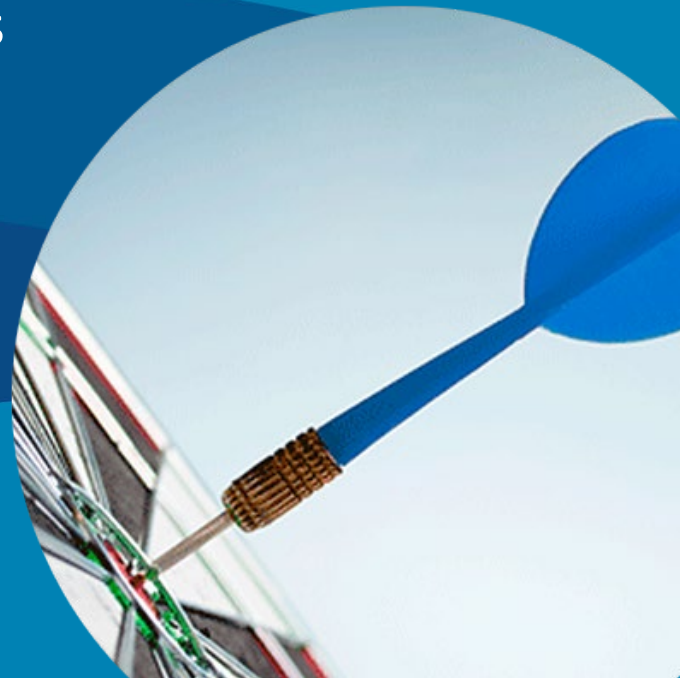




Michigan Public School Employees' Retirement System

Review of Optional Forms of Payment Factors
March 14, 2024 Board Meeting



Introduction

- Normal form of payment for a member who retires is a straight life annuity
- Section 85 of the MPSERS statute allows the member to choose an optional form of payment by having the member's computed benefit reduced
 - 100% joint and survivor (J&S) with pop-up
 - 75% joint and survivor with pop-up
 - 50% joint and survivor with pop-up
 - Social Security equated option
- If a member chooses an optional form of payment, an “option factor” is applied to the member's computed benefit

Introduction (Continued)

- Social Security Equated Option
 - For those age 60 or younger, a Social Security equated option at age 62 in a straight life form or in conjunction with a joint and survivor option
 - Retiree is paid an increased benefit from the plan until age 62 when it is reduced based on the projected Social Security benefit
 - Intent is that the increased benefit from the plan before age 62 approximates the same level of benefits as the plan plus Social Security after age 62

Introduction (Continued)

- The MPERS statute explicitly or implicitly references the concept of “actuarial equivalent” as the basis for the option factors
 - 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, the System is not financially affected by the selection of payment form by the member

Introduction (Continued)

- 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 different amounts based upon a member’s gender

Introduction (Continued)

- Section 85 of the MPERS statute indicates that the joint and survivor options shall be the “actuarial equivalent” of the straight life option
 - The statute indicates that the adjustment for the Social Security equated option shall be determined by the retirement system
- Public Act 92 of 2017 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

Introduction (Continued)

- Reasonable to review the option factors in conjunction with the 5-year Experience Study of actuarial assumptions for valuation purposes to see if the option factors should be updated
- Current option factors for MPERS are based upon the 5-year Experience Study covering the period October 1, 2012 through September 30, 2017
- This presentation compares the current option factors for MPERS against option factors based upon the 5-year Experience Study covering the period October 1, 2017 through September 30, 2022

Introduction (Concluded)

- 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; however, a review of assumptions for these purposes is beyond the scope of this presentation

Current Option Factors

- The actuarial basis for the current MPERS option factors is as follows:
 - Investment return assumption of 6.75%
 - COLA assumption:
 - 3.0% for MIP participants
 - 0.0% for Basic/PPP participants
 - Mortality assumption:
 - RP-2014 Healthy Annuitant Mortality Tables, scaled by 82% for males and 78% for females, projected with mortality improvements using the fully generational MP-2017 projection scale from a base year of 2006
 - Calculation year of 2021
 - Unisex percent of 30% (i.e., participant assumed 30% male and 70% female)
 - Pop-up cost included (for joint and survivor options)

Example

- MIP 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 \$8,760 ($\$10,000 \times 87.6\%$)
 - Reduction in member's benefit of \$1,240 makes up for the longer period of time over which the pension is expected to be paid
 - If member predeceases spouse, spouse receives \$8,760 (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

- GRS analyzed service-based retirements since October 1, 2017 contained in the September 30, 2022 actuarial valuation data
 - No death-in-service or disability retirements considered
 - Election of a joint and survivor option includes both Social Security equated elections and standard elections
 - Only considered records in which retiree was still alive
 - 35,223 retirements met above criteria
- The results are as follows:
 - Of the 20,983 retirees electing joint and survivor options, approximately 73% are female and 27% are male
 - Existing DB active population is approximately 75% female and 25% male
 - High proportion of females likely linked to retiree medical benefits

Option Election Experience Last 5 Years

- The table below shows the actual elections for the selected 35,223 retirements:

Equated Type	Optional Form	Count
Traditional	Straight Life Annuity	14,078
	50% Joint and Survivor	7,311
	75% Joint and Survivor	2,702
	100% Joint and Survivor	10,687
Social Security Equated	Straight Life Annuity	162
	50% Joint and Survivor	105
	75% Joint and Survivor	50
	100% Joint and Survivor	128
Total		35,223

Option Factor Analysis

- GRS prepared MPERS option factors based on the analysis conducted in conjunction with the 2017-2022 Experience Study:
 - Investment return assumption of 6.00%
 - COLA assumption:
 - 3.0% for MIP participants
 - 0.0% for Basic/PPP participants
 - Mortality assumption:
 - PubT-2010 Retiree Mortality Tables, scaled by 116% for males and 116% for females, projected with mortality improvements using the fully generational MP-2021 projection scale from a base year of 2010
 - Calculation year of 2026
 - Unisex percent of 30% (i.e., participant assumed 30% male and 70% female)
 - Pop-up cost included (for joint and survivor options)

Option Factor Analysis

- With respect to the joint and survivor with pop-up option factors:
 - Updating the mortality basis to that adopted during the 2017-2022 Experience Study would generally tend to result in the participant being charged less for the optional forms of payment
 - Updating the interest rate assumption to 6% would generally tend to result in the participant being charged more for the optional forms of payment
 - The result of the combined offsetting impacts is that the joint and survivor with pop-up option factors based on the 2017-2022 Experience Study are similar to the current option factors
- With respect to the Social Security equated option factors:
 - For all ages, the updated mortality tables and lowered interest rate basis resulted in the participant being charged less for the optional form of payment
- Exhibits on the following slides show deltas (changes) in the factors (factors based on 2017-2022 Experience Study minus current factors)
 - Positive numbers indicate a lower pension adjustment than under the current tables
 - Negative numbers indicate a higher pension adjustment than under the current tables

