

# Actuary 101 For SAVVA Meeting

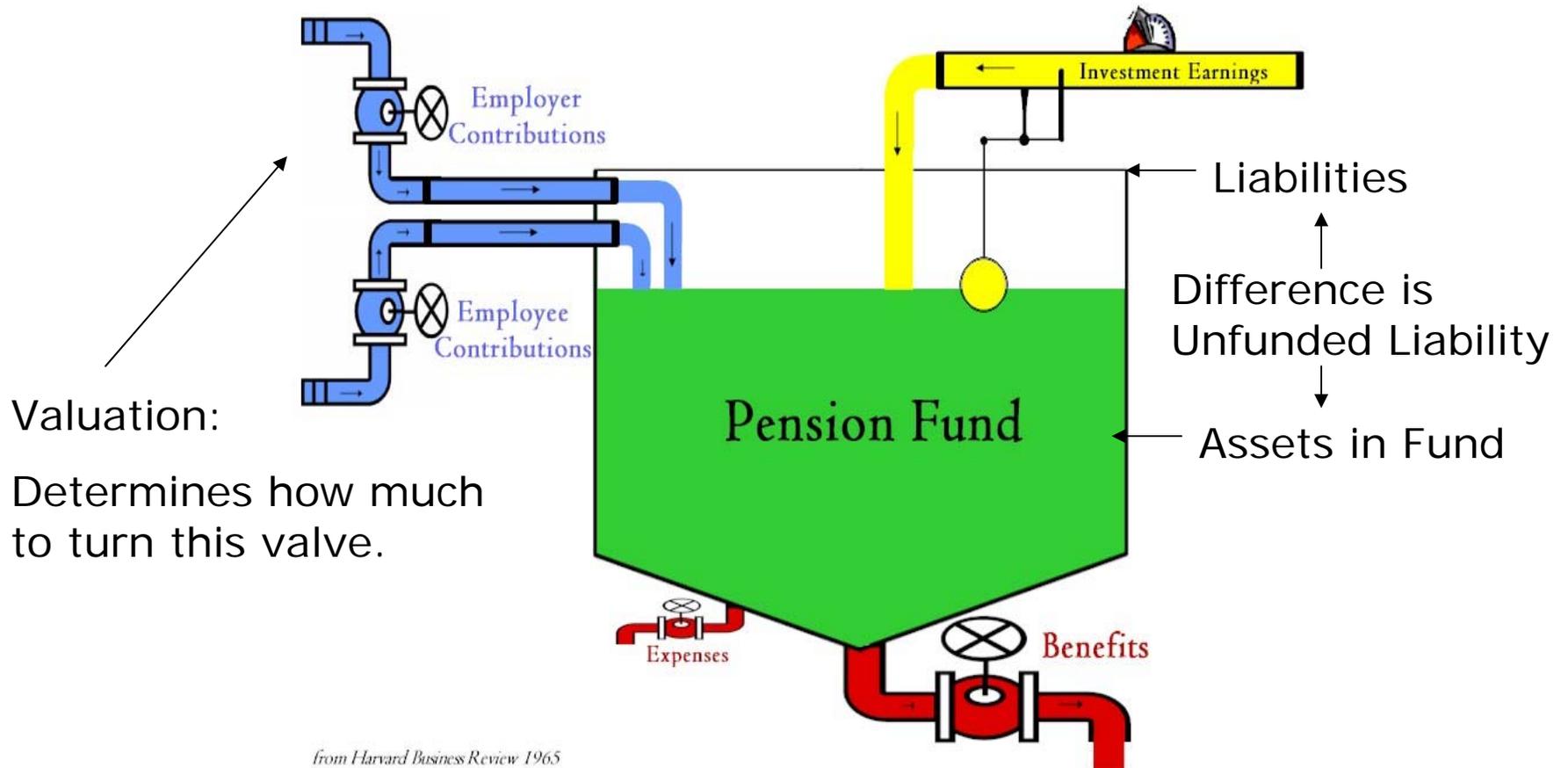
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# Pension Fund Dynamics





