TENNESSEE CONSOLIDATED RETIREMENT SYSTEM

VALUATION AND REPORT AS OF JULY 1, 2001

November 29, 2001

The Honorable Stephen D. Adams, Chairman
Board of Trustees
Tennessee Consolidated Retirement System
Nashville, Tennessee 37219

Dear Mr. Adams:

Submitted herewith are the results of an actuarial valuation of the Tennessee Consolidated Retirement System prepared as of July 1, 2001, pursuant to the provisions of TCA Section 8-34-506. Also included are the actuary's recommendations with respect to contributions by the employers.

We trust that this report will be helpful in formulation of policy with respect to the operation and financing of the System. We very much appreciate the opportunity to serve the Board of Trustees, and will be pleased to supplement this report in any way, as you request.

The staff of the Tennessee Consolidated Retirement System has been extremely helpful and cooperative in developing the information required for this valuation. Their cooperation has been greatly appreciated, and is hereby acknowledged.

Respectfully submitted,

Anthony S. Johnston, F.S.A.

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Enclosures

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A. INTRODUCTION

An actuarial valuation of the Tennessee Consolidated Retirement System was performed as of July 1, 2001. The purpose of the valuation was to determine the funding requirements of the various components of the System, with the intention that the funding requirements indicated by the valuation would be used as the basis for contributions commencing on July 1, 2002.

The Tennessee Consolidated Retirement System (TCRS) was established as of July 1, 1972 as a successor to the following superseded retirement systems:

Tennessee State Retirement System
Tennessee Teachers' Retirement System
Tennessee Judges Retirement System
Retirement System for County Paid Judges of Tennessee
Attorneys General Retirement System of Tennessee
Public Service Commissioners' Retirement System
Tennessee Retirement System for County Officials

As of the date of establishment, all members and beneficiaries of the superseded systems were covered under the Consolidated System. The assets of each superseded system were transferred to the credit of the Consolidated System, and no further contributions have been made to the superseded systems by either the members or the employers. Separate accounting is maintained under the Consolidated System for the assets and liabilities attributable to the various classes of members and beneficiaries. Benefits under the System are funded by contributions made by members and employers (including the State). The level of such contributions is determined biennially by an actuarial valuation. This report presents the results of the actuarial valuation of the System performed as of July 1, 2001.

The following sections of this report discuss the membership in the System as of the valuation date; the funding levels generated under the approach to funding previously adopted by the Board; the current financial status of the System as a whole and of each major subdivision of the System; an analysis of the factors causing change in the required contribution levels; the validity of the records on which the study was based; the benefits provided by current and superseded systems; and the data on which the valuation was based and the actuarial assumptions utilized in the valuation.

B. MEMBERSHIP

The statute which established the Tennessee Consolidated Retirement System in 1972 specified the three following classifications of employment:

Group I	Teachers and General Employees (State and Political Subdivisions)
Group II	State Policemen, Wildlife Officers, Firemen and Policemen
Group III	State Judges, County Judges, Attorneys General, County Officials, and Public Service Commissioners

Any person who was a member of a superseded system as of June 30, 1972 became a member of the Consolidated System on the date of establishment. Such a member could elect to remain covered by the benefit and contribution provisions of the superseded system of which he was a member, in which case he was classified as a "prior class member". If he did not so elect, he was classified as a member of Group I, Group II or Group III on the basis of his employment category.

Effective July 1, 1976, all new entrants to the System, without regard to their employment category, entered the System as Group I employees. Despite this change, several small groups (those previously classified as "Group III") are treated differently from the bulk of the general employees with respect to funding levels for various reasons.

Effective September 1, 1990, a new Group IV category became available to State Judges. State Judges previously participating in Group I or Group III became eligible to transfer to the new category, and those becoming State Judges on or after the effective date automatically enter Group IV.

The following tables show the number of active and retired members included in the July 1, 1999 and July 1, 2001 valuations.

THE NUMBER AND ANNUAL COMPENSATION OF
ACTIVE MEMBERS INCLUDED IN THE 1999 AND 2001 VALUATIONS

	Number		*Pct*	Compensation		*Pct*
GROUP	1999	2001	*Change*	1999	2001	*Change*
Group I						
Contributory Teachers	63,039	65,492	3.9%	2,343,473,025	2,560,094,101	9.2%
General Employees:						
State	59,704	59,772	0.1%	1,664,406,567	1,775,544,306	6.7%
University of Tennessee (TIAA)	911	712	(21.8%)	65,750,289	55,169,604	(16.1%)
Separately Funded Systems	505	516	2.2%	28,548,055	31,344,789	9.8%
Sub-Total	61,120	61,000	(0.2%)	1,758,704,911	1,862,058,699	5.9%
Political Subdivisions	64,778	68,914	6.4%	1,331,780,817	1,537,971,658	15.5%
Total - Group I	188,937	195,406	3.4%	5,433,958,753	5,960,124,458	9.7%
Group II						
State Policemen and Wildlife Officers	184	144	(21.7%)	8,945,029	7,607,885	(14.9%)
Firemen and Policemen	235	169	(28.1%)	9,582,411	7,621,877	(20.5%)
Total - Group II	419	313	(25.3%)	18,527,440	15,229,762	(17.8%)
Group III (including Superseded Systems)						
State Judges - Group III	2	2	--	201,264	208,968	3.8%
Attorneys General - Group III	7	5	(28.6%)	594,424	490,979	(17.4%)
County Judges - Group III	5	5	--	336,438	350,175	4.1%
County Officials - Group III	22	21	(4.5%)	1,083,639	1,103,793	1.9%
State Judges - Superseded	5	5	--	521,904	541,896	3.8%
Attorneys General - Superseded	10	7	(30.0%)	743,252	568,892	(23.5%)
County Judges - Superseded	2	1	(50.0%)	65,962	30,000	(54.5%)
County Officials - Superseded	14	12	(14.3%)	660,853	591,058	(10.6%)
Total - Group III	67	58	(13.4%)	4,207,736	3,885,761	(7.7%)
Group IV - Judges	169	169	--	17,080,354	17,807,046	4.3%
State - All Groups	124,579	126,863	1.8%	4,132,411,055	4,451,453,492	7.7%
Political Subdivisions- All Groups	65,013	69,083	6.3%	1,341,363,228	1,545,593,535	15.2%
Grand Total - All Groups	189,592	195,946	3.4%	5,473,774,283	5,997,047,027	9.6%

THE NUMBER AND ANNUAL RETIREMENT ALLOWANCES CURRENTLY PAYABLE TO BENEFICIARIES ON THE RETIREMENT ROLLS

	Number		***Pct***	**Amount**		***Pct***
GROUP	1999	2001	***Change***	1999	2001	***Change***
Group I						
Contributory Teachers	26,307	28,077	6.7%	335,941,643	402,199,952	19.7%
General Employees:						
State	23,364	25,579	9.5%	196,485,104	238,788,075	21.5%
University of Tennessee (TIAA)	1,902	2,025	6.5%	13,594,038	16,641,508	22.4%
Separately Funded Systems	75	87	16.0%	661,830	863,723	30.5%
Sub-Total	25,341	27,691	9.3%	210,740,972	256,293,306	21.6%
Political Subdivisions	18,335	20,217	10.3%	75,401,685	92,139,302	22.2%
Total - Group I	69,983	75,985	8.6%	622,084,300	750,632,560	20.7%
Group II						
State Policemen and Wildlife Officers	531	551	3.8%	10,665,486	12,152,347	13.9%
Firemen and Policemen	497	533	7.2%	8,179,184	9,748,967	19.2%
Total - Group II	1,028	1,084	5.4%	18,844,670	21,901,314	16.2%
Group III (including Superseded Systems)						
State Judges - Group III	8	8	--	38,694	40,931	5.8%
Attorneys General - Group III	9	11	22.2%	113,540	210,961	85.8%
County Judges - Group III	22	23	4.5%	294,415	320,147	8.7%
County Officials - Group III	76	74	(2.6%)	1,001,573	1,057,490	5.6%
State Judges - Superseded	104	94	(9.6%)	6,228,052	6,209,000	(0.3%)
Attorneys General - Superseded	111	116	4.5%	4,425,794	5,021,273	13.5%
County Judges - Superseded	168	155	(7.7%)	4,581,453	4,755,064	3.8%
County Officials - Superseded	251	226	(10.0%)	4,114,408	3,948,145	(4.0%)
Public Service Commissioners	1	0	(100.0%)	16,975	0	(100.0%)
Total - Group III	750	707	(5.7%)	20,814,904	21,563,011	3.6%
Group IV - Judges	51	55	7.8%	1,396,523	1,579,401	13.1%
State - All Groups	52,980	57,081	7.7%	579,559,528	693,788,017	19.7%
Political Subdivisions- All Groups	18,832	20,750	10.2%	83,580,869	101,888,269	21.9%
Grand Total - All Groups	71,812	77,831	8.4%	663,140,397	795,676,286	20.0%

C. DETERMINATION OF FUNDING LEVELS

General Method

The statute which established the Tennessee Consolidated Retirement System prescribed a "frozen initial liability" method of valuation, under which an initial unfunded accrued liability is established for each major cost group, and the remainder of the cost of the System is borne by a "normal cost" contribution. Under that method as it is usually utilized, the "normal cost" calculated as a part of each subsequent valuation absorbs any variation of actual from expected experience.

Prior to 1975, the unfunded accrued liability was not being amortized. In that year, a 40-year amortization of the unfunded accrued liability was begun, except that (in accordance with the statute at that time) cost of living benefits remained on a "pay-as-you-go" basis.

In 1977, the statute was changed to provide for advance funding of cost of living benefits. It was decided to amortize the additional accrued liability arising from these benefits as a percent of payroll, rather than by level dollar annual payments. The result was to arrive at a contribution rate consisting of three segments: a "normal cost"; an "accrued liability level dollar" amortization of the unfunded accrued liability for basic benefits; and an "accrued liability percent of payroll" amortization for the additional accrued liability arising from cost of living benefits. For closed groups, all of the unfunded accrued liability was amortized on a level dollar basis.

Under the present statute, the Trustees can decide whether to freeze the prior valuation's unfunded accrued liability, or to re-establish that figure. From time to time, the unfunded accrued liability has been reestablished rather than frozen. Reestablishment has generally occurred when there have been significant changes in benefits or actuarial experience and has been elected in order to more accurately portray the unfunded liability of the system. The long term trend has been for the unfunded liability to decrease due to favorable plan experience in spite of significant benefit improvements.

State

Funding History

In 1981, the State began making the contributions previously made by State Group I employees and teachers associated with higher education, in lieu of part of the salary increase these participants would otherwise have received. Separate contribution rates were developed for "contributory" (K-12) teachers and "non-contributory" (higher education) teachers. These rates were artificially adjusted so as to retain a reasonable relationship between the two rates; exact separate calculations were not made because the total pool of assets accumulated for teachers was not being accumulated separately for the two groups.

In 1983, several improvements were made to the funding program:

1. The unfunded accrued liability was treated as if it had been frozen in 1981, rather than being reestablished. This action had little effect on 1983 contribution rates, but established the desired precedent --- once frozen, the unfunded accrued liability would decrease regularly until it disappeared in 2015.
2. All of the "percent of payroll" amortization piece for State employees and 70% of the equivalent piece for teachers were shifted to the stronger "level dollar" amortization basis.
3. Contribution rates for several of the smaller groups were recombined to reflect more accurately the sources of the money used to fund them.

Separate rates were again computed for "contributory" and "non-contributory" teachers, involving an artificial differential intended to keep the relationship of the two rates reasonable.

In 1984 and again in 1985, the Legislature allocated excess general State funds to the TCRS. Some of these funds were allocated to the superseded ("prior class") State Judges and Attorney General Systems, for which existing funding was not proving adequate. The intention of this infusion of funds was to make it feasible to fund the remaining liabilities of these closed systems in reasonably level dollar amounts over the next 30 years. Other funds were intended to fund in advance the "bonus", "aged teacher" and "aged State employee" programs that had previously been funded on a year-by-year basis from the operating budget.

In 1985, the remaining 30% of the frozen accrued liability for teachers was shifted to the "level dollar" amortization basis. A new set of actuarial assumptions was adopted, based on the 1984 study of actual experience under the TCRS. The rates called for by the 1985 valuation were generally somewhat lower than the rates then being contributed. As a conservative measure, the Board of Trustees voted to continue utilizing the then-current rates, rather than allowing the rates to drop.

Between 1985 and 1987, the TCRS experienced large actuarial gains due to investment earnings substantially in excess of the actuarial assumption of 8.5%. Even when the smoothing procedure utilized since 1981 was applied to plan assets, to avoid undue fluctuations in contribution rates, the strong investment performance of the two-year period generated actuarial gains, lowering the required contribution rates. The Board of Trustees, unsure how the stock market would react to a 500 point decline of the Dow Jones Industrial Average on October 19, 1987, adopted contribution rates which "split the difference" between the then-current rates and the much lower rates called for by the 1987 valuation. Contribution rates for the major groups still dropped significantly; nevertheless, the adopted rates included considerable margins over the "required" rates, in order to minimize the likelihood of having to increase the rates in 1989.

Also in 1987, a "consolidated State" contribution rate covering all groups for whom the State was directly responsible was adopted. This group included higher education (non-contributory) teachers and a closed group of University of Tennessee teachers whose TIAA benefits are supplemented by the TCRS, as well as all Group I and Group II State employees. This change was made for purposes of administrative simplicity, and also to avoid questions concerning classification of higher education employees which had arisen in the past. Teachers who were still contributing to the TCRS (K-12 teachers) remained as a separate group.

Between 1987 and 1989, the valuation "target" rates necessary to continue the 40-year funding program begun in 1975 decreased still further. Several factors contributed to this decline. First, the unfunded accrued liability frozen in 1981 was being amortized by level dollar annual contributions; as the covered payroll increases, as it has each year since 1983, these level dollar amounts represent a decreasing percentage of each year's covered payroll. Second, actuarial gains had emerged. Third, the fact that contributions during the two years actually exceeded the targets called for by the 1987 valuation meant that current assets exceeded the amounts which would have been on hand if the valuation "target" rates had actually been adopted. For all these reasons, the 1989 valuation rates declined significantly from the 1987 rates.

A 1988 study of experience under the TCRS had led to the adoption by the Board of Trustees of a new set of actuarial assumptions for the 1989 valuation. While some of the new assumptions would require less money to go into the trust (for example, it was assumed that continuing participants would receive annual salary increases of 7% each year, rather than 8%), overall the new set of assumptions was more conservative than the old set. Therefore, the "1989 valuation rates" were somewhat higher than they would have been if the new, more conservative set of assumptions had not been adopted.

Because it was felt that most of the conditions which had caused the required contribution rates to decline from 1987 to 1989 would continue to apply after 1989, the Board of Trustees voted to adopt the 1989 "target" rates as the actual contribution rates, effective July 1, 1990.

As expected, the required contribution rates developed in 1991 were lower than the 1989 rates. The Board of Trustees again voted to adopt the 1991 "target" rates as the actual contribution rates, effective July 1, 1992.

The quadrennial experience study performed in 1992 indicated that the demographic assumptions which had been used in the 1989 and 1991 valuations had turned out to be accurate. Investment performance during the proceeding few years had substantially exceeded the 8% interest assumption, and salary increases during the last few years had fallen short of the 7% salary assumption. Therefore, the Board of Trustees took the position that continuing to utilize the same set of actuarial assumptions was an appropriate practice, retaining a reasonable yet conservative approach to the calculation of required contribution rates.

From 1991 to 1993, the System generated unusually large actuarial gains. Investment earnings exceeded expected earnings (on the 8% basis) by over $675,000,000. Freezes on salaries had minimized salary increases during the valuation period, leading to additional large actuarial gains. The effect of these two large sources of gains was to lower required contribution rates substantially.

A further result of these actuarial gains was to create several anomalies in the funding method; the most prominent of which was a "negative normal cost" for the Consolidated State. The unfunded accrued liability of each group for which a contribution rate is obtained had not been reestablished since 1981. During that period, there had been substantial actuarial gains, culminating in the large gains from 1991 to 1993. All of the gains had been absorbed into the "normal cost" component of the contribution. As a result, the remaining unfunded accrued liability had become the major component of the remaining employer liability; in the case of the Consolidated State, the unfunded accrued liability, which had been brought forward as a dollar amount from year to year, exceeded the State's total liability for the group.

