

The Report of the  
GAIN/LOSS ANALYSIS OF FINANCIAL EXPERIENCE  
During calendar 1979 and 1980  
CITY OF CHISHOLM  
POLICE RELIEF ASSOCIATION  
CHISHOLM, MINNESOTA

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May 11, 1981

City of Chisholm  
Police Relief Association  
Chisholm, Minnesota

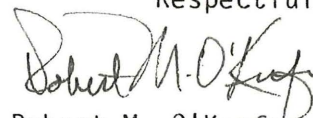
Submitted in this report are the results of the 1979-80 gain/loss analysis of the financial experiences of the City of Chisholm Police Relief Association.

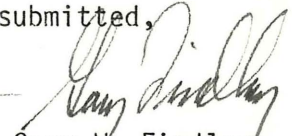
The composite results of this study are reported on Schedules 1(A) and 1(B) and comments regarding the results are on page 12.

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

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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

### 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.



CHISHOLM 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	Retirants &	Normal Cost	\$ Payment
	Members	Beneficiaries	% of Payroll	on UAL
	(\$ in 1,000)		(\$ in 1,000)	
<u>Age &amp; Service Retirements</u>	\$ 0	\$ N/A	N/A%	\$ 0
<u>Disability &amp; Death-in-Service</u>				
a. <u>Disability</u>	(0.9)	N/A	N/A	(0.07)
b. <u>Death-in Service</u>	0.7	N/A	N/A	0.05
<u>Withdrawal</u>	0.3	N/A	N/A	0.02
<u>Salary Increases</u>	20.3	49.7	N/A	5.33
<u>Investment Income</u>	0.5	6.9	N/A	0.56
<u>Post Retirement Mortality</u>	N/A	6.1	N/A	0.47
<u>Contributions</u>	6.1	14.8	N/A	1.59
<u>Miscellaneous</u>	(11.1)	(31.8)	N/A	(3.26)
EXPERIENCE RELATED (GAIN)/LOSS & CORRESPONDING CHANGE IN CONTRIBUTION REQUIREMENTS	\$15.9	\$45.7	N/A%	\$4.69
<u>Changes due to plan amendments</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
TOTAL (GAIN)/LOSS DURING YEAR	<u>\$15.9</u>	<u>\$45.7</u>	<u>N/A%</u>	<u>\$4.69</u>

CHISHOLM POLICE 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 &amp; Service Retirements</u>	\$ 0	\$ N/A	0.10 %	\$ 0
<u>Disability &amp; Death-in-Service</u>				
a. <u>Disability</u>	(1.1)	N/A	0.14	(0.09)
b. <u>Death-in Service</u>	0.6	N/A	0.27	0.05
<u>Withdrawal</u>	1.3	N/A	0.04	0.10
<u>Salary Increases</u>	15.8	0	N/A	1.24
<u>Investment Income</u>	(0.4)	(5.3)	N/A	(0.44)
<u>Post Retirement Mortality</u>	N/A	8.8	N/A	0.69
<u>Contributions</u>	(0.9)	(2.5)	N/A	(0.27)
<u>Miscellaneous</u>	(63.9)	(4.2)	N/A	(5.34)
EXPERIENCE RELATED (GAIN)/LOSS & CORRESPONDING CHANGE IN CONTRIBUTION REQUIREMENTS	\$(48.6)	\$(3.2)	0.55%	\$(4.06)
<u>Conversion to UAL Amortization</u>	N/A	N/A	N/A	(3.25)
<u>Change in Funding Method For Death &amp; Disability</u>	5.0	N/A	(1.20)	0.39
<u>Changes due to plan amendments</u>	11.2	0	0.64	0.88
TOTAL (GAIN)/LOSS DURING YEAR	\$(32.4)	\$(3.2)	(0.01)%	\$(6.04)

CHISHOLM 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>
35-39	1	\$14,018	\$16,156	15.2%
45-49	1	14,857	17,144	15.4
50-54	<u>1</u>	<u>17,228</u>	<u>20,114</u>	16.7
TOTALS	3	\$46,103	\$53,414	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	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5 or more	3	3

Average Age: 45.7 years.

