



Administrative Factors 101

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Key Questions Addressed In Today's Presentation

- What are administrative factors?
- Why would you want to know about them?
- Where do they come from?
- How are they developed?
- Why do they change?
- Others?



What Are Administrative Factors?

- Tables of numbers
 - Examples: .5940, .884, .0079809
- Applied to benefit calculations and purchases
 - Optional benefits
 - Offset the additional plan costs
- Give members flexibility without increasing plan costs
- Sometimes called “reduction” or “actuarial” factors

Why Would You Want To Know About Them?

- Appear in members' benefit calculations
- Appear in member purchases of optional benefits
- Some members may not understand why
 - Their pension would be reduced for an optional benefit
 - It costs so much to purchase or restore service credit
 - The factors can change
- May look to DRS for answers



Where Do Admin Factors Come From?

- Jointly developed by OSA and DRS
- DRS sets administrative policy for administrative factors
 - Typically consults with OSA's actuaries
- OSA's actuaries develop factors consistent with
 - Administrative policy
 - Actuarial standards of practice
- Most factors calculated using complex mathematical models
 - Based on the theory of actuarial equivalence
 - Simplified for administrative purposes

Two Basic Types of Admin Factors

- Reduction
- Annuity
- Used for different purposes



Reduction Factors

- Reduce monthly pensions to pay for optional benefits
- Used to
 - Spread member's pension over a longer period of time
 - Pay for additional benefits over a member's lifetime
- Examples
 - Joint and Survivor factors
 - Early Retirement Factors
 - PERS and TRS 1 Optional COLA factors
 - TRS 1 Option 1 Benefit factors
 - Death benefit

Annuity Factors

- Convert between one-time and lifetime payments
- Used to
 - Pay for additional benefits up-front
 - Cash-out pensions
- Examples include
 - Monthly Benefit Per \$1.00 Of Accumulation factors
 - Purchase additional service credit
 - Small pension cash-outs
 - TRS 1 partial pension cash-outs
 - TAP Annuity Factors
 - Purchase a pension using Plan 3 member DC accounts
 - Service Credit Restoration factors
 - Restore withdrawn service credit
 - Establish optional service credit



Admin Factors Based On Actuarial Equivalence (AE)

- Different payment streams can be adjusted to have the same value
- Can be used to equalize expected costs for different benefits
- Compares expected cost of plan's
 - Base benefit
 - Benefit with member-elected option
- Adjusts cost for optional benefits to make similar to base
 - Pension reduction
 - Up-front payment



Illustration Of Different Payments With Equal Value



- AE further adjusts payments for
 - Time value of money
 - Probability that the payment isn't made

Admin Factors Target Plan-Level AE

- Optional benefits expected to be cost-neutral to the plan
 - For entire group
 - Not necessarily an individual
- Calculation based on an “average” member
- Why not individual AE?
 - Administrative complexity
 - Legal constraints



Four Basic Steps In Developing An Administrative Factor

- Project future benefit payments
 - Base benefit
 - Optional benefit
- Determine the expected plan cost for each
 - Convert future payments to specific point in time
 - Add them up to find plan costs
- Divide expected plan costs to get the factor
 - $\text{Base Cost} / \text{Optional Cost} = \text{Factor}$
- Group/summarize factors for administration
- Steps require assumptions about
 - Future payments
 - Trust fund earnings
 - Group characteristics

Actuaries Use Assumptions To Predict

- When benefits begin
- How long they are paid
- How much is paid
- Expected financing cost



Several Key Assumptions Impact Admin Factors

- Investment rate of return (ROR)
- Annual cost-of-living-adjustment (COLA)
- Mortality
- Average retirement age
- Percent male/female
- Factors may be updated when assumptions change

Hypothetical Plan Examples

- Plan provisions
 - Fixed annual benefit = \$10,000
 - Normal retirement age = 65
 - Benefit paid until age 70
- Key Plan Assumptions
 - No mortality
 - No COLA
 - 7.5 percent investment ROR
- Plan provides two AE optional benefits
 - Early retirement starting at age 60
 - Additional annuity purchase up to \$1,000/year



