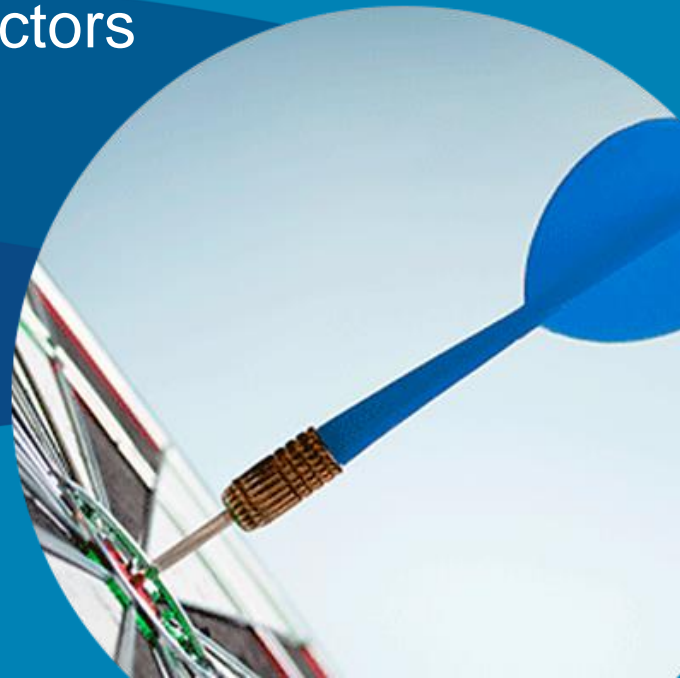


# Michigan Judges Retirement System (JRS)

Review of Optional Forms of Payment Factors  
November 1, 2018



# Introduction

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- Normal form of payment for a member who retires varies:
  - If married at retirement: 50% joint and survivor
  - If not married at retirement: a straight life benefit
- Section 506 of the JRS statute allows the member to choose an optional form of payment by having the member's computed benefit reduced
  - 100% joint and survivor with pop-up
  - 50% joint and survivor with pop-up
- If a member chooses an optional form of payment, an "option factor" is applied to the member's computed benefit

# Introduction (Continued)

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- Section 506 of the JRS statute indicates that the joint and survivor options shall be the “actuarial equivalent” of the straight life option
  - Actuarial equivalent means that the optional forms of payment are “cost neutral” based upon a set of actuarial assumptions
  - That is, if all assumptions that the option factors are based upon are met, JRS is not financially affected by the selection of payment form by the member

# Introduction (Continued)

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- Actuarial equivalent (i.e., cost neutral) option factors are generally dependent upon the following:
  - Life expectancies of the retiree and beneficiary
  - Interest rate assumption
  - COLA assumption
  - Proportion of male/female retirees choosing the options
    - Cannot charge a different option factor based upon a member's gender

# Introduction (Continued)

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- Public Act 335 of 2018 grants the Department and the Retirement Board the authority to set the assumed rate of return and mortality tables associated with actuarial equivalence for optional forms of payment
- Reasonable to review the option factors based upon the results of the recently completed 5-year Experience Study to see if the option factors should be updated

# Introduction (Concluded)

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- The choice of a set of option factors is based upon judgement
  - Considerations include:
    - System's objectives
    - Anti-selection
    - Whether the proposed factors are different enough to pursue a change
- The choice of assumptions may affect other individual actuarial calculations such as EDROs, recoupment calculations, and service purchases

# Current Option Factors

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- ORS provided the joint and survivor and the Social Security equated optional form factors currently in use
  - ORS currently uses the same joint and survivor optional form factors for all systems (i.e., MPSERS, SERS, SPRS, and JRS)
- GRS reasonably approximated the current joint and survivor factors using the following actuarial basis:
  - 8.00% interest rate
  - 1983 Group Annuity Mortality Table
  - 100% unisex (i.e., retiree assumed to be 100% male; beneficiary the opposite)
  - No COLA
  - No charge for the pop-up provision

