

MINNESOTA LEGISLATIVE COMMISSION
ON PENSIONS AND RETIREMENT

Summary of Recommendations
Regarding New Actuarial Assumptions

August 17, 2001



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Minnesota Legislative Commission
on Pensions and Retirement
c/o Mr. Lawrence A. Martin
Executive Director
55 State Office Building
St. Paul, Minnesota 55155-1201

RE: Summary of Recommendations Regarding New Actuarial Assumptions

Dear Commission Members:

During the last several months, we have completed six experience studies plus a seventh study which analyzed the impact on plan costs and liabilities of the Combined Service Annuity (CSA) provisions. As a result of those seven studies, we have developed new sets of actuarial assumptions that we recommend for adoption for six of the major plans – Public Employees Retirement Fund (PERA), Teachers Retirement Association Fund (TRA), State General Employees (MSRS), Minneapolis Teachers Retirement Fund Association (MTRFA), St. Paul Teachers Retirement Fund Association (StPTRFA), and the Duluth Teachers Retirement Fund Association (DTRFA). Furthermore, the CSA study also developed new load factor assumptions for the other eight plans for which we perform the official actuarial valuations.

This report will discuss some of the general findings and plan-by-plan highlights of these studies. Appendix A includes a summary of the recommended changes for each of the six plans noted above. More detail on the experience analysis and assumption recommendations are included in separate reports.

CSA Analysis

Our current assumptions include a modest load factor for each of the three large plans (PERA, TRA, MSRS) and nothing for the other eleven plans. The current load factors were developed based on a limited analysis of recent retirees. This past year we completed a more detailed analysis of the impact of the CSA provisions, at the request of the plan administrators. We took all data included in the July 1, 2000 actuarial valuations for active Members and former

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Members of all plans. We matched Social Security numbers to identify those with service in more than one plan. We then re-valued the "Total Benefit" of those participants using the assumptions in the plan in which they are currently active. We then compared that liability to the liability calculated using the current assumptions. While the loads for active Members in the three large funds only changed modestly, the loads for former Members and for active Members in the first class city teacher funds increased dramatically.

Table 1 below shows our recommended load factors based on this analysis.

TABLE 1
Recommended Load Factors

Fund	Current Load Factor	Recommended Load Factors	
		Active Members	Former Members
PERA General	2.5%	0.8%	60%
PERA Police & Fire	-	-	30
PERA Local Correctional	-	-	30
MSRS General	1.0	1.2	40
MSRS State Patrol	-	-	30
MSRS Correctional	-	-	30
MSRS Legislators	-	-	30
MSRS Elected Officials	-	-	30
MSRS Judges	-	-	30
TRA	1.0	1.4	4
Duluth Teachers	-	10.0	10
St. Paul Teachers	-	7.0	30
Minneapolis Teachers	-	4.0	30
MERF	-	0.2	30

Mortality

Mortality experience over the last few years has been a little different than might have been suspected. The pattern for decades now has been continued modest reductions in mortality rates from one experience study to the next regardless of participant gender or type. This time there were notable exceptions.

Among active Members, mortality was less than expected for both males and females in four of the six plans studied. Accordingly, for these four plans we are recommending modest reductions in future assumed mortality rates. Experience was close to or modestly greater than assumed in both the PERA and MSRS plans. For those two plans, we recommend no change in the current assumptions.

Among retired Members, however, a distinct differentiation by gender was noted. For male annuitants, plan experience was close to or less than assumed. For three plans, we recommend modest reductions in rates while for three plans we recommend no change. For female annuitants, however, plans generally showed mortality was greater than assumed. For three plans, the margin is close to our general 5-10% target to accommodate some future improvement. For three others, however, experience even exceeded these levels and we are recommending a modest increase in future assumed mortality rates.

Table 2 below summarizes our recommended mortality assumptions for the six plans studied.

