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Iowa Public Employees' Retirement System

Demographic Assumptions Study

Presented: June 28, 2018





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Cavanaugh Macdonald

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June 28, 2018

Investment Board
Iowa Public Employees' Retirement System
7401 Register Drive
Des Moines, IA 50321

Dear Trustees:

It is a pleasure to submit this report of our investigation of the demographic experience of the Iowa Public Employees' Retirement System for the period of July 1, 2013 through June 30, 2017. The results of the experience study are the basis for recommended changes in the actuarial assumptions. The set of assumptions proposed as a result of this study will be used in the June 30, 2018 actuarial valuation of IPERS to analyze the funding status of the system, calculate the actuarial and required contribution rates, and disclose employer liabilities for financial statements.

The purpose of this report is to communicate the results of our review of the actuarial methods and assumptions to be used in the completion of the upcoming valuation. Our recommendations represent changes from the prior methods or assumptions, which are intended to better anticipate the emerging experience of the System. Actual future experience, however, may still differ from these assumptions.

In preparing this report, we relied without audit on information supplied by IPERS staff. In our examination, we have found the data to be reasonably consistent and comparable with data used for other purposes. It should be noted that if any data or other information is inaccurate or incomplete, our calculations might need to be revised. We would like to acknowledge the help given by IPERS staff in the preparation of this report.

We hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board (ASB) and the Code of Professional Conduct and Qualification Standards for Public Statements of Actuarial Opinion of the American Academy of Actuaries.

We further certify that the assumptions developed in this report satisfy ASB Standards of Practice, in particular, No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations* and No. 35, *Selection of Demographic and Other Non-economic Assumptions for Measuring Pension Obligations*.

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We look forward to our discussions and the opportunity to respond to your questions and comments.

I, Patrice A. Beckham, am a member of the American Academy of Actuaries, an Enrolled Actuary and a Fellow of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

I, Brent A. Banister, am a member of the American Academy of Actuaries, an Enrolled Actuary and a Fellow of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

A handwritten signature in blue ink that reads 'Patrice Beckham'.

Patrice A. Beckham, FSA, FCA, EA, MAAA
Principal and Consulting Actuary

A handwritten signature in blue ink that reads 'Brent A. Banister'.

Brent A. Banister, PhD, FSA, FCA, EA, MAAA
Chief Pension Actuary



SECTION 1 – EXECUTIVE 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 the Iowa Public Employees' Retirement System (IPERS) are prepared annually to determine the actuarial contribution rate to fund the System on an actuarial 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 are accurately predicting 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.

IPERS conducts an experience study every four years. The IPERS Board chose to accelerate the study of the economic assumptions one year, so that report was presented in March of 2017 and the updated economic assumptions were utilized in the June 30, 2017 valuation. This study covers the actuarial methods and demographic assumptions used in the valuation process. The study period is June 30, 2013 through June 30, 2017.

There are three distinct membership groups in IPERS, with different applicable plan provisions and contribution rates:

1. Regular Members,
2. Sheriff and Deputy Sheriffs, and
3. Protection Occupation.

The benefit provisions for the Sheriffs and Deputies and Protection Occupation groups are very similar and the size of both groups is relatively small. Therefore, for purposes of analyzing experience, the data for these groups has been aggregated when reasonable to do so. Results are shown separately for Regular members (which includes State, School and Other public employers) and Special Service members (Sheriffs/Deputies and Protection Occupation) in the discussion of demographic assumptions.

As was noted in the 2013 experience study, several changes in benefits provisions for Regular members were passed in the 2010 legislative session and were effective July 1, 2012. Because these changes were prospective in nature, they had minimal impact on the amount of benefit or the eligibility for receiving a benefit for anyone during that study period. We continue to believe that minimal behavior changes have yet occurred as the result of the plan design changes. If any such changes do ultimately occur, they will be reflected in future experience studies as the changes unfold and experience is evaluated.



SECTION 1 – EXECUTIVE SUMMARY

ACTUARIAL METHODS

Together the actuarial cost method, the asset valuation method and the amortization of the unfunded actuarial liability (UAL) create the cornerstone of the System’s funding policy. During calendar year 2013, a special study of the current funding policy for IPERS was performed and each key factor was thoroughly discussed, reviewed, and analyzed. The result of these efforts was a revision of two documents by the Investment Board in September, 2013: (1) Actuarial Amortization Policy and (2) Contribution Rate Funding Policy. Changes were made to meet the competing goals of stabilizing contribution rates and improving IPERS’ long term funding as quickly as possible. Please see Appendix A for a copy of IPERS’ Contribution Rate Funding Policy.

There are three key actuarial methods that are required to complete the annual actuarial valuation. The current methods are shown below:

- Actuarial Cost Method: Entry Age Normal
- Asset Valuation Method: 75% Expected Value + 25% Actual Market Value with an 80% to 120% corridor around market value
- Amortization Method: Level Percent of Payroll with the June 30, 2014 UAL amortized over a closed 30 year period and subsequent changes in the UAL amortized over a closed 20 year period beginning on the date the base is established. The amortization period for changes in the UAL for plan amendments and assumption changes will be determined at the time they occur.

We are not recommending any changes to these methods.

ACTUARIAL ASSUMPTIONS

The actuarial valuation process utilizes 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

An experience study of the economic assumptions was performed in March, 2017 and a new set of economic assumptions was adopted by the Board for use in the June 30, 2017 valuation. The following table contains a brief summary of those changes:

Assumption	Prior	Adopted
Inflation	3.00%	2.60%
Interest on Member Accounts	3.75%	3.50%
Investment Return	7.50%	7.00%
General Wage Growth	4.00%	3.25%
Payroll Growth	4.00%	3.25%



SECTION 1 – EXECUTIVE SUMMARY

Demographic Assumptions

The prior two experience studies (2005-2009 and 2009-2013) were either during or just after the Great Recession (2008-09). We believe that the economic turmoil created a situation where individuals adjusted their choices regarding employment, and thus some of the experience of those study periods may not have been representative of future long-term experience. This is particularly true of the assumptions where the individual members have significant control over their situation, such as retirement and termination of employment. In addition, the State of Iowa offered an early retirement incentive program during the 2009-2013 study period which impacted the retirement experience for State members and may have also impacted other demographic experience. As a result, we realize that there may be limitations when comparing the results of the current study period to those in the last two studies.

We generally analyzed experience for each of the four years individually as well as in aggregate. If any of the experience in certain years seemed out of line, the credibility of that experience was reduced in evaluating the current assumptions and proposing changes.

In the analysis of demographic experience, we use a methodology for analyzing the experience, called a “liability-weighted” approach (referred to in this report as “weighted”). A member’s “liability” in the System is generally determined by the benefit amount and age of the member. Many assumptions already reflect differences by age directly. The other factor, benefit amount, is impacted by salary and service. We use these two factors to estimate the member’s relative benefit level and then weight the experience (the exposure and actual occurrences are scaled by salary and service). This approach is particularly insightful when analyzing experience from a non-homogenous group. While we reviewed experience on both a count and liability-weighted basis for most decrements, we generally gave the liability-weighted experience more credibility in proposing changes. This is discussed in each section of the demographic assumptions in this report.

Our recommended changes to the demographic assumptions are intended to better reflect future experience and improve the calculation of future liabilities. The specific changes are discussed below:

Mortality: In general, mortality rates continue to improve and based on the data in the last two studies, we believe some minor changes to the current assumptions are appropriate. We are recommending moving to the family of RP-2014 Mortality Tables for all groups, with adjustments and scaling as needed to ensure the fit is reasonable. The RP-2014 Tables, including the mortality improvement scales, are the most recently published mortality tables for use in pension valuations. The recommended changes impact the mortality assumption used for active members, disabled members and in-pay members.

Retirement: We continued to observe lower retirement rates than are currently used in the valuation. Based on trends observed in the current and prior experience studies, we are changing retirement rates cautiously. In general, the retirement rates for Regular members are lower than the current rates. We are also recommending changes to the retirement rates for the Sheriffs and Deputies and Protection Occupation groups to better match the actual experience. For the Sheriffs and Deputies, the recommended assumption reflects lower retirement rates at the younger ages. For the Protection Occupation group, the rates were modified both higher and lower across the age ranges.

Disability: For all groups (State, School, Other, Sheriffs and Deputies, and Protection Occupation), the disabilities rates are being lowered. The adjustments were larger for the Regular membership based on the experience in the current and prior studies.



SECTION I – EXECUTIVE SUMMARY

Termination of Employment: Based on the actual experience observed in the current and prior experience studies, we are recommending modest changes to this assumption for Regular members. While the actual data might suggest more dramatic changes could be made, we want to avoid having to adjust for overcorrection in the future and, by doing so, create more stability in the contribution pattern for funding IPERS. For the two Special Service groups, we are recommending separate assumptions be used for each group and that they be duration-based.

Election of Deferred Benefit: Overall, the current assumptions are reasonably anticipating the behavior of members who terminate employment and elect to leave their contributions with the System and draw a monthly benefit when eligible. Small adjustments were made to this assumption for State males and females, School males and Other males.

Merit Salary Scale: This assumption is used, in conjunction with the general wage growth assumption (an economic assumption), to develop the individual salary increase assumption. The general shape of the merit scale is a good fit to the observed experience for all groups other than the State. Despite the shape being consistent with the current assumption, we did note that the actual salary increases for School members during the study period were higher than expected, given the economic conditions. The observed experience was due to adjustments to teacher pay resulting from the Teacher Leadership Compensation program that commenced in 2013. We are recommending some adjustments to the merit scale for State members to provide a better fit to the actual experience. Such changes are not significant.

OPTIONAL FORM FACTORS

A retiring member may elect the form of payment for his monthly benefit: e.g. single life annuity, joint and survivor annuity, life with 10 years guaranteed, etc. These different types or forms of payments are called optional forms. Optional form factors are used to convert the benefit amount for one form of benefit payment to another on an actuarial equivalent basis (i.e. no gain or loss to the System). These factors were last updated in 2006. Because of the change in the investment return assumption in 2017 and the change to a new family of mortality tables proposed in this experience study, we recommend the optional form factors be updated when administratively feasible.



SECTION 1 – EXECUTIVE SUMMARY

COST IMPACT

The estimated financial impact of the proposed changes, as based on June 30, 2017 valuation results, is summarized on the following page. Assumption changes only impact the liabilities and the normal cost rate. Assets are unaffected. The impact on the June 30, 2018 valuation results (actuarial liability and normal cost rate) should be similar, as a percent, but the dollar amount of impact will vary with the change in the underlying actuarial liability amount.

The Actuarial Amortization Policy (Appendix B) gives the Board discretion in determining the period over which to amortize the change in liability from adopting these assumptions. The change in the actuarial liability resulting from the new set of economic assumptions adopted by the Board last year was amortized over 20 years. Therefore, we have utilized a 20-year amortization period in determining the estimated cost of these assumption changes, but the Board may choose a different amortization period, if desired.

**Estimated Change in Actuarial Liability and Costs
Based on June 30, 2017 Valuation**

	Before Change	After Change	Difference
Regular Membership			
Actuarial Liability (\$M)	\$35,177	\$35,253	\$76
Actuarial Assets (\$M)	\$28,293	\$28,293	\$0
Unfunded Actuarial Liability (\$M)	\$ 6,884	\$ 6,960	\$76
Normal Cost Rate	10.40%	10.49%	0.09%
Amortization Rate	<u>5.33%</u>	<u>5.41%</u>	<u>0.08%</u>
Actuarial Contribution Rate	15.73%	15.90%	0.17%
Sheriffs and Deputies Membership			
Actuarial Liability (\$M)	\$691	\$666	(\$25)
Actuarial Assets (\$M)	\$643	\$643	\$0
Unfunded Actuarial Liability (\$M)	\$ 49	\$ 23	(\$25)
Normal Cost Rate	16.85%	16.81%	(0.04%)
Amortization Rate	<u>2.67%</u>	<u>1.03%</u>	<u>(1.64%)</u>
Actuarial Contribution Rate	19.52%	17.84%	(1.68%)
Protection Occupation Membership			
Actuarial Liability (\$M)	\$1,572	\$1,571	(\$1)
Actuarial Assets (\$M)	\$1,537	\$1,537	\$0
Unfunded Actuarial Liability (\$M)	\$ 35	\$ 34	(\$1)
Normal Cost Rate	16.31%	15.25%	(1.06%)
Amortization Rate	<u>0.71%</u>	<u>0.61%</u>	<u>(0.10%)</u>
Actuarial Contribution Rate	17.02%	15.86%	(1.16%)

Note: Numbers may not add due to rounding.



SECTION I – EXECUTIVE SUMMARY

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SECTION 2 - INTRODUCTION

Funding and Valuation Principles

Just as certain investment choices have an associated “investment risk,” choices in actuarial assumptions have an associated “actuarial risk”. Our responsibility is to consider the impact our work will have on members, employers, and taxpayers, both current and future.

The determination of the actuarial contribution rate is dependent on the assumptions used to project the future benefit payments and then discount them to obtain the present values. Thus, it is important that the Board understand the sensitivity of the actuarial calculations to the underlying assumptions.

- If actual experience shows that the assumptions overestimated the true cost of the plan, current taxpayers and public employees and employers may be required to bear a burden that rightfully belongs to future taxpayers.
- If actual experience shows that the assumptions underestimated the true costs, future taxpayers and future employees and employers may be required to bear a burden that rightfully belongs to the current taxpayers.

The actuarial assumptions do not impact the true cost of the plan benefits; they do impact how the financing and pre-funding of those retirement benefits takes place before the true costs can be determined. Therefore, a balanced approach that is neither conservative nor aggressive seems the most equitable to all impacted parties.

The actuarial assumptions are divided into two groups: economic and demographic. The economic assumptions must not only reflect IPERS’s experience but also give even greater consideration to the long-term expectation of future economic growth for the nation, as well as the global economy. These assumptions were studied in 2017 and the Board adopted new economic assumptions that were used for the June 30, 2017 valuation.

The non-economic, or demographic assumptions, are based on IPERS’ actual experience, adjusted to reflect trends and historical experience. The demographic assumptions are much more dependent on the numerical results of the experience studies, but there is still subjectivity involved in evaluating the experience and proposing any changes. There is no “right” answer because the future is unknown. Differences of opinion among actuaries will occur based on each person’s background, experience and outlook.

Overview

This report presents the results of an investigation of the recent actuarial demographic experience of IPERS. We will refer to this investigation as an experience study. Throughout this report, we refer to “current” and “proposed” actuarial assumptions. The current assumptions are those that were used for the actuarial valuation of IPERS as of June 30, 2017. These assumptions and methods were adopted by the Board based on IPERS’ 2009-2013 Experience Study and IPERS’ 2017 Economic Assumptions Study. The proposed assumptions are those we recommend for use in the valuation as of June 30, 2018 and for subsequent valuations until further changes are made.

Sections 4 through 10 of this report will show the results of our study of demographic assumptions. The exhibits are detailed comparisons between actual and expected events (death, retirement, termination, etc.)



SECTION 2 - INTRODUCTION

on both the current and, if applicable, the proposed assumptions. The graphs are included in the Appendices for your reference.

For each type of assumption, the graph shows the actual observed rates, the current assumed rates and the proposed assumed rates, usually based on a combination of gender, years of service and age. The exhibits also show the total numbers of actual and expected decrements based on the current assumption and the proposed, if any. Ratios larger than 100% on the current basis indicate that the current rates may need to be raised; ratios smaller than 100% indicate that current rates may need to be lowered. Note that raising (or lowering) current rates could increase or decrease plan costs, depending on the assumption and the specific changes.

There are three different membership groups in IPERS:

1. Regular Members,
2. Sheriffs and Deputy Sheriffs, and
3. Protection Occupation.

The benefit provisions for both the Sheriffs and Deputies and Protection Occupation groups are very similar, in general, and the size of the groups is relatively small. Therefore, for purposes of analyzing experience, the data for these groups has been aggregated for several assumptions.

As in the last experience study, we observed differences in experience by the various groups covered in the Regular membership (State, School, Other) so we continue to recommend assumptions that vary by group. We believe the result is a better estimate of the System's liabilities.

Our Philosophy

Similar to an actuarial valuation, the numerical calculation of actual and expected experience is a fairly mechanical process. From one actuary to another, you would expect to see very little difference. However, the setting of assumptions is a different story, as it is more art than science. In this report, we at times propose revisions to the current assumptions. To better understand our thought process, here is a brief summary of our philosophy:

- **Don't overreact:** When we see significant changes in experience, we generally do not adjust our rates to reflect the entire difference. We will generally propose rates somewhere between the old rates and the new experience depending on the level of credibility assigned to the more recent data. If the experience during the next study shows the same result, we will probably recognize this trend at that point. On the other hand, if the experience returns closer to its prior level, we will not have overreacted, minimizing volatility in the actuarial contribution rates.
- **Anticipate Trends:** If there is an identified trend that is expected to continue, we believe that this should be recognized. An example of this is the retiree mortality assumption. It is an established trend that people are continuing to live longer; therefore, we prefer to reflect future decreases in mortality rates thereby recognizing the longer expected payment period.
- **Simplify:** In this report we describe what factor affects each assumption. In general, we attempt to identify which factors are significant and eliminate the ones that do not significantly improve accuracy.



SECTION 2 - INTRODUCTION

Actuarial Standard of Practice No. 35: Selection of Demographic Assumptions

Actuarial Standard of Practice No. 35 (ASOP 35) governs the selection of demographic and other non-economic assumptions for measuring pension obligations. *ASOP 35* states that the actuary should use professional judgment to estimate possible future outcomes based on past experience and future expectations, and select assumptions based upon application of that professional judgment. The actuary should select reasonable demographic assumptions in light of the particular characteristics of the defined benefit plan that is the subject of the measurement. A reasonable assumption is one that is expected to appropriately model the contingency being measured and is not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

ASOP No. 35 Steps

The actuary should follow the following steps in selecting the demographic assumptions:

1. **Identify the Types of Assumptions.** Types of demographic assumptions include but are not limited to retirement, mortality, termination of employment, disability, election of optional forms of payment, administrative expenses, family composition, and treatment of missing or incomplete data. The actuary should consider the purpose and nature of the measurement, the materiality of each assumption, and the characteristics of the covered group in determining which types of assumptions should be incorporated into the actuarial model.
2. **Consider the Relevant Assumption Universe.** The relevant assumption universe includes experience studies or published tables based on the experience of other representative populations, the experience of the plan sponsor, the effects of plan design, and general trends.
3. **Consider the Assumption Format.** The assumption format includes whether assumptions are based on parameters such as gender, age, service or calendar year. The actuary should consider the impact the format may have on the results, the availability of relevant information, the potential to model anticipated plan experience, and the size of the covered population.
4. **Select the Specific Assumption.** In selecting an assumption the actuary should consider the potential impact of future plan design changes as well as the factors listed above.
5. **Evaluate the Reasonableness of the Selected Assumption.** The assumption should be expected to appropriately model the contingency being measured. The assumption should not be anticipated to produce significant actuarial gains or losses.

ASOP No. 35 General Considerations and Application

Each individual demographic assumption should satisfy the criteria of *ASOP 35*. In selecting demographic assumptions the actuary should also consider the internal consistency between the assumptions, materiality, cost effectiveness, and the combined effect of all assumptions. At each measurement date the actuary should consider whether the selected assumptions continue to be reasonable, but the actuary is not required to do a complete assumption study at each measurement date. In our opinion, the demographic assumptions proposed in this report have been developed in accordance with *ASOP 35*.



SECTION 2 - INTRODUCTION

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SECTION 3 – ACTUARIAL METHODS

Actuarial valuations utilize methods to determine the liabilities, assets and contribution rates for the System. While these are not like actuarial assumptions that may change over time depending on experience, an experience study is still a good opportunity to review these methods to see if they are still appropriate for systematically funding the promised benefits.

Together the actuarial cost method, the asset valuation method and the amortization of the unfunded actuarial liability create the cornerstone of the System's funding policy. A significant amount of time and effort was spent during 2013 developing the current Contribution Rate Funding Policy for IPERS and considering modifications that would improve the policy and better address concerns about IPERS' long term funding. The current policy has achieved the goals established when it was created so we recommend no change. Nonetheless, a brief discussion of each actuarial method is included below. Please see Appendix A for a copy of IPERS' Contribution Rate Funding Policy.