MPSERS MIP – 100% J&S Factor Deltas

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

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

MPSERS MIP – 75% J&S Factor Deltas

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

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

MPSERS MIP – 50% J&S Factor Deltas

Retiree Age	Beneficiary Age										
	50	52	54	56	58	60	62	64	66	68	70
50	0.7%	0.8%	0.8%	0.9%	0.9%	0.8%	0.9%	0.9%	0.8%	0.7%	0.7%
51	0.6%	0.7%	0.8%	0.9%	0.9%	0.9%	0.9%	0.9%	0.8%	0.8%	0.8%
52	0.5%	0.6%	0.7%	0.8%	0.8%	0.8%	0.8%	0.9%	0.8%	0.8%	0.8%
53	0.4%	0.5%	0.7%	0.7%	0.9%	0.8%	0.9%	0.9%	0.8%	0.9%	0.8%
54	0.4%	0.5%	0.6%	0.7%	0.8%	0.8%	0.9%	0.9%	0.9%	0.9%	0.8%
55	0.2%	0.4%	0.6%	0.7%	0.8%	0.8%	0.9%	0.9%	0.9%	0.9%	0.8%
56	0.1%	0.3%	0.4%	0.6%	0.8%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
57	0.1%	0.2%	0.4%	0.6%	0.7%	0.8%	0.8%	0.9%	0.9%	1.0%	0.9%
58	0.0%	0.2%	0.3%	0.5%	0.7%	0.8%	0.8%	0.9%	1.0%	1.0%	1.0%
59	-0.2%	0.0%	0.2%	0.4%	0.6%	0.7%	0.9%	0.9%	0.9%	1.0%	1.0%
60	-0.3%	-0.1%	0.1%	0.3%	0.5%	0.7%	0.8%	0.9%	0.9%	1.0%	1.0%
61	-0.4%	-0.2%	0.0%	0.2%	0.4%	0.6%	0.8%	0.8%	1.0%	1.0%	1.0%
62	-0.7%	-0.4%	-0.2%	0.1%	0.3%	0.5%	0.6%	0.8%	1.0%	1.0%	1.1%
63	-0.8%	-0.6%	-0.3%	-0.1%	0.2%	0.4%	0.5%	0.7%	0.9%	1.0%	1.0%
64	-1.1%	-0.8%	-0.5%	-0.2%	0.0%	0.2%	0.5%	0.6%	0.9%	0.9%	1.0%
65	-1.3%	-1.0%	-0.7%	-0.5%	-0.2%	0.1%	0.3%	0.6%	0.8%	0.9%	1.0%
66	-1.5%	-1.2%	-1.0%	-0.7%	-0.4%	-0.1%	0.2%	0.4%	0.6%	0.8%	0.9%
67	-1.7%	-1.5%	-1.2%	-0.9%	-0.6%	-0.3%	0.0%	0.2%	0.5%	0.7%	0.8%
68	-2.0%	-1.7%	-1.5%	-1.2%	-0.9%	-0.5%	-0.2%	0.0%	0.3%	0.5%	0.8%
69	-2.3%	-2.0%	-1.7%	-1.4%	-1.1%	-0.8%	-0.4%	-0.1%	0.1%	0.4%	0.7%
70	-2.5%	-2.2%	-2.0%	-1.7%	-1.4%	-1.0%	-0.7%	-0.3%	-0.1%	0.2%	0.5%

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

MPSERS Basic/PPP – 100% J&S Factor Deltas

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

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

MPSERS Basic/PPP – 75% J&S Factor Deltas

Retiree Age	Beneficiary Age										
	50	52	54	56	58	60	62	64	66	68	70
50	0.8%	0.8%	1.0%	1.0%	1.0%	1.1%	1.0%	1.0%	1.0%	0.9%	0.9%
51	0.7%	0.8%	0.9%	1.0%	1.0%	1.0%	1.1%	1.0%	1.0%	1.0%	0.9%
52	0.6%	0.8%	0.9%	1.0%	0.9%	1.0%	1.1%	1.1%	1.0%	1.0%	1.0%
53	0.6%	0.7%	0.8%	0.9%	1.0%	1.0%	1.1%	1.1%	1.1%	1.0%	1.0%
54	0.4%	0.6%	0.7%	0.8%	0.9%	1.0%	1.0%	1.1%	1.0%	1.0%	1.0%
55	0.3%	0.6%	0.7%	0.8%	0.9%	0.9%	1.1%	1.1%	1.1%	1.0%	1.0%
56	0.3%	0.5%	0.6%	0.8%	0.9%	1.0%	1.1%	1.1%	1.1%	1.1%	1.1%
57	0.2%	0.4%	0.5%	0.7%	0.9%	0.9%	1.0%	1.1%	1.2%	1.2%	1.1%
58	0.1%	0.3%	0.4%	0.7%	0.8%	0.9%	1.1%	1.1%	1.2%	1.1%	1.1%
59	0.0%	0.1%	0.3%	0.6%	0.8%	0.9%	1.0%	1.1%	1.1%	1.1%	1.2%
60	-0.2%	0.0%	0.2%	0.4%	0.7%	0.8%	0.9%	1.1%	1.2%	1.2%	1.2%
61	-0.3%	-0.1%	0.1%	0.3%	0.5%	0.8%	0.9%	1.0%	1.1%	1.3%	1.2%
62	-0.5%	-0.2%	-0.1%	0.2%	0.4%	0.6%	0.8%	0.9%	1.0%	1.2%	1.2%
63	-0.7%	-0.5%	-0.2%	0.0%	0.3%	0.5%	0.7%	0.9%	1.1%	1.1%	1.2%
64	-0.8%	-0.6%	-0.4%	-0.1%	0.1%	0.4%	0.6%	0.8%	1.0%	1.1%	1.2%
65	-1.1%	-0.9%	-0.6%	-0.3%	-0.1%	0.2%	0.4%	0.7%	0.8%	1.0%	1.2%
66	-1.4%	-1.1%	-0.9%	-0.6%	-0.4%	0.0%	0.3%	0.5%	0.7%	0.9%	1.1%
67	-1.6%	-1.4%	-1.1%	-0.8%	-0.6%	-0.2%	0.0%	0.3%	0.6%	0.8%	1.0%
68	-1.9%	-1.6%	-1.4%	-1.1%	-0.8%	-0.5%	-0.2%	0.1%	0.4%	0.6%	0.8%
69	-2.2%	-1.9%	-1.7%	-1.3%	-1.1%	-0.8%	-0.4%	-0.1%	0.2%	0.4%	0.7%
70	-2.5%	-2.2%	-1.9%	-1.7%	-1.4%	-1.1%	-0.8%	-0.4%	0.0%	0.3%	0.5%

