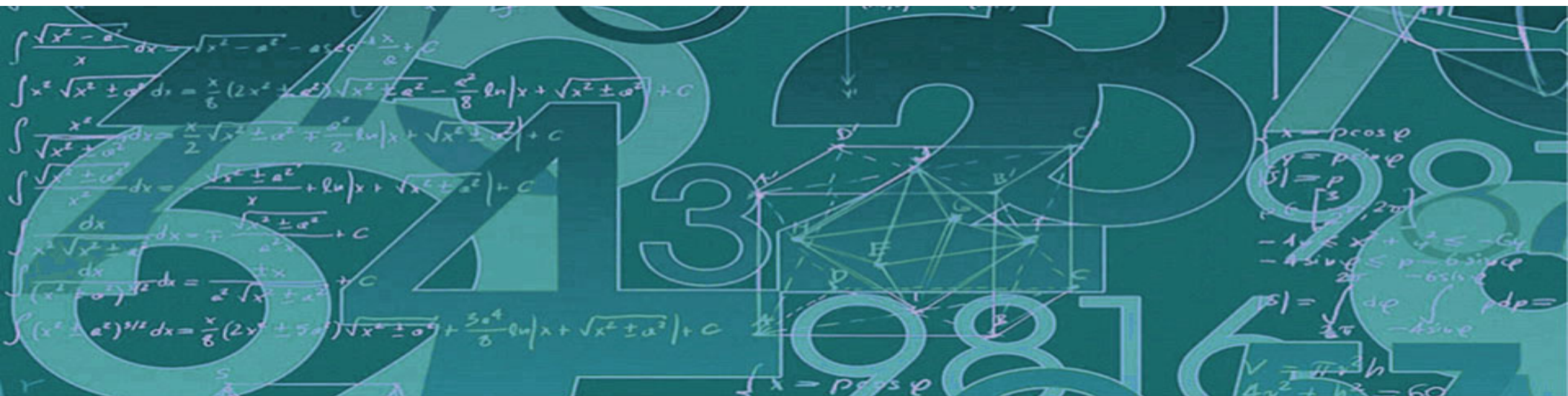


$$\int x^2 \sqrt{x^2 \pm a^2} dx = \frac{x}{8} (2x^2 \pm a^2) \sqrt{x^2 \pm a^2} - \frac{a^2}{8} \ln|x + \sqrt{x^2 \pm a^2}| + C$$

Pension Funding for Washington State Retirement Plans



Office of the State Actuary
"Supporting financial security for generations."

Topics

- How are pension plans funded?
- How do actuaries determine pension plan costs?
 - What is an actuarial cost method?
- What are the targets or goals when funding pension plans?



Pension Plans are Funded by Contributions and Investment Earnings

- Contributions are collected from plan participants and their employer (local employers, state)
- Contributions are held in a trust fund and accumulate over time through investment earnings on those contributions
 - The Washington State Investment Board manages the trust fund and invests the assets
- Goal is to have enough assets accumulated to pay all benefits from the plan when they come due

Key Components for Determining Contribution Rates

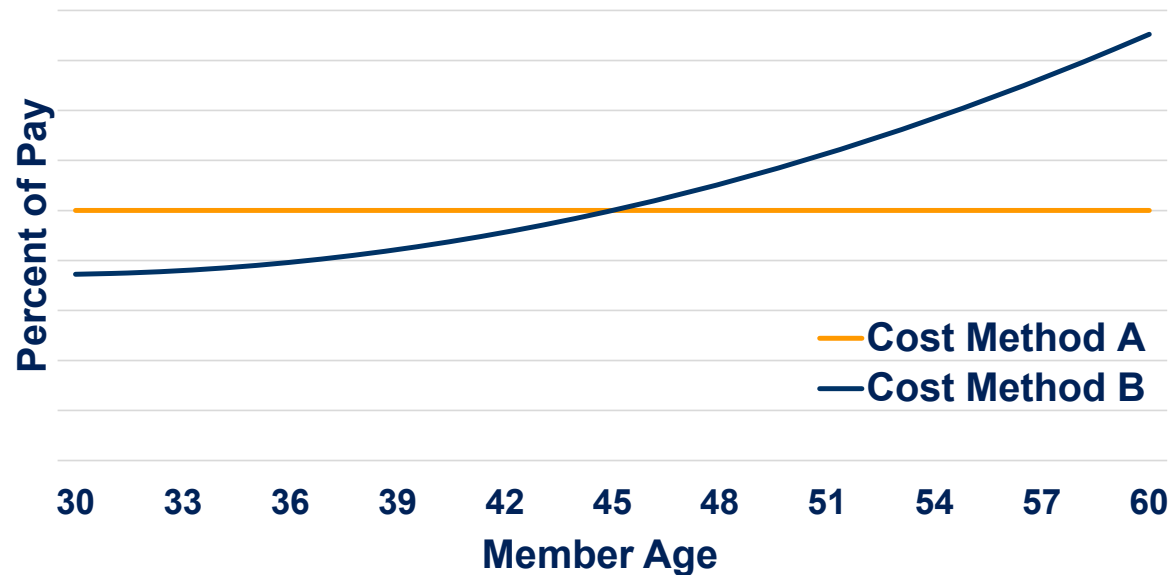
- The amount required by an actuarial cost method to achieve full funding of the plan
 - Developed by actuaries to provide systematic pension plan funding
 - Several cost methods exist and are acceptable for funding purposes
 - Pension plan funding has different rules than financial reporting
 - Adopted funding policies
 - Policies that modify the contributions determined by the actuarial cost method to meet specific needs/goals of the plan sponsor
-
- In combination, these components determine the amount and timing of member and employer contributions