# Current 100% Joint and Survivor Factors

Retiree Age	Beneficiary Age										
	50	52	54	56	58	60	62	64	66	68	70
50	90.9%	91.4%	91.9%	92.4%	93.0%	93.5%	94.0%	94.5%	95.0%	95.4%	95.8%
51	90.1%	90.7%	91.2%	91.8%	92.4%	92.9%	93.5%	94.0%	94.5%	95.0%	95.4%
52	89.3%	89.9%	90.5%	91.1%	91.7%	92.3%	92.9%	93.4%	94.0%	94.5%	95.0%
53	88.5%	89.1%	89.7%	90.3%	91.0%	91.6%	92.2%	92.8%	93.4%	94.0%	94.6%
54	87.6%	88.2%	88.8%	89.5%	90.2%	90.9%	91.5%	92.2%	92.8%	93.5%	94.0%
55	86.6%	87.3%	87.9%	88.6%	89.3%	90.1%	90.8%	91.5%	92.2%	92.9%	93.5%
56	85.6%	86.2%	86.9%	87.7%	88.4%	89.2%	90.0%	90.7%	91.5%	92.2%	92.9%
57	84.4%	85.2%	85.9%	86.7%	87.4%	88.3%	89.1%	89.9%	90.7%	91.5%	92.2%
58	83.3%	84.0%	84.8%	85.6%	86.4%	87.2%	88.1%	89.0%	89.8%	90.6%	91.4%
59	82.0%	82.8%	83.5%	84.4%	85.2%	86.1%	87.0%	88.0%	88.9%	89.7%	90.6%
60	80.7%	81.4%	82.3%	83.1%	84.0%	84.9%	85.9%	86.9%	87.8%	88.8%	89.7%
61	79.3%	80.1%	80.9%	81.8%	82.7%	83.7%	84.7%	85.7%	86.7%	87.7%	88.7%
62	77.8%	78.6%	79.5%	80.4%	81.3%	82.3%	83.4%	84.4%	85.5%	86.6%	87.6%
63	76.3%	77.1%	77.9%	78.9%	79.9%	80.9%	82.0%	83.1%	84.2%	85.4%	86.5%
64	74.7%	75.5%	76.4%	77.3%	78.3%	79.4%	80.5%	81.7%	82.9%	84.0%	85.2%
65	73.0%	73.8%	74.7%	75.7%	76.7%	77.8%	79.0%	80.2%	81.4%	82.7%	83.9%
66	71.3%	72.1%	73.0%	74.0%	75.1%	76.2%	77.4%	78.6%	79.9%	81.2%	82.5%
67	69.6%	70.4%	71.3%	72.3%	73.4%	74.5%	75.8%	77.0%	78.3%	79.7%	81.1%
68	67.8%	68.6%	69.5%	70.6%	71.6%	72.8%	74.1%	75.4%	76.7%	78.1%	79.5%
69	66.0%	66.8%	67.7%	68.8%	69.8%	71.0%	72.3%	73.6%	75.0%	76.5%	78.0%
70	64.2%	65.0%	65.9%	66.9%	68.0%	69.2%	70.5%	71.9%	73.3%	74.8%	76.3%