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

MPSERS Basic/PPP – 50% Factor Deltas

Retiree Age	Beneficiary Age										
	50	52	54	56	58	60	62	64	66	68	70
50	0.6%	0.6%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.6%	0.7%	0.7%
51	0.5%	0.5%	0.6%	0.6%	0.7%	0.7%	0.7%	0.7%	0.7%	0.6%	0.7%
52	0.4%	0.5%	0.6%	0.7%	0.6%	0.7%	0.7%	0.7%	0.7%	0.7%	0.6%
53	0.4%	0.5%	0.5%	0.6%	0.7%	0.7%	0.7%	0.7%	0.7%	0.6%	0.7%
54	0.4%	0.4%	0.5%	0.6%	0.6%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
55	0.3%	0.3%	0.5%	0.5%	0.6%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
56	0.2%	0.3%	0.4%	0.5%	0.6%	0.7%	0.7%	0.7%	0.8%	0.7%	0.7%
57	0.1%	0.2%	0.4%	0.5%	0.6%	0.7%	0.7%	0.7%	0.7%	0.8%	0.8%
58	0.1%	0.1%	0.3%	0.4%	0.6%	0.6%	0.7%	0.7%	0.8%	0.8%	0.8%
59	-0.1%	0.1%	0.3%	0.4%	0.5%	0.6%	0.7%	0.7%	0.8%	0.8%	0.8%
60	-0.2%	0.0%	0.1%	0.3%	0.4%	0.5%	0.7%	0.7%	0.8%	0.8%	0.9%
61	-0.2%	-0.1%	0.1%	0.3%	0.4%	0.5%	0.6%	0.7%	0.8%	0.8%	0.9%
62	-0.3%	-0.2%	0.0%	0.1%	0.3%	0.4%	0.5%	0.7%	0.8%	0.8%	0.9%
63	-0.5%	-0.3%	-0.1%	0.1%	0.2%	0.4%	0.5%	0.7%	0.7%	0.8%	0.8%
64	-0.6%	-0.4%	-0.3%	-0.1%	0.1%	0.2%	0.4%	0.6%	0.7%	0.8%	0.8%
65	-0.8%	-0.7%	-0.5%	-0.3%	-0.1%	0.1%	0.3%	0.5%	0.6%	0.8%	0.8%
66	-1.0%	-0.8%	-0.7%	-0.5%	-0.2%	0.0%	0.1%	0.4%	0.5%	0.7%	0.8%
67	-1.2%	-1.0%	-0.8%	-0.6%	-0.4%	-0.2%	0.0%	0.2%	0.4%	0.6%	0.7%
68	-1.4%	-1.3%	-1.1%	-0.8%	-0.6%	-0.3%	-0.1%	0.0%	0.3%	0.5%	0.7%
69	-1.7%	-1.4%	-1.3%	-1.0%	-0.8%	-0.6%	-0.4%	-0.1%	0.1%	0.4%	0.5%
70	-1.9%	-1.7%	-1.5%	-1.3%	-1.1%	-0.8%	-0.6%	-0.3%	-0.1%	0.2%	0.4%

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

MPSERS – Social Security Equated Deltas

- The table below shows the deltas between Social Security equated optional form factors (at integer ages only) based upon the 2017-2022 Experience Study analysis and the current factors

Retiree Age	MIP	Basic/PPP
45	2.73%	3.29%
46	2.74%	3.30%
47	2.75%	3.30%
48	2.73%	3.29%
49	2.71%	3.27%
50	2.68%	3.21%
51	2.62%	3.15%
52	2.56%	3.06%
53	2.47%	2.95%
54	2.36%	2.80%
55	2.21%	2.63%
56	2.03%	2.41%
57	1.82%	2.16%
58	1.57%	1.86%
59	1.27%	1.49%
60	0.91%	1.07%

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

Summary

- The optional form factors for the joint and survivor pop-up options based upon the 2017-2022 Experience Study analysis are similar to the current factors
- The optional form factors for the Social Security equated option based upon the 2017-2022 Experience Study analysis would result in the participant being charged less for the optional form of payment at all ages
- Ultimately, the decision whether to update the optional form factors or maintain the current factors resides with the Department and the Retirement Board
- The choice of assumptions may affect other individual actuarial calculations such as EDROs, recoupment calculations, and service purchases; however, a review of assumptions for these purposes is beyond the scope of this presentation

Disclosures

- 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.

APPENDIX 1

CURRENT FACTORS

MPSERS MIP – Current 100% J&S Factors

Beneficiary Age

Retiree Age	50	52	54	56	58	60	62	64	66	68	70
50	91.6%	92.2%	92.8%	93.3%	93.8%	94.3%	94.8%	95.2%	95.6%	96.0%	96.4%
51	91.0%	91.6%	92.2%	92.8%	93.3%	93.8%	94.3%	94.8%	95.3%	95.7%	96.1%
52	90.3%	90.9%	91.6%	92.2%	92.8%	93.4%	93.9%	94.4%	94.9%	95.4%	95.8%
53	89.6%	90.2%	90.9%	91.6%	92.2%	92.8%	93.4%	94.0%	94.5%	95.0%	95.4%
54	88.8%	89.5%	90.2%	90.9%	91.6%	92.2%	92.9%	93.5%	94.0%	94.6%	95.1%
55	87.9%	88.7%	89.4%	90.2%	90.9%	91.6%	92.3%	92.9%	93.5%	94.1%	94.7%
56	87.0%	87.8%	88.6%	89.4%	90.2%	90.9%	91.6%	92.3%	93.0%	93.6%	94.2%
57	86.1%	86.9%	87.7%	88.6%	89.4%	90.2%	91.0%	91.7%	92.4%	93.1%	93.8%
58	85.1%	85.9%	86.8%	87.7%	88.5%	89.4%	90.2%	91.0%	91.8%	92.5%	93.2%
59	84.0%	84.9%	85.8%	86.7%	87.6%	88.5%	89.4%	90.3%	91.1%	91.9%	92.7%
60	82.9%	83.8%	84.7%	85.7%	86.7%	87.6%	88.6%	89.5%	90.4%	91.3%	92.1%
61	81.7%	82.7%	83.6%	84.6%	85.6%	86.7%	87.7%	88.6%	89.6%	90.5%	91.4%
62	80.5%	81.5%	82.5%	83.5%	84.5%	85.6%	86.7%	87.7%	88.7%	89.7%	90.7%
63	79.2%	80.2%	81.2%	82.3%	83.4%	84.5%	85.6%	86.7%	87.8%	88.9%	89.9%
64	77.9%	78.9%	79.9%	81.0%	82.2%	83.3%	84.5%	85.7%	86.8%	88.0%	89.0%
65	76.5%	77.5%	78.6%	79.7%	80.9%	82.1%	83.3%	84.5%	85.8%	87.0%	88.1%
66	75.0%	76.0%	77.1%	78.3%	79.5%	80.7%	82.0%	83.3%	84.6%	85.9%	87.1%
67	73.5%	74.5%	75.6%	76.8%	78.0%	79.3%	80.6%	82.0%	83.4%	84.7%	86.0%
68	71.9%	72.9%	74.0%	75.2%	76.5%	77.8%	79.2%	80.6%	82.0%	83.4%	84.8%
69	70.2%	71.3%	72.4%	73.6%	74.9%	76.2%	77.7%	79.1%	80.6%	82.1%	83.6%
70	68.5%	69.5%	70.7%	71.9%	73.2%	74.6%	76.0%	77.5%	79.1%	80.6%	82.2%

