

**Iowa Public Employees'
Retirement System
1998 - 2001 Experience Study**

September 2002

Prepared by:

**Milliman USA, Inc.
10050 Regency Circle, Suite 500
Omaha, NE 68114**

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

TABLE OF CONTENTS

Letter of Transmittal

Section

1.	Board Summary	Page 1
2.	Actuarial Methods	Page 5
3.	Economic Assumptions	Page 10
4.	Demographic Assumptions	Page 21
5.	Mortality	Page 22
6.	Retirement	Page 26
7.	Disability	Page 29
8.	Termination of Employment	Page 30
9.	Merit Salary Scale	Page 35

APPENDICES

A - Current Assumptions

B - Proposed Assumptions

C - Mortality

- Exhibit 1 Probability of Death - Healthy Retirees: Males - General Membership
- Exhibit 2 Probability of Death - Healthy Retirees: Females - General Membership
- Exhibit 3 Probability of Death - Disabled Retirees: Males - General Membership
- Exhibit 4 Probability of Death - Disabled Retirees: Females - General Membership
- Exhibit 5 Probability of Death - Active Members: Males - General Membership
- Exhibit 6 Probability of Death - Active Members: Females - General Membership
- Exhibit 7 Retirement Rates - Early Retirement - General Membership
- Exhibit 8 Retirement Rates - Select - General Membership
- Exhibit 9 Retirement Rates - Ultimate - General Membership
- Exhibit 10 Retirement Rates - Special Services

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Table of Contents Continued...

E - Disability

- Exhibit 11 Rates of Disability: Males - General Membership
- Exhibit 12 Rates of Disability: Females - General Membership

F - Termination of Employment

- Exhibit 13 Termination of Employment - Males Under 2 Years of Service
- Exhibit 14 Termination of Employment - Males 2 Years of Service
- Exhibit 15 Termination of Employment - Males 3 Years of Service
- Exhibit 16 Termination of Employment - Males 4-6 Years of Service
- Exhibit 17 Termination of Employment - Males 7-8 Years of Service
- Exhibit 18 Termination of Employment - Males Over 8 Years of Service
- Exhibit 19 Termination of Employment - Females Under 2 Years of Service
- Exhibit 20 Termination of Employment - Females 2 Years of Service
- Exhibit 21 Termination of Employment - Females 3 Years of Service
- Exhibit 22 Termination of Employment - Females 4-6 Years of Service
- Exhibit 23 Termination of Employment - Females 7-8 Years of Service
- Exhibit 24 Termination of Employment - Females Over 8 Years of Service
- Exhibit 25 Termination of Employment - Special Services
- Exhibit 26 Probability of Electing a Vested Benefit (current) - Male - General Membership
- Exhibit 27 Probability of Electing a Vested Benefit (proposed) - Male - General Membership
- Exhibit 28 Probability of Electing a Vested Benefit (current) - Female - General Membership
- Exhibit 29 Probability of Electing a Vested Benefit (proposed) - Female - General Membership

G - Total Salary Increase

- Exhibit 30 Less Than 2 Years
- Exhibit 31 Year 2
- Exhibit 32 Year 3
- Exhibit 33 Years 4-5
- Exhibit 34 Years 6-7
- Exhibit 35 Years 8-10
- Exhibit 36 Years 11-15
- Exhibit 37 Years 16-20
- Exhibit 38 Years 21+

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Section 1

Board Summary

The purpose of an actuarial valuation is to provide a timely best estimate of the ultimate costs of a retirement system. Actuarial valuations of IPERS are prepared annually to determine whether the statutory contribution rate will be sufficient to fund the System on an actuarial reserve basis, i.e. the current assets plus future contributions, along with investment earnings will be sufficient to provide the benefits promised by the System to current members. The valuation requires the use of certain assumptions with respect to the occurrence of future events, such as rates of death, termination of employment, retirement age and salary changes to estimate the obligations of the System.

The basic purpose of an experience study is to determine whether the actuarial assumptions currently in use have accurately predicted actual emerging experience. This information, along with the professional judgment of System personnel and advisors, is used to evaluate the appropriateness of continued use of the current actuarial assumptions. When analyzing experience and assumptions, it is important to realize that actual experience is reported short term while assumptions are intended to be long term estimates of experience.

At the request of IPERS, Milliman USA, Inc. performed a study of the experience of the Iowa Public Employees' Retirement System (IPERS), during the period April 1, 1998 through June 30, 2001. This report presents the results and recommendations of our study, which if approved, will be implemented in the June 30, 2002 Actuarial Valuation of the System.

ACTUARIAL METHODS

There are three key actuarial methods that are required to complete the annual actuarial valuation. They are:

- Actuarial Cost Method
- Asset Valuation Method
- Amortization Method

Actuarial Cost Method

The actuarial cost method is the mechanism by which the value of the benefits provided by the System are allocated into annual costs. Currently, the System uses the entry age normal (EAN) actuarial cost method. This method, which is the most commonly used method in public plans, develops costs as a level percentage of payroll from a member's date of hire to the end of his employment. The resulting normal cost rate tends to be very stable. **We recommend the continued use of the entry age normal cost method.**

Asset Valuation Method

In preparing an actuarial valuation, the actuary must assign a value to the assets of the fund. An asset valuation method, which produces an adjusted market value, is often used to smooth out the volatility in the market value.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

The actuary does not have complete freedom in assigning this value. They must follow the basic actuarial principles and standards promulgated by the American Academy of Actuaries and the requirements of the Governmental Accounting Standards Board.

For valuation purposes, IPERS develops the actuarial value of assets as the expected value (based on the 7.5% assumed investment return) plus 25% of the difference between pure market value and the expected value of assets. The current method provides an appropriate level of smoothing. **We recommend the current "Expected +25%" method be retained.**

Amortization Method

Because the actuarial cost method used by IPERS develops an unfunded actuarial liability (UAL), the amortization of this UAL is part of the determination of the annual cost. There are a variety of different methods that can be used to amortize the UAL. Each results in a different payment stream and therefore has an impact on the incidence of costs.

Currently the UAL is amortized as a level percentage of payroll. With this methodology, the initial amortization payments are lower than they would be under a level dollar amortization payment but the payments increase at a fixed rate so that ultimately the annual payment far exceeds the level dollar payment. It is expected that total payroll is increasing as rapidly so the amortization payments will remain constant as a percentage of payroll.

Contributions to IPERS are made as a percentage of payroll. The difference between the normal cost rate and the statutory contribution rate is available to finance the UAL. Therefore we believe the level percentage of pay is the best method. **We recommend the current amortization methodology be retained.**

ACTUARIAL ASSUMPTIONS

The actuarial valuation process utilizes various actuarial methods and two different types of assumptions: economic and demographic. Economic assumptions are related to the general economy and its impact on IPERS. Demographic assumptions are based on the emergence of the specific experience of IPERS members.

Economic Assumptions

There is one change recommended in the economic assumptions, as shown below:

	<u>Current</u>	<u>Recommended</u>
• Inflation Assumption	3.50%	3.50%
• Interest Credited on Contribution Balances	5.50%	4.25%
• General Wage Increase:	4.00%	4.00%
• Investment Return:	7.50%	7.50%

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

We are recommending the assumed interest rate credited on contribution balances be lowered to 4.25%. The law changed in 1997 and tied this rate much more closely to inflation (one year CD plus 1%). This change brings the assumption into line with the current law and the System's inflation assumption.

Demographic Assumptions

The following is a brief summary of the recommended changes in demographic assumptions, listed in the order of the magnitude of their impact on the actuarial liability:

- Change the mortality assumption to the RP-2000 Mortality Table with age adjustments for active and inactive members.
- Modest lowering of the "Ultimate" retirement rates (rates applicable after a member first reaches eligibility requirements for unreduced benefits).
- Slightly lower termination of employment rates for males in year 2 and females in years 2 and 3.
- Change the assumption for a vested member elections to leave his account balance in the System to a service based rather than an age based assumption.

Significant changes were made in the actuarial assumptions for IPERS in the 1993 - 1998 Experience Study. The 1998 - 2001 Study generally makes minor modifications to the current assumptions, with two exceptions: the assumption of a vested member leaving his account balance with the System and the mortality assumption.

Election of Deferred Vested Benefit

Under the current assumption, there is an increasing probability of a vested member leaving their contributions with the System (thereby electing a deferred vested benefit) based on age. The experience during this study period indicated a somewhat increasing percentage of members electing a deferred vested benefit instead of a refund as age increased, but not nearly as dramatic as currently assumed. However, when experience was analyzed by duration (years of service) there was a much stronger correlation. We are recommending revised assumptions based on service as shown in Exhibits 27 and 29.

Mortality Assumption

The current mortality assumption for retirees provides very little margin for future mortality improvements for healthy retired male members. Therefore we feel a change is necessary to strengthen that assumption. We prefer to use a new table issued by the Society of Actuaries, the RP-2000 Table, which reflects future mortality improvements on a "generational" basis, i.e. mortality rates in the table are projected to improve in future years and the applicable rate is determined by the year in which a member reaches a particular age. However, we believe the male and female mortality assumption should be set on a consistent basis (using the generational methodology). Therefore we are recommending both assumptions be changed to the RP-2000 Healthy Annuitant Table with a one year age set forward for males and a two year age set back for females. We similarly recommend the active member mortality be based on the RP-2000 Employee Table, with the same age adjustments as the Healthy Annuitant Table.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

SUMMARY

The assumptions in this report have been developed in accordance with generally recognized and accepted actuarial principles and practices that are consistent with the applicable Standards of Practice adopted by the Actuarial Standards Board of the American Academy of Actuaries.

The estimated financial impact of the recommended changes is based on June 30, 2001 valuation results as summarized below. **Please note the numbers shown are for the general membership only.** Assumption changes only impact the liabilities and the normal cost rate. Assets are unaffected. The impact on the 2001 valuation is included to provide some quantification of the impact of these recommended changes. The impact on the June 30, 2002 valuation should be similar, as a percent of the liability, but the dollar amount of impact will vary with the 2002 change in the underlying liability amount.

	Actuarial Liability (\$Millions)	Normal Cost
June 30, 2001 Valuation	\$15,014	8.93%
Inc/(Dec) Due to Assumption Change:		
Mortality	188	0.13%
Retirement	(77)	(0.05)%
Termination of Employment	(31)	0.09%
Election of Vested Benefit	6	(0.07)%
Interest on Contribution Balances	<u>(1)</u>	<u>(0.05)%</u>
Net Change	85*	0.05%**
Revised Actuarial Liability	\$15,099	8.98%

*0.57% of the 6/30/01 Actuarial Liability.

**0.56% of the 6/30/01 Normal Cost Rate.

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Section 2

Actuarial Methods

ACTUARIAL COST METHOD

The financing of a pension plan requires that contributions be made in an orderly fashion while a member is actively employed, so that the accumulation of these contributions, together with investment earnings should be sufficient to provide promised benefits and cover administration expenses. The actuarial valuation is the process used to determine when money should be contributed; i.e., as part of the budgeting process.

The actuarial valuation will not impact the amount of benefits paid or the actual cost of those benefits. In the long run, actuaries cannot change the costs of the pension plan, regardless of the funding method used or the assumptions selected. However, actuaries will influence the incidence of costs by their choice of methods and assumptions.

The valuation or determination of the present value of all future benefits to be paid by the System reflects the assumptions that best seem to describe anticipated future experience. The choice of a funding method does not impact the determination of the present value of future benefits. The funding method, determines only the incidence of cost. In other words, the purpose of the funding method is to allocate the present value of future benefits determination into annual costs. In order to do this allocation, it is necessary for the funding method to "break down" the present value of future benefits into two components: (1) that which is attributable to the past (2) and that which is attributable to the future. The excess of that portion attributable to the past over the plan assets is then amortized over a period of years. Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial liability". The portion of the present value of future benefits allocated to the future is commonly known as "the present value of future normal costs", with the specific piece of it allocated to the current year being called "the normal cost". The difference between the plan assets and actuarial liability is called the "unfunded actuarial liability".

Two key points should be noted. First, there is no single "correct" funding method. Second, the allocation of the present value of future benefits and hence cost to the past for amortization and to the future for annual normal cost payments is not necessarily in a one-to-one relationship with service credits earned in the past and future service credits to be earned.

There are various actuarial cost methods, each of which has different characteristics, advantages and disadvantages. A brief summary of the most commonly used cost methods is included below.

- Entry-Age-Normal Cost Method

The rationale of the entry age normal (EAN) funding method is that the cost of each member's benefit is determined to be a level percentage of his salary from date of hire to the end of his employment with the employer. This level percentage multiplied by the member's annual salary is referred to as the normal cost and is that portion of the total cost of the employee's benefit which is allocated to the current year. The portion of the present value of future benefits allocated to the future is determined by multiplying

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

this percentage times the present value of the member's assumed earnings for all future years including the current year. The entry age normal actuarial liability is then developed by subtracting from the present value of future benefits that portion of costs allocated to the future (present value of future normal costs). To determine the unfunded actuarial liability, the value of plan assets is subtracted from the entry age normal actuarial liability. The current year's cost to amortize the unfunded actuarial liability is developed by applying an amortization factor.

It is to be expected that future events will not occur exactly as predicted by the actuarial assumptions in each year. Actuarial gains/losses from experience under this actuarial cost method can be directly calculated and are reflected as a decrease/increase in the unfunded actuarial liability. Consequently, the gain/loss results in a decrease/increase in the amortization payment, and therefore the contribution rate.

- Projected Unit Credit

The projected unit credit (PUC) funding method defines the actuarial liability to be the value of the employee's accrued benefit based upon his service as of the valuation date and his estimated final average earnings at the time he retires or otherwise exits. The normal cost is the present value of benefits accruing during the year with projected salary increases. The unfunded actuarial liability is determined by subtracting the actuarial value of assets from the actuarial liability. The current year's cost to amortize the unfunded actuarial liability is developed by applying an amortization factor.

As with the entry age normal funding method, the actuarial gains and losses that accrue each year modify the unfunded actuarial liability and the payment thereon.

- Aggregate

This cost method does not develop individual normal costs, but calculates a normal cost rate for the entire plan. The total value of future normal costs is found by subtracting the actuarial value of assets from the present value of future benefits. This amount is then spread as a level percentage of future payroll for the entire group. Gain/losses are included in the present value of future benefits and thereby incorporated into the normal cost percentage for future years. The basic premise of the aggregate cost method is to develop a normal cost which, from the valuation date forward, will fund the whole unfunded portion of the plan's future benefits as a level percentage of payroll over the active members' working lifetime.

This method does not differentiate between past service costs and current costs. Therefore, no actuarial liability exists under the aggregate cost method and actuarial gains and losses are not directly calculated as in the other cost methods.

- Frozen Entry Age

The frozen entry age cost method is a blend of the entry age normal and aggregate cost methods. The unfunded actuarial liability is initially determined using the entry age normal funding method. Each year the unfunded actuarial liability (UAL) is set equal to the expected unfunded actuarial liability. Actuarial gains and losses are not reflected in the amount of the unfunded actuarial liability, but rather are reflected in the normal cost. The frozen actuarial liability is changed only to reflect plan amendments and changes in the actuarial assumptions. The amortization payments for the current and all future years are fixed at the time the unfunded actuarial liability is determined. The normal cost is developed similarly to that

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

under the aggregate cost method. The present value of all future benefits is determined and then reduced by the valuation assets and the unfunded frozen actuarial liability. The resulting amount is then spread as a level percentage of future payroll.

IPERS currently uses the Entry Age Normal actuarial cost method. This method tends to develop a normal cost rate which is stable and less volatile even if there are changes in the demographics of the active population. It is used by about 85% of all public sector plans. **We recommend that IPERS continue using the entry age normal method.**

AMORTIZATION OF UAL

As described above, actuarial liabilities are the portion of the actuarial present value of future benefits that are not included in future normal costs. Thus it represents the liability that, in theory, should have been funded through historical normal costs. Unfunded actuarial liabilities (UAL) exist when actuarial liabilities exceed plan assets. These deficiencies can result from (i) plan improvements that have not been completely paid for, (ii) experience not being as favorable as expected, (iii) assumption changes or (iv) contributions less than the actuarial rate.

There are a variety of different methods that can be used to amortize the UAL. Each results in a different payment stream and therefore the amortization approach utilized will have an impact on the incidence of costs. For each methodology, there are three characteristics:

- The period over which the UAL is amortized,
- The rate at which the amortization amount increases, and
- The number of components of UAL with separate amortization bases.

Statement No. 25 of the Governmental Accounting Standards Board (GASB) sets parameters for all of these characteristics. The maximum period permitted is 30 years (there is a transition rule which permits this period to temporarily be greater than 30 but not over 40). The annual amortization amount can be a level dollar amount or a level percentage of payroll. The UAL may be amortized as one amount or components may be amortized separately.

All non-public pension plans, pursuant to the Internal Revenue Code, must use level dollar amortization to pay off their unfunded actuarial liability for purposes of IRS minimum and maximum funding. This is similar to the method in which a home owner pays off a mortgage. The liability, once calculated, is financed by a constant fixed dollar amount, based on a predetermined number of years, until the liability is extinguished. This results in the liability steadily decreasing while the payments, though remaining level in dollar terms, in all probability decrease as a percentage of payroll. (Even if a plan sponsor's population is not growing or even slightly diminishing, inflationary increases will usually be sufficient to increase the aggregate payroll).

The rationale behind the level percentage of payroll amortization method is that since normal costs are calculated to be a constant percentage of pay, unfunded actuarial liabilities should be paid off in the same manner. When this method of amortizing the unfunded actuarial liability is adopted, the initial amortization payments are lower than they would be under a level dollar amortization payment method but the payments increase at a fixed rate (4% a year for IPERS) so that ultimately the annual payment far exceeds the level dollar payment. It is expected that total payroll is increasing as rapidly so the amortization payments will

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

remain constant as a percentage of payroll. In the initial years, the level percentage of payroll amortization payment is often less than the interest accruing on the unfunded actuarial liability, meaning that even if there are no experience losses, the unfunded actuarial liability will grow. If the plan sponsor is paying off the unfunded liability over a long period, such as 30 years, it is possible that the unfunded liability will grow for nearly 20 years, gradually reduce so that in the 25th year the unfunded liability is equal to the initial unfunded liability, and still be completely paid off by the 30th year. The increasing unfunded liability may be troubling to various interested parties, but should not be worrisome unless the remaining UAL is actually increasing as a percentage of total covered payroll.

The amortization period can be either fixed or open. If it is a fixed or closed amortization period, it declines each year. Alternatively if the amortization period is an open or rolling period, the amortization period does not decline but is reset each year.

Use of the level percentage of payroll amortization has its advantages and disadvantages. From a budgetary standpoint, it makes sense to develop UAL contribution rates that are level as a percentage of payroll. However, this approach clearly results in slower funding of the UAL.

Currently, IPERS' payment on the unfunded actuarial liability is the difference between the statutory contribution rate and the normal cost rate. Since both of these numbers are expressed as a "percent of payroll", we feel it is appropriate to use the level percentage of payroll amortization methodology. The result is a determination of the number of years required to amortize the current unfunded actuarial liability in each valuation. **We recommend the current amortization methodology be retained.**

ASSET VALUATION METHOD

In preparing an actuarial valuation, the actuary must assign a value to the assets of the fund. An adjusted market value is often used to smooth out the volatility in the market value. This is because most plan sponsors would rather have annual costs remain smooth, as percentage of payroll or in actual dollars, rather than a cost pattern that is extremely volatile.

The actuary does not have complete freedom in assigning this value. For example, GASB requirements, basic actuarial principles promulgated by the American Academy of Actuaries, and the Internal Revenue Code and its associated regulations on the private employer side require any methodology used in assessing the value of assets to:

- Take into account fair market value,
- Produce a result which is not consistently above or below the fair market value, and
- Not be less than 80% of the actual market value nor more than 120% of the actual market value (private sector only).

These rules or principles prevent the asset valuation methodology from being used to distort annual funding patterns. No matter what asset valuation method is used, it is important to note that, like a funding method or actuarial assumptions, the asset valuation method does not affect the cost of the plan; it only impacts the incidence of cost.

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

IPERS values assets, for actuarial valuation purposes, based on the principle that the difference between actual and expected investment returns should be subject to partial recognition to smooth out fluctuations in the total return achieved by the fund from year to year. This philosophy is consistent with the long-term nature of a retirement system. Under this method, the actuarial value of the assets is the expected value of assets plus 25% of the difference between market value and expected value, where the expected value is last year's actuarial value and subsequent cash flows into and out of the fund accumulated with interest at the valuation rate (7.5%). This is equivalent to using a weighted average of 75% of the expected value and 25% of actual market value.

There are other smoothing methods which would also be acceptable. The one limitation of the current method is it is more difficult to explain. **However, the method provides an appropriate level of smoothing and we see no reason to change it at this time.**

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Section 3

Economic Assumptions

Actuarial Standard of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations* provides guidance to actuaries giving advice on the selection of economic assumptions for measuring obligations under defined benefit plans, such as IPERS. Because no one knows what the future holds, the best an actuary can do is to use professional judgment to estimate possible future economic outcomes. These estimates are based on a mixture of past experience, future expectations, and professional judgment. The actuary should consider a number of factors, including the purpose and nature of the measurement, and appropriate recent and long-term historical economic data. However, the standard explicitly advises the actuary not to give undue weight to recent experience.

Recognizing that there is not one "right answer", the standard calls for the actuary to develop a best estimate range for each economic assumption, and then recommend a specific point within that range. Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular valuation, each economic assumption should be consistent with all other economic assumptions over the measurement period.

An actuary's best-estimate range with respect to a particular measurement of pension obligations may change from time to time due to changing conditions or emerging plan experience. The actuary may change assumptions frequently in certain situations, even if the best-estimate range has not changed materially, and less frequently in other situations. Even if assumptions are not changed, the actuary needs to be satisfied that each of the economic assumptions selected for a particular measurement complies with the Actuarial Standard of Practice No. 27.

The remaining section of this report will address the relevant types of economic assumptions used in the actuarial valuation to determine the obligations of IPERS. In our opinion, the economic assumptions recommended in this report have been developed in accordance with ASOP No. 27. Based on our review and this study, we believe the current economic assumptions continue to reflect a reasonable set of assumptions. The following table summarizes the economic assumptions:

	Current Assumption	Recommended Assumption
A. Inflation	3.5%	3.5%
B. Interest on Contribution Balances	5.5%	4.25%
C. Investment Return	7.5%	7.5%
D. Wage Growth	4.0%	4.0%

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

INFLATION

Use in the Valuation: Inflation as referred to in this report means price inflation. The inflation assumption has an indirect impact on the results of the actuarial valuation through the development of the assumptions for investment return and general wage growth.

Inflation also has a direct impact on the valuation results. The Iowa Code provides for an increase in the annual dividend for members who retired before July 1990. The maximum annual increase in the dividend is the lesser of 3.0% or the increase in the CPI-U, subject to certain certifications by the actuary. Therefore, the inflation assumption is used directly to develop the assumed increase in future monthly benefits for this group of retirees. The law also provides that the interest rate credited on member contribution balances will be 1% above the rate credited on a one year Certificate of Deposit (CD). Because the interest rate on a one year CD is dependent on inflation, the inflation assumption also impacts the assumed rate of interest on contribution balances.

The long-term relationship between inflation and investment return has long been recognized by economists. The basic principle is that the investor demands a more or less level "real return" – the excess of actual investment return over inflation. If inflation rates are expected to be high, investment return rates are also expected to be high, while low inflation rates will result in lower expected investment returns, at least in the long run.

The effect of inflation is more direct on wages than on investment return. An individual's wages are affected by:

- (1) Promotion and longevity
- (2) Productivity
- (3) Inflation

For actuarial purposes, productivity and inflation are often combined into a single assumption for salaries: the rate of increase in the general wage level of the membership or the wage growth assumption. Our actuarial assumption for salary increases includes both the effects of promotion and longevity (called the merit scale) and the effects of increases in the general wage level.

The long term inflation rate cannot be predicted with a significant degree of confidence. This uncertainty would present severe problems in funding a retirement plan were it not for the fact that the effects of inflation on investment return and salary level are, in part, offsetting at least for active members. Salaries increasing faster than expected produce unexpected liabilities. Investment returns which exceed the assumed rate result in unanticipated assets. Although not directly equal in amount, it is expected that to a large degree these additional assets and liabilities will offset one another over the long term.

The current assumption for inflation is 3.5% per year.

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Historical Perspective: For our analysis, we used the national Consumer Price Index, US City Average, All Urban Consumers (CPI-U) as published by the Bureau of Labor Statistics. The compounded annual inflation rate for the 70 year period ending December 2001 is 3.6%.

Although economic activities in general, and inflation in particular, do not lend themselves to prediction on the basis of historical analysis, historical patterns and long term trends are a factor to be considered in developing the inflation assumption.

There are numerous ways to review historical data, with significantly differing results. The tables below show the compounded annual inflation rate for various ten-year periods, and for longer periods ended in December of 2001.

Decade	CPI
1991-01	2.5%
1981-91	3.9%
1971-81	8.6%
1961-71	3.2%
1951-61	1.3%

Period	CPI
1991-01	2.5%
1981-01	3.2%
1971-01	5.0%
1961-01	4.5%
1951-01	3.9%
1931-01	3.6%

Historically, a somewhat different picture is seen by splitting the period into several segments. For example, the CPI for 1944 was 17.8 compared to 17.7 for 1926. Although there was some modest inflation during this period, there were also periods of deflation. Over this entire 18 year period inflation was essentially 0%.

The compounded annual rate of inflation between 1944 and 1967 was 2.8% per year. Over the next fifteen years, the annual rate was at its historical highs and averaged about 7.3% per year. Since 1982, the inflation rate has averaged about 3.3% which is closer to the long-term historical average.

Period	Number of Years	CPI
1926-44	18	0.0%
1944-67	23	2.8%
1967-82	15	7.3%
1982-01	19	3.3%

Forecasts of Inflation: Since the U.S. Treasury started issuing inflation indexed bonds, it is possible to determine the approximate rate of inflation anticipated by the financial markets by comparing the yields on inflation indexed bonds with traditional fixed government bonds. Current market prices suggest investors expect inflation to be about 2.5% over the next ten years.

Although most economists forecast inflation lower than the current assumption of 3.5%, they are generally looking at a shorter period than is appropriate for a pension valuation. To consider a longer, similar time frame, we looked at the expected increase in the CPI by the Office of the Chief Actuary for the Social Security Administration. In the March 2002 report, the annual increase in the CPI over the next 30 years was 3.0%, under the intermediate cost assumptions. The lower cost assumption used 2.0% and the high cost used 4.0%.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Reasonable Range and Recommendation: We believe that a range between 2.5% and 4.0% is reasonable for an actuarial valuation of a retirement system. We recommend that the long-term assumed inflation rate be retained at 3.50% per year.

Inflation	
Current Assumption	3.5%
Reasonable Range	2.5% - 4.0%
Recommended Assumption	3.5%

RATE OF CREDITING INTEREST ON CONTRIBUTION BALANCES

Use In The Valuation: The law provides that the interest rate credited on contribution balances will be 1% above the rate credited on a one year Certificate of Deposit (CD). Because this rate impacts the dollar amount available for refund and the number of guaranteed payments at retirement under Option 2, an assumption must be used to project future contribution balances.

