



**STATE OF
MINNESOTA**

**SUMMARY OF
1997
ACTUARIAL VALUATIONS**



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January 19, 1998

Minnesota Legislative Commission
on Pensions and Retirement
55 State Office Building
St. Paul, Minnesota 55155-1201

ATTENTION: Mr. Lawrence A. Martin

Commission Members:


We have completed all of the July 1, 1997 Actuarial Valuations pursuant to the terms of our Actuarial Services Contract. This report summarizes the results of these actuarial valuations, with particular emphasis on changes occurring since the prior year's actuarial valuations.


This report covers commentary on the 1997-98 funding levels, as well as summaries of significant plan changes and actuarial assumptions used.

We hope that you will find this summary report informative as a supplement to the more detailed reports for each of the funds.

Respectfully submitted,

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STATE OF MINNESOTA

SUMMARY OF 1997 ACTUARIAL VALUATIONS

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STATE OF MINNESOTA

SUMMARY OF 1997 ACTUARIAL VALUATIONS

I. 1997-98 FUNDING LEVELS (TABLES 1-A, 1-B, 1-C AND I-D)

As the Commission Actuary, we have determined the actuarial funding requirements in accordance with the requirements of Section 356.215, Minnesota Statutes, for each of the Funds covered by those statutes. Each employer contributes to their respective Fund on the basis of statutory requirements set by statutes for the individual Fund.

In Table I-A, we provide a detailed comparison of the requirements under Section 356.215 and the statutory employer contribution. It is this comparison which allows an analysis of the Fund's ability to meet its long-term commitments. Table I-B provides a three-year history of the sufficiency determination. The pattern of these results gives a more complete picture of emerging concerns as to the adequacy of statutory requirements.

Another measure of funding adequacy is the ratio of plan assets to the present value of accrued benefits. These ratios are summarized for the last three valuations in Table I-C. Since this is more of a termination measure of adequacy, it is generally considered a less important measure for public plans than the sufficiency determination summarized in Tables I-A and I-B. Nonetheless, it does give a somewhat different and useful perspective when viewed in conjunction with other factors. If proper funding progress is made, these numbers should move toward a ratio of slightly over 100%.

Below we comment by plan on our analysis of the actuarial valuations.

PERA

1. The Public Employees plan showed a modest deficiency for 1996. The reported deficiency decreased in 1997. As noted in the valuation report, the reported deficiency is based on the statutory rates in effect for the 1997-98 fiscal year. Results based solely as of January 1, 1998 and later would show a sufficiency of about 0.25%. This sufficiency is mainly due to the increases in the Statutory contributions from the Pension Uniformity Act of 1997 and the decrease in the amortization of the Unfunded Accrued Actuarial Liability as a result of significant asset gains. Funding ratios have improved for current accruals of benefits and for projected benefits. Total active membership increased by about 1.1%. The

sufficiency based on results as of January 1, 1998 and later suggests that the Pension Uniformity Act of 1997 has improved the funding of this plan.

2. The Police and Fire plan continues to be in a well-funded position. Both the sufficiency numbers and the funding ratios support this conclusion.
3. The Police and Fire Consolidation plan still requires substantial contribution levels. Since the statutes require full current funding, no deficiency is noted; however, the required rate is over 16% of payroll with this valuation. Significant actuarial gains have contributed to an increase in the funding ratio and a decrease in the total required contribution as a percent of payroll. Both the Accrued Benefit and Accrued Liability ratios have increased over last year. An issue of concern is the ability of each individual consolidation account to transfer the required reserve for new retirees to MPRIF. In Table I-D, we present a brief analysis of each consolidation plan's ability to make the required transfer of MPRIF reserves out of existing assets.

MSRS

4. The State General Employees plan shows a modest contribution sufficiency. This decline in the sufficiency is due to primarily to the reduced Member and Employer contribution rates and the increase in the Normal Cost associated with the Pension Uniformity changes. Significant asset gains shifted the plan from an Unfunded Actuarial Accrued Liability to a surplus (Current Assets exceed Actuarial Accrued Liability) which offset the increase in liability attributable to the law changes. The accrued funding ratios improved significantly while the projected funding ratios declined modestly from the prior year.
5. The State Patrol plan shows a significant increase in the contribution sufficiency as compared to last year. This increase in the sufficiency is due to the recognition of the plan's surplus (Current Assets exceed Actuarial Accrued Liability). The recognition of the surplus is a change enacted in the Pension Uniformity Act of 1997. General accrued benefit funding ratios are slightly higher than last year while the projected funding ratios declined modestly from the prior year.
6. The State Correctional Employees plan shows a solid sufficiency. This sufficiency is due to the increase in the Statutory Contributions and to the recognition of the plan's surplus (Current Assets exceed Actuarial Accrued Liability). Both of these changes were enacted in the Pension Uniformity Act of 1997. This plan realized a sufficiency despite the increased costs which resulted from the benefit changes of the Pension Uniformity Act of 1997 and from the assumption changes.

Another issue still exists in connection with the valuation of benefits under this plan. Due to very favorable MPRIF experience over the last several years while Social Security indices have been increasing at a much more moderate rate, we are concerned that the liabilities associated with the "ultimate benefits" for participants who retired between 1991 and 1997 may be understated. We believe that the procedures used by MSRS to determine and maintain the "ultimate benefit level" may need to be reviewed and refined. Prospectively this problem has been solved by the benefit changes that were part of the Pension Uniformity Act of 1997. Accordingly, the ongoing exposure to future losses from this source will decline over the next several years.

7. The Legislators plan is funded on a terminal funding basis. This funding basis means that the State (as employer) does not pre-fund for benefits earned while service is being performed. Rather, at the time of retirement of one of these participants, the State must fund that portion of the retirement benefit not covered by member contributions. This funding approach has several disadvantages:
 - a. It can lead to substantial fluctuations in year-to-year funding requirements;
 - b. Due to lack of investment income, it means ultimate State costs are higher; and
 - c. It defers funding obligations from one generation of taxpayers to the next.

The Elective State Officers plan is handled on a pay-as-you-go basis. This funding basis means there is no accumulated funding (other than Member contributions held by the State's general fund). Actual retirement benefits are paid from the general funds via direct disbursements to the retirees (or beneficiaries).

Not surprisingly, Table I-C continues to show low funding ratios for these plans year-after-year. Since the Legislator's plan has been closed to new members, it is probably not prudent to consider pre-funding at this time.

8. The Judges plan sufficiency decreased modestly due to the increase in the Actuarial Accrued Liability which resulted from the plan changes enacted in the Pension Uniformity Act of 1997 and from the changes in assumptions. Actuarial gains related to investment return, salaries and other data offset these increases somewhat. Funding ratios continue to improve and issues concerning short-term cash shortages have lessened.

TEACHERS

9. The Teachers Retirement Association plan showed a modest decrease in the contribution sufficiency. As a result of the Pension Uniformity Act of 1997, the Statutory Contributions were decreased from 14.66% in 1996 to 11.64% in 1997 and the Required Contributions for the Normal Cost were decreased from 10.49% in 1996 to 9.66% in 1997. Also, the Actuarial Accrued Liability was decreased as a result of the benefit changes. Actuarial gains during the year from salaries and investment return further decreased the Unfunded Actuarial Accrued Liability so that the plan showed a surplus (Current Assets exceeded Actuarial Accrued Liability) at July 1, 1997. Consequently, the amortization of the Unfunded Actuarial Accrued Liability decreased from 2.13% in 1996 to 0.00% in 1997. The net result of these changes is a modest decrease in the sufficiency. The accrued benefit funding ratios showed an increase over the prior year, primarily due to these gains.
10. The Duluth Teachers plan has a contribution deficiency of 0.57% this year compared to a deficiency of 2.31% of payroll last year. This plan experienced an overall actuarial loss in the prior year. The deficiency was significantly reduced by the change in actuarial assumptions. The benefit changes enacted with the Pension Uniformity Act of 1997 increased the deficiency somewhat. The additional state contribution lowered the deficiency.
11. The St. Paul Teachers plan shows a contribution sufficiency this year. Most of this improvement is attributable to the increase in the Statutory Contributions as enacted by the Pension Uniformity Act of 1997. Investment, mortality, and salary-related gains and a decrease in the Unfunded Actuarial Accrued Liability as a result of the assumption changes were offset by the increase in the Unfunded Actuarial Accrued Liability due the benefit changes included in the Pension Uniformity Act of 1997. The net result was an increase in the amortization of the Unfunded Actuarial Accrued Liability.
12. The Minneapolis Teachers plan showed a contribution *sufficiency* this year. This change was primarily due to the increased Statutory Contributions which were included in the Pension Uniformity Act of 1997. Accrued funding ratios decreased slightly and are still very low.

MERF

13. The Minneapolis Employees Retirement Fund is a closed plan with no new active employees. The Statutory Funding requirements are structured to assure full funding of actuarial accrued liability by the year 2020. We note that the funding requirement as a percent of pay decreased from the prior valuation due primarily to gains on investments, salary, and mortality. Accrued funding ratios were higher from the prior valuation.

