

The Report of the
GAIN/LOSS ANALYSIS OF FINANCIAL EXPERIENCE
During calendar 1979 and 1980
CITY OF MANKATO
POLICEMEN'S BENEFIT ASSOCIATION
Mankato, Minnesota

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June 4, 1981

City of Mankato
Policemen's Benefit Association
Mankato, Minnesota

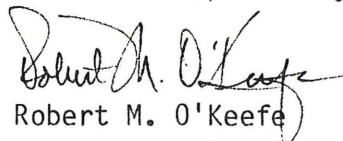
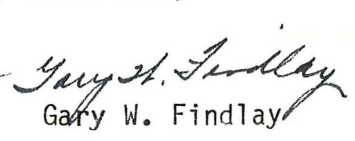
Submitted in this report are the results of the 1979-80 gain/loss analysis of the financial experiences of the City of Mankato Policemen's Benefit Association.

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.

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 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.

MANKATO POLICEMEN'S BENEFIT 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>	\$ 49.0	\$ N/A	0.09 %	\$ 3.1
<u>Disability & Death-in-Service</u>				
a. <u>Disability</u>	40.5	N/A	(0.51)	2.6
b. <u>Death-in Service</u>	4.8	N/A	(0.51)	0.3
<u>Withdrawal</u>	8.9	N/A	0.06	0.6
<u>Salary Increases</u>	(9.1)	160.5		9.7
<u>Investment Income</u>	(12.1)	(48.6)		(3.8)
<u>Post Retirement Mortality</u>	N/A	52.9	N/A	3.4
<u>Contributions</u>	(13.6)	(27.8)		(2.6)
<u>Miscellaneous</u>	(249.3)	(97.0)	(3.57)	(22.0)
EXPERIENCE RELATED (GAIN)/LOSS & CORRESPONDING CHANGE IN CONTRIBUTION REQUIREMENTS	\$(180.9)	\$ 40.0	(4.44)%	\$(8.9)
<u>Changes due to plan amendments</u>	_____	_____	_____	_____
TOTAL (GAIN)/LOSS DURING YEAR	<u>\$(180.9)</u>	<u>\$ 40.0</u>	<u>(4.44)%</u>	<u>\$(8.9)</u>

MANKATO POLICEMEN'S BENEFIT 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>	\$ 52.7	\$ N/A	0.00%	\$ 3.4
<u>Disability & Death-in-Service</u>				
a. <u>Disability</u>	151.8	N/A	0.38	9.8
b. <u>Death-in Service</u>	(62.5)	N/A	0.00	(4.0)
<u>Withdrawal</u>	8.7	N/A	0.09	0.6
<u>Salary Increases</u>	239.1	192.4		27.8
<u>Investment Income</u>	(9.1)	(40.1)		(3.2)
<u>Post Retirement Mortality</u>	N/A	68.8	N/A	4.4
<u>Contributions</u>	(16.1)	(37.9)		(3.5)
<u>Miscellaneous</u>	<u>250.4</u>	<u>(1.1)</u>	<u>2.53</u>	<u>16.1</u>
EXPERIENCE RELATED (GAIN)/LOSS & CORRESPONDING CHANGE IN CONTRIBUTION REQUIREMENTS	\$615.0	\$182.1	3.00%	\$51.4
<u>Conversion to UAL Amortization</u>			N/A	
<u>Change in Funding Method For Death & Disability</u>	126.1	N/A	0.97	8.1
<u>Changes due to plan amendments</u>	_____	_____	_____	_____
TOTAL (GAIN)/LOSS DURING YEAR	<u>\$741.1</u>	<u>\$182.1</u>	<u>3.97%</u>	<u>\$59.5</u>

MANKATO POLICEMEN'S BENEFIT 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>
30-34	5	\$ 75,547	\$ 75,480	-0.1%
35-39	2	31,480	31,404	-0.2
40-44	12	185,691	189,582	2.1
45-49	1	20,963	22,236	6.1
50-54	4	85,503	88,640	3.7
TOTALS	24	\$399,184	\$407,342	2.0%

Employees Active at Either Beginning or End of 1979

<u>Years Service</u>	<u>Beginning of Year</u>	<u>End of Year</u>
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5 or more	27	24

Average Age: 42.9 years.