In order to remove these anomalies, the Board of Trustees decided, as authorized by TCA Section 8-37-304, to re-establish the unfunded accrued liability for each group. The result was that a much smaller unfunded accrued liability remained for teachers, that unfunded accrued liabilities increased for County Judges and Officials and for State Judges and Attorneys General (Superseded), and that there was no longer an unfunded accrued liability for the other contribution groups.

Actual contributions for the two smaller groups which still had unfunded accrued liabilities were not affected by the reestablishment. Benefits for County Judges and Officials are funded through litigation taxes, so the actuarially determined contribution rate serves only as a benchmark. Superseded State Judges and Attorneys General are being funded by level annual contributions which are intended to pay off the group's <u>total</u> liability by 2015, without regard to the subdivision between "normal cost" and "accrued liability."

Rather than allowing the rates to drop substantially, the Board of Trustees followed the course which had been authorized in previously-approved legislation:

1. Portability among members who had service in more than one membership classification was improved.
2. The base benefit of active and retired members in most categories was increased by 5%.
3. The amortization period for the Contributory Teachers was decreased to 10 years. However, the Board retained the right to increase the amortization period in the future, so long as the resulting amortization period did not exceed the original "40 years from 1975."

Even after these benefit and funding improvements, the 1993 contribution rates for the major groups decreased slightly.

From 1993 to 1995, actuarial experience was not as favorable as it had been in prior years. Although the required contribution rate for Contributory Teachers decreased further, the required contribution rate for the Consolidated State group increased for the first time in several years.

The Trustees adopted the actuary's recommendation that the unfunded accrued liabilities be re-established for the three groups for which such liabilities existed. Since Section 8-37-305 of the TCA specifies that the accrued liability contribution is to be discontinued for any member classification as soon as the unfunded accrued liability becomes zero, the unfunded accrued liabilities were not re-established for the groups which had reached that goal in 1993. Re-establishment for the three entities with remaining liabilities was elected in order to maintain a more realistic balance between the accrued liability contribution and the normal cost contribution.

As mentioned above, the Board retained the right to extend the amortization period for Contributory Teachers from the eight-year period remaining from the ten-year amortization schedule adopted in 1993 to a period that in 1995 was permitted to be as much as twenty years. The primary purpose of retaining this right was as a safety valve to avoid undue strain on the State's resources in the event of a future increase in required contributions due to actuarial losses. Reversion to the twenty-year amortization schedule was elected in order to mitigate contribution volatility associated with the leveraged position as plan assets equaled approximately 80% of projected benefit values.

The quadrennial experience study conducted in 1996 led the Trustees to adopt a set of more conservative withdrawal and mortality assumptions for the Contributory Teacher group. The study also concluded that economic assumptions should be revised to reflect lower prevailing rates of inflation, as inflation had declined significantly since the previous review was conducted. Consequently, the assumed investment return rate was revised downward from the 8% per annum rate used in the 1995 valuation to 7.5%. The assumed annual rate of salary increase, which is also expected to contain an inflation component, was revised downward from 7% to 5.5%.

Unrelated to the assumption changes resulting from the experience study was a recommended modification in the asset valuation method. An asset smoothing procedure had been applied in determining the asset value upon which contributions are based since 1981. The purpose of the smoothing process was to dampen the effect of investment volatility so that contributions were not unduly affected by short-term changes in investment results. Under the procedure used in prior plan valuations, fixed income investments had been treated differently than equities and had been valued at book value. Equities were valued by adjusting the book value of the equity portion of the portfolio by a factor which reflected the five-year moving average ratio of the equity market to book values.

While the previous methodology had served the purpose of reducing volatility adequately, the procedure differed from the methods mandated by recently applicable Governmental Accounting Standards Board (GASB) Statements 25 and 27. Under the GASB standards, the entire portfolio, rather than the equity portion only, must be adjusted to recognize changes in market value. The revised methodology approved for the plan expanded the moving average procedure then in use to apply to all plan assets.

The 1997 valuation recognized benefit modifications that were adopted by the legislature in the 1997 Appropriation Act as follows –

1. The most significant change was replacement of the arithmetic, or simple, cost-of-living adjustment with a geometric, or compounded, adjustment. The modification was effective for benefits paid on and after January 1, 1998 and included a "catch-up" feature intended to bring payments of current retirees to the level that benefits would have been if the geometric adjustment form had always been in place.

2. The Act modified provisions related to salary "loading" for certain non-contributory employees. The requirement for employees of the Consolidated State and certain other entities to make employee contributions to the plan was eliminated in 1981. To recognize the reduction in benefits that occurred as a result of the related lowering of salaries, compensation of employees hired before July 1, 1981 was artificially increased, or "loaded," for the purpose of determining plan benefits, by 3.6% through 1991. The loading expiration date had been extended from time to time thereafter. The Act permanently extended the compensation loading for those fired before July 1, 1981.
3. Increases in contributions associated with the improvements resulting from the 1997 Appropriation's Act were implemented on each modification's effective date. Contribution rates related to the geometric cost-of-living adjustment and permanent salary extension were effective as of January 1, 1998 and July 1, 1998, respectively.
4. As of July 1, 1997, an unfunded accrued liability existed for only the Contributory Teacher group and two other small groups. The Trustees elected to re-establish the liability for all three groups resulting in the elimination of the unfunded accrued liability for Contributory Teachers in order to continue policies established by prior Trustee actions. The result of re-establishment was that the unfunded accrued liability for the Contributory Teachers was eliminated and the funding for only two minor groups (County Judges and Officials and State Judges and Attorneys General (Superseded)) involved amortization of an unfunded liability.

Contribution rates produced by the 1999 valuation continued to benefit from continued favorable investment experience. Lower than expected salary increases to Teachers also contributed to lower contribution rates. Factors influencing higher contributions are the addition of new entrants for whom contribution rates are higher because they do not benefit from prior accumulated gains and modifications in valuation programming to accommodate improvements in valuation techniques. The trend for the Teachers employer contribution rate continued to decline. An increase in the State employer contribution rate resulted in the State rate for the first time exceeding that for Teachers.

Between 1997 and 1999, TCRS record keeping procedures were revised to eliminate maintenance of the fund book value. Since prior asset valuation methods were based on a historical comparison of the relationship between book and market value, the valuation asset method was revised for the 1999 valuation. A primary consideration in selecting the revised method was that the prior should not be altered more than necessary. Under the revised method, the asset value used in computing plan contributions was determined by recognizing “excess earnings” occurring in each preceding year over a five year period following the year of recognition. Excess earnings in a year are earnings above the investment returns that would have occurred if the plan earned the actuarially assumed rate for the year. Excess earnings or losses so computed for each year were phased in ratably over five years. For conservatism, excess losses for a year was applied first to reduce accumulated excess earnings on a dollar for dollar basis before phasing the remainder.

During 1999, an actuarial audit of the primary calculations underlying the valuation was conducted by Buck Consultants, a national actuarial consulting firm with significant public plan experience. Conclusions and opinions resulting from the audit were discussed in a report prepared by Buck Consultants. Significantly, the audit endorsed the actuarial valuation methodology and the basic liability results used in computing contributions for the TCRS.

2001 Valuation

A quadrennial experience study was conducted in 2000 covering the period of plan operations from July 1, 1996 through June 30, 2000. The study compared the actuarial assumptions used to determine contribution rates with the actual experience of the plan. The review concluded that economic assumptions including the assumed rate of investment return and the inflation assumption should be unchanged. Modifications however were recommended for the salary increase rate and many of the demographic assumptions.

The assumed rate of salary increase, or salary scale, employed in the 1999 actuarial valuation was a uniform scale in which the single rate of 5.5% was assumed to apply at all ages. The experience study report noted the assumed rate was higher than recent experience. Also, it was noted that the actual pattern of salary increase rates was such that increases for younger participants were considerably higher than those for older participants. This pattern exhibited by TCRS is observed in most retirement plans. A graded scale was recommended to replace the uniform scale. The effect of the revision was to produce a scale that in the aggregate was slightly lower than the prior scale but more accurately reflected career salary patterns. The modification resulted in contribution rate decreases for the State and Teachers groups of approximately 2.25% of compensation.

In the four-year period covered by the experience study, post retirement mortality rates improved extending the precedent established in earlier studies. Improvement was observed for both Teachers and State groups. It was also noted that the general mortality pattern was not completely reflective of the standard tables after which the prior assumption was modeled and that actual mortality was lower in the age range of 70 to 85 and higher in younger and older ages. Since the standard tables did not appear to represent the TCRS retiree mortality pattern, a revised table was developed that was modeled after TCRS experience. On the whole, the revised table was more conservative than the table previously used for State retirees but approximately equal to the prior Teachers table. Although substantial improvement has been observed for both the groups, the prior Teachers table was more conservative, relative to prior patterns, than was the State table. The effect on employer contributions of adopting the recommended mortality standard was to increase the rates by 0.12% and 1.20% for Teachers and State groups respectively.

The continued pattern of mortality improvement noted in current and previous experience studies is compatible with national trends and suggests that actuarial valuation procedures should be modified to anticipate future improvements. The evidence of past trends and expectations of further longevity extensions due to medical advances present arguments in favor of such a modification. To incorporate future improvements, mortality tables must be projected so that life expectancy at any particular age increases in the future. Under this approach, mortality at a given age is assumed to improve by a specified percentage each year. The adoption of “projected” mortality for this valuation cycle was considered but has not been incorporated into the current mortality tables. The effect of projected mortality, if applied, on contribution rates would be dramatic and should be expected to result in a rate increase of approximately 2.0% for the major funding groups.

As of the valuation date, relatively few public or private plan sponsors have adopted projection mortality tables. Due to prevailing practice and TCRS budgetary concerns, projected mortality has not been incorporated in the current valuation. The expectation of improved mortality however will continue to be an issue for the plan to address in the future. Postponing adoption of projected mortality should be expected to exacerbate the effect on contribution rates. Accordingly, adoption at the earliest feasible date is strongly recommended.

A significant difference in procedure was implemented in the recent experience study. In previous studies the relationship of demographic tables to actual experience had been based upon the analysis of the number of participants affected by each demographic assumption. However, a more accurate analysis, facilitated by improvements in valuation technology, should focus on liability amounts. As an example to illustrate the two approaches, the effect on plan contributions from the death of a single retiree who receives half of the total benefits paid to a group of ten participants reflects a 50% mortality rate, rather than 10% determined by analyzing the number of participants affected, because plan funding is based on liabilities.

The impact of the change in procedure on termination and retirement rates would generally have little impact on a homogenous group where employee age group characteristics such as compensation are uniform. In less homogenous groups however, the effect would be significant if lower paid employees were more likely to terminate or retire than higher paid employees. For this reason, State demographic tables were more affected by the change in approach than Teacher tables. However the predicted rates of termination and retirement of both groups were significantly effected the change. The revised tables recommended by the study result in contribution rate increases of 2.3% and 3.0% for Teachers and State groups respectively.

The effect of other assumption modifications resulting from the study was small.

The aggregate effect of recommended demographic changes is to increase Teacher and State employer contribution rates by 0.3% and 2.0% respectively. Given the size of the State increase, a review of past history regarding absorption of the recommended change was conducted. It was observed that in a number of situations, Trustees elected to recognize changes over more than a single valuation cycle. Generally, the purpose of a gradual implementation approach for public employers is to induce stability into the funding process recognizing that contribution volatility has an undesirable effect on budgets. Examples of a phased approach from TCRS history are recited above and include -

- improvements in unfunded liability amortization by first commencing amortization of the unfunded amount and then by incorporating amortization of cost of living liabilities on a gradual basis

- recognition of the effect of investment gains occurring in the 1980's
- the adoption of a five year moving average asset valuation methodology through which excess gains and losses are recognized ratably over a five year period from the date of occurrence.

In order to reduce contribution volatility for the current valuation cycle, it is recommended that provisions of the actuarial experience study for the State group be partially recognized at this time. Full implementation of each of the suggested demographic changes is recommended except that the proposed termination table would be phased in by adopting one third of the suggested change in 2001. The remainder would be adopted in the next one or two valuation cycles depending on economic considerations at that time. The effect of limited adoption of the termination table proposed for the State group would be a reduction of slightly less than 1.0% in the State employer contribution rate. Therefore the net impact of assumption changes on the employer contribution developed by the 2001 actuarial valuation is an increase of 1.07% rather than the 2.0% increase stated earlier. Recommendations regarding the Teachers group should be fully implemented.

Although the effect will vary somewhat among entities, the impact of demographic changes recommended above is, in aggregate, more substantial for political subdivisions than for the State group. Therefore, phased recognition of termination rates in the same manner as suggested for the State group above is recommended for political subdivision funding.

The adoption of revised valuation mortality tables suggests that a review of the actuarial factors utilized in computing plan actuarial equivalent benefits should be modernized. The current administrative factors for survivorship plans, early reduction and delayed retirement were adopted prior to 1990. Since the time of their adoption, the assumed actuarial valuation interest rate was reduced from 8.0% to 7.5% and mortality improvements have been implemented. Accordingly, it is recommended that administrative factors be modified as of July 1, 2002.

<u>Future expectations</u>

The pattern of plan contributions produced by valuations since 1975 had until 2001 been generally downward. The pattern was due primarily to actuarial gains accruing during the period. These gains are attributable largely to lower than expected salary increases and greater than expected investment returns.

In spite of past favorable investment performance, it appears unlikely that further significant gains will occur. Data produced by capital asset pricing models cited in the 2000 actuarial experience study indicate that a reasonable expectation of future returns for the plan, given the current portfolio mix, is approximately equal to the current return assumption.

The adoption in the current valuation of a revised more realistic but less conservative salary scale suggests that salary gains are less probable. The revised age related salary scale which replaces the prior uniform 5.5% salary scale reduces the margin that previously existed.

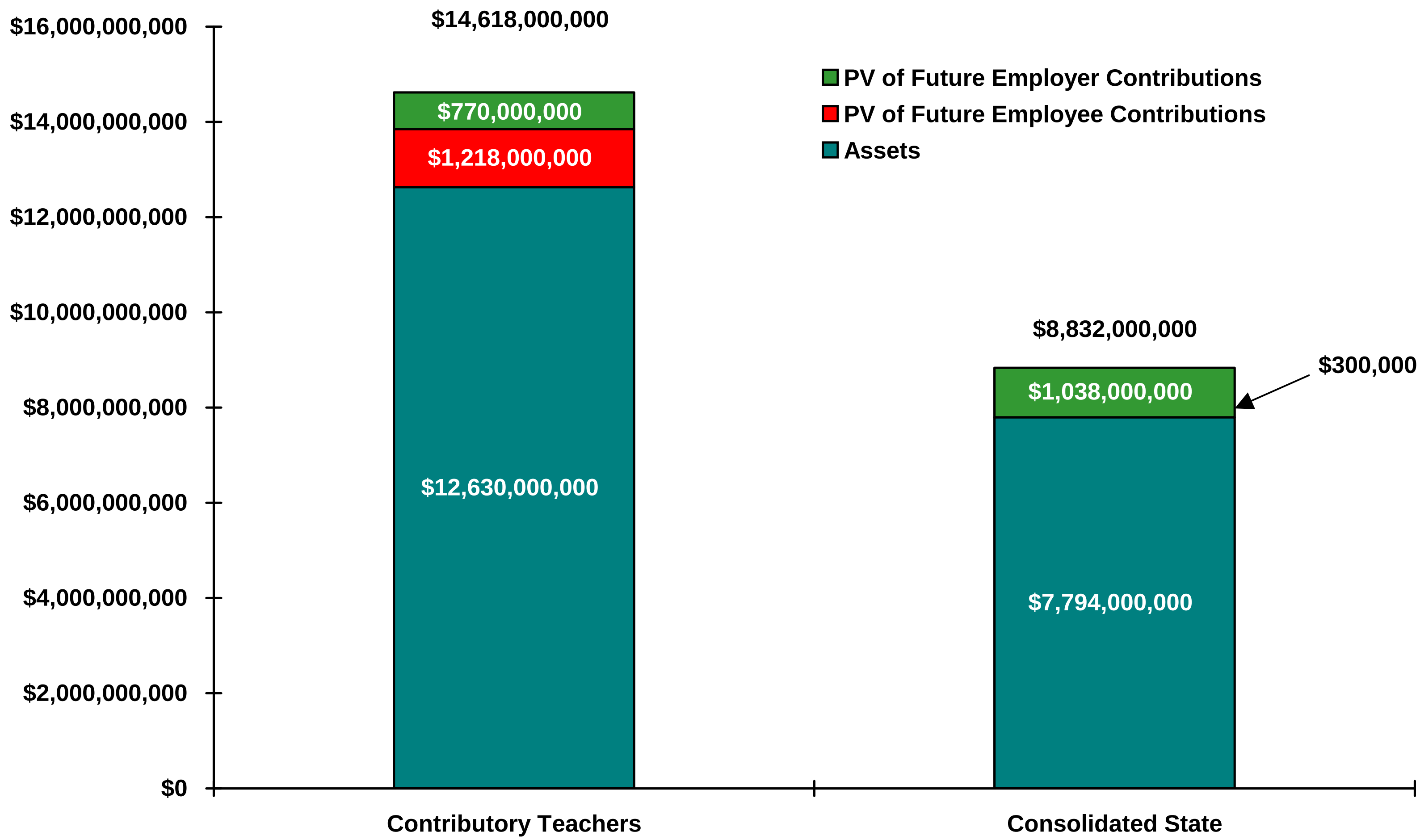
For State and Political Subdivision groups the current valuation is based upon an intermediate termination rate which is less conservative than the tables recommended by the 2000 experience study. The recommendation in the current valuation is that the full termination table be applied over the course of the next one or two valuations depending on the State's ability to address the issue at the time. Implementation of the full table would result in employer contribution rate increases of approximately 1% for both the State and, in aggregate, Political Subdivision groups.