The law changed, effective January 1, 1997, to the current methodology. Prior to 1997 the formula for determining the interest rate to be credited on contribution balances was significantly different. The formula was 2% plus the "interest rate declared by the department" (which was cash dividends on stock as received plus investment interest actually earned, divided by mean assets for the fiscal year). This formula, in most years, would provide for a much higher interest credit than the current criteria (one year CD plus 1%). Furthermore, the current law ties the interest crediting rate more directly to inflation than was true under the prior law.

The current assumption, which was not changed in 1998, is 5.50%. The interest rate credited on Certificates of Deposit is directly impacted by inflation. Rates on short term CDs are generally slightly lower than inflation so this assumption must be consistent with the inflation assumption.

Reasonable Range and Recommendation: Based on the reasonable range developed for the inflation assumption, we believe a reasonable range for the interest rate credited on contribution balances is 3.25% to 4.75%. We recommend the assumption be lowered to 4.25%.

Interest on Contribution Balances	
Current Assumption	5.50%
Reasonable Range	3.25% - 4.75%
Recommended Assumption	4.25%

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

INVESTMENT RETURN

Use In The Valuation: The investment return assumption is one of the primary determinants in the allocation of the expected cost of the System's benefits, providing a discount of the estimated future benefit payments to reflect the time value of money. The valuation interest rate should represent the long-term rate of return on the actuarial value of assets, considering the fund's asset allocation policy, expected long term real rates of return on the specific asset classes, the underlying inflation rate, and investment and administrative expenses.

The current assumption for investment return is 7.50% per year, net of all investment-related and administrative expenses.

The Actuarial Standards Board Statement on selecting economic assumptions, referred to earlier, lists specific factors that can be considered in constructing the best-estimate investment return range and/or selecting an investment return assumption within the range. Such factors are:

1. **The purpose of the measurement.** The measurement of obligations for an ongoing plan will differ from those of a terminating or frozen plan. An ongoing plan such as IPERS may reflect a longer time horizon and a more diversified investment portfolio.

For a governmental plan, benefit security is tied to the funding agency's ability to provide the required funding. Since all governmental funding sources are ultimately some type of tax, the funding of the retirement system is dependent on the ability to increase or decrease allocated tax revenues to the system. Given the normal processes, it is much easier to lower the required funding allocations than to increase it, as it is easy enough to either lower the tax income or reallocate it to another need. A primary funding goal of most governmental plans is a stable contribution rate so that the budgeting and allocation of tax revenues are not subject to a great deal of fluctuations.

It is reasonable, when setting actuarial assumptions for a governmental plan to consider the impact not only on its membership, but on the taxpayers, and the agency's ability to provide sufficient income to maintain and secure a stable funding for the benefit security of the membership. This is sometimes reflected in a more conservative approach, as experience gains are more easily absorbed into the funding than are experience losses which may result in a required increase in funding.

2. **Investment policy.** This usually refers to the plan's current asset allocation, the types of securities the system is eligible to invest in, and the target allocation, if different. It may also reflect the investment philosophy regarding risk tolerance and social investing.
3. **Reinvestment Risk.** This should reflect the reinvestment of moneys not immediately required to pay plan benefits.
4. **Investment Volatility.** If a system is required to liquidate assets at depressed values to meet benefit obligations, a higher risk is present. Also some assets carry a higher default risk. We do not believe this is a significant factor for IPERS.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

5. **Investment Manager Performance.** Few investment managers consistently out perform the market. Those who consistently under perform may be replaced. Based on the excellent investment advice provided to IPERS by its staff and consultants, we do not believe this is a significant factor to consider for IPERS.
6. **Investment Expenses.** Investment returns are assumed both with and without expenses. Actual expenses are measured periodically and taken into account when setting the IPERS investment assumption.
7. **Cash Flow Timing.** The expected stream of contributions and benefit payments may affect the liquidity of a plan's investment opportunities. Currently, benefit payments exceed contributions. This is likely to continue in the foreseeable future and the difference will grow. The impact of this item may become more significant over time.
8. **Benefit Volatility.** This is a consideration for small plans, plans with full lump sum payment options and supplemental benefits. The concern with these factors is a need to liquidate securities at depressed values. We do not expect benefit volatility to be a factor in considering the IPERS investment return assumption.

Historical Perspective: One of the inherent problems with analyzing historical data is that the results can look significantly different depending on the time frame used if the year-to-year results vary widely. For example, the unusually high equity returns in the 1990's have had a remarkable impact on rolling ten-year period returns. Furthermore, the approach we used to predict inflation does not necessarily reflect current expectations for the capital markets. Even though history provides a valuable perspective for setting this assumption, the economy of the past is not necessarily the economy of the future.

Projection Model Using Capital Market Assumptions: In our opinion, the best approach for developing the investment return assumption projects future returns from capital market assumptions. We used the capital market assumptions set by IPER'S Investment Consultant, Wilshire and Associates, with modifications for the difference in their underlying inflation assumption (2.25%) and ours (3.50%). A formula-based model was used to predict future returns based on these capital market assumptions, the asset allocation policy, and assumed annual re-balancing. The asset allocation and the expected real returns by asset class are shown below.

Asset Class	Asset Allocation	Expected Real Rate of Return	Standard Deviation
GTAA (Tactical)	5%	5.65%	14.0%
International Equity	15%	7.53%	20.0%
Fixed Income	34%	3.23%	7.0%
High Yield	3%	5.21%	10.0%
Real Estate	5%	5.86%	11.5%
US Equity	28%	7.05%	17.0%
Private Equities	10%	12.95%	32.0%

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Asset Class	Cross Correlation Mix						
	GTAA	Int'l Equity	Fixed Income	High Yield	Real Estate	US Equity	Private Equity
GTAA (Tactical)	1.00						
International Equity	0.44	1.00					
Fixed Income	0.50	0.20	1.00				
High Yield	0.58	0.30	0.50	1.00			
Real Estate	0.38	0.35	0.30	0.50	1.00		
US Equity	0.80	0.65	0.40	0.50	0.40	1.00	
Private Equities	0.65	0.50	0.27	0.34	0.41	0.75	1.00

These capital market assumptions were combined with the current asset allocation policy to generate expected returns over a thirty-year period. The model assumes that investment returns follow a lognormal distribution (a probability distribution from mathematical statistics) and are based on mathematical formulas from *The Long-Term Expected Rate of Return: Setting it Right* by Olivier de la Grandville as published in the Financial Analysts Journal, Nov/Dec 1998.

The expected real rate of return of a portfolio allocated in this way is 6.23% for one year and, 9.73% including the assumed inflation rate of 3.5%. However, the return is subject to significant volatility. The model provides a guide to see if it is reasonable to expect this return to compound over longer periods of time. The results are summarized in the following table.

Horizon in Years	Mean	Std Dev	Percentile Results				
			5th	25th	50th	75th	95th
1	9.73%	11.71%	-8.40%	1.55%	9.10%	17.22%	29.99%
10	9.16%	3.67%	3.23%	6.65%	9.10%	11.61%	15.31%
20	9.13%	2.60%	4.92%	7.37%	9.10%	10.87%	13.46%
30	9.12%	2.12%	5.67%	7.68%	9.10%	10.54%	12.64%

In the first year, the mean return is 9.73%, but due to the volatility associated with the asset allocation, the range of probable outcomes is quite large. For example, in the first year there is a 5% chance the return will be less than -8.40% and a 5% chance it will be greater than 29.99%, based on the capital market assumptions. As the time horizon lengthens, the range of cumulative average results narrows. Over a 30 year time horizon, there is a 25% chance the return will be less than 7.68% and a 25% chance the return will be greater than 10.54%.

Therefore, we can say the return is just as likely to be within the range from 7.68% to 10.54% as not. The median return over 30 years is expected to be 9.10%.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Investment-Related and Administrative Expenses

The investment return is assumed to be net of all investment-related and administrative expenses. The table below shows the ratio of investment and administrative expenses to assets over the last five years. The expense ratio is calculated as the total expenses divided by the beginning asset balance.

(\$ million)	Investment Expenses	Administrative Expenses	Actl Value Assets (\$M)	Expense Ratio	
				Investment	Administrative
2001	\$42.6	\$7.3	\$15,112	0.28%	0.05%
2000	31.0	5.9	14,145	0.22	0.04
1999	34.6	4.6	12,664	0.27	0.04
1998	20.3	4.0	11,353	0.18	0.04
1997	17.4	3.8	10,113	0.17	0.04

Based on this data, it seems reasonable to assume that investment and administrative expenses represent about 0.30% of the System's assets.

Another consideration in the development of the long term investment assumption for IPERS is the provision in the Code that provides for a potential transfer of a portion of the System's experience gains to the FED account each year. This gain is removed from the Retirement System's general assets and cannot be retrieved in future years. Because the rate of investment return on the fund may average 7.5% but the actual returns each year will be higher or lower than 7.5%, the current plan design for financing the FED serves to effectively lower the rate of return on the fund.

To illustrate this in a overly simplified way, assume the only favorable/unfavorable experience for the System is from the investment return. Furthermore, assume the portion of the favorable experience that goes to the FED is always 25% (this is hypothetical for illustration purposes only). The following chart illustrates the impact of the FED on the investment return assumption.

Year	Investment Return	Portion to FED	Effective Rate for Fund
1	10.50%	.75%	9.75%
2	4.50%	.00%	4.50%
3	10.50%	.75%	9.75%
4	4.50%	.00%	4.50%
5	10.50%	.75%	9.75%
6	4.50%	.00%	4.50%
7	10.50%	.75%	9.75%
8	4.50%	.00%	4.50%
9	10.50%	.75%	9.75%
10	4.50%	.00%	4.50%
Avg.	7.50%		7.10%

The transfer of favorable investment returns to the FED will tend to lower the effective rate of return on the System's assets over the long term, although it's precise impact cannot be easily measured.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Reasonable Range and Recommendation: Based on the ASOP No. 27 guidelines, we conclude that a reasonable range for the gross investment return is 7.68% to 10.54%. This range needs to be lowered to reflect the expenses assumed to be paid from the investment return. Given an assumed expense ratio of 30 basis points, we believe that a range between 7.38% and 10.24% is reasonable for an actuarial valuation of a retirement system with IPERS asset allocation policy. Given the long term nature of the liabilities, the expectation of lower inflation in the short term, the potential impact of the FED transfer of favorable experience and the significance of this assumption in the valuation process, we feel more comfortable toward the low end of the range.

Components of Return	Percentile Results		
	25th	50th	75th
Real Investment Return	4.18%	5.60%	7.05%
Inflation	3.50%	3.50%	3.50%
Assumed Expenses	(0.30%)	(0.30%)	(0.30%)
Net Investment Return	7.38%	8.80%	10.24%

We recommend that the net investment return assumption remain at 7.5% per year. We believe an investment return assumption of 7.5% per year is consistent with the level of inflation and real rate of return likely to occur over an extended period of time, net of expenses.

Investment Return	
Current Assumption	7.50%
Reasonable Range	7.38% - 10.24%
Recommended Assumption	7.50%

WAGE GROWTH

Use in the Valuation: Estimates of future salaries are based on two types of assumptions. Rates of increase in the general wage level of the membership are directly related to inflation while individual salary increases due to promotion and longevity (referred to as the merit scale) occur even in the absence of inflation. The merit scale will be reviewed with the other demographic assumptions.

As part of determining the System's funding, the amortization period for the unfunded actuarial liability (UAL) is determined, based on amortization payments developed as a level percent of payroll. The general wage increase assumption is used to project covered payroll in future years which determines the years to amortize the UAL.

The current wage growth assumption is 0.5% above the price inflation rate, or 4.0% per year.

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Historical Perspective: We have used statistics from the Social Security System on the National Average Wage back to 1951 (please note that 2000 is the most recent published data). For years prior to 1951, we studied the Total Private Nonagricultural Wages as published in *Historical Statistics of the U.S., Colonial Times to 1970*. This data shows a compounded annual increase from 1926 through 2000 of 1.4%.

The excess of wage growth over price inflation represents the increase in the standard of living, also called productivity growth. There has been debate on the issue of whether public sector employees will receive, over the long term, the same rewards for productivity as employees in the private sector, where productivity is more readily measurable. To our knowledge, no definitive research has been completed on this topic. Nevertheless, it is our opinion that public sector employees must be rewarded, even if there is a time lag, with the same productivity increases as those participating in the remainder of the economy.

The following table shows the compounded wage growth over the last 30 or more years, along with the comparable inflation rate for the same period. The difference represents the rate of real wage growth.

Period	Wage Growth	CPI	Real Wages
1990 - 2000	4.3%	2.7%	1.6%
1980 - 2000	4.8%	3.6%	1.2%
1970 - 2000	5.6%	5.0%	0.6%
1960 - 2000	5.3%	4.5%	0.8%
1926 - 2000	4.6%	3.2%	1.4%

Resources: Social Security National Average Wage from 1951 to 2000; Total Private Nonagricultural Wages from 1926 to 1951; Inflation as measured by the CPI-U.

The "building block approach" uses the rate of productivity growth and the inflation assumption developed previously. For example, if the rate of real wage growth is 0.5%, the inflation assumption is 3.5%, then the expected total wage growth is 4.0%. Wage growth is not as volatile as investment returns, so we have not modeled future wage growth using the more sophisticated approach used to project future investment returns. We are relying instead on the building block approach to develop this assumption.

Forecasts of Future Wages: The wage index we used for the historical analysis has been projected forward by the Office of the Chief Actuary of the Social Security Administration. In a report in March of 2002, the annual increase in the National Average Wage Index over the next 30 years under the intermediate cost assumption was 4.1%.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Reasonable Range and Recommendation: Based on our judgment, we believe that a range between 3.5% and 5.0% is reasonable for the actuarial valuation. We recommend that the long-term assumed wage growth rate remain at 4.0% per year. This reflects the assumed rate of inflation of 3.5% and an assumed rate of real wage growth of 0.5%.

Wage Growth	
Current Assumption	4.0%
Reasonable Range	3.5% - 5.0%
Recommended Assumption	4.0%

The low end of the range represents our recommended price inflation assumption with no adjustment for real wage growth. The upper end of the range reflects real wages at 1.5% above our recommended inflation assumption. The current assumption of 0.50% was first set in 1998 (prior to that time no productivity assumption was used). While recent experience on the national level would indicate that productivity growth has been increasing over the last decade, prior to that time it had been decreasing. We feel the current assumption should be maintained and this assumption should be monitored closely in the future to determine if a change is appropriate.

GROWTH IN ACTIVE MEMBERSHIP

We propose continuing the assumption that no future growth in active membership will occur. This assumption affects the amortization payment rate, which is the portion of the total contributions used to liquidate the unfunded actuarial liability. With no assumed growth in active membership, future salary growth due only to general wage increases is being anticipated. If increases should occur not only because of wage increases but also because of additional active members, there will be a larger pool of salaries over which contributions would be paid which would result in a shorter amortization period. The uncertainties in light of current conditions in public employment and the national economy argue against anticipating any increase in membership for funding purposes. Furthermore, GASB Statement No. 25 will not accept a growth in membership assumption as meeting its required parameters. Thus, if a growth assumption were to be used for funding purposes, a different set of calculations and results would be needed for accounting and disclosure purposes.

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Section 4

Demographic Assumptions

Actuarial Standard of Practice (ASOP) No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*, provides guidance to actuaries giving advice on selecting demographic assumptions for defined benefit plans, such as IPERS. This standard, is effective for measurement dates after September 15, 2001.

The purpose of a study of demographic experience is to compare what actually happened to the individual members of the System during the study period (April 1, 1998, through June 30, 2001) with what was expected to happen based on the actuarial assumptions. Three years is a relatively short observation period, so we have considered experience in the previous observation period when practical to do so.

Studies of demographic experience generally involve three steps:

- First, the number of members changing membership status, called decrements, during the study is tabulated by age, duration, sex, group, and membership class (active, retired, etc.).
- Next, the number of members expected to change status is calculated by multiplying certain membership statistics, called exposure, by the expected rates of decrement.
- Finally, the number of actual decrements is compared with the number of expected decrements. The comparison is called the actual to expected ratio (A/E Ratio), and is expressed as a percentage.

In general, if the actual experience differs significantly from the overall expected results, or if the pattern of actual decrements, or rates of decrement, by age, sex, or duration deviates significantly from the expected pattern, new assumptions are considered. Recommended revisions are normally not an exact representation of the experience during the observation period. Judgment is required to predict future experience from past trends and current evidence, including a determination of the amount of weight to assign to the most recent experience.

Revised rates of decrement are tested by using them to recalculate the expected number of decrements during the study period, and the results are shown as revised A/E Ratios.

Salary adjustments, other than the economic assumption for wage inflation, are treated as demographic assumptions. However, the method of investigation needed for salaries is different from that used for the decrements.

It takes a fair amount of data to perform a credible study of demographic assumptions. Because the membership of the Special Services group (particularly females) is relatively small, some assumptions have been selected based more on our professional judgement of reasonable future outcomes than actual experience.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

**Section 5
Mortality**

One of the most important demographic assumptions is mortality because this assumption predicts when retirement payments will stop. The life expectancies of current and future retirees are predicated on the assumed rates of mortality at each age. It is commonly known that rates of mortality have been declining throughout the 20th century, which means people, in general, are living longer. Furthermore, the experience of large, public systems that cover School employees indicate that the School group continues to exhibit better mortality than the average working group.

Because of potential differences in mortality, we studied healthy retirees, disabled retirees and active members separately.

Healthy Retirees: The valuation currently uses separate mortality assumptions for male and female members. The mortality assumption for healthy retirees was changed in the last experience study to a more recent table, the 1994 Group Annuity Mortality (94 GAM) Table, with the following adjustments:

Males	One Year Set Forward
Females	95% of the Rates, Set Back One Year

In examining the results of the Experience Study, if the A/E Ratio is greater than 100% the assumptions have predicted fewer deaths than actually occurred, and therefore have built in some "margin" for future mortality improvements. This is generally considered a prudent approach given the pattern of improvement in past mortality experience. The observed A/E Ratios for healthy retirees are shown in the following chart.

Healthy Retirees	1998-2001 Observations		A/E Ratio		
	Actual	Expected	1998-01	1993-98	1993-2001
Male	2,922	2,857	102%	104%	104%
Female	3,079	2,776	111%	105%	107%
Totals	6,001	5,633	107%	105%	106%

For both males and females, actual deaths exceeded those expected based on current assumptions. This indicates some margin for future mortality improvements does exist, however the margin for males is very small. It is interesting to note that mortality experience for males improved (lower A/E ratio occurred) but the opposite occurred for females during the study period. The A/E ratio for females increased from 105% in the prior Study to 111% in this Study.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

There is currently little, if any, margin remaining for male members. Therefore we feel a change is necessary to strengthen the mortality assumption for males. We examined changes to the current table (94 GAM) but the results were not a particularly good fit. Since the last experience study was completed, the Society of Actuaries has published a new mortality table, known as the RP-2000 Table. This table offers an alternative way to provide a margin for future mortality improvements. The table projects anticipated future mortality improvements on a "generational" basis, i.e. mortality rates are set by the year in which a member reaches a particular age. After studying results using the RP-2000 Generational Table, we found it was a good fit to actual experience, especially at the older ages. It also provides a more sophisticated approach to incorporating expected mortality improvements in the future, which we find appealing. However, we do not find it desirable to have the male mortality assumption determined on a different basis (generational table versus a static table) than the female mortality assumption. Therefore, we prefer to move both the male and female mortality assumptions to the new methodology of the RP-2000 Table. Therefore, we recommend the following changes:

Male	RP-2000 Table For Healthy Annuitants, Set Forward One Year
Female	RP-2000 Table For Healthy Annuitants, Set Back Two Years

In a "generational" mortality table, anticipated future mortality improvements are automatically reflected in the mortality rates used in future years. Therefore, there is no need for the A/E Ratio to be greater than 100% in order to provide for future mortality improvements as would be the case if no improvement were projected. The resulting A/E Ratios based on the recommended mortality tables, as shown above for males and females, are 97% and 99% respectively.

For the first time, we analyzed the mortality experience for retired members by employer group (School, State, and Local) in this Experience Study. Some significant differences appear to exist as shown below:

Healthy Retirees	Actual	Expected	A/E Ratio
Male			
School	1,128	1,257	90%
State	491	441	111%
All Others	<u>1,303</u>	<u>1,159</u>	<u>112%</u>
Total	2,922	2,857	102%
Female			
School	1,321	1,300	102%
State	481	402	120%
All Others	<u>1,277</u>	<u>1,074</u>	<u>118%</u>
Total	3,079	2,776	111%

Our findings indicate that School employees have the "best" mortality rates (i.e. longer life expectancy) of the three employer groups. We find this to be true in most of the public retirement systems for whom we provide services, i.e. School employees typically exhibit lower mortality rates than other members. There is not a significant difference between the mortality of the State and other employers.

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

We intend to continue to analyze mortality experience separately for the different employer groups in future experience studies to validate whether significant differences in mortality do exist. If these trends continue, a separate mortality assumption for each group (or at least School and non-School) would appear to be appropriate. However, at this point we feel any such change would be premature.

Beneficiaries: The mortality of beneficiaries applies to the survivors of members who have elected a joint and survivor option. There is never complete data on the mortality experience of beneficiaries prior to the death of the member because there is no requirement that the death be reported to the System (unless they elected Option 6, Joint & Survivor with pop-up). Therefore, we recommend we continue to follow standard convention and set the mortality of beneficiaries equal to the mortality of retired members.

Disabled Members: The valuation assumes that disabled members, in general, will not live as long as retired members who met the regular service retirement eligibility. There tends to be more fluctuation in disabled mortality than healthy mortality because of differences in the types of disabilities. In addition the smaller number of exposure makes the results more volatile. Based on the current assumption, the A/E Ratios for males and females were 120% and 110% respectively. This assumption was first implemented with the last experience study and adequate margin appears to exist at this time. Therefore, we recommend the current assumption be retained.

Active Members: This assumption predicts eligibility for death benefits prior to retirement, rather than the expected lifetime for pension payments. For active member mortality, it is more conservative to set the assumption with an A/E Ratio less than 100% because active member death benefits are generally less costly than retirement benefits.

In the past, the mortality rates for active members have been set based on the same assumption as is used for healthy retirees. Rates of mortality among active members may be impacted by active members first terminating or moving to disabled status before death. In addition, the number of deaths from active membership may be understated because the criteria for reporting for purposes of this study requires that a members' date of death and payment date occur before June 30. Therefore, it is likely active death rates are higher than the experience data might indicate.

The observed A/E Ratios for active members are shown in the following chart.

Active Deaths	Actual	Expected	A/E Ratio
Current Assumption			
Male	230	456	50%
Female	228	352	65%
Revised Assumption			
Male	230	325	71%
Female	228	351	65%
Totals	458	676	68%

For healthy retirees we recommended a change to the RP-2000 Healthy Annuitant Table with a one year set forward for males and a two year set back for females. We recommend the RP-2000 Employee Table with the same age adjustments for males and females as for Retired Lives be used for active member mortality.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Special Services Members

For Special Services members, we studied healthy retired and active mortality experience. There was an insufficient number of female members to produce statistically reliable information. Therefore, our analysis was performed for male members only. In the last experience study (1998), the mortality assumption was changed to the 1983 Group Annuity Mortality (GAM) Table.

The results of the current study are shown below.

Deaths	Actual	Expected	A/E Ratio
Current Assumption			
Healthy Retirees	40	34	118%
Actives	15	33	45%
Revised Assumption			
Healthy Retirees	40	39	103%
Actives	15	26	58%

Because the mortality rates for the general membership were changed to a new type of mortality table, i.e. a "generational" table, we recommend using the same type of table for Special Service members. The revised assumption for this group for healthy retirees is the RP-2000 Healthy Annuitant Table with a three year age set forward for males and no age adjustment for females. For actives, the revised assumption is the RP-2000 Employee Table with a three year age set forward for males and no age adjustment for females.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Section 6

Retirement

Service retirement measures the change in status from active membership directly to retirement. This assumption does not include the retirement patterns of the retirees who terminated from active membership months or years prior to their retirement. That experience is studied separately.

The requirement for early retirement with a reduced benefit is age 55. The requirements for retirement with a full (unreduced) benefit are age 65 or age 62 with 20 years of service (referred to as "normal retirement"). Full, unreduced benefits are also available at or after age 55 if age plus service is at least equal to 88 (referred to as Rule of 88).

Among the members at any age who are eligible to retire with unreduced benefits (Rule of 88 or normal retirement), those who are in their first year of meeting the eligibility requirements are generally more likely to retire than those who met that requirement more than a year ago. We refer to retirement rates for those in their first year of such eligibility as "select" and those beyond that first year as "ultimate." This select/ultimate approach is the basis for evaluation of experience.

The summary results of our experience study are shown below:

Retirement	Actual	Expected	A/E Ratios		
			1998-2001	1993-1998	1993-2001
Early	4,595	5,186	89%	77%	92%
Select	1,247	1,656	75%	90%	85%
Ultimate	3,838	5,517	70%	76%	71%
Total	9,612	12,361	78%	80%	79%

Based on this data there were fewer retirements during the study period than expected. This trend was exhibited in the last Experience Study and rates were lowered at many ages at that time. When results for the aggregate period are reviewed, the A/E Ratios are within acceptable ranges with the exception of the "Ultimate rates". We recommend those rates be lowered slightly to partially reflect the experience exhibited in this experience study. If the trend continues additional adjustments can be made in the future. The result using the revised "Ultimate" retirement rates is an A/E Ratio of 77%.

There is a high probability that retirement rates, especially the utilization of the Rule of 88, will vary among employer groups. Part of the higher utilization by School employees is often the result of early retirement incentive programs offered by local School Districts. For the first time we separately studied experience for

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

State, School and All Other employers. Our findings are summarized below:

Early	Actual	Expected	A/E Ratio
School	2,404	2,553	94%
State	642	717	90%
All Others	1,549	1,916	81%
Total	4,595	5,186	89%

Select	Actual	Expected	A/E Ratio
School	662	896	74%
State	177	221	80%
All Others	408	539	76%
Total	1,247	1,656	75%

Ultimate	Actual	Expected	A/E Ratio
Current Assumption			
School	2,187	2,972	74%
State	543	816	67%
All Others	1,108	1,729	64%
Total	3,838	5,517	70%
Revised Assumption			
School	2,187	2,665	82%
State	543	728	75%
All Others	1,108	1,574	70%
Total	3,838	4,967	77%

There were differences in retirement experience by group, although not as dramatic as we might have expected based on our experience with other Systems. Since this is the first experience study for which an analysis by group is available we are not recommending a change be made at this time. We recommend retirement experience continue to be studied separately for each group in the future. As more information is gathered a decision can be made as to whether separate assumptions for each group are appropriate.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Inactive Vested Members

Currently, inactive vested members who leave their contributions with the System are assumed to retire at age 62. We reviewed the experience during the observation period and found that age 62 was the average retirement age. We recommend the current assumption of age 62 be retained for inactive vested members.