# Pension Actuary Tasks

- Analyze trends
- Develop assumptions for the future
  - Demographic (turnover, retirement, disability, mortality, etc.)
  - Financial and economic (investments, payroll, inflation, etc.)
- Measure obligations (liabilities)
- Develop a funding plan
- Stress test the future
- Monitor the progress of the plan and make periodic adjustments as needed



# Analyze Trends

- Census data and past reporting
- Experience studies
- Financial historical returns
- National and regional statistics
- Changes in benefit structures
- Regulatory environment
- Economic environment
- Other?



# Develop Assumptions for the Future

- The Actuary does not have a crystal ball
- Balance past experience of the plan with on-going national trends
- Judgment, experience, and risk assessment play important roles in the final determination
- Once set, one can be sure that from year-to-year actual experience will vary
- Assumptions normally are determined when experience studies are done and remain in place until the next experience study



# Measuring Obligations

- Collect Data
  - Age, Service, Salary, etc.
  - Retiree benefits in pay status
- Determine Benefits
  - According to applicable statutes
  - Amount, Eligibility
- Apply Assumptions
  - Economic
    - Investment Return, Payroll growth, COLAs
  - Demographic
    - Withdrawal, Retirement, Mortality, Disability



# Measuring Obligations (continued)

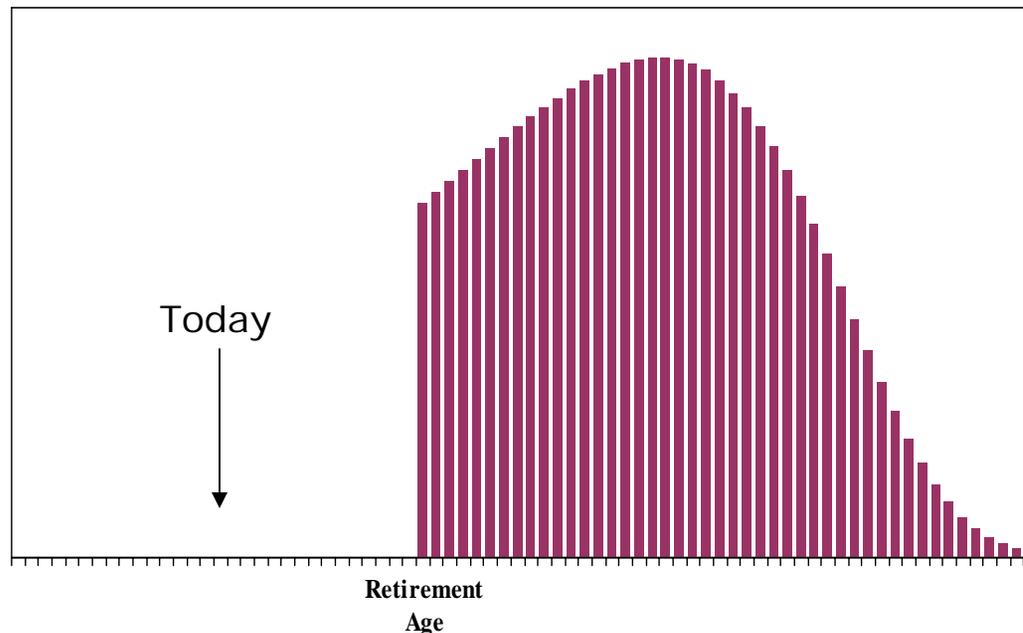
- For each person, we calculate the benefit payable for each decrement at each age

