

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

ACTUARIAL VALUATION AND
EXPERIENCE STUDY AS OF
JUNE 30, 1979

May 2, 1980

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NORTHWESTERN FINANCIAL CENTER
7900 XERXES AVENUE SOUTH, SUITE 1240
MINNEAPOLIS, MINNESOTA 55431
(612) 835-5435

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May 2, 1980

Board of Directors
Minnesota State Retirement System
529 Jackson at 10th Street
St. Paul, Minnesota 55101

Gentlemen:

Enclosed herewith is our report setting forth the results of our June 30, 1979 actuarial valuation and experience study for the Judges Retirement Fund.

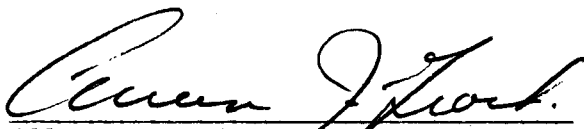
The valuation and experience study were performed on the basis of accepted actuarial methods and procedures, in accordance with the applicable provisions set forth in Minnesota Statutes (Chapter 356) and stipulated in the Contract between the State of Minnesota and The Wyatt Company.

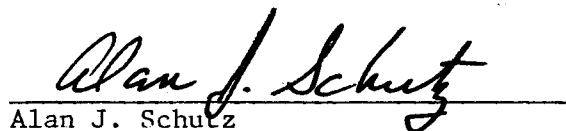
We hereby certify that the entry age normal cost method was utilized in determining the accrued liability for all benefits payable under the Fund.

If, in connection with this valuation of the Fund, additional investigations are indicated, we will be happy to undertake any further computations that may be desired.

Respectfully submitted,

THE WYATT COMPANY


Allan J. Grosh
Fellow, Society of Actuaries


Alan J. Schutz
Associate, Society of Actuaries

AJS:srw

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MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Actuarial Valuation and Experience Study as of June 30, 1979

INTRODUCTION

Chapter 356 of the Minnesota Statutes, as in effect on June 30, 1979, requires that an actuarial valuation be performed annually. In addition, the Statutes require that the appropriateness of the actuarial assumptions utilized in the valuation be tested by performing an experience study every fourth year.

This report sets forth the results of the actuarial valuation and experience study performed as of June 30, 1979 in compliance with the requirements of the Statutes. The report is divided into two principal parts as follows:

A. PART I - ACTUARIAL VALUATION

This part sets forth the determination of the financial status of the plan as of June 30, 1979. As required by Statutes this determination was prepared using the entry age normal cost method, a prescribed assumed interest rate and salary scale assumption of 5% and 3½% respectively, as well as the actuarial assumptions summarized in later tables.

B. PART II - EXPERIENCE STUDY

This part consists of an analysis of experience under the Minnesota State Retirement System, Judges Retirement Fund during the three year period ended June 30, 1979. The analysis centers primarily around a comparison of the actual experience under the plan and that experience projected by the actuarial assumptions used currently for valuation purposes. This enables the actuary to substantiate the appropriateness of the actuarial assumptions or to suggest modifications where necessary.

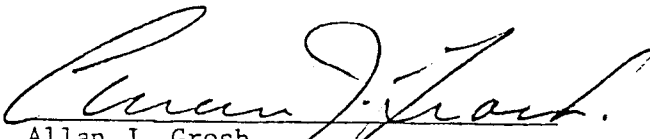
This is the first experience study of the Judges Retirement Fund since it was transferred to the Minnesota State Retirement System.


* * * * *

Although recommendations are made pertaining to possible changes as a result of the experience analysis, it should be noted that these changes have not been reflected in this valuation. It is anticipated that the full cost impact of these will be discussed and analyzed in detail in the following year preparatory to adoption in the 1980 valuation. This approach has been discussed in detail with the Executive Director.

Respectfully submitted,

THE WYATT COMPANY


Allan J. Grosh
Fellow, Society of Actuaries


Alan J. Schutz
Associate, Society of Actuaries

Minneapolis, Minnesota
May 2, 1980

PART I

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Actuarial Valuation as of June 30, 1979

PURPOSE AND SUMMARY

The purpose of this report is to set forth the financial status of the Minnesota State Retirement System (MSRS), Judges Retirement Fund in accordance with the applicable provisions set forth in Chapter 356 and Chapter 11, Section 11.25 of the Minnesota Statutes.

Chapter 356 of the Minnesota Statutes sets forth the annual reporting requirements which govern the public employee retirement systems in Minnesota. The principal requirements (in addition to the experience study requirements discussed in Part II of the report) are that an actuarial valuation be performed each year and that the valuation specifically set forth the following items based on an assumed 5% interest rate and a 3½% salary scale assumption:

1. The assets of the plan and the present value of all benefits which will be payable from the plan.
2. The normal cost of the plan (as a level percentage of payroll) based on the entry age normal cost method.
3. The accrued liability of the plan, defined as the present value of all benefits less the present value of future entry age normal costs.
4. An actuarial balance sheet showing accrued assets, accrued liabilities, and the deficit from full funding of the accrued liability (unfunded accrued liability).
5. The annual contribution required to pay normal cost and amortize the June 30, 1979 unfunded accrued liability by June 30, 2009.
6. An analysis explaining the increase or decrease in the unfunded accrued liability since the last valuation.

Chapter 11, Section 11.25 of the Minnesota Statutes pertains to the operation of the Minnesota Adjustable Fixed Benefit Fund (MAFB) and includes

) requirements regarding the determination of present value of benefits payable from MAFB and the corresponding mortality gain or loss each year, the latter to facilitate an appropriate transfer between the Judges Fund and the MAFB.

This reporting on the status of the Judges Retirement Fund as of June 30, 1979, is intended to comply with all of the requirements regarding actuarial reporting that are set forth in Chapters 356 and 11. The Appendix at the end of the report cross references the information set forth herein with that specifically called for under Chapters 356 and 11 respectively.

) Unlike most of the other public retirement programs in Minnesota, the Statutes do not require that any State contributions be made while a Judge is in active service. Rather, a terminal funding approach is used wherein, at the time of death, disablement or retirement, the Judge's accumulated contributions in the plan are supplemented by the required amount of additional State General Funds needed to provide benefits in full. Because of this approach under which the State funding (over 80% of the total) is deferred until benefits become payable, any measure of the financial status of the plan will indicate that only a small percentage of benefits earned have actually been funded. In the past year, this has been compounded by the fact that a new group of retired Judges and active Supreme Court Justices have been included for the first time, further eroding the indicated funding status. For these reasons we would support any attempt by the State to advance fund this program at least in accordance with Chapter 356 requirements.

In summary, our valuation reveals the following:

1. Judges' contributions to the plan represent 14.7% of total requirements set forth in Chapter 356.
2. The depth of funding ratio, defined as the assets divided by the present value of accrued benefits on the ongoing basis was 24.18% as of June 30, 1979.

3. The unfunded accrued liability as of June 30, 1979 was \$22,333,865.

The results of our valuation underlying the above are set forth in greater detail in the following sections of this report.

CHANGES FROM THE PRIOR YEAR'S REPORTING

This year's valuation reflects two changes from the prior report. The revisions are summarized as follows:

1. As a result of clarifications made during this past year regarding required coverage under this plan, per the directive of the Executive Director, we have included four additional groups of prior retirees and one group consisting of six Supreme Court Justices for the first time.
2. The manner in which the MAFB Annuity Stabilization Account is disclosed has been revised in accordance with our discussions with the Executive Director.

The effects of these items are discussed in detail throughout the report.