We recognize that the Pension Uniformity Act of 1997 and significant asset gains tended to improve the funding position of the majority of the plans. We believe the Commission should attempt to focus legislative consideration on the following priorities:

- ◆ Consideration and adoption of the proposed asset valuation method.
- ◆ Continue to monitor the funding status of the MTRFA plan. Even considering the special additional contributions and the current year sufficiency, this plan may still need additional corrective action to bring the projected benefit funding ratio to 100%. After the one-time special State contribution in 1997 and as the mix of participants changes from Basic to Coordinated, the measured deficiency is likely to worsen.
- ◆ Consideration of the issues and ultimate implementation of full merger of the P&F Consolidation Accounts into P.E.R.A. As these closed plans continue to mature, municipalities will be increasingly subjected to large swings in required additional contributions. While most plans had “good surprises” in 1997, a couple had bad surprises, and the potential for significant unexpected jumps will increase each year in the future.

As Commission Actuary, we stand ready to assist the Commission with these issues.

TABLE 1-A: 1997-98 FUNDING LEVELS (PERCENTAGES)

Fund	Section 356.215 Requirements				Statutory Requirements			Sufficiency/ Deficiency
	Normal Cost	Supple- mental Cost	Expense	Total	Employee	Employer	Total	
Public Employees (Chapter 353)	7.11%	2.51%	0.18%	9.80%	4.55%	4.92%	9.46%	(0.34%)
Police and Fire (Chapter 353)	21.65%	(6.57%)	0.13%	15.21%	7.60%	11.40%	19.00%	3.79%
Police and Fire Consolidation	21.59%	(5.45%) *	0.00%	16.14%	7.60%	8.54%	16.14%	0.00%
State Employees (Chapter 352)	7.48%	0.00%	0.13%	7.61%	4.00%	4.00%	8.00%	0.39%
State Patrol (Chapter 352B)	21.91%	(6.39%)	0.15%	15.67%	8.40%	12.60%	21.00%	5.33%
Correctional (Chapter 352)	14.34%	(2.03%)	0.18%	12.49%	5.50%	7.70%	13.20%	0.71%
Legislators (Chapter 3A)	18.93%	28.69%	0.41%	48.03%	9.00%	Terminal Funding	N/A	N/A
Elective State Officers (Chapter 352C)	13.67%	36.36%	1.04%	51.07%	9.00%	Paygo Funding	N/A	N/A
Judges (Chapter 490)	16.24%	11.22%	0.14%	27.60%	6.29%	22.00%	28.29%	0.69%
Teachers (Chapter 354)	9.66%	0.00%	0.19%	9.85%	5.00%	6.64%	11.64%	1.79%
Duluth Teachers (Chapter 354A)	8.51%	3.69%	0.67%	12.87%	5.50%	6.80% **	12.30%	(0.57%)
St. Paul Teachers (Chapter 354A)	10.12%	8.06%	0.27%	18.45%	6.30%	12.94% **	19.24%	0.79%
Minneapolis Teachers (Chapter 354A)	11.48%	16.47%	0.28%	28.23%	6.54%	22.07% **	28.61%	0.38%
Minneapolis Employees (Chapter 422A)	18.32%	22.85%	1.72%	42.89%	9.75%	33.14% **	42.89%	0.00%

* Equal to the total statutory requirement less the normal cost.

** Includes State contributions of 1.01% for Duluth Teachers, 12.54% for Minneapolis Teachers, 3.54% for St. Paul Teachers, and 14.25% for Minneapolis Employees.

TABLE 1-B: PATTERN OF SUFFICIENCY/DEFICIENCY: 1995-1997

Fund	Actuarial Requirements			Statutory Requirements			Sufficiency/Deficiency		
	1995	1996	1997	1995	1996	1997	1995	1996	1997
Public Employees	9.61%	9.75%	9.80%	8.91%	8.88%	9.46%	(0.70%)	(0.87%)	(0.34%)
Police and Fire	16.49%	15.11%	15.21%	19.00%	19.00%	19.00%	2.51%	3.89%	3.79%
Police and Fire Consolidation	29.74%	22.79%	16.14%	29.74%	22.79%	16.14%	0.00%	0.00%	0.00%
State Employees	8.05% ⁽²⁾	7.21%	7.61%	8.27%	8.27%	8.00%	0.22%	1.06%	0.39%
State Patrol	21.34% ⁽²⁾	21.33%	15.67%	23.80%	23.80%	21.00%	2.46%	2.47%	5.33%
Correctional	11.11% ⁽²⁾	11.21%	12.49%	11.17%	11.17%	13.20%	0.06%	(0.04%)	0.71%
Legislators	41.54%	43.96%	48.03%	T.F.	T.F.	T.F.	N/A	N/A	N/A
Elective State Officers	43.58%	43.49%	51.07%	P.G.	P.G.	P.G.	N/A	N/A	N/A
Judges	27.32%	27.01%	27.60%	28.36%	28.36%	28.29%	1.04%	1.35%	0.69%
Teachers	14.30%	12.78%	9.85%	14.66%	14.66%	11.64%	0.36%	1.88%	1.79%
Duluth Teachers	13.23% ⁽¹⁾	13.60%	12.87%	11.29%	11.29%	12.30%	(1.94%)	(2.31%)	(0.57%)
St. Paul Teachers	17.96%	16.97%	18.45%	15.87%	15.91%	19.24%	(2.09%)	(1.06%)	0.79%
Minneapolis Teachers	25.18%	25.15%	28.23%	19.00%	19.18%	28.61%	(6.18%)	(5.97%)	0.38%
Minneapolis Employees	44.48%	45.74%	42.89%	44.48%	45.74%	42.89%	0.00%	0.00%	0.00%

(1) Substantive benefit change implemented.

(2) Assumption or methodology change implemented.

TABLE 1-C: ACCRUED BENEFIT FUNDING RATIOS: 1995-1997

(Dollars in Millions)

Fund	Current Assets			P.V. of Accrued Benefit			A.B. Funding Ratio		
	1995	1996	1997	1995	1996	1997	1995	1996	1997
Public Employees	\$5,138	\$5,786	\$6,658	\$5,994	\$6,609	\$7,330	85.72%	87.56%	90.84%
Police and Fire	\$1,386	\$1,633	\$1,975	\$1,113	\$1,243	\$1,491	124.49%	131.33%	132.41%
Police and Fire Consolidation	\$675	\$754	\$876	\$723	\$769	\$865	93.44%	98.01%	101.28%
State Employees	\$3,462	\$3,976	\$4,665	\$3,339 ⁽²⁾	\$3,612	\$4,079	103.68%	110.06%	114.34%
State Patrol	\$285	\$324	\$376	\$272 ⁽²⁾	\$292	\$322	104.82%	110.78%	116.73%
Correctional	\$165	\$194	\$242	\$134 ⁽²⁾	\$150	\$191	123.52%	129.60%	126.80%
Legislators	\$21	\$23	\$26	\$48	\$51	\$57	44.09%	43.83%	44.88%
Elective State Officers	\$0.4	\$0.4	\$0.5	\$2.8	\$2.8	\$3.1	13.50%	14.49%	14.85%
Judges	\$57	\$65	\$75	\$99	\$105	\$112	57.50%	62.05%	66.46%
Teachers	\$8,348	\$9,541	\$11,104	\$9,050	\$9,697	\$10,262	92.25%	98.40%	108.20%
Duluth Teachers	\$143	\$157	\$170	\$162 ⁽¹⁾	\$177	\$187	88.44%	88.56%	90.94%
St. Paul Teachers	\$446	\$495	\$556	\$600 ^(1,2)	\$631	\$708	74.23%	78.39%	78.58%
Minneapolis Teachers	\$555	\$613	\$673	\$964	\$1,009	\$1,124	59.23%	60.74%	59.89%
Minneapolis Employees	\$965	\$1,019	\$1,072	\$1,195	\$1,232	\$1,250	80.77%	82.66%	85.73%

(1) Substantive benefit change implemented.

(2) Assumption or methodology change implemented.

**TABLE 1-D: PERA CONSOLIDATION ACCOUNTS
SUFFICIENCY FOR MPRIF TRANSFERS**

Consolidation Account	# Eligible to Retire Now	Add'l # Eligible Within 5 years	Current Assets	MPRIF Reserve	Comment Code
Albert Lea Fire	8	2	\$14,813,424	\$5,869,588	A
Albert Lea Police	5	2	\$11,384,090	\$4,886,003	A
Anoka Police	2	0	\$3,148,959	\$2,049,373	B
Austin Police	4	1	\$11,845,832	\$7,482,883	B
Bloomington Police	20	10	\$55,999,595	\$17,314,124	A
Brainerd Police	3	5	\$4,419,407	\$2,010,558	B
Buhl Police	0	0	\$1,178,450	\$585,247	A
Chisolm Fire	1	0	\$2,211,456	\$1,818,216	D
Chisolm Police	1	0	\$1,409,759	\$933,500	D
Columbia Heights Fire	0	0	\$2,143,991	\$1,052,130	A
Columbia Heights Police	3	0	\$4,104,861	\$2,810,720	C
Crookston Fire	5	0	\$1,662,096	\$553,626	C
Crystal Police	2	4	\$10,768,142	\$5,059,686	A
Duluth Fire	35	21	\$38,010,052	\$32,074,784	B*
Duluth Police	18	21	\$45,436,477	\$30,097,561	B*
Faribault Fire	0	3	\$5,490,964	\$4,588,383	B
Faribault Police	2	3	\$4,681,382	\$3,437,837	C
Fridley Police	5	1	\$9,587,063	\$4,735,088	A
Hibbing Fire	2	8	\$7,016,378	\$6,231,171	D
Hibbing Police	6	5	\$6,344,354	\$4,323,131	D

COMMENT CODE:

- A-Currently well-funded; special assessment for MPRIF transfer unlikely for foreseeable future.
- B-Significant special assessment for MPRIF transfer within five years is possible but not highly probable.
- C-Chance of special assessment this year is small, but chance of special assessment within five years is significant.
- D-Significant chance that special assessment for MPRIF transfer may be needed this year.