Special Services Group

The eligibility requirement for retirement benefits is different for the special services groups and, therefore, a different assumption is used in valuing the liabilities for these groups. The results of our investigation of experience during this study period are shown below.

Retirement	Actual	Expected	A/E Ratio
Current Assumption	152	282	54%
Revised Assumption	152	207	73%

Since the A/E Ratio is so low and this experience is consistent with that observed in the last study, we recommend retirement rates for the Special Services groups be lowered with a resulting A/E Ratio of 73%.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Section 7

Disability

The current disability assumption for the general membership was first introduced in the last experience study. Separate disability rates were developed at that time for males and females. The table below indicates the number of actual and expected disabilities during the study period and the resulting A/E Ratios. In general, ratios below 100% indicate fewer disabilities than expected which would decrease the actuarial liabilities.

Disabilities	Actual	Expected	A/E Ratio
Males	216	308	70%
Females	250	336	74%
Total	466	644	72%

Because of the time lag involved in reporting and processing disabilities, it is very likely many of the members who became disabled in the last year of the study period were not reported by the time the valuation data was provided. If only the 1998-99 and 1999-2000 years are included in the analysis, the A/E ratio changes significantly:

Disabilities	Actual	Expected	A/E Ratio
Males	169	187	90%
Females	198	202	98%
Total	367	389	94%

We assign more credibility to the first two years of the study period and therefore, we recommend the current assumption be maintained.

Special Services

During the study period, there were 18 disabilities compared to 56 expected, resulting in a A/E ratio of 32%. Due to the small number of exposure for female members in these groups, one set of rates is used for all members. Furthermore due to the small size of the group (as compared to the general membership) actual experience, although considered, cannot be given full credibility.

There has been a change in the disability provisions for Special Services members since the last study. Effective July 1, 2000 members receive a different benefit depending on whether or not the disability is duty related. A separate assumption is used for this type of disability, but the data for one year is inadequate for analysis.

The new disability provisions may impact experience in the future. In addition the actual experience of the group is of limited value. Therefore, we recommend the current disability assumptions be retained.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Section 8

**Termination of Employment
(Withdrawal)**

This section of the report summarizes the results of our study of terminations of employment for reasons other than death, retirement, or disability. Rates of termination can vary by both age and years of service. In general rates of termination are highest at younger ages and in the early years of employment.

The following table shows that over 40% of all terminations occur for members within their first year of membership and about 80% occur in the first six years of membership.

Withdrawal by Membership Year

Membership	1st	2nd - 6th	7th & Higher	All
<u>Class</u>	<u>Year</u>	<u>Year</u>	<u>Year</u>	<u>Years</u>
Male	4,200	2,952	1,873	9,025
Female	<u>10,687</u>	<u>7,840</u>	<u>4,382</u>	<u>22,909</u>
Total	14,887	10,792	6,255	31,934

The number of withdrawals includes all members reported to have terminated employment. Some of these members subsequently receive refunds of contributions; some return to active membership and some leave their contributions with the System until retirement. We have made explicit assumptions about what happens to vested members who leave their contributions with the System.

The current assumptions were first adopted as a result of the last experience study. At that time, a rather significant change in the approach for setting the withdrawal assumption was made. We changed from an age and gender based assumption to an assumption based on age, service and gender. Because this was a change in the methodology for setting the assumption, prior experience was not readily available on the same basis. As a result, the new set of withdrawal assumptions was set relatively close to the actual experience during the observation period (in particular the 1996-99 experience).

The following chart shows the actual and expected number of terminations for causes other than death, retirement, or disablement, and the corresponding A/E Ratios. In general, terminations lower than expected increase the liabilities but in terms of the impact on the valuation, which members terminate can be more important than the number of terminations. Overall, the assumptions predicted actual terminations fairly accurately with an overall A/E Ratio for males of 94% and 90% for females.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Terminations	Actual	Expected	A/E Ratio
Males			
Year 0-1	4,200	4,386	96%
Year 2	1,027	1,271	81%
Year 3	711	749	95%
Year 4-6	1,214	1,236	98%
Year 7-8	414	437	95%
Year 9+	1,459	1,496	98%
Total	9,025	9,575	94%
Females			
Year 0-1	10,687	11,596	92%
Year 2	2,702	3,442	79%
Year 3	1,777	2,238	79%
Year 4-6	3,361	3,653	92%
Year 7-8	1,294	1,210	107%
Year 9+	3,088	3,190	97%
Total	22,909	25,329	90%
Total Male and Female	31,934	34,904	91%

We are recommending the termination of employment assumption for Males in Year 2 and Females in Year 2 and 3 be lowered slightly. The revised A/E Ratios based on the proposed assumptions are:

Terminations	Actual	Expected	A/E Ratio
Revised Assumption			
Males Year 2	1,027	1,121	92%
Females Year 2	2,702	2,962	91%
Females Year 3	1,777	1,939	92%

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

For the first time we also analyzed experience by group to see if significant differences might exist by employer group. Our results, based on the current assumptions, are shown below:

Terminations	A/E Ratios		
	State	School	All Others
Males			
Year 0-1	86%	192%	166%
Year 2	81%	84%	75%
Year 3	105%	96%	91%
Year 4-6	81%	105%	95%
Year 7-8	79%	91%	103%
Year 9+	93%	86%	184%
Females			
Year 0-1	104%	89%	90%
Year 2	74%	76%	83%
Year 3	72%	73%	92%
Year 4-6	86%	84%	110%
Year 7-8	92%	93%	134%
Year 9+	77%	82%	141%

There do appear to be material differences in rates of termination of employment by employer group at most service durations. We recommend this be studied again in the next experience study and if similar trends occur, separate assumptions be set for each group.

Special Service Groups

Due to the small number of female members in the Special Service groups there is insufficient data upon which to develop separate assumptions by gender. We have developed one set of age based assumptions to be used for all special service members. The results of our study are shown below:

Terminations	Actual	Expected	A/E Ratio
Current Assumption	787	541	145%
Revised Assumption	787	658	120%

The observed A/E Ratio of 145% indicates the current assumption has not been a good fit for experience during the study period. Despite the fact there is limited data, we feel an adjustment to the current rates is appropriate. We recommend the rates be modified, with a resulting A/E Ratio, based on the recommended rates, of 120%.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

WITHDRAWAL OF MEMBER ACCOUNTS/PROBABILITY OF ELECTING A VESTED BENEFIT

Many members who terminate active employment elect to receive a distribution of their member account balance and part/all of their employer balance. We assume that all non-vested members receive a refund of their account balance at the time of termination. In addition, we assume that a certain number of terminating vested members also elect a refund, thus forfeiting a vested right to their employer-provided benefit.

We were concerned about the potential "lag" from a member's date of termination of employment to the date he requested and received his refund. Since this study period is only three years in duration, a significant lag between these dates would effectively eliminate the credibility of the results. We asked for, and were provided, individual data for 8,289 members who took refunds. We analyzed this "refund data" and determined that about 75% of refunds occur within two years of termination of employment. This percentage is high enough to give us confidence in relying on the experience study data. Due to the fact many of the members who terminated in the last year of the Experience Study period may not have requested or completed their refund, only the experience in the first two years is included in our analysis.

General Membership

The current assumption was first introduced in the last Experience Study, which was based on the study period 1993-98. The law changed in 1999 to allow members to take a partial refund of the employer contribution account. It was expected that this provision would increase the percentage of terminated vested members who elect a refund and the current assumption reflected that. Our findings actually show a lower number of refunds by vested members than expected and indicate a very different pattern of occurrences. Under the current assumption, there is an increasing probability of a vested member leaving their contributions with the System based on age. The experience during this study period indicated a somewhat increasing percentage of members electing a deferred vested benefit instead of a refund as age increased, but not nearly as dramatic as currently assumed. This was observed for both males and females. However, when experience was analyzed by duration (Years of Service) there was a much stronger correlation. We are recommending a revised assumption based on service rather than age as shown in Exhibits 27 and 29.

The following table shows the number of vested members who terminated and elected to leave their funds with the System and receive a vested benefit, along with the expected count based on the current and revised assumptions.

Vested Benefit	Actual	Expected	A/E Ratio
Current Assumption			
Male	1,520	1,193	127%
Female	4,122	3,446	120%
Total	5,642	4,639	122%
Revised Assumption			
Male	1,567	1,546	101%
Female	4,199	4,230	99%
Total	5,766	5,776	100%

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Again we studied this experience by employer group to see if differences exist. Our results, based on the recommended assumption are shown below:

Vested Benefit	Actual	Expected	A/E Ratio
Revised Assumption			
Male			
State	229	244	94%
School	643	592	109%
All Others	<u>695</u>	<u>710</u>	98%
Total	1,567	1,546	101%
Revised Assumption			
Female			
State	424	482	88%
School	2,243	2,098	107%
All Others	<u>1,532</u>	<u>1,650</u>	93%
Total	4,199	4,230	99%

Of all the groups School employees have the lowest incidence of taking refunds, and therefore the highest incidence of leaving contributions with the System. This seems reasonable as it is common for women, in particular, to leave their teaching position for several years to have and raise children. The differences in the State and Other Employers' experience is less dramatic but still significant.

As with other assumptions, this is the first experience we have by employer group. In addition the study period is shorter than normal. We recommend this analysis continue in the next experience study and a decision be made at that time about creating separate assumptions for each group.

Special Services

Due to the earlier commencement of benefits compared to IPERS general membership, refunds by vested members should occur less frequently particularly at the higher service durations. The current assumption uses the table of rates from the general membership with a ten year set forward on age. Since the general membership rates are being changed to a service based assumption, we recommend a new service based assumption also be developed for Special Services members. Because the group is small and termination rates are low, there is little credible data upon which to base this assumption. Although we considered actual experience, the final rates were based on professional judgement. The revised A/E Ratio based on the new assumption is 166%.

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Section 9

Merit Salary Scale

Estimates of future salaries are based on assumptions for two types of increases:

1. Increases in each individual's salary due to promotion or longevity (often called merit scale), and
2. Increases in the general wage level of the membership, which are directly related to price and wage inflation.

Earlier in this report, we recommended that the second of these rates, general wage inflation remain at 4.0% (3.5% price inflation and .5% real wage growth).

Although future salary increases are the result of two components, it is difficult to isolate the true salary adjustment due to inflation and productivity given the number of different employers in IPERS and potential varying conditions for each employer. Therefore, the experience study reviewed total salary increases for the period. We then eliminated the percentage attributable to general wage growth to try and isolate the merit scale. The general wage growth for the period was determined by reviewing actual salary increases by duration (years of service). For those members with more than 25 years of service, it was assumed no merit scale applied and all of the salary increase was attributable to increases in the general wage level. The results indicated a general wage increase during the study period of 3.9%, very close to the 4.0% assumed rate. If the general wage assumption is subtracted from the total salary scale, the result is the merit scale. For most durations, the merit scale appears to be a reasonable fit (i.e. actual experience is close to that expected).

Price inflation during the study period (1998-2001) was 2.8% as compared to our assumption of 3.5%, so we would have expected to see lower actual wage increases during this period than the assumed rates. However, there also is very likely a lag between the occurrence of actual inflation and the time the wage increase is granted based on that experience. Thus, at any point in time, general salary increases are more likely to be impacted by the actual inflation in the past several years as compared to the current year. Inflation for the decade of the 1990's was 2.7% and the change in the National Average Wage was 4.3% during this period. Although inflation was about 0.5% lower than our assumption, real wage growth was about 1.0% higher than our assumption. The net impact was that general wage growth in the national economy was very close to the current assumption, which is also exhibited in the actual experience.

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

We compared individual salary increases for all members active in any two consecutive periods (e.g. 1998 and 1999, 1999 and 2000, etc.). The overall results of the three years studied are shown below:

Years of Service	Average Increase in Salaries		
	Actual 1998-2001	Expected	Actual 1993-98
1	17.1%	13.0%	14.3%
2	8.4%	8.9%	8.9%
3	7.5%	7.4%	7.2%
4-5	6.9%	6.5%	6.5%
6-7	6.2%	5.9%	5.6%
8-10	5.6%	5.5%	5.2%
11-15	5.0%	5.0%	4.7%
16-20	4.4%	4.5%	4.2%
21+	4.1%	4.1%	3.6%

As with the other demographic assumptions we studied salary experience during the investigative period by group and found the following:

Years of Service	State	School	All Others	Combined
1	18.2%	16.1%	18.6%	17.1%
2	8.8%	8.6%	8.7%	8.4%
3	8.8%	7.2%	7.8%	7.5%
4-5	7.9%	6.8%	7.0%	6.9%
6-7	7.1%	6.2%	6.1%	6.2%
8-10	6.0%	5.5%	5.8%	5.6%
11-15	5.4%	4.8%	5.7%	5.0%
16-20	5.1%	4.1%	5.3%	4.4%
21+	4.9%	3.6%	5.0%	4.1%

There are differences in the salary increases experienced by members of different employer groups, in particular the School group. Since salary experience is closely tied to the economy, a longer study period is needed before any dramatic changes are implemented. We recommend this analysis be carried over to the next experience study and the aggregate experience of the two studies be considered at that time to determine whether separate salary increase assumptions by group are appropriate.

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

APPENDIX A

Current Actuarial Assumptions

Rate of Investment Return (effective June 30, 1996)

7.50% per annum, compounded annually, net of expenses.

Rates of Mortality (effective June 30, 1999)

Active and Inactive Members

	<u>General Membership</u>	<u>Special Services</u>
Males:	GAM 94 Male, set forward one year	GAM 83 Male
Females:	95% of GAM 94 Female, set back 1 year	GAM 83 Female
Disabled Members:	Annual rates are the greater of 3% or 2.5% plus the corresponding non-disabled rate (no set forward or set back applied)	Same as healthy members set forward 6 years
Beneficiaries:	Same as members	Same as members

Rates of Disablement (effective June 30, 1999)

<u>Age</u>	<u>Annual Rate</u> <u>Per 1,000 Members</u>		
	<u>Males</u>	<u>Females</u>	<u>Special Services</u>
27	0.2%	0.2%	0.2%
32	0.2%	0.2%	0.2%
37	0.4%	0.3%	0.4%
42	0.7%	0.5%	0.7%
47	1.4%	0.9%	1.3%
52	3.3%	2.2%	2.35%
57	6.3%	3.9%	5.2%
62	9.0%	6.2%	9.8%

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Rates of Termination of Employment (effective June 30, 1999)

General Membership

		Annual Rate of Withdrawals Per 1,000 Members					
Males:							
	<u>Age</u>	<u>Years 0-1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Years 4-6</u>	<u>Years 7-8</u>	<u>Years 9+</u>
	22	330.0	275.0	220.0	99.0	88.0	66.0
	27	231.0	165.0	121.0	99.0	88.0	66.0
	32	198.0	165.0	110.0	74.8	55.0	39.0
	37	195.8	159.5	110.0	74.8	49.5	33.0
	42	195.8	143.0	110.0	74.8	49.5	25.3
	47	195.8	143.0	99.0	74.8	49.5	19.8
	52	176.0	110.0	77.0	74.8	49.5	19.8
	55+	165.0	110.0	55.0	74.8	49.5	19.8
Females:							
	<u>Age</u>	<u>Years 0-1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Years 4-6</u>	<u>Years 7-8</u>	<u>Years 9+</u>
	22	330.0	308.0	220.0	110.0	99.0	55.0
	27	275.0	220.0	169.4	110.0	99.0	55.0
	32	247.5	220.0	154.0	105.5	72.0	49.5
	37	198.0	158.4	143.0	105.5	66.0	36.3
	42	198.0	157.3	121.0	88.0	61.0	30.8
	47	198.0	143.0	121.0	82.5	49.5	25.3
	52	198.0	143.0	121.0	82.5	49.5	25.3
	55+	198.0	143.0	121.0	82.5	49.5	25.3

Special Services

<u>Age</u>	<u>Annual Rate of Withdrawals Per 1,000 Members</u>
22	100
27	60
32	35
37	21
42	25
47	22
52	22
55+	22

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Rate of Election of Return of Contributions by Vested Members (effective June 30, 1999)

<u>Age</u>	Annual Rate	
	Per 1,000 Members	
	General Membership	
	<u>Males</u>	<u>Females</u>
25	1,000	1,000
30	900	800
35	800	700
40	600	500
45	300	150
50	150	150
55	0	0

Special services members are assumed to elect a return of contributions at the same rate as general members who are 10 years older.

Rates of Salary Increase (effective June 30, 1999)

Annual Rate of Increase Per 1,000 Members (%)

<u>Age</u>	<u>Years</u> 0-1	<u>Year</u> 2	<u>Year</u> 3	<u>Years</u> 4-5	<u>Years</u> 6-7	<u>Years</u> 8-10	<u>Years</u> 11-15	<u>Years</u> 16-20	<u>Years</u> 21+
22	18.5	12.5	8.5	8.0	7.5	6.0	5.5	5.0	4.9
27	15.5	10.0	8.3	7.0	6.5	6.0	5.5	5.0	4.9
32	14.8	9.8	8.0	7.0	6.5	6.0	5.5	5.0	4.9
37	14.7	9.8	8.0	7.0	6.3	6.0	5.5	5.0	4.9
42	14.7	9.2	8.0	7.0	6.2	6.0	5.5	4.9	4.9
47	14.2	9.0	8.0	7.0	6.2	5.5	5.2	4.8	4.2
52	13.3	8.3	6.9	7.0	6.2	5.5	5.0	4.5	4.2
57	12.5	7.7	6.9	7.0	5.7	5.5	4.6	4.5	4.2
57	10.9	7.1	6.7	6.0	4.5	4.5	4.5	4.5	4.0

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Retirement Rates (effective June 30, 1999)

Upon meeting the requirements for early retirement (but not for unreduced benefits), the following rates apply to general members:

<u>Age</u>	<u>Assumed Retirement Rate</u>
55-59	5%
60	10
61	15
62	25
63-64	20

Upon reaching the requirements for unreduced retirement, the following rates apply:

<u>Age</u>	<u>Assumed Retirement Rates</u>		
	<u>1st Year Eligible</u>	<u>After 1st Year</u>	<u>Special Services</u>
55	20%	10%	20%
56-58	20	10	16
59	20	20	16
60	25	25	18
61	35	35	28
62	50	50	40
63	35	40	20
64	35	40	35
65	30	50	100
66	20	25	100
67-68	15	20	100
70+	100	100	100

Terminated vested members are assumed to retire at age 62 (55 for special services).

Rate of Crediting Interest on Contribution Balances (effective June 30, 1993)

5.5% per annum, compounded annually

Rate of Inflation (effective June 30, 1999)

3.5% per annum

Payroll Growth Assumption (effective June 30, 1999)

4.0% per annum

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

APPENDIX B

Proposed Actuarial Assumptions

Rate of Investment Return (No Change)

7.50% per annum, compounded annually, net of expenses.

Rates of Mortality

	<u>General Membership</u>	<u>Special Services</u>
Males:	Inactive Lives: RP-2000 Healthy Annuitant Table, Set Forward One Year	RP-2000 Healthy Annuitant Table Set Forward Three Years
	Active Lives: RP-2000 Employee Table, Set Forward One Year	RP-2000 Employee Table Set Forward Three Years
Females:	Inactive Lives: RP-2000 Healthy Annuitant Table, Set Back Two Years	RP-2000 Healthy Annuitant Table No Age Adjustment
	Active Lives: RP-2000 Employee Table, Set Back Two Years	RP-2000 Employee Table No Age Adjustment
Disabled Members:	Annual rates are the greater of 3% or 2.5% plus the corresponding non-disabled rate (no set forward or set back applied)	Same as healthy members set forward 6 years
Beneficiaries:	Same as members	Same as members

Rates of Disablement (No Change)

<u>Age</u>	<u>Annual Rate Per 1,000 Members</u>		
	<u>Males</u>	<u>Females</u>	<u>Special Services</u>
27	0.2%	0.2%	0.2%
32	0.2%	0.2%	0.2%
37	0.4%	0.3%	0.4%
42	0.7%	0.5%	0.7%
47	1.4%	0.9%	1.3%
52	3.3%	2.2%	2.35%
57	6.3%	3.9%	5.2%
62	9.0%	6.2%	9.8%

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Rates of Termination of Employment

General Membership

		Annual Rate of Withdrawals Per 1,000 Members					
Males:							
	<u>Age</u>	<u>Years 0-1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Years 4-6</u>	<u>Years 7-8</u>	<u>Years 9+</u>
	22	330.0	250.0	220.0	99.0	88.0	66.0
	27	231.0	145.0	121.0	99.0	88.0	66.0
	32	198.0	145.0	110.0	74.8	55.0	39.0
	37	195.8	140.0	110.0	74.8	49.5	33.0
	42	195.8	140.0	110.0	74.8	49.5	25.3
	47	195.8	130.0	99.0	74.8	49.5	19.8
	52	176.0	110.0	77.0	74.8	49.5	19.8
	55+	165.0	110.0	55.0	74.8	49.5	19.8
Females:							
	<u>Age</u>	<u>Years 0-1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Years 4-6</u>	<u>Years 7-8</u>	<u>Years 9+</u>
	22	330.0	250.0	220.0	110.0	99.0	55.0
	27	275.0	170.0	140.0	110.0	99.0	55.0
	32	247.5	170.0	140.0	105.5	72.0	49.5
	37	198.0	150.0	140.0	105.5	66.0	36.3
	42	198.0	150.0	140.0	88.0	61.0	30.8
	47	198.0	130.0	140.0	82.5	49.5	25.3
	52	198.0	130.0	140.0	82.5	49.5	25.3
	55+	198.0	130.0	140.0	82.5	49.5	25.3

Special Services

Annual Rate of Withdrawals Per 1,000 Members	
<u>Age</u>	<u>Members</u>
22	100
27	70
32	35
37	35
42	35
47	35
52	30

**IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY**

Percent of Vested Members Leaving Funds in IPERS

<u>Years of Service</u>	<u>General Membership</u>		<u>Special Services</u>
	<u>Males</u>	<u>Females</u>	
5	39%	30%	47%
10	34%	27%	35%
15	29%	20%	15%
20	24%	15%	5%
25	20%	10%	0%
30	15%	5%	0%

Rates of Salary Increase (No Change)

Annual Rate of Increase

<u>Age</u>	<u>Years 0-1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Years 4-5</u>	<u>Years 6-7</u>	<u>Years 8-10</u>	<u>Years 11-15</u>	<u>Years 16-20</u>	<u>Years 21+</u>
	22	18.5%	12.5%	8.5%	8.0%	7.5%	6.0%	5.5%	5.0%
27	15.5%	10.0%	8.3%	7.0%	6.5%	6.0%	5.5%	5.0%	4.9%
32	14.8%	9.8%	8.0%	7.0%	6.5%	6.0%	5.5%	5.0%	4.9%
37	14.7%	9.8%	8.0%	7.0%	6.3%	6.0%	5.5%	5.0%	4.9%
42	14.7%	9.2%	8.0%	7.0%	6.2%	6.0%	5.5%	4.9%	4.9%
47	14.2%	9.0%	8.0%	7.0%	6.2%	5.5%	5.2%	4.8%	4.2%
52	13.3%	8.3%	6.9%	7.0%	6.2%	5.5%	5.0%	4.5%	4.2%
57	12.5%	7.7%	6.9%	7.0%	5.7%	5.5%	4.6%	4.5%	4.2%
57	10.9%	7.1%	6.7%	6.0%	4.5%	4.5%	4.5%	4.5%	4.0%

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Retirement Rates

Upon meeting the requirements for early retirement (but not for unreduced benefits), the following rates apply to general members:

<u>Age</u>	<u>Assumed Retirement Rate</u>
55-59	5%
60	10
61	15
62	25
63-64	20

Upon reaching the requirements for unreduced retirement, the following rates apply:

<u>Age</u>	<u>Assumed Retirement Rates</u>		
	<u>1st Year Eligible</u>	<u>After 1st Year</u>	<u>Special Services</u>
55	20%	10%	15%
56	20%	10%	10%
57-59	20%	20%	10%
60	25%	25%	10%
61	35%	30%	20%
62	50%	40%	35%
63	35%	30%	20%
64	35%	35%	35%
65	30%	45%	100%
66	20%	20%	100%
67-68	15%	15%	100%
69	15%	35%	100%
70+	100%	100%	100%

Terminated vested members are assumed to retire at age 62 (55 for special services).

Rate of Crediting Interest on Contribution Balances

4.25% per annum, compounded annually

Rate of Inflation (No Change)

3.5% per annum

Payroll Growth Assumption (No Change)

4.0% per annum

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

DEFINITION OF TERMS

Actuarial Liability	The difference between the actuarial present value of system benefits and the actuarial value of future normal costs. Also referred to as "accrued liability" or "actuarial accrued liability."
Actuarial Assumptions	Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
Accrued Service	Service credited under the system that was rendered before the date of the actuarial valuation.
Actuarial Equivalent	A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.
Actuarial Cost Method	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement system benefits between future normal cost and actuarial accrued liability. Sometimes referred to as the "actuarial funding method."
Experience Gain (Loss)	The difference between actual experience and actuarial assumptions anticipated experience during the period between two actuarial valuation dates.
Actuarial Present Value	The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.
Amortization	Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with lump sum payment.

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
1998 - 2001 EXPERIENCE STUDY

Normal Cost

The actuarial present value of retirement system benefits allocated to the current year by the actuarial cost method.

Unfunded Actuarial Liability

The difference between actuarial liability and the valuation assets. Sometimes referred to as "unfunded actuarial accrued liability" or "unfunded liability".

Most retirement systems have an unfunded actuarial liability. It arises anytime new benefits are added and anytime an actuarial loss is realized.

The existence of unfunded actuarial liability is not in itself bad, any more than a mortgage on a house is bad. Unfunded actuarial liability does not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial liability and make payments to finance it. Also of importance are trends in the amount or duration of payment.

