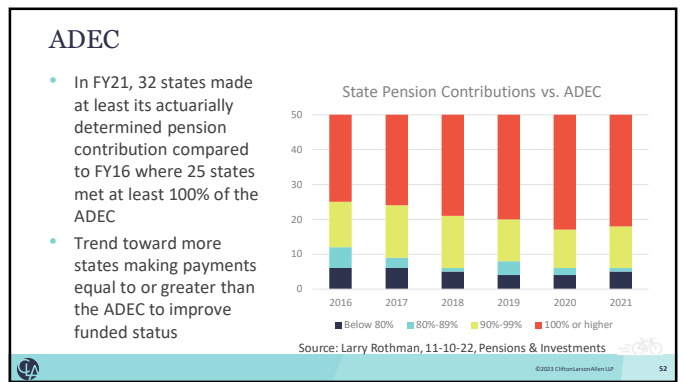
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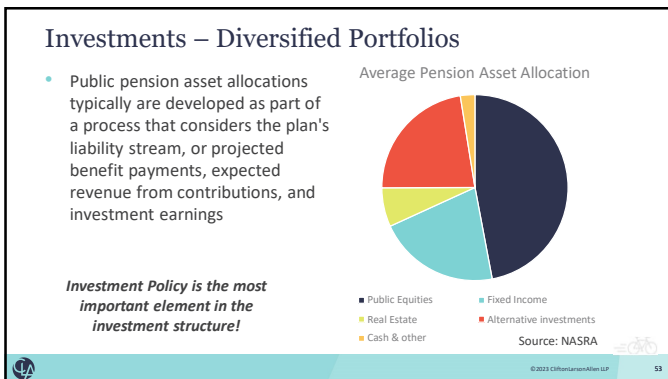
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