TABLE 2
State of Minnesota
Assumption Review -- Mortality

Fund	PRE-RETIREMENT		POST-RETIREMENT	
	Male	Female	Male	Female
Public Employees	1983 GAM (M-8)	1983 GAM (F-7)	1983 GAM (M-1) ⁽¹⁾	1983 GAM (F-1)
State Employees	1983 GAM (M-5)	1983 GAM (F-2)	1983 GAM (M-2) ⁽¹⁾	1983 GAM (F-1)
State Teachers	1983 GAM (M-12) ⁽¹⁾	1983 GAM (F-10) ⁽¹⁾	1983 GAM (M-6) ⁽¹⁾	1983 GAM (F-3) ⁽²⁾
Minneapolis Teachers	1983 GAM (M-12) ⁽¹⁾	1983 GAM (F-10) ⁽¹⁾	1983 GAM (M-4)	1983 GAM (F-1) ⁽²⁾
St. Paul Teachers	1983 GAM (M-7) ⁽¹⁾	1983 GAM (F-5) ⁽¹⁾	1983 GAM (M-3)	1983 GAM (F-1)
Duluth Teachers	1983 GAM (M-10) ⁽¹⁾	1983 GAM (F-7) ⁽¹⁾	1983 GAM (M-2)	1983 GAM (F) ⁽²⁾

(1) Setback increased from prior assumption (i.e., mortality rates reduced).

(2) Setback decreased from prior assumption (i.e., mortality rates increased.)

Note: No changes recommended in mortality rates for disabled annuitants.

Salary Increase Experience

All six plans that were studied experienced salary increases during the study period that were moderately less than assumed. This was to be expected because actual inflation during the last 4-6 years has been less than the base inflation rate imbedded in our current assumptions. The plans with the highest average increases were MSRS and MTRFA. For those two plans only, we slightly increased the ultimate age related salary increase assumption; for the other four plans the changes were negligible and generally downward.

The recommended assumptions now incorporate the select and ultimate structure for each of the six plans with the highest ultimate factor applicable in the MTRFA.

Retirement Rates

For most of the plans, observed retirement rates at the earlier ages were modestly to significantly higher than expected. We believe that at least part of any "excess" retirement experience is caused by the operation of the CSA provisions. Since we completed the study of CSA load factors using the current retirement rate assumptions, we did not want to move the rates too far which might cause a double counting of the CSA impact. Accordingly, most plans were only changed a small amount; others were not changed at all.

Plan Highlights

PERA	The clear surprise here was the much higher than expected observed rates of participant separation from employment. This result suggests that the lower rates observed in the 1988-92 period, and even lower rates observed in the 1992-96 period, should not represent our best estimate of future experience. Our recommended rates give only partial credence to each of the three periods, but nonetheless result in significant increases over the rates put into place just last year.
TRA	No big surprises in this plan. We do note the much higher than expected observed rates of early retirement and the somewhat U-shaped salary increase experience.
MSRS	Rates of separation were significantly higher than expected, although not to the same extent as PERA. This experience is partially offset by the less favorable salary increase experience discussed above.

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First Class City Teachers Plans We have moved all of these plans to a select and ultimate separation and salary increase structure. In addition, the new CSA load factors will cause each of these plans' funding status measures to decline. Alternative valuations were prepared for each of these plans based on the July 1, 2000 data with the following results:

	<u>MTRFA</u>	<u>StPTRFA</u>	<u>DTRFA</u>
Sufficiency/(Deficiency) <i>(as reported by 7/1/00 AVR)</i>	(2.00)%	0.72%	3.70%
Sufficiency/(Deficiency) <i>(at 7/1/00 using recommended assumptions)</i>	(2.73)%	(1.04)%	1.83%
Change Due to Assumptions	(0.73)%	(1.76)%	(1.87)%

We have not yet prepared alternative valuation runs on the three large plans. It is our intent to do so after completing the official July 1, 2001 valuations using the current assumptions. These results will be reported in our summary report to the LCPR in January. In the meantime, we would be happy to answer any questions Commission members may have about our experience studies or the recommended assumptions.

Respectfully submitted,

Milliman USA


Thomas K. Custis, F.S.A.
Consulting Actuary

TKC/bh

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PUBLIC EMPLOYEES RETIREMENT FUND