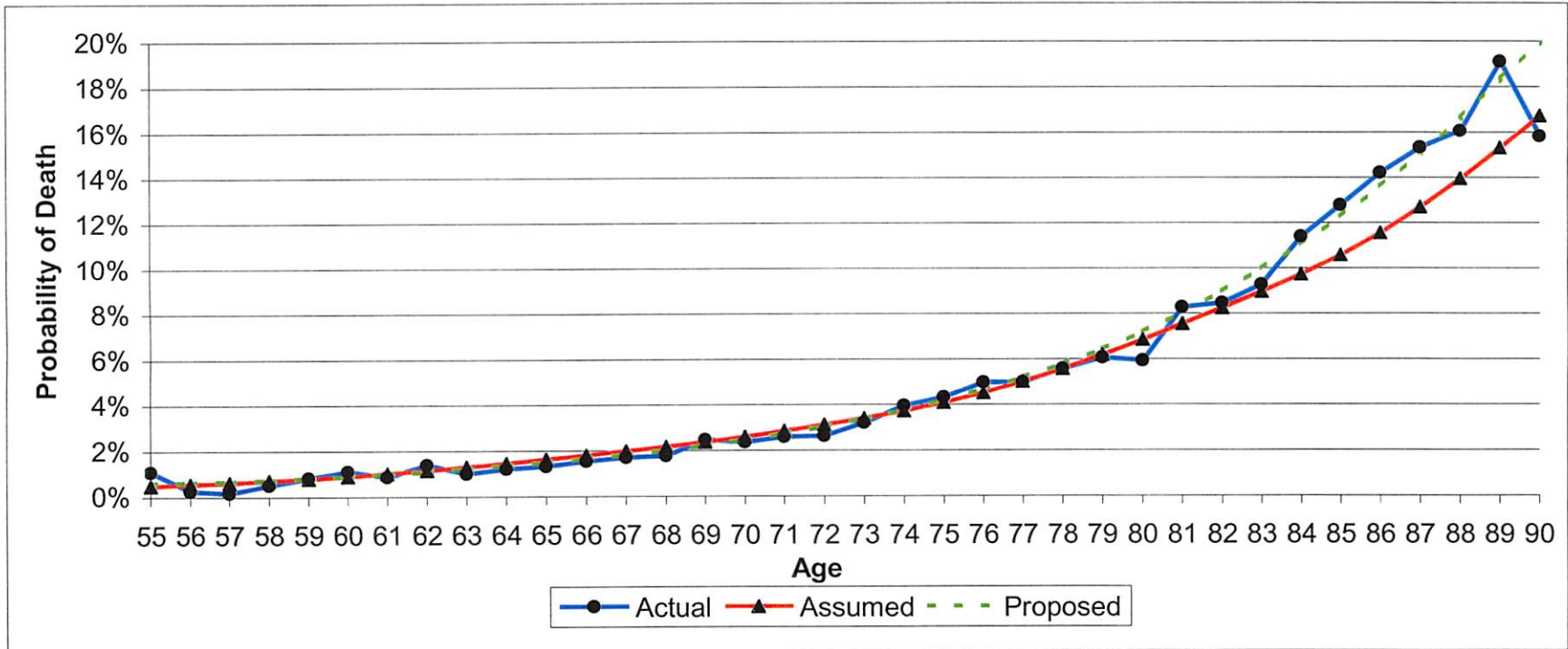
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 1

Probability of Death - Healthy Retirees

Males - General Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	2,922	2,857	3,010
Actual/Expected		102%	97%

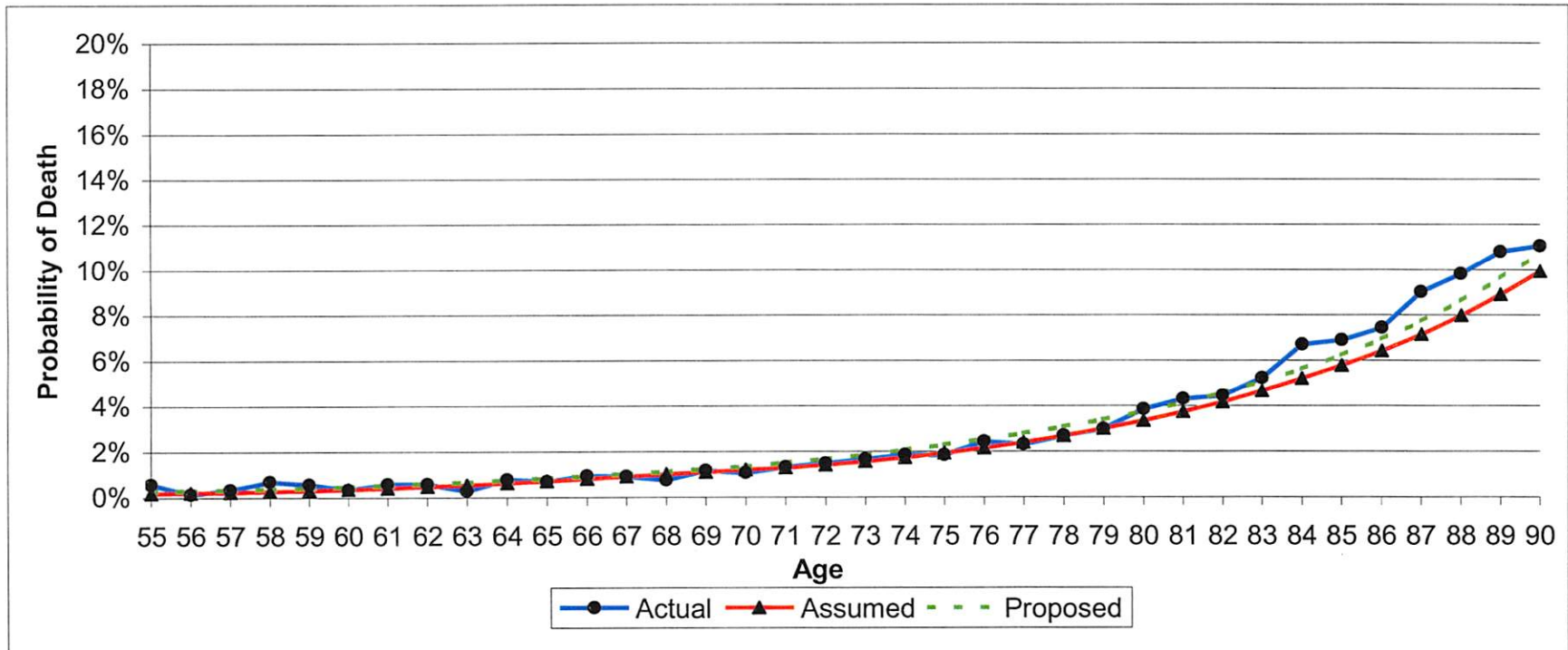
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 2

Probability of Death - Healthy Retirees

Females - General Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	3,079	2,776	3,114
Actual/Expected		111%	99%

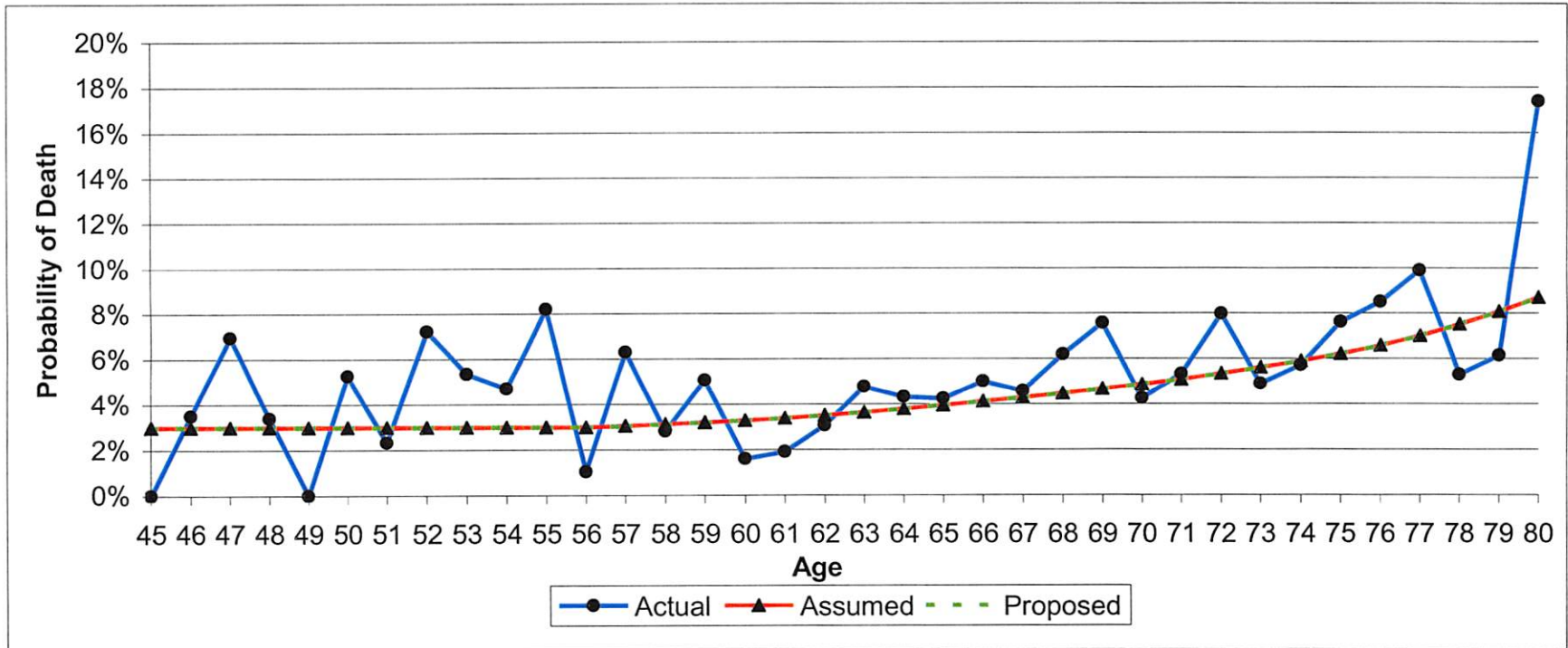
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 3

Probability of Death - Disabled Retirees

Males - General Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	164	137	137
Actual/Expected		120%	120%

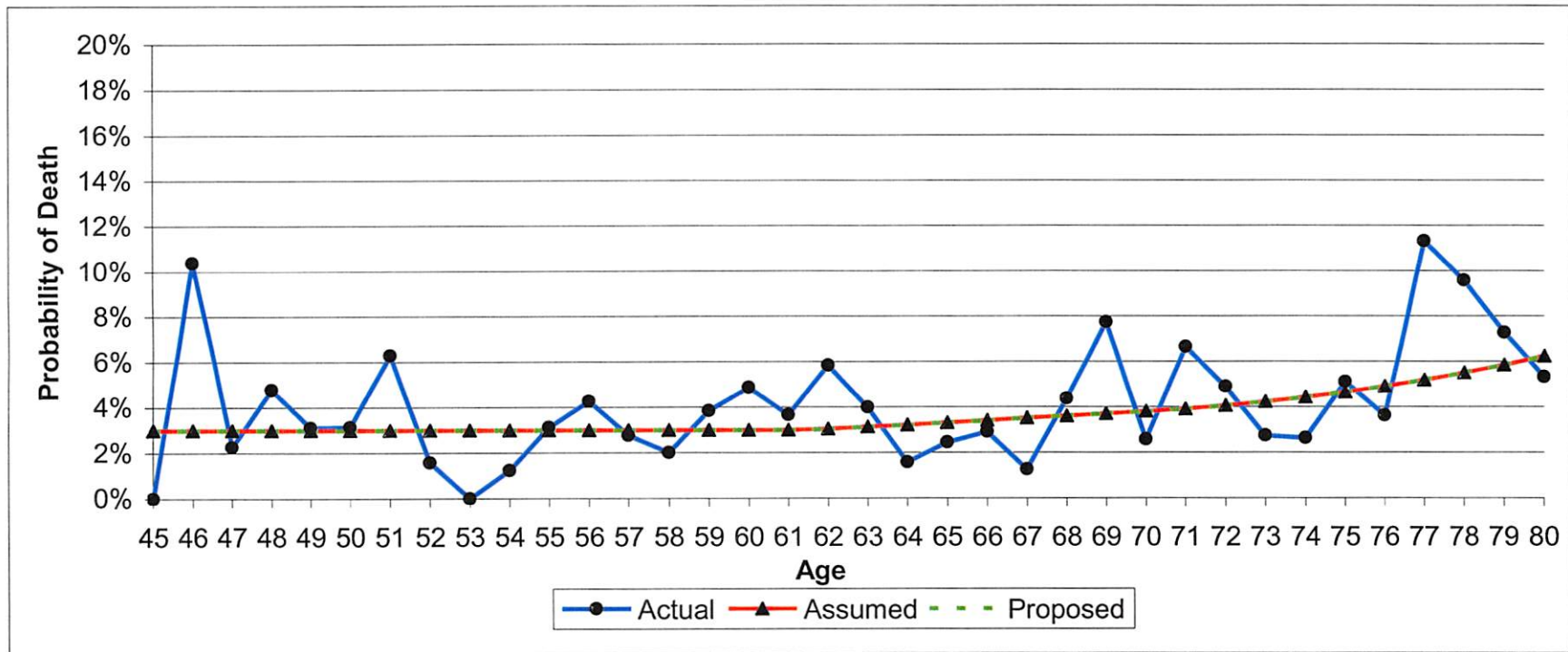
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 4

Probability of Death - Disabled Retirees

Females - General Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	135	123	123
Actual/Expected		110%	110%

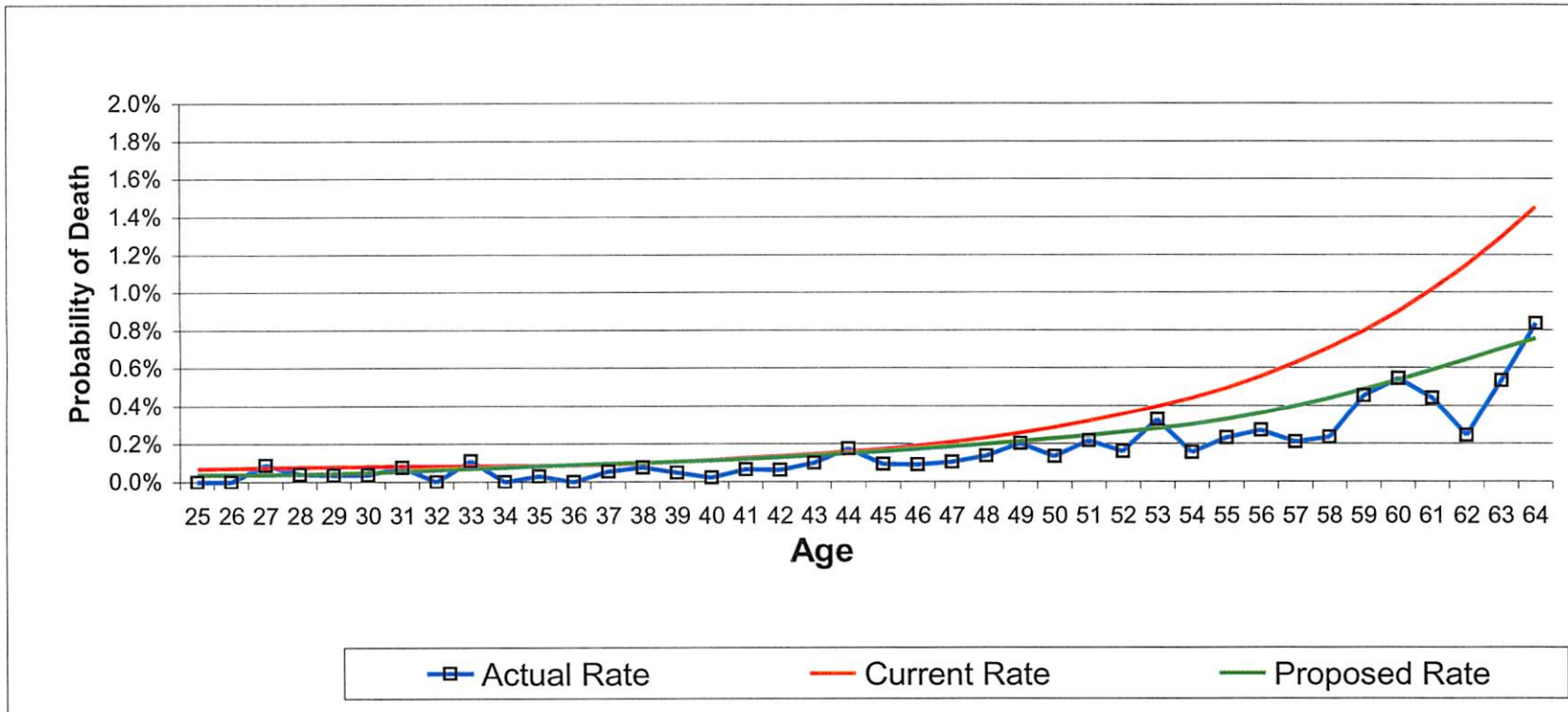
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 5

Probability of Death - Active Members

Males - General Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	230	456	325
Actual/Expected		50%	71%

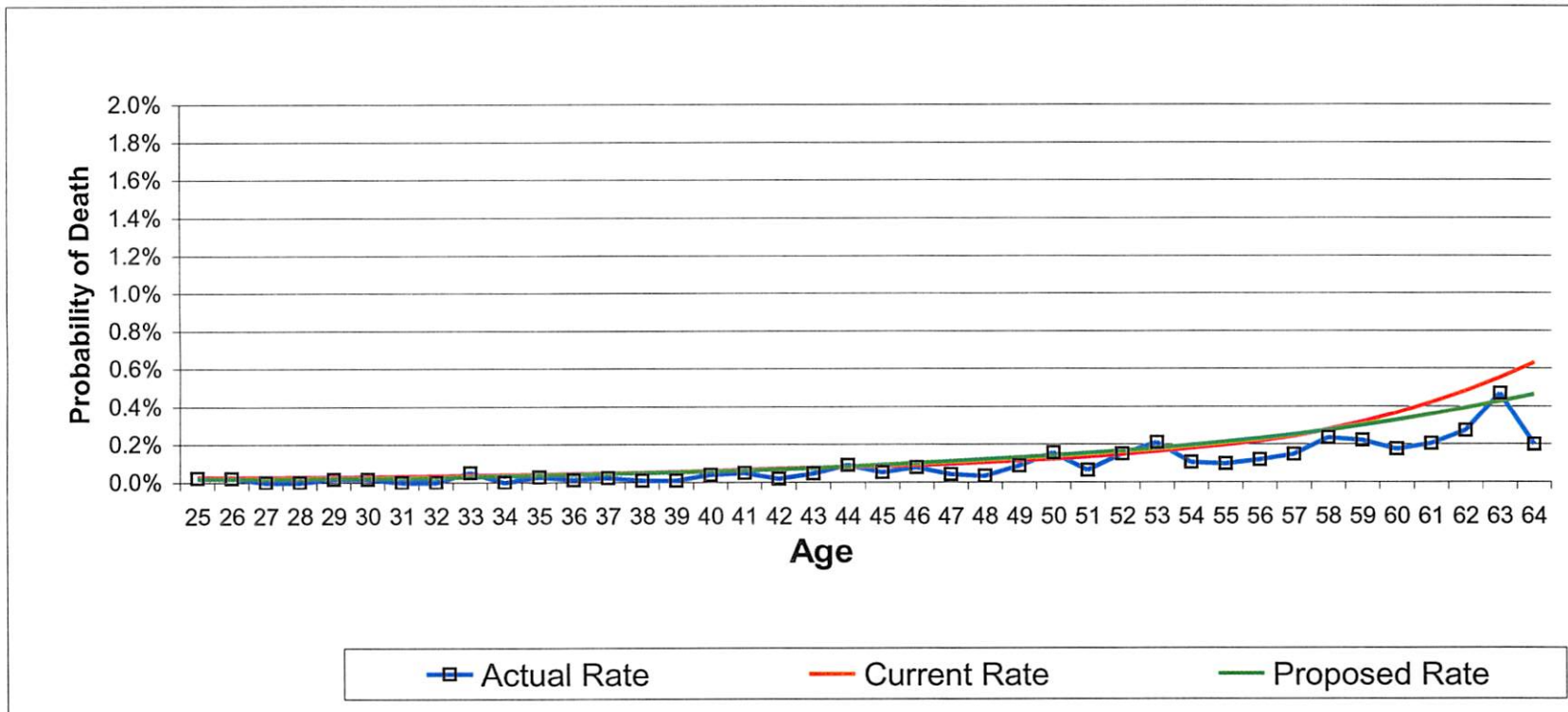
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 6

Probability of Death - Active Members

Females - General Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	228	352	351
Actual/Expected		65%	65%

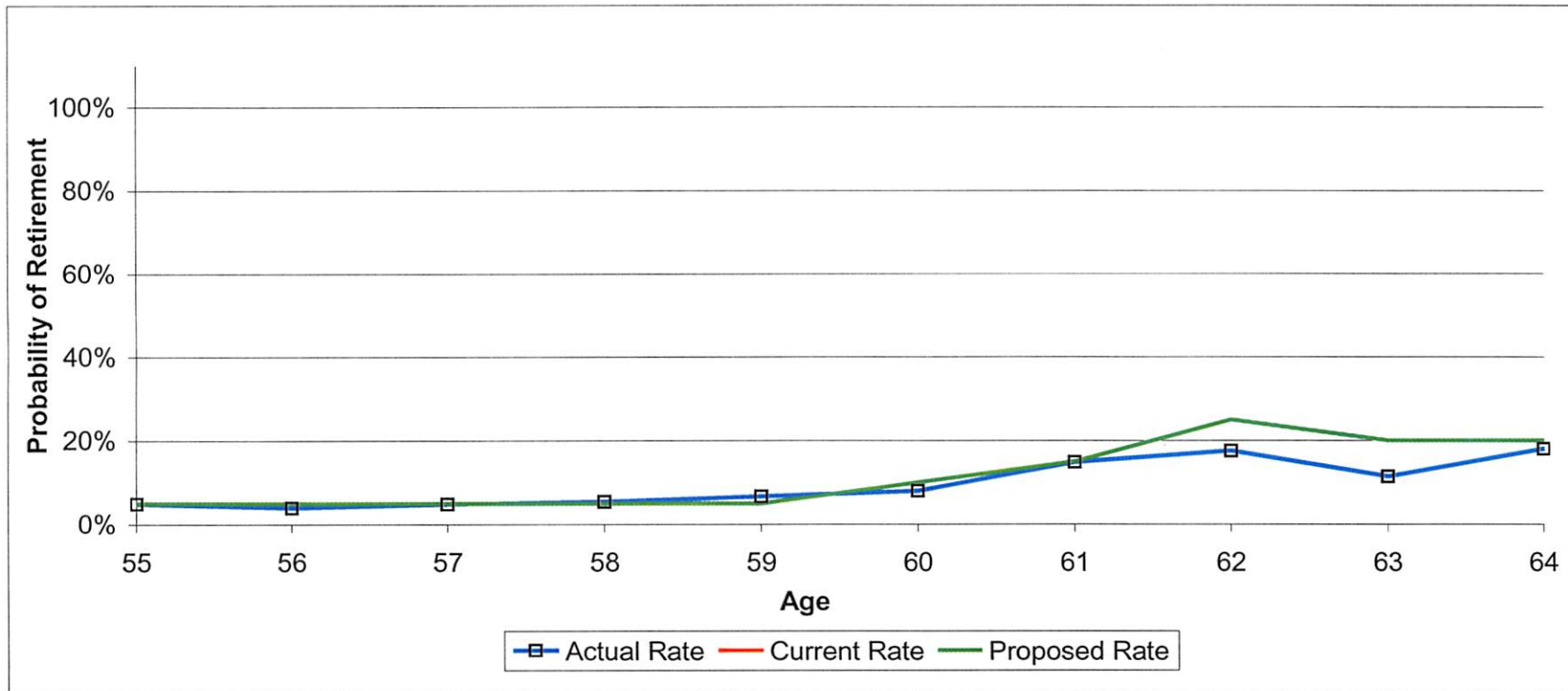
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 7

Retirement Rates - Early

General Membership



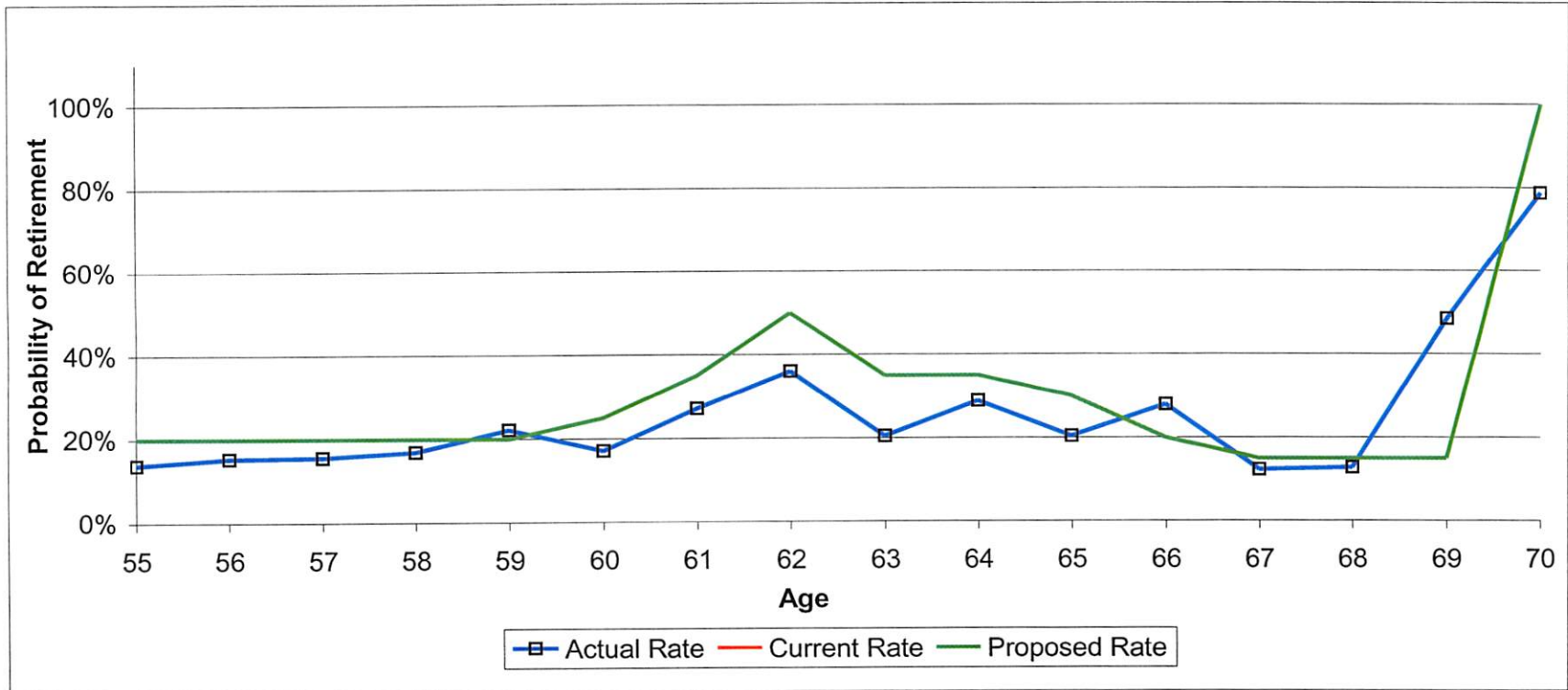
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	4,595	5,186	5,186
Actual/Expected		89%	89%

Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 8

Retirement Rates - Select
General Membership



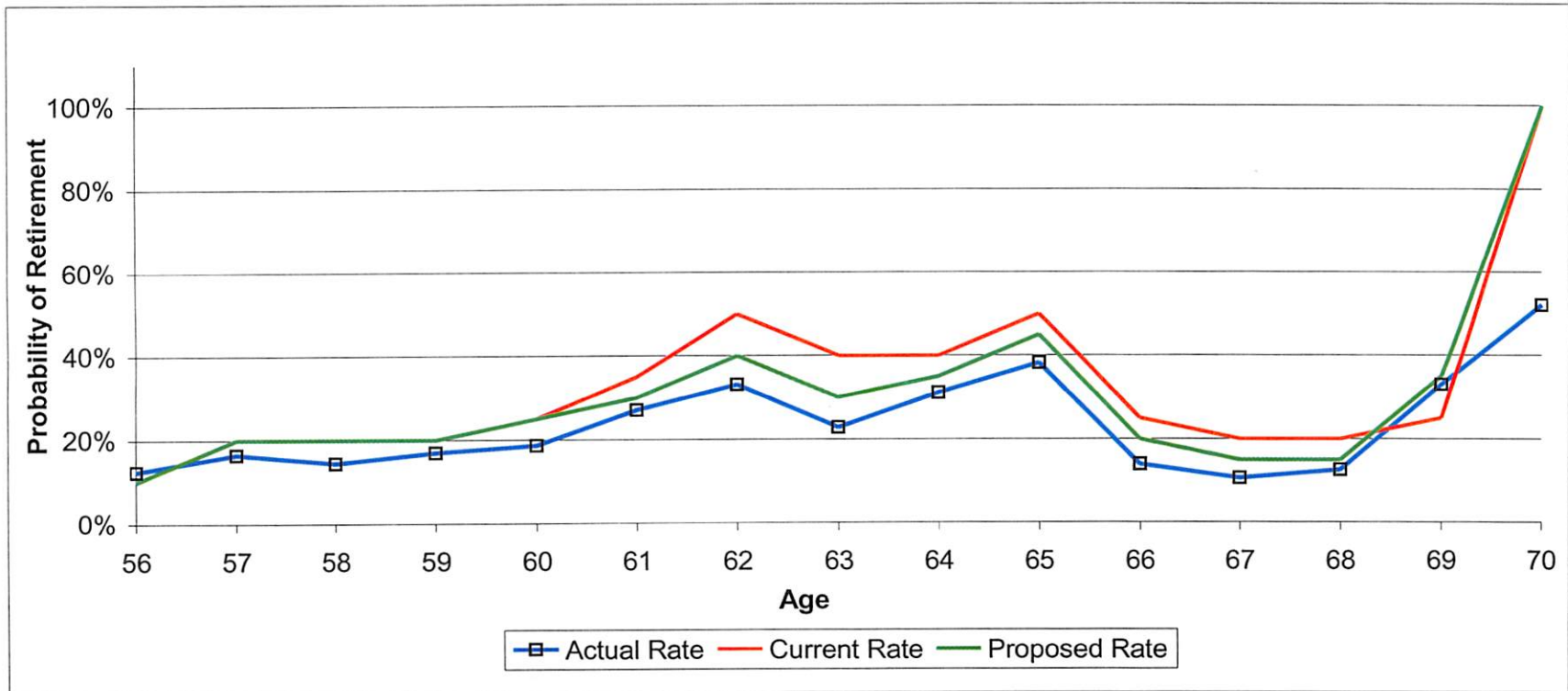
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,247	1,656	1,656
Actual/Expected		75%	75%

Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 9

Retirement Rates - Ultimate
General Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	3,838	5,517	4,967
Actual/Expected		70%	77%

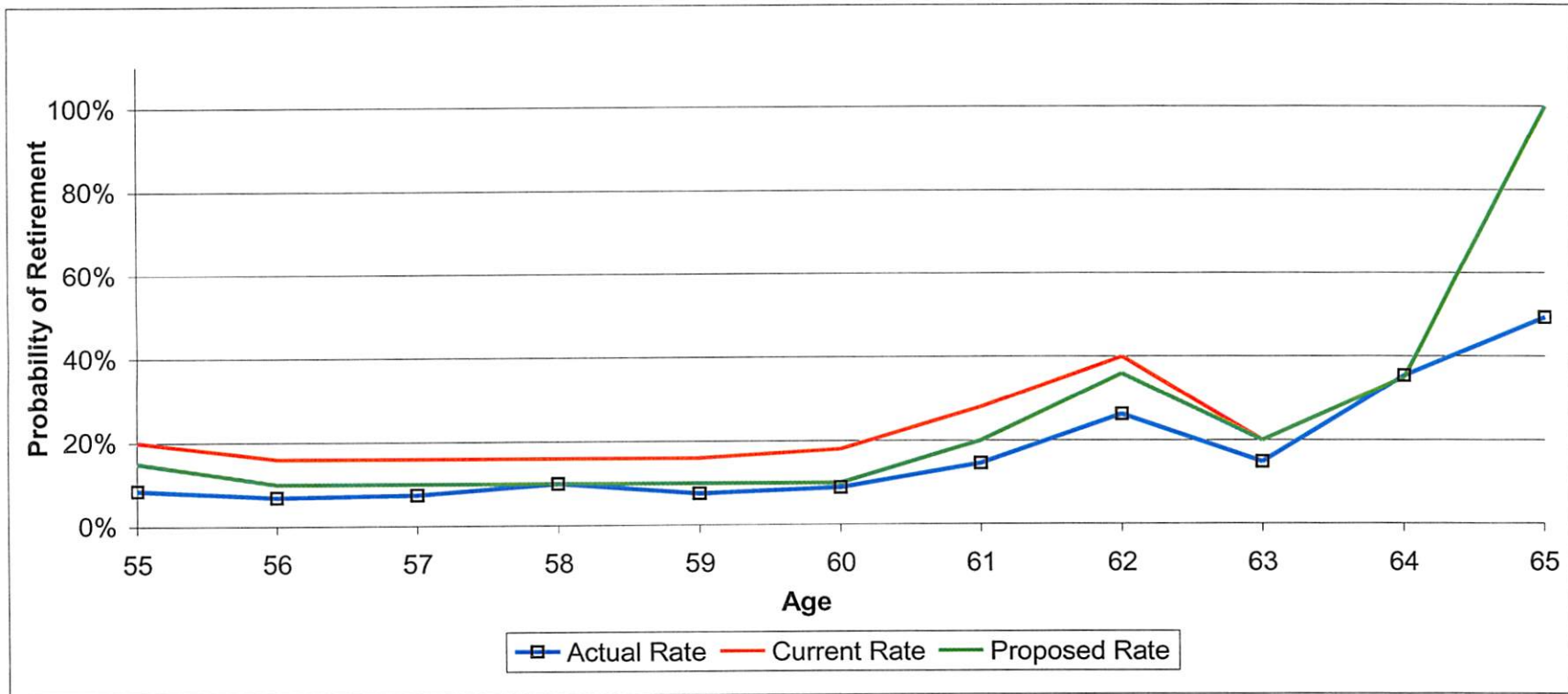
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 10

Retirement Rates

Special Services



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	152	282	207
Actual/Expected		54%	73%

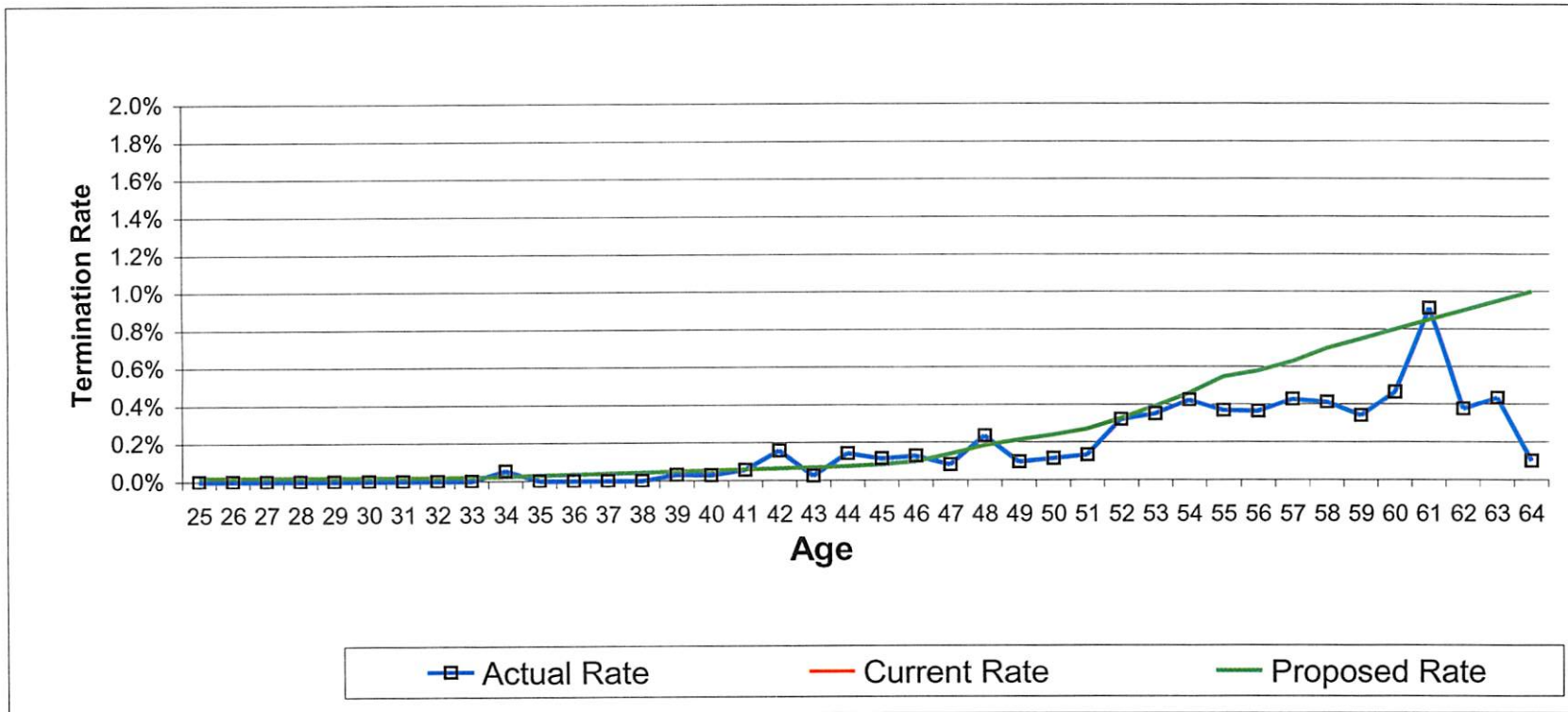
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 11

Rates of Disability

Males - General Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	216	308	308
Actual/Expected		70%	70%

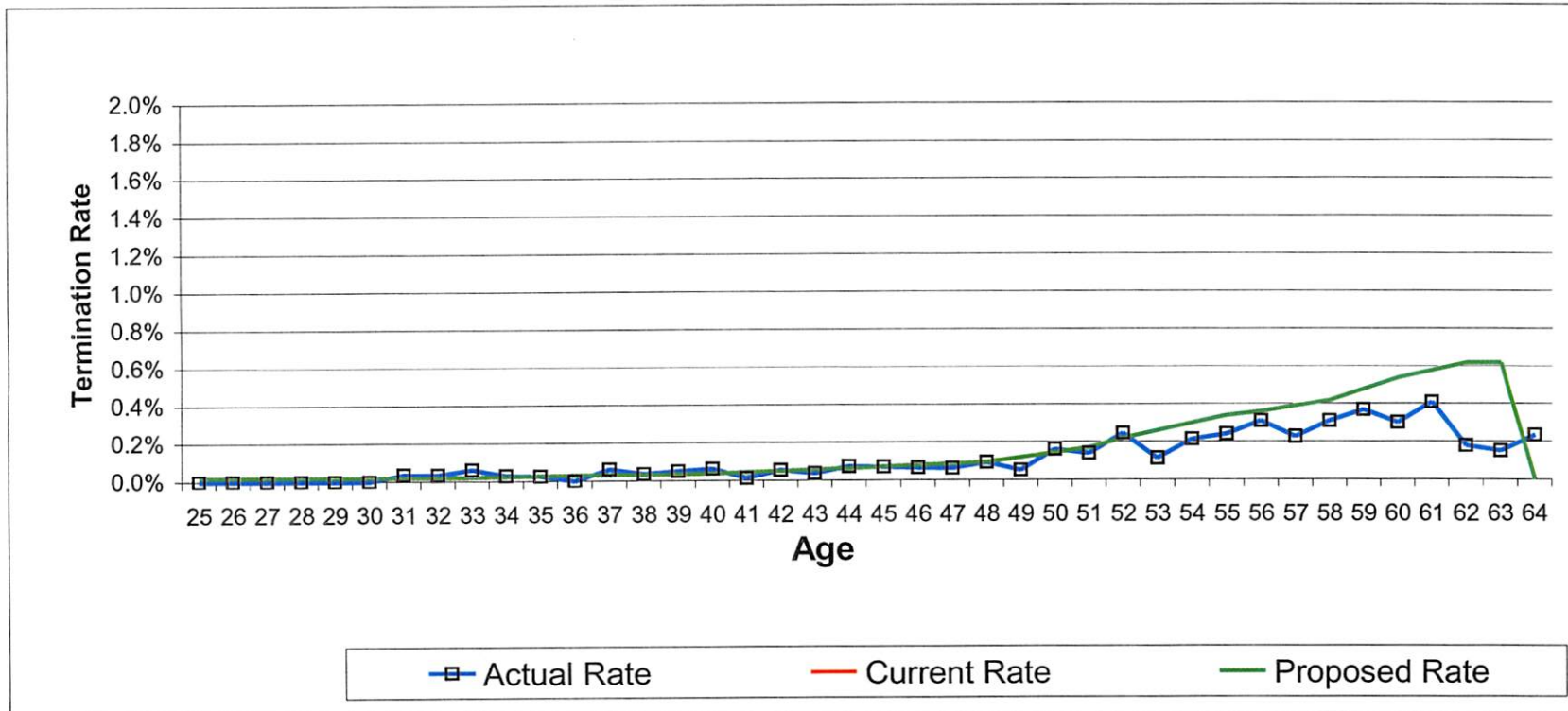
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 12

Rates of Disability

Females - General Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	250	336	336
Actual/Expected		74%	74%

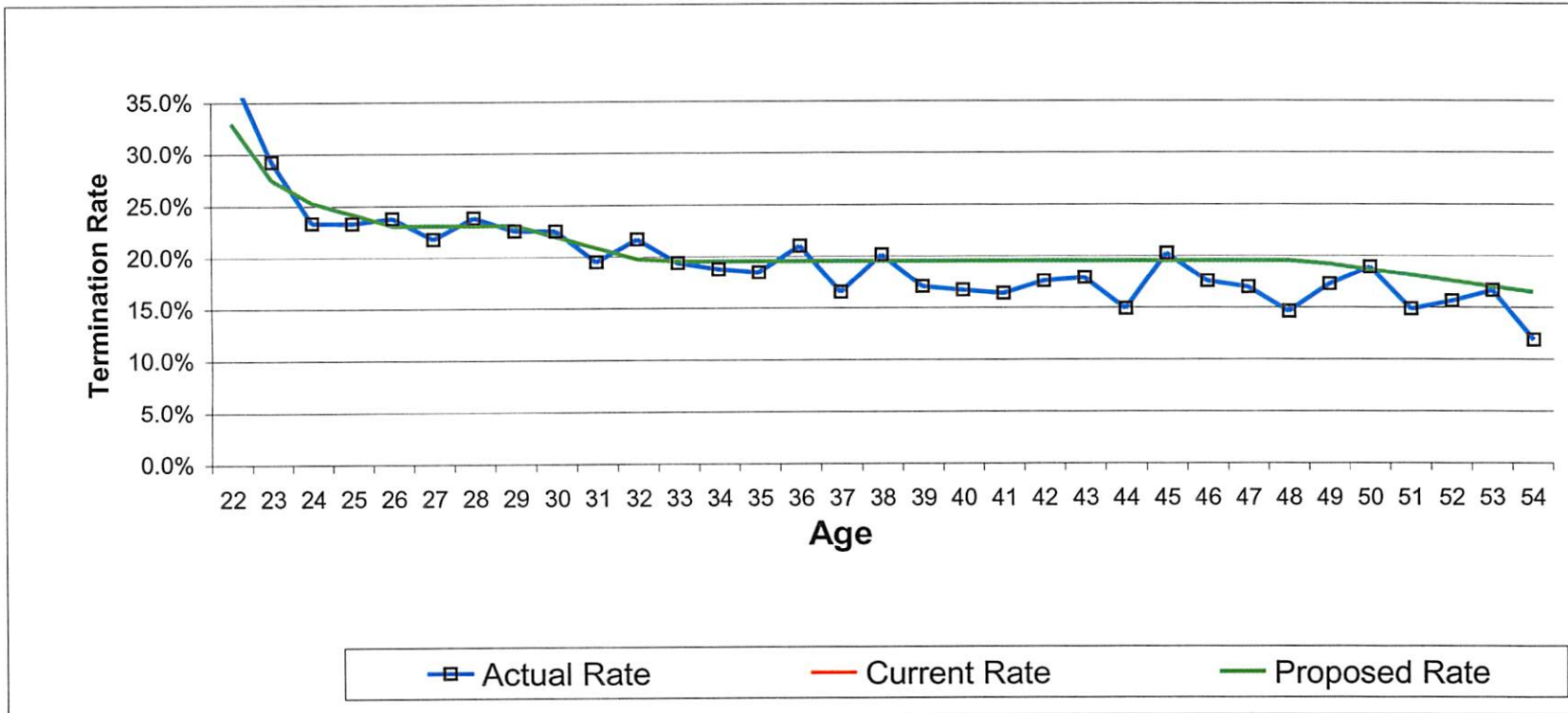
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 13

Termination of Employment

Males - Under 2 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	4,200	4,386	4,386
Actual/Expected		96%	96%

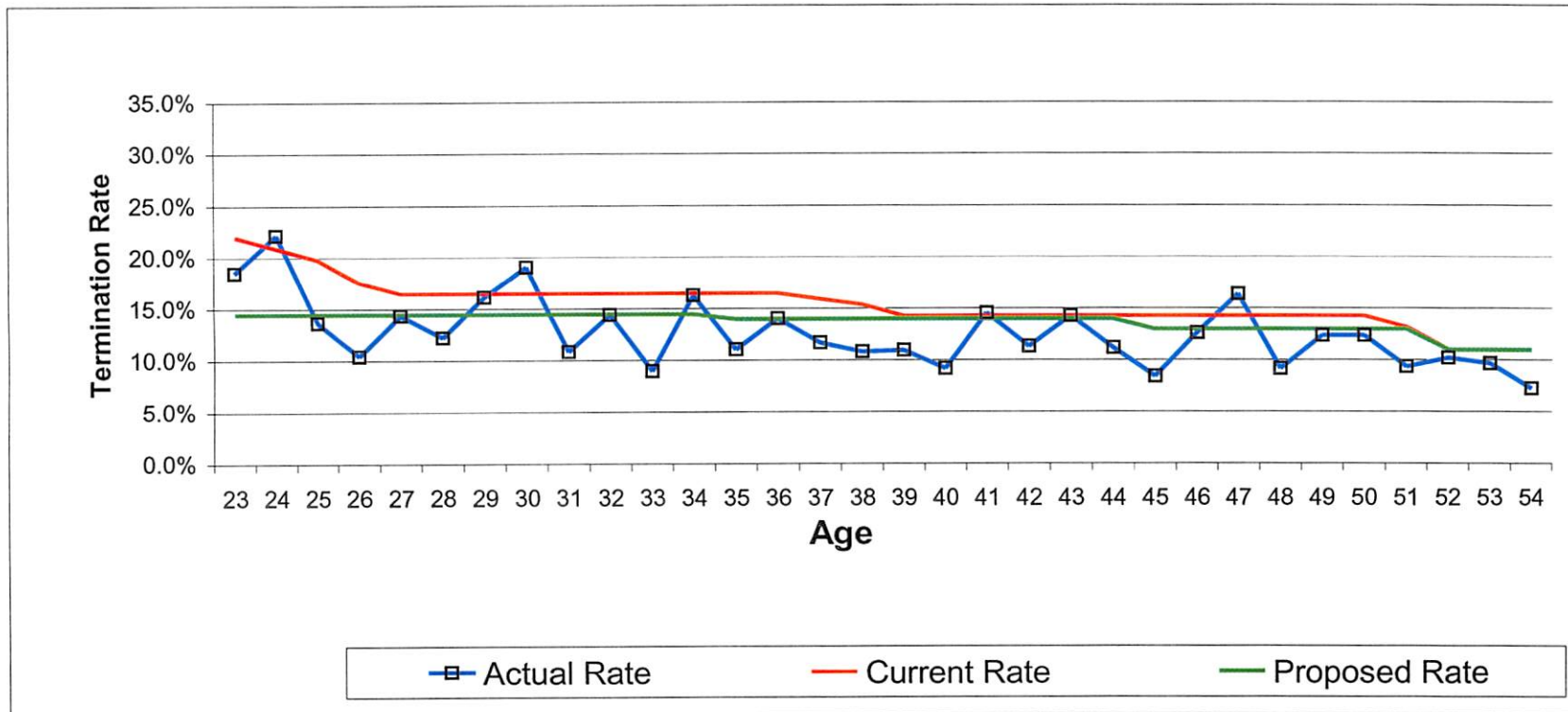
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 14

Termination of Employment

Males - 2 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	1,027	1,271	1,121
Actual/Expected		81%	92%

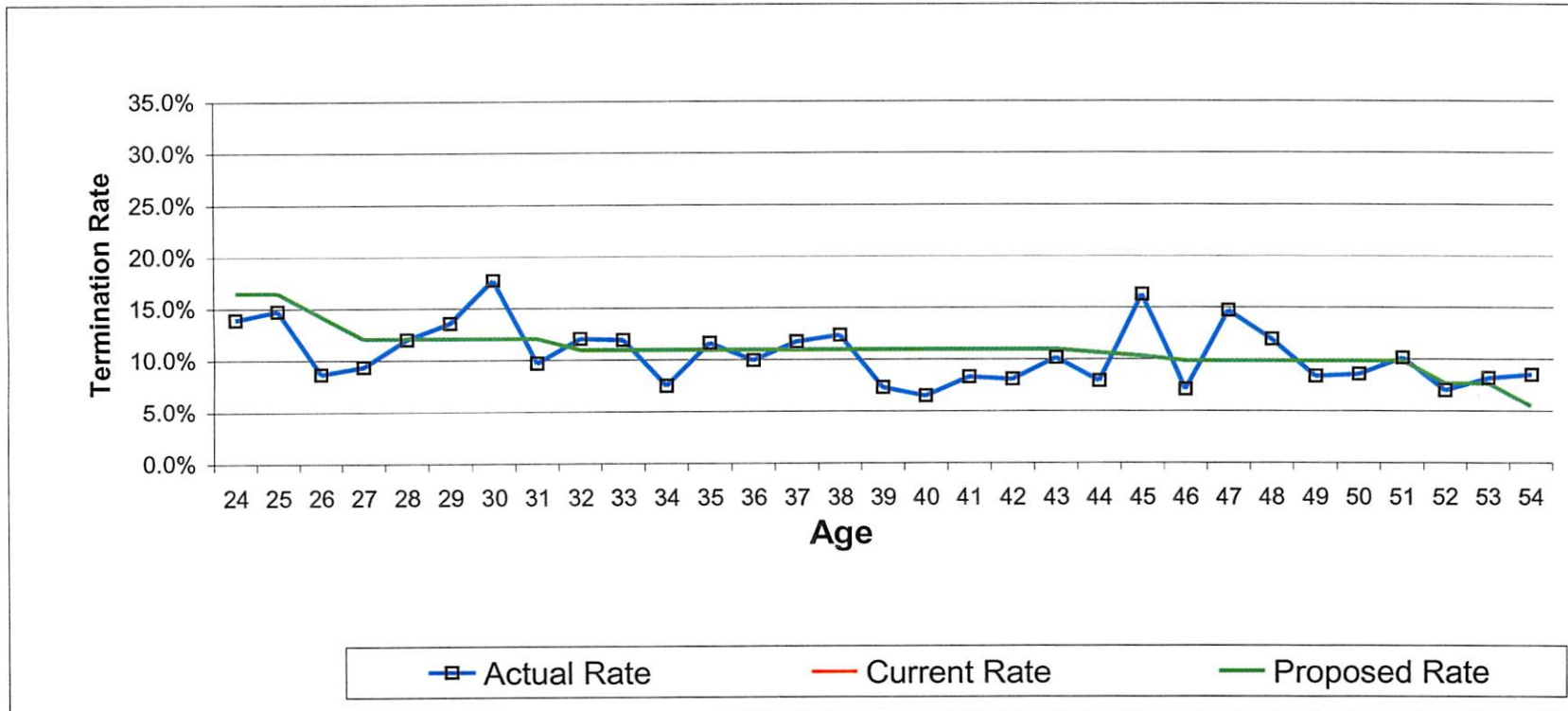
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 15

Termination of Employment

Males - 3 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	711	749	749
Actual/Expected		95%	95%

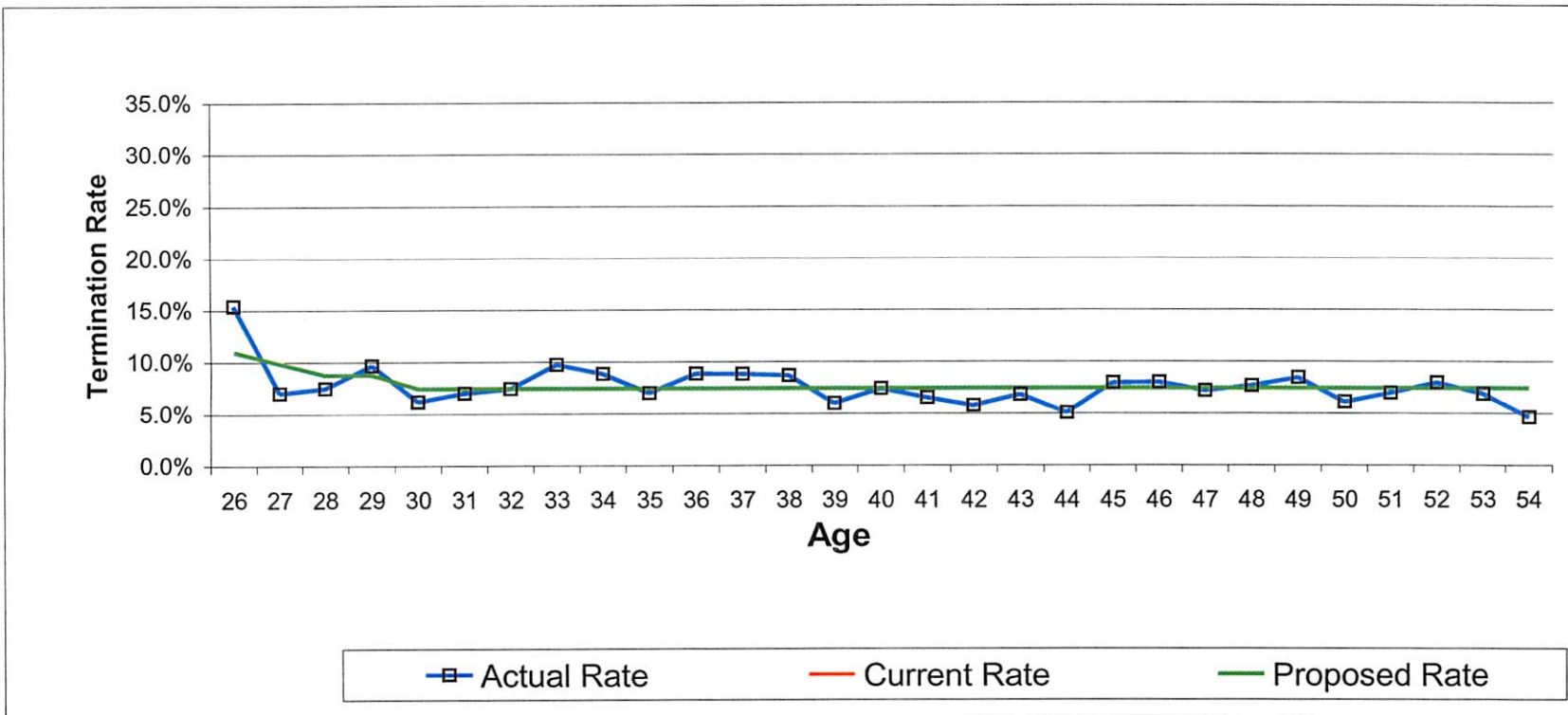
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 16