# Current 50% Joint and Survivor Factors

Retiree Age	Beneficiary Age										
	50	52	54	56	58	60	62	64	66	68	70
50	95.2%	95.5%	95.8%	96.1%	96.4%	96.6%	96.9%	97.2%	97.4%	97.6%	97.9%
51	94.8%	95.1%	95.4%	95.7%	96.0%	96.3%	96.6%	96.9%	97.2%	97.4%	97.7%
52	94.4%	94.7%	95.0%	95.3%	95.7%	96.0%	96.3%	96.6%	96.9%	97.2%	97.4%
53	93.9%	94.2%	94.6%	94.9%	95.3%	95.6%	96.0%	96.3%	96.6%	96.9%	97.2%
54	93.4%	93.7%	94.1%	94.5%	94.8%	95.2%	95.6%	95.9%	96.3%	96.6%	96.9%
55	92.8%	93.2%	93.6%	94.0%	94.4%	94.8%	95.2%	95.6%	95.9%	96.3%	96.6%
56	92.2%	92.6%	93.0%	93.4%	93.9%	94.3%	94.7%	95.1%	95.5%	95.9%	96.3%
57	91.6%	92.0%	92.4%	92.9%	93.3%	93.8%	94.2%	94.7%	95.1%	95.5%	95.9%
58	90.9%	91.3%	91.7%	92.2%	92.7%	93.2%	93.7%	94.2%	94.6%	95.1%	95.5%
59	90.1%	90.6%	91.0%	91.5%	92.0%	92.5%	93.1%	93.6%	94.1%	94.6%	95.1%
60	89.3%	89.8%	90.3%	90.8%	91.3%	91.9%	92.4%	93.0%	93.5%	94.1%	94.6%
61	88.4%	88.9%	89.4%	90.0%	90.5%	91.1%	91.7%	92.3%	92.9%	93.5%	94.0%
62	87.5%	88.0%	88.5%	89.1%	89.7%	90.3%	90.9%	91.6%	92.2%	92.8%	93.4%
63	86.5%	87.0%	87.6%	88.2%	88.8%	89.4%	90.1%	90.8%	91.4%	92.1%	92.7%
64	85.5%	86.0%	86.6%	87.2%	87.9%	88.5%	89.2%	89.9%	90.6%	91.3%	92.0%
65	84.4%	84.9%	85.5%	86.2%	86.8%	87.5%	88.3%	89.0%	89.8%	90.5%	91.3%
66	83.2%	83.8%	84.4%	85.1%	85.8%	86.5%	87.3%	88.0%	88.8%	89.6%	90.4%
67	82.0%	82.6%	83.3%	83.9%	84.6%	85.4%	86.2%	87.0%	87.9%	88.7%	89.5%
68	80.8%	81.4%	82.0%	82.7%	83.5%	84.3%	85.1%	86.0%	86.8%	87.7%	88.6%
69	79.5%	80.1%	80.8%	81.5%	82.2%	83.1%	83.9%	84.8%	85.7%	86.7%	87.6%
70	78.2%	78.8%	79.4%	80.2%	81.0%	81.8%	82.7%	83.6%	84.6%	85.6%	86.6%

# Example

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- Member retires at age 60 with a \$10,000 annual benefit
  - Spouse is the same age
  - Member chooses 100% joint and survivor with pop-up
  - Member's benefit becomes \$8,490 ( $\$10,000 \times 84.9\%$ )
    - Reduction in member's benefit of \$1,510 makes up for the longer period of time over which the pension is expected to be paid
    - If member predeceases spouse, spouse receives \$8,490 (COLAs would affect actual benefit at time of death)
    - If spouse predeceases member, member's benefit increases (i.e., pops-up) to \$10,000 (COLAs would affect actual benefit at time of death)

# Option Election Experience – Last 5 Years

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- GRS analyzed all service-based retirements contained in the September 30, 2017 actuarial valuation data
  - No death-in-service or disability retirements considered
  - Only considered records in which retiree was still alive
  - 340 retirements met above criteria

# Option Election Experience – Last 5 Years

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- The results are as follows:
  - Very few retirees elect optional forms of payment (approximately 84% of the retirements studied elected the default payment option)
  - Of the few that selected an optional form of payment, approximately 90% were male, electing the 100% joint and survivor option

# Option Factor Analysis

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- Next step was to develop actuarial equivalent option factors based upon the recently adopted actuarial assumptions and option election experience from the past 5 years
- Recommending cost associated with joint and survivor pop-up feature be included in the factor development

# Option Factor Analysis

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- Proposed factors are based upon the following:
  - Investment return assumption of 6.75%
  - No COLA assumption
  - Newly adopted post-retirement mortality assumptions
    - RP-2014 Healthy Annuitant Mortality Tables scaled by 100% for males and 100% for females, adjusted for mortality improvements using projection scale MP-2017 from 2006
    - Calculation year of 2021
  - Unisex percent of 90% (i.e., participant assumed 90% male and 10% female)
  - Pop-up cost included