As evidenced by the current valuation, there is upward pressure on contribution rates due to new entrants. Rates for new entrants are generally higher than those for existing participants because they do not have the benefit of past actuarial gains that affect existing participant rates. The opportunity for rehired former participants to purchase prior service credits results in further rate pressure.

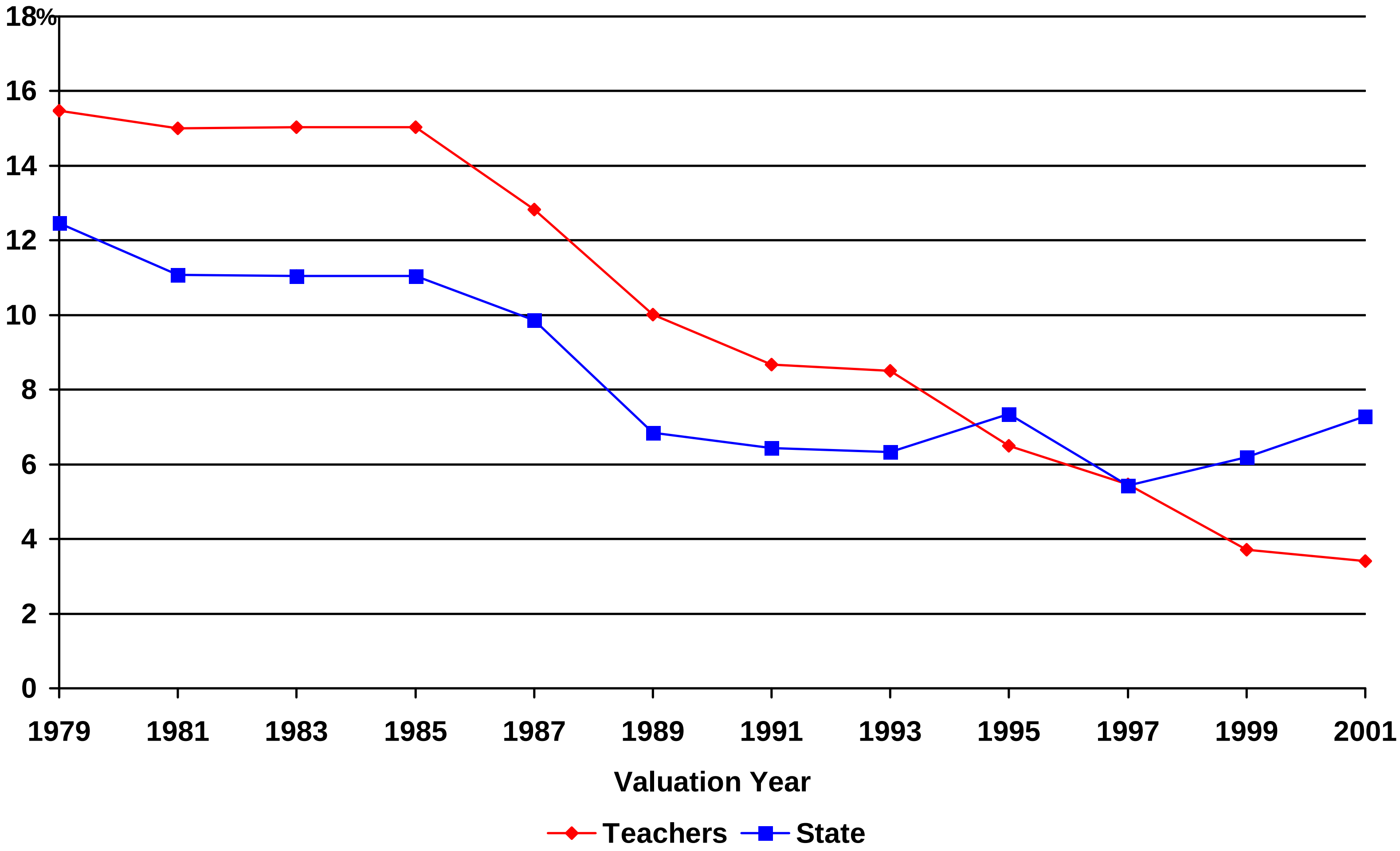
Finally, the most serious single risk for contribution rates is the issue of projected mortality. It is believed that the current mortality table does not adequately recognize expected future mortality improvements. Adoption of a revised table reflecting projected mortality is recommended at the earliest opportunity.

In summary, it seems unlikely that contribution declines of the magnitude occurring in the past will continue in future valuations.

PRESENT VALUE OF BENEFITS
July 1, 2001



HISTORY OF TCRS CONTRIBUTION RATES



COMPARISON OF TCRS EMPLOYER CONTRIBUTION RATES

	2001 Active Payroll	1999 Contribution Rate	2001 Contribution Rate
Contributory Teachers	$ 2,560,093,185	3.72%	3.40%
Consolidated State [1]	1,838,321,117	6.19%	7.30%
State Judges (Groups I, III & IV)	18,016,014	13.07%	13.41%
Attorneys General (Groups I & III)	31,279,135	10.75%	12.03%
County Judges and Officials (All) [2]	2,631,657	116.19%	88.96%
State Judges and Attorneys General (Superseded)	1,110,788	563.58%[3]	658.81%[3]

1 The University of Tennessee pays an additional 10% of covered payroll for TIAA coverage. The rates shown relate only to TCRS benefits.

2 Theoretical contribution rate. Actual funding is the amount received from litigation taxes.

3 The required rate of 658.81% actually represents an annual contribution of $7,317,994, the annual amount required to amortize all liabilities relating to this group over the next 14 years. The contribution amount developed for the 1999 actuarial valuation was $7,130,204.

VALUATION BALANCE SHEET
TENNESSEE CONSOLIDATED RETIREMENT SYSTEM
July 1, 2001

ASSETS	Total State	Contributory Teachers	Consolidated State	State Judges (Groups I, III, & IV)	Attorneys - Gen. (Groups I & III)	County Judges and Officials (All)	State Judges & Attorneys-General (Sup.)
Present assets creditable to:							
State Accumulation Fund	$18,122,409,253	$10,753,943,919	$7,059,487,544	$61,969,249	$48,910,560	$110,673,743	$87,424,238
Members' Fund	2,638,579,836	1,876,045,586	734,357,962	7,879,014	12,812,867	4,462,715	3,021,692
Total Present Assets	$20,760,989,089	$12,629,989,505	$7,793,845,506	$69,848,263	$61,723,427	$115,136,458	$90,445,930
Present value to prospective contributions payable to:							
State Accumulation Fund:							
Normal	$1,858,475,622	$770,220,401	$1,037,781,304	$15,288,408	$33,720,225	$826,420	$638,864
Accrued Liability	81,226,933	0	0	0	0	17,509,536	63,717,397
Total	$1,939,702,555	$770,220,401	$1,037,781,304	$15,288,408	$33,720,225	$18,335,956	$64,356,261
Members' Fund	1,219,837,846	1,217,769,323	327,711	1,108,574	118,801	379,118	134,319
Total Prospective Contributions	$3,159,540,401	$1,987,989,724	$1,038,109,015	$16,396,982	$33,839,026	$18,715,074	$64,490,580
Total Assets	$23,920,529,490	$14,617,979,229	$8,831,954,521	$86,245,245	$95,562,453	$133,851,532	$154,936,510
LIABILITIES							
Present value of prospective benefits payable on accounts of:							
Present retired members and contingent annuitants	$7,837,600,100	$4,542,175,988	$3,019,921,025	$17,242,637	$7,709,484	$111,162,093	$139,388,873
Present active members	15,723,108,792	9,922,550,524	5,612,638,325	67,325,693	85,171,486	21,254,579	14,168,185
Former members	359,820,598	153,252,717	199,395,171	1,676,915	2,681,483	1,434,860	1,379,452
Total Liabilities	$23,920,529,490	$14,617,979,229	$8,831,954,521	$86,245,245	$95,562,453	$133,851,532	$154,936,510

Political Subdivisions

Until 1983, all participating political subdivisions contributed the same normal cost rate. The balancing item which was used to insure that each political subdivision "paid its own way" was the contribution to amortize the unfunded accrued liability; the unfunded accrued liability was whatever was left for each political subdivision after existing assets and the present value of the "standard" normal cost rate and employee contributions were deducted from the present value of future benefits.

In 1983, the changes made by the State were also offered to the political subdivisions. In particular, each political subdivision was encouraged to freeze its unfunded accrued liability, so that in the future its normal cost would be the balancing item, reflecting actuarial gains and losses. All but about 30 of the more than 400 participating units accepted this change in 1983, and the remaining units did so in 1985.

The next page comprises an actuarial balance sheet showing the assets and liabilities relating to the participating political subdivisions. The split between normal cost and accrued liability contributions for political subdivisions is theoretical, since no summary of the split for individual political subdivisions is available at the time of this report, but all other figures, including the total value of prospective employer contributions, reflect the actual situation. The table also combines the figures for political subdivisions with the aggregate State figures to provide a summary for the entire TCRS.

VALUATION BALANCE SHEET
TENNESSEE CONSOLIDATED RETIREMENT SYSTEM
July 1, 2001

TOTAL SYSTEM

ASSETS	Total State	Polisubs	Grand Total
Present assets creditable to:			
State Accumulation Fund	$18,122,409,253	$2,595,966,677	$20,718,375,930
Members' Fund	2,638,579,836	592,023,782	3,230,603,618
Total Present Assets	$20,760,989,089	$3,187,990,459	$23,948,979,548
Present value to prospective contributions payable to:			
State Accumulation Fund:			
Normal	$1,858,475,622	$902,152,020	$2,760,627,642
Accrued Liability	81,226,933	0	81,226,933
Total	$1,939,702,555	$902,152,020	$2,841,854,575
Members' Fund	1,219,837,846	322,137,337	1,541,975,183
Total Prospective Contributions	$3,159,540,401	$1,224,289,357	$4,383,829,758
Total Assets	$23,920,529,490	$4,412,279,816	$28,332,809,306
LIABILITIES			
Present value of prospective benefits payable on accounts of:			
Present retired members and contingent annuitants	$7,837,600,100	$1,104,213,183	$8,941,813,283
Present active members	15,723,108,792	3,223,007,501	18,946,116,293
Former members	359,820,598	85,059,132	444,879,730
Total Liabilities	$23,920,529,490	$4,412,279,816	$28,332,809,306

D. GAIN AND LOSS ANALYSIS

The contribution rate for any defined benefit pension plan is based on a set of actuarial assumptions. It is assumed that interest will be earned at a certain rate, that salary increases will be granted according to a certain schedule, and that, in the aggregate, participants will withdraw, become disabled, die, and retire in certain patterns. Assumptions must also be made concerning other events --- for example, the pattern of future social security increases, or the percentage of participants who are married at the time of death.

It is possible to predict what would happen to the present value of benefits, the plan's assets, the normal cost rate, and the unfunded accrued ("past service" or "supplemental") liability from one valuation date to the next if all the actuarial assumptions prove to be exactly correct. Variations from these predicted values arise whenever actual experience differs from the actuarial assumptions. Analysis of these variations can reveal the degree to which actual experience has differed from assumed and can, over a period of years, give an indication as to the validity of the various actuarial assumptions.

Variations from "predicted" values also can arise from external sources, such as benefit changes and refinement of programming techniques.

A complete gain and loss analysis is a complex, technical task. It requires that the initial valuation be reproduced, predicting the amount of reserve expected to be released due to each type of decrement (death, disability, retirement, withdrawal) and the amount of liability expected to be incurred as a result of those terminations. Similar "expected" values must be obtained for increases in liability due to salary increases, and for changes in assets due to contributions, benefit payments, and interest earnings.

All these quantities must then be compared to actual experience. This process requires tracing each individual from the first valuation, determining if he is still active or, if not, why not and what benefit was paid and/or what liability remains for him. For those still active, updated salary information must be obtained.

Because of the complexity of this task, which is exacerbated by the fact that two years elapse between valuations, no gain and loss analysis was attempted for the TCRS prior to 1979. Annual gain and loss analyses were routinely performed for smaller cases, where the number of terminations was small enough to be investigated manually. For a system the size of the TCRS, such manual tabulations were not feasible. Improvements in data handling procedures allow for enhanced analysis but the primary procedure for analyzing TCRS experience has been the experience study. The most recent experience study covers the period for July 1, 1996 through June 30, 2000 and is set forth in a separate report.

One of the difficulties with a gain and loss analysis is the lack of intermediate check points at which progress can be determined. An initial value is projected, and is compared to an actual value at the end of the period. As a completely separate process, the "gain" or "loss" from each of a number of separate sources is calculated. It is then hoped that the net effect of the various gains and losses will approximately equal the difference between the projected value and the actual value. There is no method by which an individual gain or loss item can be "checked" against some other intermediate figure.

Gains and losses may be measured with respect to the present value of benefits, the accrued liability, or the normal cost percentage. Since concern had been expressed in prior years over the growth of the unfunded accrued liability of the TCRS (even though it was being amortized, commencing in 1975), it was decided to perform a gain and loss analysis of that quantity from the June 30, 1977 valuation to the June 30, 1979 valuation, which represented the System's initial attempt at a gain and loss analysis. Similar analyses were performed as part of the 1981 and 1983 valuations. The gain and loss analyses in more recent valuations, however, were conducted with respect to the normal cost percentage, because changes in the accrued liability, which was frozen as of 1981 and eliminated for most funding groups, were no longer meaningful.

The availability of a detailed analysis of past actuarial experience through the experience analysis process mitigates the need for a comparable detailed analysis in the biennial valuation. Due to the availability of accurate detailed information in the experience report, the scope of valuation experience analyses was limited to the more accessible sources of gain and loss. Specifically, gains and losses due to death, disability, and turnover were not analyzed, since it was felt that doing so involved time and expense disproportionate to the attention given the results. Similarly, effects of prior service purchases and early and delayed retirement were not quantified.

Although the collective effect of actuarial experience items during the course of the past two years has been to produce small changes in the current valuation contribution rates, an expanded analysis of experience has been incorporated into the current report in order to examine the factors that affect plan contributions.

The table below indicates the effect of each measured assumption upon the 2001 valuation contribution rates.

CAUSES OF CHANGE IN CONTRIBUTION RATE

	Teachers	Consolidated State
Investment results	(0.48)%	(0.54)%
Salary increases	(0.71)	(0.87)
New entrants	0.61	0.42
Social security wage base changes	(0.03)	(0.02)
Cost of living escalation	(0.05)	(0.05)
Retiree mortality (estimated)	0.00	0.10
Prior service purchases	0.08	0.12
Contribution rate change delay	(0.17)	0.10
Other	0.12	0.78
Total	(0.63)%	0.04%

Presented below is a brief discussion regarding the items in the table. Comparisons to assumptions and methods are made to the assumptions and methods used in the previous valuation conducted in 1999.