Hypothetical Plan Example: Early Retirement Reduction Factor

Age	Projected Payments ¹		Interest Discount ²	Present Value (PV) ³		AE Age 60	
	Age 65	Age 60		Age 65	Age 60	Payment ⁴	PV ³
60	\$0	\$10,000	1.0000	\$0	\$10,000	\$4,106	\$4,106
61	\$0	\$10,000	0.9302	\$0	\$9,302	\$4,106	\$3,819
62	\$0	\$10,000	0.8653	\$0	\$8,653	\$4,106	\$3,553
63	\$0	\$10,000	0.8050	\$0	\$8,050	\$4,106	\$3,305
64	\$0	\$10,000	0.7488	\$0	\$7,488	\$4,106	\$3,074
65	\$10,000	\$10,000	0.6966	\$6,966	\$6,966	\$4,106	\$2,860
66	\$10,000	\$10,000	0.6480	\$6,480	\$6,480	\$4,106	\$2,660
67	\$10,000	\$10,000	0.6028	\$6,028	\$6,028	\$4,106	\$2,475
68	\$10,000	\$10,000	0.5607	\$5,607	\$5,607	\$4,106	\$2,302
69	\$10,000	\$10,000	0.5216	\$5,216	\$5,216	\$4,106	\$2,141
Total	\$50,000	\$100,000		\$30,296	\$73,789	\$41,057	\$30,296

AE Early Retirement Factor For Age 60 (PV Age 65/PV Age 60) = 0.41057151

¹Assumes no mortality between ages 60 - 69 and no COLA.

²Assumes 7.5% investment rate of return.

³Payment * Interest Discount. Equals expected financing cost based on the assumed investment rate of return.

⁴Age 60 ERF * 10,000.

Hypothetical Plan Example: Annuity Purchase Factor

Age	Projected Payments ¹		Interest Discount ²	Present Value (PV) ³		Purchased Annuity	
	\$1	\$1 Annuity		\$1	\$1 Annuity	Payment	PV ³
65	\$1.00	\$1.00	1.0000	\$1.00	\$1.00	\$1,000	\$1,000
66	\$0.00	\$1.00	0.9302	\$0.00	\$0.93	\$1,000	\$930
67	\$0.00	\$1.00	0.8653	\$0.00	\$0.87	\$1,000	\$865
68	\$0.00	\$1.00	0.8050	\$0.00	\$0.80	\$1,000	\$805
69	\$0.00	\$1.00	0.7488	\$0.00	\$0.75	\$1,000	\$749
Total	\$1.00	\$5.00		\$1.00	\$4.35	\$5,000	\$4,349

AE Annuity Purchase Factor (PV \$1/PV \$1 Annuity) = 0.2299

Annuity purchase price (Purchased Annuity/Factor) = \$4,349

¹Assumes no mortality between ages 65 - 69 and no COLA.

²Assumes 7.5% investment rate of return.

³Payment * Interest Discount. Equals expected financing cost based on the assumed investment rate of return.

Why Do Factors Change?

- Assumptions change
 - Actuaries routinely review assumptions and update as needed
 - Past experience
 - Expectations for the future
 - Statutory cycle
- Benefits or administrative practice changes
 - Legislation
 - DRS policy/rules



How Frequently Can Factors Change?

- Two-year review cycle for assumptions related to economy
 - Includes investment ROR, inflation
 - Economic experience study recently completed
 - No recommended changes
 - ROR is in statute to change for the next two biennia
- Six-year review cycle for assumptions related to members
 - Includes mortality, retirement age, percent male/female
 - Demographic experience study will be completed next year
 - Some changes likely
- Requires balancing impact on the plan, members, and administration
 - Changes from different sources may be coordinated
- Likely to see more frequent updates over the next few years

Wrap-Up

- Admin factors can impact members' benefits
 - Reduction in monthly pension
 - Up-front member payment
- Designed to make optional benefits cost-neutral to the plan
 - Based on theory of AE
- Require assumptions about future
 - Benefit payments
 - Investment earnings
- Jointly developed by OSA and DRS
- May be updated when assumptions, benefits, or policy change



Where Can I Get More Information?