# Proposed 100% Joint and Survivor Factors

Retiree Age	Beneficiary Age										
	50	52	54	56	58	60	62	64	66	68	70
50	91.2%	91.6%	92.1%	92.5%	93.0%	93.4%	93.9%	94.3%	94.7%	95.1%	95.5%
51	90.5%	91.0%	91.5%	92.0%	92.5%	93.0%	93.4%	93.9%	94.3%	94.8%	95.2%
52	89.9%	90.4%	90.9%	91.4%	91.9%	92.4%	93.0%	93.4%	93.9%	94.4%	94.8%
53	89.2%	89.7%	90.2%	90.8%	91.3%	91.9%	92.4%	93.0%	93.5%	94.0%	94.5%
54	88.4%	89.0%	89.5%	90.1%	90.7%	91.3%	91.9%	92.4%	93.0%	93.5%	94.1%
55	87.6%	88.2%	88.8%	89.4%	90.0%	90.7%	91.3%	91.9%	92.5%	93.1%	93.6%
56	86.8%	87.4%	88.0%	88.6%	89.3%	90.0%	90.6%	91.3%	91.9%	92.5%	93.1%
57	85.9%	86.5%	87.1%	87.8%	88.5%	89.2%	89.9%	90.6%	91.3%	92.0%	92.6%
58	84.9%	85.6%	86.2%	86.9%	87.7%	88.4%	89.2%	89.9%	90.6%	91.3%	92.0%
59	83.9%	84.6%	85.3%	86.0%	86.8%	87.6%	88.3%	89.1%	89.9%	90.7%	91.4%
60	82.8%	83.5%	84.3%	85.0%	85.8%	86.6%	87.5%	88.3%	89.1%	90.0%	90.8%
61	81.7%	82.4%	83.2%	84.0%	84.8%	85.7%	86.5%	87.4%	88.3%	89.2%	90.1%
62	80.5%	81.3%	82.1%	82.9%	83.7%	84.6%	85.5%	86.5%	87.4%	88.4%	89.3%
63	79.3%	80.1%	80.9%	81.7%	82.6%	83.5%	84.5%	85.5%	86.5%	87.5%	88.4%
64	78.0%	78.8%	79.6%	80.5%	81.4%	82.4%	83.4%	84.4%	85.4%	86.5%	87.5%
65	76.7%	77.4%	78.3%	79.2%	80.1%	81.1%	82.2%	83.2%	84.3%	85.4%	86.6%
66	75.3%	76.0%	76.9%	77.8%	78.8%	79.8%	80.9%	82.0%	83.2%	84.3%	85.5%
67	73.8%	74.6%	75.4%	76.4%	77.3%	78.4%	79.5%	80.7%	81.9%	83.1%	84.4%
68	72.3%	73.1%	73.9%	74.8%	75.9%	76.9%	78.1%	79.3%	80.5%	81.8%	83.1%
69	70.7%	71.5%	72.3%	73.3%	74.3%	75.4%	76.6%	77.8%	79.1%	80.4%	81.8%
70	69.0%	69.8%	70.7%	71.6%	72.6%	73.8%	75.0%	76.2%	77.6%	79.0%	80.4%

# Proposed 50% Joint and Survivor Factors

Retiree Age	Beneficiary Age										
	50	52	54	56	58	60	62	64	66	68	70
50	95.4%	95.6%	95.9%	96.1%	96.4%	96.6%	96.8%	97.1%	97.3%	97.5%	97.7%
51	95.0%	95.3%	95.6%	95.8%	96.1%	96.4%	96.6%	96.9%	97.1%	97.3%	97.5%
52	94.7%	94.9%	95.2%	95.5%	95.8%	96.1%	96.3%	96.6%	96.9%	97.1%	97.4%
53	94.3%	94.6%	94.9%	95.2%	95.5%	95.8%	96.1%	96.4%	96.6%	96.9%	97.2%
54	93.8%	94.2%	94.5%	94.8%	95.1%	95.5%	95.8%	96.1%	96.4%	96.7%	96.9%
55	93.4%	93.7%	94.1%	94.4%	94.8%	95.1%	95.4%	95.8%	96.1%	96.4%	96.7%
56	92.9%	93.3%	93.6%	94.0%	94.3%	94.7%	95.1%	95.4%	95.8%	96.1%	96.4%
57	92.4%	92.8%	93.1%	93.5%	93.9%	94.3%	94.7%	95.1%	95.4%	95.8%	96.2%
58	91.8%	92.2%	92.6%	93.0%	93.4%	93.9%	94.3%	94.7%	95.1%	95.5%	95.9%
59	91.2%	91.6%	92.1%	92.5%	92.9%	93.4%	93.8%	94.3%	94.7%	95.1%	95.5%
60	90.6%	91.0%	91.5%	91.9%	92.4%	92.8%	93.3%	93.8%	94.3%	94.7%	95.2%
61	89.9%	90.4%	90.8%	91.3%	91.8%	92.3%	92.8%	93.3%	93.8%	94.3%	94.8%
62	89.2%	89.7%	90.1%	90.6%	91.1%	91.7%	92.2%	92.8%	93.3%	93.8%	94.3%
63	88.5%	88.9%	89.4%	89.9%	90.5%	91.0%	91.6%	92.2%	92.7%	93.3%	93.9%
64	87.7%	88.1%	88.6%	89.2%	89.7%	90.3%	90.9%	91.5%	92.1%	92.8%	93.4%
65	86.8%	87.3%	87.8%	88.4%	89.0%	89.6%	90.2%	90.8%	91.5%	92.2%	92.8%
66	85.9%	86.4%	86.9%	87.5%	88.1%	88.8%	89.4%	90.1%	90.8%	91.5%	92.2%
67	84.9%	85.4%	86.0%	86.6%	87.2%	87.9%	88.6%	89.3%	90.0%	90.8%	91.5%
68	83.9%	84.4%	85.0%	85.6%	86.3%	87.0%	87.7%	88.4%	89.2%	90.0%	90.8%
69	82.8%	83.4%	83.9%	84.6%	85.2%	86.0%	86.7%	87.5%	88.3%	89.2%	90.0%
70	81.7%	82.2%	82.8%	83.5%	84.2%	84.9%	85.7%	86.5%	87.4%	88.2%	89.1%