ACTUARIAL COST METHOD

The systematic 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 actuarial cost method is used to allocate the present value of future benefits between past service (actuarial liability) and future service (normal costs). Currently the valuation uses the entry age normal cost method. This is the most widely used cost method of large public sector plans and has demonstrated the highest degree of stability as compare to alternative methods. It also is the required actuarial cost method under calculations required by the Governmental Accounting Standards Board Statements Number 67 and 68. **We recommend the Entry Age Normal actuarial cost method be retained.**

ACTUARIAL VALUE OF ASSETS

In preparing an actuarial valuation, the actuary must assign a value to the assets of the fund. The purpose of an asset smoothing method is to dampen the impact that market volatility has on valuation results by spreading the expected market gains and losses over several years. The actuary does not have complete freedom in assigning this value. The Actuarial Standards Board has basic principles regarding the calculation of a smoothed asset value which are set out in *ASOP 44, Selection and Use of Asset Valuation Methods for Pension Valuations*.

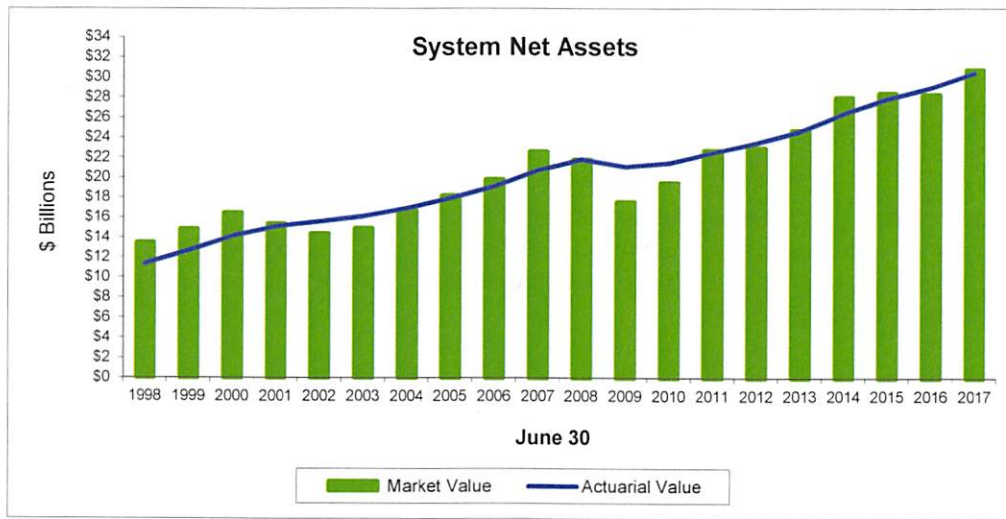
IPERS currently values assets, for actuarial valuation purposes, based on the principle that the difference between actual and expected investment returns should be subject to partial recognition to smooth out fluctuations in the total return achieved by the fund from year to year. This philosophy is 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



SECTION 3 – ACTUARIAL METHODS

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%). This is mathematically equivalent to using a weighted average of 75% of the expected value and 25% of actual market value.

It should be noted that if the return on the market value of assets was exactly equal to the assumed rate of return in all future years, this smoothing method would converge somewhat slowly to the market value. After five years, 75% of the initial deferred loss would have been recognized, while 94% would be recognized after 10 years. (Some other common methods would fully recognize the loss after just five years.) However, it is very rare for the actual return to be within 0.25% of the assumed rate for even one year, let alone every year over a longer period. In the presence of more normal volatility, this method does a good job of smoothing. In particular, when a significantly positive return occurs and a deferred loss exists (or a negative return when there is a deferred gain), this method moves very quickly toward the market value, and it tends to be more intuitive. The following graph illustrates how the smoothing has worked for IPERS over the past 20 years:



The current smoothing method has smoothed out the actual market volatility, while tracking well with the overall asset movement. Consequently, the fact that this method converges slowly under a highly improbable scenario is not of sufficient concern to outweigh the responsive smoothing that this method otherwise provides.

IPERS’ current asset valuation method also includes what is known as a “corridor”, which provides that once the initial determination of the actuarial value of assets is made it is compared to a corridor around market value (80% of market value to 120% of market value). If the initial actuarial value lies outside the corridor, the final actuarial value of assets is set equal to the corresponding corridor value. For example, if the initial actuarial value of assets is 132% of market value, the actuarial value is instead set equal to 120% of market value. We believe the corridor is necessary to ensure actuarial standards (*ASOP 44*) are met. We believe the current method, with the corridor, is reasonable and meets actuarial standards. **We recommend the current asset valuation method be retained.**



SECTION 3 – ACTUARIAL METHODS

AMORTIZATION OF UAL

As described earlier, 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 normal costs for past service. 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 that is less favorable than expected, (iii) assumption changes that increase liabilities or (iv) contributions that are less than the actuarial contribution rate.

There are a variety of different methods that can be used to amortize the UAL. Each method results in a different payment stream and, therefore, has cost implications. For each methodology, there are three characteristics:

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

Amortization Period: The amortization period can be either closed or open. If it is a closed amortization period, the number of years remaining in the amortization period declines by one in each future year. Alternatively, if the amortization period is an open or rolling period, the amortization period does not decline but is reset to the same number each year. This approach essentially “refinances” the System’s debt (UAL) every year.

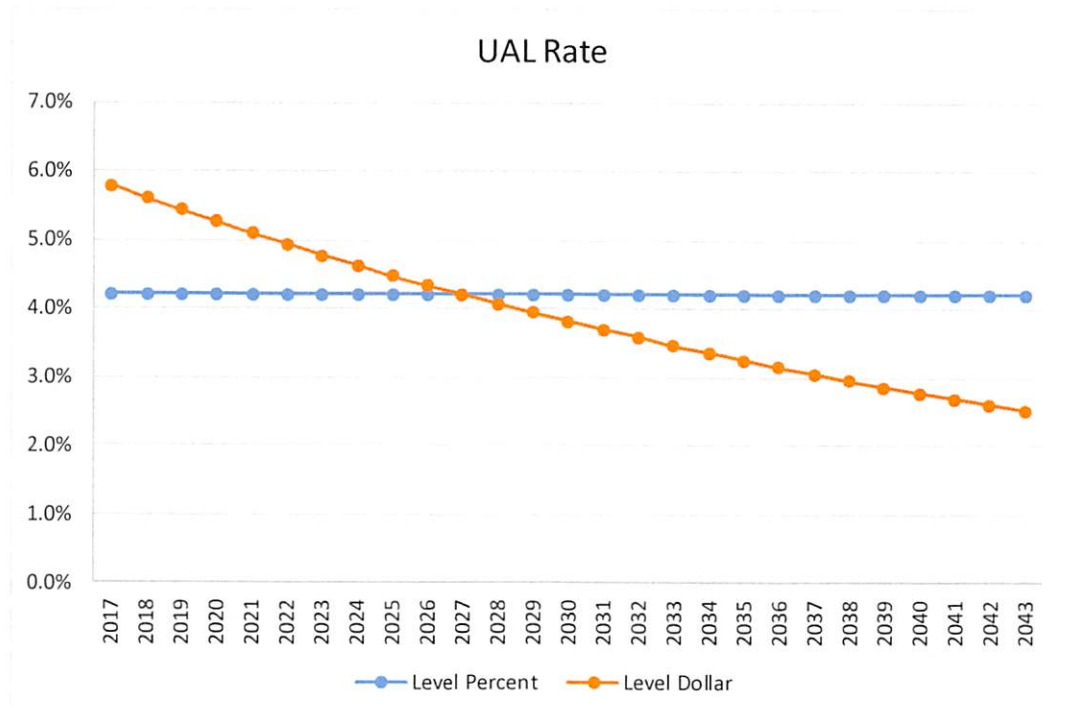
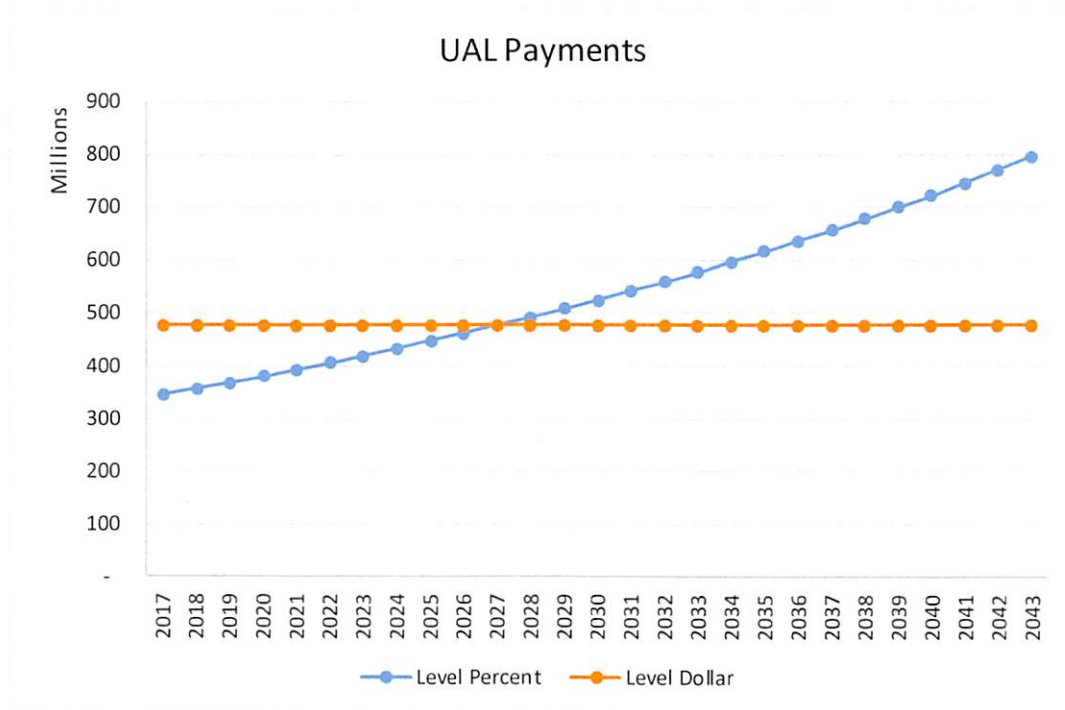
Amortization Payment: The level dollar amortization method is similar to the method in which a home owner pays off a mortgage. The liability, once calculated, is financed by a constant fixed dollar amount, based on the amortization period until the liability is extinguished. This results in the liability 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 covered 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 each year so that ultimately the annual payment far exceeds the level dollar payment. The expectation is that total payroll will increase as rapidly so that the amortization payments will remain constant, as a percentage of payroll.

As a comparison of the level dollar vs. level percentage amortization methods, we first show the IPERS “legacy” UAL base for Regular members which is currently being paid off over a 27-year period (because the closed 30-year period was established with the 2014 valuation). One graph shows the amortization as an amount, while the other shows the amortization as a rate of pay. For these graphs, it has been assumed that all assumptions are met in the future and no change in assumptions occurs.



SECTION 3 – ACTUARIAL METHODS





SECTION 3 – ACTUARIAL METHODS

Use of the level percentage of payroll amortization method 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 since contributions to fund the Plan are made as a percent of payroll and normal cost is developed as a level percent of payroll. Note that under the level dollar amortization method, the UAL contribution rate, as a percent of payroll, actually declines over time as shown in the following graph due to increasing payroll. Sample years are shown in the following table:

Year	Level Dollar Payment	Level Percent Payment	Level Dollar Rate	Level Percent Rate
2017	476,150,301	346,133,491	5.80%	4.22%
2022	476,150,301	406,156,983	4.94%	4.22%
2027	476,150,301	476,589,233	4.21%	4.22%
2032	476,150,301	559,235,237	3.59%	4.22%
2037	476,150,301	656,213,000	3.06%	4.22%
2042	476,150,301	770,007,812	2.61%	4.22%

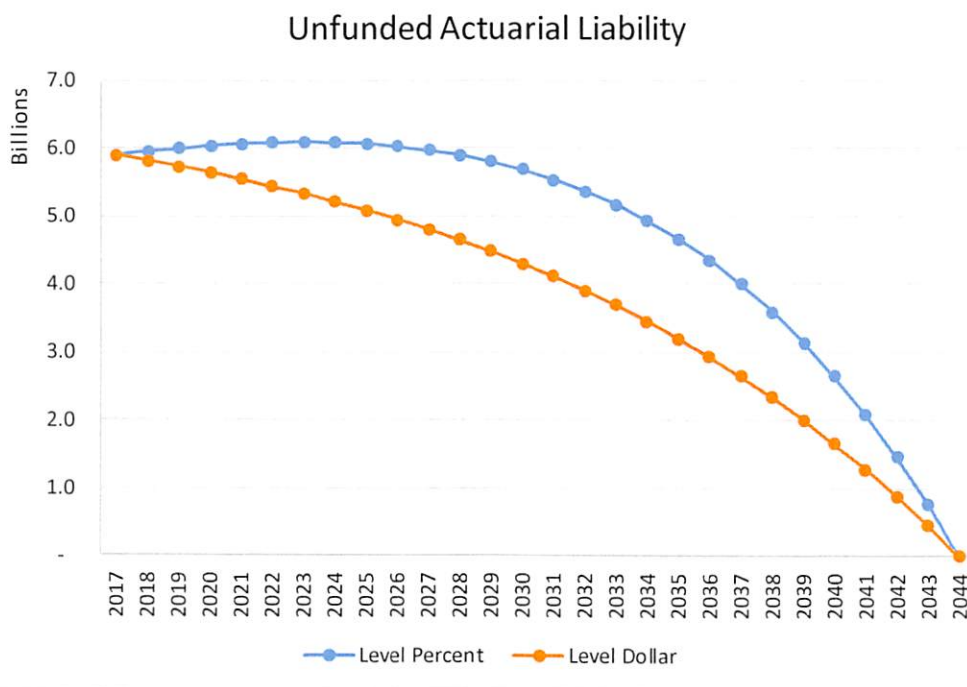
As might be expected, because the level dollar approach has higher initial payments, the UAL is paid off more rapidly initially. In fact, under the level percentage method, the initial contributions may not equal the interest of the UAL and result in the UAL growing for a few years. This is referred to as “negative amortization”.

Negative amortization is common among public retirement systems, usually the result of the system’s funding policy. For most public plans, contribution requirements are expressed as a percent of covered payroll as a means to provide budget stability for employers. Because the expectation is that covered payroll will increase over time, the dollar amounts of contributions (including UAL contributions) is also expected to increase. This means that contributions to pay off the UAL 20 to 30 years from now will be far greater than they are today, even if the contribution rate remains the same. By virtue of developing a payment pattern that is level, as a percent of payroll, the dollar amounts of payments increase significantly over time. As a result, most of the reduction in the dollar amount of the UAL occurs in the last 10 years of the amortization period. When the level percentage of payroll method is used with a long period, such as 30 years, the payments in the early part of the period are less than the interest on the UAL. As a result, the dollar amount of the UAL increases (negative amortization) even if all assumptions are met and the full actuarial contribution is made.

The following graph compares the outstanding balance of the UAL under the level dollar and level percent of payroll methods:



SECTION 3 – ACTUARIAL METHODS



Because IPERS has a relatively low payroll growth assumption and has 27 years remaining, the impact of negative amortization is that over the next 11 years, the base grows slightly before returning to its present level. The new bases established under the IPERS' Contribution Rate Funding Policy (discussed below) are amortized over a closed 20-year period and do not have any negative amortization under the current assumptions. Eventually, the legacy base will be shorter and any negative amortization will be eliminated.

Amortization Bases:

The UAL can either be amortized as one single amount or as components or "layers", each with a separate amortization base, payment and period. If the UAL is amortized as one amount, the UAL is recalculated each year in the valuation and the amortization payment is the total UAL divided by an amortization factor for the applicable amortization period.

If separate amortization bases are maintained, the UAL is composed of multiple amortization bases, each with their own payment and remaining period. In each valuation, the unexpected change in the UAL is established as a new amortization base over the appropriate amortization period beginning on the valuation date. The UAL is then the sum of all of the outstanding amortization bases on the valuation date and the UAL payment is the sum of all of the amortization payments on the existing amortization bases. This approach provides transparency in that the current UAL is paid off over a fixed period of time and the remaining components of the UAL are clearly identified. Adjustments to the UAL in future years are also separately identified in each future year. One downside of this approach is that it can create some discontinuities in contribution rates when UAL layers/components are fully paid off. This may not occur, and if it does, it would be far in the future, with adequate time to make adjustments.



SECTION 3 – ACTUARIAL METHODS

IPERS Current Actuarial Amortization Method:

While updating the Contribution Rate Funding Policy, the Board also reviewed the Actuarial Amortization Method and certain changes were made. As a result, the existing UAL on June 30, 2014 was amortized over a closed 30-year period. For each valuation subsequent to June 30, 2014, the total annual net experience gains and losses for each membership group are amortized, as a level percentage of payroll, over a new, closed 20-year period. Changes in the actuarial liability from assumption changes or benefit provision changes are amortized over a new, closed period, with the length of the period determined by the Board, based on discussions with the actuary. Please see Appendix B for a copy of the Actuarial Amortization Method document. **We believe the current actuarial amortization method meets the goals and objectives of the Contribution Rate Funding Policy and, therefore, we recommend it be retained.**



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SECTION 4 – INTRODUCTION TO DEMOGRAPHIC ASSUMPTIONS

Actuarial Standard of Practice No. 35 (ASOP 35), Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations, provides guidance to actuaries giving advice on the selection of demographic assumptions for defined benefit plans, such as IPERS.

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 (July 1, 2013, through June 30, 2017) with what was expected to happen based on the actuarial assumptions.

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.

Four years is a relatively short observation period, so we have considered experience in the previous observation period (2009 – 2013) when appropriate and practical. Where A/E ratios from prior experience studies are shown, the expected decrements are based on the current assumptions so the results are directly comparable to those found in the current study.

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. Professional judgment is required to set assumptions for future experience from past trends and current evidence, including a determination of the amount of weight to assign to the most recent experience.

In addition to the traditional “count” basis, we also analyzed the experience using a “liability-weighted” approach. The member’s “liability” in the System is generally determined by the benefit amount and age of the member. Some assumptions already reflect differences by age directly. The other factor, benefit amount, is impacted by a member’s salary and service. These two factors are used to estimate the member’s relative benefit level and to weight experience (the exposure and actual occurrences are scaled by salary and service). This approach is particularly insightful when analyzing experience from a non-homogenous group. With separate assumptions for each subgroup in the Regular membership this is less of an issue. However, for a large group like the School group where differences between certificated and non-certificated members may be significant, this approach provides additional insight. While we reviewed experience on both a count and liability basis for most assumptions, when there was a significant difference between the two, we generally assigned more credibility to the liability-weighted experience and made recommendations on that basis.

Prior experience studies have included analysis of experience by subgroup for the Regular membership (State, School, Other). In general, that analysis has indicated differences in behavior by members employed by different types of public employers. We believe the use of separate assumptions for each subgroup provides a better estimate of the total System liability. The Investment Board adopted this approach, as recommended by the actuary in the 2005-2009 experience study and we recommend it be retained.



SECTION 4 – INTRODUCTION TO DEMOGRAPHIC ASSUMPTIONS

When changes in assumptions are proposed, 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 general wage growth, are treated as a demographic assumption. However, the method of investigation needed for salaries is different from that used for the decrements. A description of the procedure followed is included in that section of this report.

It takes a fair amount of data to perform a credible study of demographic assumptions. Because the benefit provisions are similar and membership of the Special Service groups is relatively small, experience for the two Special Service groups has been aggregated when deemed appropriate. In addition, some assumptions have been selected based more on our professional judgment of reasonable future outcomes than actual experience.

The demographic assumptions studied for both Regular and Special Service groups include:

- Mortality
- Retirement
- Disability
- Termination of Employment
- Probability of Electing a Vested Benefit
- Merit Salary Scale



SECTION 5 – MORTALITY

Background: One of the most important demographic assumptions is mortality because this assumption predicts when retirement payments will stop (the duration of benefit payments). It also predicts when pre-retirement death benefits will be paid. The life expectancies of current and future retirees are predicated on the assumed rates of mortality at each age. It is well known that rates of mortality declined throughout the 20th century and continue to decline, which means people are, on average, living longer. Furthermore, the experience of large, public retirement systems that cover School employees indicate that the School group continues to exhibit better mortality than the average working population.

Actuarial Standards of Practice call for the actuary to make an assumption regarding future mortality improvement. There are two basic ways this can be done. Traditionally, mortality rates were developed with a “margin” for future improvement, meaning that the probabilities of death were lower than what had been observed in recent data. With the increase of available computational power, a new method has become increasingly popular. This method, called the “generational” mortality method, actually improves the mortality table by a small amount for each calendar year in the future. This is a more direct method than providing a margin, and is the approach that IPERS has been using for many years.

Because of potential differences in mortality, we studied healthy retirees, disabled retirees and active members separately. Because different assumptions apply to members in each of the three subgroups (State, School and Other), separate analysis was needed for each group.

