

The Report of the
GAIN/LOSS ANALYSIS OF FINANCIAL EXPERIENCE
During calendar 1979 and 1980
CITY OF ROCHESTER
FIRE DEPARTMENT RELIEF ASSOCIATION
Rochester, Minnesota

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April 15, 1981

City of Rochester
Fire Department Relief Association
Rochester, Minnesota

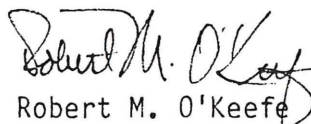
Submitted in this report are the results of the 1979-80 gain/loss analysis of the financial experiences of the City of Rochester Fire Department Relief Association.

The composite results of this study are reported on Schedules 1(A) and 1(B) and comments regarding the results are on page 12.

The gain/loss analysis was based upon statistical data furnished by the Association regarding active and retired member changes and related financial transactions.

The actuarial assumptions used for regular valuation purposes and which produce "expected" experience data are shown in the appendix of this report.

Respectfully submitted,


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RMO:mh

PURPOSE OF GAIN/LOSS ANALYSIS

Actual financial experience will not coincide exactly with assumed financial experience--differences are to be expected since the future cannot be predicted with absolute precision. The changes in computed liabilities resulting from differences between actual and assumed experiences are called actuarial gains if the experience was financially favorable and actuarial losses if the experience was financially unfavorable. Actuarial gains result in decreases in contribution rates and actuarial losses result in increases.

Regular actuarial valuations provide information about aggregate computed liabilities. However, regular valuations do not develop the information needed to explain the year to year changes in computed liabilities attributable to each activity within the retirement system financial mechanism. The purpose of a gain/loss analysis is to determine the change in computed liabilities and contribution rates attributable to variations between actual and assumed experience.

Once a difference between actual and assumed experience in a risk area has been observed to be sizeable and persistent, the assumed experience should be changed to reflect the observed reality. However, gains and losses over a relatively short period of time may not be indicative of long term trends which provide the basis for selection of actuarial assumptions.

Age & Service Retirement.

If members retire at older ages than assumed, there is a gain. If retirements occur at younger ages than assumed there is a loss.

Disability & Death-in-Service.

If casualty claims are less than assumed, there is a gain. If there are more casualty losses than assumed, there is a loss.

Withdrawal.

If more liabilities are released by withdrawal than assumed, there is a gain. If there are fewer withdrawals than assumed, there is a loss.

Salary Increases.

If there are smaller salary increases than assumed, there is a gain. If salary increases are greater than assumed, there is a loss.

Investment Income.

If there is greater investment income than assumed, there is a gain. If investment income is less than assumed, there is a loss.

Post Retirement Mortality.

If benefit recipients die at younger ages than assumed, there is a gain. If they live longer than assumed, there is a loss.

Contribution.

Gains or losses arise due to the delay in implementing changes in the recommended contribution.

Miscellaneous.

Miscellaneous gains and losses include changes due to data adjustments, rounding and changes in the average age and service characteristics of the group.

ROCHESTER FIRE DEPARTMENT RELIEF ASSOCIATION

Schedule 1(A)

Gains & Losses in Accrued Liabilities
and Changes in Contribution Requirements
During Calendar 1979

Type of Activity	Accrued Liabilities (Gain) or Loss		Contribution Requirements (Gain) or Loss	
	Active	Retirants &	Normal Cost	\$ Payment
	Members	Beneficiaries	% of Payroll	on UAL
	(\$ in 1,000)		(\$ in 1,000)	
<u>Age & Service Retirements</u>	\$ 77	\$N/A	N/A%	\$ 3.8
<u>Disability & Death-in-Service</u>				
a. <u>Disability</u>	351	N/A	N/A	17.4
b. <u>Death-in Service</u>	(77)	N/A	N/A	(3.8)
<u>Withdrawal</u>	13	N/A	N/A	0.6
<u>Salary Increases</u>	327	386	N/A	35.2
<u>Investment Income</u>	(4)	(12)	N/A	(0.8)
<u>Post Retirement Mortality</u>	N/A	67	N/A	3.3
<u>Contribution</u>	23	24	N/A	2.3
<u>Miscellaneous</u>	<u>(1)</u>	<u>0</u>	<u>N/A</u>	<u>0</u>
EXPERIENCE RELATED (GAIN)/LOSS & CORRESPONDING CHANGE IN CONTRIBUTION REQUIREMENTS	709	465	N/A	58.0
<u>Changes due to plan amendments</u>	<u>0</u>	<u>0</u>	<u>N/A</u>	<u>0</u>
TOTAL (GAIN)/LOSS DURING YEAR	<u>\$709</u>	<u>\$465</u>	<u>N/A%</u>	<u>\$58.0</u>