# Option Factor Analysis

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- Proposed decrease in interest rate and inclusion of pop-up feature typically increase the cost of the optional form to participant
- For most of the age combinations studied (ages 50-70 retiree and beneficiary), analysis indicates that the participant will be charged less for optional form payments under proposed assumptions
- Source of the reduction attributable to longer life expectancy
  - Updated mortality tables
  - Unisex blending consistent with actual gender mix of those making elections
- Exhibits on the following slides show deltas (changes) in the factors (proposed – current)
  - Positive numbers indicate a lower pension adjustment than under the current tables
  - Negative numbers indicate a higher pension adjustment than under the current tables

# Proposed 100% Factor Deltas

Retiree Age	Beneficiary Age										
	50	52	54	56	58	60	62	64	66	68	70
50	0.3%	0.2%	0.2%	0.1%	0.0%	-0.1%	-0.1%	-0.2%	-0.3%	-0.3%	-0.3%
51	0.4%	0.3%	0.3%	0.2%	0.1%	0.1%	-0.1%	-0.1%	-0.2%	-0.2%	-0.2%
52	0.6%	0.5%	0.4%	0.3%	0.2%	0.1%	0.1%	0.0%	-0.1%	-0.1%	-0.2%
53	0.7%	0.6%	0.5%	0.5%	0.3%	0.3%	0.2%	0.2%	0.1%	0.0%	-0.1%
54	0.8%	0.8%	0.7%	0.6%	0.5%	0.4%	0.4%	0.2%	0.2%	0.0%	0.1%
55	1.0%	0.9%	0.9%	0.8%	0.7%	0.6%	0.5%	0.4%	0.3%	0.2%	0.1%
56	1.2%	1.2%	1.1%	0.9%	0.9%	0.8%	0.6%	0.6%	0.4%	0.3%	0.2%
57	1.5%	1.3%	1.2%	1.1%	1.1%	0.9%	0.8%	0.7%	0.6%	0.5%	0.4%
58	1.6%	1.6%	1.4%	1.3%	1.3%	1.2%	1.1%	0.9%	0.8%	0.7%	0.6%
59	1.9%	1.8%	1.8%	1.6%	1.6%	1.5%	1.3%	1.1%	1.0%	1.0%	0.8%
60	2.1%	2.1%	2.0%	1.9%	1.8%	1.7%	1.6%	1.4%	1.3%	1.2%	1.1%
61	2.4%	2.3%	2.3%	2.2%	2.1%	2.0%	1.8%	1.7%	1.6%	1.5%	1.4%
62	2.7%	2.7%	2.6%	2.5%	2.4%	2.3%	2.1%	2.1%	1.9%	1.8%	1.7%
63	3.0%	3.0%	3.0%	2.8%	2.7%	2.6%	2.5%	2.4%	2.3%	2.1%	1.9%
64	3.3%	3.3%	3.2%	3.2%	3.1%	3.0%	2.9%	2.7%	2.5%	2.5%	2.3%
65	3.7%	3.6%	3.6%	3.5%	3.4%	3.3%	3.2%	3.0%	2.9%	2.7%	2.7%
66	4.0%	3.9%	3.9%	3.8%	3.7%	3.6%	3.5%	3.4%	3.3%	3.1%	3.0%
67	4.2%	4.2%	4.1%	4.1%	3.9%	3.9%	3.7%	3.7%	3.6%	3.4%	3.3%
68	4.5%	4.5%	4.4%	4.2%	4.3%	4.1%	4.0%	3.9%	3.8%	3.7%	3.6%
69	4.7%	4.7%	4.6%	4.5%	4.5%	4.4%	4.3%	4.2%	4.1%	3.9%	3.8%
70	4.8%	4.8%	4.8%	4.7%	4.6%	4.6%	4.5%	4.3%	4.3%	4.2%	4.1%

Positive delta means the pension adjustment will be lower than under the current tables.