Summary of Recommended Assumptions

Assumption	Current	Recommended
Salary increases	Ten year select and ultimate table. During the select period, $0.2\% \times (10 - T)$ where T is completed years of service is added to the ultimate rate. Ultimate table ranges from 6.75% at age 20 down to 5.0% at age 70	Ten year select and ultimate table. During the select period, $0.3\% \times (10 - T)$ where T is completed years of service is added to the ultimate rate. Ultimate table ranges from 6.4% at age 20 down to 5.25% at age 70
Male Pre-Retirement Mortality	1983 GAM (Male - 8)	1983 GAM (Male - 8)
Female Pre-Retirement Mortality	1983 GAM (Female - 7)	1983 GAM (Female - 7)
Male Post-Retirement Mortality	1983 GAM (Male)	1983 GAM (Male - 1)
Female Post-Retirement Mortality	1983 GAM (Female - 1)	1983 GAM (Female - 1)
Male Post-Disability Mortality	1965 RRB to age 54, graded mortality rates between 1965 RRB and Post-Retirement Mortality table between ages 55 and 64, Post-Retirement Mortality table for ages 65 and later	1965 RRB to age 54, graded mortality rates between 1965 RRB and Post-Retirement Mortality table between ages 55 and 64, Post-Retirement Mortality table for ages 65 and later
Female Post-Disability Mortality	1965 RRB to age 54, graded mortality rates between 1965 RRB and Post-Retirement Mortality table between ages 55 and 64, Post-Retirement Mortality table for ages 65 and later	1965 RRB to age 54, graded mortality rates between 1965 RRB and Post-Retirement Mortality table between ages 55 and 64, Post-Retirement Mortality table for ages 65 and later
Retirement Age	Graded rates beginning at age 55. A different set of rates applies if the Member is eligible for the Rule of 90.	Graded rates beginning at age 55. A different set of rates applies if the Member is eligible for the Rule of 90.
Separation Decrement	Select and ultimate table.	Select and ultimate table. Rates are generally higher than current rates.
Disability Decrement	Rates which are both age-related and gender-related.	No change.
Combined Service Annuity Load Factor	2.5% load on liabilities for active and deferred vested participants.	0.8% load on liabilities for active Members and 60% load on liabilities for former Members.
Payroll Growth Assumption	6.0%; except 5.0% for purposes of GASB-25 calculations.	6.0%; except 5.0% for purposes of GASB-25 calculations.

TEACHERS RETIREMENT ASSOCIATION FUND

SUMMARY OF RECOMMENDED ASSUMPTIONS

Assumption	Current	Recommended
Salary Increases	Merit table that ranges from 8.0% at age 20 down to 5.0% at age 70.	Ten year select and ultimate table. During the select period, $0.3\% \times (10 - T)$ where T is completed years of service is added to the ultimate rate. Ultimate table ranges from 6.0% at ages 20 to 38 down to 5.0% at ages 47 to 57.
Male Pre-Retirement Mortality	1983 GAM (Male - 10)	1983 GAM (Male - 12)
Female Pre-Retirement Mortality	1983 GAM (Female - 8)	1983 GAM (Female - 10)
Male Post-Retirement Mortality	1983 GAM (Male - 5)	1983 GAM (Male - 6)
Female Post-Retirement Mortality	1983 GAM (Female - 4)	1983 GAM (Female - 3)
Male Post-Disability Mortality	1965 RRB to age 54, graded mortality rates between 1965 RRB and Post-Retirement Mortality table between ages 55 and 64, Post-Retirement Mortality table for ages 65 and later.	1965 RRB to age 54, graded mortality rates between 1965 RRB and Post-Retirement Mortality table between ages 55 and 64, Post-Retirement Mortality table for ages 65 and later.
Female Post-Disability Mortality	1965 RRB to age 54, graded mortality rates between 1965 RRB and Post-Retirement Mortality table between ages 55 and 64, Post-Retirement Mortality table for ages 65 and later.	1965 RRB to age 54, graded mortality rates between 1965 RRB and Post-Retirement Mortality table between ages 55 and 64, Post-Retirement Mortality table for ages 65 and later.
Retirement Age	Graded rates beginning at age 55. A different set of rates applies if the Member is eligible for the Rule of 90.	Graded rates beginning at age 55. A different set of rates applies if the Member is eligible for the Rule of 90.
Separation Decrement	Select and ultimate table. Rates during the select period are based on gender.	Select and ultimate table. Rates during the select period are based on gender. Ultimate rates are gender based and generally higher than current rates.
Disability Decrement	Rates which are both age-related and gender-related.	Rates which are both age-related and gender-related. Recommended rates are higher than current rates especially for females.
Form of Annuity Selected - Male	15% elect 50% J&S option 15% elect 75% J&S option 50% elect 100% J&S option	15% elect 50% J&S option 25% elect 75% J&S option 55% elect 100% J&S option
Form of Annuity Selected - Female	20% elect 50% J&S option 10% elect 75% J&S option 30% elect 100% J&S option	20% elect 50% J&S option 10% elect 75% J&S option 30% elect 100% J&S option
Combined Service Annuity Load Factor Load Factor	1.0% load on liabilities for active and deferred vested participants.	1.4% load on liabilities for active Members and 4% load on liabilities for former Members.