MPSERS MIP – Current 75% J&S Factors

Beneficiary Age

Retiree Age	50	52	54	56	58	60	62	64	66	68	70
50	93.6%	94.0%	94.5%	94.9%	95.3%	95.7%	96.0%	96.4%	96.7%	97.0%	97.3%
51	93.1%	93.6%	94.0%	94.5%	94.9%	95.3%	95.7%	96.1%	96.4%	96.7%	97.0%
52	92.5%	93.0%	93.5%	94.0%	94.5%	94.9%	95.4%	95.7%	96.1%	96.5%	96.8%
53	92.0%	92.5%	93.0%	93.5%	94.0%	94.5%	95.0%	95.4%	95.8%	96.2%	96.5%
54	91.3%	91.9%	92.5%	93.0%	93.5%	94.1%	94.6%	95.0%	95.5%	95.9%	96.3%
55	90.7%	91.3%	91.9%	92.4%	93.0%	93.6%	94.1%	94.6%	95.1%	95.5%	96.0%
56	89.9%	90.6%	91.2%	91.8%	92.4%	93.0%	93.6%	94.1%	94.7%	95.2%	95.6%
57	89.2%	89.8%	90.5%	91.2%	91.8%	92.5%	93.1%	93.7%	94.2%	94.7%	95.2%
58	88.4%	89.1%	89.8%	90.5%	91.1%	91.8%	92.5%	93.1%	93.7%	94.3%	94.8%
59	87.5%	88.2%	89.0%	89.7%	90.4%	91.2%	91.9%	92.5%	93.2%	93.8%	94.4%
60	86.6%	87.3%	88.1%	88.9%	89.7%	90.4%	91.2%	91.9%	92.6%	93.3%	93.9%
61	85.6%	86.4%	87.2%	88.0%	88.8%	89.6%	90.4%	91.2%	92.0%	92.7%	93.4%
62	84.6%	85.4%	86.2%	87.1%	87.9%	88.8%	89.7%	90.5%	91.3%	92.1%	92.8%
63	83.6%	84.4%	85.2%	86.1%	87.0%	87.9%	88.8%	89.7%	90.6%	91.4%	92.2%
64	82.4%	83.3%	84.1%	85.1%	86.0%	86.9%	87.9%	88.9%	89.8%	90.7%	91.6%
65	81.2%	82.1%	83.0%	83.9%	84.9%	85.9%	86.9%	87.9%	88.9%	89.9%	90.8%
66	80.0%	80.9%	81.8%	82.8%	83.8%	84.8%	85.9%	86.9%	88.0%	89.0%	90.0%
67	78.7%	79.6%	80.5%	81.5%	82.6%	83.6%	84.7%	85.9%	87.0%	88.1%	89.1%
68	77.3%	78.2%	79.2%	80.2%	81.3%	82.4%	83.5%	84.7%	85.9%	87.0%	88.2%
69	75.9%	76.8%	77.8%	78.8%	79.9%	81.1%	82.3%	83.5%	84.7%	85.9%	87.1%
70	74.3%	75.3%	76.3%	77.3%	78.5%	79.7%	80.9%	82.1%	83.4%	84.7%	86.0%

MPSERS MIP – Current 50% J&S Factors

Beneficiary Age

Retiree Age	50	52	54	56	58	60	62	64	66	68	70
50	95.6%	95.9%	96.2%	96.5%	96.8%	97.1%	97.3%	97.5%	97.8%	98.0%	98.2%
51	95.3%	95.6%	95.9%	96.2%	96.5%	96.8%	97.1%	97.3%	97.6%	97.8%	98.0%
52	94.9%	95.3%	95.6%	95.9%	96.3%	96.6%	96.9%	97.1%	97.4%	97.6%	97.8%
53	94.5%	94.9%	95.2%	95.6%	95.9%	96.3%	96.6%	96.9%	97.2%	97.4%	97.7%
54	94.0%	94.4%	94.8%	95.2%	95.6%	96.0%	96.3%	96.6%	96.9%	97.2%	97.5%
55	93.6%	94.0%	94.4%	94.8%	95.2%	95.6%	96.0%	96.3%	96.7%	97.0%	97.3%
56	93.1%	93.5%	94.0%	94.4%	94.8%	95.2%	95.6%	96.0%	96.4%	96.7%	97.0%
57	92.5%	93.0%	93.5%	93.9%	94.4%	94.8%	95.3%	95.7%	96.1%	96.4%	96.8%
58	91.9%	92.4%	92.9%	93.4%	93.9%	94.4%	94.9%	95.3%	95.7%	96.1%	96.5%
59	91.3%	91.8%	92.4%	92.9%	93.4%	93.9%	94.4%	94.9%	95.4%	95.8%	96.2%
60	90.6%	91.2%	91.7%	92.3%	92.9%	93.4%	93.9%	94.5%	95.0%	95.4%	95.9%
61	89.9%	90.5%	91.1%	91.7%	92.3%	92.8%	93.4%	94.0%	94.5%	95.0%	95.5%
62	89.2%	89.8%	90.4%	91.0%	91.6%	92.2%	92.9%	93.5%	94.0%	94.6%	95.1%
63	88.4%	89.0%	89.6%	90.3%	90.9%	91.6%	92.3%	92.9%	93.5%	94.1%	94.7%
64	87.6%	88.2%	88.8%	89.5%	90.2%	90.9%	91.6%	92.3%	92.9%	93.6%	94.2%
65	86.7%	87.3%	88.0%	88.7%	89.4%	90.1%	90.9%	91.6%	92.3%	93.0%	93.7%
66	85.7%	86.4%	87.1%	87.8%	88.6%	89.3%	90.1%	90.9%	91.7%	92.4%	93.1%
67	84.7%	85.4%	86.1%	86.9%	87.7%	88.5%	89.3%	90.1%	90.9%	91.7%	92.5%
68	83.6%	84.3%	85.1%	85.9%	86.7%	87.5%	88.4%	89.3%	90.1%	91.0%	91.8%
69	82.5%	83.2%	84.0%	84.8%	85.6%	86.5%	87.4%	88.3%	89.3%	90.2%	91.0%
70	81.3%	82.0%	82.8%	83.7%	84.5%	85.4%	86.4%	87.3%	88.3%	89.3%	90.2%