# Proposed 50% Factor Deltas

Retiree Age	Beneficiary Age										
	50	52	54	56	58	60	62	64	66	68	70
50	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	-0.1%	-0.1%	-0.1%	-0.1%	-0.2%
51	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.0%	0.0%	-0.1%	-0.1%	-0.2%
52	0.3%	0.2%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	-0.1%	0.0%
53	0.4%	0.4%	0.3%	0.3%	0.2%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%
54	0.4%	0.5%	0.4%	0.3%	0.3%	0.3%	0.2%	0.2%	0.1%	0.1%	0.0%
55	0.6%	0.5%	0.5%	0.4%	0.4%	0.3%	0.2%	0.2%	0.2%	0.1%	0.1%
56	0.7%	0.7%	0.6%	0.6%	0.4%	0.4%	0.4%	0.3%	0.3%	0.2%	0.1%
57	0.8%	0.8%	0.7%	0.6%	0.6%	0.5%	0.5%	0.4%	0.3%	0.3%	0.3%
58	0.9%	0.9%	0.9%	0.8%	0.7%	0.7%	0.6%	0.5%	0.5%	0.4%	0.4%
59	1.1%	1.0%	1.1%	1.0%	0.9%	0.9%	0.7%	0.7%	0.6%	0.5%	0.4%
60	1.3%	1.2%	1.2%	1.1%	1.1%	0.9%	0.9%	0.8%	0.8%	0.6%	0.6%
61	1.5%	1.5%	1.4%	1.3%	1.3%	1.2%	1.1%	1.0%	0.9%	0.8%	0.8%
62	1.7%	1.7%	1.6%	1.5%	1.4%	1.4%	1.3%	1.2%	1.1%	1.0%	0.9%
63	2.0%	1.9%	1.8%	1.7%	1.7%	1.6%	1.5%	1.4%	1.3%	1.2%	1.2%
64	2.2%	2.1%	2.0%	2.0%	1.8%	1.8%	1.7%	1.6%	1.5%	1.5%	1.4%
65	2.4%	2.4%	2.3%	2.2%	2.2%	2.1%	1.9%	1.8%	1.7%	1.7%	1.5%
66	2.7%	2.6%	2.5%	2.4%	2.3%	2.3%	2.1%	2.1%	2.0%	1.9%	1.8%
67	2.9%	2.8%	2.7%	2.7%	2.6%	2.5%	2.4%	2.3%	2.1%	2.1%	2.0%
68	3.1%	3.0%	3.0%	2.9%	2.8%	2.7%	2.6%	2.4%	2.4%	2.3%	2.2%
69	3.3%	3.3%	3.1%	3.1%	3.0%	2.9%	2.8%	2.7%	2.6%	2.5%	2.4%
70	3.5%	3.4%	3.4%	3.3%	3.2%	3.1%	3.0%	2.9%	2.8%	2.6%	2.5%

Positive delta means the pension adjustment will be lower than under the current tables.

# Conclusion

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- We recommend adoption of the proposed optional form tables based on the following assumptions:
  - 6.75% interest rate
  - Mortality tables based on those previously adopted in conjunction with the 2012-2017 JRS experience study
  - Inclusion of the cost of the pop-up feature for the joint and survivor options
  - Unisex blending consistent with recent actual optional form election information