Investment results - Market value returns on plan assets during the fiscal years ending in 1999 and 2001 were 7.91% and negative 1.57% respectively. Investment performance is not reflected directly in the valuation asset amount. Valuation assets are based on a five year moving average of market values. The rate of return on valuation assets during the two year period was approximately 0.5% per year greater than the assumed return of 7.5% per annum. Excess returns resulted in valuation assets that were approximately $114,000,000 and $81,000,000 greater for the Teachers and Consolidated State groups, respectively, than would have been achieved if returns were equal to the assumed rate.

Salary Increases – The annual average rate of salary increase during 1999-2001 for Teachers was 1.0% below the assumed annual rate of 5.5% used in preparing the 1999 valuation report. General State salary increases during the period were 4.75% and were 0.75% below the assumed rate. The effect of younger employees, for whom liabilities are generally lower, receiving generally higher salary increases than older employees exaggerates the effect of the lower than expected salary increases.

New Entrants - New entrants have in recent years been a factor contributing to rising contribution rates. State and Teacher groups respectively added over 11,000 and 10,000 new entrants during the past two years. The replacements represent 18% and 15% of the active participant census population as of the valuation date. The rate pressure attributable to new entrants is due to their relatively higher employer contribution rates in comparison to rates for continuing participants who benefit from past accumulated actuarial gains. Employees entering the plan during the past two plan years were slightly older at employment than continuing employees and carried employer contribution rates of approximately 8% and 10% for Teacher and State groups respectively.

Cost of Living Escalation and Social Security Wage Base Changes - The relatively low inflation experienced during the review period produced arithmetic COLA increases that were less than the assumed rate of 3% per year. COLA adjustments for July 1, 2000 and 2001 payment dates were 2.7% and 3.0% respectively. Lower than anticipated COLA adjustments among retirees resulted in a lower liability for these participants than expected. Also, more rapid increases in the Social Security wage base than assumed caused future expected payments to active employees to be slightly lower than had been expected, causing a small actuarial gain and contribution rate decrease.

Prior Service Purchases and Sick Leave Credits **-** Employee purchases of prior service credits and credits for sick leave result in liabilities to the plan that are not fully offset by related employee contributions. Service was credited to approximately 4,000 participants during the past two years due to such purchases and credits.

Contribution Rate Change Delay - Since contribution rates have generally declined over the last decade, the prior policy of delaying the application of contribution rates produced by a valuation for one year means that contributions in the year following the valuation are greater than those actually required by the valuation. Such additional contributions received by the plan were responsible for a decline in rates required by the next biennial valuation. Alternatively, situations in which contribution rates rise produce a contribution deficit and cause rates to increase. For the 1999-2000 fiscal year, continuation of the 1997 valuation report Contributory Teacher rate of 5.47% resulted in increased plan assets in comparison to the 3.72% rate anticipated by the 1999 valuation. Consequently, contribution rates for the Teachers group in 2001 fell by 0.17%. On the other hand, the State contribution rate actually increased between the 1997 and 1999 valuations from 5.43% to 6.19%. The contribution deficiency resulting from delaying application of valuation rates in the 1999-2000 fiscal year resulted in a contribution increase of 0.10%.

Other - The "Other" category in the table above incorporates items that are not separately identified or are relatively insignificant. It includes termination experience that indicates a lower degree of turnover among employees than expected. It confirms the conclusion of the most recent quadrennial experience study that assumed rates of termination are unduly low, particularly when examined based on liability amounts rather than on the number of participants affected by each decrement. A significant unexplained “other” element has occurred in most of the recent valuations with the amount generally being larger for the State group than for Teachers. Preliminary analysis of termination and retirement rates conducted in the course of the valuation indicates that “other” amounts can be largely attributed to termination and retirement experience. Revisions to assumed retirement and termination rates can be expected to reduce or eliminate this source of adverse experience.

E. FUNDING STATUS

Until the unfunded accrued liability was frozen in 1981, it was occasionally used as a measure of the actuarial soundness of the funding of the TCRS. Concern was expressed when the unfunded amount was large and/or increasing as was the situation from 1975 to 1981. In fact, the liability is a by-product of the actuarial valuation method utilized to determine contribution rates for a retirement plan and the amount may vary significantly from one method to another. This variability renders comparability among plans on the basis of progress or lack of progress against the unfunded accrued liability standard as an unsatisfactory approach. However, comparability on this basis for a single plan from one year to another may be appropriate as long as the valuation method used for the plan does not change during the period of comparison.

From 1983 through 1987, valuations included an analysis of the Plan Termination Liability (PTL) as a measure of funding progress. This liability is equal to the present value of the benefits which are expected to be paid to retired and other inactive employees, plus the present value of the benefits that have accrued to date for active employees. Thus, it is a measure of the total obligation under the plan in the event the plan were to terminate in the current year. Since it relates strictly to a plan termination situation, the PTL is not a particularly significant figure for an ongoing plan.

In 1987, the Governmental Accounting Standards Board ("GASB") issued its Statement Number 5, setting out information to be disclosed concerning the progress being made in funding a pension plan sponsored by a governmental unit. Statement Number 5 compared the Pension Benefit Obligation ("PBO") to the assets available as of the date of measurement. The PBO increases throughout an employee's career, pro-rating throughout his period of service the liability which is expected to be generated by his benefits. Unlike the PTL, it does not relate to the "shutdown value" as of any given time; it represents a method of spreading the pension cost related to a particular employee throughout his working lifetime, and measuring the amount of that cost which has been accrued as of the date of measurement.

Due to its nature, the PBO as of a particular date does not have any special significance. However, followed over a number of years, the "percentage funded" (i.e., the ratio of assets to PBO) would be expected to increase if progress is being made in the funding of a pension plan and it was reasonable during the period when GASB 5 was effective to make inferences regarding funding progress using this standard.

In 1994, the Governmental Accounting Standards Board revised the methodology to be used in presenting funding progress results to require reporting based upon the a plan’s unfunded accrued liability. The new GASB pronouncement relating to financial reporting standards was effective for fiscal years ending June 30, 1997. The statements provide that certain parameters are to be used in determining the unfunded liability position in each year, including a parameter for the measurement of plan assets. A schedule of funding progress based upon comparison to the unfunded accrued liability is to be included in financial statements for the years in which the calculations are consistent with the parameters.

The schedule presented herein is based upon valuation results for the current valuation period only. Information for earlier periods is presented in the TCRS Comprehensive Annual Financial Report.

Results displayed in the table below are based upon the aggregate/frozen initial liability actuarial valuation method used by the plan. The unfunded liability used in the calculations has been reestablished as of the valuation date and is an appropriate representation of the current level of funding. Consequently, a comparison based on the unfunded liability should be a reasonable basis for assessing the current status of the plan.

The unfunded liability under the valuation method used is zero as of the valuation date for the primary groups, Teachers and Consolidated State, and two other groups. A liability exists however for two other minor groups with the result that the plan in total retains a small liability and should be fairly judged to be well funded. The amortization basis for groups that have a remaining unfunded liability is indicated in foot notes to the Comparison of TCRS Employer Contribution Rates Table on page C-13.

Funding for groups for which the liability has been reestablished to zero is allocated over the future working lifetime of present plan participants. The process results in an equitable allocation of the cost of benefits payable to current plan participants among future generations.

Tennessee Consolidated Retirement System
Schedule of Funding Progress
July 1, 2001

Funding Group	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll	Unfunded Actuarial Accrued Liability as a Pct of Covered Payroll
Teachers	12,629,989,505	12,629,989,505	0	100.00%	2,560,093,185	na
Consolidated State	7,793,845,506	7,793,845,506	0	100.00%	1,838,321,117	na
State Judges (I, III, IV)	69,848,263	69,848,263	0	100.00%	18,016,014	na
Attorneys General (I, III)	61,723,427	61,723,427	0	100.00%	31,279,135	na
County J & O (all) *	115,136,458	132,645,994	17,509,536	86.80%	2,631,657	na **
State Judges & Atty Gen (Supp) *	90,445,930	154,163,327	63,717,397	58.67%	1,110,788	na **
Total State	20,760,989,089	20,842,216,022	81,226,933	99.61%	4,451,451,896	1.82%
Political Subdivisions ***	3,187,990,459	3,187,990,459	0	100.00%	1,545,592,868	na
Total	23,948,979,548	24,030,206,481	81,226,933	99.66%	5,997,044,764	1.35%

*** Systems closed to new membership prior to 1977.**
**** Actual funding of liabilities for closed groups is based upon payment methods that are not related to payroll.**
***** Political subdivision results are presented in the aggregate and are not representative of results for individual entities.**

F. VALIDITY OF DATA

The quality of the records available on retired members and on active members was excellent. Almost every record relating to a retired life was used in the valuation. Similarly, very few records on active participants had to be excluded due to questionable data. A list of the records containing apparent discrepancies has been furnished to the staff of the System.

In addition to retired and active members, the master records of the System contain approximately 19,900 records for former members with deferred vested benefits and approximately 28,400 records on other terminated members. Of this latter group, about 13,800 relate to those who terminated without vested benefits, but who have not withdrawn their contributions, and the remaining 14,600 relate to those for whom records are incomplete for various reasons, such as failure to complete membership cards, reporting contradictory social security numbers, etc.

For inactive members with vested benefits, the vested benefit was calculated and the value of the benefit was compared with the current value of the member's accumulated contributions; the larger of the two amounts was established as a liability of the System. For all other "miscellaneous" categories, the amount of each member's accumulated contributions was established as a liability of the System; thus, some liability was established for each of these records.

Records on active participants were obtained from the master file which has been built on all TCRS participants. The records were examined extensively with only minor discrepancies being observed. In general, the TCRS records seem to be in excellent condition, especially for a system which is so large and which receives data from so many widely-dispersed sources.

G. BENEFIT PAYMENT PROJECTION

Advance funding for TCRS is based upon ongoing plan concepts including recognition of the likelihood that currently active participants will retire in the future. An examination of the incidence of future benefit payments can be of interest to financial managers in forecasting future cash flows from the plan. Such information is valuable in assessing the liquidity needs that must be satisfied by plan investments in order to satisfy the needs of participants.

Plan benefits are funded by means of employee and employer contributions accumulated in advance of the benefit payment commence date. Consequently, significant funds build up within the plan during the working life time of participants. The following table provides a projection of expected benefit payment patterns. The projection is based upon assumptions utilized in preparing the actuarial valuation. The assumptions include those regarding future salary levels, retirement dates, incidence of disability and mortality and annual cost of living adjustments.

Payments in the table are separated into amounts paid to existing retirees and amounts paid to currently active employees who are expected to retire in the future. Payments to existing retirees decline with increases attributable to cost of living adjustment mitigating decreases related to the incidence of mortality. In the aggregate, the decline in payments to existing retirees is more than offset by the influx of new retirees. The net effect of various factors on the retirement payment pattern is that benefit payments from the TCRS during the twenty year projection period are expected to increase by an average of approximately 7.2% per annum. Some variation in benefit payment growth is projected with the highest rates of increase expected to occur immediately with increases of over 10% anticipated.

Benefit Payment Projection

Year	*Current retirees*	*Current active participants*	*Total*
2001	$784,853,987	$41,340,057	$826,194,044
2002	783,712,109	127,978,674	911,690,783
2003	781,196,291	220,499,459	1,001,695,750
2004	777,266,981	319,810,155	1,097,077,136
2005	771,859,716	425,140,114	1,196,999,830
2006	764,978,661	536,592,681	1,301,571,342
2007	756,577,023	656,313,232	1,412,890,255
2008	746,644,737	784,554,552	1,531,199,289
2009	734,937,953	920,690,967	1,655,628,920
2010	721,851,707	1,062,431,163	1,784,282,870
2011	707,183,091	1,207,839,324	1,915,022,415
2012	690,943,656	1,356,242,890	2,047,186,546
2013	673,148,869	1,507,137,659	2,180,286,528
2014	653,829,027	1,660,761,765	2,314,590,792
2015	633,033,101	1,817,627,811	2,450,660,912
2016	610,828,870	1,976,154,867	2,586,983,737
2017	587,301,604	2,134,258,398	2,721,560,002
2018	562,555,059	2,291,210,839	2,853,765,898
2019	536,710,024	2,447,952,730	2,984,662,754
2020	509,904,408	2,601,403,989	3,111,308,397

H. OUTLINE OF BENEFIT AND CONTRIBUTION PROVISIONS

(As Amended through July 1, 2001)

Any person who becomes a teacher not participating in a local retirement fund, a general employee of the State, a state policeman, or a wildlife officer on or after July 1, 1972 becomes a member of the Tennessee Consolidated Retirement System as a condition of employment. Membership is optional for any person who becomes a state judge, a part-time employee, a commissioner, a county judge or county official in a participating political subdivision, an attorney general, an assistant attorney general, a criminal investigator, or an elected or appointed official of the general assembly. Membership is mandatory for any person employed on or after July 1, 1993 as an attorney general in the office of the Attorney General and reporter. Membership is compulsory for other employees of participating political subdivisions, except that for employees in service on the date the political subdivision commences participation, membership is optional.

A member of a superseded system as of June 30, 1972 had the choice of becoming a Group I, II, or III member of the Consolidated System according to his employment classification, or remaining subject to the benefit and contribution provisions of the superseded system as a "prior class" member with all rights, benefits and privileges under the superseded system. This choice was extended to members eligible to enter Group III prior to September 1, 1974. A transferred former Class A or Class B member of the System who is not a prior class member receives the greater of the retirement allowance provided under the Consolidated System or the superseded system. Effective July 1, 1976, all new members began to enter Group I, regardless of employment classification. Effective September 1, 1990, new state judges began to enter a new Group IV; Group I and Group III state judges could elect to transfer to this new category.

"Creditable service" means membership service under the Consolidated System for which contributions are made by the member, plus prior service credited under a superseded system as of June 30, 1972. Additional service may also be credited for certain periods of military service and service before the date of membership for which the member makes the required contributions.

The term "Average Final Compensation "(AFC) means average compensation during the five consecutive years of creditable service producing the highest average. "Social Security Integration Level" (SSIL) means, for the calendar year in which a member retires, the average annual amount of earnings (rounded to the nearest multiple of $600) with respect to which old age and survivors' benefits would be provided under Title II of the Federal Social Security Act for a male employee attaining age 65 in such calendar year, computed as though for each year prior to such calendar year, annual earnings are at least equal to the maximum amount of earnings subject to contributions under the provisions of the Federal Insurance Contributions Act. The SSIL is $35,400 in 2001 and will be $37,200 in 2002. "Social Security Base" (SSB) means for each calendar year the amount of a member's compensation subject to Social Security contributions, except that for years prior to 1966 SSB means $6,600 for the superseded Teachers' System. For the period prior to July 1, 1963 SSB means $4,200 and for the period between July 1, 1963 and January 1, 1966 SSB means $4,800 under the superseded State System.

"Benefit Base" (BB) means the annual salary in the position from which certain prior class members in a superseded system covering elected officials retired, as of the dates of their retirement; except that for members who are eligible for escalation, the Benefit Base is increased to reflect any post-retirement changes in annual salary for the position from which the member retired.

The regular form of benefit under the System is a monthly annuity payable to the member for life, with all payments ceasing at his death. In lieu of the regular benefit, a member may elect an optional plan to convert his allowance into a reduced benefit of equivalent actuarial value in accordance with one of the following options:

Option I - In the event of the member's death, the designated beneficiary will receive 100% of the member's reduced monthly benefit for life.

Option II - In the event of the member's death, the designated beneficiary will receive 50% of the member's reduced monthly benefit for life.

Option III - In the event of the member's death, the designated beneficiary will receive 100% of the member's reduced monthly benefit for life. Should the beneficiary die before the member, the benefit payable to the member reverts to the unreduced regular benefit.

Option IV - In the event of the member's death, the designated beneficiary will receive 50% of the member's reduced monthly benefit for life. Should the beneficiary die before the member, the benefit payable to the member reverts to the unreduced regular benefit.

Social Security Adjustment - A member may convert his retirement allowance into an increased benefit payable prior to the date he is eligible to receive Social Security benefits and a reduced allowance payable after that date, so that his total income will be approximately the same before and after the commencement of Social Security payments.

Benefits payable to retired members are increased on each July 1 according to the percentage increase in the Consumer Price Index during the preceding calendar year, provided that the increase will not exceed 3% of the current benefit in any year, and provided that the member has been retired for at least 12 months. Prior to July 1, 1998, the CPI increase percentage was applied to the initial base, rather than current, benefit.

