

The Report of the  
GAIN/LOSS ANALYSIS OF FINANCIAL EXPERIENCE  
During calendar 1979 and 1980  
City Of West St. Paul  
Police Relief Association  
West St. Paul, Minnesota

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April 27, 1981

City of West St. Paul  
Police Relief Association  
West St. Paul, Minnesota

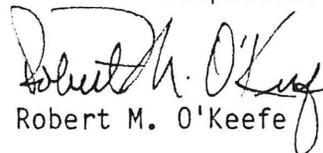
Submitted in this report are the results of the 1979-80 gain/loss analysis of the financial experiences of the City of West St. Paul Police Association.

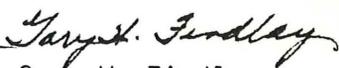
The composite results of this study are reported on Schedules 1(A) and 1(B) and comments regarding the results are on page 12.

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

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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.

## ACTIVITY WHICH RESULTS IN GAINS OR LOSSES

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### 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 POLICE 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 Members (\$ in 1,000)	Retirants & Beneficiaries	Normal Cost % of Payroll (\$ in 1,000)	\$ Payment on UAL
<u>Age &amp; Service Retirements</u>	\$ 9.8	N/A	N.C.*	\$0.5
<u>Disability &amp; Death-in-Service</u>				
a. <u>Disability</u>	.0	N/A	N.C.*	.0
b. <u>Death-in Service</u>	12.0	N/A	N.C.*	0.6
<u>Withdrawal</u>	4.9	N/A	N.C.*	0.2
<u>Salary Increases</u>	47.6	\$2.7	N.C.*	2.4
<u>Investment Income</u>	(24.5)	0.1	N.C.*	(1.2)
<u>Post Retirement Mortality</u>	N/A	9.3	N/A	.5
<u>Contribution</u>	(10.2)	(8.1)		(0.9)
<u>Miscellaneous</u>	<u>(1.8)</u>	<u>(0.1)</u>	<u>N.C.*</u>	<u>(0.1)</u>
EXPERIENCE RELATED (GAIN)/LOSS & CORRESPONDING CHANGE IN CONTRIBUTION REQUIREMENTS	\$37.8	\$3.9	N.C.*	\$2.0
<u>Changes due to plan amendments</u>	<u>0</u>	<u>0</u>	<u>—</u>	<u>—</u>
TOTAL (GAIN)/LOSS DURING YEAR	<u>\$37.8</u>	<u>\$3.9</u>	<u>N.C.*</u>	<u>\$2.0</u>

\* N.C. Not Computed

WEST ST. PAUL POLICE RELIEF ASSOCIATION

Schedule 1(B)

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

<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> <u>(\$ in 1,000)</u>	<u>Retirants &amp;</u> <u>Beneficiaries</u> <u>(\$ in 1,000)</u>	<u>Normal Cost</u> <u>% of Payroll</u> <u>(\$ in 1,000)</u>	<u>\$ Payment</u> <u>on UAL</u> <u>(\$ in 1,000)</u>
<u>Age &amp; Service Retirements</u>	\$23.7	N/A	(0.15)%	\$ 1.2
<u>Disability &amp; Death-in-Service</u>				
a. <u>Disability</u>	.0	N/A	0.0	.0
b. <u>Death-in Service</u>	15.4	N/A	0.16	0.7
<u>Withdrawal</u>	6.1	N/A	0.20	0.3
<u>Salary Increases</u>	79.6	\$ 6.8		4.2
<u>Investment Income</u>	(7.5)	0.1		(.4)
<u>Post Retirement Mortality</u>	N/A	1.2	N/A	0.1
<u>Contribution</u>	(3.4)	(2.8)		(0.3)
<u>Miscellaneous</u>	<u>5.9</u>	<u>.0</u>	<u>0.0</u>	<u>0.3</u>
EXPERIENCE RELATED (GAIN)/LOSS & CORRESPONDING CHANGE IN CONTRIBUTION REQUIREMENTS	\$119.8	\$ 5.3	0.21%	\$ 6.1
<u>Conversion to UAL Amortization</u>			N/A	14.9
<u>Change in Funding Method For</u> <u>Death &amp; Disability</u>	35.7	N/A	1.85	1.7
<u>Changes due to plan amendments</u>	<u>311.9</u>	<u>95.1</u>	<u>4.50</u>	<u>19.9</u>
TOTAL (GAIN)/LOSS DURING YEAR	<u>\$467.4</u>	<u>\$100.4</u>	<u>6.56%</u>	<u>\$42.6</u>

