

The Report of the
GAIN/LOSS ANALYSIS OF FINANCIAL EXPERIENCE
During calendar 1979 and 1980
CITY OF WEST ST. PAUL
FIREMEN'S RELIEF ASSOCIATION
West St. Paul, Minnesota

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April 15, 1981

City of West St. Paul
Firemen's Relief Association
West St. Paul, Minnesota


Submitted in this report are the results of the 1979-80 gain/loss analysis of the financial experiences of the West St. Paul Firemen's Relief Association.

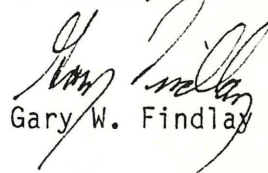
The composite results of this study are reported on Schedules 1(A) and 1(B) and comments regarding the results are on page 12.

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,


Robert M. O'Keefe


Gary W. Findlay

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 casulaty 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.

WEST ST. PAUL FIREMEN'S RELIEF ASSOCIATION

Schedule 1(A)

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

<u>Type of Activity</u>	<u>Accrued Liabilities</u> <u>(Gain) or Loss</u>		<u>Contribution Requirements</u> <u>(Gain) or Loss</u>	
	<u>Active</u> <u>Members</u> (\$ in 1,000)	<u>Retirants &</u> <u>Beneficiaries</u> (\$ in 1,000)	<u>Normal Cost</u> <u>% of Payroll</u> (\$ in 1,000)	<u>\$ Payment</u> <u>on UAL</u> (\$ in 1,000)
<u>Age & Service Retirements</u>	\$ 15	N/A	*N.C.	\$ 0.7
<u>Disability & Death-in-Service</u>				
a. <u>Disability</u>	(4)	N/A	*N.C.	(0.2)
b. <u>Death-in Service</u>	(13)	N/A	*N.C.	(0.6)
<u>Withdrawal</u>	6	N/A	*N.C.	0.3
<u>Salary Increases</u>	153	\$118	0	13.2
<u>Investment Income</u>	*N.C.	*N.C.	0	*N.C.
<u>Post Retirement Mortality</u>	N/A	5	N/A	0.2
<u>Contribution</u>	*N.C.	*N.C.		*N.C.
<u>Miscellaneous</u>	<u>(24)</u>	<u>(18)</u>	*N.C.	<u>(2.0)</u>
EXPERIENCE RELATED (GAIN)/LOSS & CORRESPONDING CHANGE IN CONTRIBUTION REQUIREMENTS	\$133	\$105		\$11.6
<u>Changes due to plan amendments</u>	0	0		
TOTAL (GAIN)/LOSS DURING YEAR	<u>\$133</u>	<u>\$105</u>	<u>*N.C.</u>	<u>\$11.6</u>

N.C. Not Computed

WEST ST. PAUL FIREMEN'S 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>	\$ 0	N/A	(0.87)%	\$ 0
<u>Disability & Death-in-Service</u>				
a. <u>Disability</u>	(4)	N/A	(0.46)	(0.2)
b. <u>Death-in Service</u>	(16)	N/A	1.10	(0.8)
<u>Withdrawal</u>	6	N/A	0.10	0.3
<u>Salary Increases</u>	78	74	0	7.5
<u>Investment Income</u>	(7)	(46)	0	(2.6)
<u>Post Retirement Mortality</u>	N/A	10	N/A	0.5
<u>Contribution</u>	5	5	N/A	0.5
<u>Miscellaneous</u>	<u>7</u>	<u>6</u>	<u> </u>	<u>0.6</u>
EXPERIENCE RELATED (GAIN)/LOSS & CORRESPONDING CHANGE IN CONTRIBUTION REQUIREMENTS	\$ 69	\$49	(0.13)%	\$ 5.7
<u>Conversion to UAL Amortization</u>	N/A	N/A	N/A	23.0
<u>Change in Funding Method For</u>	128		1.18	6.2
<u>Death & Disability</u>	58	N/A 0	1.08	2.8
<u>Changes due to plan amendments</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
TOTAL (GAIN)/LOSS DURING YEAR	<u>\$255</u>	<u>\$49</u>	<u>2.13%</u>	<u>\$37.9</u>

WEST ST. PAUL FIREMEN'S 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>
25-29	2	\$ 35,784	\$ 41,472	15.9
30-34	2	35,784	41,472	15.9
35-39	8	143,136	165,888	15.9
40-44	3	53,676	62,208	15.9
50-54	1	17,892	20,736	15.9
55-59	1	17,892	20,736	15.9
60-64	<u>1</u>	<u>17,892</u>	<u>20,736</u>	15.9
Totals	18	\$322,056	\$373,248	15.9

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
1		
2	2	
3		2
4		
5 or more	17	16

Average Age: 39.7 years.

