

The Report of the  
GAIN/LOSS ANALYSIS OF FINANCIAL EXPERIENCE  
During calendar 1979 and 1980  
CITY OF RED WING  
FIRE DEPARTMENT RELIEF ASSOCIATION  
Red Wing, Minnesota

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GABRIEL, ROEDER, SMITH & COMPANY  
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Detroit, Michigan 48226  
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June 22, 1981

City of Red Wing  
Fire Department Relief Association  
Red Wing, Minnesota

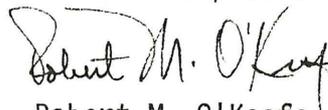
Submitted in this report are the results of the 1979-80 gain/loss analysis of the financial experiences of the Red Wing Fire Department Relief Association.

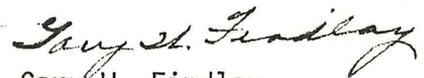
The composite results of this study are reported on Schedules 1(A) and 1(B) and comments regarding the results are on page 12.

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,

  
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.

RED WING FIRE DEPARTMENT RELIEF ASSOCIATION

Full Time Members

Schedule 1(A)

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

| <u>Type of Activity</u>  | <u>Accrued Liabilities<br/>(Gain) or Loss</u> |   | <u>Contribution Requirements<br/>(Gain) or Loss</u>  |   |
|--|---|---|--|---|
|  | <u>Active<br/>Members</u><br>(\$ in 1,000)    | <u>Retirants &amp;<br/>Beneficiaries</u><br>(\$ in 1,000) | <u>Normal Cost<br/>% of Payroll</u><br>(\$ in 1,000) | <u>\$ Payment<br/>on UAL</u><br>(\$ 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>   | (4.6)   | N/A   | N/A  | (0.3)   |
| b. <u>Death-in Service</u>   | (1.4)   | N/A   | N/A  | (0.1)   |
| <u>Withdrawal</u>  | 4.8   | N/A   | N/A  | 0.3   |
| <u>Salary Increases</u>  | 349.1   | 119.9   |  | 29.8  |
| <u>Investment Income</u>   | (1.9)   | (6.4)   |  | (0.5)   |
| <u>Post Retirement Mortality</u>   | N/A   | 14.5  | N/A  | 0.9   |
| <u>Contributions</u>   | 19.8  | 19.3  |  | 2.5   |
| <u>Miscellaneous</u>   | <u>17.4</u>                                   | <u>6.9</u>  | —  | <u>1.5</u>                                    |
| EXPERIENCE RELATED (GAIN)/LOSS<br>& CORRESPONDING CHANGE IN<br>CONTRIBUTION REQUIREMENTS | \$383.2                                       | \$154.2   | N/A  | \$34.1  |
| <u>Changes due to plan amendments</u>  | —   | —   | —  | —   |
| TOTAL (GAIN)/LOSS DURING YEAR  | <u>\$383.2</u>                                | <u>\$154.2</u>  | <u>N/A</u>   | <u>\$34.1</u>                                 |

RED WING FIRE DEPARTMENT RELIEF ASSOCIATION

Full Time Members

Schedule 1(B)

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

| <u>Type of Activity</u>  | <u>Accrued Liabilities<br/>(Gain) or Loss</u> |   | <u>Contribution Requirements<br/>(Gain) or Loss</u>  |   |
|--|---|---|--|---|
|  | <u>Active<br/>Members</u><br>(\$ in 1,000)    | <u>Retirants &amp;<br/>Beneficiaries</u><br>(\$ in 1,000) | <u>Normal Cost<br/>% of Payroll</u><br>(\$ in 1,000) | <u>\$ Payment<br/>on UAL</u><br>(\$ in 1,000) |
| <u>Age &amp; Service Retirements</u>   | \$ 0  | \$ N/A  | 0.23 %   | \$ 0  |
| <u>Disability &amp; Death-in-Service</u>   |   |   |  |   |
| a. <u>Disability</u>   | (5.7)   | N/A   | 0.03   | (0.4)   |
| b. <u>Death-in Service</u>   | (14.1)  | N/A   | (0.89)   | (0.9)   |
| <u>Withdrawal</u>  | 4.3   | N/A   | (0.09)   | 0.3   |
| <u>Salary Increases</u>  | 124.3   | 77.8  |  | 13.0  |
| <u>Investment Income</u>   | (8.3)   | (21.9)  |  | (1.9)   |
| <u>Post Retirement Mortality</u>   | N/A   | 13.5  | N/A  | 0.9   |
| <u>Contributions</u>   | 15.6  | 14.8  |  | 1.9   |
| <u>Miscellaneous</u>   | <u>0.6</u>                                    | <u>0</u>  | <u>    </u>  | <u>0.0</u>                                    |
| EXPERIENCE RELATED (GAIN)/LOSS<br>& CORRESPONDING CHANGE IN<br>CONTRIBUTION REQUIREMENTS | \$116.7                                       | \$84.2  | (0.72)%  | \$12.9  |
| <u>Conversion to UAL Amortization</u>  |   |   | N/A  | 0.0   |
| <u>Change in Funding Method For<br/>Death &amp; Disability</u>                           | 54.2  | N/A   | 0.75   | 3.5   |
| <u>Changes due to plan amendments</u>  | <u>33.6</u>                                   | <u>    </u>   | <u>0.32</u>  | <u>2.2</u>                                    |
| TOTAL (GAIN)/LOSS DURING YEAR  | <u>\$204.5</u>                                | <u>\$84.2</u>   | <u>0.35 %</u>  | <u>\$18.6</u>                                 |