WEST ST. PAUL POLICE 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	\$ 39,024	\$ 42,000	7.6%
30-34	2	39,024	42,000	7.6
35-39	6	117,072	126,000	7.6
40-44	4	78,048	84,000	7.6
45-49	1	19,512	21,000	7.6
50-54	3	58,536	63,000	7.6
55-59	<u>1</u>	<u>19,512</u>	<u>21,000</u>	7.6
Totals	19	\$370,728	\$399,000	7.6%

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	2
1	0	1
2	2	0
3	0	2
4	0	0
5 or more	17	16

Average Age: 40.3 years.

Average Service: 12.4 years.

WEST ST. PAUL POLICE 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	\$ 42,000	\$ 46,200	10.0%
30-34	3	63,000	69,300	10.0
35-39	7	147,000	161,700	10.0
40-44	3	63,000	69,300	10.0
45-49	2	42,000	46,200	10.0
50-54	1	21,000	23,100	10.0
55-59	<u>2</u>	<u>42,000</u>	<u>46,200</u>	10.0
Totals	20	\$420,000	\$462,000	10.0%

Employees Active at Either Beginning or End of 1980

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

Average Age: 39.9 years.

Average Service: 11.9 years.

WEST ST. PAUL POLICE RELIEF ASSOCIATION

Schedule 3(A)

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

Age at Termination	Withdrawal		Disability		Death	
	Actual	Expected	Actual	Expected	Actual	Expected
25-29		*		*		*
30-34		*		*		*
35-39		0.1		0.1		0.1
40-44	—	<u>0.1</u>	—	<u>*</u>	—	<u>*</u>
Totals	0	0.2	0	0.1	0	0.1

\* Less than 0.1%

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

Average age at separation: N/A

Average service at separation: N/A

WEST ST. PAUL POLICE 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		*		*		*
35-39		0.1		0.1		0.1
40-44	—	<u>0.1</u>	—	<u>*</u>	—	<u>*</u>
Totals	0	0.2	0	0.1	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 POLICE RELIEF ASSOCIATION

Schedule 4

Separations From Active Service  
For Age & Service Retirement

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<u>Age at Termination</u>	<u>1979</u>		<u>1980</u>	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>
55			1	
64	<u>1</u>	<u>1</u>	<u>—</u>	<u>—</u>
Totals	1	1	1	0

Average age at retirement during period examined: 59.5 years.

Average service at retirement during period examined: 26.6 years.

WEST ST. PAUL POLICE RELIEF ASSOCIATION

Schedule 5

Death After Retirement  
(Disability and Service Retirants)

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<u>Age at Death</u>	1979		1980	
	<u>Actual</u>	<u>Expected</u>	<u>Actual</u>	<u>Expected</u>
55-59				0.0426
60-64		0.0605		
65-69	—	<u>0.0705</u>	—	<u>0.2118</u>
Totals	0	0.1310	0	0.2544

Male

Average age at death

N/A

### Comments

The change in the normal cost for calendar year 1980 represents the change since the December 31, 1978 Actuarial Valuation.

The miscellaneous loss for 1980 under actives is due primarily to a difference in reported assets. The assets reported for the end of 1979 were \$917,570.

The beginning assets reported for 1980 were \$909,535.