Regular Membership

Healthy Retirees: The valuation currently uses separate mortality assumptions for male and female members in each group, i.e. State, School, and Other. The current mortality assumptions for healthy retirees are based on the RP-2000 Generational Table for Healthy Annuitants (RP-2000 Table), with some adjustments:

State - Male	No age adjustment
State - Female	1 Year Set Back with 5% increase above age 75
School - Male	1 Year Set Back with rates reduced 5% below age 75
School - Female	3 Year Set Back with 10% decrease before age 75 and 10% increase above age 74
Other – Male	No age adjustment
Other - Female	2 Year Set Back with 5% increase above age 75

The terms set forward and set back are used to indicate that mortality rates are adjusted by using rates for an older age (set forward) or a younger age (set back). Thus, a one year set forward indicates that a 65 year old is assumed to have the mortality rate associated with a 66 year old in the mortality table.



SECTION 5 – MORTALITY

If the A/E ratio is greater than 100% the assumptions have predicted fewer deaths than actually occurred, and with an A/E ratio less than 100% the assumptions have predicted more deaths than have occurred. Because future improvements in mortality are explicitly reflected in the mortality rates applied in future years, there is no need for a margin (A/E well above 100%). Instead we are looking for an A/E ratio around 100%, which is appropriate when future mortality improvements are reflected with a generational mortality projection.

Mortality changes evolve gradually over time. In addition, larger data sets provide more reliable results; particularly given the data is split into the various subgroups for the Regular membership and then broken down by each age. Therefore, the data in the current study period (June 30, 2013 through June 30, 2017) was aggregated with the data in the prior study (July 1, 2009 through June 30, 2013) to evaluate the overall mortality experience of the System.

The basic RP-2000 Table has been used in IPERS valuations since 2002, although various adjustments have applied over the years. 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, which is a more sophisticated approach to incorporating expected mortality improvements in the future. The RP-2000 Table uses a projection scale (Scale AA) to model improvements in mortality in each future year. Since the actual experience in our analysis included deaths in the period July 1, 2009 to June 30, 2017, we projected mortality rates to the year of the exposure for purposes of developing the expected number of deaths at each age. The results of the study for the key ages of 55 to 90 are summarized in the following chart:

Postretirement Mortality for Healthy Lives	2009-2017 Observations		Current Assumption		Proposed
	Exposure	Actual Deaths	Expected Deaths	A/E Ratio	A/E Ratio
Males					
State	43,134	1,356	1,451	93%	98%
School	119,043	3,172	3,501	91%	99%
Other	<u>90,073</u>	<u>3,187</u>	<u>3,177</u>	100%	98%
Total	252,250	7,724	8,161	95%	98%
Females					
State	53,161	1,266	1,298	98%	99%
School	265,962	4,883	5,350	91%	94%
Other	<u>136,140</u>	<u>3,085</u>	<u>3,244</u>	95%	96%
Total	455,263	9,234	9,914	93%	95%

With the exception of Other males and State females, actual deaths were at least 5% lower than expected during the study period. General trends throughout the nation, including in studies conducted by the Society of Actuaries, have indicated that mortality has been improving at a rate that is slightly faster than the rate anticipated by the mortality tables currently used in the valuation. Thus, A/E ratios that are generally less than 100% are not unexpected.

In the 2009-2013 Experience Study, we mentioned that the Society of Actuaries was developing an updated mortality table for use by retirement plans and its release was expected in the near future. While public plan data was excluded from the development of the RP-2014 Tables (it was primarily developed for



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corporate retirement plans), we nonetheless have found that the table, with adjustments in some cases, can be useful for public retirement plans as well. This family of tables was also published with a mortality improvement scale (MP-2014) to anticipated future improvements in mortality. Each year since 2014, the mortality improvement scale has been updated to reflect the most recent observed experience. We have used the most recent scale, MP-2017 for our analysis and found it to be reasonable. We do not generally recommend that systems update the projection scale each year, so we recommend its use through the next experience study, at which time its continued use will be evaluated.

As computation capability increases, we are able to perform additional analysis of observed data. We have started with this study to begin to analyze the retire mortality data on a liability-weighted basis by using the benefit amount in place of simply a count of the number of lives. Because we did not have this analysis from the prior study, we were not able to fully compare it with the eight years of count-based data we utilized. Without being able to validate this approach, we do not yet wish to rely on it for our recommended assumption. However, our initial observations are that there may be a correlation between benefit amount and mortality experience. During the next four years, we will monitor the annual valuation experience to see if this same pattern is observed. If it is, we may introduce this additional analysis in the study in 2021 and start to rely on those findings in setting our mortality assumption.

We recommend changing the mortality assumptions for males in the Regular membership as follows:

State - Male	RP-2014 Healthy Annuitant, Generational using MP-2017 with no age adjustments and 8.5% increase in rates after age 75
State - Female	RP-2014 Healthy Annuitant, Generational using MP-2017 with no adjustments
School Male	RP-2014 Healthy Annuitant, Generational using MP-2017 with two-year age setback, 10% reduction in rates before age 75, and 20% increase in rates after age 75
School Female	RP-2014 Healthy Annuitant, Generational using MP-2017 with two-year age setback, 25% reduction in rates before age 75, and 10% increase in rates after age 75
Other - Male	RP-2014 Healthy Annuitant, Generational using MP-2017 with one-year age set forward, 10% reduction in rates before age 75, and 8% increase in rates after age 75
Other - Female	RP-2014 Healthy Annuitant, Generational using MP-2017 with one-year age setback, 10% reduction in rates before age 75, and 5% increase in rates after age 75

The resulting A/E ratios for male members using the proposed assumptions are 97% for State males, 98% for State females, 98% for School males, 94% for School females, 98% for Other males, and 96% for Other females.

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



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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 of the same gender.

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 and the relatively small number of disabled members. In addition, the smaller number of exposure results in more volatility. The current assumption is the RP-2000 Disabled Mortality Table, Generational with a one-year age setback for males and a three-year age set forward for females. Based on this assumption, the A/E ratios for Regular members males and females in the current study were 84% and 70%, respectively. We prefer to use the same family of mortality tables for all assumptions and the A/E ratios indicate the current assumption is not a good fit. Therefore, we recommend changing to the RP-2014 Disabled Mortality Table, Generational with a three-year set forward for males and a five-year set forward for females. The A/E ratios, using the recommended assumptions, are 103% and 108% for males and females respectively.

Active Members: This assumption predicts eligibility for death benefits for active members prior to retirement, rather than the expected lifetime for pension payments. The observed 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 both occur before June 30. For these reasons, it is likely active death rates are actually higher than the experience data might indicate. Because of these challenges and the very limited number of observed deaths, we frequently find it best to simply use the active member mortality table that corresponds with the retiree mortality table, with some age adjustments to help improve the observed A/E ratio.

The observed A/E ratios, on a count basis, for both the current and proposed assumptions for active members ages 25 to 64 are shown in the following chart.

Active Members	2013-2017 Observations		Current A/E Ratio	Proposed A/E Ratio
	Exposure	Actual		
Male				
State	28,532	39	43	91%
School	71,970	91	96	95
Other	<u>79,291</u>	<u>127</u>	<u>150</u>	85
Total	179,793	257	289	89%
Female				
State	41,832	38	32	119%
School	234,125	120	155	77
Other	<u>122,331</u>	<u>97</u>	<u>86</u>	113
Total	398,288	255	273	93%

Given the small probability of death while members are active and the smaller exposure that results from segmenting the Regular membership into six groups, some volatility in results is to be expected. **We recommend using the RP-2014 Employees Mortality Table, Generational using MP-2017, with an**



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eight-year age setback for School females, a three-year age setback for Other males, and a four-year age setback for all other groups.

Special Service Groups

For members who are in the Special Service groups, we studied healthy retired and active mortality experience. There were an insufficient number of female members to produce statistically reliable information so our analysis was performed for male members only. While there is more data for males, the number of members is still much smaller than the Regular membership and, therefore, less credibility is assigned to the results.

The current assumption for this group for healthy retirees is the RP-2000 Healthy Annuitant Table with no adjustment. For actives, the RP-2000 Employee Table without adjustment is used. It is assumed that 5% of pre-retirement deaths are service related.

The results of this study are shown below.

Deaths	2009-2017 Observations		
	Actual	Expected	A/E Ratio
Current Assumption			
Healthy Retirees	85	76	112%
Actives (2013-2017 only)	28	33	85%

There is considerably less data to rely on for the Special Service groups than the other groups. As stated earlier, we prefer to use the same family of mortality tables for all groups in the IPERS valuation. Therefore, we recommend moving to the RP-2014 Healthy Annuitant Mortality Table, Generational with a one-year set forward for males with rates increased by 10% over age 75. The resulting A/E ratio for retired members who are ages 55 to 90 is 101%. For active members, we recommend using the RP-2014 Employees Mortality Table, Generational with a three-year age setback. The resulting A/E ratio is 104%. Female data is very limited, so we recommend using the same assumption as is used for State females (no adjustment for retirees, a four-year age setback for active employees) as the best estimate.

We recommend that the mortality assumptions described here and detailed in Appendix D be adopted.



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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 and then commence benefits at a later date. That experience is studied separately later in this section.

Regular Membership

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 our evaluation of the retirement experience.

The summary results of our experience study, on both a count basis and liability-weighted basis, are shown below:

Retirements	Exposure	Actual Retirements	Expected Retirements	A/E Ratio		Proposed A/E Ratio Weighted
				Count	Weighted	
<i>State</i>						
Early	15,308	778	1,115	70%	94%	94%
Select	2,273	512	548	93%	101%	101%
Ultimate	<u>6,463</u>	<u>1,400</u>	<u>1,607</u>	87%	88%	88%
Total	24,044	2,690	3,270	82%	93%	93%
<i>School</i>						
Early	57,700	2,677	6,226	43%	65%	79%
Select	6,943	1,608	2,235	72%	83%	92%
Ultimate	<u>19,977</u>	<u>4,781</u>	<u>6,529</u>	73%	93%	96%
Total	84,620	9,066	15,020	60%	73%	84%
<i>Other</i>						
Early	46,214	1,749	3,741	47%	67%	79%
Select	5,100	974	1,451	67%	73%	83%
Ultimate	<u>16,500</u>	<u>3,318</u>	<u>4,659</u>	71%	86%	94%
Total	67,814	6,041	9,851	61%	72%	83%

Traditional actuarial analysis measures the number of actual retirements compared to the expected number of retirements (A/E ratio on count). However, as we have observed in the past, experience gains on retirements may not appear despite the fact that a smaller than expected number of members retired if the demographic composition of the group retiring was significantly different from that of the total eligible group. In general, if the average salary and service for those retiring was higher than the average salary and service for the total group eligible to retire the expected gains will not materialize. The liability-weighted analysis (far right column in the table above) captures these differences in the experience study



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results and enables us to develop assumptions that are based on the liability experience rather than experience using the counts. As is evident in the table above, the A/E ratios on a liability-weighted basis are generally greater than those on a count basis indicating that those electing retirement have, on average, more pay and/or service than those who do not.

In comparing these results with those of the prior study, it is important to remember that there was a State Early Retirement Incentive Program (SERIP) offered to state employees in 2010. In the prior study, we noted that the SERIP increased retirement rates when it was offered, and potentially decreased retirement rates for a period of time thereafter, potentially including the first year or two of this study. Consequently, very low credibility was assigned to the experience in the last study and it is possible the SERIP had some influence even on the experience in the current study. Given that fact, the overall A/E ratio for retirement of 93% is reasonable and we recommend leaving the State retirement rates unchanged for now.

For both the School and Other groups, the A/E ratios on a weighted basis are noticeably below 100% (83% for School and 72% for Other). The pattern of lower retirement rates in the IPERS data is consistent with the experience observed in many of our other systems. Following our philosophical approach of changing rates cautiously, we have adjusted the current retirement rates to partially reflect this pattern of delayed retirement. If the trend continues to exist in the next study, further refinements to this assumption will likely be made.

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 four years of observation period and found that the average retirement age was 62. **We recommend the current assumption of age 62 be retained for inactive vested members.**

Special Service Groups

The eligibility requirement for retirement benefits is different for the two Special Service groups. Sheriffs and Deputies may retire at age 50 with 22 years of service, effective July 1, 2008. Members in the Protection Occupation group are eligible to retire at age 55. Therefore, a different retirement assumption is used in valuing the liabilities for these two groups and their experience must be analyzed separately as well.

The results of our investigation of retirement experience for ages 50 (Sheriffs and Deputies) or 55 (Protection Occupation) to 65 during this study period are shown below.

	Exposure	Actual Retirements	Expected Retirements	A/E Ratio	
				Count	Weighted
<i>Sheriffs and Deputies</i>	1,090	154	229	67%	70%
<i>Protection Occupation</i>	4,265	564	754	75%	103%

The A/E ratios for the Sheriffs and Deputies group has been well under 100% in the past two studies, and retirement rates have been adjusted downward, particularly at the younger ages. We believe it is appropriate



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to continue decreasing rates at the younger ages as more data becomes available, but we also want to be cautious and not decrease the rates too much. Based on the recommended retirement rates, the A/E ratio increases to 81% on a weighted basis.

The Protection Occupation group has an A/E ratio on a weighted basis near 100%, normally suggesting little reason to change. However, there are some ages where the rates appear to be too high and other ages where they appear to be too low, so we suggest some minor adjustments to improve the overall fit. We note that this group increased in size substantially during the early 2000's as new groups of Regular members moved to the Protection Occupation group. Initially, many of the older members in the group would have had significant portions of service credited as IPERS Regular membership service, potentially affecting the amount of the benefit payable before age 62. As the situation changes and more members have a greater proportion of service as a Protection Occupation member, we may find that retirement patterns continue to evolve. We are recommending minor adjustments to this assumption with a resulting A/E ratio of 100%.

We recommend that the retirement assumptions described here and detailed in Appendix D be adopted.



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SECTION 7 – DISABILITY

Regular Membership

The current disability assumption for the Regular membership utilizes separate disability rates for males and females in each subgroup (State, School and Other). 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 generally result in a lower actuarial liability than expected.

Disabilities	Male			Female		
	Actual	Expected	A/E Ratio	Actual	Expected	A/E Ratio
State	28	48	58%	27	76	36%
School	62	78	79%	118	240	49%
Other	89	211	42%	66	166	40%
Total	179	337	53%	211	482	44%

Overall, there were substantially fewer disabilities in all three groups than expected as demonstrated by A/E ratios well below 100%. The results in this study are similar to those in the 2009-2013 study which showed A/E ratios in the mid-50s, so we believe it is reasonable to reduce the probability of disability for all of the groups. Depending on the actual experience in both the current and prior studies, disability rates were reduced from 15% to 25%. The revised A/E ratios are:

State-males: 74%	State females: 44%
School males: 90%	School females: 61%
Other males: 53%	Other females: 49%.

It is likely that further reductions will be made in the next study if the experience of the last eight years continues.

Special Service Membership

There are two disability assumptions used in the valuation: (1) ordinary disability and (2) in-service disability. For purposes of the experience study, all disability experience was combined and the expected number of disabilities was the sum of the accidental plus ordinary disability rates times the exposure at each age.

During the current study period, there were 44 disabilities compared to 61 expected, resulting in an A/E ratio of 72%. 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 Regular membership) actual experience, although considered, cannot be assigned full credibility. The experience in this study period is consistent with the disability rates observed in the last study. The current study indicates the A/E ratio is still well below 100%, but given the small probabilities of disability some volatility in the results is to be expected. We prefer to maintain some conservatism in this assumption because adverse experience with respect to this assumption can be significant from a liability standpoint. However, we are recommending a small change to the disability rates, resulting in an A/E ratio of 85%.



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Of the 44 disabilities observed, 22 were in-service. Currently, the assumption is that two-thirds of the total disabilities are in-service. Because of the limited number of observations, the A/E ratio is reasonable and we recommend that the current assumption be retained. This approach also provides a slight degree of conservatism since the in-service disability benefits are greater than the ordinary disability benefits.

We recommend that the disability assumptions described here and detailed in Appendix D be adopted.



SECTION 8 – TERMINATION OF EMPLOYMENT

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

Regular Membership

Generally speaking, about 45% of all terminations occur within the first two years of membership and over 80% occur in the first six years of membership.

	Withdrawal by Membership Year			
	Less Than 2 Years	2 nd – 6 th Year	7 th & Higher Year	All Years
Male	4,483	2,746	1,424	8,653
Female	9,973	8,057	4,568	22,598
Total	14,456	10,803	5,992	31,251

The number of terminations includes all members reported to have terminated employment whether voluntary or involuntary. Some of these members subsequently receive refunds of contributions; some return to active membership and some leave their contributions with the System until retirement. This is addressed by the use of explicit assumptions about what happens to the members after they terminate employment. (See Section 9 of this report.)

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 so we tend to focus on the liability weighted results. The specific results are summarized in the tables below:

Group	Male				Female			
	Actual	Expected	A/E Ratio		Actual	Expected	A/E Ratio	
			Count	Weighted			Count	Weighted
State	678	989	69%	65%	1,015	1,485	68%	76%
School	3,270	3,422	96%	57%	11,762	11,603	101%	69%
Other	4,705	6,148	77%	53%	9,819	11,624	84%	67%

In the prior experience study, we noted that termination rates were lower than expected, but suspected that the residual effects of the Great Recession were exerting some atypical pressure on member behavior. We again have observed termination rates that are lower than expected, suggesting that there may indeed be a fundamental shift in behavior. We are, however, unsure as to what may be causing this shift so we want to proceed cautiously in making adjustments.



SECTION 8 – TERMINATION OF EMPLOYMENT

The revised A/E ratios, based on the recommended assumptions and liability-weighted results, are as follows:

	<u>Male</u>		<u>Female</u>	
	Current	Proposed	Current	Proposed
State	65%	72%	76%	86%
School	57%	61%	69%	73%
Other	53%	59%	67%	77%

The proposed changes we are recommending are perhaps not as significant as the data might suggest could be made, but we believe that being cautious in changing this assumption will provide stability for IPERS’ funding process and avoid having to adjust for overcorrection in the future. We will be watching the actual termination experience closely during the valuations between now and the next experience study, so that we can be ready to propose further changes in the next study if warranted.

Special Service Groups

Due to the small number of female members in the two Special Service groups, there is insufficient data upon which to develop separate assumptions by gender. An age-based assumption is used for the termination assumption for all Special Service members – both the Sheriffs and Deputies and Protection Occupation groups. The results of our study, for ages 25 to 54, are summarized below:

	Exposure	Actual	Expected	A/E Ratio	
				Count	Weighted
Total	26,921	1,177	812	145%	63%

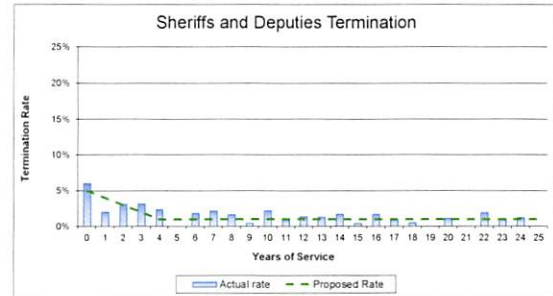
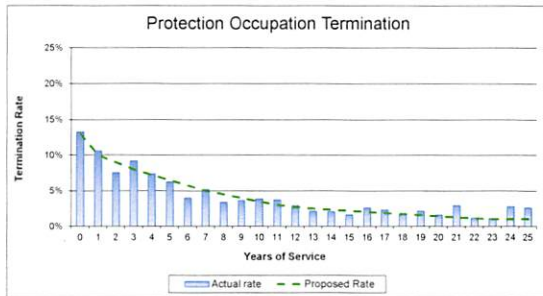
A closer examination of the data indicated that the termination patterns of the Sheriffs and Deputies group was quite different from the Protection Occupation group. While our general preference is to combine these two groups to increase the credibility of the data, the very distinct termination patterns observed made it clear that separate assumptions are needed.

The termination rates for the Protection Occupation group have a strong correlation to years of service so we are recommending the assumption change from age-based to duration-based. As noted in the discussion on retirement rates, there are some demographic features of the Protection Occupation group that may lead to a greater level of adjustment for this group in future years. Because the recommended assumption is based solely on the experience in the current period, it closely mirrors that experience. Additional refinement of the assumption will be needed in future years as more data becomes available. The A/E ratio for the Protection Occupation group, using the recommended assumption, is 100% on a count basis and 71% on a liability-weighted basis.

We also recommend the use of a duration-based assumption for the Sheriffs and Deputies group. The A/E ratio on that basis is 112% on a count basis and 88% on a liability-weighted basis. Graphs for both of these are shown below:



SECTION 8 – TERMINATION OF EMPLOYMENT



We recommend that the termination of employment assumptions described here and detailed in Appendix D be adopted.



