

INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS



How to Read and Understand Your Pension Systems Actuarial Report

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January 31, 2018



Today we'll discuss:

- **Financing: How much should be put into the pension fund?**
 - What's GASB got to do with that?
 - Who else decides what should go in?
 - What's the right number?
- **Examples of Actuarial Reports**
 - Statewide vs Local
 - Actuarially Funded vs Statutorily Funded
- **Critical Actuarial Assumptions and Methods**
 - Return on Pension Plan Assets
 - Mortality Table and Improvement Projection
 - Amortization Policy



Today we'll discuss:

- General approaches
 - Pay-as-you-go (PAYGO)
 - Actuarially advanced funded
- But some systems use statutory contribution rates
 - For example, Social Security uses fixed rates which have exceeded PAYGO until recently
 - Most US pension plans who use statutory rates target them to be close to actuarial advance funding rate
 - Best practice is to use actuarially advanced funding
 - Many system contribution rates are short of actuarial rates



How much should be put into the pension fund?

- What's the point of funding?
 - To build up assets to pay benefits
 - To pay for the cost of workers while they're working
 - To allow investment income, which will save money in the long run



How much should be put into the pension fund?

- GASB is the Government Accounting Standards Board
 - Technically, GASB only governs **ACCOUNTING**
 - But GASB defined ARC – Annual Required **CONTRIBUTION**
 - GASB rules are changing
- So who really governs **CONTRIBUTION**?
 - The Pension System?
 - The Actuary?
 - The Government Employers?
 - No – Generally, it's the Legislature



How much should be put into the pension fund?

- What's the right number?
 - I thought you'd never ask
- Imagine that you're just starting your career
 - You have no pension
 - You're trying to figure out how much to save for retirement
 - The actuarial calculation is very similar to this





How much should I start saving for retirement? – It depends

- How much money will you make?
- Where will you invest it?
- How much will you earn on it?
- When will you retire?
- How long will you live?
- How long will you want the money to last?
- How much will your pay grow each year?
- You'll want to take out more each year as you get older, due to inflation, right?
- What will inflation be?
- You'll probably want enough to withdraw 80% of final pay



Use the Actuarial Model

- Make assumptions; for example:
 - You'll earn 8%
 - You'll retire at 65
 - You'll live to 82
 - Your pay will grow by 5% per year
 - Inflation will be 3%
 - You'll need enough to withdraw 80% of final pay
- Do the math
 - Figure out how much you need to save
 - Adjust each year based on errors in assumptions
discount rate





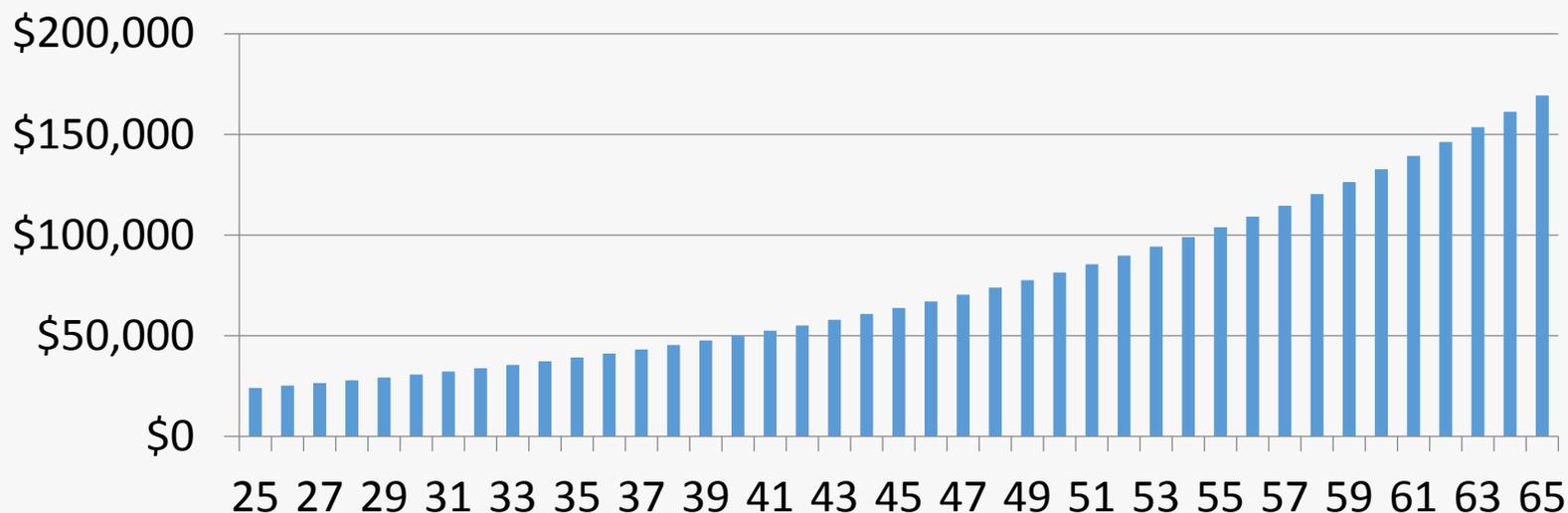
Let's Perform a “mini” Actuarial Valuation