What Is an Actuarial Cost Method?

- A procedure that allocates the cost of a pension plan over members' working careers
- Different actuarial cost methods can vary in how quickly they fund the plan
 - Higher contribution rates earlier or later in a member's career
 - More stable contribution rates over the member's career
 - Pay for unexpected changes in plan costs over shorter or longer periods
- Goal is to produce contribution rates that will fully fund the plan
 - Sufficient assets available when benefit payments are due
 - Relies on assumptions reasonably modeling actual plan experience

Contribution Rates Under Different Actuarial Cost Methods

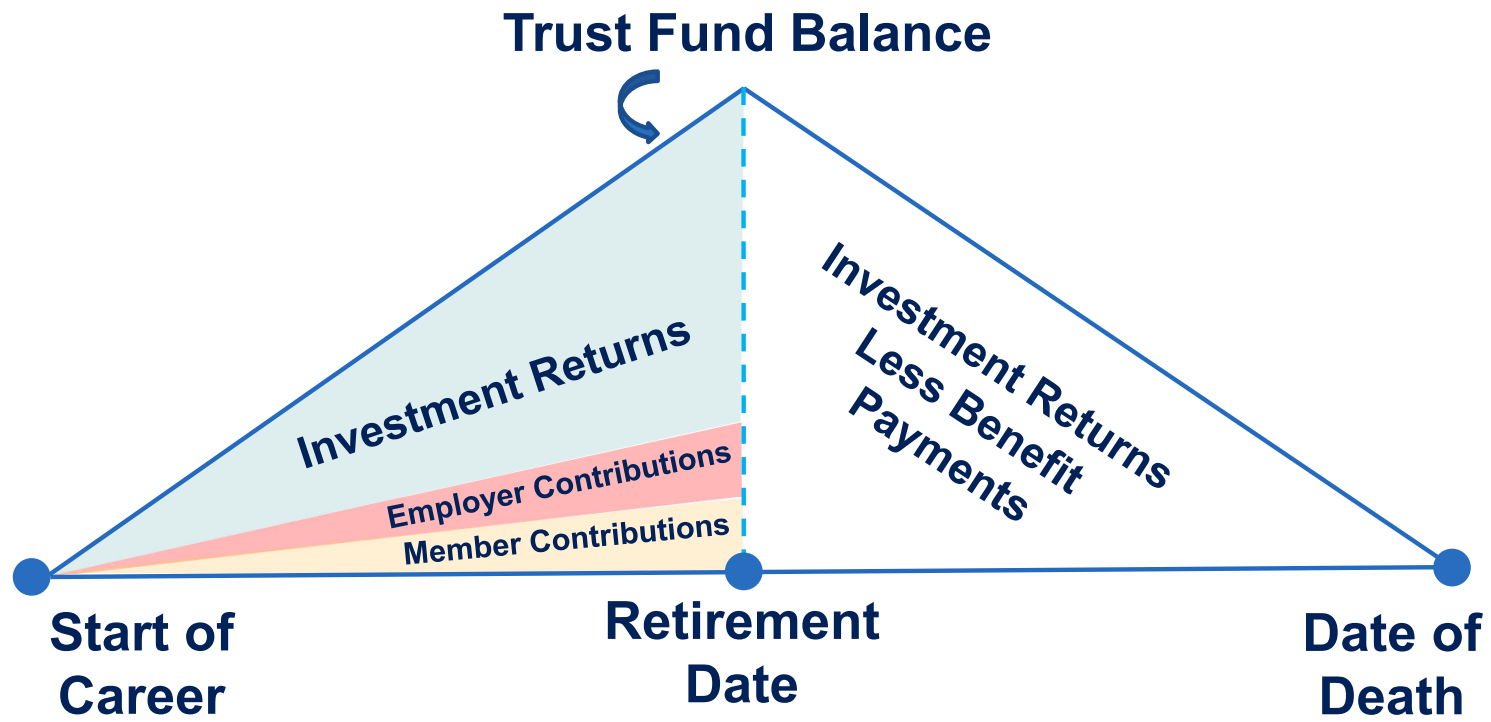


- Cost Method A requires stable contributions to fund the plan
- Cost Method B has lower contributions early in a member's career and higher contributions as they approach retirement
- Both methods achieve the same goal: Enough assets when payments are due

Goals of an Actuarial Cost Method and Pension Funding

- Accumulate enough assets over a member's working career to pay for all benefits that member will receive during their retirement
- Assets include member and employer contributions to the trust fund plus the investment earnings on those contributions
- Assumptions are required to determine how much must be contributed each year such as
 - When will a member retire?
 - How much will their salary grow during their career?
 - How long will they live in retirement (how many benefit payments will they receive)?
 - How much will the contributions in the trust fund grow based on investment earnings?

Pension Funding Goal for Each Plan Member



What Happens if Experience Is Different Than Expected?

- Future contributions will be adjusted to make up for the difference
 - This difference is called an actuarial gain or actuarial loss
- Example A: Investment earnings were higher than expected
 - The size of the trust fund balance is larger
 - To keep the trust fund balance equal to what is needed in retirement, member and employer contributions will decrease
- Example B: Members live longer than expected
 - More money is needed at retirement to pay more pension payments
 - To increase the assets in the trust fund, active member and employer contributions will increase

How Are Contributions Adjusted for Experience Gains or Losses?

- Each actuarial cost method calculates contribution rates to include both past and future costs
 - Past costs: Adjustments for experience that was different than expected
 - Future costs: The cost of next year's benefits all active members are expected to earn
-