	Withdrawal	Early (reduced) Retirement	Normal (unreduced ) Retirement	Service Connected Death	Non-Service Death	Service Connected Disability	Ordinary Disability
Age 25	\$0	NA	NA	\$750	NA	\$9,000	NA
Age 26	ROC	NA	NA	\$775	NA	\$9,250	NA
Age 27	ROC	NA	NA	\$800	\$400	\$9,500	\$480
:							
Age 50	NA	\$12,000	NA	\$23,000	\$11,500	\$32,000	\$23,000
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Age 55	NA	NA	\$25,000	\$25,000	\$12,500	\$35,000	\$25,000
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Age 70	NA	NA	\$30,000	\$30,000	\$15,000	\$37,500	\$30,000



# Measuring Obligations (continued)

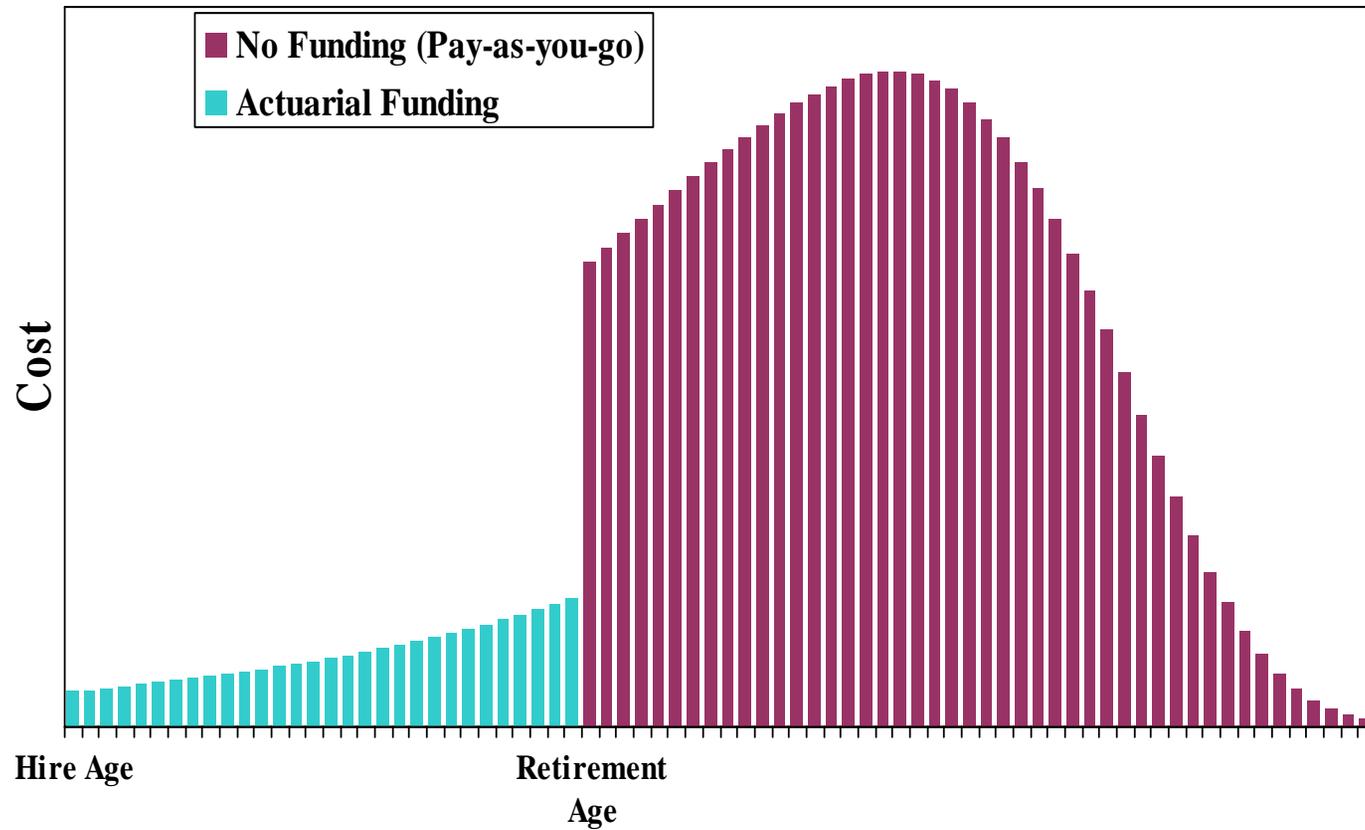
- We then convert each of the benefits to a payout stream (reflecting COLAs where applicable) and the probability of paying each benefit