Every member is guaranteed the return of his account balance arising from his own contributions (including interest) either as benefit payments to him or his designated beneficiary, or upon his death or termination as a lump sum amount equal to the excess of his accumulated contributions over any benefits paid on his behalf.

Effective July 1, 1981, the System became non-contributory (or, for classes of employees who previously contributed more than 5%, contribution rates were reduced by 5%) for State employees and for teachers in higher education. Teachers in grades K-12 and political subdivisions remained contributory, except that political subdivisions were given the option of electing to become non-contributory.

For employees who moved from "contributory" to "non-contributory" on July 1, 1981, withdrawals in the event of termination have been calculated as though their personal contributions had continued, and retirement benefits have been calculated by loading each of the next 15 years' salaries by 3.6%. This provision, which otherwise would have expired on June 30, 1996, has been extended permanently effective July 1, 1998 by the Legislature for those members in the system at the onset of non-contributory retirement.

The following summaries give the main provisions of the Tennessee Consolidated Retirement System on which the valuation was based. Summaries are also given of the various superseded systems, whose provisions are applicable for certain members. Throughout these summaries, the symbol # means that the actual benefit (or minimum or maximum) is 105% of the indicated amount for State employees (including teachers) in these categories, and that participating political subdivisions may elect this improvement as an optional provision.

Note: In the following tables, minimum benefits are described as $96.00 per year or $103.92 per year for various classifications. These amounts apply to members with at least 10 years of creditable service. If a benefit is calculated for a member with less than 10 years of creditable service, minimum benefits of $84.00 per year and $91.92 per year, respectively, apply instead of the amounts shown in the tables.

TENNESSEE CONSOLIDATED RETIREMENT SYSTEM

	GROUP			
	I	II	III	IV
SERVICE RETIREMENT				
Full Benefit:				
Eligibility conditions (Age and years of creditable service)	Age 60 and vested, or 30 years	Age 60 and vested, or 55 with 25 years or 30 years of service*	Age 65 and vested, or age 55 with 24 years or 30 years	Age 55 with 24 years, or Age 60 with 8 years
Benefit percentages (% of AFC for each year of Creditable service):				
% up to SSIL	1.50%#	1.75%#	2.00%	2.50%
% over SSIL	1.75#	2.25#	2.50	2.50
Early Reduced Benefit:				
Eligibility conditions	N/A	55 with 10 years	Age 55 with 8 years	N/A
Benefit	Full benefit reduced by 4/10 of 1% for each month prior to eligibility for full benefit.			
25 Year Benefit:				
Eligibility Conditions	25 years	N/A	N/A	N/A
Benefit	Full benefit is reduced 4/10 of 1% for each of first 60 months prior to 30 years of service. Benefit so calculated is further reduced by actuarial factor if member's age at commencement of benefits is less than 55.			

*See note on next page.

#See explanation on page H-3.

TENNESSEE CONSOLIDATED RETIREMENT SYSTEM
(Continued)

	GROUP			
	I	II	III	IV
Vested Benefit:				
Eligibility conditions	5 years**	10 years	8 years	8 years
Benefit	Reduced benefit payable at age 55 or later Benefit further reduced by 15% for each year of service less than 10 years			
Maximum Benefit: (before reduction)	90%# of average final compensation	80%	75%	75%
Minimum Benefit:	$96.00# for each year of creditable service, but not in excess of 100% of average final compensation.			
ORDINARY DISABILITY RETIREMENT				
Eligibility conditions	5 years	5 years	8 years	8 years
Benefit percentages:*				
% up to SSIL	1.350%#	1.575%#	1.800%	2.250%
% over SSIL	1.575#	2.025#	2.250	2.250

* Benefit % for each year of creditable service. If service to date of disability retirement is less than 20 years, projected years of service to the full benefit date are added to creditable service, but not to bring total years of creditable service to more than 20 years, nor less than ten years of creditable service. Benefit changes to normal service benefit (including projected years of service) when the conditions for normal service retirement are met.

NOTE: During certain time restricted periods, certain Group II members could elect to become covered by a special provision whereby the eligibility condition for service retirement is age 55 (and vested) or 25 years of service. In order to elect this provision of the law, the Group II member must make additional contributions to the retirement system at the rate of 5% of salary.

**If membership date is prior to 7-1-79, 4 years.

TENNESSEE CONSOLIDATED RETIREMENT SYSTEM
(Continued)

	GROUP			
	I	II	III	IV
ORDINARY DISABILITY RETIREMENT (Continued)				
Maximum Benefit:	75%# of average final compensation			
Minimum Benefit: (no reduction)	$96.00# for each year of creditable service to date of disability retirement, but not in excess of 100% of final compensation.			
ACCIDENTAL DISABILITY RETIREMENT				
Eligibility condition	In performance of duty	In performance of duty	N/A	N/A
Benefit:				
To age 62 or receipt of Social Security Disability	50%# of average final compensation	50%# of average final compensation	N/A	N/A
After age 62 or receipt of Social Security Disability	33-1/3%# of average final compensation	33-1/3%# of average final compensation	N/A	N/A
For members joining on or after 7/1/97, benefit is determined in same manner as ordinary disability.				
INACTIVE DISABILITY				
Eligibility condition	5 years	5 years	8 years	8 years
Benefit:	Actuarial equivalent of age 55 benefit			
ORDINARY DEATH BENEFITS				
1. Eligibility condition	Eligible for early or service retirement benefit			
Benefit	Survivor benefit as if member had retired and elected joint and 100% survivor annuity			

TENNESSEE CONSOLIDATED RETIREMENT SYSTEM
(Continued)

	GROUP			
	I	II	III	IV
ORDINARY DEATH BENEFITS (Continued)				
2. Eligibility condition*	10 years	10 years	10 years	10 years
Benefit	To surviving spouse, as if member had retired and elected immediate joint and 100% survivor annuity (Option I)			
3. Eligibility condition	In service within 120 days and no other benefit			
Benefit	Lump sum equal to the member's account balance plus an equal amount payable from the employer fund.			
ACCIDENTAL DEATH BENEFITS				
Eligibility condition	Death in performance of duty			
Benefit	50%[#] of average final compensation to eligible dependent(s) integrated with Board of Claims and Social Security so that the total benefit does not exceed 100% of average final compensation.			
INACTIVE DEATH BENEFITS				
Eligibility condition*	10 years	10 years	10 years	10 years
Benefit	To surviving spouse as if member had retired and elected Option II (50%)			

* Optional to political subdivisions

TENNESSEE CONSOLIDATED RETIREMENT SYSTEM
(Continued)

	GROUP			
	I	II	III	IV
MEMBER CONTRIBUTION RATES				
Contributory				
% of compensation up to SSB	5.0%	5.5%	5.5%	N/A
% of compensation in excess of SSB	5.0%	5.5%	7.0%	N/A
Non-Contributory				
% of compensation up to SSB	0.0%	0.5%	0.5%	0.5%
% of compensation in excess of SSB	0.0%	0.5%	2.0%	2.0%

SUPERSEDED SYSTEMS
TENNESSEE TEACHERS' RETIREMENT SYSTEM

	PRIOR CLASS A	TRANSFERRED CLASS B	PRIOR CLASS B
SERVICE RETIREMENT			
Full Benefit:			
Eligibility conditions (Age and years of creditable service)	------------------------ Age 60 or 30 years ------------------------		
Benefit percentages (% of AFC for each year of creditable service):			
% up to SSB	1.125%#	1.875%#	1.875%#
% over SSB	1.875#	1.875#	1.875#
Vested Benefit:			
Eligibility conditions	10 years or 4 years at higher learning institute (only Class A)		
Benefit	Full benefit deferred to age 60		
Minimum Benefit (No reduction)	$96.00#	$103.92#	$103.92#
DISABILITY RETIREMENT			
Eligibility conditions	10 years	10 years	10 years
Benefit percentages:			
% up to SSB	1.0125%*#	1.6875%**#	1.6875%**#
% over SSB	1.6875#	1.6875#	1.6875#
Minimum Benefit (No reduction)	$96.00#	$103.92#	$103.92#

* If service to date of disability retirement is less than 20 years, projected years of service to the full benefit date are added to creditable service, but not to bring total years of creditable service to more than 20 years, nor less than 10 years.

** Total benefit package percentage based on years of service not to be less than 25%.#

SUPERSEDED SYSTEMS

TENNESSEE TEACHERS' RETIREMENT SYSTEM
(Continued)

	PRIOR CLASS A	TRANSFERRED CLASS B	PRIOR CLASS B
DEATH BENEFITS			
1. Eligibility condition	Eligible for early or service retirement		
Benefit	Joint and 100% survivor option as if member had retired and elected this option		
2. Eligibility condition	10 years	10 years	10 years
Benefit	To surviving spouse, as if member had retired and elected immediate joint and 100% survivor annuity (Option I)		
3. Eligibility condition	In service within 120 days and no other benefit		
Benefit	Lump sum equal to the member's account balance plus an equal amount payable from the employer fund		
INACTIVE DEATH BENEFITS			
Eligibility condition*	10 years	10 years	10 years
Benefit	To surviving spouse as if member had retired and elected Option II (50%)		
MEMBER CONTRIBUTION RATES			
Contributory			
% of compensation up to SSB	3.0%	5.0%	7.0%
% of compensation in excess of SSB	3.0%	5.0%	7.0%
Non-Contributory	0.0%	0.0%	2.0%

*Optional to political subdivisions

SUPERSEDED SYSTEMS

TENNESSEE STATE RETIREMENT SYSTEM

	GENERAL EMPLOYEES		
	PRIOR CLASS A	TRANSFERRED CLASS B	PRIOR CLASS B
SERVICE RETIREMENT			
Full Benefit:			
Eligibility conditions (Age and years of creditable service)	Age 65	Age 60 with 20 years or 30 years	Age 60 with 20 years or 30 years
Benefit percentages (% of AFC for each year of creditable service):			
% up to SSB	1.125%#	1.875%#	1.875%#
% over SSB	1.750#	1.875#	1.875#
Vested Benefit:			
Eligibility conditions	10 years	10 years	10 years
	Payable at age 55 or later		
Benefit	Full benefit reduced by 4/10 of 1% for each month prior to eligibility for full benefit		
Maximum Benefit:	75%# of average final compensation		
Minimum Benefit:			
(Per year of creditable service) No reduction	$96.00#	$103.92#	$103.92#
Death Benefits:			
1. Eligibility condition	Eligible for early or service retirement		
Benefit	Joint and 100% survivor option as if member had retired and elected this option.		
2. Eligibility condition*	10 years	10 years	10 years
Benefit	To surviving spouse, as if member had retired and elected immediate joint and 100% survivor annuity (Option I)		

* Optional to political subdivisions.

SUPERSEDED SYSTEMS

TENNESSEE STATE RETIREMENT SYSTEM
(Continued)

	GENERAL EMPLOYEES		
	PRIOR CLASS A	TRANSFERRED CLASS B	PRIOR CLASS B
3. Eligibility condition	In service within 120 days and no other benefit		
Benefit	Lump sum equal to the member's account balance plus an equal amount payable from the employer fund.		
INACTIVE DEATH BENEFITS			
Eligibility condition***	10 years	10 years	10 years
Benefit	To surviving spouse as if member had retired and elected Option II (50%)		
DISABILITY RETIREMENT			
Eligibility conditions	10 years	5 years	5 years
Benefit percentages:			
% up to SSB	1.0125%*[#]	1.6875%**[#]	1.6875%**[#]
% over SSB	1.5750[#]	1.6875[#]	1.6875[#]
Maximum Benefit	75% of average final compensation		
Minimum Benefit (No reduction)	$96.00[#]	$103.92[#]	$103.92[#]
MEMBER CONTRIBUTION RATES			
Contributory			
% of compensation up to SSB	3.0%	5.5%	7.0%
% of compensation in excess of SSB	5.0%	5.5%	7.0%
Non-Contributory	0.0%	0.0%	2.0%

* If service to date of disability retirement is less than 20 years, projected years of service to the full benefit date are added to creditable service, but not to bring total years of creditable service to more than 20 years.

** Total benefit percentage based on years of service not to be less than 25%.[#]

*** Optional to political subdivisions

SUPERSEDED SYSTEMS

TENNESSEE STATE RETIREMENT SYSTEM
(Continued)

	GAME AND FISH OFFICERS	STATE POLICEMEN	FIREMEN AND POLICEMEN
SERVICE RETIREMENT			
Full Benefit:			
Eligibility conditions (Age and years of creditable service)	Age 60 or 55 with 25 years, or 30 years	Age 50 or 25 years	Age 55 with 25 years, or 30 years
Benefit percentages (% of AFC for each year of creditable service)	2.125%#	2.250%#	2.250%#
Vested Benefit:			
Eligibility conditions	10 years	10 years	10 years
	Payable at age 55 or later for Class A Payable upon completion of 10 years for Class B		
Benefit	Full benefit reduced by 4/10 of 1% for each month prior to eligibility for full benefit		
Maximum Benefit	75%# of average final compensation		
Minimum Benefit (Per year of creditable service)	Class A - $96.00# Class B - $103.92#	N/A	Class A - $96.00# Class B - $103.92#
DISABILITY RETIREMENT			
Eligibility conditions	Class A - 10 years Class B - 5 years	5 years	Class A - 10 years Class B - 5 years
Benefit percentages	1.9125%*#	2.025%**#	2.025%*#
Maximum Benefit	75% of average final compensation		
Minimum Benefit (No projected service)	Class A - $96.00# Class B - $103.92#	N/A	Class A - $96.00# Class B - $103.92#

* For Class A, if service to date of disability retirement is less than 20 years, projected years of service to age 55 are added to creditable service, but not to bring total years of creditable service to more than 20 years. Class B does not get projected years.

** Total benefit percentage based on years of service (without projection) not to be less than 25%.#

SUPERSEDED SYSTEMS

TENNESSEE STATE RETIREMENT SYSTEM
(Continued)

	GAME AND FISH OFFICERS	STATE POLICEMEN	FIREMEN AND POLICEMEN
ACCIDENTAL DISABILITY			
Eligibility conditions	N/A	In performance of duty	N/A
Benefit	N/A	50% of AFC#	N/A
ORDINARY DEATH BENEFITS			
1. Eligibility conditions	In service within 120 days and no other benefit		
Benefit	Lump sum equal to the member's account balance plus an equal amount payable from the employer fund.		
2. Eligibility conditions*	10 years	10 years	10 years
Benefit	To surviving spouse, as if member had retired and elected immediate joint and 100% survivor annuity (Option I)		
3. Eligibility conditions	Eligible for early or service retirement		
Benefit	Joint and 100% survivor option as if member had retired and elected this option.		
INACTIVE DEATH BENEFITS			
Eligibility condition	10 years	10 years	10 years
Benefit	To surviving spouse as if member had retired and elected Option II (50%)		
DEATH IN PERFORMANCE OF DUTY	N/A	50% of AFC#	N/A
MEMBER CONTRIBUTION RATES			
% of compensation to SSB	5.0%	6.63%	Class A - 3.0% Class B - 7.0%
% of compensation in excess of SSB	5.0%	6.63%	Class A - 5.0% Class B - 7.0%

*Optional to political subdivisions.

SUPERSEDED SYSTEMS

	STATE JUDGES	ATTORNEYS GENERAL	COUNTY JUDGES
SERVICE RETIREMENT			
Full Benefit:			
Eligibility conditions (Age and years of service)	Age 65 or age 54 with 8 years	Age 54 with 10 years	Age 55 with 8 years
Benefit percentages (% of BB for each year of creditable service)	3.75%	3.75%	3.0%*
Vested Benefit:			
Eligibility conditions	Immediate	10 years	8 years
Benefit	Full benefit deferred to age 54 with 8 years or age 65	Full benefit deferred to age 54	Full benefit deferred to age 55
Maximum Benefit	75% of BB	75% of BB	75% of BB
DISABILITY RETIREMENT			
Eligibility conditions	10 years	10 years	8 years
Benefit	Full service benefit	Full service benefit	Full service benefit
Minimum Benefit	N/A	N/A	25% of AFC

BB (Benefit Base) definition:

(1) If member's benefit is subject to escalation, the BB is the salary the retired member would have received had he remained in office.
(2) If member's benefit is not subject to escalation, the BB is the salary at the time the member retired or the salary in effect May 1, 1975, whichever is greater.