- Imagine you're saving for retirement and have no other plans (except Social Security)
- Your individual demographic data
 - Age 40
 - Earning \$50,000 per year
 - You've been working since age 25
 - \$75,000 in retirement savings so far
 - Plan to retire at 65
 - You want to have 80% income replacement at retirement



Entry Age Actuarial Valuation

- Your pay will be \$161,255 at age 65



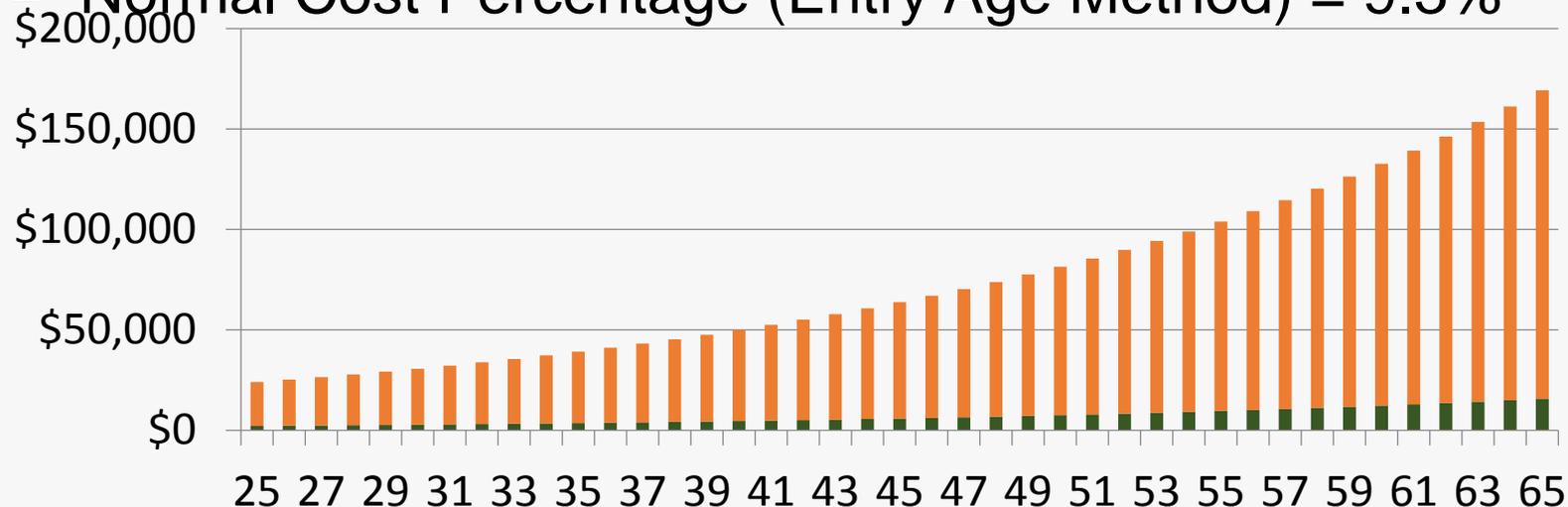
- Social Security will pay you \$36,960 per year (23%)
- You'll need \$1,089,596 saved up to fund 57% (80% total)



Entry Age Actuarial Valuation

- Basic Concept:
 - What contribution should be made each year
 - From “entry age” to “retirement age”
 - So that it accumulates to be enough to pay future benefits

