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ACTUARIAL
REPORT

DULUTH TEACHERS' RETIREMENT
FUND ASSOCIATION

AS OF JUNE 30, 1983

NOT FILMED

Hewitt Associates

Pursuant to Mn Stat 356.215

PREPARATION OF THIS ACTUARIAL REPORT

AS OF JUNE 30, 1983

DULUTH TEACHERS' RETIREMENT FUND ASSOCIATION

This report has been prepared in accordance with generally accepted actuarial principles and practices. This actuarial valuation was made in accordance with the provisions of Sections 356.20 to 356.23 of Minnesota Statutes 1969, as amended. The material from which this report was prepared consisted of personnel data furnished by the Association, the annual report of Eikill and Schilling for the Association, and actuarial tables compiled by Hewitt Associates. The usual care has been exercised in making the calculations and presenting the results. The contents of this report are, therefore, believed to be a correct appraisal of the state of affairs of the Plan.

Respectfully submitted,

HEWITT ASSOCIATES

J. Michael Jones
J. Michael Jones
Member, American Academy of Actuaries

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Fellow, Society of Actuaries

October 18, 1983

SUMMARY*

	June 30, 1983**	June 30, 1982**	June 30, 1981
Accrued Liability	$63,630,916	$58,568,245	$47,322,626
Actuarial Value of Assets	42,901,016	39,004,140	36,521,054
Unfunded Accrued Liability	$20,729,900	$19,564,105	$10,801,572
Normal Cost as Percent of Compensation	7.87%	7.94%	7.22%
Contribution as a Percent of Compensation Based on Normal Cost plus:			
Interest only	12.30%	12.13%	9.85%
Amortization by 2009	13.82%	13.49%	10.59%
Value of Accrued Benefits			
Vested Only	$32,792,153	$29,870,216	$25,819,473
All Accrued	34,793,103	31,687,788	26,795,561
Market Value of Assets	$49,665,414	$39,236,344	$37,849,125
Number of Members			
Active	1,119	1,173	1,221
Retired	557	531	508
Terminated Deferred Vested	50	63	53
Total	1,726	1,767	1,782

*Based on statutory interest rate and salary scale.
**Total plan inclusive of the Old Coordinated and New Coordinated Programs and the benefit improvements effective July 1, 1981.

LIABILITIES, ASSETS, NORMAL COST

Shown below are the results of the actuarial valuation as of June 30, 1983. The results for the New Coordinated Program take into account the plan feature that allows members in the Old Coordinated Program to elect the New Coordinated Program at anytime up to retirement.

	Old Coordinated Program	New Coordinated Program	Total
Present Value of Projected Benefits	$ 81,618,654	$ 5,135,339	$ 86,753,993
Present Value of Future Normal Costs	21,293,935	1,829,142	23,123,077
Accrued Liability	$ 60,324,719	$ 3,306,197	$ 63,630,916
Actuarial Value of Assets (page II-A-3)	41,675,465	1,225,551	42,901,016
Unfunded Accrued Liability	$ 18,649,254	$ 2,080,646	$ 20,729,900
Present Value of Future Compensation	$264,944,243	$28,842,225*	$293,786,468
Present Value of Future Normal Costs as a Percent of Present Value of Future Compensation	8.04%	6.34%	7.87%
Current Compensation for Members under the Assumed Retirement Age	$23,338,701	$ 2,206,971*	$25,545,672
Normal Cost Based on Current Compensation	N/A	N/A	$ 2,010,444

*These amounts are determined for the members of the New Coordinated Program, plus a proportionate amount attributable to the benefit payable from the New Coordinated Program for the current Old Coordinated Program members (the Old Coordinated Program amounts have been reduced by the amount the New Coordinated Program has been increased.) For this reason the dollar normal cost is not shown by separate program.

Actuarial Balance Sheet

	Old Coordinated Program	New Coordinated Program	Total
Present and Prospective Assets			
Actuarial Value of Assets	$41,675,465	$ 1,225,551	$42,901,016
Present Value of Future Member Contributions	11,918,247	1,303,335	13,221,582
Present Value of Future Normal Cost Contributions from State of Minnesota	9,375,688	525,807	9,901,495
Unfunded Accrued Liability	18,649,254	2,080,646	20,729,900
Total	$81,618,654	$ 5,135,339	$86,753,993
Present and Prospective Liabilities			
Present Value of Benefits Payable on Account of:			
Service Retirement Annuitants	$16,749,980	$ 1,119,978	$17,869,958
Disability Retirement Annuitants	264,908	0	264,908
Beneficiaries	438,586	0	438,586
Deferred Vested	263,762	0	263,762
Present Value of Future Benefits Anticipated on Account of Present Active Members for:			
Service Retirement	$51,393,469	$ 3,836,681	$55,230,150
Disability Retirement	4,174,962	37,441	4,212,403
Withdrawal Prior to Retirement	3,904,852	129,449	4,034,301
Death Prior to Retirement	4,428,135	11,790	4,439,925
Total	$81,618,654	$ 5,135,339	$86,753,993

Determination of Actuarial Value of Assets

(1)	Actuarial Value of Assets, 6/30/82	$39,004,140
(2)	Contributions	2,464,350
(3)	Benefits Paid	2,215,013
(4)	Assumed Investment Return at 5% on:	
	(a) Actuarial Value of Assets, line (1)	1,950,207
	(b) Contributions, line (2)	61,609
	(c) Benefits Paid, line (3)	55,376
	(d) Total, (4a)+(4b)-(4c)	$ 1,956,440
(5)	Expected Value of Assets, 6/30/83 (1)+(2)-(3)+(4d)	$41,209,917
(6)	Market Value, 7/1/83*	$49,665,414
(7)	Adjustment Towards Market Value, 20% of (6)-(5)	$ 1,691,099
(8)	Actuarial Value of Assets, 6/30/83, (5)+(7)	$42,901,016

*Recognizes marketable common stocks valued at market and total bonds and notes valued at cost.

The total actuarial value of assets of $42,901,016 has been allocated to the Old Coordinated Program and the New Coordinated Program as follows:

Old Coordinated Program	$41,675,465
New Coordinated Program	$ 1,225,551

CONTRIBUTIONS

Required Support Levy from the State of Minnesota

Active members of the Fund contribute 4.50% of their compensation to meet part of the cost of the Plan. The following tables indicate the total contributions and the support levy from the State of Minnesota, expressed as a percent of compensation, required to meet the remaining cost of the Plan. The expense entries shown have been determined by dividing the 1982-83 expense (excluding Investment Advisor's fees) by current compensation.

Normal Cost Plus Interest on Unfunded Accrued Liability

	Total	State of Minnesota
Normal Cost	7.87%	3.37%
Interest on Unfunded Accrued Liability	3.86%	3.86%
Expenses	.57%	.57%
Total	12.30%	7.80%

This contribution could be viewed as 12.42% for the Old Coordinated Program and 11.40% for the New Coordinated Program. The State of Minnesota portion would be 7.92% and 6.90% respectively.

Normal Cost Plus Amortization of Unfunded Accrued Liability by 2009

	Total	State of Minnesota
Normal Cost	7.87%	3.37%
Payment on Unfunded Accrued Liability	5.38%	5.38%
Expenses	.57%	.57%
Total	13.82%	9.32%

This contribution could be viewed as 13.90% for the Old Coordinated Program and 13.16% for the New Coordinated Program. The State of Minnesota portion would be 9.40% and 8.66% respectively.

EXPERIENCE

Changes in Unfunded Accrued Liability

The unfunded accrued liability as determined on the basis of an interest assumption of 5.0% increased from $19,564,105 on June 30, 1982, to $20,729,900 on June 30, 1983. This increase of $1,165,795 reflects the effect of the contributions, and the experience loss under the Plan.

The actuarial valuation report as of June 30, 1982, based on a 5.0% interest assumption, indicated a required support levy of 12.13% of compensation by the State of Minnesota and the members to keep the unfunded accrued liability from increasing (that is, to meet the normal cost payment, pay interest on the unfunded accrued liability, and to meet expenses). The actual contribution by the State of Minnesota and the members was 10.29% of compensation from July through December, 1982 and 8.29% from January through June 1983. On average, this results in a contribution shortage of about 2.95%. Thus, the contribution shortage increased the unfunded accrued liability by about $744,000 (2.95% of $25,213,173).

Since the unfunded accrued liability increased more than $744,000, the actual experience under the plan for the year resulted in an actuarial loss of approximately $422,000.

Normal Cost Percentage

The normal cost percentage decreased slightly from 7.94% on June 30, 1982, to 7.87% on June 30, 1983.

Actuarial Loss

During the 1982-1983 school year, there was an actuarial loss (i.e., an unanticipated increase in the unfunded accrued liability because of experience) of about $422,000.