Average Service: 15.8 years.

MANKATO POLICEMEN'S BENEFIT 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>
30-34	5	\$ 75,480	\$ 89,460	18.5%
35-39	2	31,632	38,652	22.2
40-44	7	107,172	126,936	18.4
45-49	5	82,410	92,564	12.3
50-54	1	30,190	33,138	9.8
55-59	<u>1</u>	<u>17,292</u>	<u>20,376</u>	17.8
TOTALS	21	\$344,176	\$401,126	16.5%

Employees Active at Either Beginning or End of 1980

<u>Years Service</u>	<u>Beginning of Year</u>	<u>End of Year</u>
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5 or more	24	21

Average Age: 42.0 years.

Average Service: 15.8 years.

MANKATO POLICEMEN'S 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>
25-29		*		*		*
30-34		0.1		*		*
35-39		*		*		*
40-44		0.1	1	0.1		0.1
45-49		*		*		*
50-54						*
TOTALS	0	0.2	1	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 or more		0.2
TOTALS	0	0.2

Average age at separation: N/A.

Average service at separation: N/A.

MANKATO POLICEMEN'S BENEFIT 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>
30-34		0.1		*		*
35-39		*		*		*
40-44		0.1	1	0.1		0.1
45-49		*		*		*
55-59	—	—	—	—	<u>1</u>	—
TOTALS	0	0.2	1	0.1	1	0.1

* Less than 0.1%

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

Average age at separation: N/A.

Average service at separation: N/A.

MANKATO POLICEMEN'S BENEFIT 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>
50			1	
54		2.0		
55	1	1.0		1.0
56				1.0
58	<u>1</u>	<u> </u>	<u> </u>	<u> </u>
TOTALS	2	3.0	1	2.0

Average age at retirement during period examined: 54.6 years.

Average service at retirement during period examined: 22.8 years.

MANKATO POLICEMEN'S BENEFIT 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>
35-39		0.0024		0.0026
40-44		0.0082		0.0130
45-49		0.0073		0.0081
50-54		0.0121		0.0222
55-59		0.0800		0.0869
60-64		0.0910		0.0992
65-69		0.1112		0.1196
75-79		0.0680		0.0735
80-84		0.1341		0.1439
85-89	<u>1</u>	<u> </u>	<u> </u>	<u> </u>
TOTALS	1	0.5143	0	0.5690

Average age at death: 86 years.

Comments

The miscellaneous gain under Active members for 1979, the miscellaneous loss under Active members for 1980, and the changes in Normal Cost for 1979 and 1980 are attributable to an understatement of the liability for active members whose attained age was greater than the assumed retirement age.

The miscellaneous gain under Retirants and Beneficiaries for 1979 was attributable to a change in the method of valuing the survivor's benefit for current retired and disabled members.

APPENDICES

MANKATO POLICEMEN'S BENEFIT 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 53, 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

Mankato Policemen's Benefit 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.

Pay Used For Plan Purposes. For benefit determination purposes, "base pay" means the base salary for the rank held plus longevity pay. For contribution purposes, "base pay" means total salary.

Disability Retirement

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

Amount. Same as age & service retirement.

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. \$2,100 per year.

Child. \$300 each per year.

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

Post Retirement Adjustment ("Escalator"). Each time base pay is changed, benefit payments to retired members are simultaneously changed by the same percent that base pay is changed. (Not applicable to spouse or child's benefits.)

Member Contributions. 10.65% of base pay up to social security taxable wage base. 4% of base pay exceeding the social security taxable wage base. Total member contributions are refundable, without interest, if no monthly benefit is payable upon separation from service.