RED WING FIRE DEPARTMENT RELIEF ASSOCIATION

Full Time Members

Schedule 2(A)

Employees Active at Both Beginning & End of 1979

| <u>Age Group<br/>Beg. Year</u> | <u>No.</u> | <u>Beginning<br/>Salary</u> | <u>Ending<br/>Salary</u> | <u>% Increase<br/>In Salary</u> |
|--------------------------------|------------|-----------------------------|--------------------------|---------------------------------|
| 30-34                          | 2          | \$ 28,980                   | \$ 37,200                | 28.4%                           |
| 35-39                          | 3          | 42,840                      | 54,972                   | 28.3                            |
| 40-44                          | 7          | 109,476                     | 138,456                  | 26.5                            |
| 45-49                          | 8          | 123,720                     | 157,584                  | 27.4                            |
| 50-54                          | <u>1</u>   | <u>14,700</u>               | <u>18,876</u>            | 28.4                            |
| TOTALS                         | 21         | \$319,716                   | \$407,088                | 27.3%                           |

Employees Active at Either Beginning or End of 1979

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

Average Age: 43.6 years.

Average Service: 12.7 years.

RED WING FIRE DEPARTMENT RELIEF ASSOCIATION

Full Time Members

Schedule 2(B)

Employees Active at Both Beginning & End of 1980

| <u>Age Group<br/>Beg. Year</u> | <u>No.</u> | <u>Beginning<br/>Salary</u> | <u>Ending<br/>Salary</u> | <u>% Increase<br/>In Salary</u> |
|--------------------------------|------------|-----------------------------|--------------------------|---------------------------------|
| 35-39                          | 3          | \$ 55,524                   | \$ 61,524                | 10.8%                           |
| 40-44                          | 6          | 115,944                     | 128,512                  | 10.8                            |
| 45-49                          | 9          | 179,544                     | 198,231                  | 10.4                            |
| 50-54                          | <u>2</u>   | <u>37,752</u>               | <u>41,832</u>            | 10.8                            |
| TOTALS                         | 20         | \$388,764                   | \$430,099                | 10.6                            |

Employees Active at Either Beginning or End of 1980

| <u>Years<br/>Service</u> | <u>Beginning<br/>of Year</u> | <u>End<br/>of Year</u> |
|--------------------------|------------------------------|------------------------|
| 0                        | 0                            | 0                      |
| 1                        | 0                            | 0                      |
| 2                        | 0                            | 0                      |
| 3                        | 0                            | 0                      |
| 4                        | 0                            | 0                      |
| 5 or more                | 21                           | 20                     |

Average Age: 45.2 years.

Average Service: 13.9 years.

RED WING FIRE DEPARTMENT RELIEF ASSOCIATION

Full Time Members

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 |
| 30-34              |            | *        |            | *        |        | *        |
| 35-39              |            | *        |            | *        |        | *        |
| 40-44              |            | *        |            | *        |        | *        |
| 45-49              |            | *        |            | *        |        | *        |
| TOTALS             | 0          | 0.1      | 0          | 0.1      | 0      | 0.1      |

\* Less than 0.1%

| Years Service at Termination | Actual | Expected |
|------------------------------|--------|----------|
| 0                            |        |          |
| 1                            |        |          |
| 2                            |        |          |
| 3                            |        |          |
| 4                            |        |          |
| 5 or more                    |        | 0.1      |
| TOTALS                       | 0      | 0.1      |

Average age at separation: N/A.