PRINCIPAL VALUATION RESULTS

The principal results of our valuation may be summarized and compared with those of the June 30, 1978 valuation as follows:

<u>SUMMARY OF PRINCIPAL VALUATION RESULTS</u>		
	<u>1978</u>	<u>1979</u>
1. Normal Cost	1,149,883 (12.65)*	1,342,403 (13.53)*
2. Accrued Liability	20,305,553	29,179,057
3. Valuation Assets	4,854,062	6,845,192
4. Accrued Liability Funding Ratio	23.91%	23.46%
5. Unfunded Accrued Liability	15,451,491	22,333,865
6. Chapter 356 Requirement	2,441,142	2,809,146
7. Estimated Judges Annual Contribution	384,506	407,294
8. Plan Continuation Liability	17,188,040	28,313,839
9. Continuation Liability Funding Ratio	28.24%	24.18%
* Parentheses indicate item as a percentage of covered payroll.		

)

The normal cost has increased from 12.65% to 13.53% of covered payroll. In addition, there has been an increase in the accrued liability during the past year from \$20,305,553 to \$29,179,057 and a corresponding increase in the unfunded accrued liability from \$15,451,491 to \$22,333,865. The portion of the accrued liability that is funded has decreased from 23.91% to 23.46% during the same period. A detailed reconciliation of the change in the unfunded accrued liability from the prior year's valuation is also set forth later in the report.

The Chapter 356 contribution requirements have increased from \$2,441,142 to \$2,809,146. The change in the Chapter 356 contribution requirement represents the net effect of (i) extending the time for amortizing the unfunded accrued liability from June 30, 1997 to June 30, 2009, (ii) including the new group of retired Judges and active Supreme Court Justices for the first time, and (iii) net actuarial losses during the year.

)

The present value of accrued benefits, determined on a plan continuation basis (applying all ongoing actuarial assumptions including assumed salary increases and turnover) increased from \$17,188,040 as of June 30, 1978 to \$28,313,839 as of June 30, 1979. As a result, the depth of funding ratio, defined as the valuation assets divided by the present value of accrued benefits, has decreased from 28.24% to 24.18%.

Table 1(a) summarizes the results of the valuation in detail, while Table 1(b) sets forth a comparison between the June 30, 1978 and June 30, 1979 principal actuarial valuation results.

VALUATION ASSETS

)

The Executive Director furnished us with a Financial Report setting forth the assets and liabilities of the Fund as of June 30, 1979. The accounting balance sheet furnished by the Executive Director is set forth in Table 2(a),

) as adjusted by us to reflect a \$45,828 transfer of assets from the MAFB Fund to the Judges Fund as a result of this year's post-retirement mortality gain regarding MAFB benefits (treatment of MAFB is discussed later in the text).

An accounting balance sheet in the traditional sense sets forth a listing of assets, liabilities and reserves, and to strike a balance, equates the total physical assets on hand to the sum of liabilities and reserves.

Because of the funding pattern followed in the past under this plan, assets on hand are not sufficient to cover benefits in present pay status. This results from (i) no formal funding, (ii) the addition of the retired Judges reflected for the first time and the active Supreme Court Justices also reflected for the first time in the past year, and (iii) the fact that not all benefits in pay status are paid from the MAFB.

) Accordingly, in order for the accounting balance sheet to balance, item B.5 (Reserves - State Contribution Reserve) is a negative amount (\$5,357,406) representing the extent to which assets on hand (\$6,925,769) fall short of the amount required to cover the value of benefits currently being paid after adjusting for member contributions on hand and liabilities for accounts payable.

ACTUARIAL BALANCE SHEETS

Table 2(b) sets forth an actuarial balance sheet summarizing the actuarial valuation. Whereas the previously mentioned accounting balance sheet balances the current assets to date with current accumulated reserves for benefits payable, the actuarial balance sheet compares total assets, including the present value of all future contributions payable to the plan, with the present value of all benefits payable from the plan.

) Table 3(a) sets forth a balance sheet comparing the assets and unfunded accrued liability (the total of the two equaling the accrued liability) to the current liabilities and reserves required under the plan. This table is in the

) format specifically required by Chapter 356 and is supported by attachments in the form of Tables 3(b) and 3(c) which set forth the determination of the June 30, 1979 unfunded accrued liability and the June 30, 1979 MAFB Fund Participation respectively.

MINNESOTA ADJUSTABLE FIXED BENEFIT (MAFB) FUND PARTICIPATION

) As shown in Table 3(c) the unadjusted MAFB participation reported in the Financial Statements submitted by the Executive Director was \$3,226,645. We determined that the liability for benefits payable under the MAFB has increased from \$2,315,219 as of June 30, 1978 to \$3,232,950 as of June 30, 1979. Taking into account substantial active participant retirements during the year, this reflects a mortality gain of \$45,828 since June 30, 1978. Consequently, item 2 of the table indicates a transfer of the \$45,828 mortality gain back to the Judges Fund from the MAFB Fund resulting in a June 30, 1979 MAFB Fund participation of \$3,180,817.

The MAFB Fund is basically a vehicle for providing variable annuity payments to pensioners, where the changes in benefit levels from year to year depend on investment performance of the fund. With certain exceptions, when an active participant retires, assets equal to the present value of future benefits payable to that participant (and beneficiary, if applicable) are transferred from the State and Employee Contribution Reserves (and, for the Judges plan, from the State General Funds if needed) to the MAFB Fund. Thereafter, benefits paid to the retiree are made from the MAFB Fund. The exceptions to this treatment pertain to those retirees not being paid directly from the MAFB.

) Each year, as required by Section 11.25 of the Statutes, as part of a determination whether benefits are to be adjusted, the present value of all future benefits payable from the MAFB are compared to assets on hand in the MAFB

Fund after adjustment for mortality gains or losses. The magnitude of the Annuity Stabilization Account (or ASA, which is defined as the adjusted assets on hand in the MAFB Fund less the present value of benefits for retirees in MAFB) determines whether benefits are to be adjusted. If the ASA is positive, then based on a formula set forth in the Statutes, part of this surplus may be used to increase benefits for eligible retirees. If the ASA is negative, then again according to formula, benefits to eligible retirees could decrease, although according to Statute, benefits may not be decreased below their original level upon retirement (or the level on July 1, 1976, whichever is greater).

As a result of favorable investment experience, the negative account balance of (\$79,237) as of June 30, 1978 has reduced to a negative balance of (\$52,133) as of June 30, 1979. This year's ASA has been reflected in all of the tables and balance sheets as follows:

<u>ACCOUNTING TREATMENT OF MAFB AND ASA</u>	
ASSETS:	
. Actual Participation	3,180,817
LIABILITIES:	
. Present Value of Benefits Payable from MAFB as of June 30, 1979	3,232,950
. Annuity Stabilization Account	(52,133)
. Total Liability Equals Reserves Required by MSRS	3,180,817

In fact, the approach taken is to reflect assets and liabilities as offsetting items with no resulting surplus or deficit to the Judges Retirement Fund, the intent of the Statutes in our opinion. This approach suggests that if the ASA is positive, any surplus simply represents a liability to MAFB for future

increases. On the other hand, if it is negative, this deficit represents a fund deficiency in the MAFB which in the absence of legislated ad hoc adjustments, must be covered in full before future increases are granted.

The above represents a slight change from procedures in the prior year's report which we have discussed in detail with the Executive Director and would outline as follows:

1. In prior years, when the ASA was negative, the accrued liability (or total required reserves) reflected it by including for retirees the actual present value of benefits payable, even though actual underlying assets were deficient by the dollar amount of the ASA. This implied that the ASA in negative form was a liability of the Judges Fund. However, in disclosing the unfunded accrued liability, this amount was deducted.
2. In determining the depth of funding on a plan continuation basis in prior years, a negative ASA was treated as a positive asset (to balance, since it was not deducted from the present value of benefits payable to retirees on the liability side), thus resulting in a slightly higher funding ratio.
3. In the prior year's analysis of income and disbursements, a balancing item equal to the change in the ASA during the year was required to reconcile the change in the unfunded accrued liability during the year. Since we do not involve the ASA in our determinations, this balancing item is no longer necessary.