**Combined rating for both police and fire (fire alone would be D; police alone would be A).*

**TABLE 1-D: PERA CONSOLIDATION ACCOUNTS
SUFFICIENCY FOR MPRIF TRANSFERS**

Consolidation Account	# Eligible to Retire Now	Add'l # Eligible Within 5 years	Current Assets	MPRIF Reserve	Comment Code
Mankato Fire	1	0	\$7,905,691	\$7,558,664	C
Mankato Police	1	1	\$9,067,494	\$7,412,415	A
New Ulm Police	4	0	\$5,533,896	\$2,446,854	A
Red Wing Fire	4	0	\$7,451,835	\$3,128,534	A
Red Wing Police	2	2	\$10,914,462	\$1,288,566	A
Richfield Fire	2	2	\$7,847,864	\$6,645,078	D
Richfield Police	5	6	\$16,058,463	\$5,159,665	A
Rochester Fire	12	6	\$33,637,958	\$7,803,892	A
Rochester Police	17	7	\$34,090,939	\$15,419,645	A
Saint Cloud Fire	8	3	\$11,991,277	\$10,174,320	C
Saint Louis Park Fire	3	4	\$13,436,959	\$2,629,459	A
Saint Louis Park Police	11	6	\$23,645,228	\$9,179,231	A
Saint Paul Fire	77	94	\$174,193,314	\$106,254,385	A
Saint Paul Police	123	92	\$217,954,553	\$108,045,553	A
South St. Paul Fire	3	2	\$6,495,056	\$5,089,902	C
South St. Paul Police	4	2	\$8,137,000	\$7,003,007	D
Virginia Police	1	4	\$8,150,143	\$3,221,593	A
West St. Paul Fire	3	2	\$8,881,746	\$2,816,858	A
West St. Paul Police	4	4	\$8,973,744	\$2,997,710	A
Winona Fire	4	4	\$10,700,677	\$9,175,602	C
Winona Police	6	6	\$9,446,000	\$6,419,784	B

COMMENT CODE:

- A-Currently well-funded; special assessment for MPRIF transfer unlikely for foreseeable future.
- B-Significant special assessment for MPRIF transfer within five years is possible but not highly probable.
- C-Chance of special assessment this year is small, but chance of special assessment within five years is significant.
- D-Significant chance that special assessment for MPRIF transfer may be needed this year.

II. PLAN PROVISIONS

This section of our summary presents a brief summary of those changes made to the statutes since last year's report **which had an impact on the actuarial funding** of a plan. This section is not designed to provide a comprehensive summary of all changes which were made. For a more detailed description of the plan provisions, please refer to the individual report for each Fund.

For the July 1, 1997 Actuarial Valuation, we highlight the following:

Public Employees (Chapter 353):

1. Increase in contribution rates for both Member and Employer.
2. Increase in the benefit rate factor by 0.2%.
3. Post-retirement benefit increases now paid in excess of 6% rather than 5% of earnings with corresponding benefit increase for Members who do not receive the benefit rates in (2.).
4. Normal Retirement Age capped at age 66.

Police and Fire (Chapter 353):

1. Increase in the benefit rate factor by 0.35%.
2. Post-retirement benefit increases now paid in excess of 6% rather than 5% of earnings with corresponding benefit increase for Members who do not receive the benefit rates in (1.).

Police and Fire Consolidation:

1. Increase in the P.E.R.A. Police and Fire benefit rate factors to 2.74, 2.9, or 3.0% depending on which rate received municipal approval.
2. Post-retirement benefit increases now paid in excess of 6% rather than 5% of earnings with corresponding benefit increase for Members who do not receive the benefit rates in (1.).
3. Optional Early Retirement Benefit calculated using a 2.4% reduction factor if this provision has been approved by the municipality.

Added four new accounts -- Mankato Police, Richfield Fire, South St. Paul Police, and Virginia Police.

The increase in the highest benefit accrual factor from 2.65% to 3.0% implemented in 1997 is not to be effective until each respective municipality approves the increase. All new accounts come in at 3.0%. As of July 1, 1997, the following municipalities had not taken formal additional action to approve the change in the benefit accrual factor and our valuation reflects continuation of the 2.74 or 2.9% multiplier for these municipalities:

<u>Relief Association</u>	<u>Factor</u>
Albert Lea Fire	2.9%
Albert Lea Police	2.9%
Anoka Police	2.9%
Bloomington Police	2.9%
Brainerd Police	2.9%

Chisholm Police	2.9%
Mankato Fire	2.74%
New Ulm Police	2.9%
Richfield Fire	2.9%
Richfield Police	2.9%
St. Louis Park Fire	2.9%
St. Louis Park Police	2.9%

State Employees (Chapter 352):

1. Decrease in contribution rates for both Member and Employer.
2. Increase in the benefit rate factor by 0.2%.
3. Post-retirement benefit increases now paid in excess of 6% rather than 5% of earnings with corresponding benefit increase for Members who do not receive the benefit rates in (2.).
4. Normal Retirement age capped at 66.

State Patrol (Chapter 352B):

1. Decrease in contribution rates for both Member and Employer.
2. Increase in the benefit rate factor by 0.35%.
3. Post-retirement benefit increases now paid in excess of 6% rather than 5% of earnings with corresponding benefit increase for Members who do not receive the benefit rates in (2.).
4. Early retirement benefit reduced by 2/10% for each month below age 55.
5. Authorized recognition of amortization credit due to negative Unfunded Actuarial Accrued Liability.

Correctional Employees (Chapter 352):

1. Increase in contribution rates for both Member and Employer.
2. Decrease in the initial benefit rate factor by 0.1% but with continuation of this benefit for life.
3. Post-retirement benefit increases now paid in excess of 6% rather than 5% of earnings with corresponding benefit increase for Members who do not receive the benefit rates in (2.).
4. Authorized recognition of amortization credit due to negative Unfunded Actuarial Accrued Liability.

Legislators (Chapter 3A): Post-retirement benefit increases now paid in excess of 6% rather than 5% of earnings with corresponding increase in the benefit level made at the time of retirement.

Elective State Officers (Chapter 352C): Post-retirement benefit increases now paid in excess of 6% rather than 5% of earnings with corresponding increase in the benefit level made at the time of retirement.

Judges (Chapter 490):

1. Increase in the benefit rate factor by 0.2%.
2. Increase in the maximum benefit to 70% of salary for the 12 months preceding retirement.
3. Post-retirement benefit increases now paid in excess of 6% rather than 5% of earnings with corresponding benefit increase for Members who do not receive the benefit rates in (1.).

Teachers Retirement Association (Chapter 354):

1. Decrease of 1.5% in both Member and Employer contribution rates. The employer contribution rate will be reduced by 1.64% when full funding occurs.
2. All benefit rate factors increase by 0.07%.
3. Benefits are increased by the applicable transition percentage (50% to 10%) of the July 1, 1997 permanent increase for Members who terminate after June 30, 1997 and for whom benefits commence during the period July 2, 1997 to July 1, 2002.
4. Post-retirement benefit increases now paid in excess of 6% rather than 5% of earnings with corresponding benefit increase for Members who do not receive the benefit rates in (2.).

Duluth Teachers (Chapter 354A):

1. Increase in the benefit rate factors by 0.07%.
2. Normal Retirement Age capped at 66 for employees first hired after June 30, 1989.
3. Direct state funding of \$486,000 per year added.

St. Paul Teachers (Chapter 354A):

1. Increase in the Member and Employer contribution rates.
2. Increase in the benefit rate factors by 0.20%.
3. Normal Retirement Age capped at 66 for Members first hired after June 30, 1989.
4. The methodology used to determine post-retirement benefit increases was changed.
5. Direct state funding is increased.

Minneapolis Teachers (Chapter 354A):

1. Increase in Member contribution rate.
2. Increase in the benefit rate factors by of 0.20%.
3. Normal Retirement Age capped at 66 for Members first hired after June 30, 1989.
4. Direct state funding is increased.
5. Indexing to the additional contribution amounts required to be made by the city of Minneapolis and Minneapolis Public Schools has been eliminated.

***Minneapolis Employees (Chapter 422A):* None**

III. ACTUARIAL ASSUMPTIONS (TABLES III-A, III-B AND III-C)

In projecting costs to be incurred by a pension plan in future years, it is necessary to provide actuarial assumptions relating to the future events which trigger those costs. To provide for all **significant** events, a wide range of assumptions must be utilized. These assumptions may be classified into three different categories.