SECTION 8 – TERMINATION OF EMPLOYMENT

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SECTION 9 – PROBABILITY OF ELECTING A DEFERRED VESTED BENEFIT

Some members who terminate active employment elect to receive a distribution of their member account balance and the appropriate share 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 percentage of active vested members who terminate also elect a refund, thus forfeiting a vested right to their employer-provided monthly benefit. The remaining members are thus assumed to elect to receive a deferred vested benefit at retirement.

Regular Membership

The current assumption is a service-based assumption which varies by subgroup. The following table shows the number of vested members who terminated and elected to leave their funds with the System and receive a deferred vested benefit, along with the expected count.

Electing a Vested Benefit	2013-17 Observations			A/E Ratio		A/E Ratio
	Exposure	Actual	Expected	Count	Weighted	Proposed Weighted
Male						
State	422	281	302	93%	95%	98%
School	1,319	1,000	1,051	95%	93%	95%
Other	<u>1,648</u>	<u>1,192</u>	<u>1,063</u>	112%	111%	105%
Total	3,389	2,473	2,416	102%	98%	100%
Female						
State	755	454	513	88%	90%	95%
School	5,527	4,396	4,499	98%	101%	101%
Other	<u>3,973</u>	<u>2,926</u>	<u>2,892</u>	101%	99%	99%
Total	10,255	7,776	7,904	98%	95%	100%

The experience in this study period was very consistent with that in the prior experience study. Because of the consistency of results in both studies, we are recommending some minor adjustments to the State males, State females, School males, and Other males.

Special Service Groups

Because the size of the group is small and termination rates are relatively low, there is little credible data upon which to base this assumption. The A/E ratio, based on the current assumption, was 100% on a count basis and 80% on a liability-weighted basis. For the second study in a row, these A/E ratios are slightly higher than those observed in the prior study. Given the small amount of data, we believe the current assumption remains reasonable and we recommend it be retained.

We recommend that the assumptions regarding the probability of electing a deferred vested benefit described here and detailed in Appendix D be adopted.



SECTION 9 – PROBABILITY OF ELECTING A DEFERRED VESTED BENEFIT

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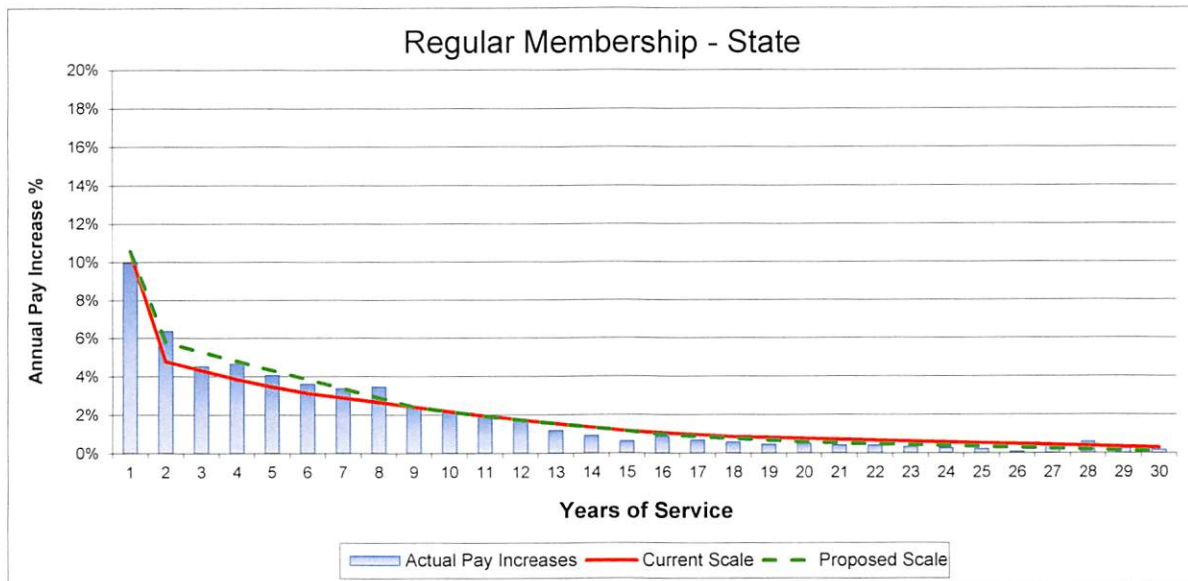


SECTION 10 – MERIT SALARY SCALE

The assumed rates of salary increase provide the expected growth in future salaries both for approximating the future benefits to be provided and the future amounts expected to be contributed to the System through contributions of members and employers. Therefore, this assumption is very material to the valuation results. The actuarial standards of practice recommend a “building block” approach to developing this assumption. Under this approach, the assumption is composed of an assumption for general wage growth (the “across the board” increases granted to active members) and a merit scale reflecting salary increases due to promotion or longevity, based on years of service.

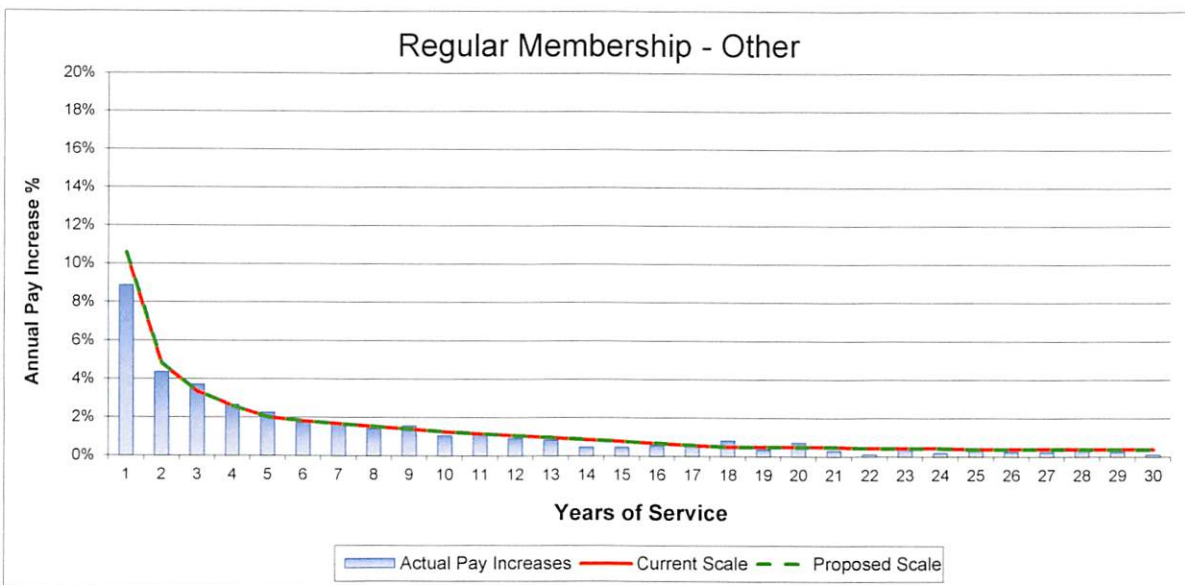
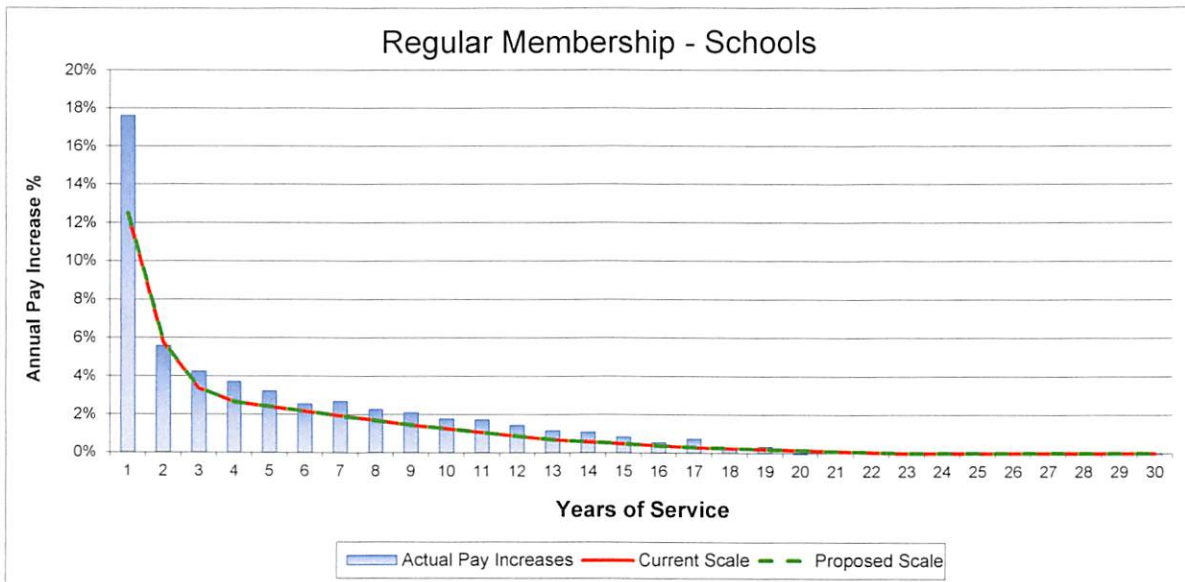
In the 2017 Economic Assumptions Study, we recommended the general wage growth assumption be set at 3.25% (2.60% price inflation and 0.65% real wage inflation). During the study period, however, the assumption for general wage inflation was 4.00%.

Although future salary increases are the result of two components, it is difficult, if not impossible, 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 apparent percentage attributable to general wage growth to try and isolate the merit scale. The general wage growth for the period was determined by assuming that those members with more than 30 years of service have little, if any, merit scale and attributing the salary increase they experienced to increases in the general wage level. This results in comparing the shape of the observed salary increases to the shape of the merit scale to assess the quality of fit. The following graphs demonstrate this analysis:



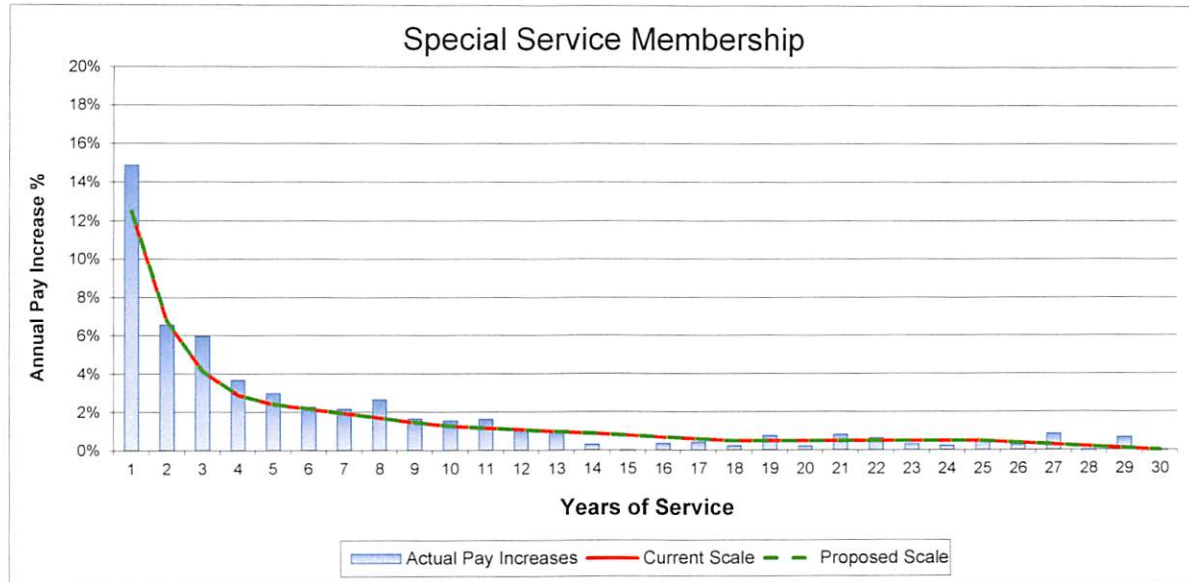


SECTION 10 – MERIT SALARY SCALE





SECTION 10 – MERIT SALARY SCALE



Regular Membership

We compared individual salary increases for all members who were active in any two consecutive years (e.g. 2013 and 2014, 2014 and 2015, etc.). The results for each of the Regular membership groups over the four years studied are shown in the following table:

Average Increase in Salary 2013-2017			
Fiscal Year End	State	School	Other
2014	3.51%	5.81%	4.70%
2015	2.59%	6.11%	4.68%
2016	4.29%	5.71%	4.96%
2017	5.10%	5.89%	5.96%
Total Actual	3.86%	5.88%	5.10%
Expected	6.19%	5.75%	6.31%
Expected - Actual	2.33%	(0.13%)	1.21%

During this period, there were significant differences in salary increases that varied by employer type. The Teacher Leadership Compensation program which began in 2013 is likely a significant factor in the salary increases in the School group being higher than expected. This adjustment in pay for teachers essentially limits the credibility of the actual experience in this study. In addition, actual price and wage inflation in the US economy has been low through the study period, so the observed experience for the State and Other groups is not unexpected.



SECTION 10 – MERIT SALARY SCALE

When we adjusted for these differences, we found that the general shape of the merit salary increase assumption fit well for the School and Other groups. However, the data suggests that State members have received slightly greater than expected merit increases early in their careers (roughly the first 10 years) and slightly lower merit increases later in their careers (after around 20 years). We recommend adjustments be made to the current merit salary assumption for the State to better fit the observed experience.

Special Service Members

Separate analysis was done for the two groups of Special Service members. Actual salary increases were lower than expected (4.8% vs. 6.1% for the entire period) as shown in the following table:

Fiscal Year	Salary Increases	
	Actual	Expected
2014	4.10%	6.01%
2015	4.03%	6.04%
2016	5.17%	6.20%
2017	5.85%	6.12%
Total	4.81%	6.09%

The general wage increase for these groups was, like the Regular membership, less than assumed, which is not unexpected given the low price and wage inflation during the study period. In examining the shape of expected merit increases compared with the observed increases and considering the limited amount of data, we do not see any significant differences that would cause us to recommend a change at this time.

We have come through a period where salary increases for most public employees have been quite low. This is unlikely to remain the long term trend so we prefer to maintain the current assumption.

The actual salary increases observed are lower at all durations due to lower price inflation and corresponding general wage increases in this period. However, the general shape of the merit salary increase assumption is consistent with actual salary increases observed in the study period and we recommend the current assumption be retained.

We recommend that the salary increase assumptions described here and detailed in Appendix D be adopted.



APPENDICES



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APPENDIX A

IPERS CONTRIBUTION RATE FUNDING POLICY



APPENDIX A

IPERS Contribution Rate Funding Policy

Background:

IPERS is charged with setting a “Required Contribution Rate” for each membership category within IPERS that will discharge its liabilities. Iowa Code §97B.11(3)(d) provides the basic framework for implementing this charge by stating:

The Required Contribution Rate that is set by the system for a membership category shall be the contribution rate the system actuarially determines, based upon the most recent actuarial valuation of the system and using the actuarial methods, assumptions, and funding policy approved by the investment board, is the rate required by the system to discharge its liabilities as a percentage of the covered wages of members in that membership category. However, the Required Contribution Rate set by the system for members in regular service for a fiscal year shall not vary by more than one percentage point from the Required Contribution Rate for the prior fiscal year.

Goal:

To establish policy and procedures in setting contribution rates that combined with investment income will fund the benefits specified in Chapter 97B of the Iowa Code.

To move towards fully funding the benefits (100% or greater funded ratio) in as expeditious manner as is reasonable within the guidelines acknowledged herein.

Procedure:

The Investment Board shall retain a consulting actuary to conduct an annual actuarial valuation of assets and liabilities. The consulting actuary shall use the entry age normal cost method and all other actuarial assumptions and methods approved by the Investment Board.

In the annual valuation process, the consulting actuary shall calculate an Actuarial Contribution Rate and a Required Contribution Rate pursuant to this policy. Each shall be calculated as a level percent of pay.

There is a one year lag between the completion of an annual actuarial valuation report and the fiscal year to which the contribution rates calculated therein are applied. Therefore, the Actuarial Contribution Rate and the Required Contribution Rate declared in the annual valuation process are applicable to the fiscal year immediately following the completion of the valuation report (for example the rates declared in the report presented to the Investment Board in December, 2013 are applicable to the rates for the fiscal year beginning July 1, 2014).

Actuarial Contribution Rate (ACR):

1. ACR is the combined employer and employee contribution rate that is the minimum rate necessary to fund the benefits using the actuarial assumptions and methods approved by the Investment Board.
2. A separate ACR shall be determined for each membership group within IPERS according to this policy.
3. The ACR shall consist of:



- a. Normal cost and an amortization payment (not less than zero) of any unfunded actuarial liability.
- b. Normal cost may only be offset by a negative amortization payment after a membership group has attained a funded ratio of 110 percent or greater for 3 consecutive years.

Required Contribution Rate:

1. The Required Contribution Rate is the combined employer and employee rate payable pursuant to this policy and Iowa Code §97B.11(3)(d).
2. The Required Contribution Rate shall be determined by comparing the ACR determined in the annual valuation process to the Required Contribution Rate of the previous year.
 - a. If the ACR is less than the previous Required Contribution Rate by fewer than 50 basis points, then the Required Contribution Rate shall remain unchanged from the previous year.
 - b. If the ACR is less than the previous Required Contribution Rate by 50 basis points or more, then the Required Contribution Rate shall be lowered by 50 basis points provided the funded ratio of the membership group is 95% or higher.
 - c. If the ACR is greater than the Required Contribution Rate of the previous year, then the Required Contribution Rate shall be:
 - i. Increased to be equal to ACR for Sheriffs and Deputies.
 - ii. Increased to be equal to ACR for Protection Occupation Members.
 - iii. Increased to be equal to ACR for Regular Members, or one percentage point greater than the prior year's Required Contribution Rate, whichever is smaller.

Policy Guidelines:

In adopting actuarial assumptions and methods to be used in setting contributions, the Investment Board shall strive to provide a balance among the following:

1. Stability in contributions (such as use of smoothing and amortization schedules that do not produce dramatic swings in the required contributions from year to year).
2. Disciplined funding approach (such as requiring full payment of normal cost and an amortization payment towards the unfunded actuarial liability and deferring decreases in contribution rates until strong funded ratios are attained).
3. Interperiod equity (such as shortening the amortization schedule when reasonable and amortization of retroactive benefit enhancements over a reasonable time period such as the average working lifetime for active members and the average life expectancy of retired members).
4. Support an affordable, sustainable plan (in consultation with the BAC review affordability of required contribution rates and/or the benefit provisions).
5. At a minimum, this policy will be reviewed in conjunction with the quadrennial experience study.



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APPENDIX B

ACTUARIAL AMORTIZATION METHOD



APPENDIX B

Actuarial Amortization Method

The portion of the actuarial present value of benefits allocated to the valuation year is called the normal cost. The portion of the actuarial present value of benefits not provided for by the actuarial present value of future normal costs is called the actuarial liability. Deducting the actuarial value of assets from the actuarial liability determines the unfunded actuarial liability (UAL). The one-year lag between the valuation date and the date the contribution rate is effective is reflected in calculating the corresponding amortization payment. The UAL is amortized according to the Actuarial Amortization Method adopted by the Investment Board and summarized below:

1. Amortization payments will be calculated as a level percentage of payroll.
2. For the actuarial valuation prepared as of June 30, 2013, the amortization period of the UAL shall be 30 year open for all membership groups.
3. For the actuarial valuation prepared as of June 30, 2014:
 - a. The UAL for each membership group shall be amortized over a 30-year closed period.
 - b. This will be designated as the initial UAL base for subsequent valuations and it will be amortized over the remaining years of the 30-year closed period set on June 30, 2014.
4. For each valuation subsequent to the June 30, 2014, annual net experience gains/losses for each membership group will be amortized over a new, closed 20 year period.
5. Subsequent plan amendments or changes in actuarial assumptions or method that create a change in the UAL will be amortized over a demographically appropriate period selected by the Investment Board at the time that the change is incurred.
6. The dollar amount of the UAL payment for purposes of computing the UAL component of the actuarial and required contribution rate will be the sum of the amortization payments for each amortization schedule divided by the total projected payroll. Unless the plan has been 110 percent funded for the current and prior two years, a negative amortization payment shall be ignored.
7. If the valuation shows that the membership group has surplus, the prior amortization bases will be eliminated and one base equal to the amount of surplus shall be established. The amortization period of a surplus shall be a 30 year open period for all membership groups.