It is our opinion that our method reflects a more consistent treatment throughout the report and presents items for disclosure purposes in a uniform manner.

RECONCILIATION OF THE UNFUNDED ACCRUED LIABILITY

Tables 4 and 5 reconcile the change in the unfunded accrued liability during the year. Table 4 sets forth an accounting balance sheet illustrating that the increase in the unfunded accrued liability is equal to the excess of deductions over income during the year, where any increase in required actuarial reserves is indicated as a deduction item.

) Table 5 sets forth our analysis of the change in the unfunded accrued liability. As is shown in detail in the table, the unfunded accrued liability increased from \$15,451,491 on June 30, 1978 to \$22,333,865 on June 30, 1979. This increase has resulted primarily on account of:

1. A reduction due to contributions (employee plus appropriations from State General Funds for Judges retiring during the year) in excess of normal cost, operating expenses and interest on the unfunded accrued liability, in the amount of \$394,652.
2. An increase due to reflecting the new group of retired Judges for the first time, in the amount of \$5,534,479.
3. An increase of \$969,630 due to reflecting active Supreme Court Justices for the first time.
4. An increase of \$772,917 due to net actuarial losses during the year.

The actuarial losses are attributable to the extent that salary and turnover losses have exceeded all other gains during the year.

) EMPLOYEE DATA

The Executive Director furnished us with employee information pertaining to all active members, inactive members and retired members of the Fund. Tables 6(a) and 6(b) summarize the changes in active, inactive and retired membership during the year in accordance with the requirements set forth in Section 356.215 of the Minnesota Statutes, Subdivisions 4 and 5.

As noted earlier, the following groups of retired Judges and their beneficiaries have been included for the first time:

1. County Paid Judges.
2. County Court Judges' Widows.
3. District and Supreme Court Judges' Widows.
4. District and Supreme Court Judges.

) In addition, the six active Supreme Court Justices participating in the Supreme Court Justices Plan have been reflected in the Judges Retirement Fund actuarial valuation for the first time on June 30, 1979.

PLAN VALUED

The provisions of the Minnesota Retirement System, Judges Retirement Fund are governed principally by the Uniform Retirement and Survivors Annuities for Judges section of Chapter 490 of the Minnesota Statutes which are summarized in Table 7.

In addition, Table 7 sets forth a summary of the Supreme Court Justices Plan, which is also covered in Chapter 490 of the Statutes. With the exception of the coverage clarifications noted earlier, we are not aware of any material changes to either of these plans since last year.

ACTUARIAL METHODS AND ASSUMPTIONS

The actuarial methods and assumptions differed for the Judges Retirement Fund and the Supreme Court Justices Plan and are summarized separately as follows:

Judges Retirement Fund

Actuarial Methods

The method used for the Judges Retirement Fund is one of the many variations of the entry age cost method which was used by the prior actuary and is identical to the method utilized in valuing the MSRS State Employees Retirement Fund.

Under the method, the entry age normal cost percentage is determined as (a) divided by (b) where:

- (a) equals the sum of the present value of benefits payable for all active members, determined at each member's entry age; and
- (b) equals the sum of the present value of compensation for all active members, determined at each member's entry age.

The normal cost for the year is then determined by applying the normal cost percentage to covered payroll. The accrued liability is, by definition, equal to the present value of all benefits payable under the

plan, less the present value of all future normal costs. The unfunded accrued liability is the net of the accrued liability and current valuation assets on hand.

The method has produced a slightly higher normal cost and a slightly lower unfunded accrued liability for this group than the more standard entry age normal cost method. The impact of this method has been discussed with the Executive Director preparatory to completion of this report.

Actuarial Assumptions

The actuarial assumptions for the Judges Retirement Fund were identical to those used in the prior year's valuation and are set forth in Tables 8(a) through 8(c).

Supreme Court Justices Plan

Actuarial Methods

The standard entry age normal cost, with normal cost developed directly as a percentage of pay for each member was used for the six Supreme Court Justices valued in the plan.

Actuarial Assumptions

The actuarial assumptions, which are identical to those used by the prior actuary, are summarized in Table 8(a).

PART II

MINNESOTA STATE RETIREMENT SYSTEM JUDGES RETIREMENT FUND

Experience Study as of June 30, 1979

PURPOSE

An actuarial valuation is basically a procedure under which the financial condition of a retirement program is determined. In addition, the valuation provides a determination of funding requirements which set forth the pattern of expected costs in a uniform, predictable and consistent manner. In order to determine the liabilities and applicable annual contribution amounts several assumptions affecting the level of projected benefits which will become payable under the plan are made. The extent to which any valuation method can accurately measure the financial liabilities of a retirement program depends heavily on whether or not the actuarial assumptions, in the aggregate, closely reflect actual experience under the plan.

The purpose of this experience study as called for under Chapter 356 of Minnesota Statutes is to compare "expected experience" predicted by the actuarial assumptions, with "actual experience" over the past three years (July 1, 1976 through June 30, 1979) with a view toward revising those assumptions which prove inconsistent with actual experience and in the aggregate would produce material cost deviations. This study consists of such a comparison and analysis with regard to the following assumptions which are used along with the 5% assumed interest rate and 3½% assumed salary increases mandated by Chapter 356 of the Minnesota Statutes:

1. Separation from service on account of:
 - a. Withdrawal prior to vesting;
 - b. Death;

- c. Disability;
 - d. Retirement.
- 2. Mortality experience of retired and disabled annuitants.
 - 3. Operating expense levels.

It should be noted that although the Statutes call for an experience study based on four years of data, information concerning separations during the fiscal year ended June 30, 1976 was not available. We have discussed this with the actuary for the Legislative Commission on Pensions and he has agreed that a study based on three years of experience would be appropriate.

EXPERIENCE DATA

We have examined the emerging experience of the plan during the three year period ending June 30, 1979. The data, submitted by the Executive Director of the Minnesota State Retirement System, included those items necessary for the June 30, 1979 valuation along with copies of the data submitted to the prior actuaries for performance of the June 30, 1977 and June 30, 1978 actuarial valuations. The basic data includes all active and retired members reported on the prior three valuation dates as follows:

<u>SUMMARY OF EXPERIENCE DATA FOR THE THREE YEAR PERIOD ENDING JUNE 30, 1979</u>		
<u>Year Ending</u>	<u>Active Participants</u>	<u>Retired Participants*</u>
June 30, 1977	213	17
June 30, 1978	216	27
June 30, 1979	217	32
* Including disabled participants.		

The study has not been done on a sex specific basis, since the majority of the members are male.

In the following sections we summarize the results of the experience study and analyze the appropriateness of the actuarial assumptions with respect to the anticipated impact on the overall cost of the plan. Specific recommendations for any changes are set forth in the last sub-part of this analysis (Summary and Recommendations).

SUMMARY OF RESULTS - RATES OF SEPARATION FROM ACTIVE SERVICE

As follows, we have summarized the expected experience versus actual experience pertaining to rates of separation from active service. It should be noted that expected experience was based on each year's valuation data and on the rates set forth in the active service tables (Tables 8(b) and 8(c)) later in this report.

1. Non-Vested Withdrawal

The actuarial valuation of the MSRS Judges Retirement Fund includes assumptions as to the rate of non-vested turnover. That is, based on a member's age, rates of withdrawal prior to achieving eligibility status for any benefits (other than a return of contribution with interest) are assumed. The following table sets forth a comparison of actual non-vested termination experience over the past three years with that projected by the rates set forth in the present active service table.