– Normal Cost Percentage (Entry Age Method) = 9.3%





Liabilities

- Present Value of Future Benefits (PVFB)
 - Liability for all expected future benefits
 - Selected funding method does not affect calculation
 - In this example, PVFB is \$159,100 at age 40
 - That would grow to \$1,089,596 by age 65 (at 8% return)
- Normal Cost (NC)
 - Liability for benefits expected to accrue in year of valuation
 - In this example, it's 9.3% of pay, or \$4,628
 - That means that if all actuarial assumptions are met, and 9.3% of pay is invested each year, there will be just enough to pay benefits for your lifetime

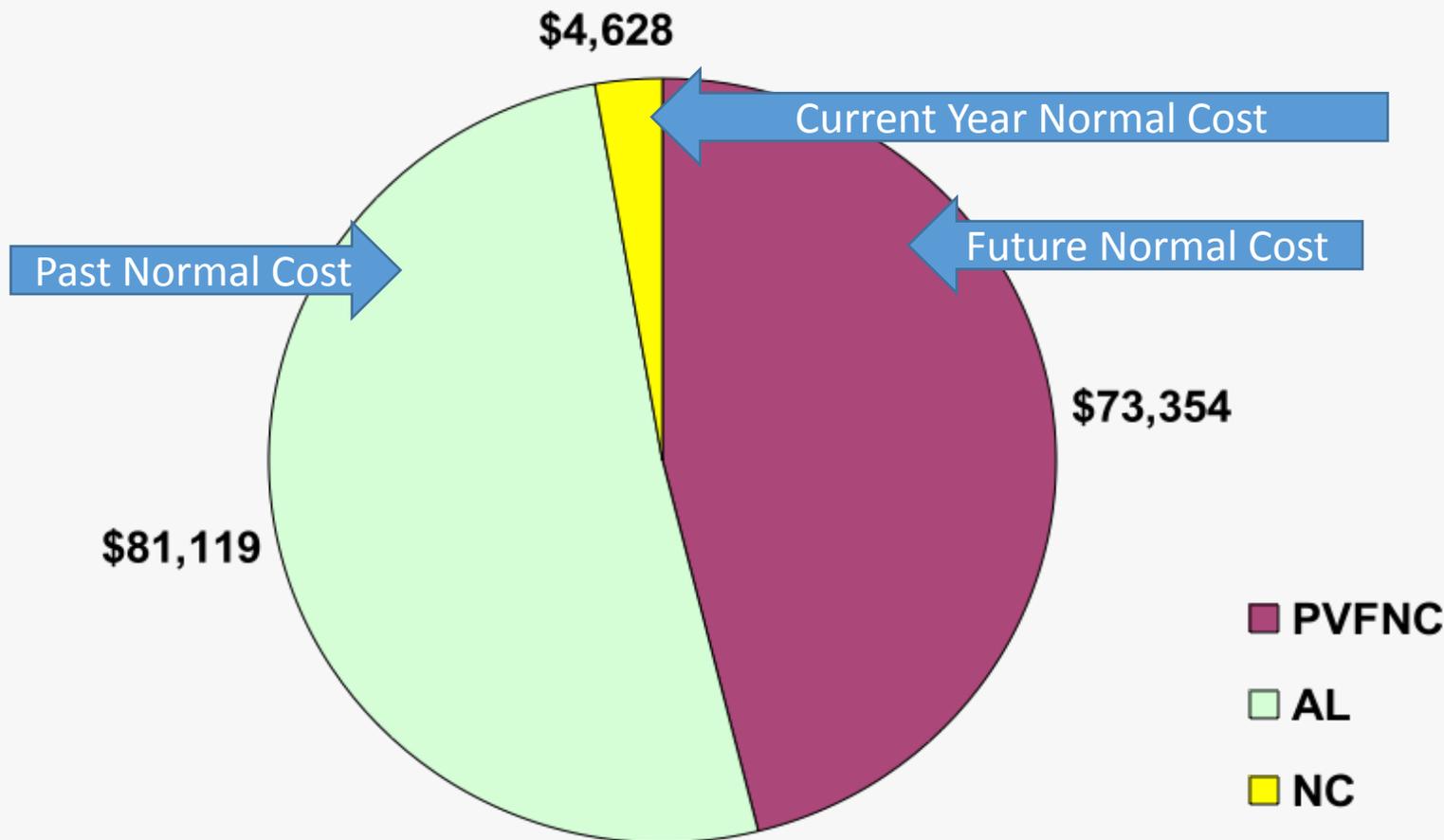


Liabilities

- Past – Actuarial Accrued Liability (AL)
 - Portion of PVFB attributed to prior service
 - In this example, AL is \$81,119
 - This is what the 9.3%'s would have built up to by now if all assumptions had been met
 - I like to think of this as more of a “funding target” than a “liability”
- Present – This Year’s Normal Cost (NC)
- Future – Present Value of Normal Costs (PVFNC)
 - Liability for future benefits not assigned to accrued liability or normal cost
 - Equals PVFB less accrued liability less normal cost
 - In this example, PVFNC is \$73,354