Average service at separation: N/A.

RED WING FIRE DEPARTMENT RELIEF ASSOCIATION

Full Time Members

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                     |                   |                 |                   |                 | 1             |                 |
| 35-39                     |                   | *               |                   | *               |               | *               |
| 40-44                     |                   | *               |                   | *               |               | *               |
| 45-49                     |                   | *               |                   | *               |               | 0.1             |
| 50-54                     |                   |                 |                   | *               |               |                 |
| TOTALS                    | 0                 | 0.1             | 0                 | 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                           |               | 0.1             |
| TOTALS                              | 0             | 0.1             |

Average age at separation: N/A.

Average service at separation: N/A.

RED WING FIRE DEPARTMENT RELIEF ASSOCIATION

Full Time Members

Schedule 4

Separations From Active Service  
For Age & Service Retirement

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| <u>Age at<br/>Termination</u> | 1979          |                 | 1980          |                 |
|-------------------------------|---------------|-----------------|---------------|-----------------|
|                               | <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                     | —             | —               | —             | —               |
| 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.

RED WING FIRE DEPARTMENT RELIEF ASSOCIATION

Full Time Members

Schedule 5

Death After Retirement  
(Disability and Service Retirants)

| <u>Age at<br/>Death</u> | <u>1979</u>   |                 | <u>1980</u>   |                 |
|-------------------------|---------------|-----------------|---------------|-----------------|
|                         | <u>Actual</u> | <u>Expected</u> | <u>Actual</u> | <u>Expected</u> |
| 55-59                   |               | 0.0450          |               | 0.0488          |
| 60-64                   |               | 0.0237          |               | 0.0258          |
| 65-69                   | —             | <u>0.0706</u>   | —             | <u>0.0760</u>   |
| TOTALS                  | 0             | 0.1393          | 0             | 0.1506          |

Average age at death: N/A.

### Comments

This report only reflects changes in the unfunded accrued liability and contributions for full time members of the Red Wing Fire Department Relief Association.

The miscellaneous loss for 1979 is due to differences in the financial statements for 1978 and 1979. The ending assets reported for 1978 were not reported as the beginning assets for 1979.

## APPENDICES

RED WING 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<br>Ages | Single Life Values:<br>Present Value of \$1 Monthly |          |                           |          | Future Life<br>Expectancy (Years) |       |
|----------------|---|----------|---------------------------|----------|-----------------------------------|-------|
|                | Level<br>For Life                                   |          | Increasing<br>3.5% Yearly |          | Men                               | Women |
|                | Men   | Women    | Men                       | Women    |                                   |       |
|                | 45  | \$169.61 | \$186.84                  | \$263.23 | \$304.86                          | 27.33 |
| 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<br>Ages | % of Active Members<br>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<br/>Ages</u> | <u>Present Pay<br/>Resulting in<br/>Pay of \$1,000 at Age 60</u> | <u>Percent Increase<br/>in Pay<br/>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<br/>Ages</u> | <u>% of Active Members Becoming<br/>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  |

Red Wing Fire Department Relief Association

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

Full Time

Age & Service Retirement

Eligibility. 20 years of service and 50 years of age.

Amount. For first 20 years of service, 40% of average annual wage. For each year in excess of 20 but less than 25 an additional 2% is added and for each year in excess of 25 and additional 1 1/2% is added. (Of the additional 1 1/2% for years over 25, 1/2% is not subject to the post retirement adjustment provisions.)

Average Annual Wage. Average annual salary for 3 highest paid years.

Disability Retirement

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

Amount.

Duty Related. 40% of average annual wage plus 2% for each year in excess of 20 to a maximum of 50%.

Non-duty Related. 2% of average annual wage for each year of service. Minimum of 10% and maximum of 40%.

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

Eligibility.

Spouse. Married to member at least one year 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 average annual wage.

Child. 8% of average annual wage per child.

Funeral Expenses. Lump sum payment of \$1,000 at time of death of active or retired member.

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

Post Retirement Adjustments ("Escalator"). Benefits are increased January 1 for all benefit recipients in accordance with the increase in the Consumer Price Index during the preceding year.

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

### Volunteer

#### Age & Service Retirement

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

Amount. For 20 years of service, \$192 per year. For 25 years of service, \$240 per year.

#### Death Benefit

\$1,000 lump sum payment for funeral expenses.

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

Member Contributions. \$19.20 per year. Total member contributions are refundable without interest if no monthly benefit is payable upon separation from service.