STATE EMPLOYEES RETIREMENT FUND

Summary of Recommended Assumptions

Assumption	Current	Recommended
Salary increases	Ten year select and ultimate table. During the select period, $0.2\% \times (10 - T)$ where T is completed years of service is added to the ultimate rate. Ultimate table ranges from 6.75% at age 20 down to 5.0% at age 70	Ten year select and ultimate table. During the select period, $0.3\% \times (10 - T)$ where T is completed years of service is added to the ultimate rate. Ultimate table ranges from 6.75% at age 20 down to 5.25% at age 70
Male Pre-Retirement Mortality	1983 GAM (Male - 5)	1983 GAM (Male - 5)
Female Pre-Retirement Mortality	1983 GAM (Female - 2)	1983 GAM (Female - 2)
Male Post-Retirement Mortality	1983 GAM (Male - 1)	1983 GAM (Male - 2)
Female Post-Retirement Mortality	1983 GAM (Female - 1)	1983 GAM (Female - 1)
Male Post-Disability Mortality	1965 RRB to age 54, graded mortality rates between 1965 RRB and the Combined Annuity Table between ages 55 and 64, the Combined Annuity Table for ages 65 and later	1965 RRB to age 54, graded mortality rates between 1965 RRB and the Combined Annuity Table between ages 55 and 64, the Combined Annuity Table for ages 65 and later
Female Post-Disability Mortality	1965 RRB to age 54, graded mortality rates between 1965 RRB and the Combined Annuity Table between ages 55 and 64, the Combined Annuity Table for ages 65 and later	1965 RRB to age 54, graded mortality rates between 1965 RRB and the Combined Annuity Table between ages 55 and 64, the Combined Annuity Table for ages 65 and later
Retirement Age	Graded rates beginning at age 55. A different set of rates applies if the Member is eligible for the Rule of 90.	Graded rates beginning at age 55. A different set of rates applies if the Member is eligible for the Rule of 90. Recommended rates are higher than current rates.
Separation Decrement	Select and ultimate rates based on gender.	Select and ultimate rates based on gender rates are generally higher than current rates.
Disability Decrement	Age-related and gender-related rates.	Age-related and gender-related rates. Recommended rates are modestly higher than current rates.
Form of Annuity Selected - Male	25% elect 50% J&S option 45% elect 100% J&S option	20% elect 50% J&S option 50% elect 100% J&S option
Form of Annuity Selected - Female	10% elect 50% J&S option 10% elect 100% J&S option	10% elect 50% J&S option 15% elect 100% J&S option
Combined Service Annuity Load Factor	1.0% load on liabilities for active and deferred vested participants.	1.2% load on liabilities for active Members and 40% load on liabilities for former Members.

MINNEAPOLIS TEACHERS RETIREMENT FUND

Summary of Recommended Assumptions

Assumption	Current	Recommended
Salary increases	Merit table that ranges from 7.5% at age 20 down to 5.0% at age 70	Ten year select and ultimate table. During the select period, $0.4\% \times (10 - T)$ where T is completed years of service is added to the ultimate rate. Ultimate table ranges from 6.50% at age 45 and under down to 5.0% at ages 60 and over.
Male Pre-Retirement Mortality	1983 GAM (Male – 6)	1983 GAM (Male – 12)
Female Pre-Retirement Mortality	1983 GAM (Female – 4)	1983 GAM (Female – 10)
Male Post-Retirement Mortality	1983 GAM (Male – 4)	1983 GAM (Male – 4)
Female Post-Retirement Mortality	1983 GAM (Female – 2)	1983 GAM (Female – 1)
Male Post-Disability Mortality	1977 RRB	1977 RRB
Female Post-Disability Mortality	1977 RRB	1977 RRB
Retirement Rates	Graded rates beginning at age 55. A different set of rates applies if the Member is eligible for the Rule of 90.	Similar structure; slightly modified pattern of rates.
Rates of Separation	Age-related rates.	Select and ultimate table. Ultimate rates are slightly higher than current rates.
Rates of Disability	Age-related rates.	Age-related rates that are considerably lower than current rates.
Election of Optional Forms - Male	15% elect 50% J&S option 20% elect 75% J&S option 40% elect 100% J&S option	15% elect 50% J&S option 20% elect 75% J&S option 40% elect 100% J&S option
Election of Optional Forms - Female	15% elect 50% J&S option 5% elect 75% J&S option 10% elect 100% J&S option	15% elect 50% J&S option 5% elect 75% J&S option 15% elect 100% J&S option
Combined Service Annuity Load Factor	None	4.0% load on liabilities for active Members and 30% load on liabilities for former Members.