Termination of Employment

Males - 4-6 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	1,214	1,236	1,236
Actual/Expected		98%	98%

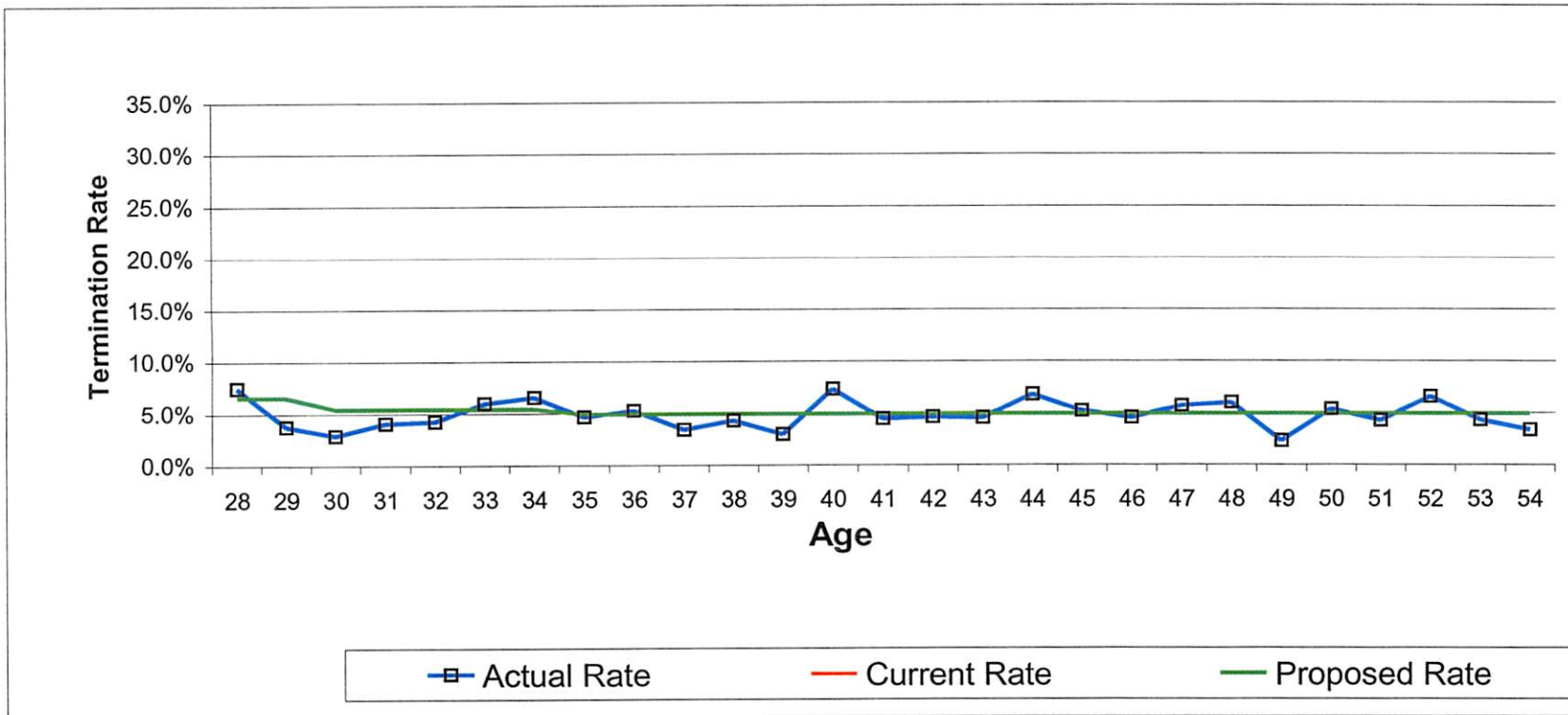
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 17

Termination of Employment

Males - 7-8 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	414	437	437
Actual/Expected		95%	95%

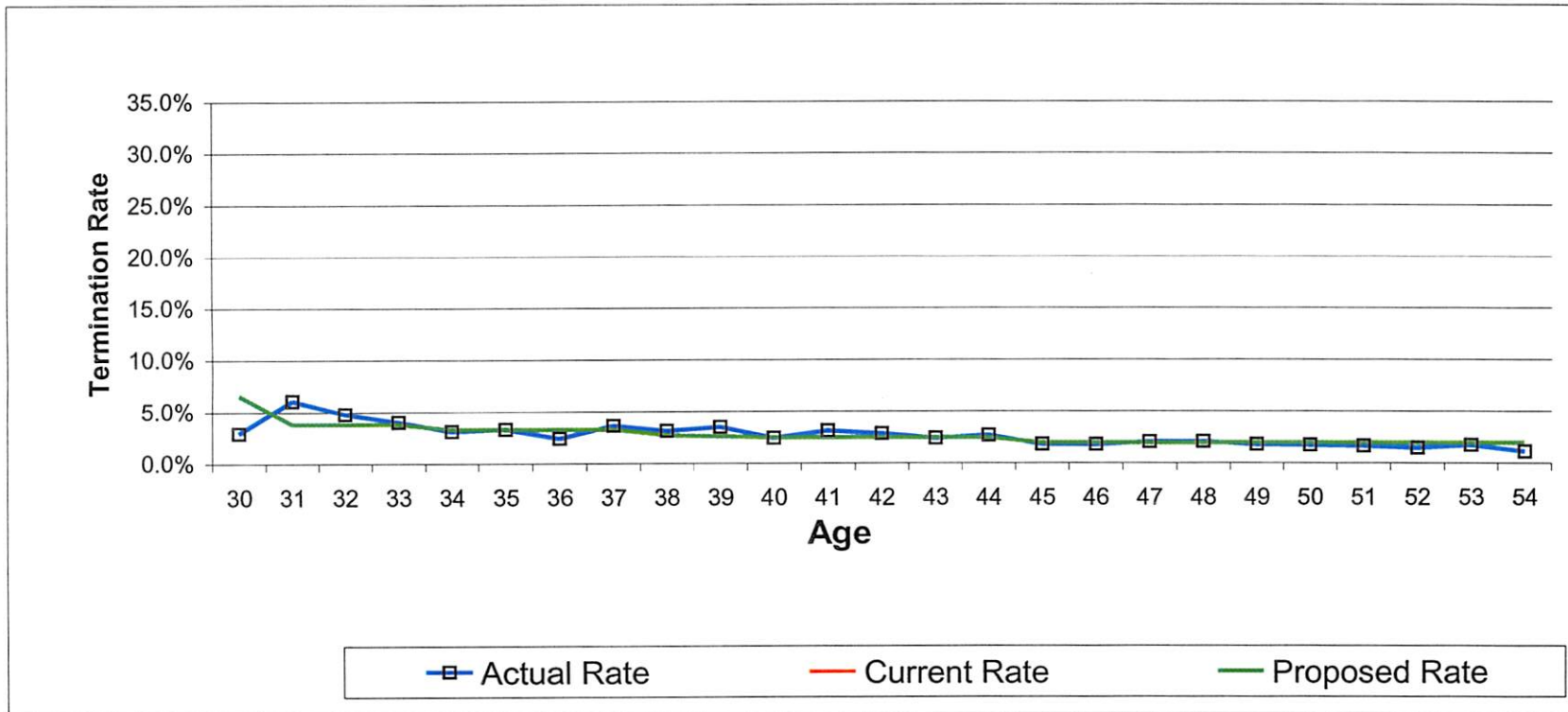
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 18

Termination of Employment

Males - Over 8 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	1,459	1,496	1,496
Actual/Expected		98%	98%

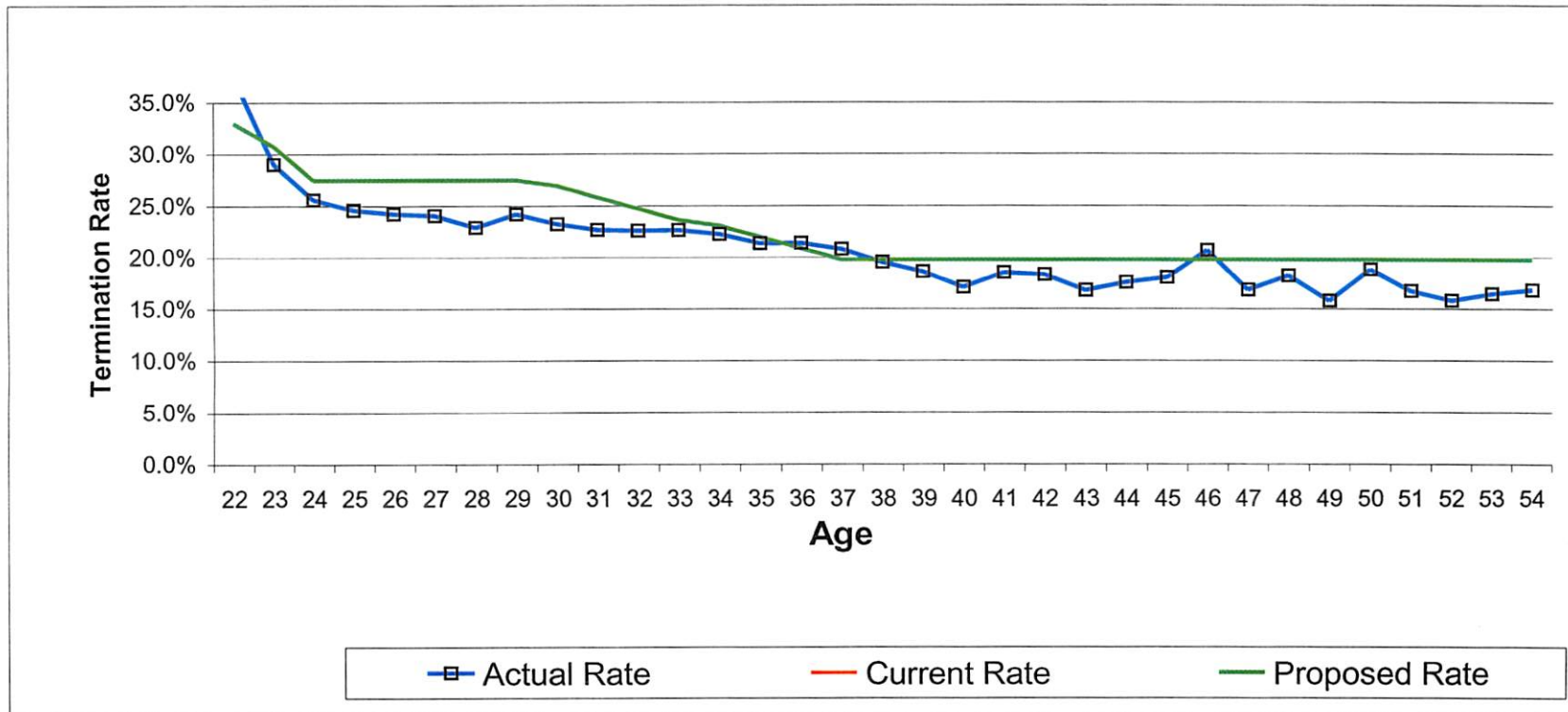
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 19

Termination of Employment

Females - Under 2 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	10,687	11,596	11,596
Actual/Expected		92%	92%

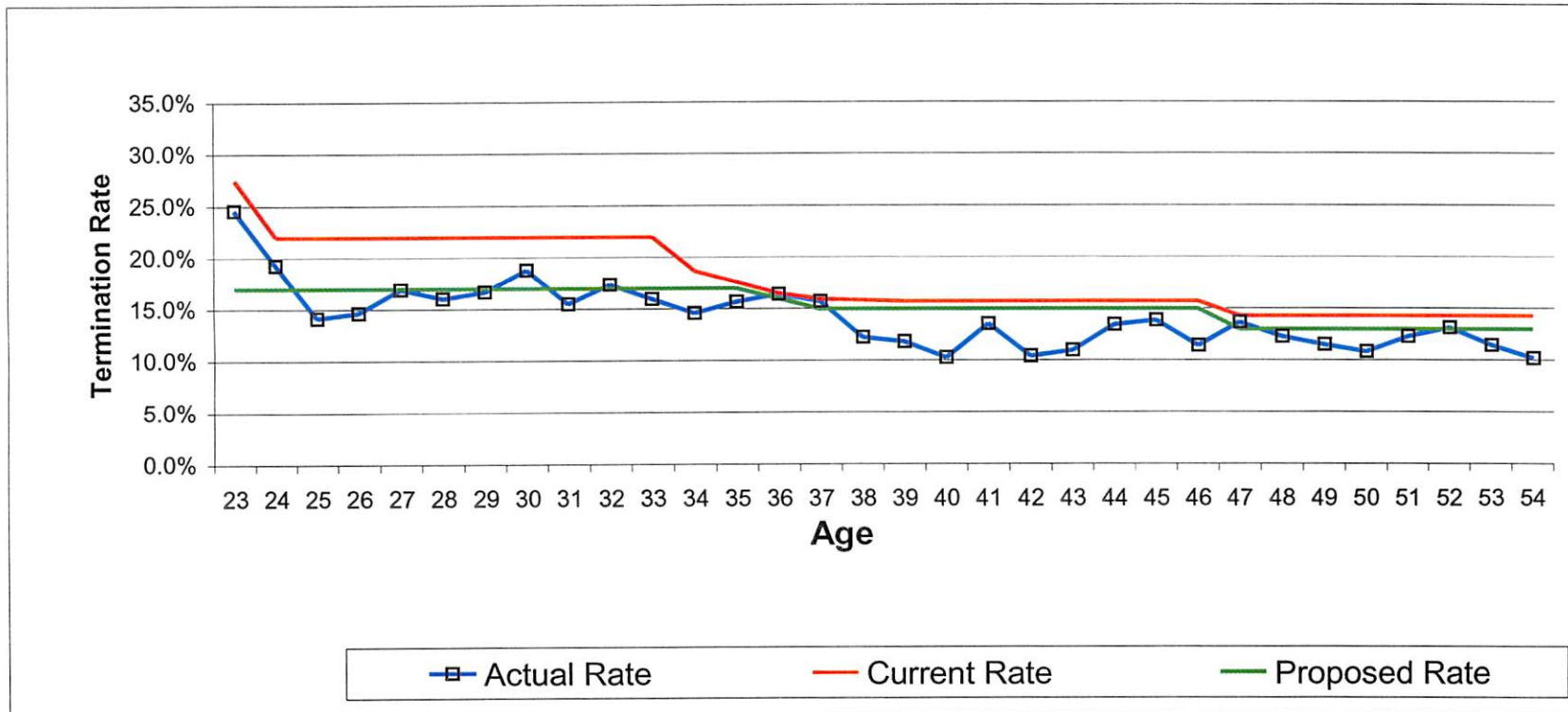
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 20

Termination of Employment

Females - 2 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	2,702	3,442	2,962
Actual/Expected		79%	91%

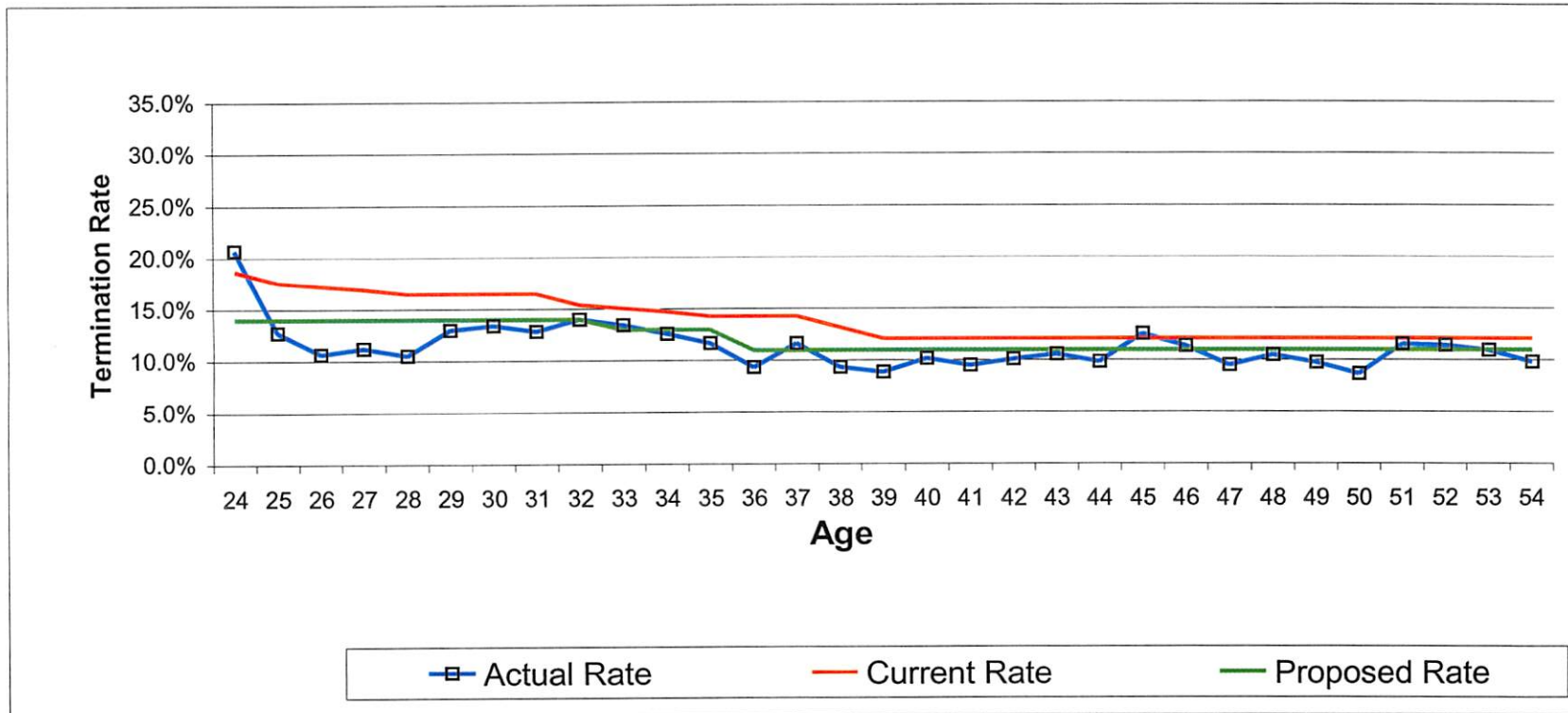
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 21

Termination of Employment

Females - 3 Years of Service



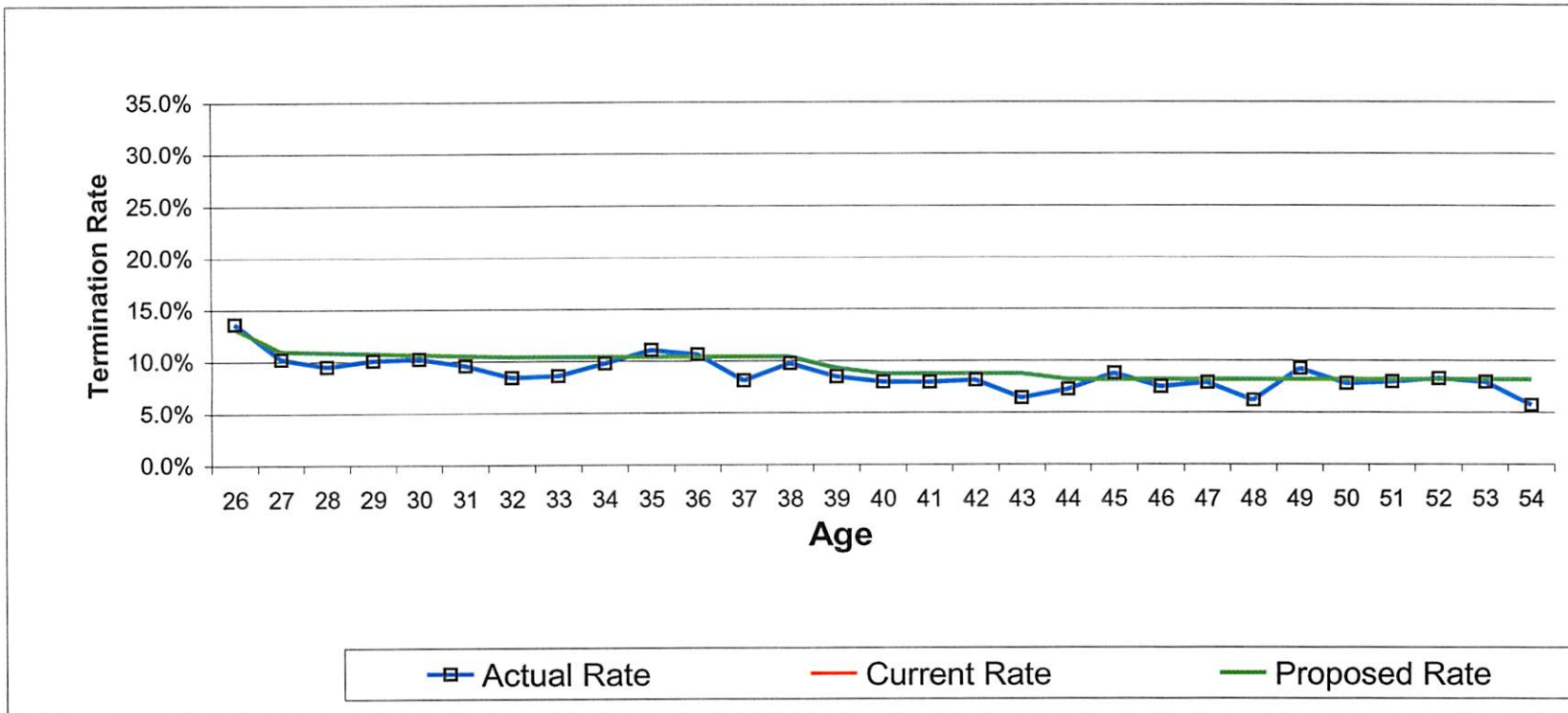
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	1,777	2,238	1,939
Actual/Expected		79%	92%

Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 22

Termination of Employment
Females - 4-6 Years of Service



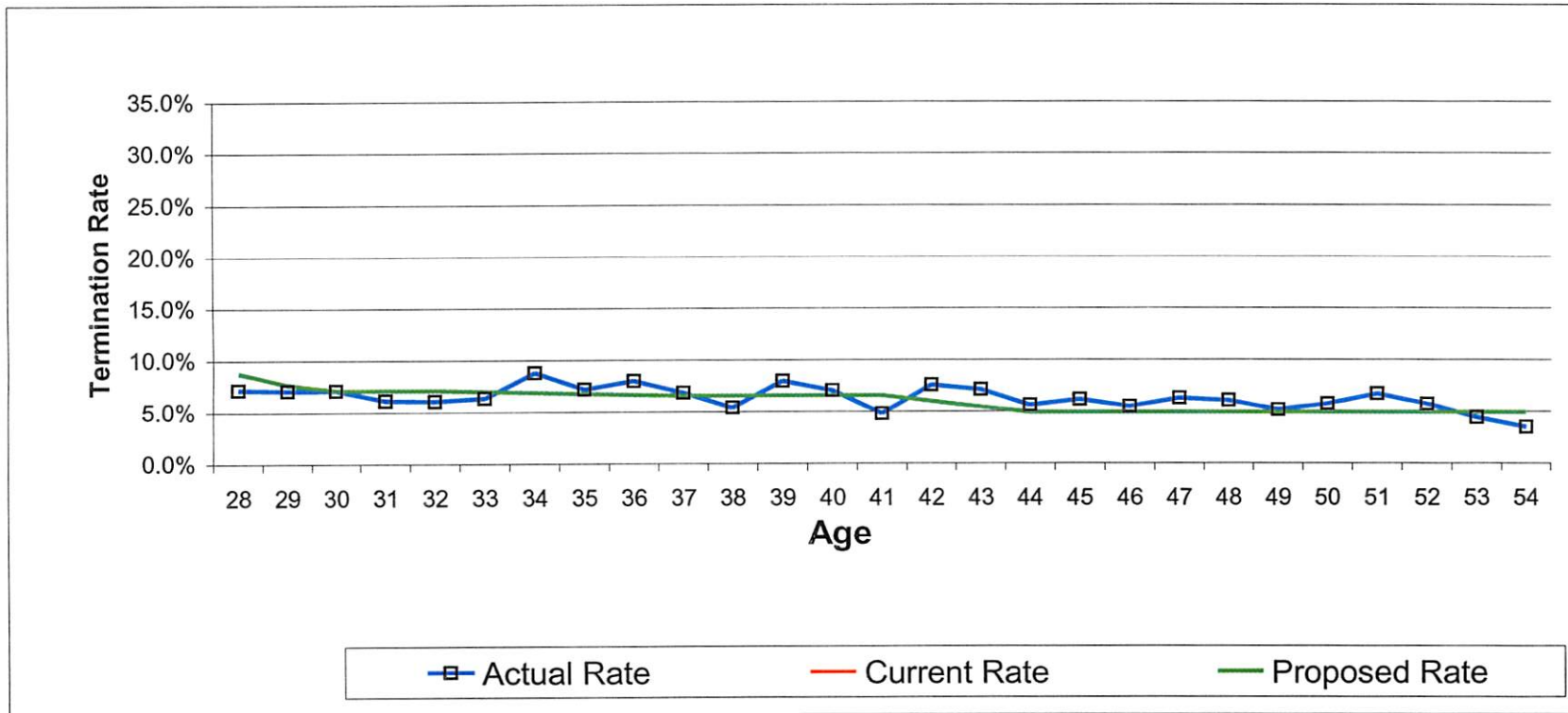
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	3,361	3,653	3,653
Actual/Expected		92%	92%

Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 23

Termination of Employment
Females - 7-8 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	1,294	1,210	1,210
Actual/Expected		107%	107%