* Minimum total rate of 75% of average final compensation after 24 years of creditable service.

SUPERSEDED SYSTEMS
(Continued)

	STATE JUDGES	ATTORNEYS GENERAL	COUNTY JUDGES
DEATH BENEFIT			
Eligibility conditions			
1. Eligible for service retirement	If elected, survivorship option as if member retired; otherwise 100% joint and survivor option to designated beneficiary	If elected, survivorship option as if member retired; otherwise 100% joint and survivor option to designated beneficiary	If elected, survivorship option as if member retired; otherwise 50% joint and survivor option to designated beneficiary
2. Eligibility conditions	10 years	10 years	10 years
Benefit	To surviving spouse, as if member had retired and elected immediate joint and 100% survivor annuity (Option I)		
3. 10 years	N/A	Optional benefit paid at age 54 if elected	N/A
4. Age 54 with 10 years or 18 years	N/A	50% joint and survivor option as if member had retired	N/A
5. Eligibility condition	In service within 120 days and no other benefit		
Benefit	Lump sum equal to the member's account balance plus an equal amount payable from the employer fund.		
INACTIVE DEATH BENEFITS			
Eligibility condition	10 years	10 years	10 years
Benefit	To surviving spouse as if member had retired and elected Option II (50%)		
MEMBER CONTRIBUTION RATES	3.0%	8.0% contributory 3.0% non-contributory	8.0% contributory 3.0% non-contributory

SUPERSEDED SYSTEMS

(Continued)

	COUNTY OFFICIALS	PUBLIC SERVICE COMMISSIONERS
SERVICE RETIREMENT		
Full Benefit:		
Eligibility conditions (Age and years of service)	Age 55 with 12 years	Age 65 or age 54 with 12 years
Benefit percentages (% of BB or AFC for each year of creditable service)	2.5% of AFC	3.75% of salary at retirement
Maximum Benefit	75% of AFC	75% of salary at retirement
Vested Benefit:		
Eligibility conditions	12 years	Immediate
Benefit	Full benefit deferred to age 55	Deferred to age 65 or to age 54 with 12 years
DISABILITY RETIREMENT		
Eligibility conditions	N/A	10 years
Benefit	N/A	Full benefit
DEATH BENEFITS		
1. Eligibility conditions	12 years	Eligible for full benefit
Benefit	Full benefit payable to beneficiary for 10 years; if eligible for service retirement, beneficiary may elect joint and 100% survivor option	If elected, survivorship option as if member retired; otherwise 100% joint and survivor option to designated beneficiary
2. Eligibility conditions	10 years	10 years
Benefit	To surviving spouse, as if member had retired and elected immediate joint and 100% survivor annuity (Option I)	
3. Eligibility condition	In service within 120 days and no other benefit	
Benefit	Lump sum equal to the member's account balance plus an equal amount payable from the employer fund.	

SUPERSEDED SYSTEMS
(Continued)

	COUNTY OFFICIALS	PUBLIC SERVICE COMMISSIONERS
INACTIVE DEATH BENEFITS		
1. Eligibility conditions	10 years	10 years
Benefit	To surviving spouse as if member had retired and elected Option II (50%)	
2. Eligibility conditions	Out of service more than 120 days	
Benefit	Lump sum payment equal to member's account balance	
MEMBER CONTRIBUTION RATES	8.0%	8.0%

I. APPENDIX

TABLE I-1

CONTRIBUTORY TEACHERS

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age	Male		Female		Total		
						Earnings	
Group	Number	Earnings	Number	Earnings	Number	Total	Average
1-20	1	$30,620	1	$16,881	2	$47,501	$23,751
21-25	508	15,333,263	2,800	81,618,623	3,308	96,951,886	29,308
26-30	1,796	58,206,225	6,680	205,483,551	8,476	263,689,776	31,110
31-35	1,620	57,584,233	5,632	186,963,443	7,252	244,547,676	33,721
36-40	1,524	59,489,603	5,122	184,199,407	6,646	243,689,010	36,667
41-45	1,732	73,099,866	7,020	271,974,142	8,752	345,074,008	39,428
46-50	2,509	113,563,875	9,631	401,469,914	12,140	515,033,789	42,425
51-55	2,849	135,760,287	8,927	388,261,058	11,776	524,021,345	44,499
56-60	1,403	69,017,548	3,987	177,381,150	5,390	246,398,698	45,714
61-65	378	18,699,171	1,059	47,429,010	1,437	66,128,181	46,018
66-70	68	3,328,083	173	7,959,439	241	11,287,522	46,836
71-75	18	815,964	41	1,820,296	59	2,636,260	44,682
76-80	2	54,829	8	388,554	10	443,383	44,338
81-85	1	49,797	2	95,269	3	145,066	48,355
86-90	0	0	0	0	0	0	0
Total	14,409	$605,033,364	51,083	$1,955,060,737	65,492	$2,560,094,101	$39,090

TABLE I-2

STATE GENERAL EMPLOYEES
(INCLUDES NON-CONTRIBUTORY TEACHERS AND SEPARATELY-FUNDED SYSTEMS)

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Male Number	Male Earnings	Female Number	Female Earnings	Total Number	Total Earnings Total	Total Earnings Average
1-20	204	$3,428,499	246	$3,777,359	450	$7,205,858	$16,013
21-25	1,069	21,479,502	1,769	34,109,630	2,838	55,589,132	19,587
26-30	1,838	44,447,039	2,705	60,787,952	4,543	105,234,991	23,164
31-35	2,159	59,596,518	3,060	75,341,518	5,219	134,938,036	25,855
36-40	2,853	84,859,871	4,391	115,627,758	7,244	200,487,629	27,676
41-45	3,685	118,082,227	5,658	158,999,551	9,343	277,081,778	29,657
46-50	4,363	155,715,269	6,112	185,128,863	10,475	340,844,132	32,539
51-55	4,374	163,367,296	5,455	169,325,326	9,829	332,692,622	33,848
56-60	3,024	119,798,085	3,288	102,826,170	6,312	222,624,255	35,270
61-65	1,569	63,033,138	1,407	42,909,705	2,976	105,942,843	35,599
66-70	447	18,221,353	395	11,333,339	842	29,554,692	35,101
71-75	156	5,391,816	129	3,693,378	285	9,085,194	31,878
76-80	49	1,978,147	37	1,038,772	86	3,016,919	35,080
81-85	4	60,915	11	337,145	15	398,060	26,537
86-90	0	0	0	0	0	0	0
Total	25,794	$859,459,675	34,663	$965,236,466	60,457	$1,824,696,141	$30,182

TABLE I-3

POLITICAL SUBDIVISION GENERAL EMPLOYEES

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Male Number	Male Earnings	Female Number	Female Earnings	Total Number	Total Earnings Total	Total Earnings Average
1-20	220	$3,843,962	129	$1,839,945	349	$5,683,907	$16,286
21-25	1,634	36,286,886	1,375	24,031,985	3,009	60,318,871	20,046
26-30	3,152	81,519,871	2,677	50,624,907	5,829	132,144,778	22,670
31-35	3,540	97,144,438	4,032	73,142,587	7,572	170,287,025	22,489
36-40	3,824	109,530,549	5,850	102,861,680	9,674	212,392,229	21,955
41-45	3,918	114,541,883	6,772	124,334,800	10,690	238,876,683	22,346
46-50	3,873	118,570,895	6,522	126,477,064	10,395	245,047,959	23,574
51-55	3,502	105,094,385	5,598	107,694,422	9,100	212,788,807	23,383
56-60	2,714	74,719,787	4,027	75,790,562	6,741	150,510,349	22,328
61-65	1,522	38,995,856	1,986	35,139,951	3,508	74,135,807	21,133
66-70	646	13,709,271	712	11,411,184	1,358	25,120,455	18,498
71-75	303	4,848,434	232	3,501,679	535	8,350,113	15,608
76-80	73	1,041,881	48	790,049	121	1,831,930	15,140
81-85	16	238,953	17	243,792	33	482,745	14,629
86-90	0	0	0	0	0	0	0
Total	28,937	$800,087,051	39,977	$737,884,607	68,914	$1,537,971,658	$22,317

TABLE I-4

UNIVERSITY OF TENNESSEE (TIAA)

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Male Number	Male Earnings	Female Number	Female Earnings	Total Number	Total Earnings Total	Total Earnings Average
1-20	0	$0	0	$0	0	$0	$0
21-25	0	0	0	0	0	0	0
26-30	0	0	0	0	0	0	0
31-35	0	0	0	0	0	0	0
36-40	0	0	0	0	0	0	0
41-45	0	0	0	0	0	0	0
46-50	8	548,439	7	606,836	15	1,155,275	77,018
51-55	87	7,301,930	43	2,813,860	130	10,115,790	77,813
56-60	239	18,489,572	28	1,782,681	267	20,272,253	75,926
61-65	175	13,795,939	28	1,801,406	203	15,597,345	76,834
66-70	59	5,254,450	8	515,748	67	5,770,198	86,122
71-75	21	1,583,743	3	307,686	24	1,891,429	78,809
76-80	5	325,092	1	42,222	6	367,314	61,219
81-85	0	0	0	0	0	0	0
86-90	0	0	0	0	0	0	0
Total	594	$47,299,165	118	$7,870,439	712	$55,169,604	$77,485

TABLE I-5

GROUP II

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Male Number	Male Earnings	Female Number	Female Earnings	Total Number	Total Earnings Total	Total Earnings Average
1-20	0	$0	0	$0	0	$0	$0
21-25	0	0	0	0	0	0	0
26-30	0	0	0	0	0	0	0
31-35	0	0	0	0	0	0	0
36-40	0	0	0	0	0	0	0
41-45	2	101,803	0	0	2	101,803	50,901
46-50	81	4,001,479	0	0	81	4,001,479	49,400
51-55	155	7,428,839	0	0	155	7,428,839	47,927
56-60	64	3,258,687	0	0	64	3,258,687	50,916
61-65	9	385,394	0	0	9	385,394	42,821
66-70	1	51,160	0	0	1	51,160	51,160
71-75	0	0	0	0	0	0	0
76-80	1	2,400	0	0	1	2,400	2,400
81-85	0	0	0	0	0	0	0
86-90	0	0	0	0	0	0	0
Total	313	$15,229,762	0	$0	313	$15,229,762	$48,657

TABLE I-6

GROUP III

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Male Number	Male Earnings	Female Number	Female Earnings	Total Number	Total Earnings Total	Total Earnings Average
1-20	0	$0	0	$0	0	$0	$0
21-25	0	0	0	0	0	0	0
26-30	0	0	0	0	0	0	0
31-35	0	0	0	0	0	0	0
36-40	0	0	0	0	0	0	0
41-45	0	0	0	0	0	0	0
46-50	0	0	0	0	0	0	0
51-55	7	532,970	2	84,810	9	617,780	68,642
56-60	16	1,161,789	3	166,590	19	1,328,379	69,914
61-65	10	681,299	2	98,454	12	779,753	64,979
66-70	7	457,188	5	261,525	12	718,713	59,892
71-75	4	343,325	0	0	4	343,325	85,831
76-80	1	49,655	1	48,156	2	97,811	48,905
81-85	0	0	0	0	0	0	0
86-90	0	0	0	0	0	0	0
Total	45	$3,226,226	13	$659,535	58	$3,885,761	$66,995

TABLE I-7

TOTAL

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY AGE

Age Group	Male Number	Male Earnings	Female Number	Female Earnings	Total Number	Total Earnings Total	Total Earnings Average
1-20	425	$7,303,081	376	$5,634,185	801	$12,937,266	$16,151
21-25	3,211	73,099,651	5,944	139,760,238	9,155	212,859,889	23,251
26-30	6,786	184,173,135	12,062	316,896,410	18,848	501,069,545	26,585
31-35	7,319	214,325,189	12,724	335,447,548	20,043	549,772,737	27,430
36-40	8,201	253,880,023	15,363	402,688,845	23,564	656,568,868	27,863
41-45	9,337	305,825,779	19,450	555,308,493	28,787	861,134,272	29,914
46-50	10,834	392,399,957	22,272	713,682,677	33,106	1,106,082,634	33,410
51-55	10,974	419,485,707	20,025	668,179,476	30,999	1,087,665,183	35,087
56-60	7,460	286,445,468	11,333	357,947,153	18,793	644,392,621	34,289
61-65	3,663	135,590,797	4,482	127,378,526	8,145	262,969,323	32,286
66-70	1,228	41,021,505	1,293	31,481,235	2,521	72,502,740	28,760
71-75	502	12,983,282	405	9,323,039	907	22,306,321	24,594
76-80	131	3,452,004	95	2,307,753	226	5,759,757	25,486
81-85	21	349,665	30	676,206	51	1,025,871	20,115
86-90	0	0	0	0	0	0	0
Total	70,092	$2,330,335,243	125,854	$3,666,711,784	195,946	$5,997,047,027	$30,606

TABLE II-1

CONTRIBUTORY TEACHERS

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service Group	Male Number	Male Earnings	Female Number	Female Earnings	Total Number	Total Earnings Total	Total Earnings Average
0	992	$32,315,298	3,653	$115,182,499	4,645	$147,497,797	$31,754
1	1,009	32,367,736	3,662	110,352,577	4,671	142,720,313	30,555
2	857	28,528,077	2,842	88,869,885	3,699	117,397,962	31,738
3	728	24,768,439	2,665	84,875,876	3,393	109,644,315	32,315
4	669	23,980,766	2,224	72,803,445	2,893	96,784,211	33,455
0- 4	4,255	141,960,316	15,046	472,084,282	19,301	614,044,598	31,814
5-9	2,532	97,440,241	9,220	327,548,664	11,752	424,988,905	36,163
10-14	1,665	71,428,611	6,617	262,273,455	8,282	333,702,066	40,292
15-19	1,286	59,694,340	5,553	234,540,505	6,839	294,234,845	43,023
20-24	1,523	72,844,271	5,624	248,011,248	7,147	320,855,519	44,894
25-29	1,843	91,875,321	5,703	255,872,800	7,546	347,748,121	46,084
30-34	997	52,952,877	2,549	118,636,605	3,546	171,589,482	48,390
35-39	258	14,170,925	632	29,512,703	890	43,683,628	49,083
40-44	44	2,398,723	103	4,892,841	147	7,291,564	49,602
45-49	6	267,739	36	1,687,634	42	1,955,373	46,557
Total	14,409	$605,033,364	51,083	$1,955,060,737	65,492	$2,560,094,101	$39,090

TABLE II-2

STATE GENERAL EMPLOYEES
(INCLUDES NON-CONTRIBUTORY TEACHERS AND SEPARATELY-FUNDED SYSTEMS)

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service Group	Male		Female		Total		
						Earnings	
	Number	Earnings	Number	Earnings	Number	Total	Average
0	2,297	$51,493,814	3,460	$70,947,094	5,757	$122,440,908	$21,268
1	1,555	38,135,433	2,501	55,187,918	4,056	93,323,351	23,009
2	1,505	39,792,110	2,258	52,549,486	3,763	92,341,596	24,539
3	1,164	30,404,887	1,781	40,812,891	2,945	71,217,778	24,183
4	923	24,936,535	1,325	31,489,266	2,248	56,425,801	25,100
0- 4	7,444	184,762,779	11,325	250,986,655	18,769	435,749,434	23,216
5-9	4,148	122,177,727	5,452	138,001,902	9,600	260,179,629	27,102
10-14	3,845	125,309,832	5,100	141,586,211	8,945	266,896,043	29,837
15-19	3,968	141,438,728	5,506	171,656,384	9,474	313,095,112	33,048
20-24	2,764	113,259,536	3,635	125,522,091	6,399	238,781,627	37,315
25-29	2,189	100,084,661	2,569	95,124,687	4,758	195,209,348	41,028
30-34	933	47,759,684	782	30,644,224	1,715	78,403,908	45,717
35-39	395	19,185,322	204	8,211,065	599	27,396,387	45,737
40-44	96	4,802,076	62	2,357,071	158	7,159,147	45,311
45-49	12	679,330	28	1,146,176	40	1,825,506	45,638
Total	25,794	$859,459,675	34,663	$965,236,466	60,457	$1,824,696,141	$30,182