ST. PAUL TEACHERS RETIREMENT FUND

Summary of Recommended Assumptions

Assumption	Current	Recommended
Salary increases	Merit table that ranges from 7.25% at age 20 down to 5.25% at age 70.	Ten year select and ultimate table. During the select period, $0.3\% \times (10 - T)$ where T is completed years of service is added to the ultimate rate. Ultimate table ranges from 6.90% at age 20 down to 5.0% at age 70.
Male Pre-Retirement Mortality	1983 GAM (Male – 5)	1983 GAM (Male – 7)
Female Pre-Retirement Mortality	1983 GAM (Female – 3)	1983 GAM (Female – 5)
Male Post-Retirement Mortality	1983 GAM (Male – 3)	1983 GAM (Male – 3)
Female Post-Retirement Mortality	1983 GAM (Female – 1)	1983 GAM (Female – 1)
Male Post-Disability Mortality	1977 RRB	1977 RRB
Female Post-Disability Mortality	1977 RRB	1977 RRB
Retirement Rates	Graded rates beginning at age 55. A different set of rates applies if the Member is eligible for the Rule of 90.	No change.
Rates of Separation	Age-related rates.	Select and ultimate table. Ultimate rates are generally lower than current rates.
Rates of Disability	Age-related rates.	Age-related rates that are generally lower than current rates.
Election of Optional Forms - Male	15% elect 50% J&S option 50% elect 100% J&S option	10% elect 50% J&S option 45% elect 100% J&S option
Election of Optional Forms - Female	10% elect 50% J&S option 10% elect 100% J&S option	10% elect 50% J&S option 10% elect 100% J&S option
Combined Service Annuity Load Factor	None	7.0% load on liabilities for active Members and 30% load on liabilities for former Members.

DULUTH TEACHERS RETIREMENT FUND

Summary of Recommended Assumptions

Assumption	Current	Recommended
Salary increases	Merit table that ranges from 8.00% at age 20 down to 5.25% at ages 52 and over.	Ten year select and ultimate table. During the select period, $0.3\% \times (10 - T)$ where T is completed years of service is added to the ultimate rate. Ultimate table ranges from 6.90% at age 20 down to 5.0% at ages 50 and over.
Male Pre-Retirement Mortality	1983 GAM (Male – 4)	1983 GAM (Male – 10)
Female Pre-Retirement Mortality	1983 GAM (Female – 3)	1983 GAM (Female – 7)
Male Post-Retirement Mortality	1983 GAM (Male – 2)	1983 GAM (Male – 2)
Female Post-Retirement Mortality	1983 GAM (Female – 1)	1983 GAM (Female)
Male Post-Disability Mortality	1977 RRB	1977 RRB
Female Post-Disability Mortality	1977 RRB	1977 RRB
Retirement Rates	Graded rates beginning at age 55. A different set of rates applies if the Member is eligible for the Rule of 90.	No change
Rates of Separation	Age-related rates.	Select and ultimate table. Ultimate rates are generally lower than current rates.
Rates of Disability	Age-related rates.	Age-related rates that are considerably lower than current rates.
Election of Optional Forms - Male	30% elect 50% J&S option 55% elect 100% J&S option	35% elect 50% J&S option 55% elect 100% J&S option
Election of Optional Forms - Female	30% elect 50% J&S option 20% elect 100% J&S option	25% elect 50% J&S option 25% elect 100% J&S option
Combined Service Annuity Load Factor	None	10.0% load on liabilities for active Members and 10% load on liabilities for former Members.