MPERS Basic/PPP – Current 100% J&S Factors

Beneficiary Age

Retiree Age	50	52	54	56	58	60	62	64	66	68	70
50	93.7%	94.0%	94.4%	94.7%	95.1%	95.4%	95.8%	96.1%	96.4%	96.7%	96.9%
51	93.2%	93.6%	94.0%	94.3%	94.7%	95.1%	95.4%	95.8%	96.1%	96.4%	96.7%
52	92.7%	93.1%	93.5%	93.9%	94.3%	94.7%	95.1%	95.4%	95.8%	96.1%	96.4%
53	92.1%	92.5%	93.0%	93.4%	93.8%	94.3%	94.7%	95.1%	95.4%	95.8%	96.2%
54	91.5%	91.9%	92.4%	92.9%	93.3%	93.8%	94.2%	94.7%	95.1%	95.5%	95.8%
55	90.8%	91.3%	91.8%	92.3%	92.8%	93.3%	93.8%	94.2%	94.7%	95.1%	95.5%
56	90.1%	90.6%	91.2%	91.7%	92.2%	92.7%	93.2%	93.7%	94.2%	94.7%	95.1%
57	89.4%	89.9%	90.5%	91.0%	91.6%	92.1%	92.7%	93.2%	93.7%	94.3%	94.7%
58	88.6%	89.1%	89.7%	90.3%	90.9%	91.5%	92.1%	92.7%	93.2%	93.8%	94.3%
59	87.7%	88.3%	88.9%	89.5%	90.2%	90.8%	91.4%	92.1%	92.7%	93.3%	93.8%
60	86.8%	87.4%	88.1%	88.7%	89.4%	90.1%	90.7%	91.4%	92.1%	92.7%	93.3%
61	85.9%	86.5%	87.2%	87.9%	88.6%	89.3%	90.0%	90.7%	91.4%	92.1%	92.7%
62	84.9%	85.5%	86.2%	86.9%	87.7%	88.4%	89.2%	89.9%	90.7%	91.4%	92.1%
63	83.8%	84.5%	85.2%	85.9%	86.7%	87.5%	88.3%	89.1%	89.9%	90.7%	91.5%
64	82.7%	83.4%	84.1%	84.9%	85.7%	86.5%	87.4%	88.2%	89.1%	89.9%	90.8%
65	81.5%	82.2%	83.0%	83.8%	84.6%	85.5%	86.4%	87.3%	88.2%	89.1%	90.0%
66	80.3%	81.0%	81.8%	82.6%	83.5%	84.4%	85.3%	86.2%	87.2%	88.2%	89.1%
67	79.0%	79.7%	80.5%	81.3%	82.2%	83.2%	84.1%	85.1%	86.2%	87.2%	88.2%
68	77.6%	78.3%	79.1%	80.0%	80.9%	81.9%	82.9%	83.9%	85.0%	86.1%	87.2%
69	76.2%	76.9%	77.7%	78.6%	79.5%	80.5%	81.6%	82.7%	83.8%	84.9%	86.1%
70	74.6%	75.4%	76.2%	77.1%	78.1%	79.1%	80.2%	81.3%	82.5%	83.7%	84.9%

MPERS Basic/PPP – Current 75% J&S Factors

Beneficiary Age

Retiree Age	50	52	54	56	58	60	62	64	66	68	70
50	95.2%	95.5%	95.7%	96.0%	96.3%	96.5%	96.8%	97.0%	97.3%	97.5%	97.7%
51	94.8%	95.1%	95.4%	95.7%	96.0%	96.3%	96.5%	96.8%	97.0%	97.3%	97.5%
52	94.4%	94.7%	95.0%	95.3%	95.7%	96.0%	96.2%	96.5%	96.8%	97.1%	97.3%
53	93.9%	94.3%	94.6%	95.0%	95.3%	95.6%	95.9%	96.2%	96.5%	96.8%	97.1%
54	93.5%	93.8%	94.2%	94.6%	94.9%	95.3%	95.6%	95.9%	96.3%	96.6%	96.9%
55	93.0%	93.3%	93.7%	94.1%	94.5%	94.9%	95.2%	95.6%	95.9%	96.3%	96.6%
56	92.4%	92.8%	93.2%	93.6%	94.0%	94.4%	94.8%	95.2%	95.6%	96.0%	96.3%
57	91.8%	92.2%	92.7%	93.1%	93.5%	94.0%	94.4%	94.8%	95.2%	95.6%	96.0%
58	91.2%	91.6%	92.1%	92.5%	93.0%	93.5%	93.9%	94.4%	94.8%	95.3%	95.7%
59	90.5%	91.0%	91.5%	91.9%	92.4%	92.9%	93.4%	93.9%	94.4%	94.9%	95.3%
60	89.8%	90.3%	90.8%	91.3%	91.8%	92.4%	92.9%	93.4%	93.9%	94.4%	94.9%
61	89.0%	89.5%	90.1%	90.6%	91.2%	91.7%	92.3%	92.9%	93.4%	93.9%	94.5%
62	88.2%	88.7%	89.3%	89.9%	90.5%	91.1%	91.7%	92.3%	92.9%	93.4%	94.0%
63	87.4%	87.9%	88.5%	89.1%	89.7%	90.3%	91.0%	91.6%	92.2%	92.9%	93.5%
64	86.4%	87.0%	87.6%	88.2%	88.9%	89.5%	90.2%	90.9%	91.6%	92.3%	92.9%
65	85.5%	86.1%	86.7%	87.3%	88.0%	88.7%	89.4%	90.1%	90.9%	91.6%	92.3%
66	84.5%	85.0%	85.7%	86.4%	87.1%	87.8%	88.5%	89.3%	90.1%	90.9%	91.6%
67	83.4%	84.0%	84.6%	85.3%	86.1%	86.8%	87.6%	88.4%	89.2%	90.1%	90.9%
68	82.2%	82.8%	83.5%	84.2%	85.0%	85.8%	86.6%	87.5%	88.3%	89.2%	90.1%
69	81.0%	81.6%	82.3%	83.0%	83.8%	84.7%	85.5%	86.4%	87.3%	88.3%	89.2%
70	79.7%	80.3%	81.0%	81.8%	82.6%	83.5%	84.4%	85.3%	86.2%	87.2%	88.2%

MPERS Basic/PPP – Current 50% J&S Factors

Beneficiary Age

Retiree Age	50	52	54	56	58	60	62	64	66	68	70
50	96.7%	96.9%	97.1%	97.3%	97.5%	97.7%	97.8%	98.0%	98.2%	98.3%	98.4%
51	96.5%	96.7%	96.9%	97.1%	97.3%	97.5%	97.7%	97.8%	98.0%	98.2%	98.3%
52	96.2%	96.4%	96.6%	96.8%	97.1%	97.3%	97.5%	97.7%	97.8%	98.0%	98.2%
53	95.9%	96.1%	96.4%	96.6%	96.8%	97.0%	97.3%	97.5%	97.7%	97.9%	98.0%
54	95.5%	95.8%	96.1%	96.3%	96.6%	96.8%	97.0%	97.3%	97.5%	97.7%	97.9%
55	95.2%	95.5%	95.7%	96.0%	96.3%	96.5%	96.8%	97.0%	97.3%	97.5%	97.7%
56	94.8%	95.1%	95.4%	95.7%	95.9%	96.2%	96.5%	96.8%	97.0%	97.3%	97.5%
57	94.4%	94.7%	95.0%	95.3%	95.6%	95.9%	96.2%	96.5%	96.8%	97.0%	97.3%
58	93.9%	94.3%	94.6%	94.9%	95.2%	95.6%	95.9%	96.2%	96.5%	96.8%	97.1%
59	93.5%	93.8%	94.1%	94.5%	94.8%	95.2%	95.5%	95.9%	96.2%	96.5%	96.8%
60	93.0%	93.3%	93.7%	94.0%	94.4%	94.8%	95.1%	95.5%	95.9%	96.2%	96.5%
61	92.4%	92.8%	93.1%	93.5%	93.9%	94.3%	94.7%	95.1%	95.5%	95.9%	96.2%
62	91.8%	92.2%	92.6%	93.0%	93.4%	93.9%	94.3%	94.7%	95.1%	95.5%	95.9%
63	91.2%	91.6%	92.0%	92.4%	92.9%	93.3%	93.8%	94.2%	94.7%	95.1%	95.6%
64	90.5%	90.9%	91.4%	91.8%	92.3%	92.8%	93.3%	93.7%	94.2%	94.7%	95.2%
65	89.8%	90.3%	90.7%	91.2%	91.7%	92.2%	92.7%	93.2%	93.7%	94.2%	94.7%
66	89.1%	89.5%	90.0%	90.5%	91.0%	91.5%	92.1%	92.6%	93.2%	93.7%	94.2%
67	88.3%	88.7%	89.2%	89.7%	90.2%	90.8%	91.4%	92.0%	92.6%	93.1%	93.7%
68	87.4%	87.9%	88.4%	88.9%	89.5%	90.0%	90.6%	91.3%	91.9%	92.5%	93.1%
69	86.5%	86.9%	87.5%	88.0%	88.6%	89.2%	89.9%	90.5%	91.2%	91.8%	92.5%
70	85.5%	86.0%	86.5%	87.1%	87.7%	88.3%	89.0%	89.7%	90.4%	91.1%	91.8%