The *first category* involves the economic assumptions. These assumptions include assumed investment return, salary increases, social security increases and cost-of-living increases on plan benefits. These assumptions are characterized as economic because they generally tend to be affected by interrelated factors which also affect economic growth.

The *second category* relates to assumptions which affect the expected working lifetime (and retired lifetime) of a member. These assumptions include mortality rates, disability rates and rates of separation due to other causes. Within a particular group classification (such as teachers or policemen), year-to-year mortality and disability rates may be reasonably represented by standard published tables. Separation due to other causes may vary considerably and should be reviewed and monitored on an individual group basis. In particular, where a subsidized benefit exists (such as for early retirement), extra care must be provided with respect to the rate of separation which is assumed to occur (such as the rate of early retirement).

The *third category* relates to miscellaneous assumptions which are needed to accommodate special plan provisions which are not adequately covered in the first two categories. These would include (but are not limited to) items such as assumed family composition, plan expenses, election to specific benefit forms, etc. These assumptions need to be monitored so that they remain consistent with the plan provisions which are in effect.

In Tables III-A, III-B and III-C, we have prepared a summary of some of the assumptions being used by each plan in all three categories. For a comprehensive review of all assumptions being used for a particular plan, please refer to the July 1, 1997 Actuarial Valuation for that Fund.

In our opinion the assumptions used for July 1, 1997 valuations are reasonable and well within the mainstream of current actuarial practice. For all but the three statewide plans and MERF, new assumptions were approved by the LCPR last spring and reflected for the first time in these valuations. These assumptions were based on recent experience studies of the respective plans. Experience during the 1992-96 period has been analyzed for the three large statewide plans and we are in the process of developing appropriate recommended changes in the assumptions for these plans. A complete description of the specific recommendations and the cost implications thereof will be prepared and provided to the LCPR in a separate report.

TABLE III-A: JULY 1, 1997 ACTUARIAL ASSUMPTIONS - CATEGORY 1
(Highlighted box indicates change from prior year.)

Fund	Interest Rates Pre-retire/Post-retire	Salary Increase %/ Data Used	Social Security	COLA on Benefits
Public Employees (Chapter 353)	8.5%/6.0%	*/Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
Police and Fire (Chapter 353)	8.5%/6.0%	*/ Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
Police and Fire Consolidation	8.5%/6.0% (PERA) 8.5% (Local)	*/Prior Year Salary increased	N/A	2.5% Implied (PERA) 5.0% Explicit (Local) (with exceptions)
State Employees (Chapter 352)	8.5%/6.0%	*/Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
State Patrol (Chapter 352B)	8.5%/6.0%	*/Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
Correctional (Chapter 352)	8.5%/6.0%	*/Prior Year Salary Increased	Current Law and 6.5% Salary Scale	2.5% Implied by 6.0% Interest Rate
Legislators (Chapter 3A)	8.5%/5.0%	Statutory salary, then 5.0%	N/A	3.5% Implied by 5.0% Interest Rate
Elective State Officers (Chapter 352C)	8.5%/5.0%	Statutory Salary, then 5.0%	N/A	3.5% Implied by 5.0% Interest Rate
Judges (Chapter 490)	8.5%/6.0%	Statutory Salary, then 5.0%	N/A	2.5% Implied by 6.0% Interest Rate
Teachers (Chapter 354)	8.5%/6.0%	*/Prior Year Salary Increased	N/A	2.5% Implied by 6.0% Interest Rate
Duluth Teachers (Chapter 354A)	8.5%/8.5%	*/Reported Salary Increased	N/A	2% Implied by 6.5% Interest Rate
St. Paul Teachers (Chapter 354A)	8.5%/8.5%	*/Reported Salary Increased	N/A	2% Per Annum
Minneapolis Teachers (Chapter 354A)	8.5%/8.5%	*/Reported Salary Increased	N/A	2% Per Annum
Minneapolis Employees (Chapter 422A)	6.0%/5.0%	4.0%/Reported Pay Increased 1.0198%	N/A	1.0% Implied by 5.0% Interest Rate

**Graded rates using a 5.0% base increase plus a merit scale.*

TABLE III-B: JULY 1, 1997 ACTUARIAL ASSUMPTIONS - CATEGORY 2
(Highlighted box indicates change from prior year.)

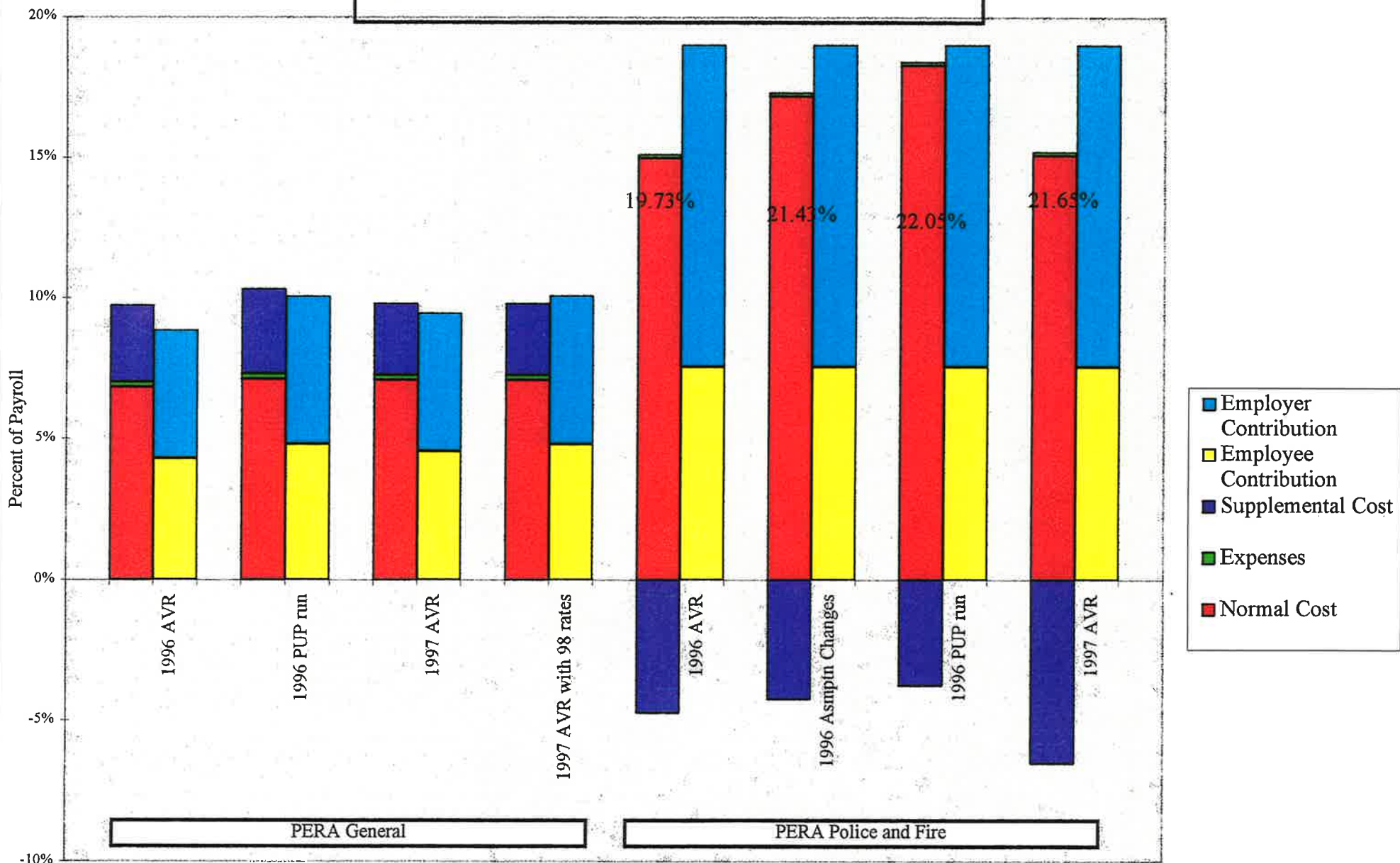
Fund	Mortality Table (male rates shown)	Disability Table (male rates shown)	Retirement Age (Coordinated)	Other Separation (male rates shown)
Public Employees (Chapter 353)	1983 GAM Male set back 5 years	Graded: .12% @ 35 .58% @ 55	Age 64 and 50% of Rule of 90 (first year only)	Graded: 7.19% @ 35 1.95% @ 55
Police and Fire (Chapter 353)	1983 GAM Male set back 5 years	Graded: .19% @ 35 1.35 @ 55	Graded from age 50	Graded: 1.83% @ 35 .11% @ 55
Police and Fire Consolidation	1983 GAM Male set back 5 years	Graded: .19% @ 35 1.35% @ 55	PERA: Graded from age 50 Local: Varies between ages 50-60	Graded: 1.83% @ 35 .11% @ 55
State Employees (Chapter 352)	1983 GAM Male set back 4 years	Graded: .02% @ 35 .34% @ 55	Graded from age 58 and 25% of Rule of 90	Graded: 7.20% @ 35 2.10% @ 55
State Patrol (Chapter 352B)	1983 GAM Male set back 1 year	Graded: .11% @ 35 .88% @ 55	Graded from age 50	Graded: 0.70% @ 35 0.00% @ 55
Correctional (Chapter 352)	1983 GAM Male set back 1 year	Graded: .11% @ 35 .88% @ 55	Graded from age 50	Graded: 6.00% @ 35 1.40% @ 55
Legislators (Chapter 3A)	1983 GAM Male set back 4 years	None	Age 62	Varies based upon service; 0% @ 9 years
Elective State Officers (Chapter 352C)	1983 GAM Male set back 4 years	None	Graded from age 62	Varies based upon service; 0% @ 9 years
Judges (Chapter 490)	1983 GAM Male set back 4 years	Graded: .02% @ 35 .34% @ 55	Graded from age 62	None
Teachers (Chapter 354)	1983 GAM Male set back 8 years	Graded: .06% @ 35 .36% @ 55	Age 62 and 30% of Rule of 90	Select & ultimate graded
Duluth Teachers (Chapter 354A)	1983 GAM Male set back 4 years	Graded: .06% @ 35 .36% @ 55	Graded from age 55 40% under Rule of 90	Graded: 4.91% @ 35 .13% @ 55
St. Paul Teachers (Chapter 354A)	1983 GAM Male set back 5 years	Graded: .06% @ 35 .36% @ 55	Graded from age 55	Graded: 4.50% @ 35 0.50% @ 55
Minneapolis Teachers (Chapter 354A)	1983 GAM Male set back 6 years	Graded: .05% @ 35 .36% @ 55	Graded from age 55	Graded: 4.50% @ 35 0.50% @ 55
Minneapolis Employees (Chapter 422A)	1986 Projected Exp. Table set back 1 year	Graded: .30% @ 35 1.60% @ 55	Age 61	Graded: 1.50% @ 35 1.00% @ 55

