Reduction Factors For Survivor Retirements

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Overview

- Survivor option factors
- Current factors
- Examples
- Approximation in the factors
- Three-way balance
- Ways to increase precision

Survivor Option Factors

- Factors convert a member's annuity benefit from a Single Life benefit to a Joint and Survivor (J&S) benefit
- Smaller benefit for a longer period of time
  - Reduces the member's benefit to fund the survivor's benefit
  - Applied both pre- and post-retirement
- Based on actuarial equivalence
  - Benefit present value the same with and without the reduction
  - Expected life span of two people is greater than expected life span of each person

Survivor Option Factors

- Factors developed for each
  - continuation percentage (100%, 67%, & 50%)
  - age difference between member and beneficiary
- Difference = member's age minus beneficiary's age
  - max difference + 40
  - min difference -20

Current Factors

- Developed using demographic assumptions from 1995-2000 experience study
- Based on difference in age of member and survivor
- Designed to be actuarially equivalent in the aggregate
  - Actuarially equivalent for the group of annuitants

Current reduction factors at a glance

- Lower continuation percentage, the higher the member's benefit, i.e. larger reduction factor
- Smaller age difference, the higher the member's benefit
  - Beneficiary older than member is a negative difference

Age Diff.	J&S 100%	J&S 67%	J&S 50%
+10	0.821	0.873	0.902
+5	0.845	0.891	0.916
0	0.870	0.909	0.930
-5	0.894	0.927	0.944
-10	0.917	0.943	.0957

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Current factors applied

- **Post-retirement**
  - Retirees have a choice – Single Life or a Joint and Survivor option
- **Pre-retirement**
  - Survivors of eligible active members who die have no choice – statutorily receive J&S 100% annuity

Example: Post-Retirement

- 55-year old member retires and selects J&S 100% benefit
  - Spouse age 50
  - Final average salary - $75,000
  - Years of Service – 25
- Value of single life annuity in first year - $37,500
  - 2% x 25 yos x $75,000
- J&S 100% reduction factor - 0.845
- Value of J&S 100% annuity in first year - $31,687.50
 - 0.845 x $37,500

Example: Pre-Retirement

- **40-year old member dies in the line-of-duty**
  - Spouse age 35
  - Final average salary - $60,000
  - Years of Service – 15
- **Value of unreduced single life annuity in first year - $18,000**
  - 2% x 15 yos x $60,000
- **J&S 100% reduction factor - 0.845**
- **Value of J&S 100% annuity in first year - $15,210**
  - 0.845 x $18,000

How Is Approximation Built Into The Factors?

- Factors based on assumptions about future
- Actuarial equivalence
- Balance between difficulty in calculation, ease of administration, and accuracy of factors
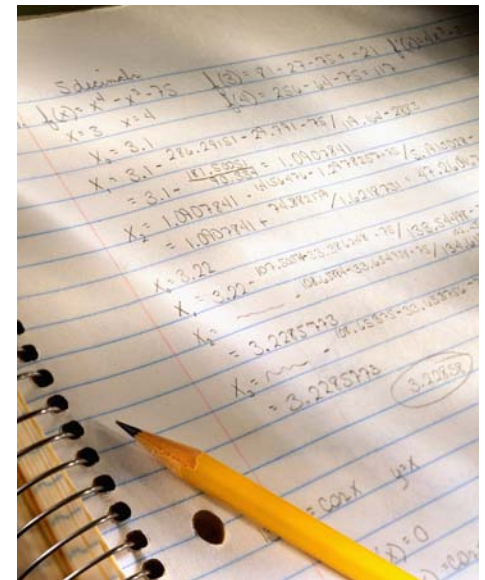
Factors Are Based On Assumptions

- Historical experience (data) and actuarial judgment
  - Demographic Assumptions based largely on experience data with expectations for the future
  - Economic Assumptions based more evenly on past experience and expectations and judgment about the future
- Larger populations and longer time periods yield more precise assumptions

Key Assumptions

- Expected retirement age
- Percent male
- Mortality (Improvements)
- Interest
- Inflation

Assumptions Depend on Actuarial Equivalence

- **Expected retirement age**
  - Non-age based factors assume everyone retires at same time
  - Average over group of annuitants
- **Percent male – law does not allow gender specific tables**
  - Blend male and female mortality by percent male e.g. 92%
- **Mortality/Interest/Inflation – factors adjust annuity value**
  - Value of annuity determined by these assumptions

Actuarial Equivalence

- Current factors equivalent over entire group of annuitants
  - Average retirement age is key assumption
- Current equivalence is between value of single life benefits for whole population vs. value of J&S benefits for whole population
  - Reduction factors set the two benefits equal
- Current equivalence balances relative precision with administrative efficiency

Three-Way Balance

- Complexity – how difficult to develop
- Efficiency – how easy to administer
- Precision – how theoretically accurate

Ways to Increase Precision

- **Redefine the actuarial equivalence**
  - Group/Aggregate Equivalence
    - Current factors with current level of precision (one group)
    - Develop pre- and post- retirement factors (two groups)
  - Individual Equivalence
    - Develop factors for each age
    - Set present value of survivor's benefit equal to member's

Implications of Increased Precision

- **Aggregate equivalence**
  - Efficient to administer
    - One table per group
  - Fewer calculations
  - Moderate precision – more groups imply more precision
- **Individual equivalence**
  - Inefficient to administer
    - One table per age
  - Vastly more computations
  - Extremely precise

Conclusion

- Survivor Option Factors spread one benefit over two lifetimes
- Expected payouts are the same
  - Actuarially equivalent
- Balance theoretical accuracy and administrative efficiency
- Both economic and demographic assumptions are being studied in upcoming experience studies
  - Results in late 2007 and throughout 2008
- Changes in assumptions usually result in new factors

Questions?