Average Service: 19.2 years.



# CHISHOLM 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>
35-39	1	\$16,156	\$18,294	13.2%
45-49	1	17,145	19,432	13.3
50-54	<u>1</u>	<u>20,114</u>	<u>23,000</u>	14.3
TOTALS	3	\$53,415	\$60,726	13.7%

### Employees Active at Either Beginning or End of 1980

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

Average Age: 46.7 years.

Average Service: 20.2 years.

CHISHOLM POLICE 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>
35-39		*		*		*
45-49		*		*		*
50-54	<u>—</u>	<u>*</u>	<u>—</u>	<u>*</u>	<u>—</u>	<u>*</u>
TOTALS	0	0.0	0	0.0	0	0.0

\* Less than 0.1%

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

Average age at separation: N/A.

Average service at separation: N/A.

# CHISHOLM 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>
35-39		*		*		*
45-49		*		*		*
50-54		*		*		*
TOTALS	0	0.0	0	0.0	0	0.0

\* Less than 0.1%

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

Average age at separation: N/A.

Average service at separation: N/A.

CHISHOLM 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>
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				
60				
61				
62				
63				
64				
65 & Over	<u>      </u>	<u>      </u>	<u>      </u>	<u>      </u>
TOTALS	0	0.0	0	0.0

Average age at retirement during period examined: N/A.

Average service at retirement during period examined: N/A.

CHISHOLM POLICE 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>
60-64		0.1168		0.1272
65-69	—	<u>0.1137</u>	—	<u>0.1223</u>
TOTALS	0	0.2305	0	0.2495

Average age at death: N/A.



### Comments

#### Miscellaneous Gain (Loss)

The net miscellaneous gains evolve mainly from inconsistent asset data. The normal flow of the fund from year to year could not be developed from the asset information provided.

#### Contribution Gain (Loss)

The asset data provided for 1979 indicated that there was no contribution made to the fund other than employee contributions.

## APPENDICES

# CHISHOLM 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 For Life		Increasing 3.0% Yearly			
	Men	Women	Men	Women	Men	Women
45	\$169.61	\$186.84	\$245.68	\$282.18	27.33	32.52
50	154.85	174.20	215.89	252.78	23.22	28.08
55	139.29	159.62	186.96	222.26	19.45	23.81
60	122.79	142.73	158.75	190.57	16.01	19.69
65	106.31	124.22	132.52	159.01	12.97	15.88
70	89.86	104.31	108.13	128.10	10.29	12.38
75	73.39	83.92	85.38	99.04	7.92	9.28
80	57.54	64.24	64.92	73.12	5.89	6.67

Age & service retirement was assumed to occur at age 62, 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

Chisholm Police 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, 50% of average annual earnings during last six months prior to retirement. For each year of service in excess of 20 years an additional annual benefit of \$60 is added with the maximum annual amount of this additional benefit being \$300. For each year over 25 a benefit of 1/2% of average annual earnings during last six months prior retirement is added. (The latter benefit is not subject to the post retirement adjustment provisions.)

Disability Retirement

Eligibility. Disabled to the extent that no longer able to perform the duties of a police officer prior to being eligible for age & service retirement.

Amount. Same as age & service retirement assuming 20 years of service.

Member's Death While Active, Or in Deferred Status, Or Retired.

Eligibility.

Spouse. Legally married to member at separation from service.

Benefits terminate upon remarriage.

Child. Younger than age 16.

Amount.

Spouse. \$2,100 per year.

Child. \$180 per child per year.

Maximum Family Benefit. \$2,460 per year.

Vested Deferred. 20 years service and separated before age 55. Payment beginning is deferred to attainment of age 55.