The primary source of this loss was compensation increases in excess of the assumed salary increases of 3-1/2%. For members who were active in both the 1982 and 1983 valuations, the average compensation increased 4.4%. For members age 45 and older, the average increase was 6.1%. These increases are shown graphically by five-year age groups on page IV-7. This experience produced an actuarial loss of about $900,000. The mortality experience among the retired members produced a loss of about $200,000 as less liability was released than expected. Corrections to the payment form for some of the retired members caused an additional increase in the unfunded accrued liability. The average age of the new service retirements was 61.5 years, lower than the assumed retirement age of 63, producing an additional loss.

Partially offsetting these losses was an actuarial gain due to favorable investment performance. The rate of return during the year based on the actuarial value of assets was 9.3%, well in excess of the assumed 5% rate. This investment experience produced a gain of $1,691,099 based on the actuarial value of assets. The annual market value rate of return was approximately 25.9%.

ACCRUED BENEFIT VALUES

The Financial Accounting Standards Board Statement No. 35 was issued in March of 1980 for reporting in the annual financial statements of the plan. This statement requires the inclusion of the present value of vested benefits and all accrued benefits determined on an ongoing plan basis for all defined benefit pension plans.

To provide guidance for consistent actuarial practice in the determination of accrued benefit values for an ongoing plan, the American Academy of Actuaries has recommended procedures for calculating the present value of vested benefits (Interpretation 1) and the present value of accrued benefits (Interpretation 2). In the judgment of the Academy Committee on Pension Actuarial Principles and Practices, these Interpretations are acceptable for the determination of both vested and all accrued benefit values.

Both Interpretations include the present value as of June 30, 1983, of the sum of: (a) all benefits expected to be paid to former members, and their beneficiaries, who have retired or have terminated with vested rights, and (b) benefits expected to be paid at future dates to present active members, based only on compensation and service prior to June 30, 1983, as further described in the next two paragraphs.

The calculation of the present value of vested benefits using Interpretation 1, as shown on page III-2, represents only the benefits in which an active member retains a right, independent of continuation of employment. It does not include any additional benefits which might arise because of the future death or disability of a member that become payable only if the member remains employed until death or disability.

The calculation of the present value of all accrued benefits using Interpretation 2, also shown on page III-2, represents all accrued benefits expected to become payable at future dates, including the accrued portion of disability or preretirement death benefits which are expected to become payable. In addition, members who are not vested in any benefits as of June 30, 1983, are included in this calculation based on their current accrued benefits that are expected to become payable upon the occurrence of future events (termination, retirement, etc.) and the probability of becoming eligible for such benefits.

ACCRUED BENEFIT VALUES (Continued)

These present values represent the single sum values based on the actuarial assumptions described in Section V-B of this report. With the exception of the interest rate, where 7% has been assumed for purposes of the accrued benefit values, these are the same assumptions as used for determining the valuation results that produce the contribution requirements for this plan. The basic retirement benefit on which these calculations were made was the estimated benefit accrued to June 30, 1983, for each member based on the five-year average compensation, which was calculated from the actual compensation reported for the previous five school years.

	Old Coordinated Program	New Coordinated Program	Total
Present Value of Vested Benefits			
Retired (Including Beneficiaries)	$15,305,516	$ 940,033	$16,245,549
Terminated Deferred Vested Members	184,977	0	184,977
Active Members	16,313,195	48,432	16,361,627
Total, Vested Benefits	$31,803,688	$ 988,465	$32,792,153
Present Value of Nonvested Benefits	1,582,406	418,544	2,000,950
Total Present Value of Accrued Benefits	$33,386,094	$1,407,009	$34,793,103
Assets			
Actuarial Value	$41,675,465	$1,225,551	$42,901,016
Market Value	N/A	N/A	49,665,414

Changes in Value

Since the actuarial valuation as of June 30, 1982, there have been no changes in the actuarial assumptions or plan provisions. The change in the accrued benefit values between the June 30, 1982, and June 30, 1983, calculation dates was an increase of $3,105,315 as shown below:

Present Value of All Accrued Benefits

June 30, 1983	$34,793,103
June 30, 1982	31,687,788
Increase	$ 3,105,315

PERSONNEL INVENTORY

The following tables show the changes that occurred in the active and retired membership from June 30, 1982, to June 30, 1983. The following pages provide more information pertaining to these members.

Active Members, June 30, 1982	1,173
New Entrants	50
Total	1,223
Separations from Active Service:	
Refund of Contributions	68
Separation With Deferred Annuity	1
Separation Without Refundment or Deferred Annuity	0
Disability	3
Death	1
Service Retirement	31
Total Separations	104
Active Members, June 30, 1983	1,119

	Number	Annual Benefits
Service Retirements as of June 30, 1982	503	$1,958,985
New Retirements	42	251,630
Total	545	$2,210,615
Terminations:		
Death	19	$ 56,652
Other	0	56,584*
Total	19	$ 113,236
Service Retirements as of June 30, 1983	526	$2,097,379
Disability Retirements as of June 30, 1982	5	$ 16,249
New Retirements	3	13,480
Total	8	$ 29,729
Terminations	0	0
Disability Retirements as of June 30, 1983	8	$ 29,729
Beneficiaries as of June 30, 1982	23	$ 57,754
New Entrants	1	2,301
Total	24	$ 60,055
Terminations	1	4,223
Beneficiaries as of June 30, 1983	23	$ 55,832

*Reflects reduction to age 62 benefit under Social Security adjustment option.

Active Membership Characteristics

There were 1,119 active members in the personnel data submitted as of June 30, 1983. Included in this total are 27 members who were on leave of absence. As of June 30, 1983, 86 members are participating in the New Coordinated Program and 1,033 members are participating in the Old Coordinated Program. Shown below are the personnel characteristics of the 1,119 members. The average age is computed to years and completed months on the valuation date and the average service is the number of years and months from the date of appointment to the valuation date. The average compensation during the 1982-1983 school year is estimated from the actual member contributions during that period.

Number	1,119
Average Age	43.4
Average Service	12.6
Average Age at Hire	30.8
Total Compensation	$25,753,810
Average Compensation	$ 23,015

Distribution of Active Members

Page IV-4 shows the distribution of active members by age last birthday and completed years of service on June 30, 1983. A key showing the contents of the age and service breakdown is shown in the upper right hand corner of the page. All members hired at the same age lie along the same diagonal line.

Several observations can be made by the use of these charts:

- the number of members who will become eligible for early or normal retirement benefits in the next few years
- the number of members who will reach the vesting requirements in the next few years
- number of members effected by changes in other benefits related to service (e.g., additional benefits for those with certain minimum service)
- number of hires per year for all past years who have remained with the School District and hiring patterns by age of hire
- some idea of median age and service figures that averages do not take into account.

Distribution of Active Members (Continued)

Supplementing these age/service distributions are two sets of graphs. The first graph (on page IV-5) illustrates the distribution of these members by five-year age groups, showing the average service and compensation for each group, and indicates separately the number of members, average service and average compensation for each age 55 and over.

The second graph (on page IV-6) shows the percentage of active members age 55 and over by expected service at age 65 classifications. This second graph can assist in reviewing the level of retirement benefits these individuals will receive at retirement.

The last graph (on page IV-7) illustrates the movement of average compensation by five-year age groups from 1982 to 1983. Only members who were active in both 1982 and 1983 are included in the graph. The solid line illustrates the "expected" compensation level for 1983 based on the actuarial assumption for salary increases.

Retired Members Information

There were 557 retired members in the personnel data submitted as of June 30, 1983. These members and their annual benefits can be summarized as follows:

	Number	Annual Benefits
Service Retirements		
Males	118	$ 601,623
Females	408	1,495,756
Total	526	$2,097,379
Disability Retirements		
Males	4	$ 17,808
Females	4	11,921
Total	8	$ 29,729
Beneficiaries (All Females)	23	55,832
Total All Retirements		
Males	122	$ 619,431
Females	435	1,563,509
Total	557	$2,182,940

In addition, there were 27 members who resigned and elected a deferred annuity and 23 members who have repaid their contribution to reinstate prior service years.

Distribution of Pensioners

The graph on page IV-8 shows the distribution of the 526 service retirements by age last birthday and completed years since retirement as of June 30, 1983.

DISTRIBUTION OF PERSONNEL BY AGE AND YEARS OF SERVICE

DULUTH TEACHERS' RETIREMENT FUND ASSOCIATION ACTIVE MEMBERS

- THIS DISTRIBUTION SHOWS PERSONNEL BY AGE LAST BIRTHDAY AND COMPLETED YEARS OF SERVICE AS OF 07/01/83. FOR INSTANCE, THE CELL AT AGE 23 AND 1 YEAR OF SERVICE CONTAINS 9 EMPLOYEES.
- INDIVIDUAL CAREERS PROGRESS ALONG A DIAGONAL (STAIR-STEP) LINE; E.G., ALL EMPLOYEES HIRED AT AGE 25 APPEAR ON THE DIAGONAL WHICH STARTS AT AGE 25 WITH 0 SERVICE AND RUNS THROUGH 26 AND 1, 27 AND 2, ETC.
- THE AVERAGE AGE OF THIS GROUP IS 43.4 AND THE AVERAGE SERVICE IS 12.6.