TABLE II-3

POLITICAL SUBDIVISION GENERAL EMPLOYEES

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service	Male		Female		Total		
						Earnings	
Group	Number	Earnings	Number	Earnings	Number	Total	Average
0	2,993	$63,677,694	4,869	$77,290,380	7,862	$140,968,074	$17,930
1	2,802	63,349,049	4,648	73,223,045	7,450	136,572,094	18,332
2	2,463	58,686,606	3,582	58,986,818	6,045	117,673,424	19,466
3	2,188	55,011,267	3,125	52,848,273	5,313	107,859,540	20,301
4	1,856	47,714,375	2,394	41,830,820	4,250	89,545,195	21,069
0- 4	12,302	288,438,991	18,618	304,179,336	30,920	592,618,327	19,166
5-9	6,814	189,982,870	9,124	168,326,979	15,938	358,309,849	22,481
10-14	4,647	142,436,593	5,698	116,499,278	10,345	258,935,871	25,030
15-19	2,468	80,298,241	3,147	69,008,459	5,615	149,306,700	26,591
20-24	1,785	64,232,440	2,245	50,882,289	4,030	115,114,729	28,564
25-29	776	27,984,724	960	23,150,144	1,736	51,134,868	29,456
30-34	109	4,796,373	157	4,710,329	266	9,506,702	35,739
35-39	24	1,282,298	22	904,935	46	2,187,233	47,549
40-44	12	634,521	1	66,206	13	700,727	53,902
45-49	0	0	5	156,652	5	156,652	31,330
Total	28,937	$800,087,051	39,977	$737,884,607	68,914	$1,537,971,658	$22,317

TABLE II-4

UNIVERSITY OF TENNESSEE (TIAA)

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service Group	Male Number	Male Earnings	Female Number	Female Earnings	Total Number	Total Earnings Total	Total Earnings Average
0	0	$0	0	$0	0	$0	$0
1	1	33063	0	0	1	33063	33,063
2	1	6900	0	0	1	6900	6,900
3	0	0	0	0	0	0	0
4	1	21414	0	0	1	21414	21,414
0- 4	3	61,377	0	0	3	61,377	20,459
5-9	9	449,726	0	0	9	449,726	49,969
10-14	6	202,574	2	69,771	8	272,345	34,043
15-19	11	948,123	6	287,607	17	1,235,730	72,690
20-24	68	5,413,085	20	1,560,810	88	6,973,895	79,248
25-29	218	18,316,351	50	3,432,348	268	21,748,699	81,151
30-34	202	15,640,653	27	1,659,312	229	17,299,965	75,545
35-39	63	4,909,097	8	533,602	71	5,442,699	76,657
40-44	11	1,100,994	4	277,512	15	1,378,506	91,900
45-49	3	257185	1	49477	4	306662	76,665
Total	594	$47,299,165	118	$7,870,439	712	$55,169,604	$77,485

TABLE II-5

GROUP II

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service Group	Male Number	Male Earnings	Female Number	Female Earnings	Total Number	Total Earnings Total	Total Earnings Average
0	0	$0	0	$0	0	$0	$0
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
0- 4	0	0	0	0	0	0	0
5-9	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0
15-19	0	0	0	0	0	0	0
20-24	1	47,470	0	0	1	47,470	47,470
25-29	252	12,107,931	0	0	252	12,107,931	48,047
30-34	51	2,560,146	0	0	51	2,560,146	50,198
35-39	9	514,215	0	0	9	514,215	57,135
40-44	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0
Total	313	$15,229,762	0	$0	313	$15,229,762	$48,657

TABLE II-6

GROUP III

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service Group	Male Number	Male Earnings	Female Number	Female Earnings	Total Number	Total Earnings Total	Total Earnings Average
0	0	$0	0	$0	0	$0	$0
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
0- 4	0	0	0	0	0	0	0
5-9	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0
15-19	0	0	0	0	0	0	0
20-24	0	0	0	0	0	0	0
25-29	33	2,402,462	8	422,259	41	2,824,721	68,895
30-34	11	758,859	5	237,276	16	996,135	62,258
35-39	1	64,905	0	0	1	64,905	64,905
40-44	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0
Total	45	$3,226,226	13	$659,535	58	$3,885,761	$66,995

TABLE II-7

TOTAL

DISTRIBUTION OF ACTIVE PARTICIPANTS' EARNINGS BY LENGTH OF SERVICE

Service Group	Male Number	Male Earnings	Female Number	Female Earnings	Total Number	Total Earnings Total	Total Earnings Average
0	6,282	$147,486,806	11,982	$263,419,973	18,264	$410,906,779	$22,498
1	5,367	133,885,281	10,811	238,763,540	16,178	372,648,821	23,034
2	4,826	127,013,693	8,682	200,406,189	13,508	327,419,882	24,239
3	4,080	110,184,593	7,571	178,537,040	11,651	288,721,633	24,781
4	3,449	96,653,090	5,943	146,123,531	9,392	242,776,621	25,849
0- 4	24,004	615,223,463	44,989	1,027,250,273	68,993	1,642,473,736	23,806
5-9	13,503	410,050,564	23,796	633,877,545	37,299	1,043,928,109	27,988
10-14	10,163	339,377,610	17,417	520,428,715	27,580	859,806,325	31,175
15-19	7,733	282,379,432	14,212	475,492,955	21,945	757,872,387	34,535
20-24	6,141	255,796,802	11,524	425,976,438	17,665	681,773,240	38,595
25-29	5,311	252,771,450	9,290	378,002,238	14,601	630,773,688	43,201
30-34	2,303	124,468,592	3,520	155,887,746	5,823	280,356,338	48,146
35-39	750	40,126,762	866	39,162,305	1,616	79,289,067	49,065
40-44	163	8,936,314	170	7,593,630	333	16,529,944	49,639
45-49	21	1,204,254	70	3,039,939	91	4,244,193	46,639
Total	70,092	$2,330,335,243	125,854	$3,666,711,784	195,946	$5,997,047,027	$30,606

TABLE III

DISTRIBUTION OF CURRENT BENEFITS BY AGE GROUPS

RETIRED LIVES

Age Group	Male			Female			Total		
	Number	Annual Benefit Total	Annual Benefit Average	Number	Annual Benefit Total	Annual Benefit Average	Number	Annual Benefit Total	Annual Benefit Average
1-20	0	0	0	0	0	0	0	0	0
21-25	0	0	0	0	0	0	0	0	0
26-30	1	4,299	4,299	2	11,280	5,640	3	15,579	5,193
31-35	13	78,770	6,059	8	40,096	5,012	21	118,866	5,660
36-40	54	247,637	4,586	61	294,031	4,820	115	541,668	4,710
41-45	122	681,607	5,587	136	886,832	6,521	258	1,568,439	6,079
46-50	308	2,515,647	8,168	351	2,750,005	7,835	659	5,265,652	7,990
51-55	1,405	20,904,287	14,878	1,586	22,639,980	14,275	2,991	43,544,267	14,558
56-60	3,009	45,600,473	15,155	3,967	51,208,767	12,909	6,976	96,809,240	13,877
61-65	5,683	70,911,888	12,478	7,606	82,203,457	10,808	13,289	153,115,345	11,522
66-70	6,974	82,751,954	11,866	8,173	81,437,516	9,964	15,147	164,189,470	10,840
71-75	5,894	64,219,741	10,896	7,387	69,774,391	9,446	13,281	133,994,132	10,089
76-80	4,485	44,841,659	9,998	5,826	46,205,321	7,931	10,311	91,046,980	8,830
81-85	3,000	23,781,287	7,927	4,598	33,475,067	7,280	7,598	57,256,354	7,536
86-90	2,399	15,196,099	6,334	4,783	33,014,195	6,902	7,182	48,210,294	6,713
Total	33,347	371,735,348	11,147	44,484	423,940,938	9,530	77,831	795,676,286	10,223

TABLE IV

DISTRIBUTION OF CURRENT BENEFITS BY YEARS SINCE RETIREMENT

RETIRED LIVES

Years Since Retirement	Male Number	Male Annual Benefit Total	Male Annual Benefit Average	Female Number	Female Annual Benefit Total	Female Annual Benefit Average	Total Number	Total Annual Benefit Total	Total Annual Benefit Average
0	1,808	23,170,519	12,816	2,308	28,052,411	12,154	4,116	51,222,930	12,445
1	2,221	27,963,915	12,591	3,071	36,404,536	11,854	5,292	64,368,451	12,163
2	2,364	33,288,525	14,081	2,836	33,050,799	11,654	5,200	66,339,324	12,758
3	2,054	26,885,735	13,089	2,647	30,385,806	11,479	4,701	57,271,541	12,183
4	2,109	24,979,222	11,844	2,450	27,032,403	11,034	4,559	52,011,625	11,409
0- 4	10,556	136,287,916	12,911	13,312	154,925,955	11,638	23,868	291,213,871	12,201
5-9	8,022	95,169,718	11,864	9,917	101,848,716	10,270	17,939	197,018,434	10,983
10-14	6,229	69,673,022	11,185	7,274	65,746,039	9,038	13,503	135,419,061	10,029
15-19	4,220	39,382,230	9,332	5,910	46,011,107	7,785	10,130	85,393,337	8,430
20-24	2,850	20,719,426	7,270	4,470	30,071,130	6,727	7,320	50,790,556	6,939
25-29	1,283	8,942,972	6,970	2,797	19,947,440	7,132	4,080	28,890,412	7,081
30-34	146	1,256,868	8,609	680	4,555,715	6,700	826	5,812,583	7,037
35-39	23	185,271	8,055	76	532,920	7,012	99	718,191	7,254
40-44	9	78,220	8,691	32	218,956	6,842	41	297,176	7,248
45-49	9	39,705	4,412	16	82,960	5,185	25	122,665	4,907
Total	33,347	371,735,348	11,147	44,484	423,940,938	9,530	77,831	795,676,286	10,223

TABLE V

BRINGING FORWARD AMOUNTS TO BE AMORTIZED

	Contributory Teachers	Consolidated State	State Judges (I, III and IV)	Attorneys General (I and III)	County Judges and Officials (All)	St. Judges & Att. Gen. (Superseded)
1999 Unfunded Supplemental Liability	0	0	0	0	$26,955,074	$66,067,671
Contribution	0	0	0	0	2,742,927	6,722,994
Interest	0	0	0	0	1,815,911	4,450,851
2000 Unfunded Supplemental Liability	0	0	0	0	26,028,058	63,795,528
Contribution	0	0	0	0	2,742,927	6,722,994
Interest	0	0	0	0	1,746,385	4,280,440
2001 Unfunded Supplemental Liability	0	0	0	0	25,031,516	61,352,974
Adjustment attributable to Assumption Change					4,280,318	4,881,512
July 1, 2001 Unfunded Supplement Liability after Changes					29,311,834	66,234,486
Amortization Contribution	na	na	na	na	3,211,960	7,257,905
Eligible Payroll	$2,560,093,185	$1,838,321,117	$18,016,014	$31,279,135	$2,631,657	$1,110,788
Contribution as % of Pay	na	na	na	na	122.051%	653.402%

TABLE V (Continued)
REESTABLISHMENT OF UNFUNDED ACCRUED LIABILITY
July 1, 2001

	Contributory Teachers	Consolidated State	State Judges (Groups I, III and IV)	Attorneys General (Groups I and III)	County Judges and Officials	State Judges and Attorneys General (Superseded)
Entry Age Past Service Liability	na	na	na	na	$132,645,994	$154,163,327
Valuation Assets	na	na	na	na	115,136,458	90,445,930
Unfunded Accrued Liability	na	na	na	na	17,509,536	63,717,397
Amortization Contribution	na	na	na	na	1,918,677	6,982,086
Eligible Payroll	$2,560,093,185	$1,838,321,117	$18,016,014	$31,279,135	$2,631,657	$1,110,788
Contribution as % of Pay	na	na	na	na	72.908%	628.570%

TABLE VI
CALCULATION OF CONTRIBUTION RATES
PRIOR ASSUMPTION

	Contributory Teachers	Consolidated State	State Judges (Groups I, III, and IV)	Attorneys General (Groups I and III)	County Judges and Officials (All)	State Judges and Attorneys General (Superseded)
1. Present Value of Benefits	$14,677,989,017	$8,743,608,683	$84,810,689	$95,484,159	$130,285,892	$150,727,978
2. Current Members' Fund	1,876,045,586	734,357,962	7,879,014	12,812,867	4,462,715	3,021,692
3. Current State Accumulation Fund	10,753,943,919	7,059,487,544	61,969,249	48,910,560	110,673,743	87,424,238
4. Present Value of Future Employee Contributions	1,302,347,408	355,889	1,149,272	175,860	721,468	340,025
5. Unfunded Accrued Liability	0	0	0	0	13,229,218	58,835,886
6. Present Value of Future Normal Costs, ((1)-(2)-(3)-(4)-(5))	745,652,104	949,407,289	13,813,154	33,584,872	1,198,748	1,106,138
7. Present Value of Future Salaries	26,157,556,075	16,159,014,489	119,206,187	306,841,477	12,477,825	6,629,885
8. Normal/Aggregate Cost Percentage ((6)/(7))	2.851%	5.875%	11.588%	10.945%	9.607%	16.684%
9. Unfunded Accrued Liability Percentage (Table V)	0.000%	0.000%	0.000%	0.000%	67.248%	580.415%
14-Year Amortization						
10. Total Contribution Rate ((8)+(9)) x 1.0375+0.13%						
14-Year Amortization	na	na	na	na	67.248%	619.620%
Aggregate	3.088%	6.226%	12.152%	11.486%	120.095%	938.153%

TABLE VI
CALCULATION OF CONTRIBUTION RATES
REVISED ASSUMPIONS

	Contributory Teachers	Consolidated State	State Judges (Groups I, III, and IV)	Attorneys General (Groups I and III)	County Judges and Officials (All)	State Judges and Attorneys General (Superseded)
1. Present Value of Benefits	$14,617,979,229	$8,831,954,521	$86,245,245	$95,562,453	$133,851,532	$154,936,510
2. Current Members' Fund	1,876,045,586	734,357,962	7,879,014	12,812,867	4,462,715	3,021,692
3. Current State Accumulation Fund	10,753,943,919	7,059,487,544	61,969,249	48,910,560	110,673,743	87,424,238
4. Present Value of Future Employee Contributions	1,217,769,323	327,711	1,108,574	118,801	379,118	134,319
5. Unfunded Accrued Liability	0	0	0	0	17,509,536	63,717,397
6. Present Value of Future Normal Costs, ((1)-(2)-(3)-(4)-(5))	770,220,401	1,037,781,304	15,288,408	33,720,225	826,420	638,864
7. Present Value of Future Salaries	24,427,056,839	15,027,179,815	119,437,068	294,050,834	6,499,107	2,818,993
8. Normal/Aggregate Cost Percentage ((6)/(7))	3.153%	6.906%	12.800%	11.467%	12.716%	22.663%
9. Unfunded Accrued Liability Percentage (Table V)	0.000%	0.000%	0.000%	0.000%	72.908%	628.570%
14-Year Amortization						
10. Total Contribution Rate ((8)+(9)) x 1.0375+0.13%						
14-Year Amortization	na	na	na	na	88.964%	675.785%
Aggregate	3.401%	7.295%	13.410%	12.028%	292.840%	2368.693%

TABLE VII

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

PRIOR ASSUMPTIONS

Actuarial Funding Method:

Frozen Initial Liability. Unfunded accrued liabilities are being funded over the 40-year period commencing in 1975. Through reestablishment, unfunded liabilities have been eliminated for all groups except County Judges and Officials and State Judges and Attorneys General (Superseded). The Aggregate actuarial funding method is used for groups for which no unfunded accrued liability exists.

Asset Valuation Method:

Five-year moving market value average. Earnings in excess of or below expected investment returns are recognized over a five year period. Investment losses are applied to offset accumulated investment gains prior to determining the amount of earnings to be phased in.

Zero coupon bonds purchased to satisfy a specific liability are valued by discounting their maturity values at the valuation interest rate prior to applying the moving average adjustment.