TABLE III-C: JULY 1, 1997 ACTUARIAL ASSUMPTIONS - CATEGORY 3

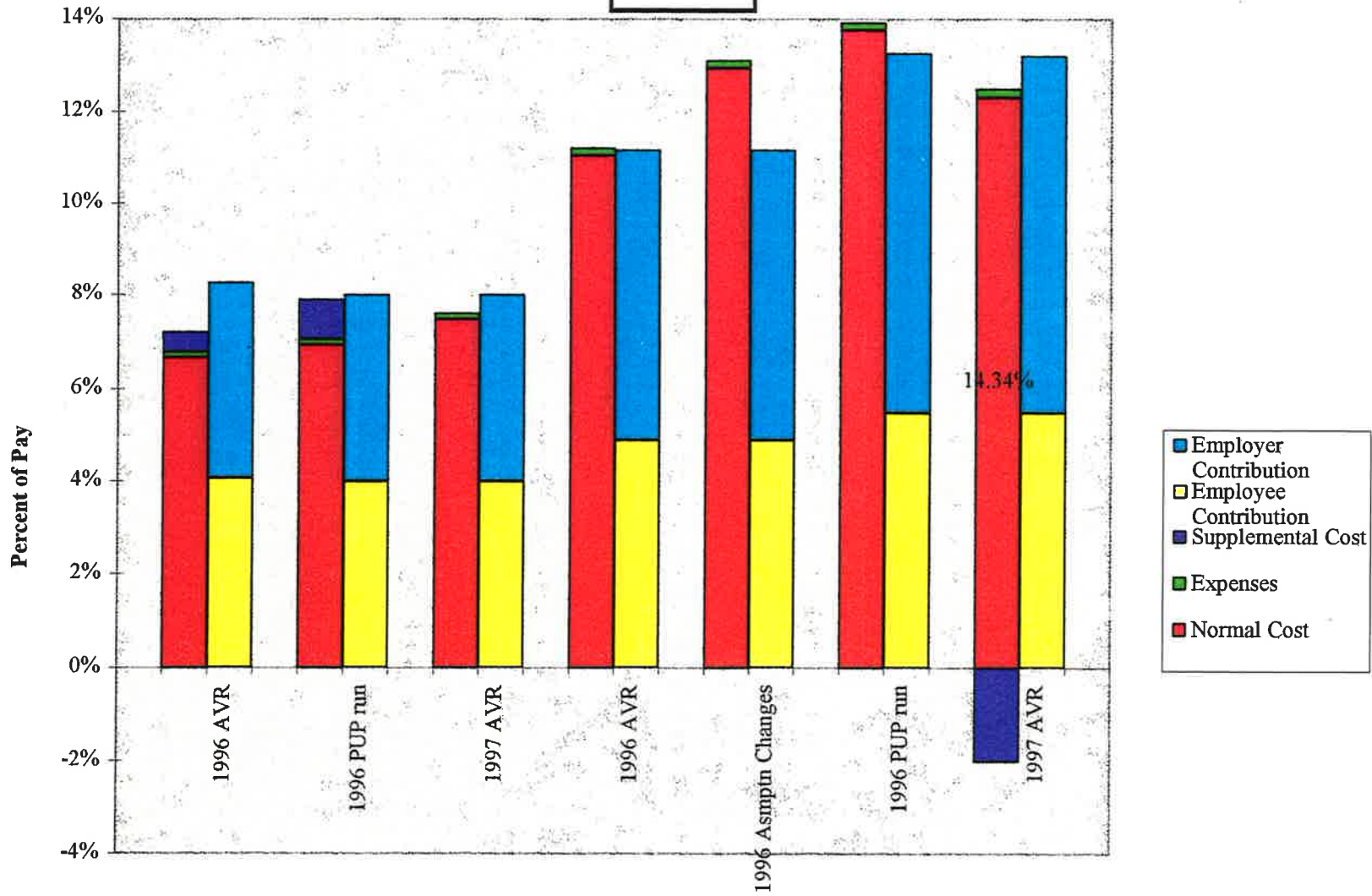
(Highlighted box indicates change from prior year.)

Fund	Family Composition (Male/Female)	Expenses (Admin. Only)	Bounceback Annuity Election (Male/Female)	Other
Public Employees (Chapter 353)	85%/65% married; no children	Prior year as % of payroll	30%/15% for 50% J&S 45%/15% for 100% J&S	None
Police and Fire (Chapter 353)	85%/65% married; no children	Prior year as % of payroll	40%/15% for 50% J&S 45%/15% for 100% J&S	None
Police and Fire Consolidation	85%/65% married; no children	Expenses paid outside the fund	40%/15% for 50% J&S 45%/15% for 100% J&S	None
State Employees (Chapter 352)	85%/85% married	Prior year as % of payroll	25%/ 5% for 50% J&S 45%/ 5% for 100% J&S	None
State Patrol (Chapter 352B)	100%/100% married; two children	Prior year as % of payroll	25%/ 5% for 50% J&S 25%/ 5% for 100% J&S	None
Correctional (Chapter 352)	85%/85% married	Prior year as % of payroll	25%/ 5% for 50% J&S 25%/ 5% for 100% J&S	None
Legislators (Chapter 3A)	85%/85% married; two children	Prior year as % of payroll	None	\$4,800 per diem income
Elective State Officers (Chapter 352C)	85%/85% married; two children	Prior year as % of payroll	None	No refunds after 8 years
Judges (Chapter 490)	Actual data	Prior year as % of payroll	None	No refunds
Teachers (Chapter 354)	85%/65% married; no children	Prior year as % of payroll	15%/10% for 50% J&S 0%/ 0% for 75% J&S 50%/10% for 100% J&S	None
Duluth Teachers (Chapter 354A)	80%/80% married	Prior year as % of payroll	30%/30% for 50% J&S 55%/20% for 100% J&S	None
St. Paul Teachers (Chapter 354A)	85%/60% married; two children	Prior year as % of payroll	15%/10% for 50% J&S 50%/10% for 100% J&S	None
Minneapolis Teachers (Chapter 354A)	80%/60% married	Prior year as % of payroll	15%/15% for 50% J&S 20%/ 5% for 75% J&S 40%/10% for 100% J&S	Benefit increase = (5 yr. return - 8.50%) x (1 - contribution deficiency)
Minneapolis Employees (Chapter 422A)	67%/67% married	Prior year increased by 4% as % of payroll	None	Investment expense amortized to a required date