APPENDIX C

CURRENT ACTUARIAL ASSUMPTIONS



**APPENDIX C
CURRENT ACTUARIAL ASSUMPTIONS**

ECONOMIC ASSUMPTIONS:

Rate of Inflation (effective June 30, 2017)

2.60% per annum

Rate of Crediting Interest on Contribution Balances (effective June 30, 2017)

3.50% per annum, compounded annually

Rate of Investment Return (effective June 30, 2017)

7.00% per annum, compounded annually, net of expenses.

Wage Growth Assumption (effective June 30, 2017)

3.25% per annum based on 2.60% inflation assumption and 0.65% real wage inflation.

Payroll Increase Assumption (effective June 30, 2017)

3.25% per year

Cost of Living Adjustments Assumption (effective June 30, 2017)

2.60% for members who retired before July 1, 1990. No cost-of-living adjustments are assumed to be granted to future retirees

DEMOGRAPHIC ASSUMPTIONS:

Rates of Mortality

To reflect anticipated future mortality improvements, generational mortality is used with projected mortality improvements based on Projection Scale AA.

Pre-Retirement (effective June 30, 2010)

State

Male	RP2000 Employee Table, Generational, set back 3 years
Female	RP2000 Employee Table, Generational, set back 8 years

School

Male	RP2000 Employee Table, Generational, set back 3 years
Female	RP2000 Employee Table, Generational, set back 8 years

Other

Male	RP2000 Employee Table, Generational, no setback
Female	RP2000 Employee Table, Generational, set back 8 years



**Sheriffs/Deputies and
Protection Occupation**

Male RP2000 Employee Table, Generational
Female RP2000 Employee Table, Generational

5% of active deaths are assumed to be service related for non-regular members.

Post-Retirement (effective June 30, 2014)

State	RP-2000 Healthy Annuitant Table, Generational
Male	No age adjustment
Female	1 Year setback with 5% increase above age 75
School	RP-2000 Healthy Annuitant Table, Generational
Male	1 Year setback with rates decreased by 5% below age 75
Female	3 Year setback with 10% decrease before age 75 and 10% increase above age 75
Other	RP-2000 Healthy Annuitant Table, Generational
Male	No age adjustment
Female	2 Year setback with 5% increase above age 75
Sheriffs/Deputies and Protection Occupation	RP-2000 Healthy Annuitant Table, Generational
Male	No age adjustment
Female	No age adjustment
Beneficiaries:	Same as members
Disabled Members (all groups):	RP-2000 Disabled Mortality, Generational Set back 1 year for males and set forward 3 years for females

Retirement Rates (effective June 30, 2014)

Upon meeting the requirements for early retirement, the following rates apply to Regular Members:

<u>Age</u>	<u>Assumed Retirement Rates – Early</u>		
	<u>State</u>	<u>School</u>	<u>Other</u>
55	5.0%	8.0%	5.0%
56	5.0%	8.0%	5.0%
57	5.0%	8.0%	5.0%
58	5.0%	8.0%	5.0%
59	5.0%	9.0%	5.0%
60	5.0%	10.0%	5.0%
61	15.0%	15.0%	10.0%
62	15.0%	20.0%	20.0%
63	15.0%	20.0%	20.0%
64	15.0%	20.0%	20.0%



Upon reaching the requirements for normal retirement (unreduced benefits), the following rates apply:

Assumed Retirement Rates – Select Unreduced			
<u>Age</u>	<u>State</u>	<u>School</u>	<u>Other</u>
55	20.0%	30.0%	20.0%
56	15.0%	30.0%	20.0%
57	15.0%	30.0%	20.0%
58	15.0%	30.0%	20.0%
59	15.0%	30.0%	20.0%
60	15.0%	30.0%	20.0%
61	20.0%	30.0%	20.0%
62	40.0%	40.0%	40.0%
63	35.0%	30.0%	35.0%
64	30.0%	30.0%	35.0%
65	30.0%	30.0%	30.0%

Assumed Retirement Rates – Ultimate Unreduced			
<u>Age</u>	<u>State</u>	<u>School</u>	<u>Other</u>
55	15.0%	23.0%	15.0%
56	15.0%	23.0%	15.0%
57	15.0%	23.0%	15.0%
58	15.0%	23.0%	15.0%
59	15.0%	23.0%	15.0%
60	15.0%	23.0%	15.0%
61	20.0%	30.0%	20.0%
62	40.0%	35.0%	35.0%
63	30.0%	30.0%	25.0%
64	30.0%	30.0%	25.0%
65	30.0%	45.0%	40.0%
66	30.0%	35.0%	30.0%
67	20.0%	25.0%	20.0%
68	20.0%	25.0%	20.0%
69	35.0%	40.0%	40.0%
70	100.0%	100.0%	100.0%



Assumed Retirement Rates

<u>Age</u>	<u>Sheriffs and Deputies</u>	<u>Protection Occupation</u>
50	20.0%	
51	20.0%	
52	20.0%	
53	20.0%	
54	20.0%	
55	17.0%	20.0%
56	17.0%	10.0%
57	17.0%	10.0%
58	17.0%	10.0%
59	17.0%	10.0%
60	17.0%	10.0%
61	17.0%	10.0%
62	30.0%	35.0%
63	30.0%	30.0%
64	30.0%	30.0%
65	100.0%	100.0%

Terminated vested members are assumed to retire at age 62 (55 for Sheriffs/Deputies and Protection Occupation groups).

For Regular Membership, retired reemployed members are assumed to retire at a rate of 25% per year until age 80 when all are assumed to retire.

All retirees are assumed to elect a modified cash refund annuity (Option 2).

Rates of Disablement (effective June 30, 2010)

Assumed Rates

<u>Age</u>	<u>Males</u>			<u>Females</u>		
	<u>State</u>	<u>School</u>	<u>Other</u>	<u>State</u>	<u>School</u>	<u>Other</u>
27	0.020%	0.020%	0.020%	0.020%	0.030%	0.020%
32	0.020%	0.020%	0.020%	0.020%	0.030%	0.020%
37	0.040%	0.040%	0.040%	0.032%	0.040%	0.032%
42	0.065%	0.065%	0.065%	0.051%	0.050%	0.051%
47	0.120%	0.110%	0.140%	0.087%	0.090%	0.087%
52	0.220%	0.160%	0.326%	0.220%	0.165%	0.200%
57	0.320%	0.260%	0.630%	0.390%	0.240%	0.350%
62	0.420%	0.360%	0.900%	0.620%	0.320%	0.500%



Assumed Rates
Sheriffs/Deputies
Protection Occupation

<u>Age</u>	<u>Rate</u>
27	0.150%
32	0.150%
37	0.150%
42	0.180%
47	0.230%
52	0.280%
57	0.380%
62	0.510%

Rates of Termination of Employment (effective June 30, 2010)

Regular Membership

<u>Years of Service</u>	<u>Male</u>			<u>Female</u>		
	<u>State</u>	<u>School</u>	<u>Other</u>	<u>State</u>	<u>School</u>	<u>Other</u>
1	15.4%	15.0%	21.0%	15.4%	15.0%	21.0%
5	5.5%	6.9%	8.4%	5.5%	6.9%	9.2%
10	2.2%	2.9%	4.3%	2.2%	2.9%	5.8%
15	1.7%	1.8%	2.6%	1.7%	1.8%	4.1%
20	1.1%	1.3%	2.4%	1.1%	1.3%	3.2%
25	1.1%	1.3%	2.0%	1.1%	1.2%	2.4%
30	1.1%	1.2%	1.2%	1.1%	1.2%	1.5%

Sheriffs/Deputies and Protection Occupation

<u>Age</u>	<u>Rate of Termination</u>
22	5.8%
27	5.8%
32	3.5%
37	3.0%
42	2.6%
47	2.0%
52	2.0%



Probability of Electing a Deferred Vested Benefit (effective June 30, 2010)

<u>Years of Service</u>	Regular Membership					
	Male			Female		
	<u>State</u>	<u>School</u>	<u>Other</u>	<u>State</u>	<u>School</u>	<u>Other</u>
5	66.0%	76.0%	61.0%	61.0%	80.0%	70.0%
10	73.0%	81.0%	66.0%	66.0%	80.0%	73.0%
15	78.0%	86.0%	71.0%	76.0%	85.0%	80.0%
20	83.0%	91.0%	76.0%	86.0%	90.0%	85.0%
25	88.0%	95.0%	80.0%	96.0%	95.0%	90.0%
30	90.0%	95.0%	80.0%	100.0%	100.0%	90.0%

Sheriffs/Deputies and Protection Occupation

<u>Years of Service</u>	<u>Rate</u>
5	53%
10	65%
15	85%
20	95%
25	100%
30	100%

Rates of Salary Increase* (effective June 30, 2017)

<u>Years of Service</u>	Annual Increase			Sheriffs/Deputies and Protection Occupation
	<u>State</u>	<u>School</u>	<u>Other</u>	
1	14.25%	16.25%	14.25%	16.25%
5	6.85%	5.75%	5.35%	5.75%
10	5.50%	4.55%	4.55%	4.55%
15	4.45%	3.75%	4.05%	4.05%
20	4.05%	3.40%	3.75%	3.75%
25	3.80%	3.25%	3.65%	3.75%
30	3.55%	3.25%	3.65%	3.25%
35+	3.25%	3.25%	3.25%	3.25%

* Includes 3.25 % wage growth



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APPENDIX D

PROPOSED ACTUARIAL ASSUMPTIONS



**APPENDIX D
PROPOSED ACTUARIAL ASSUMPTIONS**

ECONOMIC ASSUMPTIONS:

Rate of Inflation (effective June 30, 2017)

2.60% per annum

Rate of Crediting Interest on Contribution Balances (effective June 30, 2017)

3.50% per annum, compounded annually

Rate of Investment Return (effective June 30, 2017)

7.00% per annum, compounded annually, net of expenses.

Wage Growth Assumption (effective June 30, 2017)

3.25% per annum based on 2.60% inflation assumption and 0.65% real wage inflation.

Payroll Increase Assumption (effective June 30, 2017)

3.25% per year

Cost of Living Adjustments Assumption (effective June 30, 2017)

2.60% for members who retired before July 1, 1990. No cost-of-living adjustments are assumed to be granted to future retirees

DEMOGRAPHIC ASSUMPTIONS:

Rates of Mortality

To reflect anticipated future mortality improvements, generational mortality is used with projected mortality improvements based on Projection Scale AA.

Pre-Retirement (effective June 30, 2018)

State	
Male	RP-2014 Employee Table, Generational using MP-2017, setback 4 years
Female	RP-2014 Employee Table, Generational using MP-2017, setback 4 years
School	
Male	RP-2014 Employee Table, Generational using MP-2017, setback 4 years
Female	RP-2014 Employee Table, Generational using MP-2017, setback 8 years
Other	
Male	RP-2014 Employee Table, Generational using MP-2017, setback 3 years
Female	RP-2014 Employee Table, Generational using MP-2017, setback 4 years



Sheriffs/Deputies and Protection Occupation

Male RP-2014 Employee Table, Generational using MP-2017, setback 3 years
 Female RP-2014 Employee Table, Generational using MP-2017, setback 4 years

5% of active deaths are assumed to be service related for non-regular members.

Post-Retirement (effective June 30, 2018)

State RP-2014 Healthy Annuitant, Generational using MP-2017
 Male 8.5% increase in rates above age 75
 Female No age adjustment

School RP-2014 Healthy Annuitant, Generational using MP-2017
 Male 2 Year setback, 10% decrease in rates below age 75, 20% increase above age 75
 Female 2 Year setback, 25% decrease below age 75, 10% increase above age 75

Other RP-2014 Healthy Annuitant, Generational using MP-2017
 Male 1 Year set forward, 10% decrease below age 75, 8% increase above age 75
 Female 1 Year setback, 10% decrease below age 75, 5% increase above age 75

Sheriffs/Deputies and Protection Occupation RP-2014 Healthy Annuitant, Generational using MP-2017
 Male 1 Year set forward, 10% increase above age 75
 Female No age adjustment

Beneficiaries: Same as members

Disabled Members RP-2014 Disabled Mortality, Generational using MP-2017
 Male 3 Year age set forward
 Female 5 Year age set forward

Retirement Rates (effective June 30, 2018)

Upon meeting the requirements for early retirement, the following rates apply to Regular Members:

Age	Assumed Retirement Rates – Early		
	State	School	Other
55	5.0%	6.0%	4.0%
56	5.0%	6.0%	4.0%
57	5.0%	6.0%	4.0%
58	5.0%	7.0%	4.0%
59	5.0%	8.0%	5.0%
60	5.0%	10.0%	5.0%
61	15.0%	15.0%	10.0%
62	15.0%	15.0%	15.0%
63	15.0%	15.0%	15.0%
64	15.0%	15.0%	15.0%



Upon reaching the requirements for normal retirement (unreduced benefits), the following rates apply:

Assumed Retirement Rates – Select Unreduced			
<u>Age</u>	<u>State</u>	<u>School</u>	<u>Other</u>
55	20.0%	25.0%	20.0%
56	15.0%	25.0%	20.0%
57	15.0%	25.0%	17.0%
58	15.0%	25.0%	20.0%
59	15.0%	25.0%	20.0%
60	15.0%	25.0%	17.0%
61	20.0%	33.0%	20.0%
62	40.0%	40.0%	30.0%
63	35.0%	30.0%	25.0%
64	30.0%	30.0%	30.0%
65	30.0%	30.0%	30.0%

Assumed Retirement Rates – Ultimate Unreduced			
<u>Age</u>	<u>State</u>	<u>School</u>	<u>Other</u>
55	15.0%	20.0%	12.0%
56	15.0%	20.0%	12.0%
57	15.0%	20.0%	12.0%
58	15.0%	20.0%	12.0%
59	15.0%	21.0%	12.0%
60	15.0%	23.0%	15.0%
61	20.0%	28.0%	20.0%
62	40.0%	35.0%	30.0%
63	30.0%	30.0%	20.0%
64	30.0%	30.0%	25.0%
65	30.0%	45.0%	40.0%
66	30.0%	35.0%	30.0%
67	20.0%	25.0%	20.0%
68	20.0%	25.0%	20.0%
69	35.0%	40.0%	40.0%
70	100.0%	100.0%	100.0%



Assumed Retirement Rates

<u>Age</u>	<u>Sheriffs and Deputies</u>	<u>Protection Occupation</u>
50	17.0%	
51	15.0%	
52	15.0%	
53	15.0%	
54	15.0%	
55	15.0%	25.0%
56	15.0%	10.0%
57	15.0%	10.0%
58	15.0%	10.0%
59	15.0%	10.0%
60	15.0%	10.0%
61	15.0%	15.0%
62	30.0%	30.0%
63	30.0%	25.0%
64	30.0%	25.0%
65	100.0%	100.0%

Terminated vested members are assumed to retire at age 62 (55 for Sheriffs/Deputies and Protection Occupation groups).

For Regular Membership, retired reemployed members are assumed to retire at a rate of 25% per year until age 80 when all are assumed to retire.

All retirees are assumed to elect a modified cash refund annuity (Option 2).

Rates of Disablement (effective June 30, 2018)

Assumed Rates

<u>Age</u>	<u>Males</u>			<u>Females</u>		
	<u>State</u>	<u>School</u>	<u>Other</u>	<u>State</u>	<u>School</u>	<u>Other</u>
27	0.020%	0.020%	0.020%	0.020%	0.020%	0.020%
32	0.020%	0.020%	0.020%	0.020%	0.020%	0.020%
37	0.030%	0.034%	0.030%	0.030%	0.030%	0.030%
42	0.050%	0.056%	0.050%	0.040%	0.040%	0.040%
47	0.100%	0.098%	0.110%	0.070%	0.070%	0.070%
52	0.180%	0.142%	0.260%	0.180%	0.130%	0.160%
57	0.260%	0.230%	0.500%	0.310%	0.190%	0.280%
62	0.340%	0.318%	0.720%	0.500%	0.260%	0.400%



Assumed Rates
Sheriffs/Deputies
Protection Occupation

<u>Age</u>	<u>Rate</u>
27	0.130%
32	0.130%
37	0.130%
42	0.150%
47	0.200%
52	0.240%
57	0.320%
62	0.430%

Rates of Termination of Employment (effective June 30, 2018)

Regular Membership

<u>Years of Service</u>	<u>Male</u>			<u>Female</u>		
	<u>State</u>	<u>School</u>	<u>Other</u>	<u>State</u>	<u>School</u>	<u>Other</u>
1	11.00%	14.20%	19.00%	11.00%	14.20%	19.99%
5	4.75%	6.60%	7.50%	4.75%	6.60%	8.35%
10	2.25%	2.70%	4.10%	2.25%	2.70%	4.93%
15	1.60%	1.70%	2.64%	1.60%	1.70%	3.36%
20	1.10%	1.20%	2.10%	1.10%	1.20%	2.66%
25	0.80%	1.00%	1.60%	0.80%	1.00%	1.98%
30	0.80%	1.00%	1.10%	0.80%	1.00%	1.30%

Sheriffs/Deputies and Protection Occupation

<u>Years of Service</u>	<u>Sheriffs/Deputies</u>	<u>Protection Occupation</u>
1	4.00%	10.00%
5	1.00%	6.50%
10	1.00%	3.50%
15	1.00%	2.20%
20	1.00%	1.45%
25	1.00%	1.00%
30	1.00%	1.00%



Probability of Electing a Deferred Vested Benefit (effective June 30, 2018)

<u>Years of Service</u>	Regular Membership					
	Male			Female		
	<u>State</u>	<u>School</u>	<u>Other</u>	<u>State</u>	<u>School</u>	<u>Other</u>
5	62.0%	74.0%	62.0%	56.0%	80.0%	70.0%
10	71.0%	79.0%	71.0%	62.0%	80.0%	73.0%
15	76.0%	84.0%	76.0%	72.0%	85.0%	80.0%
20	81.0%	89.0%	81.0%	82.0%	90.0%	85.0%
25	86.0%	94.0%	86.0%	92.0%	95.0%	90.0%
30	90.0%	95.0%	90.0%	100.0%	100.0%	90.0%

Sheriffs/Deputies and Protection Occupation	
<u>Years of Service</u>	<u>Rate</u>
5	53.0%
10	65.0%
15	85.0%
20	95.0%
25	100.0%
30	100.0%

Rates of Salary Increase* (effective June 30, 2018)

<u>Years of Service</u>	Annual Increase			Sheriffs/Deputies and Protection Occupation
	<u>State</u>	<u>School</u>	<u>Other</u>	
1	14.25%	16.25%	14.25%	16.25%
5	7.75%	5.75%	5.35%	5.75%
10	5.50%	4.55%	4.55%	4.55%
15	4.45%	3.75%	4.05%	4.05%
20	3.85%	3.40%	3.75%	3.75%
25	3.60%	3.25%	3.65%	3.75%
30	3.35%	3.25%	3.65%	3.25%
35+	3.25%	3.25%	3.25%	3.25%

* Includes 3.25 % wage growth



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APPENDIX E

MORTALITY



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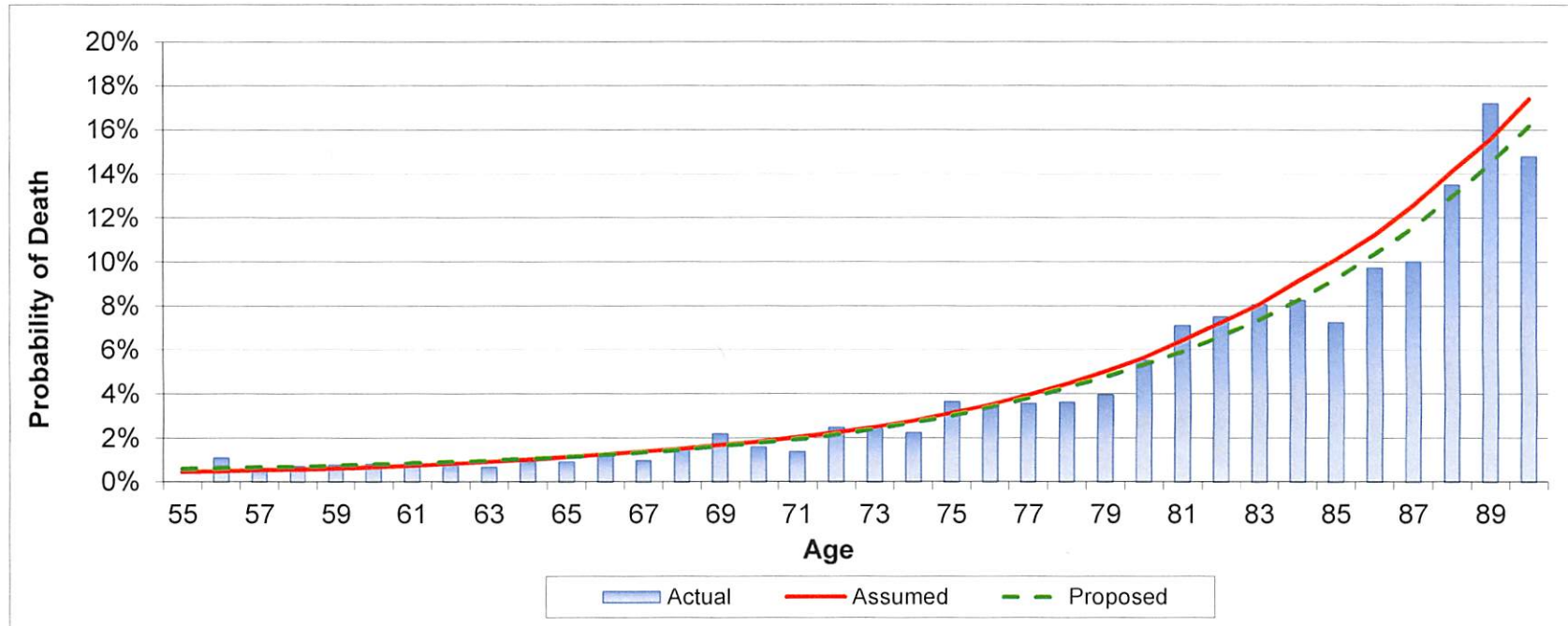
Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Exhibit E-1