YEARS OF SERVICE

AGE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40+	M	F	T
15																																												
16																																												
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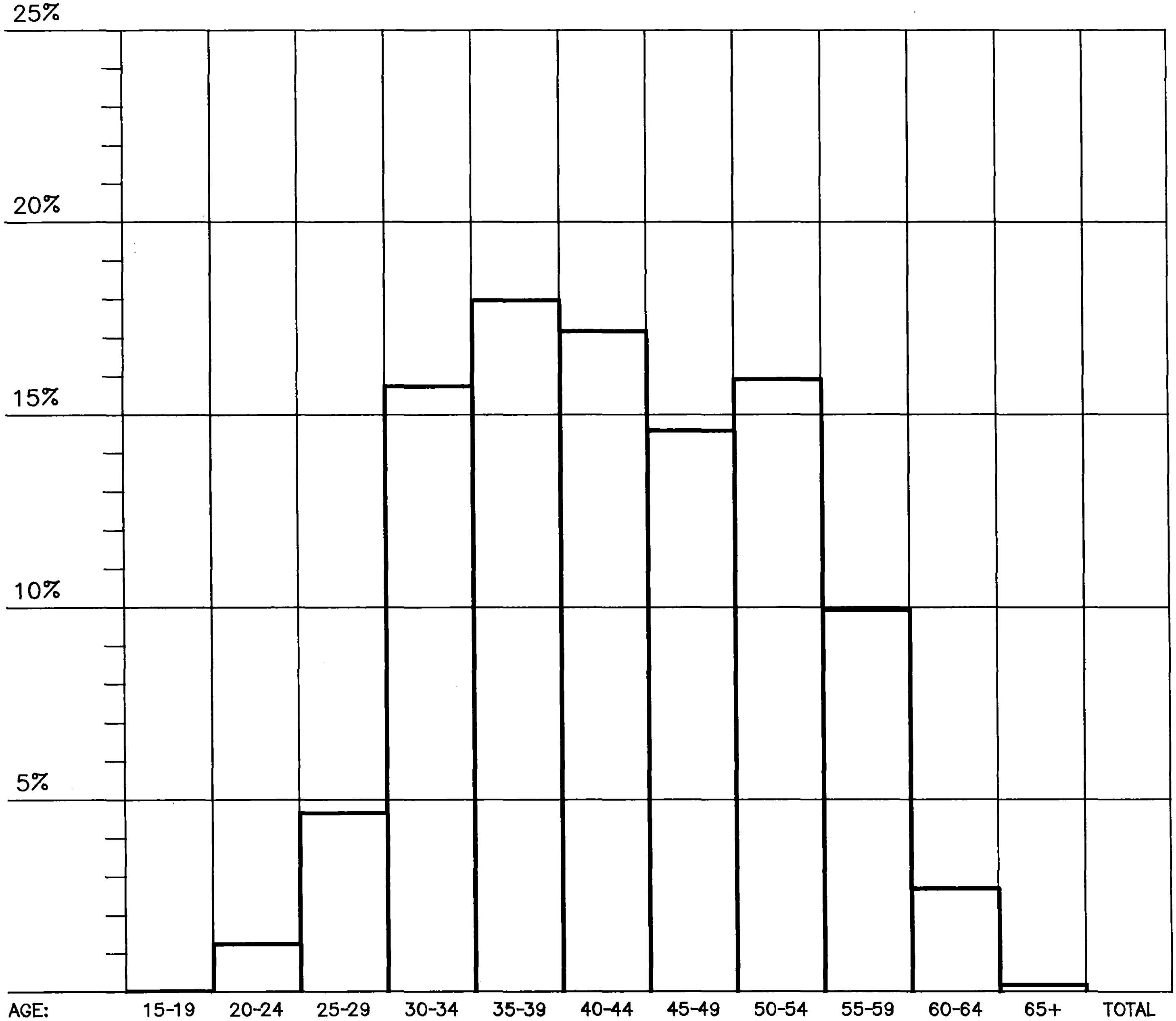
18																																												
19																																												
20																																												
21																																												
22	1	1																																								1	1	2
23	1	9			1																																					2	9	11
24		1																																									1	1
25		1	2		1																																					1	3	4
26		2	2	1	1																																						6	6
27	2	2	1	1																																						1	5	6
28		2	3	6	6	2																																				6	13	19
29	1		2	3	6	2	2	1																																		3	14	17
30	29		1	4	5	1	3	4			1																															17	31	48
31	1	2	2	2	3	2	4	3	3	2																																9	15	24
32	1		2	4	1	2	3	2	4	13	5																															9	28	37
33	1	4	1	3	2	1	2	2	3	4	7	3	2																													10	25	35
34	2	1		1		1	5	3	1	2	6	9	1																													19	13	32
35	2	1	3	2	5	1	1	1	1	5	6	3	5	4																												19	21	40
36		2	2	3	6		1	1	1	2	3	10	2	5	1																											15	24	39
37			2	1	1		4	1	4	2	2	4	1	1	4	2																										13	16	29
38	1		4		4	1	1	2			3	4	3	4	8	13	2																									26	24	50
39	1		1	1	3	2	3	1	1	2	3	6	2	5	4	2	4	2																								24	19	43
40			1	1	3	2	4	1	1	3	7	2	2	6	3	6	1	6	1																							27	23	50
41	2	2		4	1	1	4	1	1	1	1	1	3	3	5	2	2	1	3	1																						16	23	39
42		1		1	2		3	2	2	1	3	2	2	1	6	1	2	2	1	1	1																					19	15	34
43				2	2			1		1	2	1	7	2	4		2	1	2	4	3	2																				23	13	36
44					2	1	2		3	1	3	1	1	3	3	4	1	4		2		2																				16	17	33
45		2		1	2	1			1	2	2	1	2	3	2	3	2	1	1	1		2	1	2																		16	16	32
46			1		1	1	1	2				1	1	1	2	3	2	1	1		4	2		3																		12	15	27
47	2		1	1		1	1	2	1	3	1	2		6	1	2	1	1	1	1	2	4	1																			18	17	35
48	1			2	2		1	2	1		2	1	2		4	3		3		2		2		5	1	1																19	16	35
49								1		1	3	3	3	1	1	2		1	1	4	1	6	1	1	1	2		1														19	15	34
50						1	1		2	1	2		1	1	2	2	4		1	3	1	2	3	2	1		1	1														17	15	32
51				1				1		2	2	1	3				2		2	2	2		2	2	1	3			1	1												16	12	28
52	2	1			1	1	1	1			4		3	3	1	2	1	2	1		2	1		4	3	6	1	1														16	26	42
53					2			1	2		1	1	3	2	3	3	1	2		3	1	1	1	2	2	1		2	1	1												22	14	36
54							2			1	2		1	1	3	1	2		1	1	1	3	1	2	3	2	6	2	1	2	1		1									27	13	40
55						1	1		1				1	1	5	3	1		1	2	2		1	3	1			1	1	1		1										13	15	28
56							1		1	1				1	4	1	2	1		2				1	1	2			3		1	1		1	1							16	9	25
57							1				2	1	1	3	1				1			2	1		1	1	1	1	1		1	1										12	8	20
58											1		1				1		1	1		2	1			1			1	2		1	2									10	5	15
59							1				1		1	2	1	2	1		1	3	2		1	1			1	2		1	1			1								13	10	23
60							1		1		1	1	1		3				1	1	1																					4	7	11
61		1					1								1						1			1	1						1				1							5	3	8
62												1	1			1		1					2	2																		2	6	8
63											1			1																													2	2
64																1																											1	1
65						1																																					1	1
66														1																													1	1
67																																												
68																																												
69																																												
70+																																												
M	14	9	13	16	6	5	13	7	9	26	29	28	32	33	35	38	20	18	16	23	15	24	13	24	12	13	8	10	7	5	2	4	3	2	1									533
F	36	26	18	29	57	21	42	29	26	24	48	31	24	28	37	21	14	11	5	11	9	7	3	7	4	6	2	1	2	3	3				1									586
T	50	35	31	45	63	26	55	36	35	50	77	59	56	61	72	59	34	29	21	34	24	31	16	31	16	19	10	11	9	8	5	4	3	2	2									1,119