APPENDICES

WEST ST. PAUL POLICE 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		Men	Women
	For Life		3.5% Yearly			
	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

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<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 Police 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.

Amount. 50% of base pay. For each year over 25 an additional 1/2% of base pay is added to the benefit. (The additional benefit is not subject to the post retirement adjustment provisions.)

Disability Retirement

Eligibility. Disabled to the extent that unable to perform the duties of a police officer before being eligible for age & service retirement.

Amount. \$900 per year. (Not paid during period in which worker's compensation payments are being received.)

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

Eligibility.

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

Child. Younger than age 18.

Amount.

Spouse. 25% of base\*pay.

Child. \$180 per child per year. Maximum of \$360 per year if spouse is receiving benefits. If no spouse is receiving benefits, \$900 per year is divided equally among eligible children.

Vested Deferred. 20 years of service and separated before age 50. Payment beginning is deferred to attainment of age 50.

Post Retirement Adjustments ("Escalator"). Retired member's benefits increase by 3 1/2% per year if base pay increases by at least that amount. Each time base pay is changed, surviving spouse benefits 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.

GABRIEL, ROEDER, SMITH & COMPANY  
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Detroit, Michigan 48226  
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May 8, 1981

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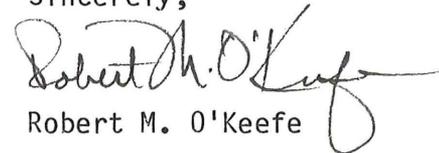
Re: City of West St. Paul Police Relief Association

Dear Sir:

We have enclosed revised pages for the above referenced Relief Association. These pages reflect the adoption of 10 year vesting as an alternate benefit.

The previous report does not reflect the adoption of the automatic benefit or an alternate.

Sincerely,

  
Robert M. O'Keefe

RMO:eg  
Encl.

was an increase in the contribution of 1.85% of payroll plus \$1,700. This change increased the unfunded accrued liabilities \$35,700.

#### Financing Unfunded Accrued Liabilities

As was mentioned earlier, the 1980 change in the law requires that the unfunded accrued liability of each relief association be funded by December 31, 2010. (See Appendix II for a description of unfunded accrued liabilities.) The previous requirement for your plan was for payment of only the interest on the unfunded accrued liability. The effect of this change alone was an increase in the contribution of \$14,900.

#### Benefit Improvements

This valuation reflected the adoption of a post-retirement escalator for current and future retired members. Benefits are increased each year after retirement with the increase in base pay but not in excess of 3.5%. The increase in the contribution was 4.50% of payroll plus \$19,900. This change increased the unfunded accrued liabilities \$407,000.

This valuation reflected the adoption of 10 year vesting. The increase in the contribution was 0.45% of payroll less \$105. This change decreased unfunded accrued liabilities \$1,630.

WEST ST. PAUL POLICE RELIEF ASSOCIATION

CONTRIBUTION RATE TO PROVIDE BENEFITS

Member portion & Employer portion

Effective January 1, 1982

<u>Contributions for</u>	<u>If Paid Equally Throughout Year</u> <u>% of Active</u>	<u>Payroll for 1982</u>	+	<u>U.A.L Dollars</u>
Normal cost of annuities:				
Age & service: to members	16.00%			
Age & service: to survivors	3.62			
Disability	1.42			
Death before retirement	3.28			
Refunds of member contributions	0.27			
Total Normal Cost	<u>24.59%</u>			
Amortization of unfunded accrued liabilities (UAL) (29 year level dollar payment)				
Retired lives				\$61,268
Active members				<u>61,268</u>
Total				
Total Cost of Benefits	24.59%		+	\$61,268
Member contributions	8.00%			
COMPUTED EMPLOYER RATE:				
(a) If Paid Equally Throughout Year	16.59%		+	\$61,268
(b) IF PAID AT CALENDAR YEAR END	17.00%		+	\$62,781

WEST ST. PAUL POLICE RELIEF ASSOCIATION

Present Actuarial Condition

The Association accrued actuarial assets were in excess of \$1,000,000 on December 31, 1980 -- a considerable sum of money if unencumbered and allocated among a small group of persons. This is not the case with Association assets.