PERA General and PERA Police and Fire



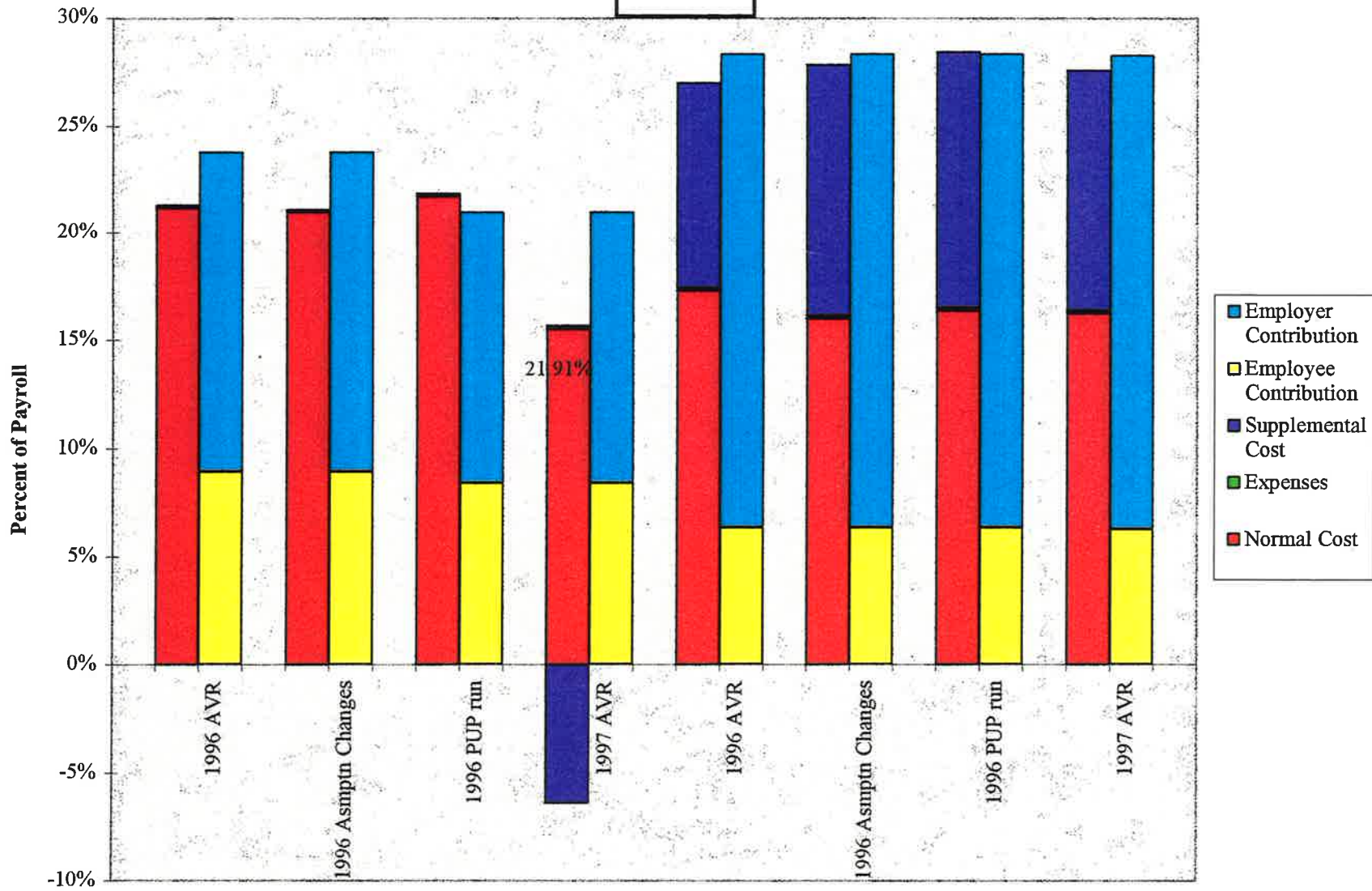
MSRS



State Employees'

Correctional Employees'