SERVICE

DISTRIBUTION OF PERSONNEL BY AGE

DULUTH TEACHERS' RETIREMENT FUND ASSOCIATION
ACTIVE MEMBERS



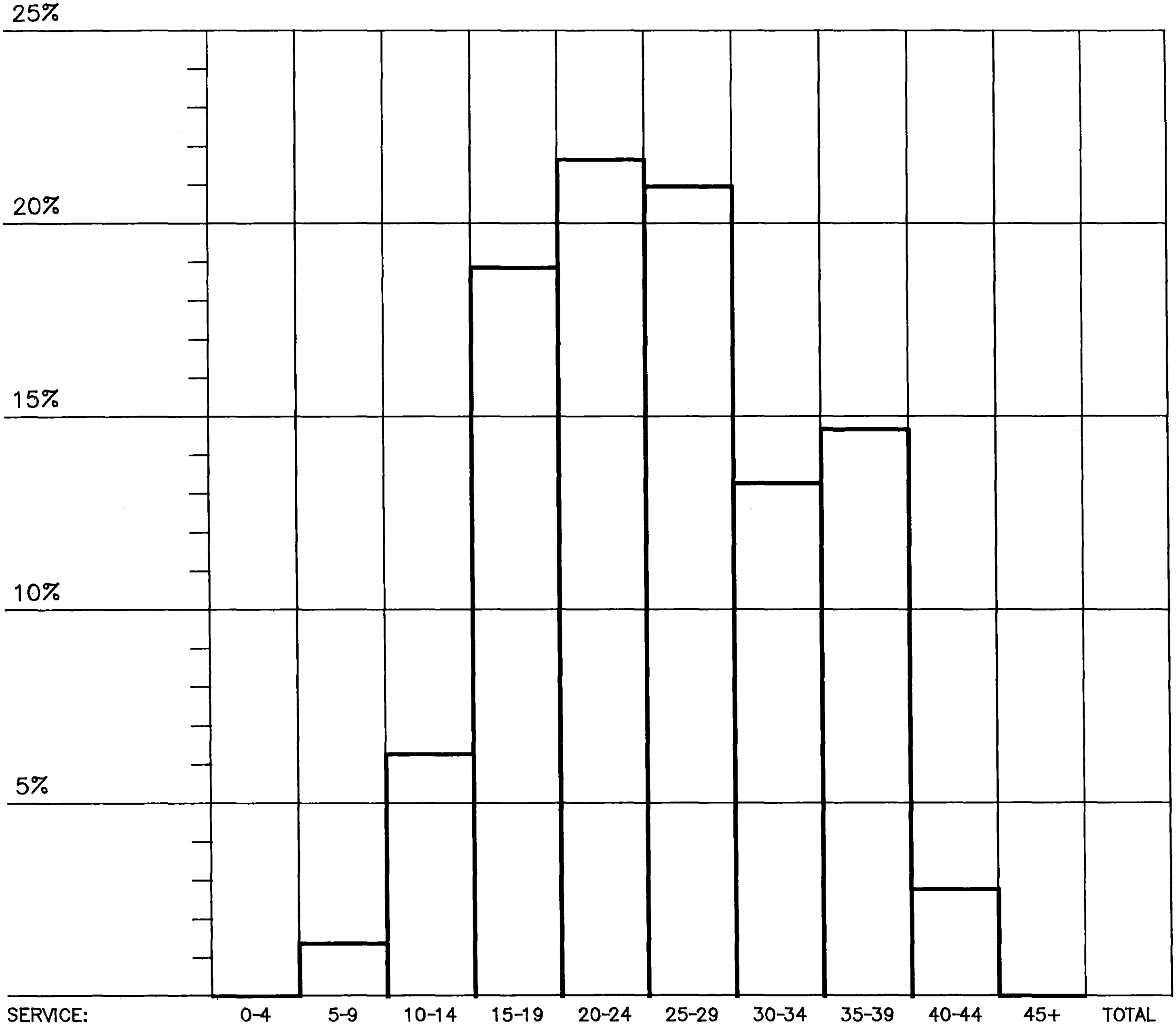
AGE:	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+	TOTAL
NUMBER	0	14	52	176	201	192	163	178	111	30	2	1,119
AVERAGE PAY	0	7,730	11,752	16,380	22,329	24,123	25,640	27,877	28,257	23,682	21,603	23,015
AVERAGE SERVICE	0.0	1.7	3.6	6.2	10.1	12.3	14.9	18.2	20.3	16.7	9.3	12.6

DETAIL OF EMPLOYEES 55 & OVER

AGE:	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70+
NUMBER	28	25	20	15	23	11	8	8	2	1	1	1	0	0	0	0
AVERAGE PAY	27,782	27,800	27,388	29,195	29,475	22,493	22,894	25,210	28,322	21,554	15,035	28,171	0	0	0	0
AVERAGE SERVICE	18.6	20.8	19.5	23.7	20.1	13.9	19.7	18.9	12.3	15.8	5.3	13.3	0.0	0.0	0.0	0.0

DISTRIBUTION OF PERSONNEL BY EXPECTED SERVICE AT AGE 65
(BASED UPON PERSONNEL AGE 55 AND OVER)

DULUTH TEACHERS' RETIREMENT FUND ASSOCIATION
ACTIVE MEMBERS

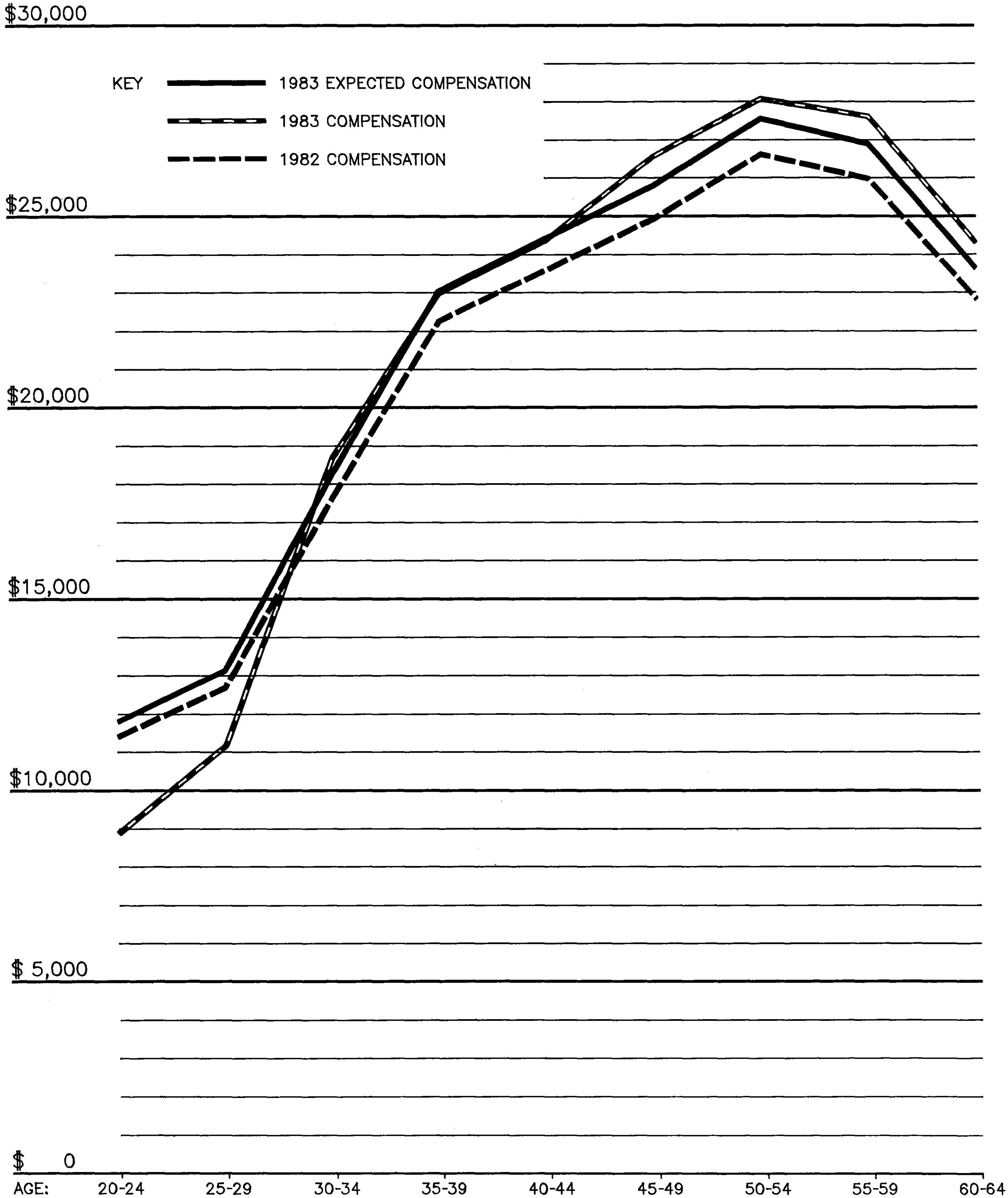


SERVICE:	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	TOTAL
NUMBER	0	2	9	27	31	30	19	21	4	0	143
AVERAGE PAY	0	8,465	21,008	25,152	27,046	28,088	29,523	30,580	30,225	0	27,204
AVERAGE SERVICE AT AGE 65 *	0.0	5.2	13.0	17.9	23.2	27.2	32.9	37.5	41.7	0.0	26.1

* OR CURRENT AGE IF OLDER

AVERAGE COMPENSATION BY AGE

DULUTH TEACHERS' RETIREMENT FUND ASSOCIATION
INCLUDES MEMBERS WHO WERE ACTIVE
BOTH JUNE 30, 1982 AND JUNE 30, 1983



DISTRIBUTION OF PERSONNEL BY AGE AND YEARS SINCE RETIREMENT

DULUTH TEACHERS' RETIREMENT FUND ASSOCIATION SERVICE RETIREMENTS

- THIS DISTRIBUTION SHOWS PERSONNEL BY AGE LAST BIRTHDAY AND COMPLETED YEARS SINCE RETIREMENT AS OF 07/01/83. FOR INSTANCE, THE CELL AT AGE 56 AND 1 YEAR SINCE RETIREMENT CONTAINS 2 RETIREES.
- INDIVIDUALS RETIRING AT THE SAME AGE PROGRESS ALONG A DIAGONAL (STAIR-STEP) LINE; E.G., ALL EMPLOYEES RETIRING AT AGE 65 APPEAR ON THE DIAGONAL WHICH STARTS AT AGE 65 WITH 0 YEARS SINCE RETIREMENT AND RUNS THROUGH 66 AND 1, 67 AND 2, ETC.