- The discounted value of these payout streams is the Present Value of Future Benefits (PVFB)



# Funding Plan Development





# Contribution Components

- **Normal Cost**
  - Cost associated with one year of service by the actuarial cost method (Entry Age Normal method for Montana systems)
  - Expressed as a percentage of payroll
  - Only changes if benefits or assumptions change
- **Actuarial Accrued Liability (AAL)**
  - Portion of the Present Value of Future Benefits (PVFB) which is not covered by future normal costs
  - Disclosed in annual financial report
- **Actuarial Value of Assets (AVA)**
  - The value of assets used by the actuary for purposes of the actuarial valuation
  - Normally the actuary smoothes investment gains and losses over future valuation dates (4 years for Montana systems) to reduce volatility



# Annual Required Contribution (ARC)

- ARC is the sum of the current year's normal cost plus an amortization payment toward the Unfunded Actuarial Liability (UAL)
- Amortization of Unfunded Actuarial Liability
  - $UAL = \text{Actuarial Accrued Liability} - \text{Actuarial Value of Assets}$
  - Maximum period of 30 years under GASB rules
  - For public funds, payments are normally calculated to increase with assumed increases in payroll
  - If payroll increases at the assumed rate (and there are no further gains or losses) this will produce a constant contribution rate
- Statutory contribution rates may or may not be sufficient to satisfy the ARC



# Relevant Accounting Standards

- Issued by Governmental Accounting Standards Board (GASB)
- Two primary statements affecting public retirement systems
  - Statement 25: Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans
  - Statement 27: Accounting for Pensions by State and Local Governmental Employers



# Actuarial Standards of Practice

- Issued by the Actuarial Standards Board
- Provide actuaries with a framework for providing professional actuarial assignments
- Currently there are 44 standards covering all areas of actuarial practice, 6 of which directly impact actuarial valuations of pension plans

<b>ASOP No. 4</b>	<b>Measuring Pension Obligations</b>
<b>ASOP No. 23</b>	<b>Data Quality</b>
<b>ASOP No. 27</b>	<b>Selection of Economic Assumptions</b>
<b>ASOP No. 35</b>	<b>Selection of Demographic and Other Noneconomic Assumptions</b>
<b>ASOP No. 41</b>	<b>Actuarial Communications</b>
<b>ASOP No. 44</b>	<b>Selection and Use of Asset Valuation Methods</b>



# Qualifications of Actuaries

- Society of Actuaries
  - Administers actuarial exams and provides for continuing education
  - Designations include Fellow of the Society of Actuaries (FSA) and Associate of the Society of Actuaries (ASA)
- American Academy of Actuaries
  - Voice of the actuarial profession on public policy and professionalism issues
  - Designation is Member of the American Academy of Actuaries (MAAA)



# Qualifications of Actuaries (continued)

- Joint Board for the Enrollment of Actuaries
  - Agency of the Federal government
  - Qualifies actuaries to sign forms and reports required by ERISA for private sector plans
  - Designation is Enrolled Actuary (EA)
- Actuarial Code of Conduct
  - Identifies the professional and ethical standards required of actuaries
  - Sets forth the requirements that actuaries have to the public, to their clients, to their employers and to the actuarial profession



# Qualifications of Actuaries (continued)

- Qualification Standards
  - Set forth specific qualifications for actuaries issuing Statements of Actuarial Opinion
  - Require ongoing continuing education in each actuary's specific practice area