The following schedule puts the \$1,000,000 into perspective by showing the relationship between accrued assets, accrued liabilities, and the number of persons with actual and potential claims on the Association's assets.

	<u>Accrued Actuarial Assets</u>	<u>Accrued Liabilities</u>	<u>Unfunded Accrued Liabilities</u>	<u>% Funded</u>
Retirants and Beneficiaries				
Retired Members (3)		\$ 452,655		
Surviving Spouse (0)		0		
Surviving Children (1)		<u>176</u>		
Total (4)	\$ 452,831	\$ 452,831	\$ 0	100%
Deferred Members (0)		0	0	
Active Members (22)	<u>590,096</u>	<u>1,540,766</u>	<u>950,670</u>	38
Total	\$1,042,927	\$1,993,597	\$950,670	52%

Accrued liabilities represent the value, computed as of December 31, 1980 of:

- (i) retirement allowances likely to be paid the 4 retirants and beneficiaries;  
and
- (ii) the contributions assumed to have been made for the 22 active members  
from their entry into the plan until December 31, 1980.

To illustrate, the value of retirement allowances likely to be paid the 4 retirants and beneficiaries -- discounted for investment earnings and mortality -- was computed to be \$452,831 as of December 31, 1980. This means that if the 4 retirants and beneficiaries live and die according to the assumed mortality and if the \$452,831 can be invested to yield an average annual return of 5.0 percent over the remaining lifetimes of the 4 retirants and beneficiaries, then the \$452,831 together with investment earnings thereon will just be sufficient to pay the 4 retirants and beneficiaries their allowances for their remaining lifetimes.

With respect to active members, the accrued liability of \$1,540,766 represents the amount that would have been accumulated by December 31, 1980 if the normal cost (which is expressed as a level percentage of pay) had been contributed from the date of hire until December 31, 1980 for each of the 22 actives, if these amounts had earned 5.0% interest and if the members in the past had lived, died, withdrawn, retired and received salary increases according to the actuarial assumptions shown in this report.

Historical Funding Ratio Schedule  
(\$ in thousands)

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<u>Valuation Date December 31</u>	<u>Accrued Liabilities</u>	<u>Accrued Assets</u>	<u>Percent Funded</u>
1978	\$1,108,373	\$ 765,617	69%
1980	1,993,597	1,042,927	52

WEST ST. PAUL POLICE RELIEF ASSOCIATION  
 CONTRIBUTION FOR CALENDAR YEAR EFFECTIVE JANUARY 1, 1982

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For any period of time the percent-of-payroll contribution rate is converted to dollars. The amount of dollars for any calendar year depends upon the results of the last actuarial valuation, and upon the timing of contributions within the year. The later the contribution date, the greater the dollar amount will be.

The municipality's dollar contribution for the year may be determined as follows:

(1) Estimated covered payroll for 1982	\$ _____	
(2) Total normal cost % from page A-3	<u>24.59%</u>	
(3) Total normal cost (Line 1 times line 2)		\$ _____
(4) Amortization payment on UAL from page A-3		<u>61,268</u>
(5) Total contributions required (Line 3 plus line 4)		_____
(6) Employee contributions (Line 1 times 8%)	\$ _____	
(7) State amortization aid based on 12/31/78 UAL of \$	<u>5,158</u>	
(8) Estimated insurance premium aid	_____	
(9) Total of line 6 plus line 7 plus line 8		_____
(10) Employer's Minimum Obligation if payment is made in equal installments throughout the year. (Line 5 minus line 9)		\$ _____
(11) EMPLOYER'S MINIMUM OBLIGATION IF PAYMENT IS MADE AT YEAR END (Line 10 times 1.0247)		\$ _____