YEARS SINCE RETIREMENT

AGE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40+	M	F	T
45																																												
46																																												
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48																																												
49																																												
50																																												
51																																												
52																																												
53																																												
54																																												
55	3																																									1	2	3
56	3	2																																									5	5
57	1	2	3																																							4	2	6
58	4	3		1																																						5	3	8
59	1	1	2		3																																					2	5	7
60	3	5				1																																				1	8	9
61	6	1	2	4	2																																					7	8	15
62	8	1	4			1	1	1																																		11	5	16
63	4	7	3	1	1	1	1	1																																		4	15	19
64	2	3	2	4		1	1	3																																		8	8	16
65	4	3	2	5	3			2																																		5	14	19
66	1	4	3	2	2	2	5	1	1	1																																8	14	22
67		1	5	1		3	4		1																																	3	12	15
68				3	2	2	3	5	2		1	2																														4	16	20
69			1		1	4	4	4	3	1																																2	16	18
70						8	4	1	4		2																															2	17	19
71							6	2	2		2	1	1																													5	9	14
72							1	4	2	4	7			2																												3	17	20
73								1	6	7	2	5	1	3		1			1																							7	20	27
74										8	5	6	3	3																												6	19	25
75										4	8	3	3	2	2	2																										3	21	24
76											9	2	3	2	1																											3	14	17
77										1	1	4	4	4		1		2																								2	15	17
78												4	3	1	3	5	1																									5	12	17
79												2	3	3	3	1	4	3	1	1																						2	19	21
80													6	2	1	3	3		1							1																5	12	17
81														2	1	2	1	2	1	1	1																					1	10	11
82															5		2	1	1		1																					2	8	10
83																2	5	2	1	1	2	1																				1	13	14
84																	3		1	1	2				1		1																9	9
85																		4			4									1												1	8	9
86																			4		3	1	2	1			1		1													1	12	13
87																				2	1	2				1																1	5	6
88																					4			1																		1	4	5
89																					1			1	1		1	1			1			1									7	7
90																						3		1	1						1				1							1	6	7
91																									2	1			1		1				1	1							7	7
92																									1											1							2	2
93																																												
94																											1				1		1						1				4	4
95																																			1								1	1
96																																												
97																														1						1						1	1	2
98																															1												1	1
99																																												
100+																																	1								1		2	2
M	16	15	15	9	4	3	2	5	3	8	10	5	7	2	6		1	1	1	1	2	1								1												118		
F	24	18	12	12	10	20	28	20	18	18	27	24	20	22	10	17	18	13	10	5	17	6	2	4	6	3	4	1	2	1	5		2	1	3	3			1		1		408	
T	40	33	27	21	14	23	30	25	21	26	37	29	27	24	16	17	19	14	11	6	19	7	2	4	6	3	4	1	2	2	5		2	1	3	3			1		1			526

YEARS

PLAN PROVISIONS

Effective Date	December 31, 1957. Most recent amendments effective July 1, 1981.
Coverage	Any teacher in the employ of the Board of Education of the City of Duluth who elects to make the required contributions. Includes the superintendent, supervisors, principals, instructors and association staff members.
Active Member	A member who is making contributions under this Plan.
Inactive Member	A member who is no longer making contributions under the Plan and who has not withdrawn his contributions.
Credited Service	Service as an employee of the school district for which required contributions are made to this Plan. One full year of credit shall be given for each full school year but not more than one year of credit shall be given for any 12-month period. Credit for part of a year shall be in proportion to the required contributions for a full school year, computed to the nearest tenth of a year.
Final Average Salary	Average annual cash remuneration, including any such cash remuneration for assignment to extra-curricular services, during the five school years yielding the highest average.

Normal Retirement Benefit

Old Coordinated Program

Eligibility	Age 60.

Normal Retirement Benefit (Continued)

Amount

Annual normal retirement benefit equal to 1.25% of the member's final average salary multiplied by the number of years of credited service.

The minimum annual normal retirement benefit to a member who was a member on June 30, 1971, consists of:

(i) An annuity of equivalent actuarial value to two times the accumulated regular contributions to the member; plus

(ii) An annuity equal to 20% of the annuity determined in (i) above.

New Coordinated Program

Eligibility

Age 65, or age 62 if the member has completed 30 years of service.

Amount

Annual normal retirement benefit equal to 1.0% per year for the first 10 years plus 1.5% for each year in excess of 10 years times the member's final average salary.

Early Retirement Benefit

Old Coordinated Program

Eligibility

Age 55 and ten years of credited service.

Amount

A deferred benefit commencing at age 60 equal to the amount computed as a normal retirement benefit on the basis of the final average compensation and years of credited service at the time of the retirement; in lieu of such deferred benefit an immediate benefit of equivalent actuarial value.

Early Retirement Benefit (Continued)

New Coordinated Program

Eligibility	Age 55 and ten years of credited service.
Amount	A deferred benefit commencing at age 65 equal to the amount computed as a normal retirement benefit on the basis of the final average compensation and years of credited service at the time of retirement; The benefit is reduced 1/2 of 1% for each month the benefit commences before age 65 unless the member has completed 30 years of service, then the reduction will be for each month before age 62.

Disability Retirement

Old Coordinated Program

Eligibility	Five or more years of credited service and permanently incapacitated for teaching service.
Amount	Equal to the normal retirement benefit determined on the basis of the final average salary and years of credited service at the time of the disability.

New Coordinated Program

Eligibility	Age 50 and five or more years of credited service, or ten years of credited service, and totally and permanently disabled.
Amount	Equal to the normal retirement benefit determined on the basis of the final average salary and years of credited service at the time of disability.

Vested Retirement

Old Coordinated Program

Eligibility	Ten or more years of credited service if member does not elect to withdraw the accumulated contributions.
Amount	Deferred benefit commencing at age 60 or the first day of the month following receipt of the application for the benefit, whichever is later, and is equal to the amount computed as a normal retirement benefit on the basis of the final average salary and years of credited service at the time of termination. In lieu of the deferred benefit, a member who has attained age 55 may elect to receive an immediate allowance of equivalent actuarial value. In lieu of a Vested Retirement Benefit, any member may elect to withdraw the accumulated contributions.

New Coordinated Program

Eligibility	Ten or more years of credited service if member does not elect to withdraw the accumulated contributions.
Amount	Deferred benefit commencing at age 65 or the first day of the month following receipt of the application for the benefit, whichever is later, and is equal to the amount computed as a normal retirement benefit on the basis of final average salary and years of credited service at the time of termination. In lieu of the deferred benefit, a member who has attained age 55 may elect to receive an immediate allowance of equivalent actuarial value. In lieu of a Vested Retirement Benefit, any member may elect to withdraw the accumulated contributions.

Death Benefit--Before Retirement

Old Coordinated Program

a) Two times the member's accumulated regular contributions shall be paid to the designated beneficiary or estate;

b) if the deceased member had

completed ten or more years of credited service and had designated as his beneficiary his surviving spouse to whom he had been married for at least three years, the surviving spouse may elect, in lieu of the lump sum payment, an immediate or deferred annuity of equivalent actuarial value to the member's accumulated regular contributions and the matching funds of the district, increased by 20%;

c) if the deceased member had attained age 55 and completed 10 years of service, in lieu of b), the surviving spouse may elect to receive an annuity equal to the remainder of the equivalent actuarial value of the 100% joint and survivor annuity which the member would have been entitled to had the member retired on the date of his death.