MPSERS –

Current Social Security Equated Factors

- The table below shows the current Social Security equated optional form factors at integer ages only

Retiree Age	MIP	Basic/PPP
45	26.09%	27.47%
46	28.07%	29.49%
47	30.21%	31.67%
48	32.54%	34.02%
49	35.07%	36.57%
50	37.81%	39.34%
51	40.81%	42.33%
52	44.06%	45.59%
53	47.62%	49.12%
54	51.50%	52.97%
55	55.75%	57.16%
56	60.41%	61.74%
57	65.52%	66.73%
58	71.13%	72.20%
59	77.31%	78.20%
60	84.13%	84.78%

APPENDIX 2

FACTORS BASED ON 2017-2022 EXPERIENCE STUDY ANALYSIS

MPSERS MIP – 100% J&S Factors

(Based on 2017-2022 Experience Study Analysis)

Retiree Age	Beneficiary Age										
	50	52	54	56	58	60	62	64	66	68	70
50	92.8%	93.5%	94.2%	94.9%	95.4%	96.0%	96.4%	96.8%	97.2%	97.5%	97.8%
51	92.0%	92.8%	93.6%	94.3%	94.9%	95.5%	96.0%	96.5%	96.9%	97.2%	97.6%
52	91.2%	92.1%	92.9%	93.6%	94.3%	95.0%	95.5%	96.1%	96.5%	96.9%	97.3%
53	90.3%	91.2%	92.1%	92.9%	93.7%	94.4%	95.0%	95.6%	96.1%	96.6%	97.0%
54	89.4%	90.3%	91.3%	92.2%	93.0%	93.8%	94.5%	95.1%	95.7%	96.2%	96.7%
55	88.4%	89.4%	90.4%	91.4%	92.3%	93.1%	93.9%	94.6%	95.2%	95.8%	96.3%
56	87.3%	88.4%	89.5%	90.5%	91.5%	92.4%	93.3%	94.0%	94.7%	95.4%	95.9%
57	86.2%	87.3%	88.4%	89.6%	90.6%	91.6%	92.6%	93.4%	94.2%	94.9%	95.5%
58	85.0%	86.2%	87.4%	88.5%	89.7%	90.8%	91.8%	92.7%	93.6%	94.4%	95.1%
59	83.7%	84.9%	86.2%	87.4%	88.6%	89.8%	90.9%	92.0%	92.9%	93.8%	94.5%
60	82.3%	83.6%	84.9%	86.2%	87.5%	88.8%	90.0%	91.1%	92.2%	93.1%	94.0%
61	80.9%	82.2%	83.6%	85.0%	86.3%	87.7%	89.0%	90.2%	91.3%	92.4%	93.3%
62	79.4%	80.8%	82.2%	83.6%	85.0%	86.5%	87.8%	89.2%	90.4%	91.6%	92.6%
63	77.9%	79.2%	80.7%	82.1%	83.6%	85.1%	86.6%	88.0%	89.4%	90.6%	91.8%
64	76.2%	77.6%	79.1%	80.6%	82.1%	83.7%	85.3%	86.8%	88.3%	89.6%	90.9%
65	74.5%	75.9%	77.4%	79.0%	80.6%	82.2%	83.8%	85.4%	87.0%	88.5%	89.9%
66	72.8%	74.2%	75.6%	77.2%	78.9%	80.6%	82.3%	84.0%	85.7%	87.3%	88.8%
67	70.9%	72.3%	73.8%	75.4%	77.1%	78.8%	80.6%	82.4%	84.2%	85.9%	87.5%
68	69.0%	70.4%	71.9%	73.5%	75.2%	77.0%	78.8%	80.7%	82.6%	84.4%	86.1%
69	67.0%	68.4%	69.9%	71.5%	73.2%	75.0%	76.9%	78.9%	80.8%	82.8%	84.6%
70	65.0%	66.3%	67.8%	69.4%	71.2%	73.0%	74.9%	76.9%	79.0%	81.0%	83.0%

MPSERS MIP – 75% J&S Factors

(Based on 2017-2022 Experience Study Analysis)

Beneficiary Age

Retiree Age	50	52	54	56	58	60	62	64	66	68	70
50	94.5%	95.1%	95.6%	96.1%	96.5%	96.9%	97.3%	97.6%	97.9%	98.1%	98.4%
51	93.9%	94.5%	95.1%	95.6%	96.1%	96.6%	97.0%	97.3%	97.6%	97.9%	98.2%
52	93.3%	93.9%	94.6%	95.2%	95.7%	96.2%	96.6%	97.0%	97.4%	97.7%	98.0%
53	92.6%	93.3%	94.0%	94.6%	95.2%	95.8%	96.2%	96.7%	97.1%	97.4%	97.7%
54	91.8%	92.6%	93.3%	94.0%	94.7%	95.3%	95.8%	96.3%	96.7%	97.1%	97.5%
55	91.0%	91.8%	92.6%	93.4%	94.1%	94.8%	95.4%	95.9%	96.4%	96.8%	97.2%
56	90.2%	91.0%	91.9%	92.7%	93.5%	94.2%	94.9%	95.5%	96.0%	96.5%	96.9%
57	89.3%	90.2%	91.1%	92.0%	92.8%	93.6%	94.3%	95.0%	95.6%	96.1%	96.6%
58	88.3%	89.2%	90.2%	91.1%	92.1%	92.9%	93.7%	94.4%	95.1%	95.7%	96.2%
59	87.2%	88.3%	89.3%	90.3%	91.2%	92.2%	93.0%	93.8%	94.6%	95.3%	95.8%
60	86.1%	87.2%	88.3%	89.3%	90.3%	91.4%	92.3%	93.2%	94.0%	94.7%	95.4%
61	85.0%	86.1%	87.2%	88.3%	89.4%	90.5%	91.5%	92.5%	93.4%	94.2%	94.9%
62	83.7%	84.9%	86.0%	87.2%	88.3%	89.5%	90.6%	91.6%	92.6%	93.5%	94.3%
63	82.4%	83.6%	84.8%	86.0%	87.2%	88.4%	89.6%	90.7%	91.8%	92.8%	93.7%
64	81.1%	82.2%	83.4%	84.7%	86.0%	87.3%	88.5%	89.8%	90.9%	92.0%	93.0%
65	79.6%	80.8%	82.0%	83.3%	84.7%	86.0%	87.4%	88.7%	89.9%	91.1%	92.2%
66	78.1%	79.3%	80.6%	81.9%	83.3%	84.7%	86.1%	87.5%	88.8%	90.1%	91.3%
67	76.5%	77.7%	79.0%	80.3%	81.8%	83.2%	84.7%	86.2%	87.6%	89.0%	90.3%
68	74.8%	76.0%	77.3%	78.7%	80.2%	81.7%	83.2%	84.8%	86.3%	87.8%	89.2%
69	73.0%	74.3%	75.6%	77.0%	78.5%	80.0%	81.6%	83.3%	84.9%	86.5%	88.0%
70	71.2%	72.4%	73.7%	75.2%	76.7%	78.3%	79.9%	81.6%	83.3%	85.0%	86.7%