- Appendix includes additional details about specific factors
- OSA sends DRS admin factor update letter
- Letter documents what goes into the factors in more detail
 - Assumptions
 - Methods

Appendix: Frequently Used Factors

- Joint and Survivor factors
- Early Retirement Factors
- Monthly Benefit Per \$1.00 Of Accumulation factors
- Service Credit Purchase Factors
- PERS and TRS 1 Optional COLA factors
- TRS 1 Option 1 Benefit factors
- TAP Annuity Factors



Joint And Survivor Factors

- Standard benefit = annuity paid over the life of the member
 - Except: LEOFF 1 and WSPRS 1 include survivor benefit
- Members can elect an AE survivor benefit
 - Spreads payments over two lives
 - Includes “pop-up”
- Joint life annuity = single life annuity x factor
- Tables based on age difference, plan, option selected
 - Age difference = member age-beneficiary age
 - WAC 415-02-380



Early Retirement Factors

- Standard benefit= member's accrued benefit paid at the plan's normal retirement age (NRA)
- Plan 2/3 members can take AE early retirement
 - Spreads payments over more years of retirement
- Immediate annuity = deferred annuity x factor
 - Annuity based on member's accrued benefit
 - Deferral is to plan's NRA
- Tables based on months retiring early and plan
 - WAC 415-02-320
- Factors also used for some
 - Pre-retirement death
 - Disability



Monthly Benefit Per \$1.00 Of Accumulation Factors

- Basic annuity factors
 - Convert between one-time and lifetime payments
 - Apply to multiple optional benefits
- Members can increase their pension by purchasing extra service credit at retirement
 - Pay actuarial cost up-front
 - Limited to five years
 - One-time cost = increased annuity/factor
- Members can cash-out small pensions
 - Receive the AE value in a one-time payment
 - Limited to pensions < \$50/month
 - One-time payment=pension/factor
- TRS 1 members can withdraw their contributions at retirement and receive an actuarially reduced pension
 - Monthly pension reduction = contributions withdrawn x factor
- Tables based on age and plan
 - WAC 415-02-340

Service Credit Purchase Factors

- Members can restore withdrawn service or establish optional service
 - Make required contributions by the statutory deadline
 - Pay full expected actuarial cost after deadline and prior to retirement
- Specialized form of annuity factor
 - Projects retirement eligibility and starting retirement benefit
 - Calculates the increased plan cost for the additional service
 - Requires additional assumptions
- Applied differently than other annuity factors
 - Cost = average salary x years purchased x factor
- New tables planned for implementation in 2014
 - Based on age, service after purchase, and plan
 - Current tables will be discontinued
 - WAC 415-02-370



TRS And PERS Plan 1 Optional COLA Factors

- Standard PERS and TRS 1 benefit = life annuity without automatic COLA
 - Except for member's receiving minimum benefit
- Members can elect an AE automatic CPI-based COLA
 - Shifts portion of the payments to the future
- Single life annuity with a COLA = single life annuity x factor
 - Assumes long-term inflation of three percent
- Tables based on age and plan
 - WAC 415-02-360

TRS 1 Option 1 Factors

- Standard benefit for TRS 1 stops upon death
 - Most plans refund difference if pension payments < member's accumulated contributions when a member dies
- TRS 1 members can elect an AE annuity with a death refund
 - Guarantees plan will pay back member contributions
 - No "pop up"
 - Similar to buying insurance
- Single life annuity with death refund = single life annuity x factor
- Tables based on age
 - WAC 415-02-345



TAP Annuity Factors

- Plan 3 members have a DC account
 - May self-direct investments or invest with the state in the Total Allocation Portfolio (TAP)
- Members can buy an AE annuity from the plan using their TAP funds
 - Provides lifetime income
 - Includes a COLA and a death refund
 - Paid from the TAP
- Specialized form of the basic annuity factors
- Annuity=DC account payment x factor
- Tables based on age and plan
 - WAC 415-02-390

Index of Abbreviations

- AE - Actuarial Equivalence
- COLA - Cost of Living Adjustment
- CPI - Consumer Price Index
- DC - Defined Contribution
- DRS - Department of Retirement Systems
- ERF - Early Retirement Factor
- LEOFF - Law Enforcement Officers' and Fire Fighters' Retirement System
- NRA - Normal Retirement Age
- OSA - Office of the State Actuary
- PERS - Public Employee's Retirement System
- PV - Present Value
- ROR - Rate of Return
- TAP - Total Allocation Portfolio
- TRS - Teacher's Retirement System
- WAC - Washington Administrative Code
- WSPRS - Washington State Patrol Retirement System