New Coordinated Program

a) the member's accumulated contributions with interest at 3-1/2% interest shall be paid to the members designated beneficiary or estate;

b) if the deceased member had attained age 55 and completed 20 years of service or completed 30 years of service, the surviving spouse shall receive an annuity equal to the remainder of the equivalent actuarial value of the 100% joint and survivor annuity which the member would have been entitled to had the member retired on the date of his death.

Death Benefit--After Retirement

Old Coordinated and New Coordinated Program

The excess, if any, of a member's accumulated regular contributions at retirement over the total amount received as retirement allowance payments is paid in a lump sum to his designated beneficiary or estate provided that he has not elected an optional benefit that has become effective. If an option has become effective, the terms of the option are to govern.

Refund of Contributions

Upon termination of employment for reasons other than death or retirement, a refund of the accumulated member contributions is payable in lieu of any other benefits from the Association.

Upon the death of a terminated member entitled to a vested retirement benefit, whose death occurs prior to the commencement of the retirement allowance, the amount of the members accumulated contributions at the time of death is payable in a single sum.

Optional Benefits

Normal, early or disability retirement benefits may be paid in one of the following optional forms of equivalent actuarial value:

Option 1. A reduced retirement benefit payable during the member's life, with the provision that after death it is paid to the member's contingent annuitant for life.

Option 2. A reduced retirement benefit payable during the member's life, with the provision that after death one-half of such reduced allowance is paid to the member's contingent annuitant for life.

Option 3. A reduced retirement allowance payable during the member's life, with the provision that if death occurs within a period of five, ten, fifteen or twenty years, the reduced benefit is continued for the balance of the designated period.

Annuity Values	Effective July 1, 1969, annuity values for converting a member's accumulated contributions to monthly payments, where applicable, are to be based on an interest rate of 5% per annum, compounded annually.
Contributions	Members: 4.50% of annual salary. State of Minnesota: 5.79% of salary of active members.

ACTUARIAL ASSUMPTIONS
(Adopted effective June 30, 1982)

Actuarial Method	Entry Age Cost Method with normal cost determined as a level percentage of current and future compensation.
Investment Return	Five percent compounded annually.
Salary Increases	Three and one-half percent per year until retirement.
Retirement Age	
Old Coordinated Program	Age 63 (at present age if greater than age 63).
New Coordinated Program	Age 63 with 30 years of service, otherwise age 65.
Actuarial Value of Assets	The basis for determining the actuarial value of assets was changed with the June 30, 1978, valuation, using as a starting value the actuarial value of assets developed from the prior basis in the June 30, 1977, valuation report. Under the new basis, the expected value of assets is calculated starting with the prior year's actuarial value, adding in the expected investment return at the valuation interest rate, adding the mandatory employee and State of Minnesota contributions and subtracting benefit payments. Both contributions and benefit payments are adjusted for interest to reflect the estimated timing of the amounts into and out of the fund. The actuarial value then equals the expected value plus 20% of the difference between market value and the expected value.
Mortality	
Nondisabled Lives	See page V-B-3 (UP-1984 Mortality Table set back two years).
Disabled Lives	The 1956 Disability Mortality Table.

ACTUARIAL ASSUMPTIONS (Continued)

Withdrawal	See page V-B-3.
Disability	See page V-B-3.
Percent Married	80% of all active members are assumed to be married at the time of death before retirement. The husband is assumed to be three years older than his spouse.
Special Consideration	Members in the old coordinated program who were hired before age 33 are assumed to receive their retirement benefits from the new coordinated program.
Expenses	Actual expenses for previous year (excluding investment management fees) as a percent of valuation payroll.

ACTUARIAL ASSUMPTIONS (Continued)
Probability of Withdrawal, Disability and Death

Age	Withdrawal	Disability	Death	Age	Withdrawal	Disability	Death
18	.2000	.0028	.0014	53	.0067	.0074	.0062
19	.2000	.0028	.0014	54	.0040	.0080	.0069
20	.2000	.0028	.0014	55	.0013	.0087	.0075
21	.1931	.0028	.0014	56	.0000	.0095	.0083
22	.1731	.0028	.0013	57	.0000	.0104	.0090
23	.1532	.0028	.0013	58	.0000	.0114	.0099
24	.1332	.0028	.0012	59	.0000	.0125	.0108
25	.1132	.0028	.0012	60	.0000	.0136	.0119
26	.0932	.0028	.0011	61	.0000	.0149	.0130
27	.0732	.0028	.0011	62	.0000	.0163	.0142
28	.0703	.0028	.0011	63	.0000	.0000	.0155
29	.0673	.0028	.0011	64	.0000	.0000	.0170
30	.0643	.0028	.0011	65	.0000	.0000	.0187
31	.0612	.0028	.0011	66	.0000	.0000	.0205
32	.0582	.0028	.0011	67	.0000	.0000	.0226
33	.0552	.0028	.0011	68	.0000	.0000	.0248
34	.0522	.0028	.0012	69	.0000	.0000	.0272
35	.0491	.0029	.0012	70	.0000	.0000	.0296
36	.0461	.0029	.0013	71	.0000	.0000	.0321
37	.0430	.0030	.0014	72	.0000	.0000	.0347
38	.0409	.0031	.0015	73	.0000	.0000	.0377
39	.0389	.0031	.0016	74	.0000	.0000	.0409
40	.0368	.0032	.0018	75	.0000	.0000	.0445
41	.0347	.0033	.0019	76	.0000	.0000	.0485
42	.0325	.0035	.0021	77	.0000	.0000	.0529
43	.0304	.0037	.0023	78	.0000	.0000	.0578
44	.0282	.0038	.0026	79	.0000	.0000	.0631
45	.0260	.0041	.0028	80	.0000	.0000	.0686
46	.0237	.0043	.0031	81	.0000	.0000	.0746
47	.0214	.0046	.0034	82	.0000	.0000	.0813
48	.0191	.0049	.0038	85	.0000	.0000	.1043
49	.0167	.0053	.0042	90	.0000	.0000	.1551
50	.0143	.0057	.0046	95	.0000	.0000	.2330
51	.0118	.0062	.0051	100	.0000	.0000	.3495
52	.0092	.0068	.0056	105	.0000	.0000	.5243

Actuarial Status

Actuarial status is measured by comparing the value of the assets of the plan with the value of prospective payments to be made from the plan and determining the value of future contributions necessary to obtain actuarial balance of the plan. This may be expressed in an equation as follows:

Value of Prospective Payments from the Plan	less	Value of Assets of the Plan	equals	Value of Future Contributions

The value of prospective payments from the plan is called the present value of benefits in actuarial terminology. This value is determined by considering the provisions of the plan and known past and current personnel information, such as number of employees, their ages, and their compensation. To determine how many of the employees will become eligible for benefits in the future, what benefits will be paid, and how long benefits will be paid, it is necessary to make some forecasts, called actuarial assumptions, as to when people will retire, who will die and leave before retirement, how long people will live after retirement, etc. Actuarial assumptions are made on the basis of past experience, both specific and general, and expected trends.

The value of assets of the plan is essentially a financial valuation. Certain types of assets may be valued on different bases. For example, common stocks might be valued at market, at cost, or on some other basis.

Actuarial Method

Valuations of the plan use the Entry Age Normal Cost Method of allocating future contributions into portions attributable to past and to current and future employment of employees.

Under this actuarial method, the value of future contributions attributable to current and future employment of employees is first determined. This is called present value of future normal costs. The following steps indicate how this is determined for benefits expected to be paid upon normal retirement.

-- Expected pension benefit at normal retirement is determined for each employee.

-- The normal cost is determined for each employee computed as a level percentage of his pay and assuming that such percentage of pay is paid from the employee's date of hire to his normal retirement. This normal cost is determined so that its accumulated value at normal retirement is sufficient to provide the expected pension benefits. (The sum of the normal costs for all employees determines the normal cost of the plan.)

-- The value of future payments of normal cost is determined for each employee, based on the number of years with the Association to normal retirement date.

-- The sum of such values for all employees determines the present value of future normal costs.

In general, the calculations for any disability benefits, vested termination benefits and death benefits follow the above procedure taking into consideration that there is no single time at which the employee is entitled to the benefits. Rather, each age prior to normal retirement has associated with it appropriate probabilities of disability, termination, and death.

The portion of the present value of future benefits which is not covered by future normal costs is called the accrued liability. It is the amount to which past normal costs would have accumulated had they been paid each year in the employee's career and had all assumptions been realized. The unfunded accrued liability is thus equal to the accrued liability less the accumulated assets.