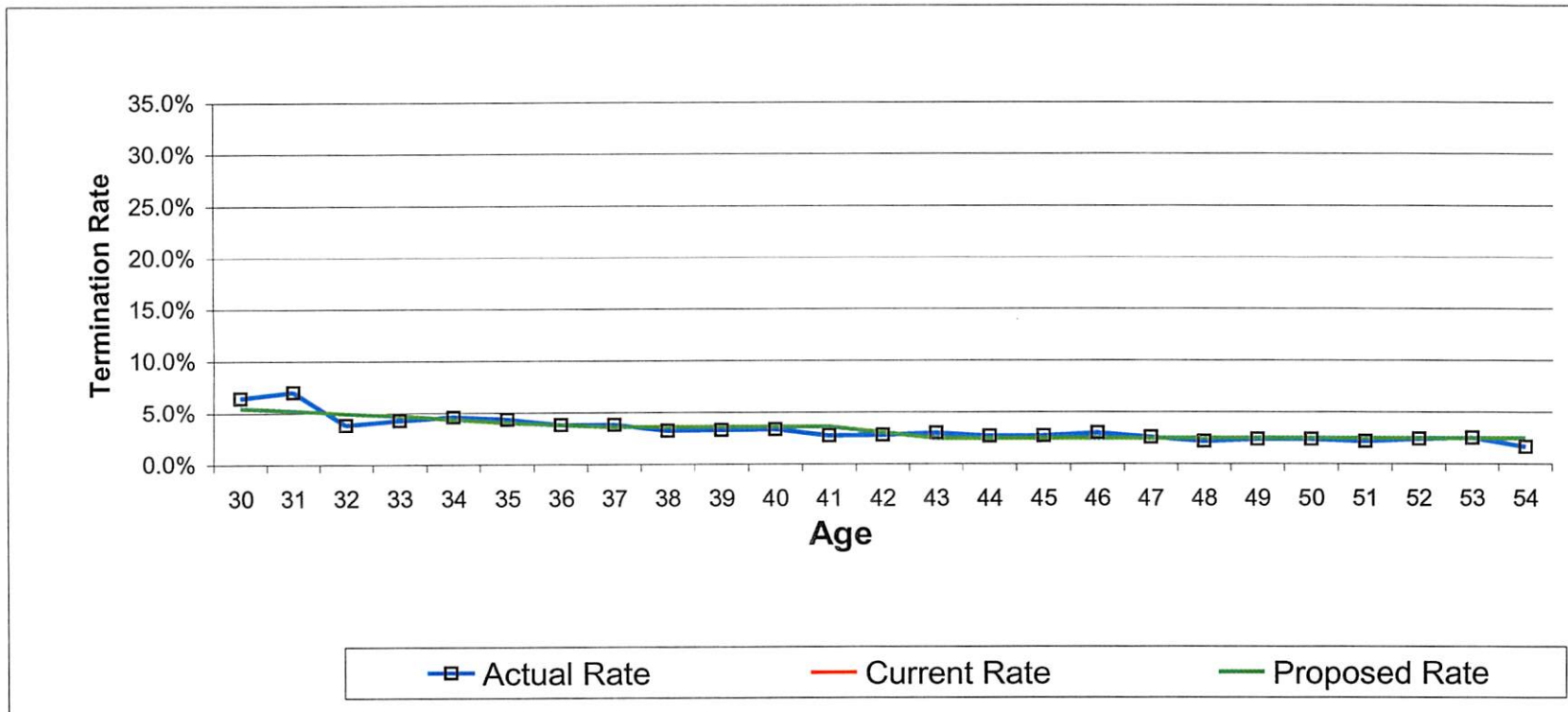
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 24

Termination of Employment

Females - Over 8 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	3,088	3,190	3,190
Actual/Expected		97%	97%

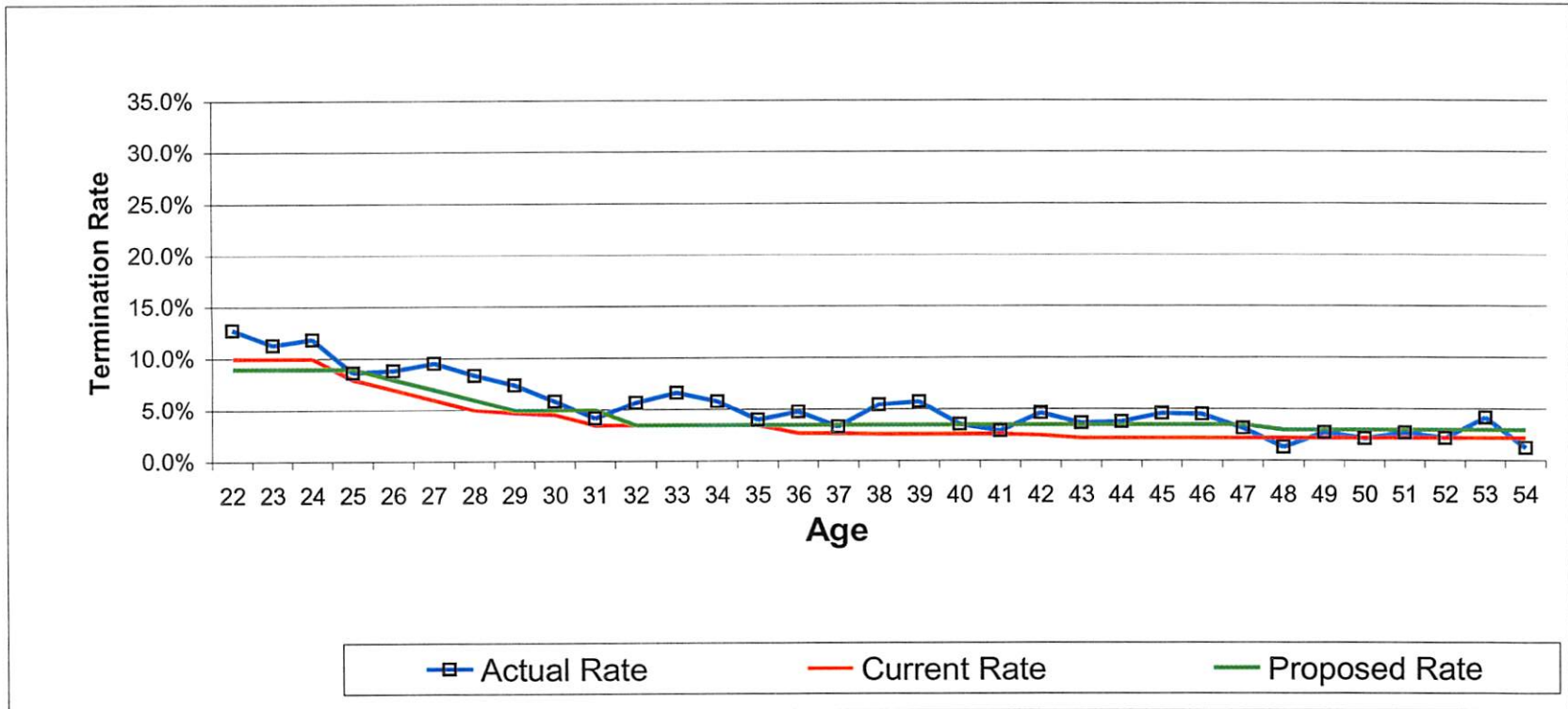
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 25

Termination of Employment

Special Services



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	787	541	658
Actual/Expected		145%	120%

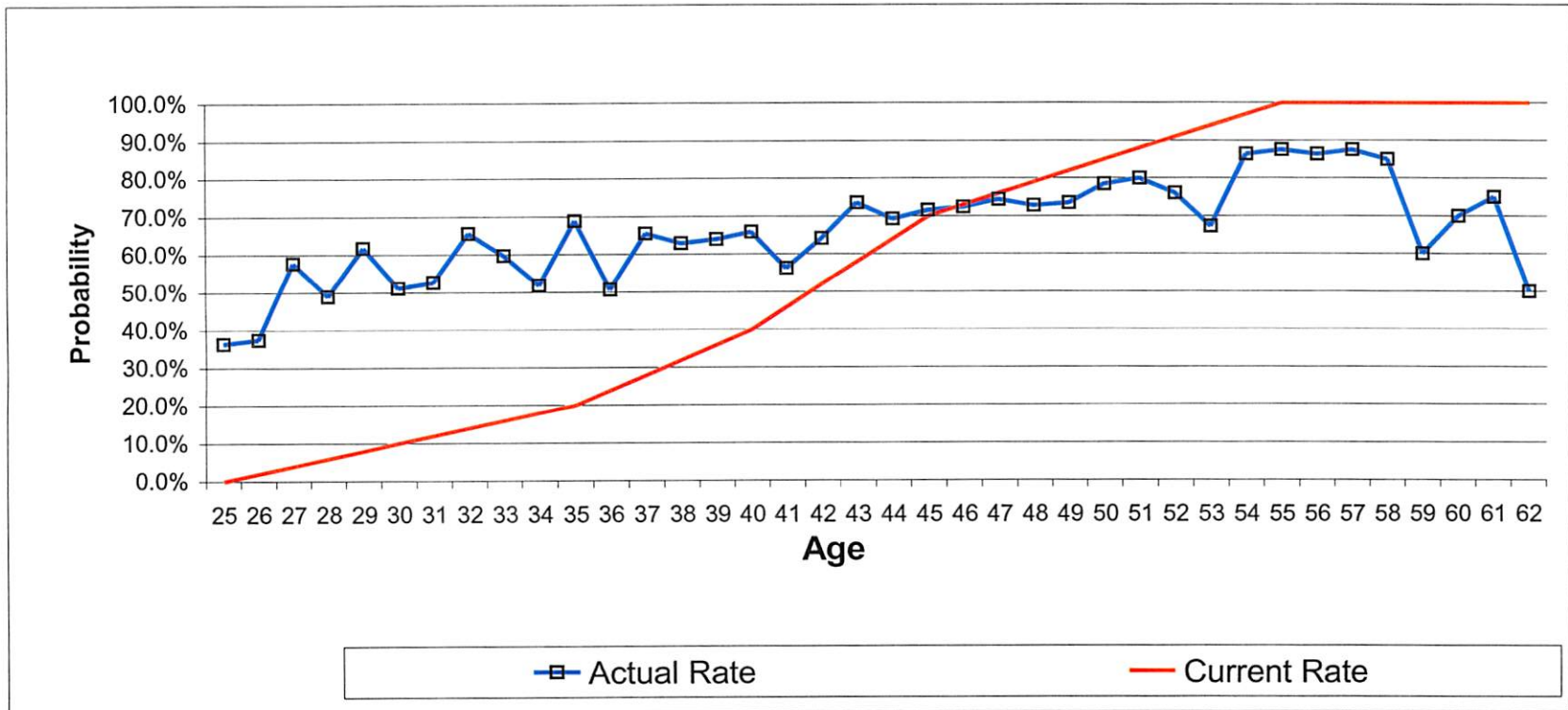
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 26

Probability of Electing a Vested Benefit (Current)

Males - General Membership



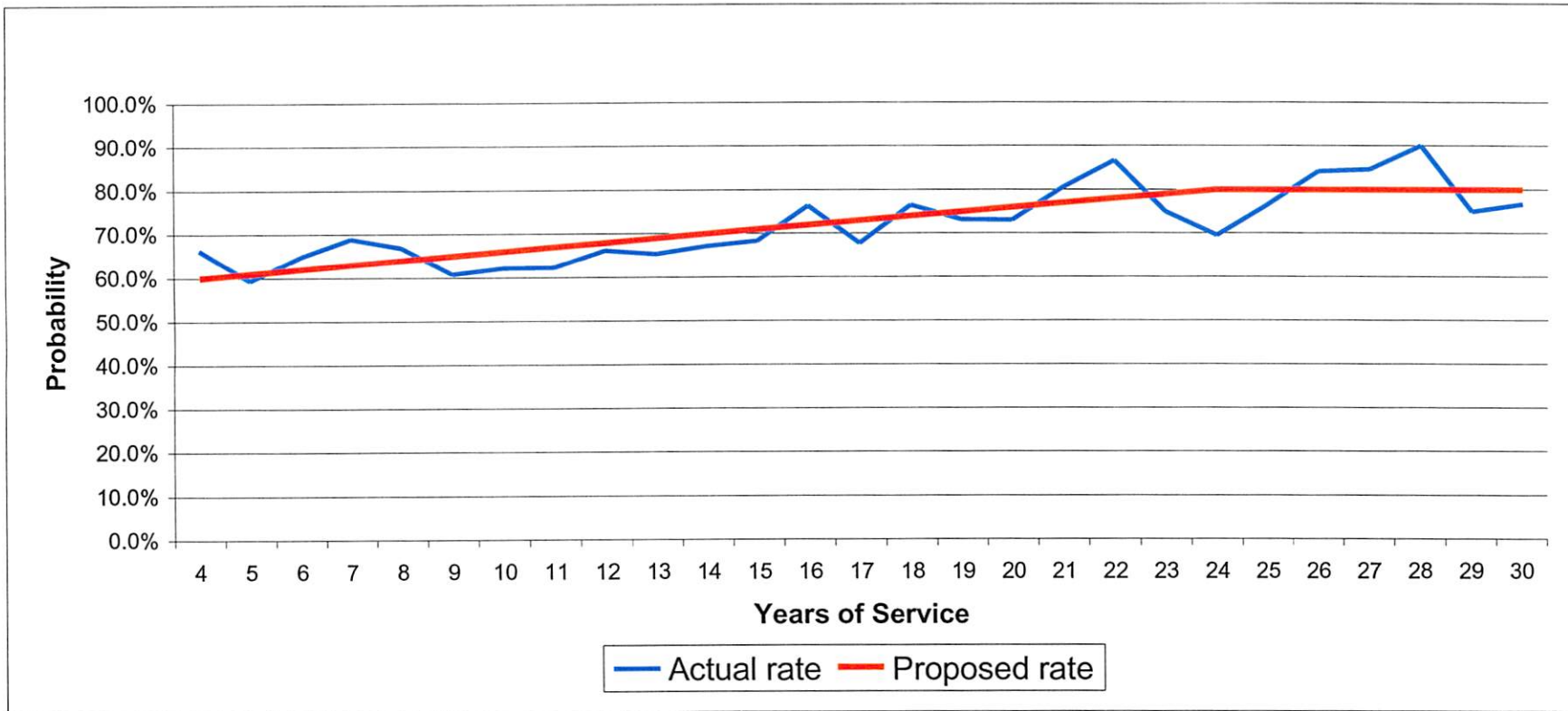
	Actual	Expected - Current Assumptions
Weighted Count	1,520	1,193
Actual/Expected		127%

Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 27

Probability of Electing a Vested Benefit (Proposed)
Males - General Membership



	Actual	Expected - Proposed Assumptions
Weighted Count	1,567	1,546
Actual/Expected		101%

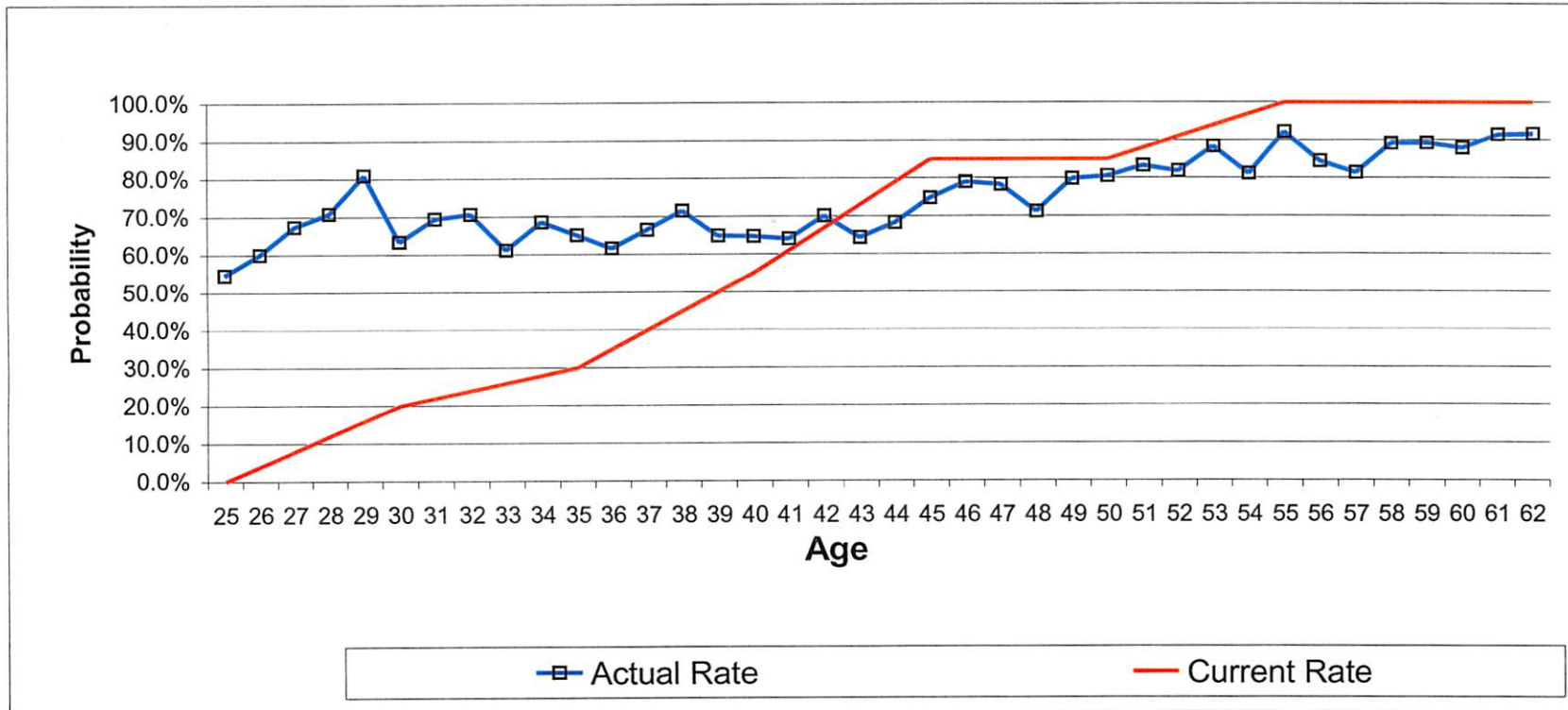
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 28

Probability of Electing a Vested Benefit (Current)

Females - General Membership



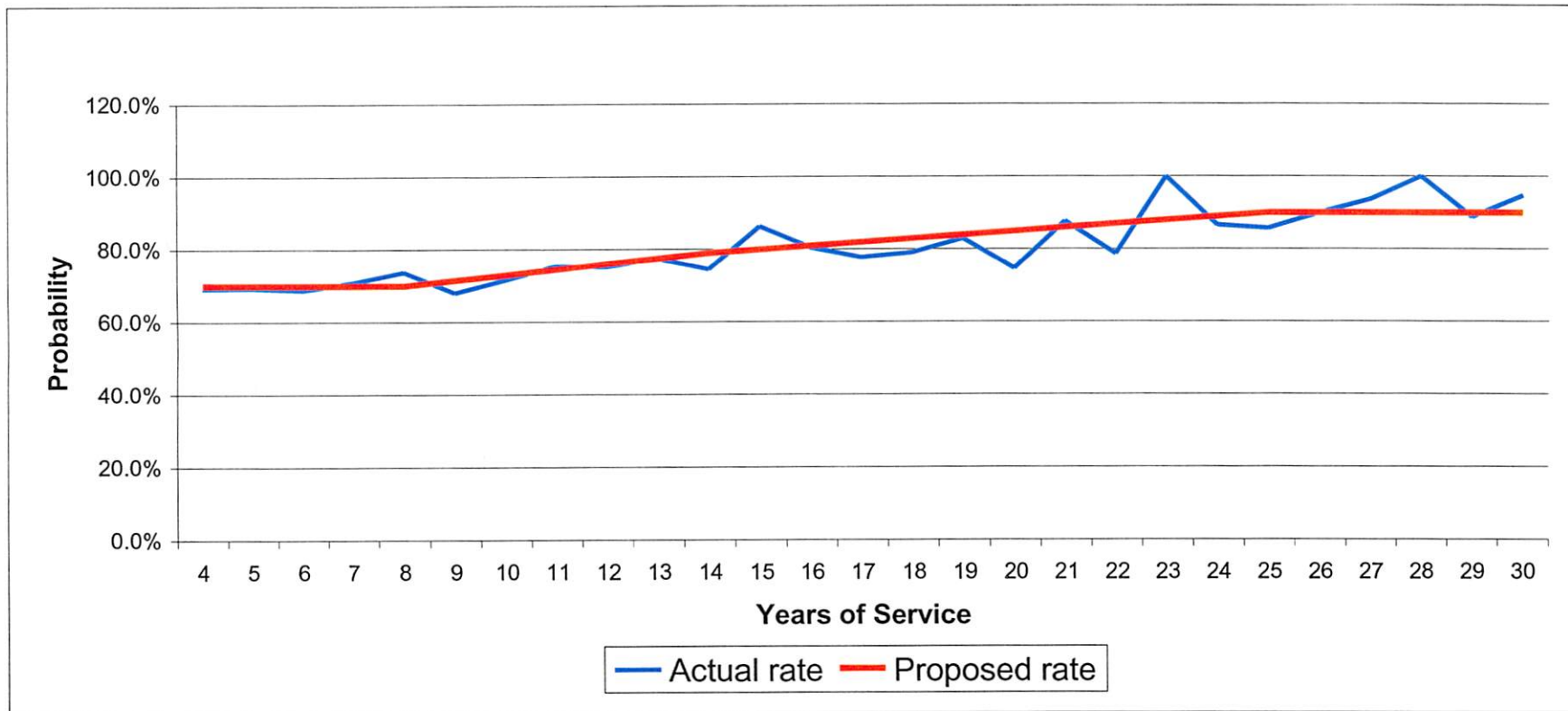
	Actual	Expected - Current Assumptions
Weighted Count	4,122	3,446
Actual/Expected		120%

Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 29

Probability of Electing a Vested Benefit (Proposed)
Females - General Membership



	Actual	Expected - Proposed Assumptions
Weighted Count	4,199	4,230
Actual/Expected		99%

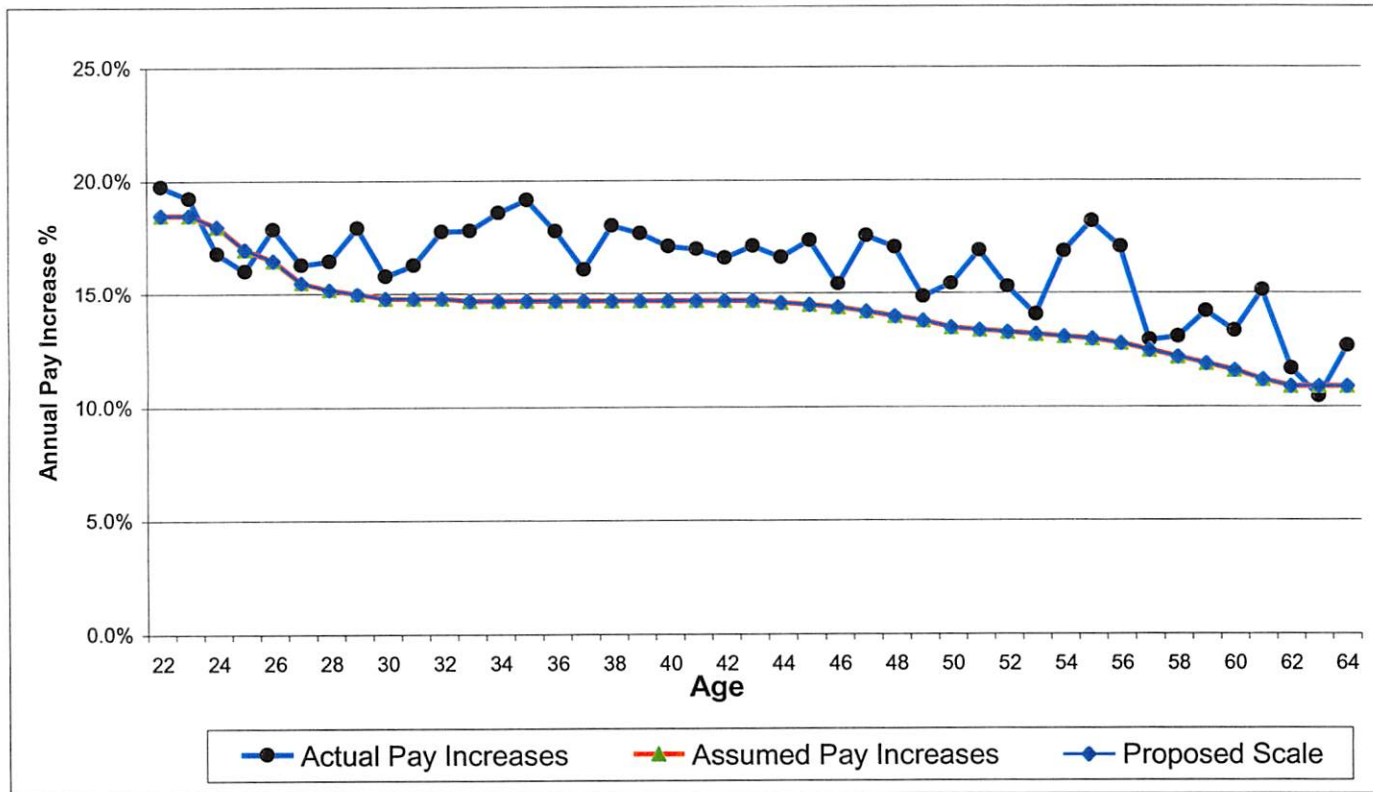
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 30