Average Service: 12.0 years.

WEST ST PAUL FIREMEN'S 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>
25-29	2	\$ 41,472	\$ 45,408	9.5%
30-34	2	41,472	45,408	9.5
35-39	7	145,152	158,928	9.5
40-44	4	82,944	90,816	9.5
45-49	1	20,736	22,704	9.5
50-54	1	20,736	22,704	9.5
55-59	<u>1</u>	<u>20,736</u>	<u>22,704</u>	9.5
Totals	18	\$373,248	\$408,672	9.5%

Employees Active at Either Beginning or End of 1980

<u>Years Service</u>	<u>Beginning of Year</u>	<u>End of Year</u>
0	1	
1		2
2		
3	2	
4		2
5 or more	16	15

Average Age: 39.2 years.

Average Service: 11.8 years.

WEST ST. PAUL FIREMEN'S RELIEF ASSOCIATION

Schedule 3(A)

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

Age at Termination	Withdrawal		Disability		Death	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>
25-29		*		*		*
30-34		0.1		*		0.1
35-39		0.1		*		*
40-44		<u>*</u>		<u>*</u>		<u>*</u>
Totals		0.2		0.0		0.1

* Less than 0.1%

Years Service at Termination	<u>Actual</u>	<u>Expected</u>
0		
1		
2		
3		
4		
5 or more	<u>0</u>	<u>0.2</u>
Totals	0	0.2

Average age at separation: N/A

Average service at separation: N/A

WEST ST. PAUL FIREMEN'S RELIEF ASSOCIATION

Schedule 3(B)

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

<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>
25-29		*		*		*
30-34		0.1		*		0.1
35-39		0.1		*		*
40-44		*		*		*
45-49		*		*		*
Totals		0.2		0.0		0.1

* Less than 0.1%

<u>Years Service at Termination</u>	<u>Actual</u>	<u>Expected</u>
0		
1		
2		
3		
4		
5 of more	<u>0</u>	<u>0.2</u>
Totals	0	0.2

Average age at separation: N/A

Average service at separation: N/A

WEST ST. PAUL FIREMEN'S 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>
56	1			
58				1.0
60		1.0		
61	—	—	<u>1</u>	<u>1.0</u>
Totals	1	1.0	1	2.0

Average age at retirement during period examined: 58.5 years

Average service at retirement during period examined: 22.6 years

WEST ST. PAUL FIREMEN'S RELIEF ASSOCIATION

Schedule 5

Death After Retirement
(Disability and Service Retirants)

<u>Age at Death</u>	<u>1979</u>		<u>1980</u>	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>
55-59		0.0604		0.0654
60-64		<u>0.0237</u>		<u>0.0496</u>
Totals		0.0841		0.1150

	<u>Male</u>
Average age at death	N/A

Comments

A valuation was not performed as of 12/31/79. Therefore, the normal cost rate was not computed.

Financial information on Income and Disbursements was not provided for 1979. Therefore, the change in the unfunded accrued liabilities due to Investment Income and Contributions could not be calculated. The large Miscellaneous Gain for 1979 reflects this.

The change in benefits provided a member retiring with 25 or more years of service is reflected in calendar year 1980 calculations.

APPENDICES

WEST ST. PAUL FIREMEN'S 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 58, or attained age if older.

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

Sample Ages	% of Active Members Separating Within Next Year
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

West St. Paul Firemen's Relief Association

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

Age & Service Retirement

Eligibility. 20 years of service and 55 years of age.

Amount. For first 20 years of service, 40% of base pay. For years 21 thru 30 an additional 1% of base pay is added for each year with the exception of the 25th year for which 3% is added. Maximum benefit for 30 or more years of service is 52% of base pay.

Pay Used For Plan Purposes. "Base pay" means salary of first grade fireman.

Disability Retirement

Eligibility. Permanently disabled to the extent that no longer able to perform the duties of a firemen before being eligible for age & service retirement.

Amount. 40% of base pay. Benefit will be reduced by the amount that income from gainful employment plus the benefit exceed 120% of base pay.

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

Eligibility.

Spouse. Legally married to member at least 3 years before separation from service and residing with member at time of death.

Child. Younger than age 18.

Amount.

Spouse. 30% of base pay.

Child. 5% of base pay per child. Children's maximum is 10% of base pay if spouse is receiving or 40% if no spouse is receiving.

Vested Deferred. 20 years of service and separated before age 55. Benefit for service up to 20 years is 1/2% of base pay for each year before October 1965 plus 2% of base pay for each year after October 1965. For service in excess of 20 years an additional 1% per year is added up to a maximum of 52% of base pay.

Post Retirement Adjustments ("Escalator"). Each time base pay is changed, payments to all benefit recipients are simultaneously changed by the same percent that base pay is changed.

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