# Disclosures

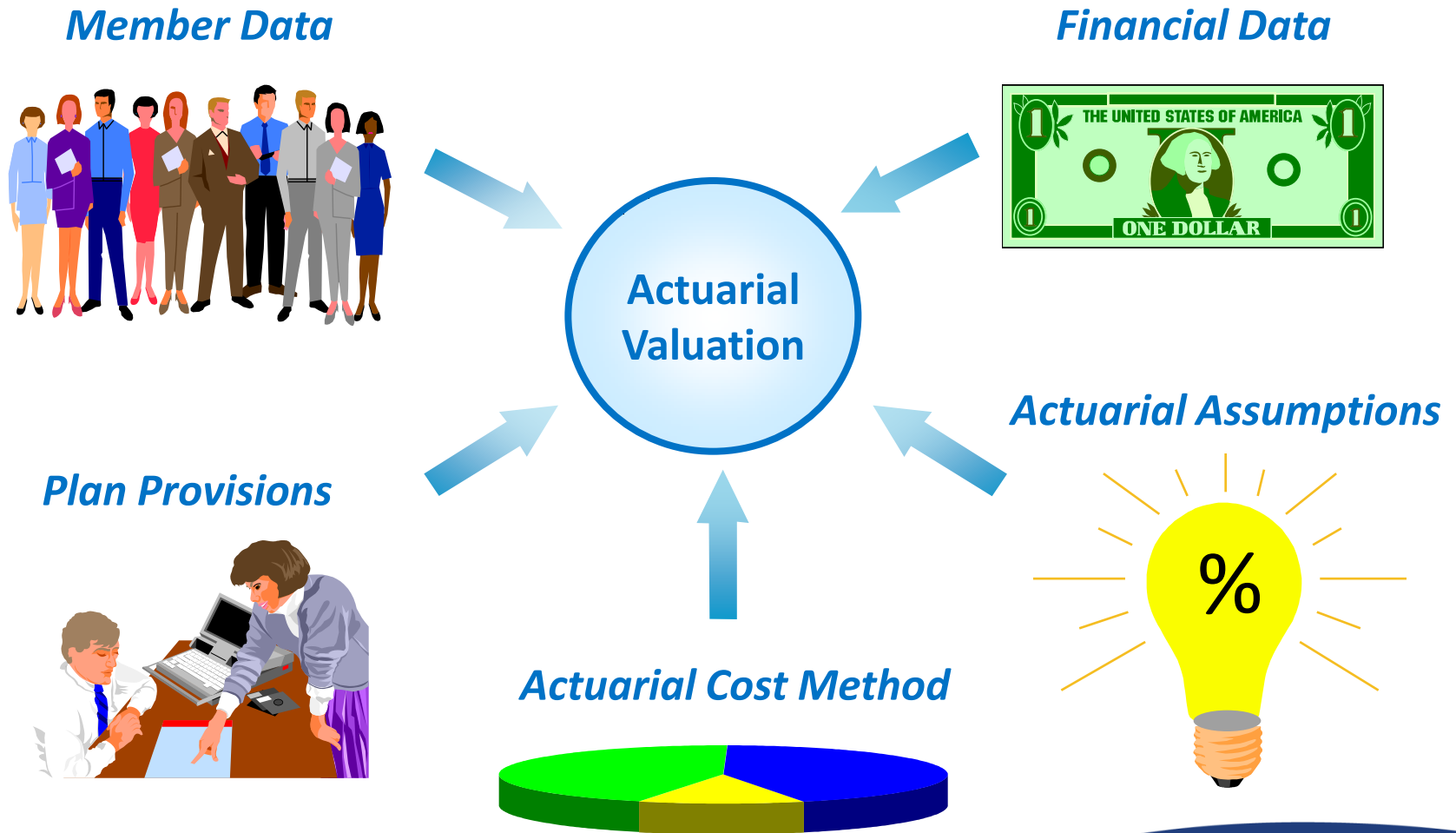
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- This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- Mita Drazilov and Louise Gates are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.
- If you need additional information to make an informed decision about the contents of this presentation, or if anything appears to be missing or incomplete please contact us before using this presentation.

# Military Retirement Provisions

Pension Actuarial Valuation Results  
as of September 30, 2017  
Experience Study  
October 1, 2015 – September 30, 2017

# Actuarial Valuation Process



# Select Valuation Results

	Results as of	
	<u>September 30, 2017</u>	<u>September 30, 2016</u>
Total Computed Employer Contribution	\$ 3,542,423	\$ 4,421,691
Amortization Period of UAAL (years)	19	20
Total Accrued Liability	\$ 49,950,120	\$ 49,674,928
Funding Value of Assets	<u>4,602,232</u>	<u>3,696,232</u>
Unfunded Actuarial Accrued Liabilities (UAAL)	\$ 45,347,888	\$ 45,978,696
	Plan Membership as of	
	<u>September 30, 2017</u>	<u>September 30, 2016</u>
Current Employees	10,394	10,144
Retired Members Including Beneficiaries	4,362	4,325
Inactive Employees <sup>(1)</sup>	<u>563</u>	<u>470</u>
<b>Total Participants</b>	<b>15,319</b>	<b>14,939</b>

<sup>(1)</sup> Inactive counts include Army inactive employees only. Air inactive employees were not provided.