MPSERS MIP – 50% J&S Factors

(Based on 2017-2022 Experience Study Analysis)

Beneficiary Age

Retiree Age	50	52	54	56	58	60	62	64	66	68	70
50	96.3%	96.7%	97.0%	97.4%	97.7%	97.9%	98.2%	98.4%	98.6%	98.7%	98.9%
51	95.9%	96.3%	96.7%	97.1%	97.4%	97.7%	98.0%	98.2%	98.4%	98.6%	98.8%
52	95.4%	95.9%	96.3%	96.7%	97.1%	97.4%	97.7%	98.0%	98.2%	98.4%	98.6%
53	94.9%	95.4%	95.9%	96.3%	96.8%	97.1%	97.5%	97.8%	98.0%	98.3%	98.5%
54	94.4%	94.9%	95.4%	95.9%	96.4%	96.8%	97.2%	97.5%	97.8%	98.1%	98.3%
55	93.8%	94.4%	95.0%	95.5%	96.0%	96.4%	96.9%	97.2%	97.6%	97.9%	98.1%
56	93.2%	93.8%	94.4%	95.0%	95.6%	96.1%	96.5%	96.9%	97.3%	97.6%	97.9%
57	92.6%	93.2%	93.9%	94.5%	95.1%	95.6%	96.1%	96.6%	97.0%	97.4%	97.7%
58	91.9%	92.6%	93.2%	93.9%	94.6%	95.2%	95.7%	96.2%	96.7%	97.1%	97.5%
59	91.1%	91.8%	92.6%	93.3%	94.0%	94.6%	95.3%	95.8%	96.3%	96.8%	97.2%
60	90.3%	91.1%	91.8%	92.6%	93.4%	94.1%	94.7%	95.4%	95.9%	96.4%	96.9%
61	89.5%	90.3%	91.1%	91.9%	92.7%	93.4%	94.2%	94.8%	95.5%	96.0%	96.5%
62	88.5%	89.4%	90.2%	91.1%	91.9%	92.7%	93.5%	94.3%	95.0%	95.6%	96.2%
63	87.6%	88.4%	89.3%	90.2%	91.1%	92.0%	92.8%	93.6%	94.4%	95.1%	95.7%
64	86.5%	87.4%	88.3%	89.3%	90.2%	91.1%	92.1%	92.9%	93.8%	94.5%	95.2%
65	85.4%	86.3%	87.3%	88.2%	89.2%	90.2%	91.2%	92.2%	93.1%	93.9%	94.7%
66	84.2%	85.2%	86.1%	87.1%	88.2%	89.2%	90.3%	91.3%	92.3%	93.2%	94.0%
67	83.0%	83.9%	84.9%	86.0%	87.1%	88.2%	89.3%	90.3%	91.4%	92.4%	93.3%
68	81.6%	82.6%	83.6%	84.7%	85.8%	87.0%	88.2%	89.3%	90.4%	91.5%	92.6%
69	80.2%	81.2%	82.3%	83.4%	84.5%	85.7%	87.0%	88.2%	89.4%	90.6%	91.7%
70	78.8%	79.8%	80.8%	82.0%	83.1%	84.4%	85.7%	87.0%	88.2%	89.5%	90.7%

MPSERS Basic/PPP – 100% J&S Factors (Based on 2017-2022 Experience Study Analysis)

Beneficiary Age

Retiree Age	50	52	54	56	58	60	62	64	66	68	70
50	94.7%	95.2%	95.6%	96.0%	96.4%	96.8%	97.1%	97.4%	97.7%	97.9%	98.2%
51	94.1%	94.6%	95.1%	95.6%	96.0%	96.4%	96.8%	97.1%	97.4%	97.7%	97.9%
52	93.5%	94.0%	94.6%	95.1%	95.6%	96.0%	96.4%	96.8%	97.1%	97.4%	97.7%
53	92.8%	93.4%	94.0%	94.5%	95.1%	95.6%	96.0%	96.4%	96.8%	97.1%	97.4%
54	92.1%	92.7%	93.4%	94.0%	94.5%	95.1%	95.6%	96.0%	96.4%	96.8%	97.2%
55	91.3%	92.0%	92.7%	93.3%	94.0%	94.5%	95.1%	95.6%	96.1%	96.5%	96.9%
56	90.5%	91.2%	91.9%	92.6%	93.3%	94.0%	94.6%	95.1%	95.7%	96.1%	96.5%
57	89.6%	90.4%	91.1%	91.9%	92.6%	93.3%	94.0%	94.6%	95.2%	95.7%	96.2%
58	88.7%	89.5%	90.3%	91.1%	91.9%	92.7%	93.4%	94.1%	94.7%	95.3%	95.8%
59	87.7%	88.5%	89.4%	90.2%	91.1%	91.9%	92.7%	93.5%	94.1%	94.8%	95.4%
60	86.6%	87.5%	88.4%	89.3%	90.2%	91.1%	91.9%	92.8%	93.5%	94.2%	94.9%
61	85.5%	86.4%	87.3%	88.3%	89.2%	90.2%	91.1%	92.0%	92.9%	93.6%	94.4%
62	84.3%	85.2%	86.2%	87.2%	88.2%	89.2%	90.2%	91.2%	92.1%	93.0%	93.8%
63	83.0%	83.9%	84.9%	86.0%	87.0%	88.1%	89.2%	90.2%	91.2%	92.2%	93.1%
64	81.6%	82.6%	83.6%	84.7%	85.8%	87.0%	88.1%	89.2%	90.3%	91.3%	92.3%
65	80.2%	81.2%	82.2%	83.3%	84.5%	85.7%	86.9%	88.1%	89.3%	90.4%	91.5%
66	78.7%	79.7%	80.7%	81.9%	83.1%	84.3%	85.6%	86.9%	88.1%	89.4%	90.5%
67	77.1%	78.1%	79.2%	80.3%	81.6%	82.8%	84.2%	85.5%	86.9%	88.2%	89.5%
68	75.4%	76.4%	77.5%	78.7%	79.9%	81.3%	82.7%	84.1%	85.5%	86.9%	88.3%
69	73.6%	74.7%	75.8%	76.9%	78.2%	79.6%	81.0%	82.5%	84.0%	85.5%	87.0%
70	71.8%	72.8%	73.9%	75.1%	76.4%	77.8%	79.3%	80.8%	82.4%	84.0%	85.5%