SURVEY ANALYSIS

Compensation Increases

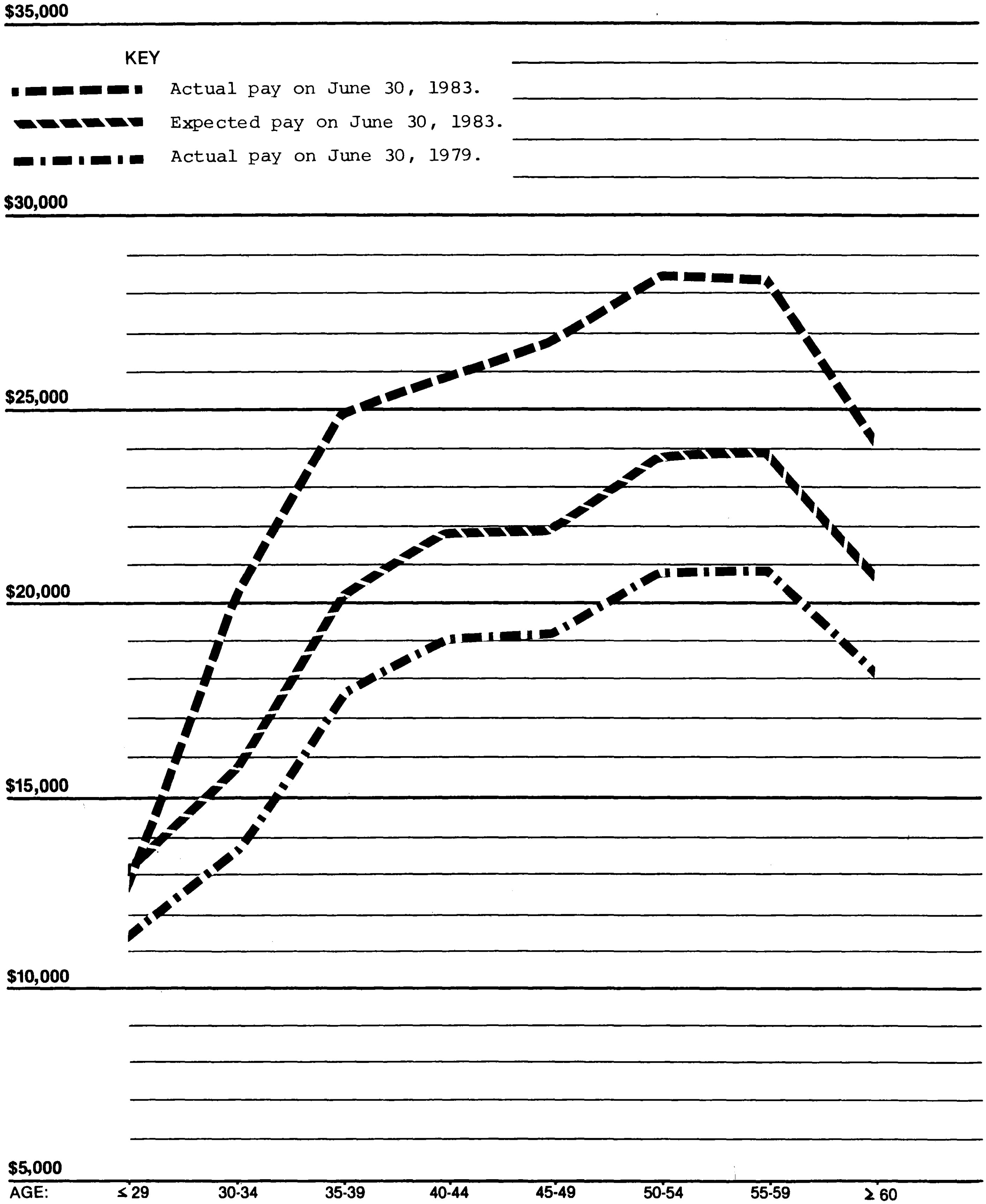
During the four years ended June 30, 1983, compensation increases substantially exceeded the 3.5% annual rate assumption required by Minnesota statutes. This assumption has consistently been the major source of actuarial loss. The following table indicates the average compensation for active members on each actuarial valuation date since the last survey. These amounts reflect the actual compensation earned in the prior year.

Date of Valuation	Average Compensation
June 30, 1980	$18,334
June 30, 1981	19,725
June 30, 1982	21,781
June 30, 1983	23,015

Another method for examining the changes in compensation level is shown on the next page. Page V-C-2 shows, for each five year age group, the actual average pay on June 30, 1979, the expected average pay on June 30, 1983, and the actual average pay on June 30, 1983, for those members who were active on both June 30, 1979, and June 30, 1983. The effective annual rate of increase over the four year period for these members is as follows:

Age on June 30, 1983	Average Annual Compensation Increase
29 or less	2.8%
30 - 34	9.9
35 - 39	9.1
40 - 44	8.1
45 - 49	8.8
50 - 54	8.2
55 - 59	8.0
60 and over	7.6

AVERAGE COMPENSATION BY AGE

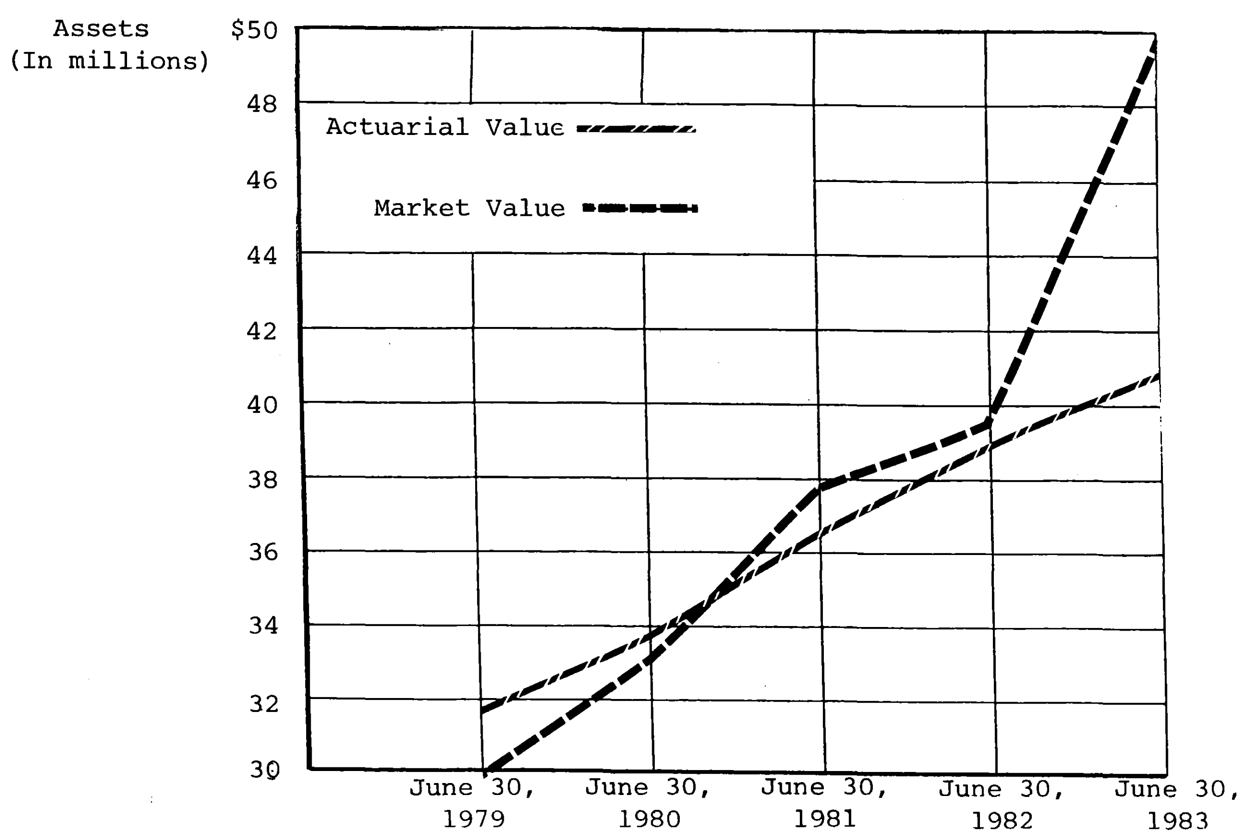


Investment Performance

The 5% assumed interest rate is required by Minnesota statutes. The asset valuation method was changed effective June 30, 1978, to a method that expects a 5% growth in the fund each year and then adjusts this expected amount 20% toward the market value. At that time, it was expected that the asset experience would produce actuarial losses until the actuarial value of assets exceeded the market value. This was the experience to June 30, 1981, when the market value exceeded the actuarial value for the first time producing an actuarial gain. Even in 1982, when the market value investment return was less than the 5% assumed, a small actuarial gain resulted. Over this period the annual market rate of return is as follows:

Period	Market Value Rate of Return
7/1/79-6/30/80	8.9%
7/1/80-6/30/81	12.2
7/1/81-6/30/82	2.1
7/1/82-6/30/83	25.9

The growth of the fund is illustrated in the graph below, showing the actual market value and the actuarial value of assets over the last five years.



Withdrawal Rates

The actual number of terminations between July 1, 1979, and June 30, 1983, for each five year age group is shown on the graph on the next page together with the expected number of terminations based on the current actuarial assumptions. The total number of terminations for all ages combined was 267 while the expected number of terminations on the current assumptions was 194. The graph indicates that the actual termination experience exceeded the expected rates for ages less than 33, but conforms very closely to the expected rates at ages greater than 33.