<u>WITHDRAWAL PRIOR TO RETIREMENT</u>	
Expected Non-vested Withdrawals	16
Actual Non-vested Withdrawals	2
Experience Ratio	12.5%

There has been essentially no non-vested withdrawals from this group. We recommend that this assumption be adjusted to assume no withdrawal prior to retirement.

2. Mortality

The following schedule compares actual deaths among active members with the number projected by the assumed mortality rates which are set forth in the active service table:

<u>MORTALITY PRIOR TO RETIREMENT</u>	
Expected Deaths	6
Actual Deaths	3
Experience Ratio	50.0%

Although the data is not substantial enough to indicate any significant trends, there has been a current trend towards decreasing mortality in recent years. This is borne out by the experience study for the MSRS General Plan, and we therefore recommend that a more recent table, reflecting recent mortality improvements, be adopted.

3. Disability

There have been three disabilities during the past three years, although direct application of the disability rates would indicate that zero disabilities were expected. Obviously, this is much too small a group to adequately test the appropriateness of the disability rates. As set forth in the Summary and Recommendations section, we recommend that the disability rates be modified slightly to be consistent with the revision we recommended for valuing the MSRS General Plan.

4. Age Retirement

The valuation for Judges utilizes rates of retirement which assume retirements to take place as early as age 58. The following table sets forth a comparison between the actual number of retirements over the past three years and those expected by application of the valuation rates, taking into account each member's age and associated probability of retirement.

<u>RETIREMENT</u>	
Expected Retirements	70
Actual Retirements	22
Experience Ratio	31.4%

Actual retirement experience has been significantly lower than that expected over the study period. This translates into employees tending to retire later than predicted by direct application of the retirement assumptions. This trend is also borne out by noting the average retirement age of those retiring in recent years as follows:

<u>EARLY RETIREMENT TREND IN RECENT YEARS</u>	
<u>Retirement in the Year Ending</u>	<u>Average Retirement Age*</u>
June 30, 1976	71.4
June 30, 1977	69.3
June 30, 1978	70.3
June 30, 1979	67.5
*As reported by the Executive Director and documented in prior actuarial valuation reports	

Although the average retirement age of all existing annuitants is 69.9, to retain a degree of conservativeness we recommend that the retirement assumption be revised to age 68.

SUMMARY OF RESULTS - POST RETIREMENT MORTALITY

1. Mortality After Retirement

The valuation utilizes a mortality assumption based on the male and female 1951 Group Annuity Mortality Tables with ages set back one year for males and two years for females. The following table sets forth a comparison

of actual mortality during the three year period ending June 30, 1979 and that which is expected based on the valuation assumptions:

<u>POST-RETIREMENT MORTALITY</u>	
Expected Deaths	5
Actual Deaths	4
Experience Ratio	80.0%

Although the data is not substantial enough to reflect significant trends in mortality, noting again current trends towards improved mortality, and further noting that these improvements have been borne out by the mortality experience of the MSRS General Plan over the past four years, we recommend that a more recent annuitant mortality table be adopted.

SUMMARY OF RESULTS - EXPENSE PROVISIONS

The present valuation takes into account a provision of .14% of covered payroll for operating and administrative expenses of the System. Experience over the past three years has indicated an average actual expense provision of .16% as follows:

<u>EXPENSE PROVISIONS</u>			
<u>Year Ending</u>	<u>Actual Expenses</u>	<u>Covered Payroll</u>	<u>Percentage Provision</u>
June 30, 1979	15,437	9,089,988	0.17%
June 30, 1978	11,269	9,041,000	0.12%
June 30, 1977	13,176	6,058,740	0.22%
Total	39,882	24,189,728	0.16%

Reflecting this average, we recommend that the assumed expense provision be increased to .16% of payroll.

SUMMARY AND RECOMMENDATIONS

Based on the results discussed throughout the study, we recommend the following:

1. The assumptions concerning non-vested withdrawal should be revised so that no non-vested withdrawal is assumed. Upon application of this assumption, if the minimal non-vested withdrawals experienced by the plan continue to occur, slight actuarial gains will result.
2. The pre and post-retirement mortality assumptions should be revised to reflect the recent trend toward improved mortality. For this purpose, we would recommend the 1971 Group Annuity Mortality Table (or modification thereof). This table was prepared by the Society of Actuaries in order to reflect those improvements in mortality which have occurred subsequent to the publication of the 1951 Group Annuity Table. In accordance with standard usage of this table, we recommend that female rates be based on the male table, with ages set back six years.

It should be noted that a change in the mortality basis will increase the reported present value of benefits to be payable from MAFB and serve to reduce or diminish future MAFB mortality losses. Based on a discussion with the actuary for the Legislative Commission on Pensions, we concur that the simplest and most equitable manner in which to reflect this would be to transfer funds from MSRS to the MAFB in the amount of the increase in reserve requirement produced by the revised mortality basis. In this way MSRS would essentially be making a one time payment to eliminate future anticipated mortality losses which will occur if use of the 1951 Group Annuity Table is retained for retirees.

3. The current assumed rates of disability be retained, but the rates after age 40 be gradually increased so that they are 100% higher at ages 50 and thereafter. This is the same recommendation made for the General Plan.
4. The assumptions concerning the rates of retirement be replaced by an assumed retirement age of 68.
5. The expense provision be increased from .14% to .16% of covered payroll.

We suggest in accordance with the above, that the cost impact on Chapter 356 requirements of the Minnesota Statutes be analyzed completely in the ensuing fiscal year such that changes, if deemed material and necessary, be implemented in the 1980 valuation.

Table 1(a)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Summary of Actuarial Valuation as of June 30, 1979

	<u>Judges Plan</u>	<u>Supreme Court Justices</u>	<u>Total</u>
A. <u>BASIC DATA</u>			
1. Active Members			
a. Number	214	6	220
b. Covered payroll	9,606,000	318,000	9,924,000
c. Average prospective annual benefit <u>1/</u>	30,356	53,055	30,975
2. Retired Member/Beneficiaries			
a. Number	129	---	129
b. Average annual benefit payable	10,326	---	10,326
3. Deferred Annuitants			
a. Number	4	---	4
b. Average annual vested benefit	7,048	---	7,048
4. Former Members Without Vested Rights			
a. Number	1	---	1
b. Average employee contributions	376	---	376
B. <u>BASIC FINANCIAL RESULTS</u>			
1. Normal Cost	1,275,677	66,726	1,342,403
2. Accrued Liability	28,209,427	969,630	29,179,057
3. Valuation Assets	6,845,192	---	6,845,192
4. Portion of Accrued Liability Funded	24.27%	0.00%	23.46%
5. Unfunded Accrued Liability [2 - 3]	21,364,235	969,630	22,333,865
C. <u>DETERMINATION OF ANNUAL REQUIREMENT IN ACCORDANCE WITH CHAPTER 356</u> <u>2/</u>			
1. Normal Cost	1,275,677	66,726	1,342,403
	(13.28)	(20.98)	(13.53)
2. Assumed Operating Expenses	13,448	445	13,893
	(0.14)	(0.14)	(0.14)
3. Amortization of the Unfunded Accrued Liability by June 30, 2009	1,389,774	63,076	1,452,850
	(14.47)	(19.84)	(14.64)
4. Total Chapter 356 Requirement [1 + 2 + 3]	2,678,899	130,247	2,809,146
	(27.89)	(40.96)	(28.31)
5. Portion Being Funded by Judges Contributions	407,294	---	407,294
	(4.24)	---	(4.10)
D. <u>DEPTH OF FUNDING - PLAN CONTINUATION BASIS</u>			
1. Present Value of Accrued Benefits			
a. Active members	16,715,791	812,051	17,527,842
b. Deferred annuitants	137,248	---	137,248
c. Retirement and survivors benefits not payable from MAFB Fund	7,467,932	---	7,467,932
d. Benefits payable from MAFB Fund	3,232,950	---	3,232,950
e. Annuity Stabilization Account	(52,133)	---	(52,133)
f. Total present value of accrued benefits	27,501,788	812,051	28,313,839
2. Asset Reserves	6,845,192	---	6,845,192
3. Ratio of Accrued Benefits Funded [2 + 1(f)]	24.89%	0.00%	24.18%

1/ Reflects assumed increases in salary as set forth in Table 8(a).