ROCHESTER FIRE DEPARTMENT RELIEF ASSOCIATION

Schedule 1(B)

Gains & Losses in Accrued Liabilities
and Changes in Contribution Requirements
During Calendar 1980

Type of Activity	Accrued Liabilities (Gain) or Loss		Contribution Requirements (Gain) or Loss	
	Active	Retirants &	Normal Cost	\$ Payment
	Members	Beneficiaries	% of Payroll	on UAL
	(\$ in 1,000)		(\$ in 1,000)	
<u>Age & Service Retirements</u>	\$168	\$N/A	(0.43)%	\$ 8.3
<u>Disability & Death-in-Service</u>				
a. <u>Disability</u>	(24)	N/A	(0.20)	(1.2)
b. <u>Death-in Service</u>	(42)	N/A	(0.15)	(2.1)
<u>Withdrawal</u>	5	N/A	0.05	0.2
<u>Salary Increases</u>	282	282	0	27.9
<u>Investment Income</u>	(35)	(160)	0	(9.6)
<u>Post Retirement Mortality</u>	N/A	(58)	N/A	(2.9)
<u>Contribution</u>	(23)	(22)	0	(2.2)
<u>Miscellaneous</u>	<u>85</u>	<u>11</u>	<u>0.13</u>	<u>4.8</u>
EXPERIENCE RELATED (GAIN)/LOSS & CORRESPONDING CHANGE IN CONTRIBUTION REQUIREMENTS	416	53	(0.60)	23.2
<u>Conversion to UAL Amortization</u>	N/A	N/A	N/A	133.7
<u>Change in Funding Method For Death & Disability</u>	246	N/A	0.29	12.1
<u>Changes due to plan amendments</u>	<u>232</u>	<u>17</u>	<u>0.63</u>	<u>12.3</u>
TOTAL (GAIN)/LOSS DURING YEAR	<u>\$894</u>	<u>\$ 70</u>	<u>0.32 %</u>	<u>\$181.3</u>

ROCHESTER FIRE DEPARTMENT RELIEF ASSOCIATION

Schedule 2(A)

Employees Active at Both Beginning & End of 1979

<u>Age Group Beg. Year</u>	<u>No.</u>	<u>Beginning Salary</u>	<u>Ending Salary</u>	<u>% Increase In Salary</u>
20-24	2	\$ 34,464	\$ 37,566	9.0%
25-29	9	155,088	169,047	9.0
30-34	14	241,248	262,962	9.0
35-39	16	275,712	300,528	9.0
40-44	8	137,856	150,264	9.0
45-49	13	224,016	244,179	9.0
50-54	14	241,248	262,962	9.0
55-59	7	120,624	131,481	9.0
60-64	<u>1</u>	<u>17,232</u>	<u>18,783</u>	9.0
TOTALS	84	\$1,447,488	\$1,577,772	9.0

Employees Active at Either Beginning or End of 1979

<u>Years Service</u>	<u>Beginning of Year</u>	<u>End of Year</u>
0	1	4
1	6	4
2	4	6
3	2	4
4	5	2
5 or more	73	71

Average Age: 41.1 years.

Average Service: 14.6 years.