Probability of Death - Healthy Retirees

Males - State Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	1,356	1,451	1,384
Actual/Expected		93%	98%



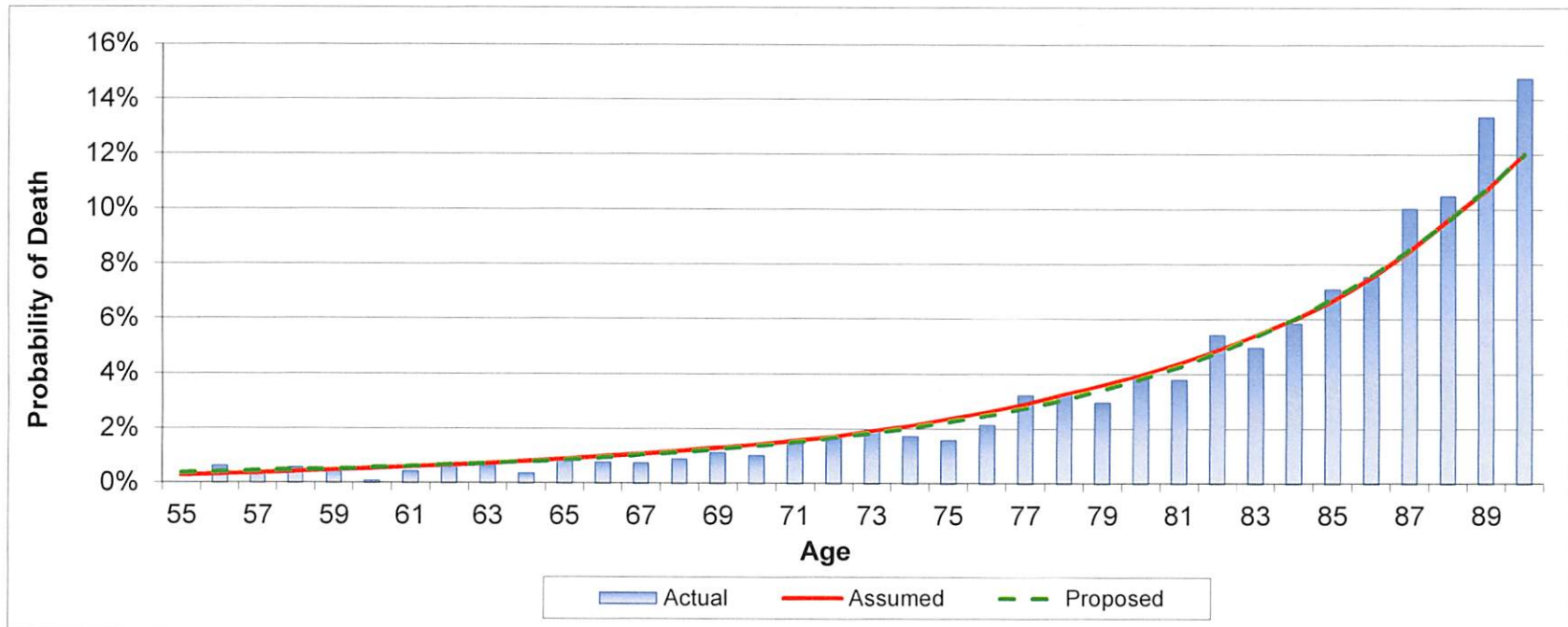
Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Exhibit E-2

Probability of Death - Healthy Retirees

Females - State Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	1,266	1,298	1,280
Actual/Expected		98%	99%



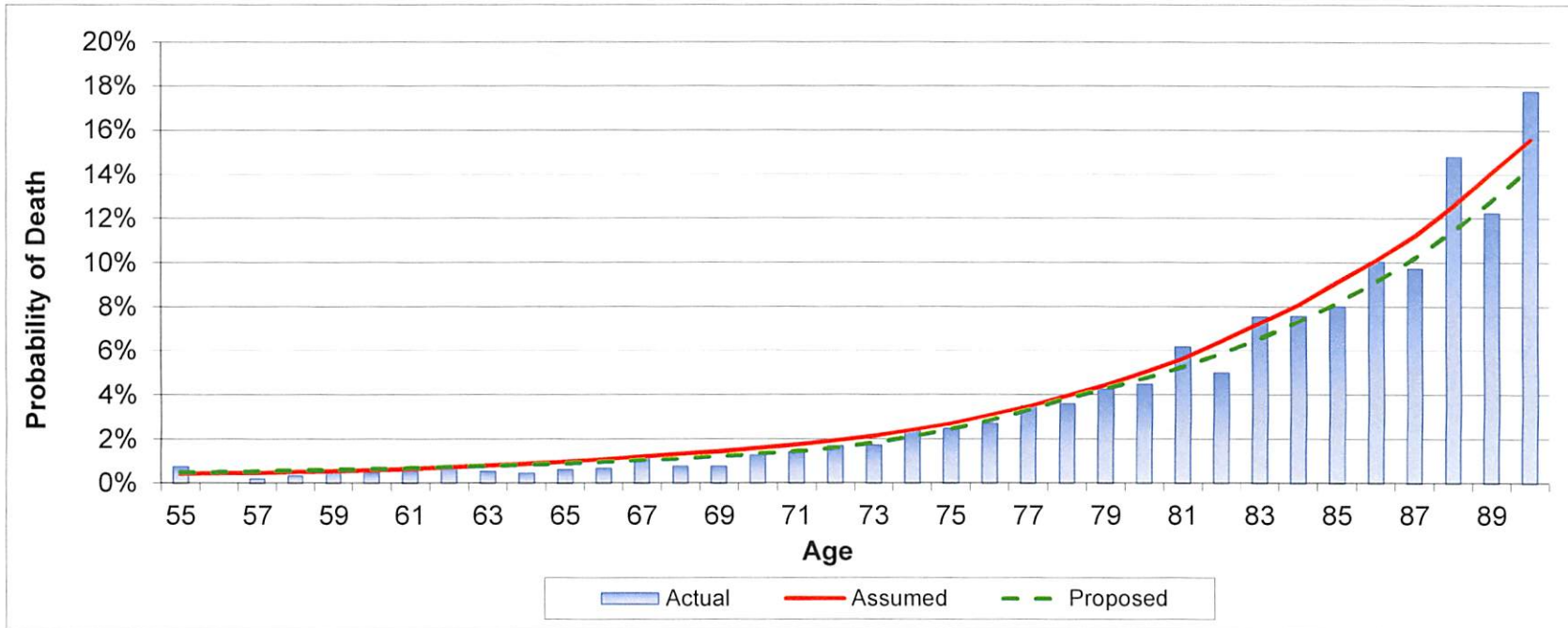
Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Exhibit E-3

Probability of Death - Healthy Retirees

Males - School Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	3,172	3,501	3,207
Actual/Expected		91%	99%



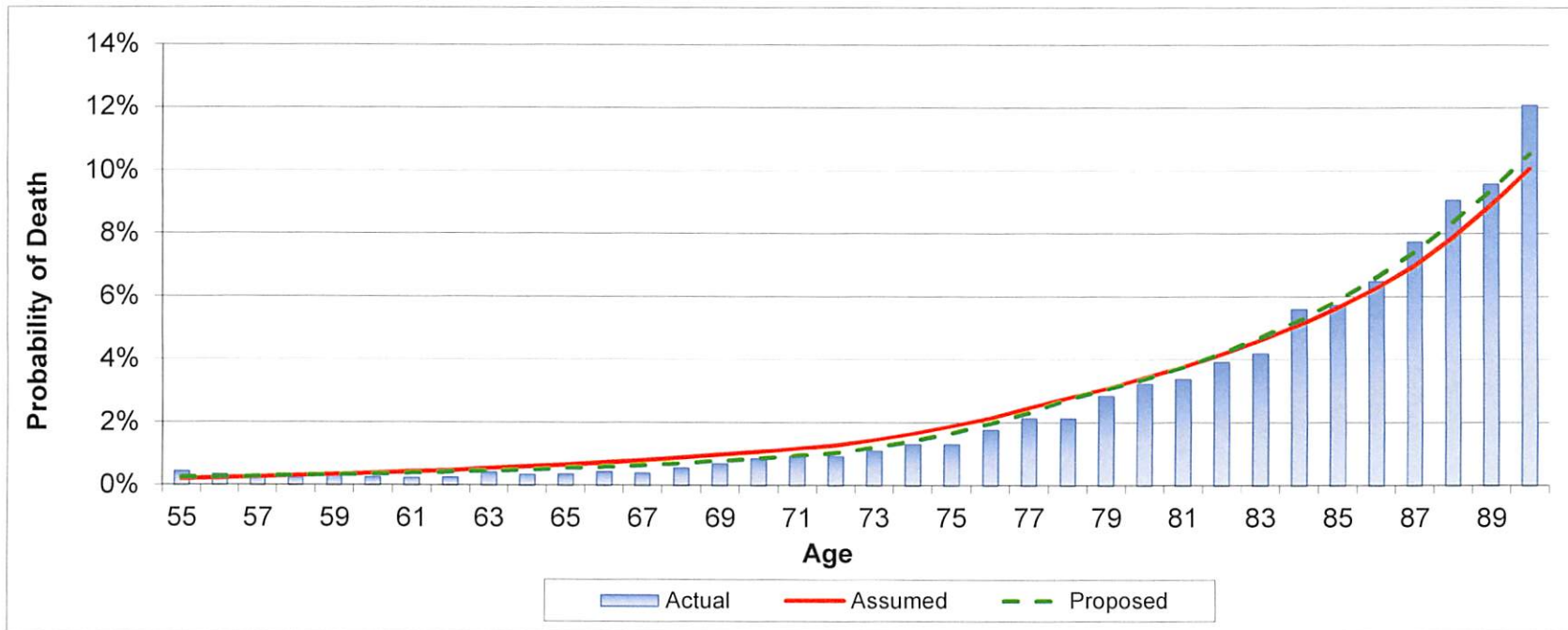
Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Exhibit E-4

Probability of Death - Healthy Retirees

Females - School Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	4,883	5,350	5,187
Actual/Expected		91%	94%



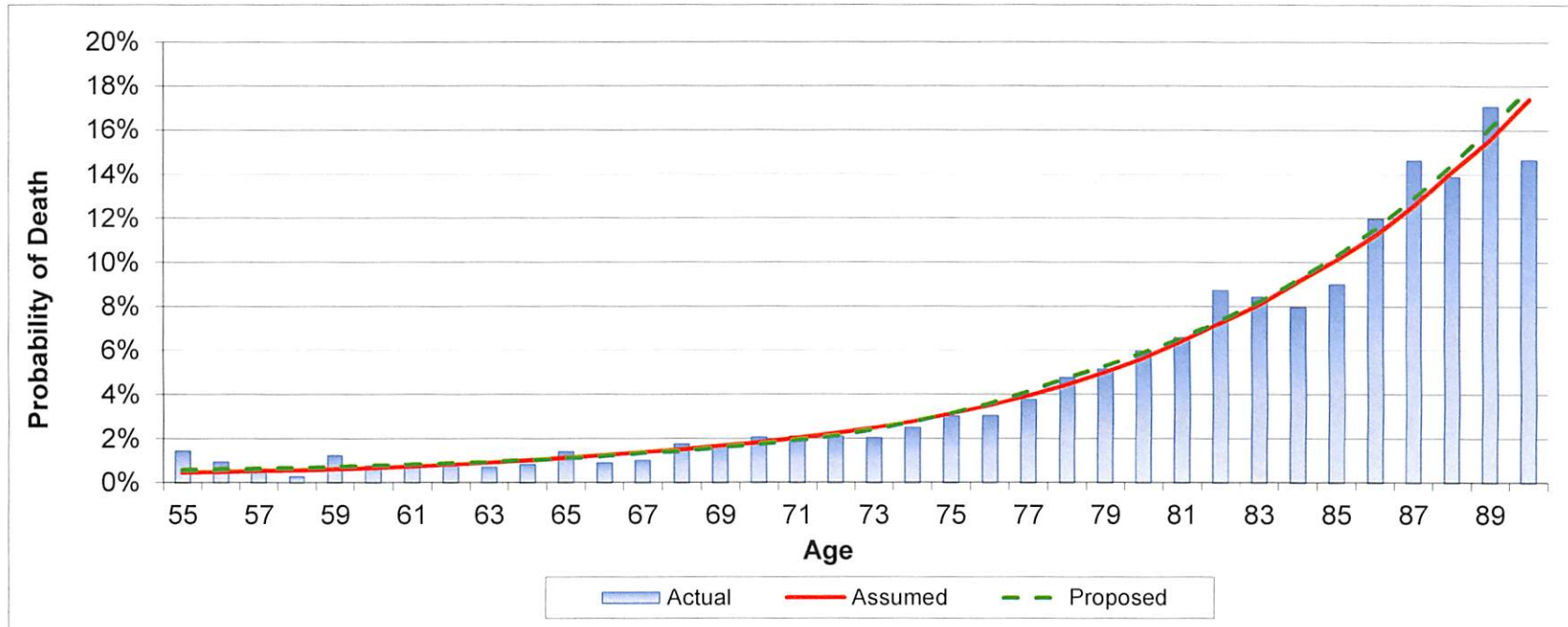
Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Exhibit E-5

Probability of Death - Healthy Retirees

Males - Other Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	3,187	3,177	3,242
Actual/Expected		100%	98%



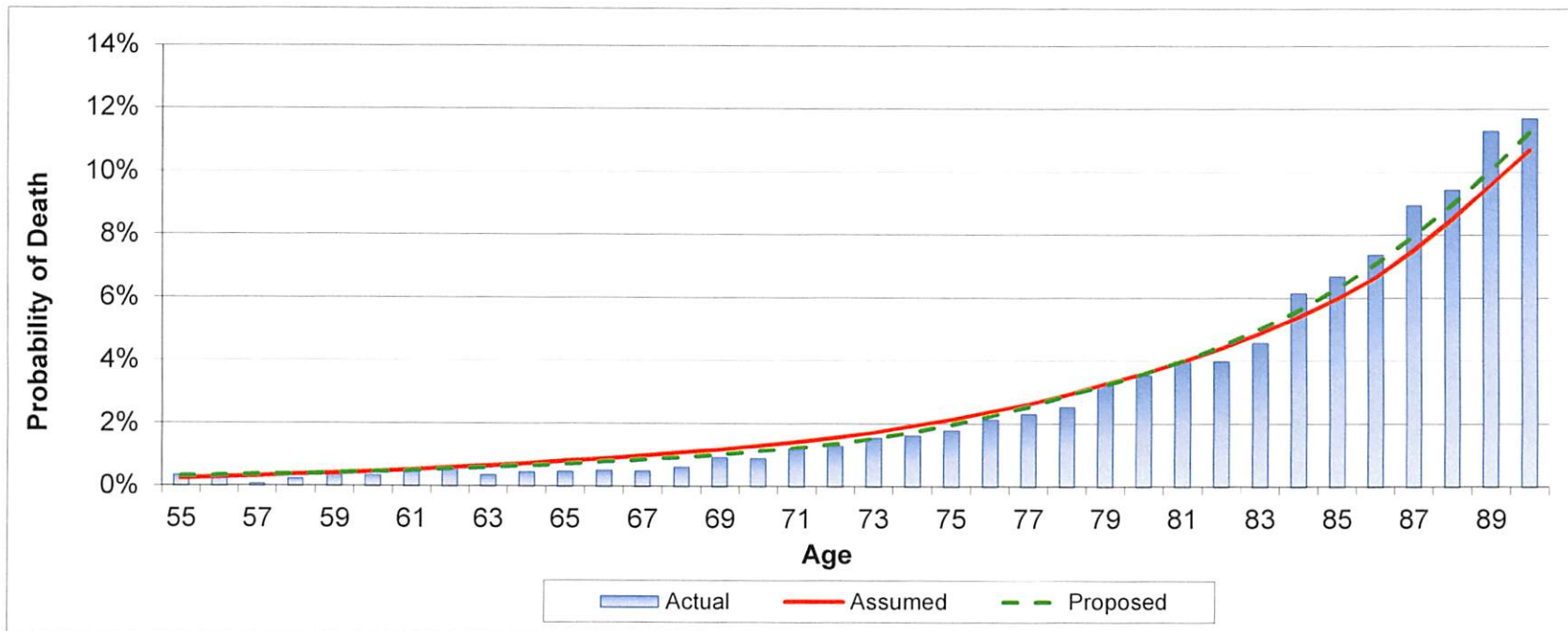
Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Exhibit E-6

Probability of Death - Healthy Retirees

Females - Other Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	3,085	3,244	3,204
Actual/Expected		95%	96%



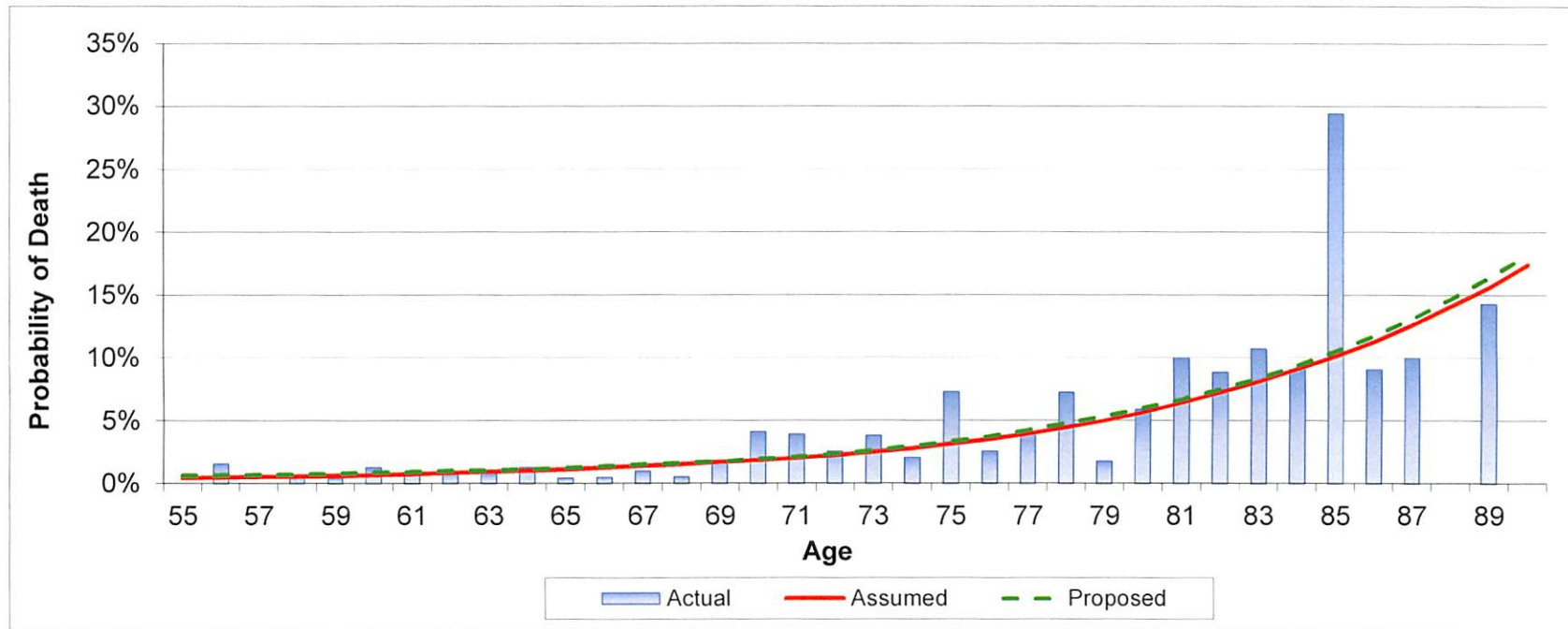
Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Exhibit E-7