2/ Chapter 356 requirements reflect revisions in the law effective for valuations performed subsequent to June 1, 1979. Parentheses indicate Chapter 356 contribution levels as a percentage of salary.

Table 1(b)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Comparison of 1978 and 1979 Actuarial Valuation Results

	<u>1978</u>	<u>1979</u> <u>1/</u>
1. Active Members		
a. Number	217	220
b. Covered payroll	9,089,988	9,924,000
c. Average prospective annual benefit <u>2/</u>	N/A	30,975
2. Retired Members/Beneficiaries		
a. Number	42	129
b. Average annual benefit payable	11,049	10,326
3. Deferred Annuitants		
a. Number	3	4
b. Average annual vested benefit	6,657	7,048
4. Former Members Without Vested Rights <u>2/</u>		
a. Number	N/A	1
b. Average employee contributions	N/A	376
5. Normal Cost <u>3/</u>	1,149,883 (12.65)	1,342,403 (13.53)
6. Accrued Liability <u>4/</u>	20,305,553	29,179,057
7. Valuation Assets	4,854,062	6,845,192
8. Unfunded Accrued Liability	15,451,491	22,333,865
9. Revised Chapter 356 Requirement (Normal Cost Plus Amortization by 2009) <u>4/</u> <u>5/</u>	2,167,751 (23.85)	2,809,146 (28.31)
10. Prior Chapter 356 Requirement (Normal Cost Plus Amortization by 1997) <u>4/</u> <u>5/</u>	2,441,142 (26.86)	3,266,874 (32.92)
11. Present Value of Accrued Benefits - Plan Continuation Basis <u>4/</u>	17,188,040	28,313,839
12. Depth of Funding [7 ÷ 11]	28.24%	24.18%

1/ New group of retired Judges added and active Supreme Court Justices included for the first time.

2/ Per salary scale assumption set forth in Table 8(a). Amount for 1978 not readily available from prior report.

3/ Parentheses indicate contribution levels as a percentage of salary.

4/ Not including the Annuity Stabilization Account.

5/ Including assumed operating expenses and .14% of covered payroll. See text for a description of the recent revisions to Chapter 356 of the Minnesota Statutes. Parentheses indicate contribution levels as a percentage of salary.

Table 2(a)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Accounting Balance Sheet as of June 30, 1979

A. ASSETS

1. Cash	5,366.15
2. Short Term Investments (at Cost)	613,480.00
3. Accounts Receivable:	
a. Due from MAFB Fund for Mortality Gain	45,828.00
4. Accrued Interest on Investments	69,247.86
5. Dividends Declared and Payable, but Not Yet Received	4,411.75
6. Investment in Debt Securities at Amortized Cost	1,977,132.36
7. Investment in G.N.M.A.'s at Amortized Cost	280,636.38
8. Investment in Equities at Cost <u>1/</u>	754,206.56
9. Deferred Yield Adjustment Account	(5,357.00)
10. Participation in the MAFB Fund	<u>3,180,817.00</u>
11. TOTAL ASSETS	<u><u>6,925,769.06</u></u>

B. LIABILITIES AND RESERVESLiabilities

1. Accounts Payable		
a. Due State Employees Retirement Fund	15,437.06	
b. Due General Fund	<u>4,528.78</u>	19,965.84
2. Deferred Credits and County Reimbursement		<u>60,610.99</u>
3. Total Liabilities		<u><u>80,576.83</u></u>

Reserves

1. Minnesota Adjustable Fixed Benefit Fund		
a. Actuarial reserve requirement	3,232,950.00	
b. Annuity Stabilization Reserve	<u>(52,133.00)</u>	3,180,817.00
2. Member Contribution Reserve		1,553,849.61
3. Retirement Reserve - "Old Law" Judges		844,010.00
4. Retirement Reserve - Additional Judges and Survivors		6,623,922.00
5. State Contribution Reserve		<u>(5,357,406.38)</u>
6. Total Reserves (Valuation Reserves) <u>2/</u>		<u><u>6,845,192.23</u></u>
7. TOTAL LIABILITIES AND RESERVES		<u><u>6,925,769.06</u></u>

1/ Market value as of June 30, 1979 is \$783,563.00.

2/ Portion of assets to be applied as valuation assets toward providing benefits.

Table 2(b)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Actuarial Balance Sheet as of June 30, 1979

A. ASSETS

1.	Assets on Hand from Accounting Balance Sheet:		
a.	Participation in MAFB Fund	3,180,817	
b.	All other assets	<u>3,744,952</u>	6,925,769
2.	Present Value of Judges' Future Contributions		3,188,074
3.	Present Value of State Future Contributions Applicable to:		
a.	Entry age normal cost	7,626,862	
b.	Unfunded accrued liability	<u>22,333,865</u>	<u>29,960,727</u>
4.	TOTAL ASSETS		<u><u>40,074,570</u></u>

B. LIABILITIES

1.	Current Liabilities from Accounting Balance Sheet		80,577
2.	Present Value of Earned and Earnable Benefits Payable to Presently Active Members:		
a.	Retirement benefits	25,658,052	
b.	Disability benefits	585,926	
c.	Refundments due to death or withdrawal	473,505	
d.	Surviving spouse benefits	<u>2,490,513</u>	29,207,996
3.	Present Value of Benefits for Deferred Annuitants		137,248
4.	Present Value of Presently Retired Persons		
a.	From MAFB Fund	3,232,950	
b.	Annuity Stabilization Account	(52,133)	
c.	From Judges Fund	<u>7,467,932</u>	<u>10,648,749</u>
5.	TOTAL LIABILITIES		<u><u>40,074,570</u></u>

Table 3(a)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Chapter 356 Balance Sheet as of June 30, 1979

<u>ASSETS AND UNFUNDED ACCRUED LIABILITY</u>	
A. <u>ASSETS</u>	
1. Cash	5,366.15
2. Short Term Investments (at Cost)	613,480.00
3. Accounts Receivable:	
a. Due from MAFB for mortality gain	45,828.00
4. Accrued Interest on Investments	69,247.86
5. Dividends Declared and Payable, but Not Yet Received	4,411.75
6. Investment in Debt Securities at Amortized Cost	1,977,132.36
7. Investment in G.N.M.A.'s at Amortized Cost	280,636.38
8. Investment in Equities at Cost	754,206.56
9. Deferred Yield Adjustment Account	(5,357.00)
10. Participation in the MAFB Fund	3,180,817.00
11. Total Assets	<u>6,925,769.06</u>
B. <u>UNFUNDED ACCRUED LIABILITY</u>	
1. Total Unfunded Accrued Liability	<u>22,333,864.77</u>
2. TOTAL ASSETS AND UNFUNDED ACCRUED LIABILITY	<u>29,259,633.83</u>
<u>CURRENT LIABILITIES AND RESERVES REQUIRED</u>	
C. <u>LIABILITIES</u>	
1. Accounts Payable:	
a. Due State Employees Retirement Fund	15,437.06
b. Due General Fund	<u>4,528.78</u>
2. Deferred Credits and County Reimbursement	19,965.84
3. Total Liabilities	<u>60,610.99</u> <u>80,576.83</u>
D. <u>RESERVES REQUIRED</u>	
1. Total Reserves Required per Attached Table 3(b)	<u>29,179,057.00</u>
2. TOTAL CURRENT LIABILITIES AND RESERVES REQUIRED	<u>29,259,633.83</u>

NOTE: Accumulated contributions, without interest, of members not yet retired amounted to \$1,553,849.61 as of June 30, 1979 (includes accrued but unpaid contributions).