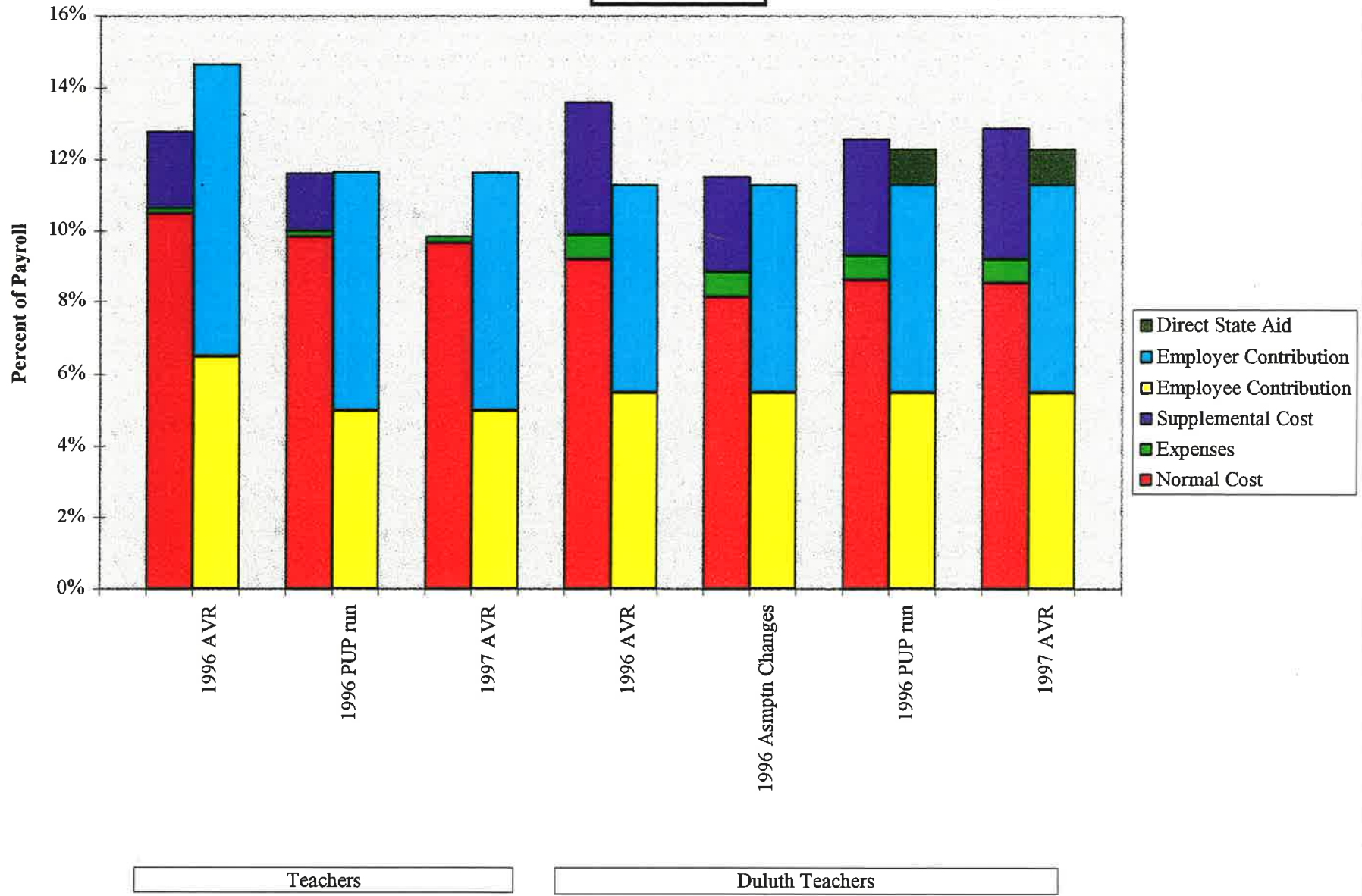
MSRS



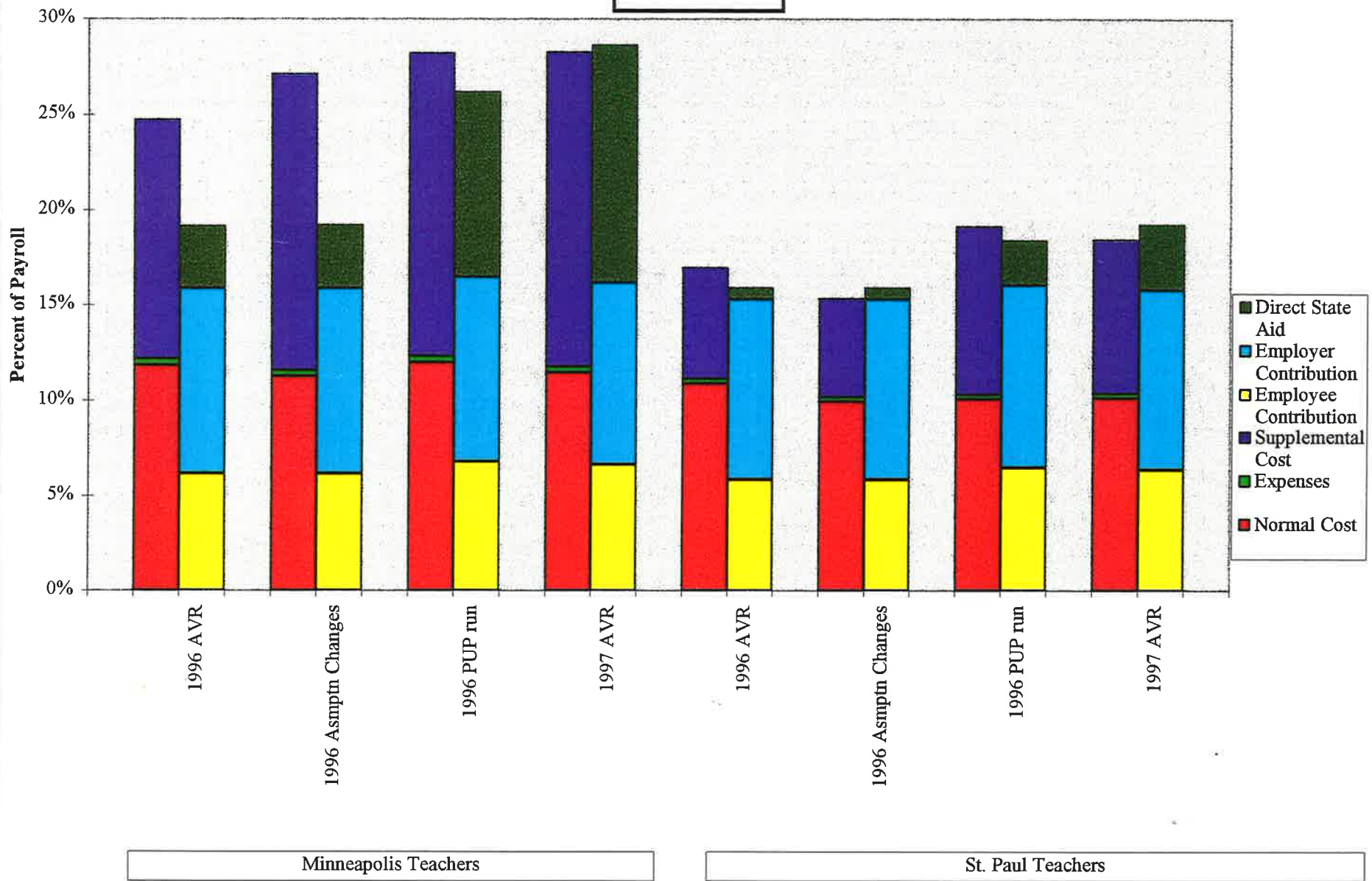
State Patrol

Judges

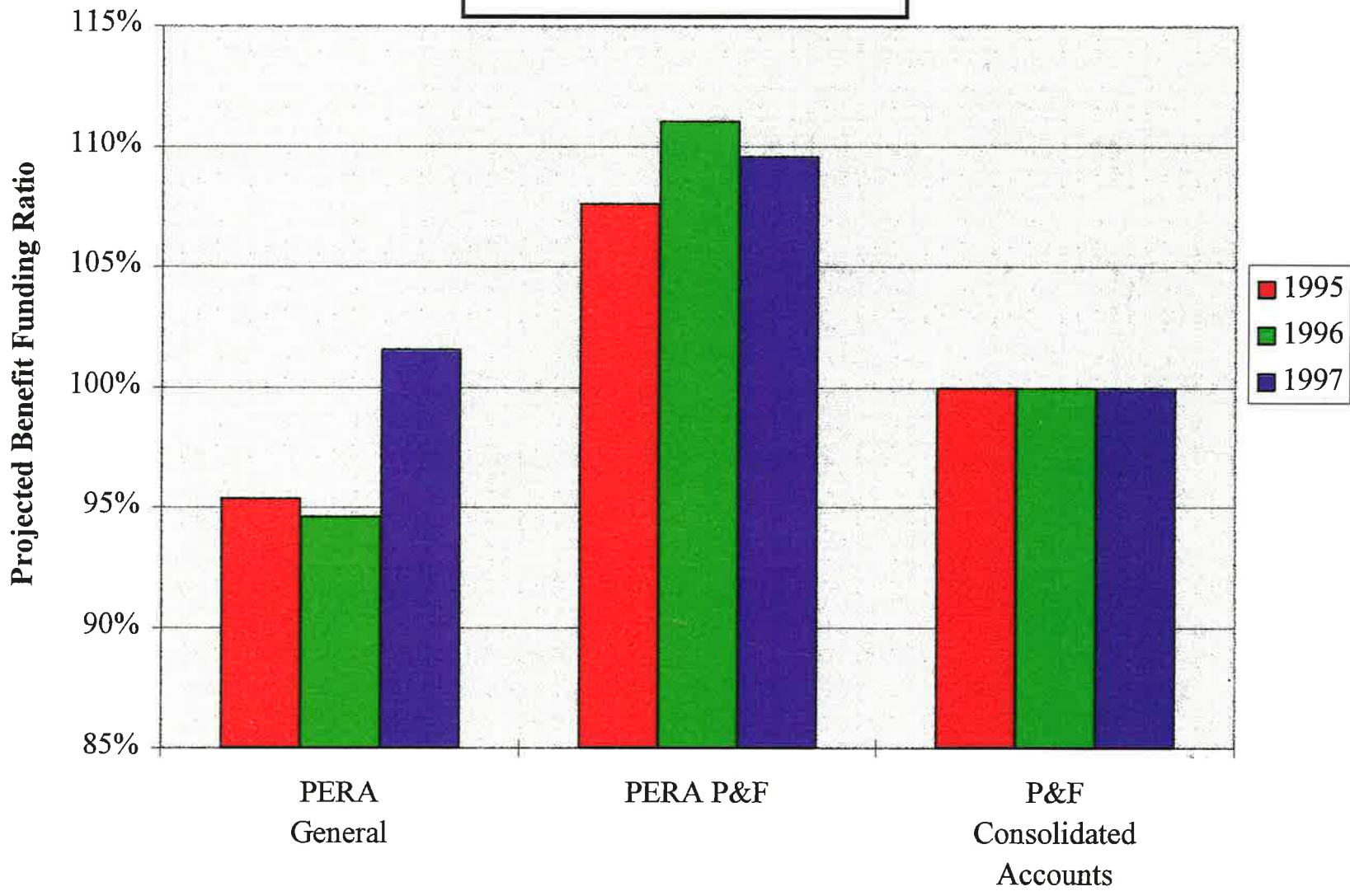
Teachers



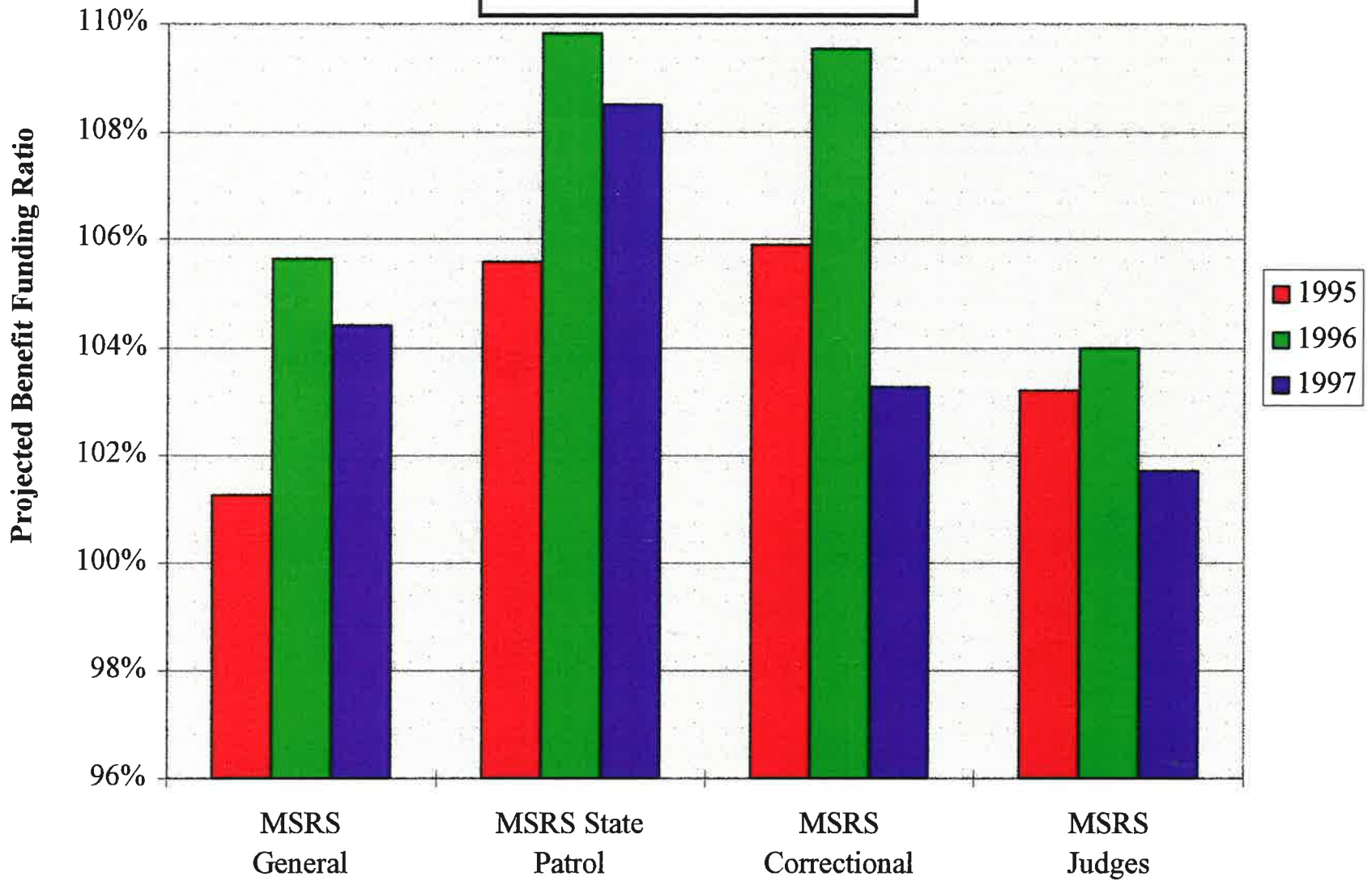
Teachers



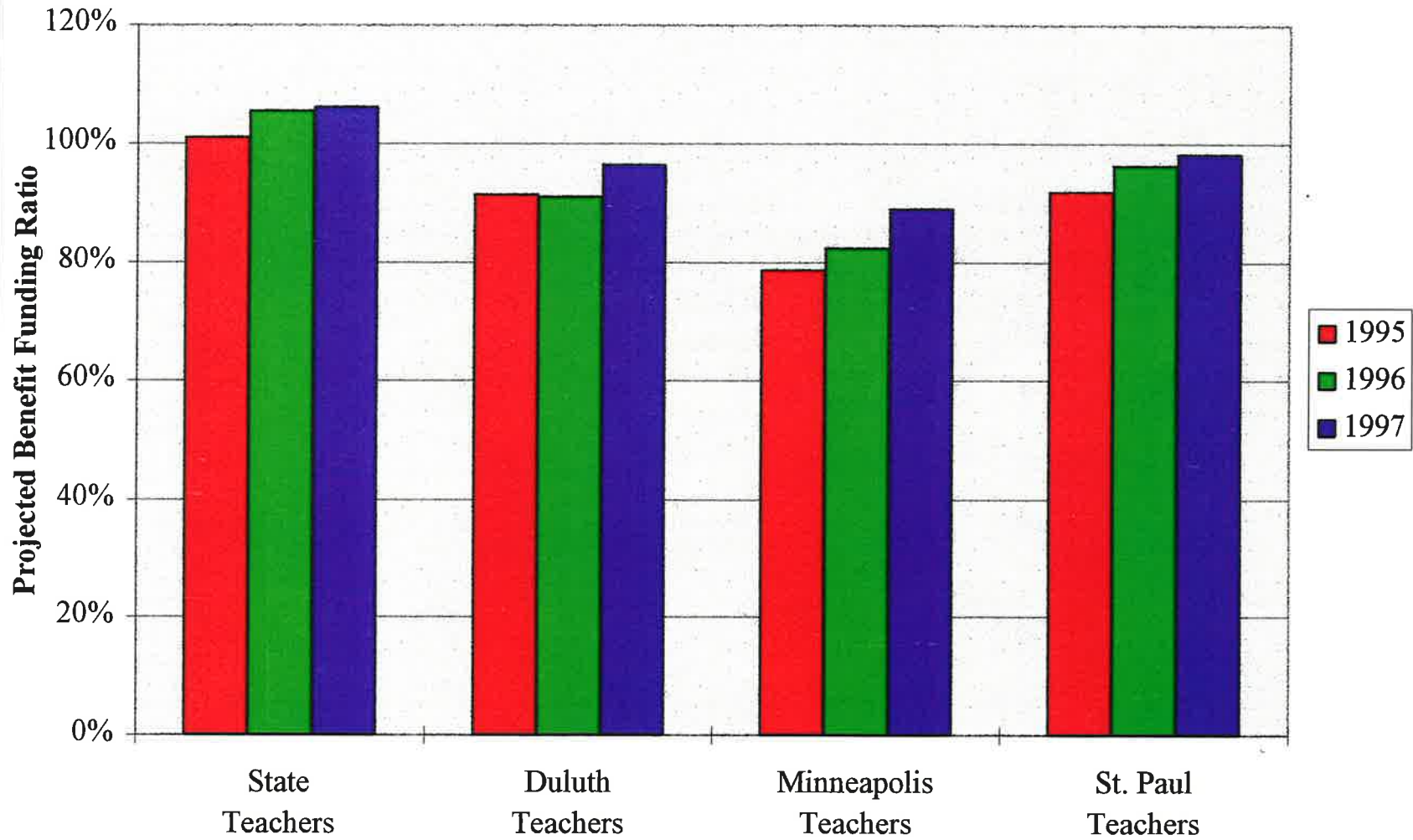
FUNDING RATIOS PERA



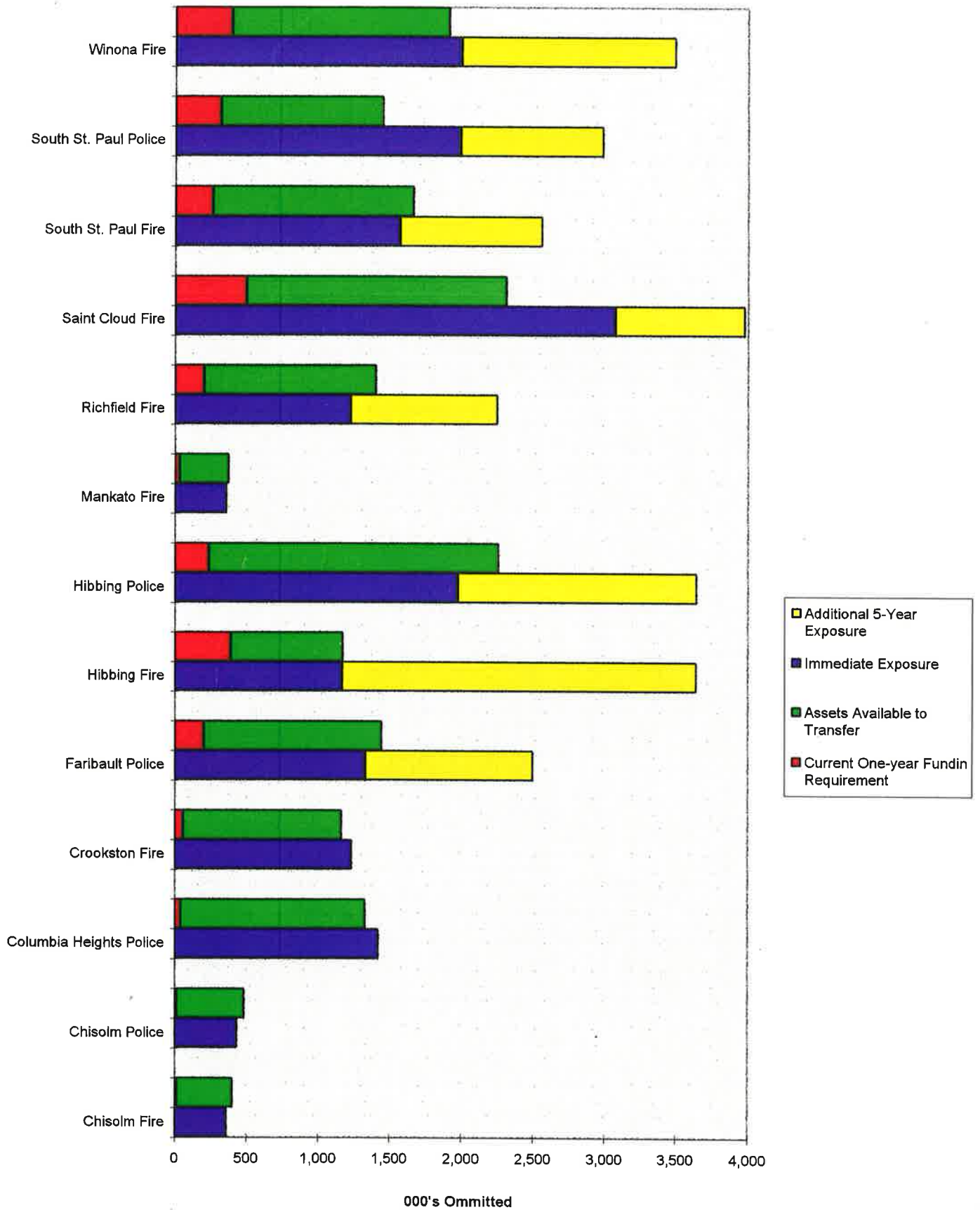
FUNDING RATIOS MSRS



FUNDING RATIOS TEACHER PLANS



Consolidated Funds Funding Status C or D



**Demonstration of Impact of
Proposed Valuation Method**
(dollars in thousands)

ASSET VALUES AS OF JULY 1, 1997

	Cost Value	Market Value	Current Actuarial Value	Proposed Actuarial Value	Ratio of Current Value/ Market Value	Ratio of Proposed Value/ Market Value
P.E.R.A.	6,552,205	6,870,819	6,658,410	6,464,210	96.91%	94.08%
P.E.R.A. Police & Fire	1,924,375	2,075,156	1,974,635	1,897,670	95.16%	91.45%
T.R.A.	10,904,134	11,503,009	11,103,759	10,725,846	96.53%	93.24%
State Employees	4,564,401	4,864,755	4,664,519	4,486,591	95.88%	92.23%
State Patrol	368,551	389,849	375,650	359,812	96.36%	92.30%
Correctional Employees	236,425	252,899	241,916	228,786	95.66%	90.47%
State Judges	74,123	75,793	74,680	75,080	98.53%	99.06%
Duluth Teachers	155,368	199,442	170,059	177,682	85.27%	89.09%
Minneapolis Teachers	611,675	796,276	673,209	694,202	84.54%	87.18%
St. Paul Teachers	510,984	647,249	556,406	571,555	85.96%	88.31%
M.E.R.F.	1,033,427	1,148,734	1,071,863	1,078,554	93.31%	93.89%