Probability of Death - Healthy Retirees

Males - Special Services Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	85	76	84
Actual/Expected		112%	101%



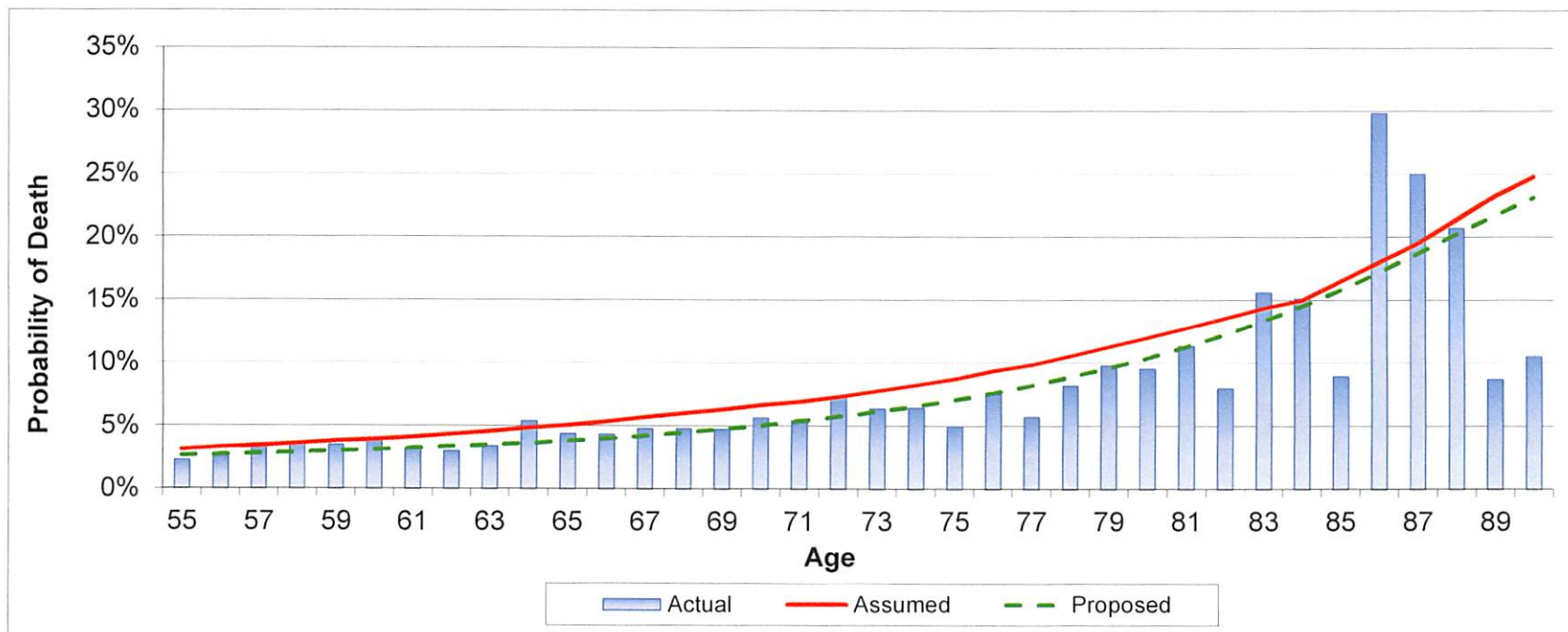
Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Exhibit E-8

Probability of Death - Disabled Retirees

Males - Regular Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	559	669	544
Actual/Expected		84%	103%



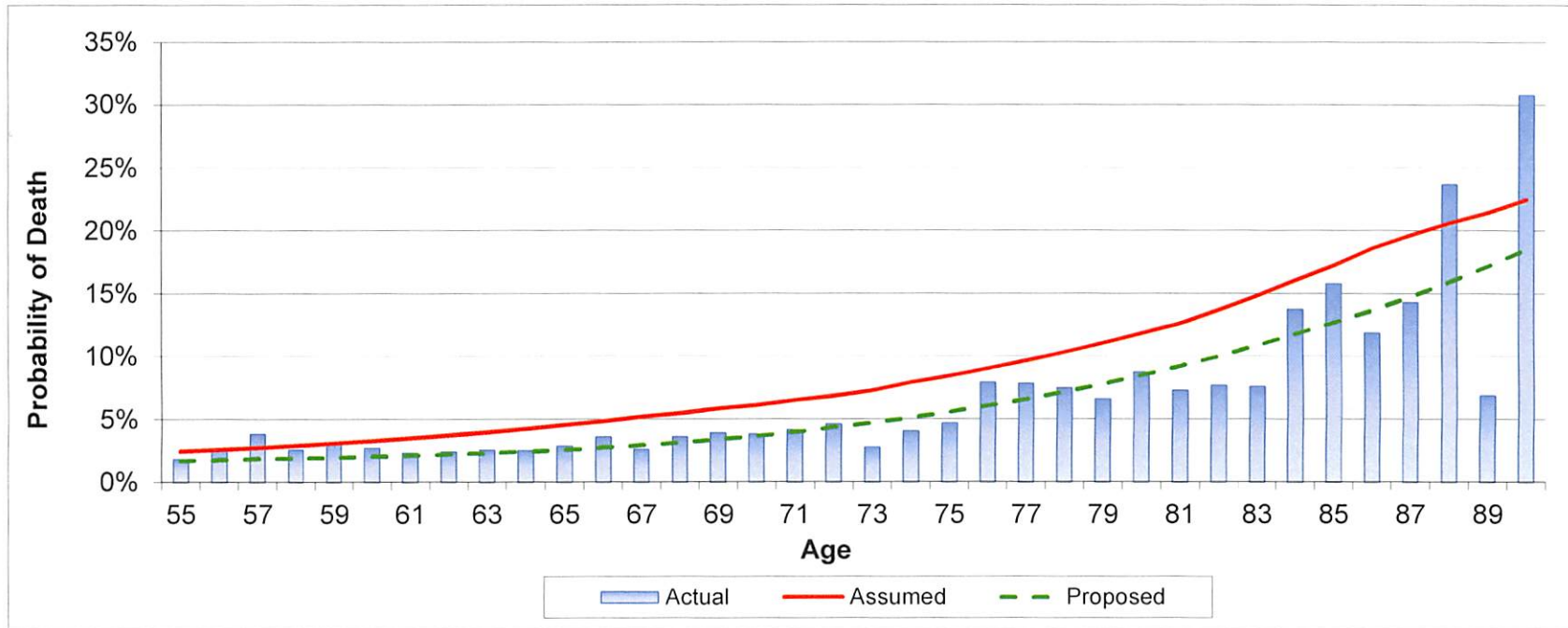
Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Exhibit E-9

Probability of Death - Disabled Retirees

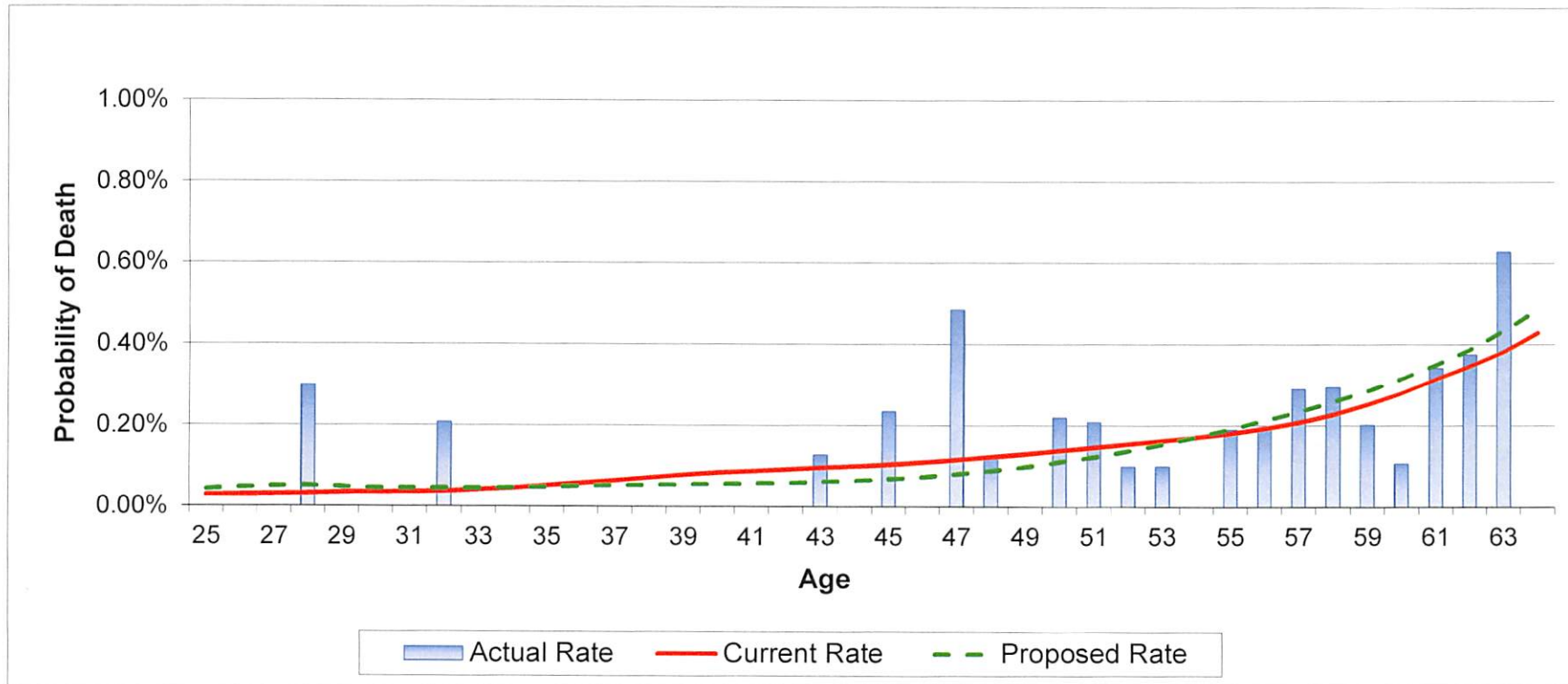
Females - Regular Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	621	891	577
Actual/Expected		70%	108%



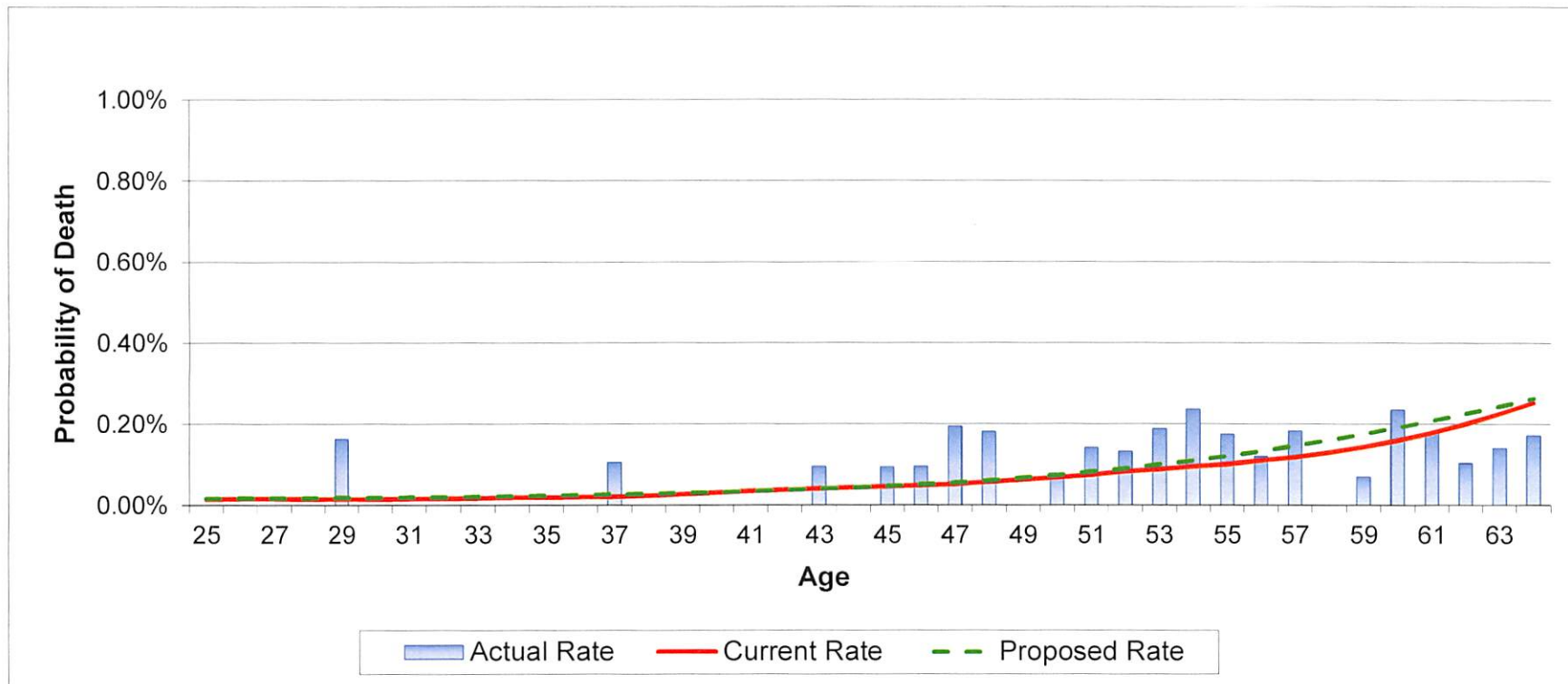
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit E-10
 Probability of Death - Active Members
 Males - State Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	39	43	42
Actual/Expected		91%	93%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit E-11
Probability of Death - Active Members
Females - State Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	38	32	36
Actual/Expected		119%	106%



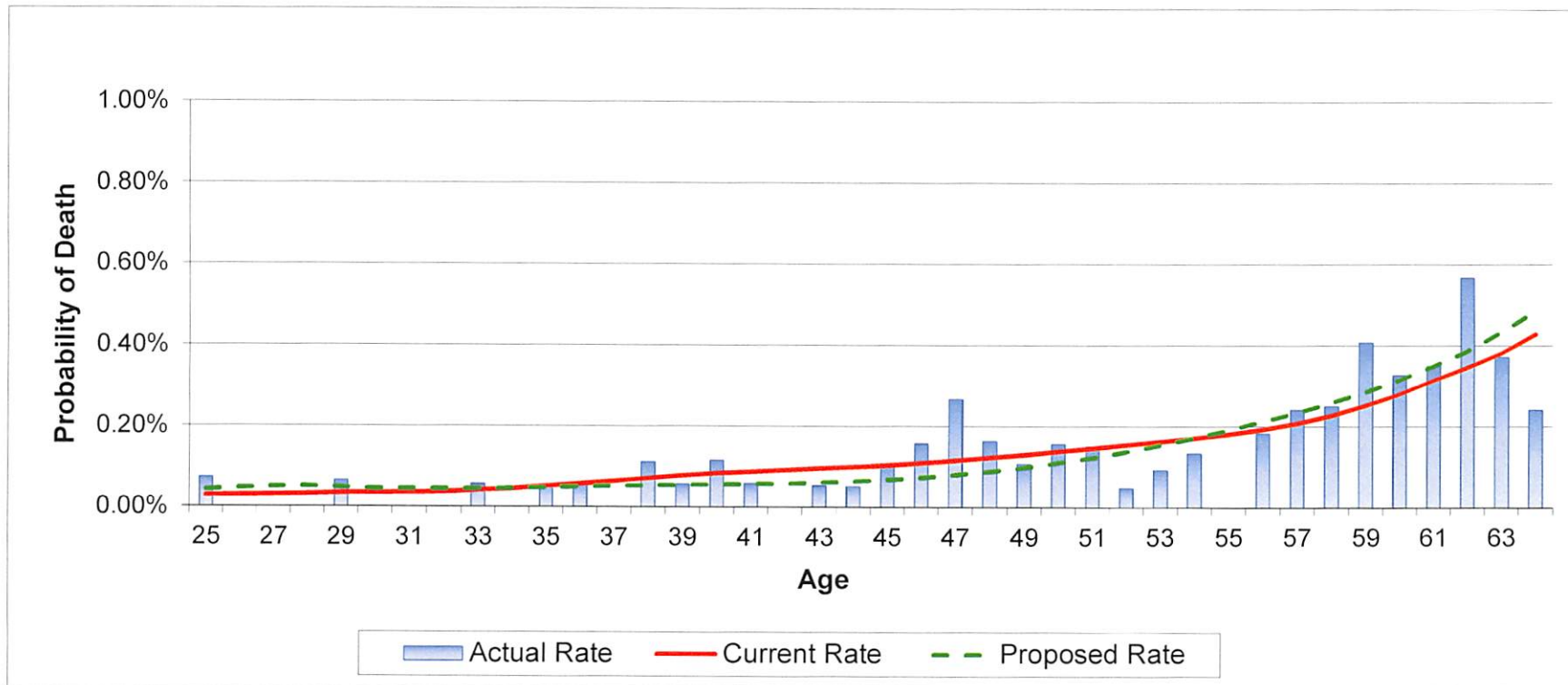
Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit E-12

Probability of Death - Active Members

Males - School Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	91	96	95
Actual/Expected		95%	96%



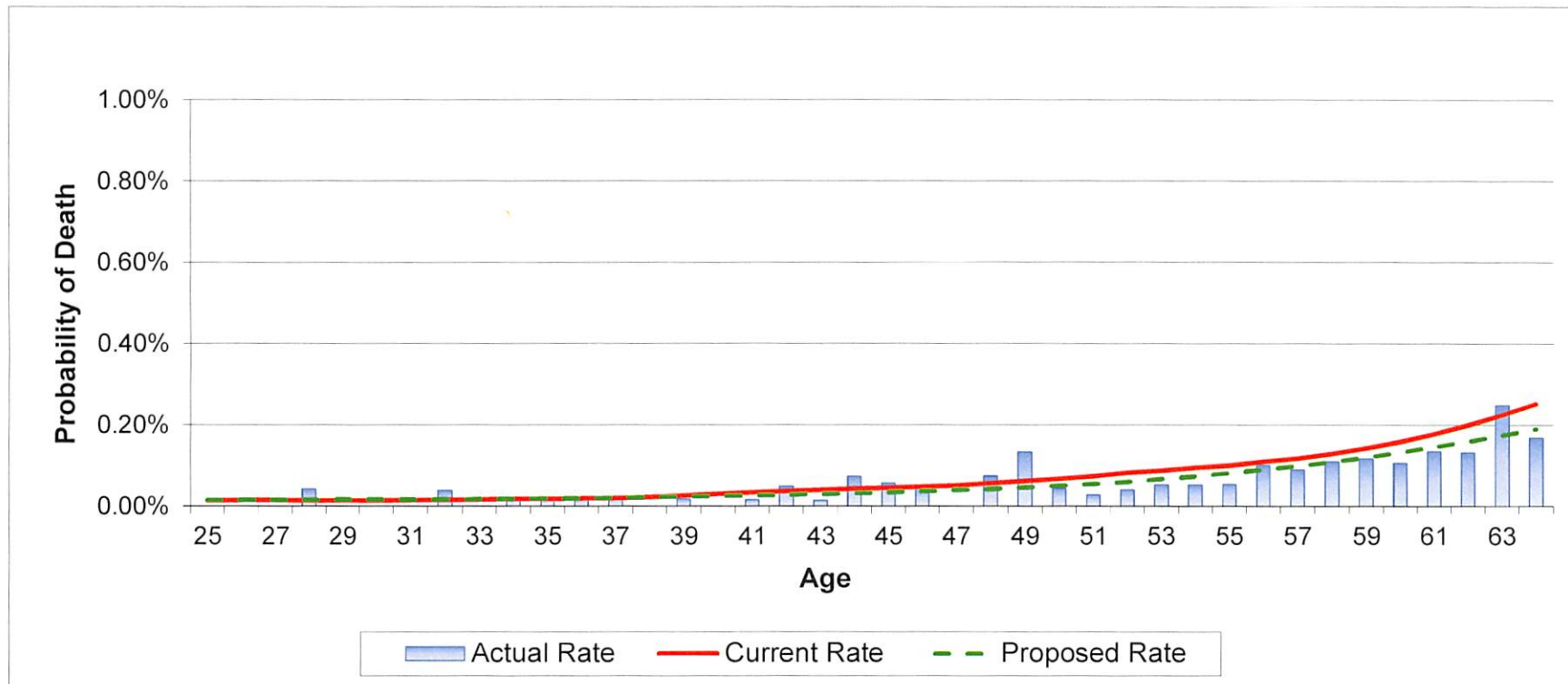
Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit E-13