Table 3(b)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Determination of Accrued Liability and
Unfunded Accrued Liability as of June 30, 1979

	(1)	(2)	(3)
	Present Value of Benefits	Present Value of Applicable Portion of Normal Cost Contribution	Accrued Liability Equals Reserves Required (1)-(2)
A. <u>DETERMINATION OF ACCRUED LIABILITY</u>			
1. Active Members			
a. Retirement benefits	25,658,052	8,193,114	17,464,938
b. Disability benefits	585,926	240,463	345,463
c. Refundments due to death or withdrawal	473,505	690,361	(216,856)
d. Surviving spouse benefits	2,490,513	1,690,998	799,515
2. Deferred Annuitants	137,248	---	137,248
3. Retirement and Survivors Benefits from Judges Fund	7,467,932	---	7,467,932
4. Benefits Payable From MAFB Fund	3,232,950	---	3,232,950
5. MAFB Fund Annuity Stabilization Account	(52,133)	---	(52,133)
6. Total	39,993,993	10,814,936	29,179,057
B. <u>DETERMINATION OF UNFUNDED ACCRUED LIABILITY</u>			
1. Accrued Liability	---	---	29,179,057
2. Valuation Assets	---	---	6,845,192
3. Unfunded Accrued Liability [1 - 2]	---	---	22,333,865

Table 3(c)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Determination of MAFB Fund Participation
and MAFB Fund Annuity Stabilization Account
as of June 30, 1979

1.	Unadjusted MAFB Fund Participation as of June 30, 1979	3,226,645
2.	Transfer to Judges Fund from MAFB Fund for 1979 Mortality Gain	(45,828)
3.	MAFB Fund Participation after Transfer [1 + 2]	3,180,817
4.	Present Value of Benefits Payable from MAFB Fund <u>1/</u>	3,232,950
5.	MAFB Fund Annuity Stabilization Account [3 - 4]	(52,133)
<u>1/</u>	Allocated to members eligible or not eligible to participate in any January 1, 1980 increases as follows:	
a.	Liability for members eligible to participate in increase	2,299,699
b.	Liability for members not eligible to participate in increase	933,251

Table 4

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Analysis of Income and Deductions From Income
and Effect on the Unfunded Accrued Liability

A. INCOME

1.	From Judges Contributions		393,224.16
2.	From the State		
	a. General Fund appropriations	628,162.55	
	b. Transfers from the State General Fund	<u>1,310,737.88</u>	1,938,900.43
3.	From Investments		
	a. Interest on securities	238,400.50	
	b. Dividends on corporate stock	36,413.37	
	c. Recognized unrealized appreciation on stock	0.00	
	d. Gain on sale of securities	<u>4,972.06</u>	279,785.93
4.	From MAFB Fund Participation		
	a. Participation in MAFB Fund Income		153,356.34
5.	Other Revenues		
	a. Transfer from Survivors of City and Probate Judges	398,572.23	
	b. County reimbursements	101,817.07	
	c. Prior year adjustments	<u>50.10</u>	500,439.40
6.	TOTAL INCOME		<u><u>3,265,706.26</u></u>

B. DEDUCTIONS FROM INCOME

1.	Benefits		
	a. Judges Plan service retirement annuities	456,600.54	
	b. Judges Plan disability retirement benefits	25,761.08	
	c. Judges Plan survivor benefits (spouses)	49,596.84	
	d. Supreme and District Court Judges Plan retirement annuities	445,383.52	
	e. Supreme and District Court Judges Plan survivor benefits	170,734.65	
	f. County Paid Judges Plan	<u>106,691.70</u>	1,254,768.33
2.	Refundments		
	a. Erroneous deductions	1,113.68	
	b. To counties	<u>3,257.32</u>	4,371.00
3.	Administrative Expenses ^{1/}		15,437.06
4.	Increase in Total Reserves Required		
	a. Reserves required 6/30/78	20,305,553.00	
	b. Reserves required 6/30/79	<u>29,179,057.00</u>	8,873,504.00
5.	TOTAL DEDUCTIONS FROM INCOME		<u><u>10,148,080.39</u></u>
6.	EXCESS OF DEDUCTIONS FROM INCOME OVER INCOME		<u><u>6,882,374.13</u></u>

C. REDUCTION IN UNFUNDED ACCRUED LIABILITY

1.	Unfunded Accrued Liability 6/30/78	15,451,490.64
2.	Unfunded Accrued Liability 6/30/79	<u>22,333,864.77</u>
3.	INCREASE IN UNFUNDED ACCRUED LIABILITY	<u><u>6,882,374.13</u></u>

^{1/} Represents 0.17% of covered payroll.

Table 5

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Analysis of Change in the Unfunded Accrued Liability
During the Fiscal Year Ending June 30, 1979

1.	Unfunded Accrued Liability as of June 30, 1978		15,451,491
2.	Change Due to Current Rate of Funding and Interest Requirements		
a.	1978 - 79 past service contribution	(1,167,227)	
b.	5% interest requirement	<u>772,575</u>	(394,652)
3.	Change Due to Reflecting Additional Judges for the First Time		5,534,479
4.	Change Due to Including Supreme Court Justice Active Members for the First Time		969,630
5.	Change Due to Actuarial Gains (indicated by parentheses) or Losses (no parentheses) Because of Experience Deviations from Expected		
a.	MAFB mortality gain	(45,825)	
b.	Salary	634,833	
c.	Social Security increase	(131,378)	
d.	Investments	(151,593)	
e.	Withdrawal, disability, mortality (balancing item)	<u>466,880</u>	<u>772,917</u>
6.	Unfunded Accrued Liability as of June 30, 1979		<u><u>22,333,865</u></u>

Table 6(a)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Covered Judges Retirement Fund Employee Census Data
as of June 30, 1979 1/

	<u>Number</u>	<u>Annualized Payroll</u>
Active at June 30, 1978	217	9,089,988
New Entrants	<u>7</u>	315,000
Total	224	
Less Separations from Active Service:		
Separation with a Vested Right to a Deferred Annuity	1	42,000
Separation with Neither Refundment Nor Right to a Deferred Annuity	1	42,000
Disability	1	42,000
Service Retirement	7	279,000
Total Separations	<u>10</u>	405,000
Active at June 30, 1979	214	9,606,000

AVERAGE ENTRY AGE OF NEW EMPLOYEES

<u>For the Fiscal Year Ending</u>	<u>Average Age at Entry</u>
6/30/76	42.1
6/30/77	39.8
6/30/78	46.8
6/30/79	38.7
Average age at entry in State service for all active employees at 6/30/79	42.1

1/ In addition 6 Supreme Court Justices participating under their own plan were reflected for the first time in the valuation.