ROCHESTER FIRE DEPARTMENT RELIEF ASSOCIATION

Schedule 2(B)

Employees Active at Both Beginning & End of 1980

<u>Age Group Beg. Year</u>	<u>No.</u>	<u>Beginning Salary</u>	<u>Ending Salary</u>	<u>% Increase In Salary</u>
20-24	3	\$ 56,349	\$ 60,858	8.0%
25-29	9	169,047	182,574	8.0
30-34	15	281,745	304,290	8.0
35-39	13	244,179	263,718	8.0
40-44	14	262,962	284,004	8.0
45-49	12	225,396	243,432	8.0
50-54	10	187,830	202,860	8.0
55-59	9	169,047	182,574	8.0
TOTALS	85	\$1,596,555	\$1,724,310	8.0%

Employees Active at Either Beginning or End of 1980

<u>Years Service</u>	<u>Beginning of Year</u>	<u>End of Year</u>
0	4	0
1	4	4
2	6	4
3	4	6
4	2	3
5 or more	71	69

Average Age: 41.5 years.

Average Service: 15.1 years.

ROCHESTER FIRE DEPARTMENT RELIEF ASSOCIATION

Schedule 3(A)

Separations From Active Service (Other Than Age & Service Retirement)
During 1979

<u>Age at Termination</u>	<u>Withdrawal</u>		<u>Disability</u>		<u>Death</u>	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>
20-24				*		*
25-29		0.3	1	*		*
30-34		0.3		*		*
35-39		0.1		*		*
40-44		0.1		*		0.1
45-49			1	0.1		*
50-54				*	1	0.1
55-59				*		0.1
60-64	—	—	—	*	—	*
TOTALS	0	0.8	2	0.3	1	0.6

* Less than 0.1%

<u>Years Service at Termination</u>	<u>Actual</u>	<u>Expected</u>
0		0.1
1		0.1
2		0.1
3		0.0
4		0.1
5 of more	—	0.4
TOTALS	0	0.8

Average age at separation: N/A

Average service at separation: N/A

ROCHESTER FIRE DEPARTMENT RELIEF ASSOCIATION

Schedule 3(B)

Separations From Active Service (Other Than Age & Service Retirement)
During 1980

Age at Termination	Withdrawal		Disability		Death	
	Actual	Expected	Actual	Expected	Actual	Expected
20-24		0.1		*		
25-29		0.2		*		
30-34	2	0.2		*		*
35-39		0.2		*		*
40-44		0.1		*		0.1
45-49		*		*		0.1
50-54						*
55-59	—	—	—	—	—	<u>0.1</u>
TOTALS	2	0.9	0	0.3	0	0.5

* Less than 0.1%

Years Service at Termination	Actual	Expected
0		0.2
1	1	0.1
2		0.1
3		0.1
4	1	0.0
5 of more	—	<u>0.4</u>
TOTALS	2	0.9

Average age at separation: 31.0 years.

Average service at separation: 2.4 years.

ROCHESTER FIRE DEPARTMENT RELIEF ASSOCIATION

Schedule 4

Separations From Active Service
For Age & Service Retirement

<u>Age at Termination</u>	<u>1979</u>		<u>1980</u>	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>
54			1	
55			1	
56	1		1	
57	1			
58				
60		1.0		
61	1	1.0	1	1.0
63	<u>1</u>	<u>1.0</u>	<u>—</u>	<u>—</u>
TOTALS	4	3.0	4	1.0

Average age at retirement during period examined: 58.5 years.

Average service at retirement during period examined: 30.6 years.

ROCHESTER FIRE DEPARTMENT RELIEF ASSOCIATION

Schedule 5

Death After Retirement
(Disability and Service Retirants)

Age at Death	1979		1980	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>
30-34		0.0015		0.0016
45-49		0.0145		0.0162
50-54		0.0607		0.0648
55-59		0.1042		0.1565
60-64		0.1535		0.1250
65-69		0.1357	1	0.1763
70-74			1	
75-79		0.0680		0.0735
80-84	—	<u>0.3393</u>	—	<u>0.3692</u>
TOTALS	0	0.8774	2	0.9831

Average age at death: 67.5 years.

Comments

We have estimated the investment income attributable to the Fixed Return Account of the State Board of Investments. A portion of the miscellaneous loss in 1980 may be due to an overstatement of this investment income.

APPENDICES

ROCHESTER FIRE DEPARTMENT RELIEF ASSOCIATION

Valuation Methods and Assumptions

The Entry Age Normal Cost method was used to determine the normal cost of all benefits. Disability and death before retirement benefits were valued in previous valuations on a terminal funding basis (one year term cost).