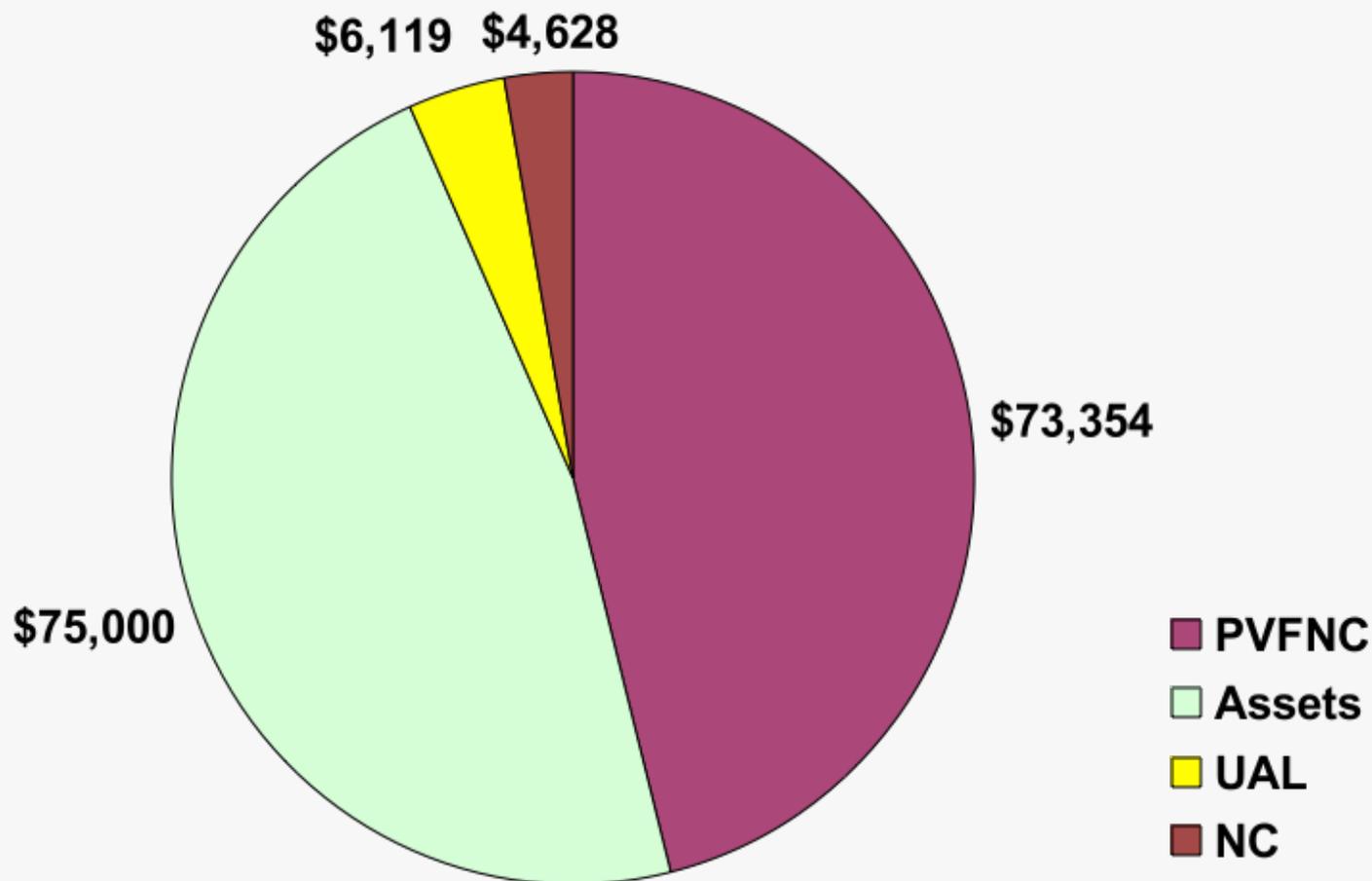


Split of \$ 159,100 PVFNB





Unfunded Liability is the Actuarial Liability minus Assets





Entry Age Actuarial Valuation

- Remember the Actuarial Values:
 - Present Value of Projected Benefits = \$159,100
 - Actuarial Accrued Liability = \$81,119
 - Unfunded Actuarial Accrued Liability = \$6,119
 - Funded Percentage = 92%
 - Normal Cost Percentage (Entry Age Method) = 9.3%
- Amortization of Unfunded Liability
 - Over 25 years
 - Increasing 5% per year
 - Amount is 0.7% of pay
- Total contribution requirement is 10.0% of pay