MPSERS Basic/PPP – 75% J&S Factors (Based on 2017-2022 Experience Study Analysis)

Beneficiary Age

Retiree Age	50	52	54	56	58	60	62	64	66	68	70
50	96.0%	96.3%	96.7%	97.0%	97.3%	97.6%	97.8%	98.0%	98.3%	98.4%	98.6%
51	95.5%	95.9%	96.3%	96.7%	97.0%	97.3%	97.6%	97.8%	98.0%	98.3%	98.4%
52	95.0%	95.5%	95.9%	96.3%	96.6%	97.0%	97.3%	97.6%	97.8%	98.1%	98.3%
53	94.5%	95.0%	95.4%	95.9%	96.3%	96.6%	97.0%	97.3%	97.6%	97.8%	98.1%
54	93.9%	94.4%	94.9%	95.4%	95.8%	96.3%	96.6%	97.0%	97.3%	97.6%	97.9%
55	93.3%	93.9%	94.4%	94.9%	95.4%	95.8%	96.3%	96.7%	97.0%	97.3%	97.6%
56	92.7%	93.3%	93.8%	94.4%	94.9%	95.4%	95.9%	96.3%	96.7%	97.1%	97.4%
57	92.0%	92.6%	93.2%	93.8%	94.4%	94.9%	95.4%	95.9%	96.4%	96.8%	97.1%
58	91.3%	91.9%	92.5%	93.2%	93.8%	94.4%	95.0%	95.5%	96.0%	96.4%	96.8%
59	90.5%	91.1%	91.8%	92.5%	93.2%	93.8%	94.4%	95.0%	95.5%	96.0%	96.5%
60	89.6%	90.3%	91.0%	91.7%	92.5%	93.2%	93.8%	94.5%	95.1%	95.6%	96.1%
61	88.7%	89.4%	90.2%	90.9%	91.7%	92.5%	93.2%	93.9%	94.5%	95.2%	95.7%
62	87.7%	88.5%	89.2%	90.1%	90.9%	91.7%	92.5%	93.2%	93.9%	94.6%	95.2%
63	86.7%	87.4%	88.3%	89.1%	90.0%	90.8%	91.7%	92.5%	93.3%	94.0%	94.7%
64	85.6%	86.4%	87.2%	88.1%	89.0%	89.9%	90.8%	91.7%	92.6%	93.4%	94.1%
65	84.4%	85.2%	86.1%	87.0%	87.9%	88.9%	89.8%	90.8%	91.7%	92.6%	93.5%
66	83.1%	83.9%	84.8%	85.8%	86.7%	87.8%	88.8%	89.8%	90.8%	91.8%	92.7%
67	81.8%	82.6%	83.5%	84.5%	85.5%	86.6%	87.6%	88.7%	89.8%	90.9%	91.9%
68	80.3%	81.2%	82.1%	83.1%	84.2%	85.3%	86.4%	87.6%	88.7%	89.8%	90.9%
69	78.8%	79.7%	80.6%	81.7%	82.7%	83.9%	85.1%	86.3%	87.5%	88.7%	89.9%
70	77.2%	78.1%	79.1%	80.1%	81.2%	82.4%	83.6%	84.9%	86.2%	87.5%	88.7%

MPSERS Basic/PPP – 50% J&S Factors (Based on 2017-2022 Experience Study Analysis)

Retiree Age	Beneficiary Age										
	50	52	54	56	58	60	62	64	66	68	70
50	97.3%	97.5%	97.8%	98.0%	98.2%	98.4%	98.5%	98.7%	98.8%	99.0%	99.1%
51	97.0%	97.2%	97.5%	97.7%	98.0%	98.2%	98.4%	98.5%	98.7%	98.8%	99.0%
52	96.6%	96.9%	97.2%	97.5%	97.7%	98.0%	98.2%	98.4%	98.5%	98.7%	98.8%
53	96.3%	96.6%	96.9%	97.2%	97.5%	97.7%	98.0%	98.2%	98.4%	98.5%	98.7%
54	95.9%	96.2%	96.6%	96.9%	97.2%	97.5%	97.7%	98.0%	98.2%	98.4%	98.6%
55	95.5%	95.8%	96.2%	96.5%	96.9%	97.2%	97.5%	97.7%	98.0%	98.2%	98.4%
56	95.0%	95.4%	95.8%	96.2%	96.5%	96.9%	97.2%	97.5%	97.8%	98.0%	98.2%
57	94.5%	94.9%	95.4%	95.8%	96.2%	96.6%	96.9%	97.2%	97.5%	97.8%	98.1%
58	94.0%	94.4%	94.9%	95.3%	95.8%	96.2%	96.6%	96.9%	97.3%	97.6%	97.9%
59	93.4%	93.9%	94.4%	94.9%	95.3%	95.8%	96.2%	96.6%	97.0%	97.3%	97.6%
60	92.8%	93.3%	93.8%	94.3%	94.8%	95.3%	95.8%	96.2%	96.7%	97.0%	97.4%
61	92.2%	92.7%	93.2%	93.8%	94.3%	94.8%	95.3%	95.8%	96.3%	96.7%	97.1%
62	91.5%	92.0%	92.6%	93.1%	93.7%	94.3%	94.8%	95.4%	95.9%	96.3%	96.8%
63	90.7%	91.3%	91.9%	92.5%	93.1%	93.7%	94.3%	94.9%	95.4%	95.9%	96.4%
64	89.9%	90.5%	91.1%	91.7%	92.4%	93.0%	93.7%	94.3%	94.9%	95.5%	96.0%
65	89.0%	89.6%	90.2%	90.9%	91.6%	92.3%	93.0%	93.7%	94.3%	95.0%	95.5%
66	88.1%	88.7%	89.3%	90.0%	90.8%	91.5%	92.2%	93.0%	93.7%	94.4%	95.0%
67	87.1%	87.7%	88.4%	89.1%	89.8%	90.6%	91.4%	92.2%	93.0%	93.7%	94.4%
68	86.0%	86.6%	87.3%	88.1%	88.9%	89.7%	90.5%	91.3%	92.2%	93.0%	93.8%
69	84.8%	85.5%	86.2%	87.0%	87.8%	88.6%	89.5%	90.4%	91.3%	92.2%	93.0%
70	83.6%	84.3%	85.0%	85.8%	86.6%	87.5%	88.4%	89.4%	90.3%	91.3%	92.2%

MPSERS – Social Security Equated Factors (Based on 2017-2022 Experience Study Analysis)

- The table below shows the Social Security equated optional form factors at integer ages only, based upon the 2017-2022 Experience Study analysis

Retiree Age	MIP	Basic/PPP
45	28.82%	30.76%
46	30.81%	32.79%
47	32.96%	34.97%
48	35.27%	37.31%
49	37.78%	39.84%
50	40.49%	42.55%
51	43.43%	45.48%
52	46.62%	48.65%
53	50.09%	52.07%
54	53.86%	55.77%
55	57.96%	59.79%
56	62.44%	64.15%
57	67.34%	68.89%
58	72.70%	74.06%
59	78.58%	79.69%
60	85.04%	85.85%