The rate of investment return (interest) used in making the valuation was 5.0 percent per annum, compounded annually.

The mortality table used was the United States Life Table, 1959-61, White Males and White Females.

Sample Ages	Single Life Values: Present Value of \$1 Monthly				Future Life Expectancy (Years)	
	Level		Increasing			
	For Life		3.5% Yearly			
	Men	Women	Men	Women	Men	Women
45	\$169.61	\$186.84	\$263.23	\$304.86	27.33	32.52
50	154.85	174.20	229.51	270.80	23.22	28.08
55	139.29	159.62	197.24	236.11	19.45	23.81
60	122.79	142.73	166.26	200.76	16.01	19.69
65	106.31	124.22	137.82	166.16	12.97	15.88
70	89.86	104.31	111.71	132.82	10.29	12.38
75	73.39	83.92	87.66	101.94	7.92	9.28
80	57.54	64.24	66.29	74.77	5.89	6.67

Age & service retirement was assumed to occur at age 60, or attained age if older.

Sample Rates of Separation From Active Employment Before Retirement, Death or Disability

<u>Sample Ages</u>	<u>% of Active Members Separating Within Next Year</u>
20	3.00%
25	2.50
30	2.00
35	1.50
40	1.00
45	0.50
50+	0.00

Sample Pay Adjustment Factors used to Project Current Pays

<u>Sample Ages</u>	<u>Present Pay Resulting in Pay of \$1,000 at Age 60</u>	<u>Percent Increase in Pay During Next Year</u>
20	\$ 253	3.5%
25	300	3.5
30	356	3.5
35	423	3.5
40	503	3.5
45	597	3.5
50	709	3.5
55	842	3.5
60	1,000	3.5

Disability retirements were assumed to occur as indicated below:

<u>Sample Ages</u>	<u>% of Active Members Becoming Disabled Within Next Year</u>
20	0.08%
25	0.08
30	0.08
35	0.08
40	0.20
45	0.26
50	0.49
55	0.89

Rochester Fire Department Relief Association

Brief Summary (12/31/80) of Benefit Provisions Evaluated and/or Considered

Age & Service Retirement

Eligibility. 20 years of service and 50 years of age if hired before 7/1/69. 20 years of service and 55 years of age if hired after 6/30/79.

Amount. For first 20 years of service, 35/75 of base pay. For each year in excess of 20, 1/75 is added up to a maximum of 42/75 of base pay for 27 or more years of service. In addition, and not subject to the maximum above, 1/2% of base pay is paid for each year of service over 25. The latter additional benefit is not subject to the post retirement adjustment provisions.

Pay Used For Plan Purposes. "Base pay" means the salary of a first class firefighter.

Disability Retirement

Eligibility. Permanently disabled to the extent that no longer able to perform the duties of a firefighter before being eligible for regular retirement.

Amount. 36/75 of base pay.

Member's Death While Active, Or In Deferred Status, Or Retired

Eligibility.

Spouse. Legally married to member at least one year before separation from service and residing with member at time of death. Benefits terminate upon remarriage.

Child. Younger than age 18.

Amount.

Spouse. 18/75 of base pay.

Child. 6/75 of base pay per child. Children's maximum is 18/75 if spouse is receiving or 36/75 if no spouse is receiving.

Vested Deferred. 20 years of service and separated before reaching eligible retirement age. Payment is deferred to attainment of age 50 or 55 depending on date hired.

Post Retirement Adjustments ("Escalator"). If hired before 7/1/69, each time base pay is changed, payments to benefit recipients are simultaneously changed by the same percent that base pay is changed. If hired after 6/30/69, changes in benefits are equal to 1/2 of changes for those hired before 7/1/69.

Member Contributions. 8% of base pay. 75% of total member contributions is refundable, without interest, if no monthly benefit is payable upon separation from service.

Medical, Accident, or Hospitalization Expenses (Active Members). If expenses exceed amount provided by municipal plan, and member has paid \$100 of the excess, additional expenses up to \$500 may be paid by the association for any one illness.