Interest Rate:

7.5% per annum, compounded annually

Salary Increases:

5.5% annual rate of salary increase

Increase in Social Security Wage Base:

4.5% annual increase

Cost of Living Adjustment:

3.0% annual increase

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

PRIOR ASSUMPTIONS

Post Retirement Mortality:

	Annual Rate of Mortality After					
	Service Retirement				Disability Retirement	
	Teachers and Group III		Others			
Age	Male	Female	Male	Female	Male	Female
40	0.1%	0.1%	0.2%	0.1%	0.3%	2.5%
50	0.3	0.2	0.5	0.2	3.8	2.9
55	0.5	0.3	0.8	0.3	4.2	3.3
60	0.7	0.4	1.3	0.5	4.9	3.9
65	1.2	0.7	2.1	0.9	6.0	4.9
70	2.2	1.2	3.5	1.6	7.6	6.5
75	3.6	2.4	5.4	3.1	10.2	8.8
80	5.9	4.3	8.6	5.4	14.2	12.5
85	9.2	7.0	12.8	8.7	20.1	18.1
90	13.3	11.2	17.6	13.6	28.7	26.1
95	18.7	18.2	23.8	21.5	40.4	37.3

Separations from Service:

Representative values of the assumed annual rates of death, disability, withdrawal and service retirement for the various membership groups are shown on the following pages.

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

PRIOR ASSUMPTIONS

GROUP I

TEACHERS

MALE

Age	Mortality	Disability	Annual Rate of Withdrawal			Service Retirement	
			First Year	Second Year	Later	Age	Rate *
20	0.02%	0.02%	15.0%	12.0%	7.9%	55	5.0%
25	0.03	0.02	15.0	12.0	7.3	60	9.0
30	0.04	0.02	15.0	12.0	5.5	61	17.0
35	0.05	0.03	15.0	12.0	3.4	62	20.0
40	0.07	0.05	15.0	12.0	2.2	63	14.0
45	0.13	0.07	15.0	12.0	1.4	64	25.0
50	0.23	0.14	15.0	12.0	1.2	65	35.0
55	0.37	0.24	15.0	12.0	1.1	66	25.0
60	0.55	-	15.0	12.0	0.6	67	25.0
65	0.94	-	-	-	-	68	25.0
						69	30.0
						70	100.0

* 20% for male teachers is added to service retirement rate at age when employee is first eligible for unreduced benefit.

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

PRIOR ASSUMPTIONS

GROUP I

TEACHERS

FEMALE

Age	Mortality	Disability	Annual Rate of Withdrawal			Service Retirement	
			First Year	Second Year	Later	Age	Rate *
20	0.01%	0.02%	15.0%	12.0%	9.9%	55	5.0%
25	0.02	0.02	15.0	12.0	9.1	60	15.0
30	0.02	0.02	15.0	12.0	7.1	61	23.0
35	0.03	0.03	15.0	12.0	4.6	62	20.0
40	0.04	0.05	15.0	12.0	2.7	63	20.0
45	0.06	0.07	15.0	12.0	1.7	64	35.0
50	0.10	0.14	15.0	12.0	1.5	65	38.0
55	0.15	0.24	15.0	12.0	1.4	66	25.0
60	0.25	-	15.0	12.0	-	67	30.0
65	0.42	-	-	-	-	68	30.0
						69	40.0
						70	100.0

* 10.0% is added to service retirement rate at age when employee is first eligible for unreduced benefit.

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

PRIOR ASSUMPTIONS

GROUP I

GENERAL EMPLOYEES

MALE

Age	Mortality	Disability	Annual Rate of Withdrawal				Service Retirement	
			First Year	Second Year	Later		Age	Rate *
					State	Polisubs		
20	0.04%	0.02%	32.2%	24.8%	18.0%	26.0%	55	1.0%
25	0.05	0.02	28.5	22.5	15.0	17.0	60	5.0
30	0.06	0.02	24.8	21.0	10.8	11.9	61	11.0
35	0.09	0.04	22.5	18.0	7.8	10.4	62	21.0
40	0.12	0.07	21.0	15.2	5.6	8.9	63	12.0
45	0.22	0.16	17.3	12.8	4.3	7.6	64	16.0
50	0.39	0.35	15.0	12.8	3.2	6.6	65	30.0
55	0.61	0.50	15.0	12.8	2.4	5.6	66	20.0
60	0.92	-	15.0	12.8	2.0	-	67	19.0
65	1.56	-	-	-	-	-	68	20.0
							69	25.0
							70	25.0
							71	20.0
							72	25.0
							73	33.0
							74	50.0
							75	100.0

* 10.0% is added to service retirement rate at age when employee is first eligible for unreduced benefit.

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

PRIOR ASSUMPTIONS

GROUP I

GENERAL EMPLOYEES

FEMALE

Age	Mortality	Disability	Annual Rate of Withdrawal				Service Retirement	
			First Year	Second Year	Later		Age	Rate *
					State	Polisubs		
20	0.02%	0.02%	32.2%	24.8%	18.0%	26.0%	55	2.0%
25	0.03	0.02%	28.5	22.5	15.0	17.0	60	7.0
30	0.03	0.02	24.8	21.0	10.8	11.9	61	12.0
35	0.05	0.02	22.5	18.0	7.8	10.4	62	20.0
40	0.07	0.03	21.0	15.2	5.6	8.9	63	14.0
45	0.10	0.06	17.3	12.8	4.3	7.6	64	17.0
50	0.16	0.14	15.0	12.8	3.2	6.6	65	31.0
55	0.25	0.24	15.0	12.8	2.4	5.6	66	23.0
60	0.42	0.30	15.0	12.8	2.0	-	67	20.0
65	0.71	-	-	-	-	-	68	20.0
		-					69	30.0
							70	30.0
							71	25.0
							72	25.0
							73	33.0
							74	50.0
							75	100.0

* 10.0% is added to service retirement rate at age when employee is first eligible for unreduced benefit.

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

PRIOR ASSUMPTIONS

GROUP II

	Annual Rate of			
Age	Disability	Withdrawal	Service Retirement *	
			Age	Rate
20	0.07%	5.8%	50	5.0%
25	0.12	4.2	51	6.0
30	0.22	3.0	52	7.0
35	0.38	2.0	53	8.0
40	0.48	1.2	54	9.0
45	0.59	0.7	55	10.0
50	0.99	0.2	56	10.0
55	1.38		57	10.0
			58	10.0
			59	10.0
			60	100.0

* 15.0% is added to service retirement rate at age when employee is first eligible for unreduced benefit if prior to age 60.

GROUP III

	Annual Rate of	
Age	Disability	Service Retirement
20	0.02%	-
25	0.02	-
30	0.02	-
35	0.03	-
40	0.05	-
45	0.07	-
50	0.14	-
55	0.24	-
60	-	-
65	-	100.0%

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

REVISED ASSUMPTIONS

The actuarial assumptions and methods set forth below have been selected by the actuary based on results of an actuarial experience study covering the period from July 1, 1996 through June 30, 2000 and expectations regarding future events and economic conditions.

The assumptions and methods have been adopted as July 1, 2001 unless otherwise noted.

Actuarial Funding Method:

Frozen Initial Liability. Unfunded accrued liabilities are being funded over the 40-year period commencing in 1975. Through reestablishment, unfunded liabilities have been eliminated for all groups except County Judges and Officials and State Judges and Attorneys General (Superseded). The Aggregate actuarial funding method is used for groups for which no unfunded accrued liability exists.

Asset Valuation Method:

Five-year moving market value average. Earnings in excess of or below expected investment returns are recognized over a five year period. Investment losses are applied to offset accumulated investment gains prior to determining the amount of earnings to be phased in.

Zero coupon bonds purchased to satisfy a specific liability are valued by discounting their maturity values at the valuation interest rate prior to applying the moving average adjustment.

Effective July, 1999

Interest Rate:

7.5% per annum, compounded annually

Salary Increases:

Salary increase rates vary by age. Sample rates are shown below.

Age	Rate
20	9.49%
30	7.25
40	5.86
50	4.79
60	4.30
65	4.22

Increase in Social Security Wage Base:

3.5% annual increase

Cost of Living Adjustment:

3.0% annual increase in monthly retirement benefits

Inflation:

3.0% annual rate of inflation is assumed in establishing economic assumptions

Marital Status:

(a) Percent married --
Eligible for service retirement – 80%
Ineligible for service retirement – 75%

(b) Age difference – males are assumed to be four years older than spouse

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

REVISED ASSUMPTIONS

Post Retirement Mortality:

	Annual Rate of Mortality After					
	Service Retirement				Disability Retirement	
	Teachers and Group III		Others			
Age	Male	Female	Male	Female	Male	Female
40	0.1%	0.1%	0.2%	0.1%	2.3%	2.3%
50	0.3	0.2	0.4	0.2	2.6	2.6
55	0.5	0.3	0.7	0.3	2.8	2.8
60	0.7	0.5	1.2	0.6	3.3	3.3
65	1.2	0.7	2.1	1.1	3.9	3.9
70	2.1	1.3	3.2	1.7	4.9	4.9
75	3.5	2.3	4.8	2.6	6.3	6.3
80	5.8	4.1	7.5	4.5	8.7	8.7
85	8.9	7.0	10.9	8.0	12.7	12.7
90	12.9	12.1	16.2	14.1	19.4	19.4
95	18.3	19.5	23.9	22.2	31.3	31.3

Separations from Service:

Representative values of the assumed annual rates of death, disability, withdrawal and service retirement for the various membership groups are shown on the following pages.

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

REVISED ASSUMPTIONS

GROUP I

TEACHERS

MALE

Age	Mortality	Disability	Annual Rate of Withdrawal		
			First Year	Second Year	Later
20	0.02%	0.02%	15.0%	12.0%	9.9%
25	0.02	0.02	15.0	12.0	8.5
30	0.03	0.03	15.0	12.0	5.6
35	0.04	0.05	15.0	12.0	3.1
40	0.06	0.09	15.0	12.0	1.5
45	0.11	0.13	15.0	12.0	0.9
50	0.20	0.17	15.0	12.0	2.0
55	0.31	0.21	15.0	12.0	4.3
60	0.47	--	15.0	12.0	6.5
65	0.80	--	--	--	6.5

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

REVISED ASSUMPTIONS

GROUP I

TEACHERS

FEMALE

Age	Mortality	Disability	Annual Rate of Withdrawal		
			First Year	Second Year	Later
20	0.01%	0.02%	15.0%	12.0%	10.7%
25	0.02	0.02	15.0	12.0	9.9
30	0.02	0.03	15.0	12.0	8.1
35	0.03	0.05	15.0	12.0	4.3
40	0.04	0.09	15.0	12.0	1.8
45	0.06	0.13	15.0	12.0	1.1
50	0.10	0.17	15.0	12.0	1.8
55	0.15	0.21	15.0	12.0	3.7
60	0.25	--	15.0	12.0	5.7
65	0.42	--	--	--	5.7

* 10.0% is added to service retirement rate at age when employee is first eligible for unreduced benefit.

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

REVISED ASSUMPTIONS

GROUP I

GENERAL EMPLOYEES

MALE

Age	Mortality	Disability		Annual Rate of Withdrawal					
				First Year		Second Year		Later	
		State	Polisubs	State	Polisubs	State	Polisubs	State	Polisubs
20	0.05%	0.04%	0.04%	35.5%	32.3%	27.2%	24.8%	19.2%	23.3%
25	0.07	0.04	0.04	31.4	28.5	24.8	22.5	15.9	15.1
30	0.09	0.05	0.05	27.2	24.8	23.1	21.0	10.7	10.3
35	0.09	0.08	0.09	24.8	22.5	19.8	18.0	7.0	8.7
40	0.12	0.16	0.14	23.1	21.0	16.7	15.2	4.8	7.2
45	0.17	0.24	0.33	19.0	17.3	14.0	12.8	3.6	6.1
50	0.28	0.35	0.53	16.5	15.0	14.0	12.8	2.9	5.5
55	0.48	0.35	0.75	16.5	15.0	14.0	12.8	2.7	5.0
60	0.86	--	--	16.5	15.0	14.0	12.8	2.7	1.4
65	1.56	--	--	--	--	--	--	--	--

* 10.0% is added to service retirement rate at age when employee is first eligible for unreduced benefit.

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

REVISED ASSUMPTIONS

GROUP I

GENERAL EMPLOYEES

FEMALE

Age	Mortality	Disability		Annual Rate of Withdrawal					
				First Year		Second Year		Later	
		State	Polisubs	State	Polisubs	State	Polisubs	State	Polisubs
20	0.03	0.04%	0.04%	35.5	32.3	27.2	24.8	19.2%	25.4%
25	0.03	0.04	0.04	31.4	28.5	24.8	22.5	15.9	17.3
30	0.04	0.05	0.04	27.2	24.8	23.1	21.0	10.7	11.8
35	0.05	0.07	0.06	24.8	22.5	19.8	18.0	7.0	9.4
40	0.08	0.17	0.08	23.1	21.0	16.7	15.2	4.8	8.1
45	0.10	0.28	0.22	19.0	17.3	14.0	12.8	3.6	6.8
50	0.15	0.37	0.36	16.5	15.0	14.0	12.8	2.9	5.9
55	0.25	0.45	0.45	16.5	15.0	14.0	12.8	2.7	5.3
60	0.48	--	--	16.5	15.0	14.0	12.8	2.7	1.7
65	0.93	--	--	--	--	--	--	--	--

* 10.0% is added to service retirement rate at age when employee is first eligible for unreduced benefit.

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

REVISED ASSUMPTIONS

SERVICE RETIREMENT RATES

The following rates are applied at each age at which a member is eligible for an unreduced service retirement benefit.

Age	Teachers	State	Polisubs	Group II	Group III
50	7.0%	5.0%	6.0%	10.0%	--
51	8.0	5.0	6.0	10.0	10.0%
52	8.0	6.0	7.0	15.0	10.0
53	10.0	7.0	7.0	15.0	10.0
54	10.0	7.0	7.0	20.0	10.0
55	10.0	7.0	7.0	20.0	12.0
56	13.0	7.0	7.0	20.0	12.0
57	16.0	8.0	10.0	20.0	12.0
58	16.0	9.0	12.0	25.0	12.0
59	16.0	10.0	12.0	25.0	12.0
60	15.0	9.0	10.0	30.0	12.0
61	22.0	12.0	17.0	30.0	12.0
62	26.0	23.0	26.0	45.0	25.0
63	22.0	15.0	17.0	35.0	12.0
64	31.0	18.0	19.0	35.0	12.0
65	43.0	34.0	29.0	40.0	25.0
66	36.0	21.0	21.0	40.0	25.0
67	32.0	21.0	16.0	40.0	25.0
68	32.0	21.0	16.0	100.0	25.0
69	32.0	21.0	17.0	100.0	25.0
70	100.0	21.0	20.0	100.0	25.0
71	100.0	21.0	20.0	100.0	100.0
72	100.0	21.0	20.0	100.0	100.0
73	100.0	21.0	20.0	100.0	100.0
74	100.0	21.0	20.0	100.0	100.0
75	100.0	100.0	100.0	100.0	100.0

Additional increments for retirees who have fifteen or more years of service at retirement on or after age 60

	Teachers	State	Polisubs	Group II	Group III
	10.0%	5.0%	5.0%	na	na

Additional increments for retirees in the year in which they are first eligible for unreduced retirement prior to age 60

	Teachers	State	Polisubs	Group II	Group III
	10.0%	10.0%	10.0%	15.0%	na

TABLE VII (Continued)

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

REVISED ASSUMPTIONS

GROUP II

Age	Annual Rate of Disability	Annual Rate of Withdrawal
20	0.07%	5.8%
25	0.12	4.2
30	0.22	3.0
35	0.38	2.0
40	0.48	1.2
45	0.59	0.7
50	0.99	0.2
55	1.38	--

* 15.0% is added to service retirement rate at age when employee is first eligible for unreduced benefit if prior to age 60.

GROUP III

Age	Annual Rate of Disability
20	0.02%
25	0.02
30	0.03
35	0.05
40	0.09
45	0.13
50	0.17
55	0.21
60	--
65	--

TABLE VIII
ACTUARIAL CERTIFICATION

The actuarial valuation summarized in this report has been performed utilizing generally accepted actuarial principles and is based on the current provisions of the TCRS and on actuarial assumptions which we consider to be internally consistent and reasonably related, in the aggregate, to experience under the plan and to reasonable expectations. The valuation was performed in accordance with principles of practice prescribed by the Actuarial Standards Board, by me personally or by other qualified actuaries under my direct supervision. I am a member of the American Academy of Actuaries and have experience in performing valuations for public retirement systems. It is our opinion that the results fully and fairly disclose the actuarial position of the plan on the valuation date.

____________________________	____________________________________
Date	Anthony S. Johnston, F.S.A.