# Military Retirement System

## Other Annual Valuation Comments

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- Valuation results based upon a 7.50% discount rate
- Computed employer contribution is for fiscal year 2020
  - Normal cost component includes an administrative expense contribution of \$481,605
  - Reflects a scheduled additional employer contribution of \$11 million in FY 2018
- UAAL amortization period of 19 years
- Fiscal year 2017 benefit payments were reported to be \$4,089,801

# Experience Study Process

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- Our analysis was based upon data submitted for the 2015 through 2017 annual valuations
- Analysis of demographic assumptions limited to withdrawal and retirement experience of M-Day members
- Economic assumption analysis similar to that performed for the other 4 Systems that ORS administers

# Recommendations - Economic

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- Adopt a 2.25% price inflation assumption.
- The preferred investment return assumption is 6.75%. However, the alternate assumption of 7.0% is also reasonable.
- Adopt a 2.75% wage inflation assumption.

# Recommendations – Non-Economic

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- Change the rates of age and service retirement:
  - No change in rates for Special Duty members.
  - Decrease rates for M Day members.
- Change the rates of withdrawal (termination of membership before being eligible to retire):
  - First 5 Years of Service:
    - No change in rates for Special Duty members.
    - Decrease rates for M Day members.
  - Over 5 Years of Service:
    - No change in rates.
- Adopt the RP-2014 mortality tables (Healthy Annuitant and Employees) adjusted for mortality improvement back to the observation period base year of 2006. For healthy retiree mortality, use 93% of the male rates and 99% of the female rates. Adopt the MP-2017 mortality improvement scale.
  - Same mortality basis as Michigan State Police Retirement System

# Recommendations - Other

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- Continue using the same asset valuation method.
- Continue using the entry age cost method and current amortization method.

# Effect on Valuation Results – Pension Valuation as of September 30, 2017

	Present Assumptions	Alternate #1 Assumptions	Alternate #2 Assumptions
<b>Investment Return</b>	<b>7.50%</b>	<b>7.00%</b>	<b>6.75%</b>
<b>Wage Inflation</b>	<b>3.50%</b>	<b>2.75%</b>	<b>2.75%</b>
<b>Mortality Assumptions</b>	<b>Current</b>	<b>Proposed</b>	<b>Proposed</b>
<b>All Other Assumptions</b>	<b>Current</b>	<b>Proposed</b>	<b>Proposed</b>
Employer Normal Cost \$	\$165,592	\$237,188	\$252,577
Administrative and Legal Expenses	<u>481,605</u>	<u>481,605</u>	<u>481,605</u>
Total Normal Cost \$	647,197	718,793	734,182
Total Actuarial Accrued Liability	\$49,950,120	\$51,381,336	\$52,759,359
Funding Value of Assets	<u>4,602,232</u>	<u>4,602,232</u>	<u>4,602,232</u>
Unfunded Actuarial Accrued Liabilities	45,347,888	46,779,104	48,157,127
Funded Ratio - Total	9.2%	9.0%	8.7%
Amortization Payment \$	\$2,895,226	\$2,916,604	\$2,992,989
Total Computed Employer Contribution \$ <sup>(1)</sup>	\$3,542,423	\$3,635,397	\$3,727,171

(1) Contribution amounts presented above would be for fiscal year (FY) 2020 but are illustrative only. Actual FY 2020 contribution amounts are based on pre-experience study results. Our expectation is that the proposed set of actuarial assumptions would first be used for the September 30, 2018 valuation.

# Disclaimers

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- This presentation is intended to be used in conjunction with the September 30, 2017 pension actuarial valuation report and October 1, 2015 through September 30, 2017 Experience Study report. This presentation should not be relied upon for any other purpose other than the purpose described in those reports.
- This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- The actuaries submitting this presentation (Mita Drazilov and Louise Gates) are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.