Table 6(b)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Judges Retirement Fund Annuitant Census Data
as of June 30, 1979

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
A. <u>SERVICE RETIREMENT ANNUITANTS</u> 1/		
Receiving at June 30, 1978	31	399,279.60
New	7	104,138.40
Deaths	1	17,420.04
Receiving at June 30, 1979	37	485,997.96
B. <u>DISABLED EMPLOYEES</u>		
Receiving at June 30, 1978	1	6,477.12
New	2	28,479.60
Deaths	1	19,160.88
Receiving at June 30, 1979	2	15,795.84
C. <u>WIDOWS RECEIVING AN ANNUITY OR SURVIVOR BENEFIT</u>		
Receiving at June 30, 1978	10	58,306.92
New	0	0.00
Transfer	1	8,710.08
Receiving at June 30, 1979	9	49,596.84
D. <u>CHILDREN RECEIVING A SURVIVOR BENEFIT</u>		
Receiving at June 30, 1979	None	

Page 1 of 2

	<u>Number</u>	<u>Annual Annuity Benefit Payable</u>
E. <u>DEFERRED ANNUITANTS</u>		
Deferred as of June 30, 1978	3	19,971.12
New	1	8,220.00
Began Receiving	0	0.00
Deferred as of June 30, 1979	4	28,191.12
F. <u>NEW RETIREES (NOT PREVIOUSLY IN JUDGES RETIREMENT FUND)</u>		
Receiving at June 30, 1979	81	780,602.88

AVERAGE AGE AT RETIREMENT OF NEW SERVICE ANNUITANTS 2/

<u>Fiscal Year Ending</u>	<u>Average Retirement Age</u>
6/30/76	71.4
6/30/77	69.3
6/30/78	70.3
6/30/79	67.5
<u>All Existing Service Annuitants</u>	69.9

1/ Includes Non-MAFB retired Judges.

2/ Not including the new retirees not previously in the Judges Retirement Fund.

Table 7

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Summary of Principal Plan Provisions as of June 30, 1979

A. JUDGES PLAN

1. Coverage: From first date as a Judge.
2. Types of Coverage:
 - a. Including Social Security: All Judges except those excluded by Item 2(b) are covered by Social Security.
 - b. Not Including Social Security: Judges prior to January 1, 1974 were given the opportunity to elect not to be covered under Social Security.
3. Contributions:
 - a. From Judges: Judges pay the Social Security Tax Rate applied to the entire salary. For those Judges with Social Security coverage, the appropriate portion of this contribution is forwarded to Social Security.
 - b. From the State: The State provides any additional funds necessary to meet obligations.
4. Final Average Salary: Monthly average for the highest 5 years of salary within the last 10 years.
5. Normal Retirement:
 - a. Eligibility: Earlier of:
 - . attainment of age 65 and completion of 10 years of service; or
 - . attainment of age 70.
 - b. Benefit Amount: 2-1/2% of Final Average Salary for each year of service, subject to a maximum of 60% of annual salary in the year immediately preceding retirement.
 - c. Minimum Benefit: Benefits for Judges who retire at age 70 with at least 10 years of service and who were members of the plan prior to January 1, 1974, are subjected to a minimum of 50% of Final Average Salary (proportionately reduced for less than 15 years of service).

6. Early Retirement:
- a. Eligibility: Attainment of age 62 and completion of 10 years of service.
 - b. Benefit Amount: Normal Retirement benefit formula based on service and Final Average Salary to date of early retirement but reduced 1/15th for each year that actual retirement precedes age 65.
7. Form of Payment: Life annuity with no guarantees upon death.
8. Disability Retirement:
- a. Eligibility: None other than disablement while in office.
 - b. Benefit Amount:
 - . Full salary for the first two years of disability paid outside the plan.
 - . After two years of disability, an annuity computed in the same manner as the full benefit amount for service retirement, subject to a minimum of 25% of Final Average Salary.
9. Deferred Service Retirement: Any benefit described above may be deferred until the early or normal retirement date.
10. Return of Contributions: Upon termination of employment, if a Judge qualifies for no other benefits under this plan, he will receive his contributions accumulated with interest at a rate of 5% compounded annually.
11. Pre-Retirement Survivor's Annuity: 60% of the annuity determined in the same manner as normal service retirement benefits assuming the Judge retired on his date of death.
12. Post-Retirement Survivor's Annuity:
- a. Joint and Survivor Election: In lieu of receiving benefits in the standard life annuity form of payment, a retiring Judge may elect actuarially reduced benefits in the joint and survivor annuity or term certain annuity forms.
 - b. Prior Survivor's Benefits: Benefits for Judges who were in office prior to January 1, 1974 and who continue to make additional contributions of 4% of salary to the survivor's fund receive benefits in the 50% joint and survivor form, with no actuarial reduction.

B. SUPREME COURT JUSTICES PLAN

1. Coverage: Supreme Court Justices as of December 31, 1973 who elected coverage under Chapter 490.025 in lieu of coverage under Chapters 490.121 through 490.132.
2. Retirement With Continuation of Compensation:
 - a. Eligibility: Attainment of age 70 and completion of 12 years of Supreme Court service.
 - b. Benefit Amount:
 - . Continuation of final compensation until the end of the term to which the Supreme Court Justice was elected.
 - . 50% of final salary plus an additional 2-1/2% of final salary for each year of Supreme Court service in excess of 12, payable after the continuation of compensation ceases.
3. Retirement Without Continuation of Compensation:
 - a. Eligibility: Earlier of:
 - . attainment of age 65 and completion of 15 years of Supreme Court service; or
 - . attainment of age 70.
 - b. Benefit Amount: 50% of final salary plus an additional 2-1/2% of final salary for each year of Supreme Court service in excess of 12.
4. Disability Benefits:
 - a. Eligibility: Disablement after completion of two full terms.
 - b. Benefit Amount: 50% of final salary plus an additional 2-1/2% of final salary for each year of Supreme Court service in excess of 12.

Table 8(a)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Summary of Actuarial Assumptions and Methods

A. JUDGES RETIREMENT FUND

- | | |
|--------------------------------|---|
| 1. Pre-Retirement Mortality: | Rates based on actual experience developed by the June 30, 1971 experience analysis and set forth in the Separation from Active Service Table. |
| 2. Post-Retirement Mortality: | 1951 Group Annuity Mortality with ages set back 1 year for males and 2 years for females. |
| 3. Post-Disablement Mortality: | Combined Annuity Mortality Table. |
| 4. Withdrawal: | Graded rates based on actual experience developed by the June 30, 1971 experience analysis and set forth in the Separation from Active Service Table. |
| 5. Expenses: | .14% of covered payroll. |
| 6. Interest Rate: | 5% per annum. |
| 7. Salary Scale: | 3-1/2% per annum. |
| 8. Assumed Retirement Age: | Graded rates beginning at age 58 set forth in the Separation from Active Service Table. |
| 9. Actuarial Cost Method: | Individual entry age cost method, with normal cost determined as a level percent-age of future covered payroll. |
| 10. Social Security: | |
| a. Primary amount: | \$553.30 per month, increasing with salary scale. |
| b. Level contribution rate: | 6.86%. |
| c. Covered monthly wages: | \$22,900 increasing with salary scale. |

B. SUPREME COURT JUSTICES

- | | |
|---|--|
| 1. Mortality (Pre and Post-Retirement): | 1951 Group Annuity Mortality with ages set back 1 year for males and 2 years for females. |
| 2. Withdrawal: | None. |
| 3. Interest Rate: | 5%. |
| 4. Salary Scale: | 3-1/2% per annum. |
| 5. Expenses: | .14% of covered payroll. |
| 6. Retirement Age: | Latest of: <ul style="list-style-type: none">. attainment of age 70;. completion of 12 years of service; or. one year from valuation date. |

Table 8(b)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Male Judges

Probabilities of Separation From Active Service

(Number Separating at Each Age Per 10,000 Working at That Age)