Mortality Rates - Before Retirement

The actual number of deaths between July 1, 1979, and June 30, 1983, among active members was nine. The expected number of deaths under the current actuarial assumptions was 17.

Mortality Rates - After Retirement

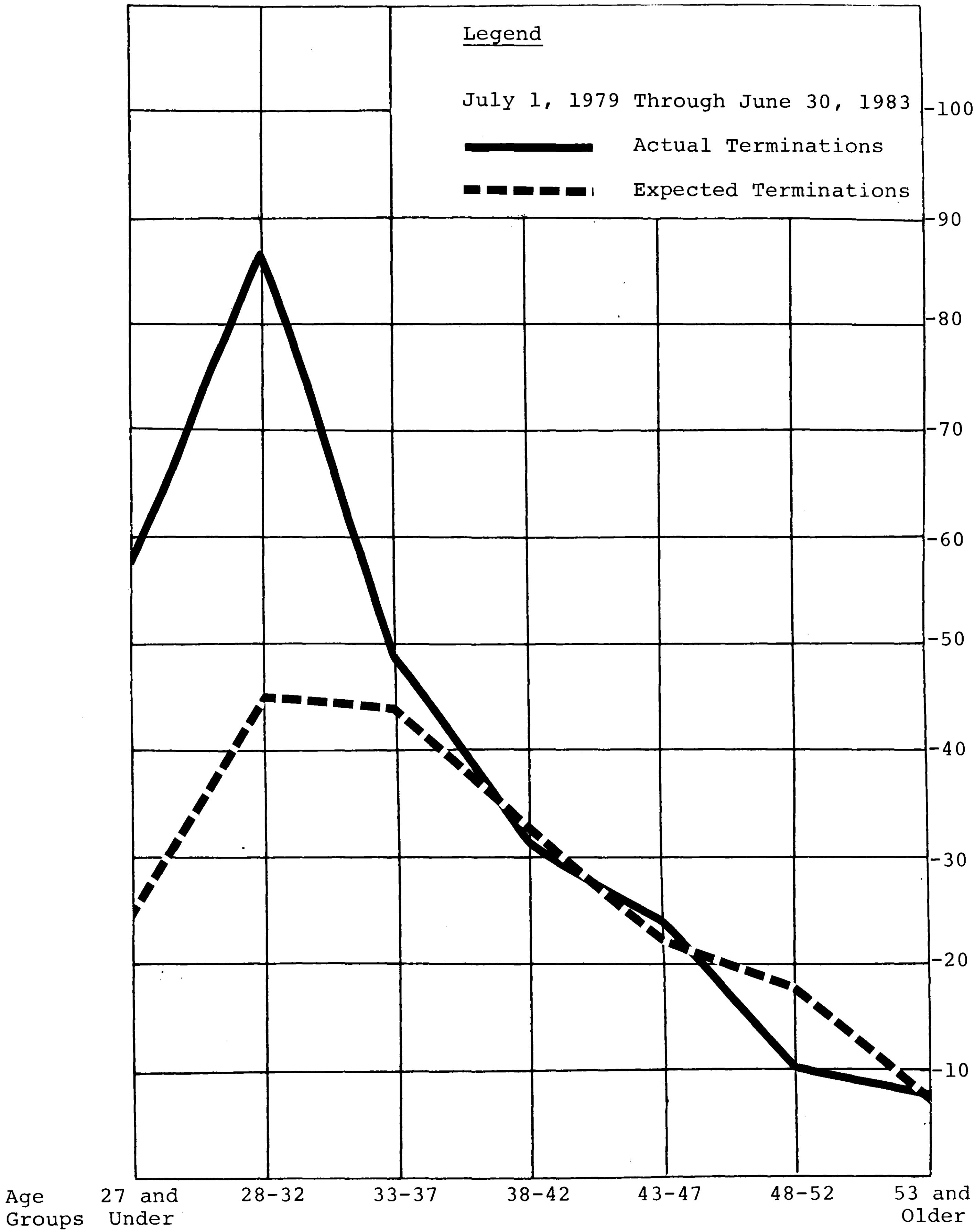
The actual number of deaths between July 1, 1979, and June 30, 1983, for each five year age group among service retirements is shown on the graph on page V-C-6 together with the expected number of deaths on the current actuarial assumptions. The total number of deaths for all ages combined was 67 while the expected number of deaths on the current assumptions was 99.

Average Ages

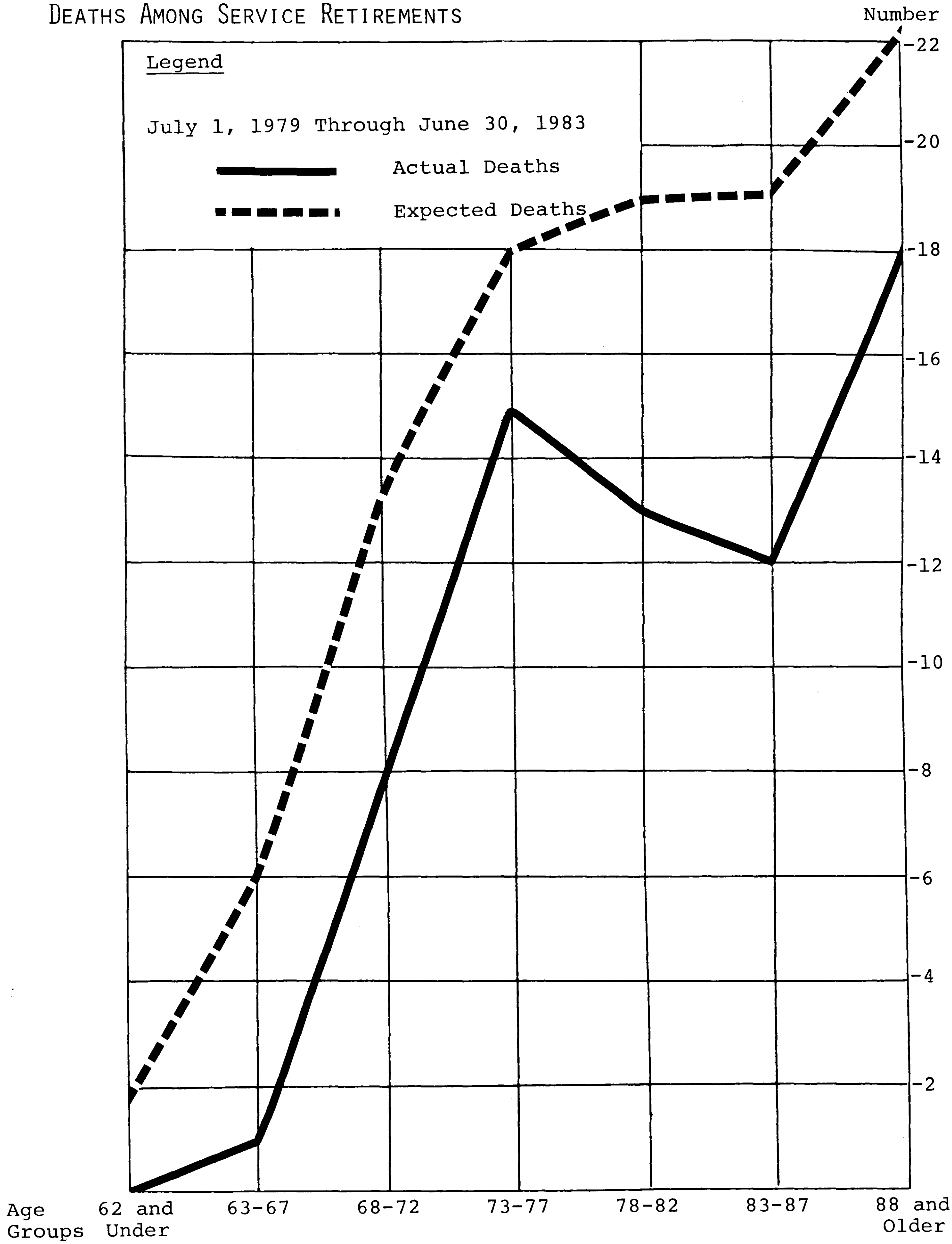
The following table shows the average entry age of new members and the average retirement age for service retirements from each valuation since the last survey. The distribution of age and years since retirement, shown on page IV-7, provides additional information as to the actual retirement experience and the number of retirees continuing to receive benefits.

Year	Average Entry Age	Average Retirement Age
July 1, 1979-June 30, 1980	32.4	62.0
July 1, 1980-June 30, 1981	32.9	62.1
July 1, 1981-June 30, 1982	28.2	62.1
July 1, 1982-June 30, 1983	32.7	61.5

TERMINATIONS OF ACTIVE MEMBERS



DEATHS AMONG SERVICE RETIREMENTS



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