- Both past and future costs may also include adjustments if changes are made to the plan's benefits or the actuarial assumptions
 - Example: If the salary growth assumption changes it impacts the expected pension benefit amount the member will receive for all their earned service (both past and future)

What Actuarial Cost Methods Are Used for Funding Public Pensions?

- Entry Age Normal (EAN) Cost Method
 - Calculates two separate contribution rates to fund past and future costs
 - Past costs: Unfunded Actuarial Accrued Liability (UAAL) contribution rate
 - Future costs: Normal Cost contribution rate
- Aggregate Cost Method
 - Calculates one contribution rate that includes both the past and future costs



The EAN Actuarial Cost Method

- Used by most public pension plans in the country
- Method required for financial reporting under [Governmental Accounting Standards Board](#)
- Total contribution rate required to achieve full funding under this method is the sum of two components:
 - Normal cost: Cost of one additional year of earned benefits
 - UAAL cost: Past costs that are different than amount that was paid
 - Unfunded past costs are amortized (spread) over a certain number of years in order to make the plan whole
- EAN Method can seek intergenerational equity through the amortization policy for UAAL cost
 - Example: Amortize UAAL over the expected future working years of current members

The Aggregate Actuarial Cost Method

- Used for funding all Washington State retirement plans that are open to new hires ([RCW 41.45.060](#))
- One contribution rate that rolls all plan costs together
- No UAAL (or surplus) amount separately identified and requiring an amortization policy
- Seeks intergenerational equity by spreading all costs (past + future) over the expected future working years of current members
 - Contribution rate calculated by taking all costs and dividing by the value of future salaries of all current members



Funding Policies Help Achieve Specific Goals

- May be used with the plan's actuarial cost method to address
 - Adequacy, stability, and affordability of contribution rates
 - Risk management
- Washington State has pension funding goals set in statute ([RCW 41.45.010](#))
 - Fully fund the Plans 2 and 3 as provided by law
 - Establish long-term employer contribution rates that remain a relatively predictable proportion of future state budgets
 - [Asset smoothing](#) and [minimum contribution rates](#)
 - [Intergenerational equity](#) in Plans 2 and 3
 - Use of [aggregate funding method](#)

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Thank You