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
20	2,400	6		
21	2,250	6		
22	2,080	7		
23	1,920	7		
24	1,760	7		
25	1,600	7		
26	1,470	7		
27	1,340	7		
28	1,230	8		
29	1,130	8		
30	1,040	8	2	
31	950	9	2	
32	890	10	2	
33	830	11	2	
34	770	12	2	
35	720	13	2	
36	680	15	2	
37	640	16	2	
38	600	18	2	
39	560	20	2	
40	530	22	2	
41	500	25	2	
42	480	27	2	
43	460	29	2	
44	430	32	2	

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
45	410	35	2	
46	390	38	3	
47	370	41	4	
48	350	44	5	
49	340	48	6	
50	320	52	7	
51	300	57	8	
52	280	63	10	
53	260	70	12	
54	240	77	14	
55	210	85	17	
56	170	93	20	
57	140	102	23	
58	90	111	28	30
59	40	120	33	30
60		130	38	40
61		140	45	150
62		150	55	150
63		160	68	250
64		170	87	1,350
65				10,000

Table 8(c)

MINNESOTA STATE RETIREMENT SYSTEM
JUDGES RETIREMENT FUND

Female Judges

Probabilities of Separation From Active Service

(Number Separating at Each Age Per 10,000 Working at That Age)

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
20	3,700	1		
21	3,550	2		
22	3,390	2		
23	3,230	2		
24	3,070	3		
25	2,910	3		
26	2,750	4		
27	2,600	4		
28	2,430	4		
29	2,270	4		
30	2,120	4		
31	1,970	4		
32	1,820	4		
33	1,680	4		
34	1,540	4		
35	1,410	4	1	
36	1,300	5	1	
37	1,190	5	1	
38	1,090	6	1	
39	1,000	7	2	
40	920	8	2	
41	850	8	2	
42	780	9	3	
43	720	11	3	
44	680	13	3	

<u>Age</u>	<u>Withdrawal</u>	<u>Death</u>	<u>Disability</u>	<u>Age and Service Retirement</u>
45	630	15	3	
46	590	17	4	
47	560	19	4	
48	530	21	4	
49	500	23	5	
50	470	25	5	
51	440	27	6	
52	410	30	7	
53	390	33	8	
54	360	36	10	
55	330	39	12	
56	290	43	15	
57	230	47	18	
58	170	51	22	50
59	90	56	26	50
60		61	31	150
61		66	37	150
62		72	44	200
63		78	52	350
64		83	61	1,100
65				10,000

APPENDIX

MINNESOTA STATE RETIREMENT SYSTEM JUDGES RETIREMENT FUND

Table References to Chapter 11 and Chapter 356

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1/ All as of June 30, 1979.

MINNESOTA STATE JUDGES' RETIREMENT FUND
ACTUARIAL VALUATION AS OF JUNE 30, 1979

The purpose of this memorandum is to discuss the report of the valuation of the Minnesota State Judges' Retirement Fund as of June 30, 1979. This valuation was submitted to the Commission in accordance with Minnesota Statutes, Chapter 356. The entry age normal cost method was used with a 5% interest assumption. The 1978 report was prepared by Harry M. Church and David G. Adams of Towers, Perrin, Forster and Crosby, and the 1979 report was prepared by Allan J. Grosch and Alan J. Schutz of the Wayatt Company.

This memorandum contains the following:

1. Statistical and Valuation Data
2. Discussion of Valuation Results
3. Experience Study
4. Conclusion

1. Statistical and Valuation Data

(1) Membership

	June 30, 1978	June 30, 1979
Active Members	217	220*
Retired Members	31	118**
Disabled	1	2
Survivors	10	9
Deferred Annuitants	3	4

(2) Payroll and Annuities Payable

Total Annual Payroll	\$ 9,089,988	\$ 9,924,000
Annuities (annual)	464,064	1,331,994**

(3) Valuation Balance Sheet

Actuarial Liabilities		
Annuities in Force	\$ 3,844,849	\$10,700,882
Deferred Annuities	102,377	137,248
Active Members	16,437,564	18,393,060
Total	\$20,384,790	\$29,231,190
Assets	4,933,299	6,897,325
	\$15,451,491	\$22,333,865

Funding Ratio	24.20%	23.60%
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*Includes 6 Supreme Court Judges for the first time.

**Includes 81 retired judges with \$780,603 of benefit for the first time.

(4) <u>Normal Cost and Funding Costs</u>	<u>June 30, 1978</u>	<u>June 30, 1979</u>
Normal Cost	12.65%	12.53%
Expenses	0.14	0.14
Interest on Deficit	8.50	11.62
Minimum Contribution	21.29%	25.29%
Normal Cost plus Expenses	12.79%	13.67%
Amortization by 2009	11.06	14.64
Required Contribution	23.85	28.31

2. Discussion of Valuation Results

As indicated above, the normal cost turned out to be 13.53% of payroll. Since the benefit in this plan in most cases involves a Social Security offset, the judges' share of the normal cost is determined by the actuary using a formula which takes into account the employee Social Security tax. This resulted in the following division of the normal cost:

	<u>June 30, 1978</u>	<u>June 30, 1979</u>
Judges' Share	4.23%	4.10%
State's Share	8.42	9.43
Total	12.65%	13.53%

With this division of the normal cost, the State's share of the 28.31% required contribution becomes 24.21%. This compares with 19.62% in 1978.

The increase in the normal cost came about as a result of including six Supreme Court judges for the first time. This same factor plus the addition of 81 judges to the retired group under this plan caused much of the increase in the deficit. This increase of \$6,882,374 was analyzed as follows:

Increases

Adding Retired Judges	\$5,534,479	
Adding Supreme Court Judges	969,630	
Salary Increase Loss	634,833	
Deviation in Mortality	466,880	
Disablement & Withdrawal		
Total Increases		\$7,605,822

Decreases

Amortization Contribution	\$ 394,652	
Mortality Gain - Retireds	45,825	
Social Security Increase	131,378	
Capital Gain	4,972	
Excess Interest	146,621	
Total Decreases		\$ 723,448

Net Increase \$6,882,374

3. Experience Study

As required by statute, the 1979 report contained a comparison of the experience under the plan during the past three years with the predictions of the actuarial assumptions. The statute calls for a review of experience over a four year period, but data were available for this plan for only three years.

Each year, attention has been called to the fact that this plan was being valued with actuarial assumptions borrowed from the MSRS valuations and that they were untested so far as the judges were concerned. Therefore, it is not surprising that this first experience study suggests more appropriate assumptions.

The following chart summarizes the actual number of events compared with the number predicted by the actuarial assumptions:

	<u>Actual</u>	<u>Expected</u>	<u>Ratio</u>
Withdrawals	2	16	12.5%
Disabilities	3	0	--
Mortality - Active	3	6	50.0
Mortality - Retirees	4	5	80.0
Age Retirement	22	70	31.4

The following shows the average age at retirement in recent years:

Year	1976	1977	1978	1979
Ave. Age	71.4	69.3	70.3	67.5

Since almost no withdrawals have occurred, the Actuary recommends that none be assumed. The death rates among both actives and retirees have been less than those in the mortality table used for valuations, and a more conservative table should be adopted. Moreover, a more realistic set of rates of disablement should be used.

As stated above, the valuations up to now have been based on the actuarial assumptions used in valuing MSRS. For MSRS, it is assumed that retirements begin at age 58 at a low rate and that the rate increases as the age increases, reaching 100% at age 65. The above analysis indicates that judges tend to retire later than those rates predict, and the Actuary states that an average retirement age of 68 could be used and would still provide some margin.

4. Conclusion

It should be pointed out that the adoption of the recommended set of actuarial assumptions will produce different results in the 1980 valuation. The new termination rates, death rates and rates of disablement will exert an upward thrust on the cost figures which will be partially offset by the new retirement assumption.

Franklin C. Smith
Associate, Society of Actuaries
Commission Actuary