Actuarial Cost Methods

- Entry Age is the most commonly used actuarial method
- Entry Age is the method specified by GASB
- Some use “Projected Unit Credit” actuarial method
- “Market Value of Liability” is touted by some
 - But rather than considering investment return, MVL is based on bond interest rates



Complete actuarial calculations are much more complex because they consider:

- All potential retirement dates
- Benefits other than retirement, including:
 - Retirement due to age and service (not merit)
 - Coordination with Social Security
 - Special benefits
 - Termination benefits
 - Death benefits
 - Disability benefits
 - Minimum benefits
- Cost of Living adjustments
- Benefit forms
- Service purchase
- Many other nuances



Other Types of Actuarial Studies

- Actuarial Audit
 - <https://legis.wisconsin.gov/lab/reports/15-17full.pdf>
- Actuarial Experience Study
 - <https://www.op-f.org/FILES/investigationdemoecoexperience.pdf>
- Plan Design Change
 - <https://lincoln.ne.gov/city/mayor/boards/pension/20160505-pension-review-committee-report.pdf>
- Asset Liability Modeling
 - <https://www.nctreasurer.com/inv/IAC%20Resources/IACNCRSAssetLiabilityStudyOverview-121613.pdf>
- Comprehensive Annual Financial Report
 - https://employerportal.mersofmich.com/SharePointFormsService/Default.aspx?Publication=CAFR_2015.pdf



Actuarial Valuation Reports

- Usually publicly available
- Provide the essential information regarding funding and funded status
- Does not usually include any potential plan changes
- Does include detailed description of actuarial assumptions and methods
- No consistent format between actuarial firms



Excerpts from Actuarial Valuation Reports

- Chicago Firemen's 2015
 - <http://www.fabf.org/PDF/Financial/ActuarialValuation/GRS12-31-2015.pdf>
- San Bruno CA Safety 2015 (CalPERS)
 - <https://www.calpers.ca.gov/docs/actuarial-reports/2015/san-bruno-city-safety-2015.pdf>



Actuarial Practices – Most Important Consideration

- Two types of actuarial policies
 - Determined by statute
- Best Practice – funding is dictated by the results of the actuarial valuation
- Common alternate practice – funding is at a fixed rate by statute
- Which approach used is fundamental to your strategies



Actuarial Strategies for Bargaining

- Do we want to encourage conservative assumptions and strong funding?
 - Maximizes the likelihood that our pensions will be able to be paid
 - But increases the cost of our pensions to the employer
- Or do we want less conservative assumptions and more flexible funding
 - Helps our employer with costs
 - Minimizes the “sticker shock” of pensions
 - But can result in disastrous funding position



Critical Actuarial Assumption #1 – Expected Return on Plan Assets

- Most common range today is 7% to 8%
- Important component is underlying inflation assumed
 - 2% inflation + 5% real = 7% is more optimistic than
 - 3.5% inflation + 4% real = 8%
- The inflation has a role in a pay-based amortization of unfunded liability



Critical Actuarial Assumption #2 – Mortality and its projected improvement

- Most systems perform a rigorous mortality study of own experience
- Then calibrate this experience to a widely used mortality table
 - With an age adjustment
 - This is usually a good start
- Critical is how they anticipate future mortality improvement
 - Full “generational” projection is most robust
 - Common shortcut is to project to a few years in the future



Critical Actuarial Assumption #3 – Amortization of Unfunded Liability

- Most systems today have unfunded liability which needs to be paid off
- How fast or slow this is paid off impacts balance between security and low-cost. Four decisions shape this:
 1. Amortization period: 5 – 30 years
 2. Is everything amortized over the same period (layers)
 3. Is the period perpetually reset?
 4. Is it “level percent of pay” or “level dollar”



Questions?

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