Salary Increases

Under 2 Years of Service



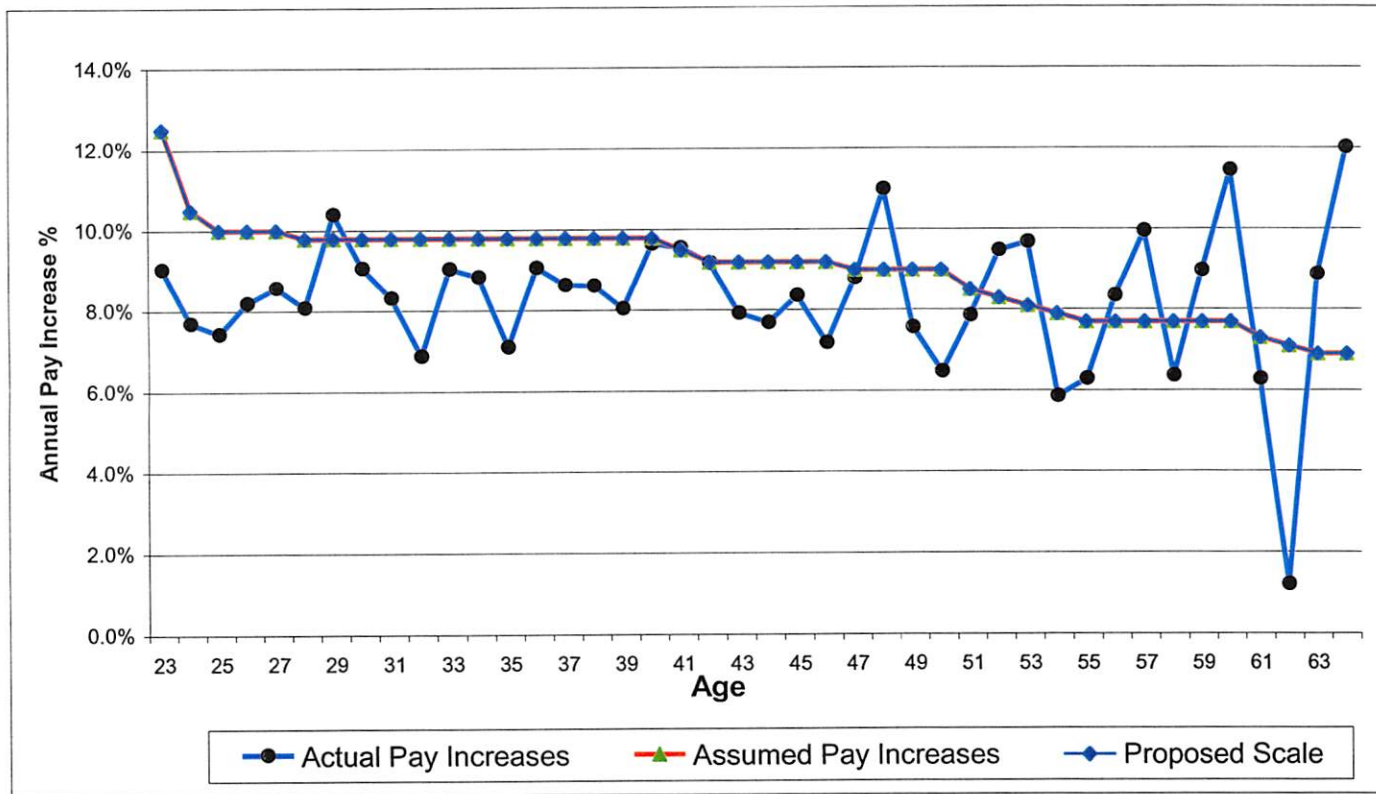
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	17.1%	13.0%	13.0%

Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 31

Salary Increases
2 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	8.4%	8.9%	8.9%

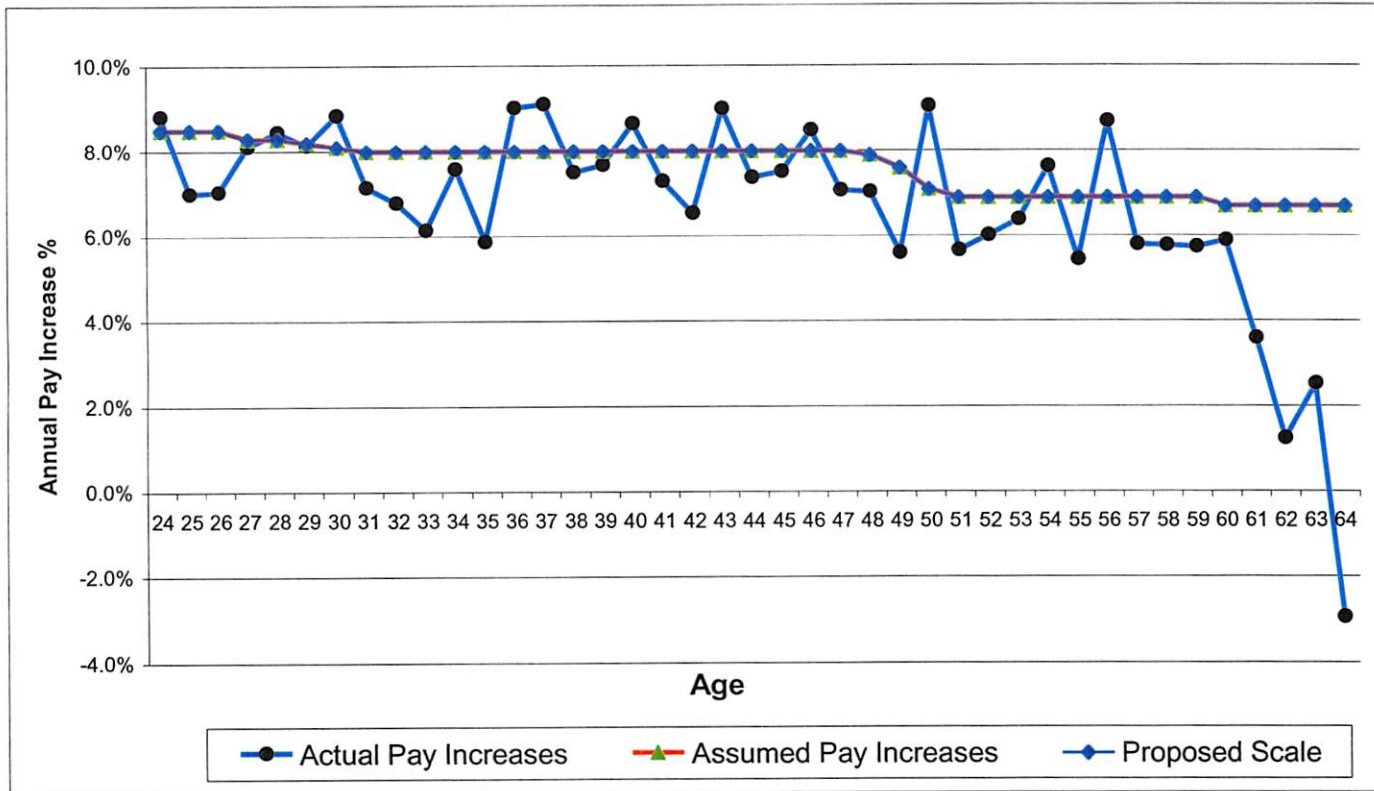
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 32

Salary Increases

3 Years of Service



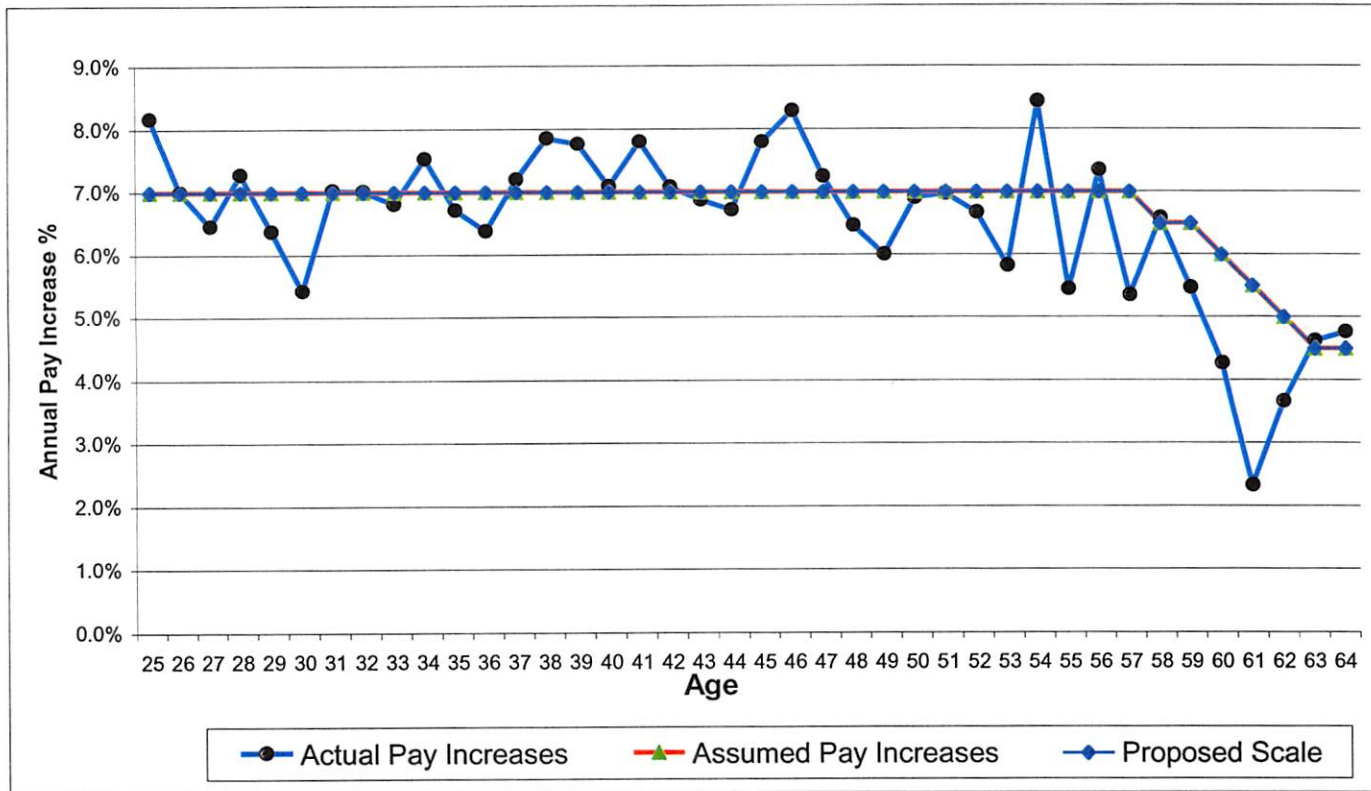
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	7.5%	7.4%	7.4%

Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 33

Salary Increases
4-5 Years of Service



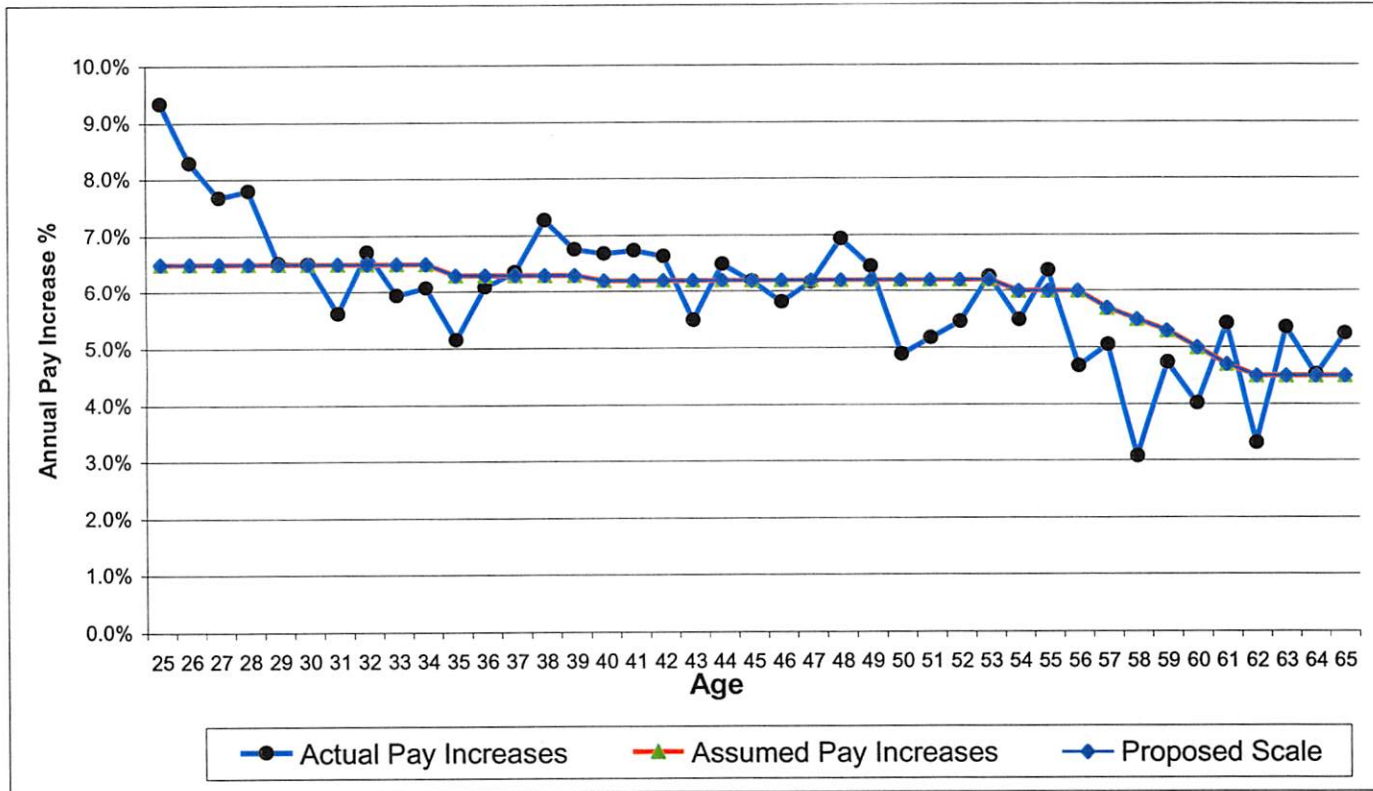
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	6.9%	6.5%	6.5%

Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 34

Salary Increases
6-7 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	6.2%	5.9%	5.9%

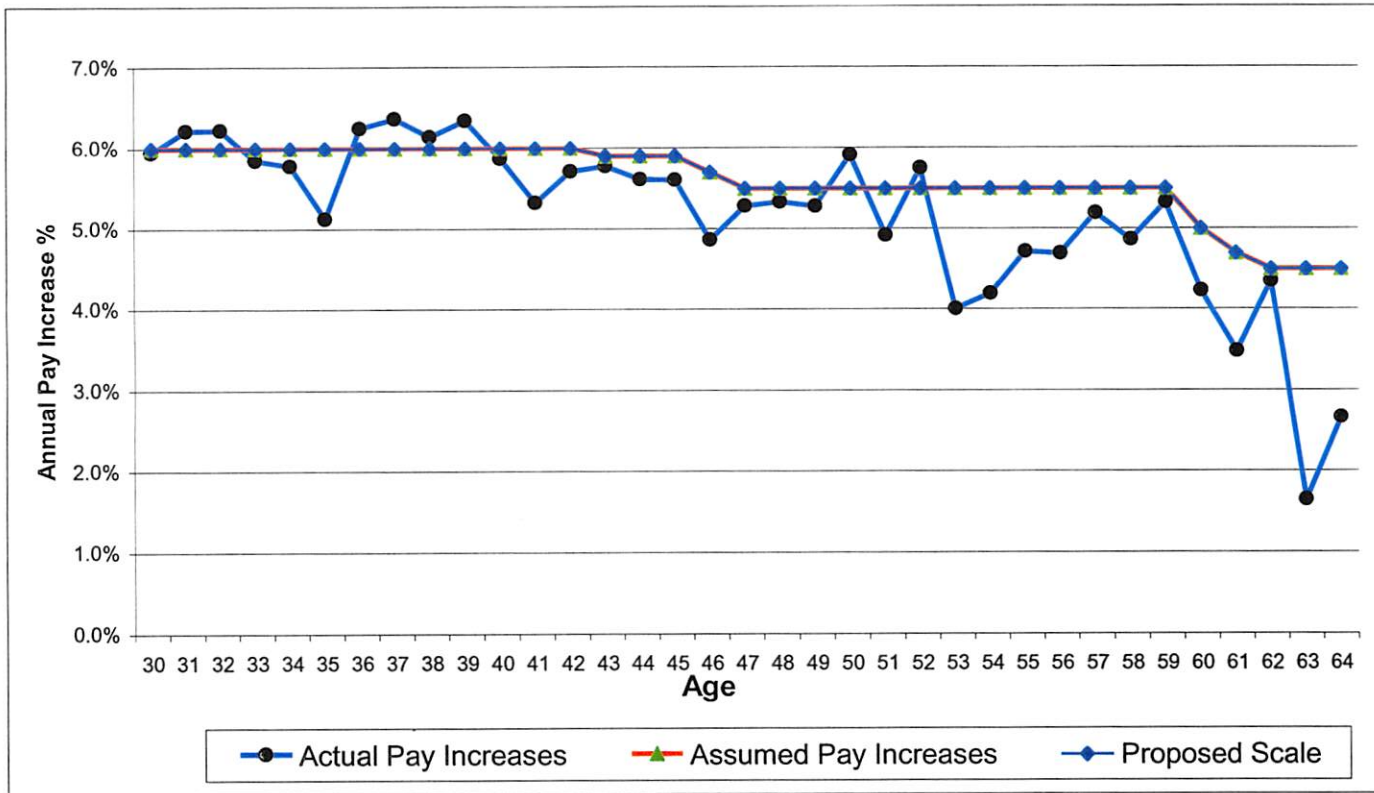
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 35

Salary Increases

8-10 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	5.6%	5.5%	5.5%

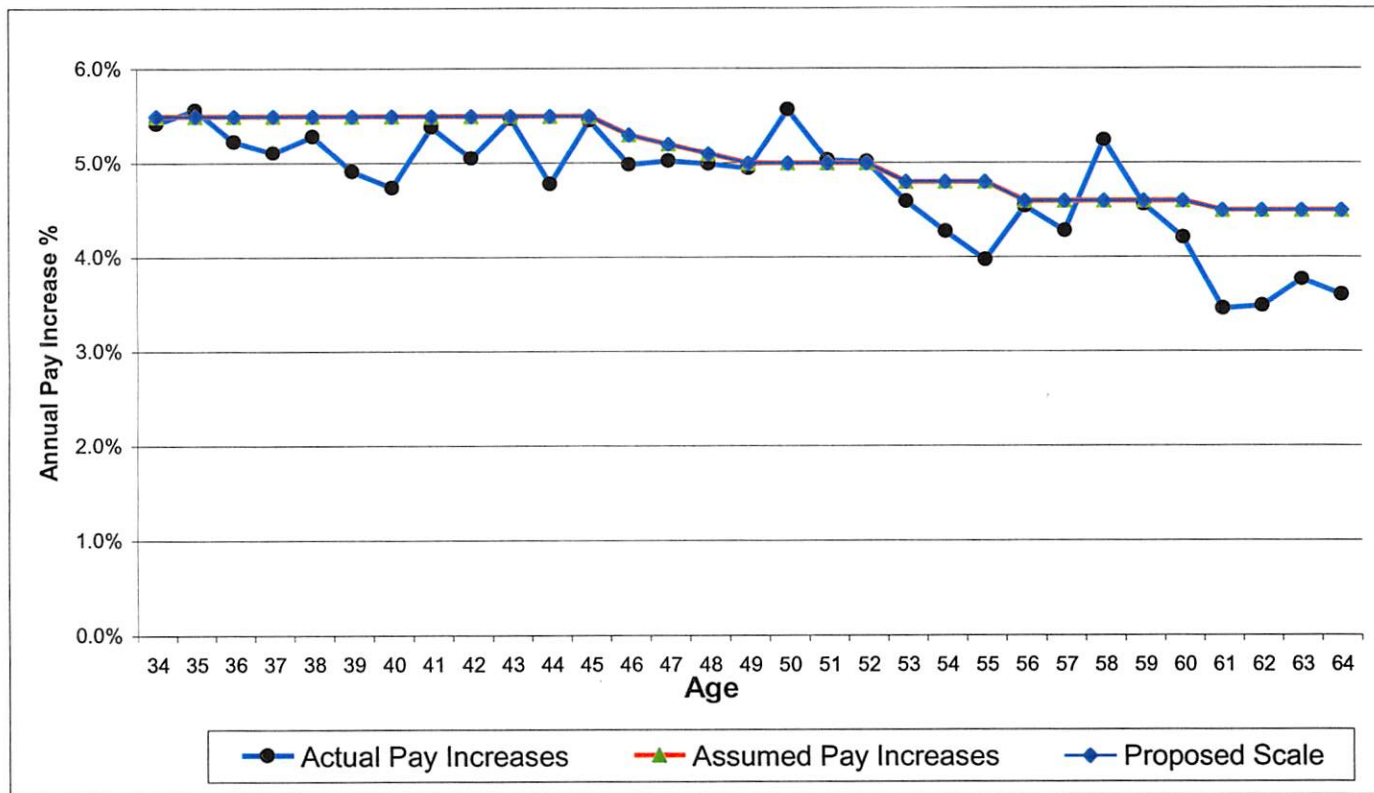
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 36

Salary Increases

11-15 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	5.0%	5.0%	5.0%

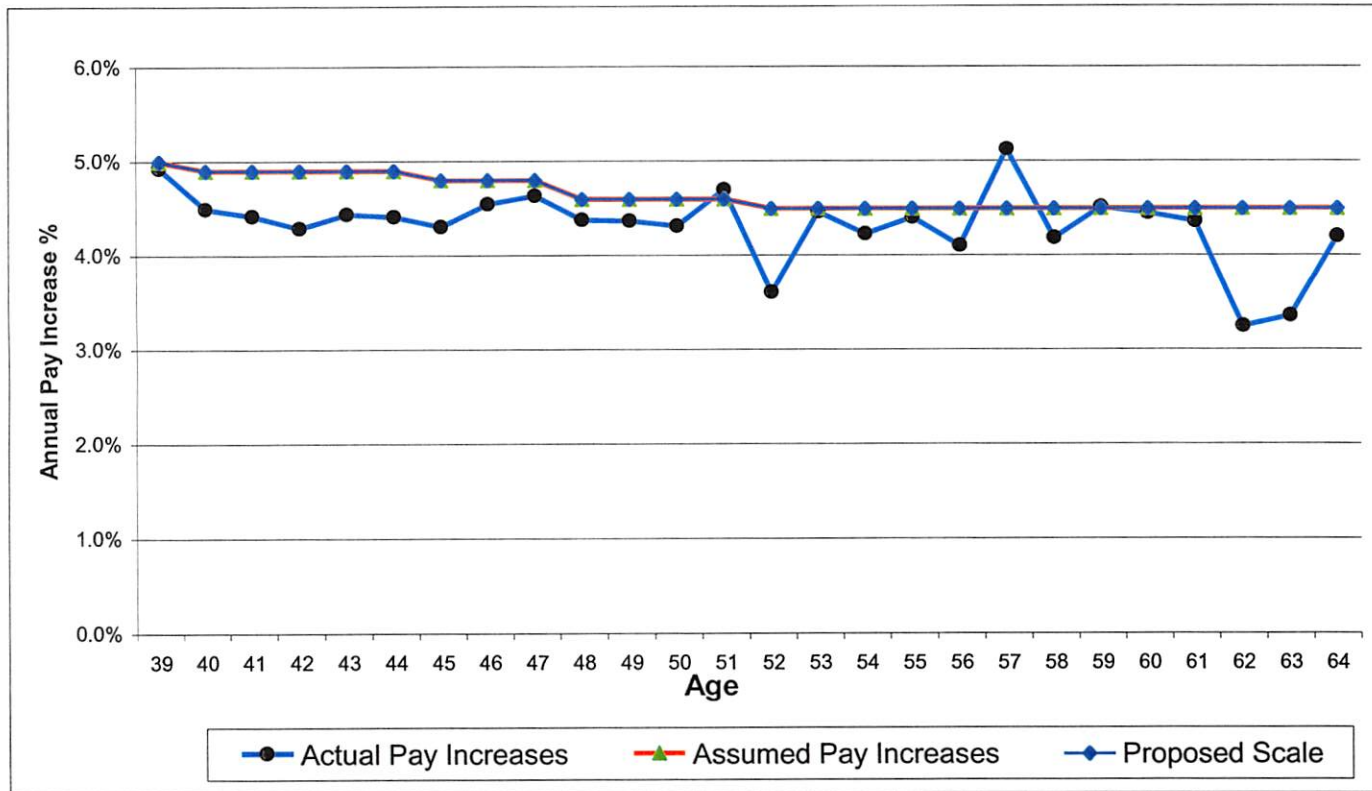
Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 37

Salary Increases

16-20 Years of Service



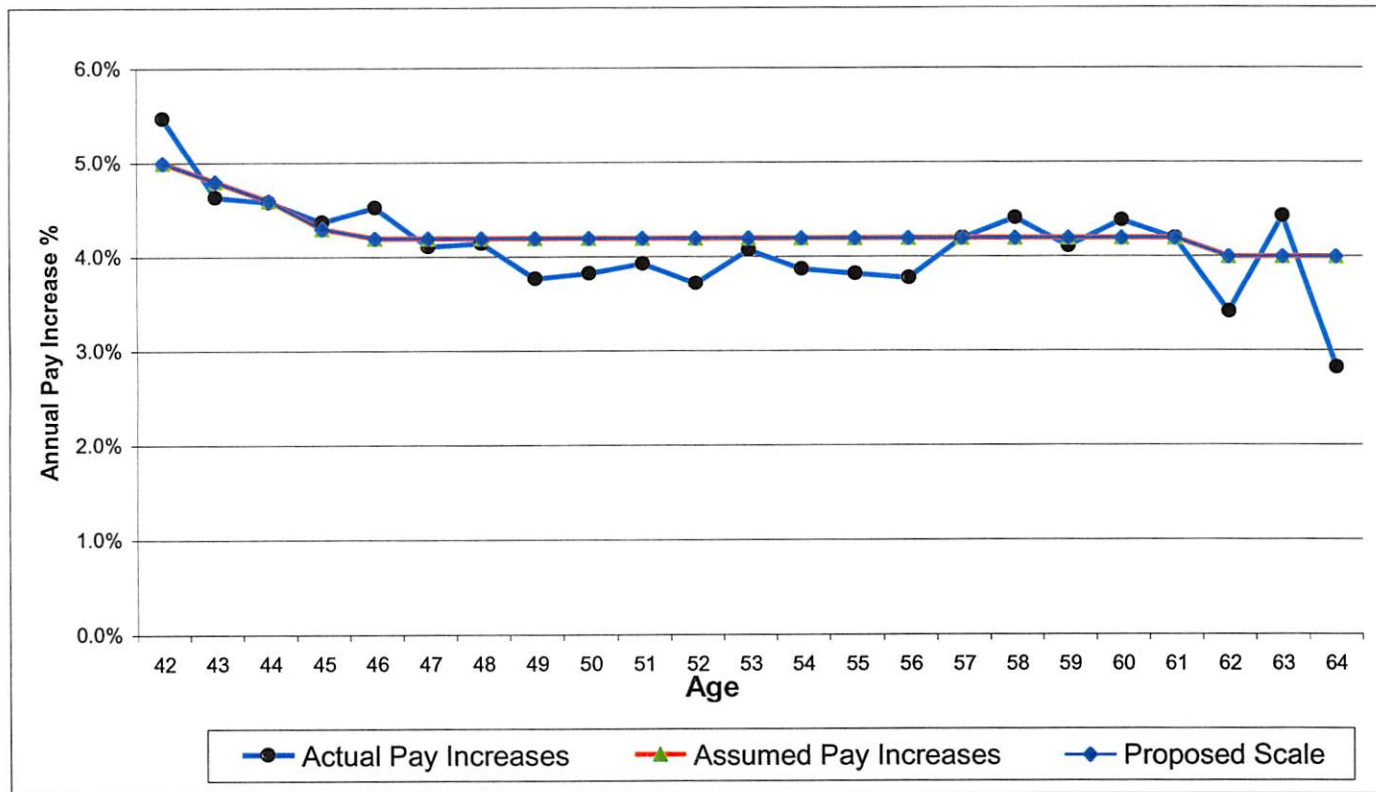
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	4.4%	4.5%	4.5%

Iowa Public Employees Retirement System

Experience Study 1998-2001

Exhibit 38

Salary Increases
Over 20 Years of Service



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	4.1%	4.1%	4.1%