Probability of Death - Active Members

Females - School Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	120	155	127
Actual/Expected		77%	94%



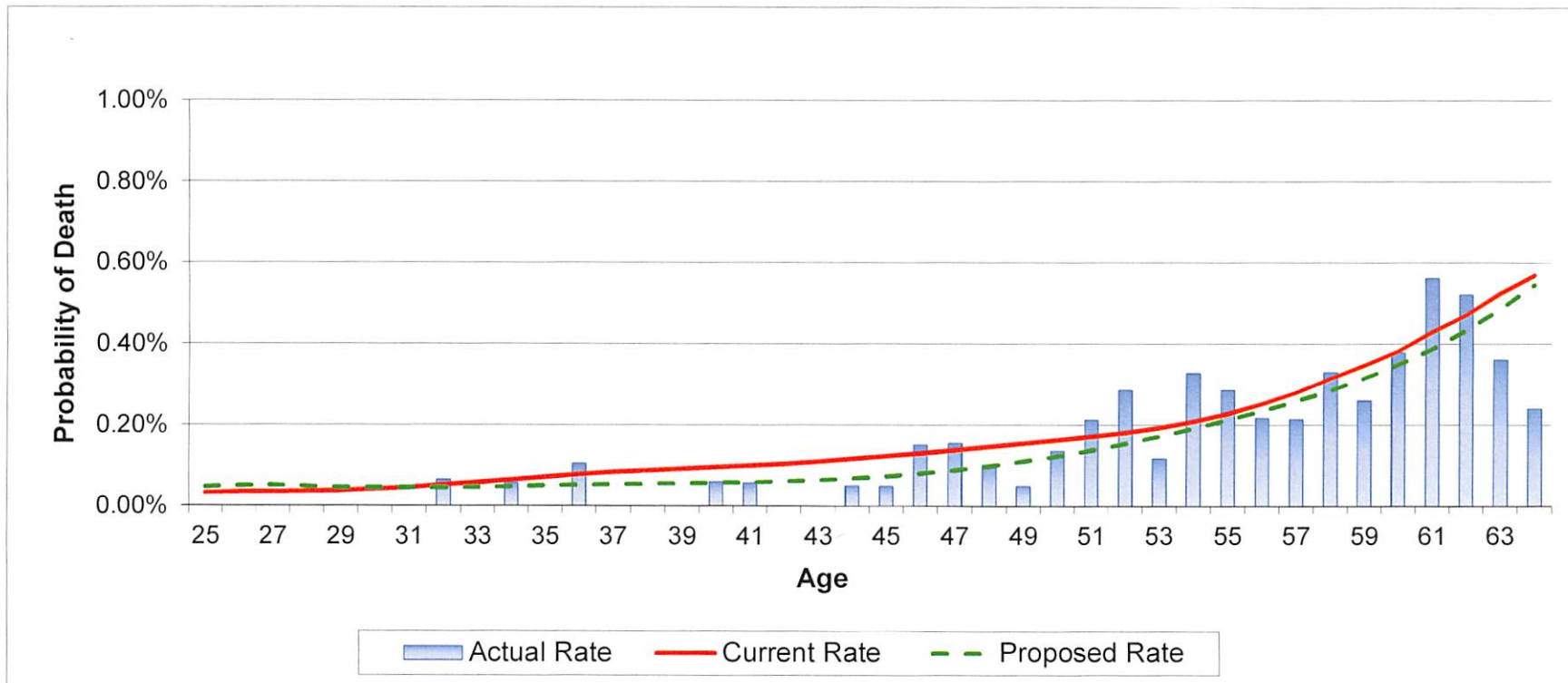
Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit E-14

Probability of Death - Active Members

Males - Other Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	127	150	129
Actual/Expected		85%	98%



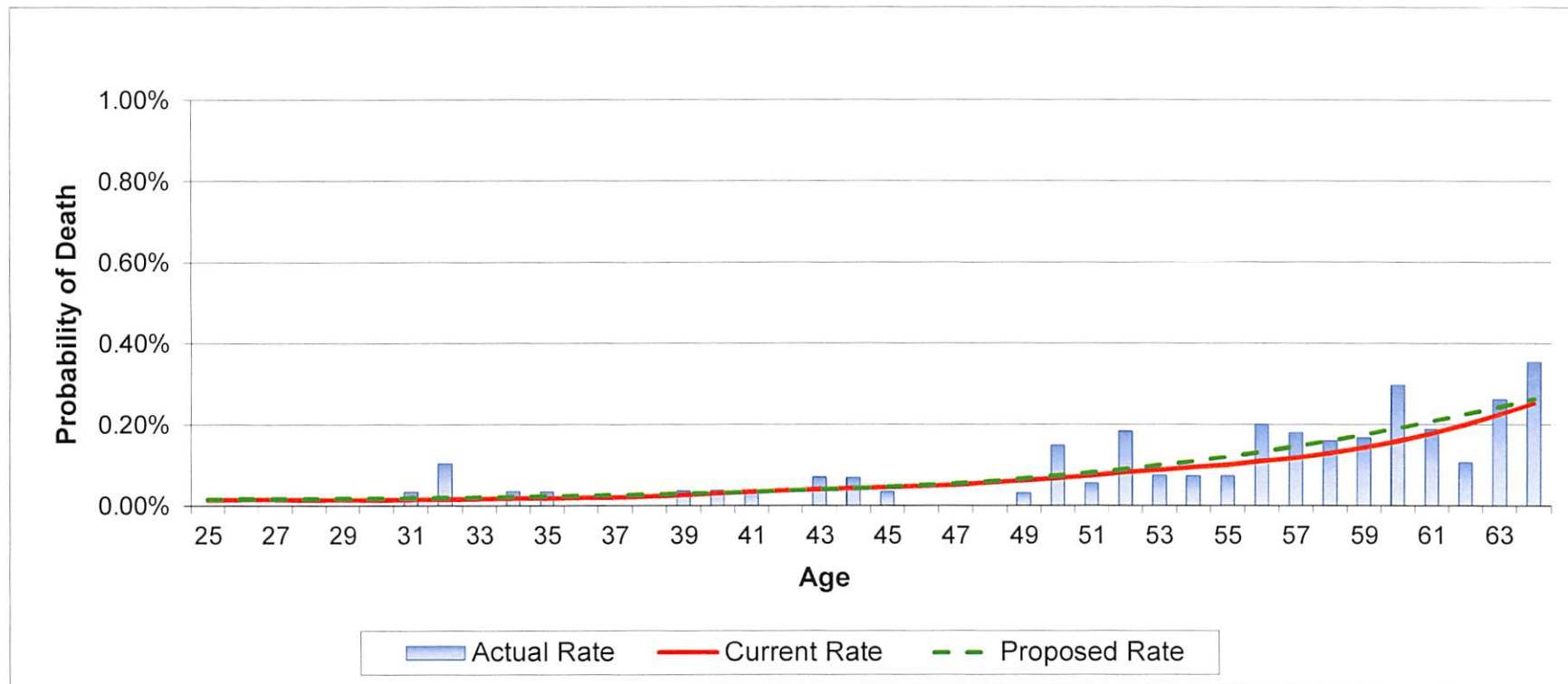
Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit E-15

Probability of Death - Active Members

Females - Other Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	97	86	98
Actual/Expected		113%	99%



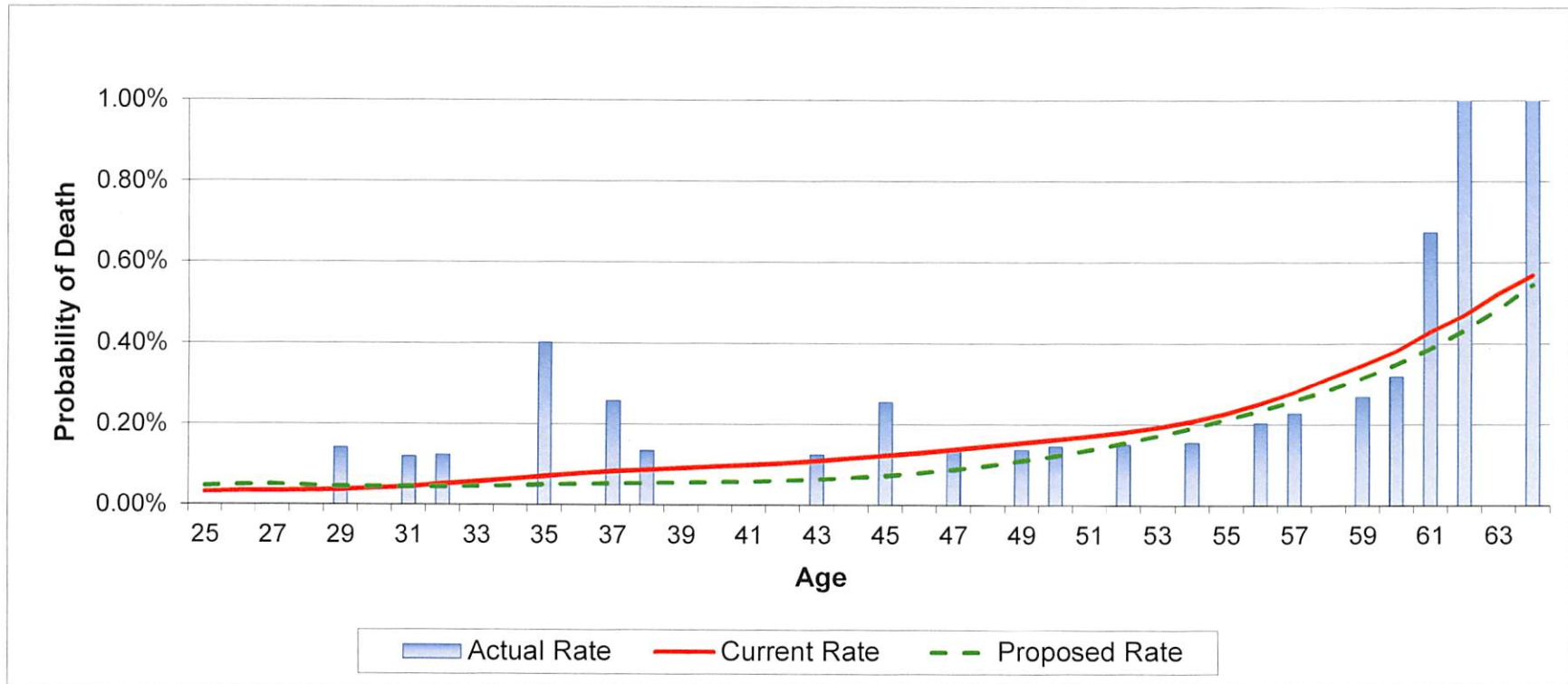
Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit E-16

Probability of Death - Active Members

Males - Special Services Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	28	33	27
Actual/Expected		85%	104%



Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Data Summary E-1

Probability of Death - Healthy Retirees

Males - State Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	79	-	0.0%	0.4	0.5%	0.5	0.6%
56	273	3	1.1%	1.3	0.5%	1.7	0.6%
57	408	2	0.5%	2.1	0.5%	2.7	0.7%
58	571	4	0.7%	3.2	0.6%	4.1	0.7%
59	783	6	0.8%	4.8	0.6%	5.9	0.8%
60	978	8	0.8%	6.5	0.7%	7.9	0.8%
61	1,210	11	0.9%	8.9	0.7%	10.4	0.9%
62	1,496	11	0.7%	12.2	0.8%	13.8	0.9%
63	1,911	13	0.7%	17.4	0.9%	19.0	1.0%
64	2,114	19	0.9%	21.3	1.0%	22.7	1.1%
65	2,156	20	0.9%	24.1	1.1%	25.0	1.2%
66	2,193	26	1.2%	27.5	1.3%	27.6	1.3%
67	2,219	22	1.0%	30.8	1.4%	30.4	1.4%
68	2,115	32	1.5%	32.0	1.5%	31.6	1.5%
69	1,949	43	2.2%	32.6	1.7%	31.8	1.6%
70	1,819	29	1.6%	33.2	1.8%	32.5	1.8%
71	1,706	24	1.4%	34.4	2.0%	33.5	2.0%
72	1,611	40	2.5%	36.1	2.2%	34.8	2.2%
73	1,522	37	2.4%	38.0	2.5%	36.7	2.4%
74	1,463	33	2.3%	40.7	2.8%	39.5	2.7%
75	1,394	51	3.7%	43.9	3.1%	42.2	3.0%
76	1,320	46	3.5%	46.3	3.5%	44.8	3.4%
77	1,258	45	3.6%	49.8	4.0%	48.0	3.8%
78	1,217	44	3.6%	54.2	4.5%	52.3	4.3%
79	1,157	46	4.0%	58.0	5.0%	55.2	4.8%
80	1,103	61	5.5%	62.3	5.6%	58.6	5.3%
81	1,052	75	7.1%	67.4	6.4%	62.3	5.9%
82	932	70	7.5%	67.6	7.3%	61.6	6.6%
83	842	68	8.1%	68.1	8.1%	62.2	7.4%
84	797	66	8.3%	72.6	9.1%	65.9	8.3%
85	743	54	7.3%	75.1	10.1%	68.7	9.3%
86	678	66	9.7%	76.0	11.2%	70.2	10.4%
87	610	61	10.0%	76.7	12.6%	70.7	11.6%
88	562	76	13.5%	79.3	14.1%	72.9	13.0%
89	494	85	17.2%	77.0	15.6%	71.6	14.5%
90	399	59	14.8%	69.5	17.4%	64.6	16.2%
	43,134	1,356	3.1%	1,451.5	3.4%	1,384.1	3.2%



Iowa Public Employees' Retirement System
2013-2017 Experience Study (including 2009-2013 data)

Data Summary E-2

Probability of Death - Healthy Retirees
Females - State Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	134	-	0.0%	0.4	0.3%	0.5	0.4%
56	491	3	0.6%	1.6	0.3%	2.0	0.4%
57	690	3	0.4%	2.5	0.4%	3.0	0.4%
58	910	5	0.5%	3.7	0.4%	4.3	0.5%
59	1,152	5	0.4%	5.3	0.5%	5.9	0.5%
60	1,374	1	0.1%	7.1	0.5%	7.7	0.6%
61	1,642	7	0.4%	9.5	0.6%	10.0	0.6%
62	2,005	12	0.6%	13.0	0.6%	13.3	0.7%
63	2,382	15	0.6%	17.2	0.7%	17.3	0.7%
64	2,491	9	0.4%	19.9	0.8%	19.7	0.8%
65	2,568	24	0.9%	22.6	0.9%	22.2	0.9%
66	2,625	20	0.8%	25.5	1.0%	24.9	0.9%
67	2,568	19	0.7%	27.5	1.1%	26.7	1.0%
68	2,460	22	0.9%	28.9	1.2%	28.1	1.1%
69	2,333	26	1.1%	30.1	1.3%	29.3	1.3%
70	2,193	22	1.0%	31.1	1.4%	30.3	1.4%
71	2,048	32	1.6%	32.1	1.6%	31.2	1.5%
72	1,935	32	1.7%	33.2	1.7%	32.5	1.7%
73	1,811	36	2.0%	34.9	1.9%	33.6	1.9%
74	1,671	29	1.7%	35.6	2.1%	34.2	2.0%
75	1,570	25	1.6%	37.4	2.4%	35.5	2.3%
76	1,481	32	2.2%	38.7	2.6%	37.0	2.5%
77	1,419	46	3.2%	41.2	2.9%	39.3	2.8%
78	1,340	44	3.3%	43.8	3.3%	41.2	3.1%
79	1,278	38	3.0%	46.0	3.6%	43.8	3.4%
80	1,231	48	3.9%	49.0	4.0%	47.0	3.8%
81	1,187	45	3.8%	52.2	4.4%	50.6	4.3%
82	1,145	62	5.4%	55.7	4.9%	54.7	4.8%
83	1,088	54	5.0%	58.7	5.4%	58.2	5.4%
84	1,082	63	5.8%	64.8	6.0%	65.0	6.0%
85	1,014	72	7.1%	67.6	6.7%	68.5	6.8%
86	954	72	7.5%	71.7	7.5%	72.4	7.6%
87	868	87	10.0%	73.8	8.5%	74.1	8.5%
88	773	81	10.5%	74.2	9.6%	74.1	9.6%
89	673	90	13.4%	72.0	10.7%	72.3	10.7%
90	575	85	14.8%	69.2	12.0%	69.1	12.0%
	53,161	1,266	2.4%	1,297.7	2.4%	1,279.5	2.4%



Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Data Summary E-3

Probability of Death - Healthy Retirees

Males - School Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	135	1	0.7%	0.6	0.4%	0.6	0.5%
56	591	-	0.0%	2.6	0.4%	3.0	0.5%
57	982	2	0.2%	4.5	0.5%	5.3	0.5%
58	1,472	5	0.3%	7.2	0.5%	8.4	0.6%
59	2,021	10	0.5%	10.7	0.5%	12.2	0.6%
60	2,608	12	0.5%	15.0	0.6%	16.7	0.6%
61	3,229	17	0.5%	20.4	0.6%	21.9	0.7%
62	3,936	25	0.6%	27.7	0.7%	28.5	0.7%
63	4,638	25	0.5%	35.9	0.8%	35.9	0.8%
64	4,965	23	0.5%	43.0	0.9%	41.3	0.8%
65	5,301	32	0.6%	50.8	1.0%	47.4	0.9%
66	5,602	37	0.7%	59.5	1.1%	54.1	1.0%
67	5,672	65	1.1%	67.6	1.2%	59.2	1.0%
68	5,522	43	0.8%	72.8	1.3%	62.6	1.1%
69	5,357	41	0.8%	77.1	1.4%	66.0	1.2%
70	5,243	67	1.3%	83.4	1.6%	70.4	1.3%
71	5,247	75	1.4%	90.9	1.7%	77.1	1.5%
72	5,104	87	1.7%	97.9	1.9%	82.2	1.6%
73	4,934	86	1.7%	106.0	2.1%	91.5	1.9%
74	4,716	111	2.4%	113.8	2.4%	101.0	2.1%
75	4,446	111	2.5%	120.7	2.7%	110.1	2.5%
76	4,192	114	2.7%	129.8	3.1%	120.2	2.9%
77	4,006	140	3.5%	139.4	3.5%	133.1	3.3%
78	3,810	137	3.6%	150.8	4.0%	147.0	3.9%
79	3,538	150	4.2%	157.6	4.5%	151.3	4.3%
80	3,221	144	4.5%	161.6	5.0%	153.0	4.7%
81	2,917	180	6.2%	164.8	5.6%	154.0	5.3%
82	2,641	132	5.0%	169.2	6.4%	155.3	5.9%
83	2,452	185	7.5%	177.8	7.3%	160.7	6.6%
84	2,196	166	7.6%	177.5	8.1%	160.6	7.3%
85	1,922	154	8.0%	175.0	9.1%	157.1	8.2%
86	1,665	167	10.0%	168.3	10.1%	152.3	9.1%
87	1,491	145	9.7%	167.1	11.2%	152.6	10.2%
88	1,316	195	14.8%	165.6	12.6%	150.7	11.5%
89	1,071	131	12.2%	151.1	14.1%	137.3	12.8%
90	884	157	17.8%	137.8	15.6%	126.8	14.3%
	119,043	3,172	2.7%	3,501.4	2.9%	3,207.2	2.7%



Iowa Public Employees' Retirement System
2013-2017 Experience Study (including 2009-2013 data)

Data Summary E-4

Probability of Death - Healthy Retirees
Females - School Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	458	2	0.4%	0.9	0.2%	1.1	0.2%
56	1,747	6	0.3%	3.9	0.2%	4.6	0.3%
57	2,811	8	0.3%	7.1	0.3%	8.0	0.3%
58	3,972	9	0.2%	11.4	0.3%	12.1	0.3%
59	5,193	15	0.3%	17.0	0.3%	17.1	0.3%
60	6,624	16	0.2%	24.5	0.4%	23.5	0.4%
61	7,999	19	0.2%	33.2	0.4%	30.8	0.4%
62	9,904	25	0.3%	46.2	0.5%	41.5	0.4%
63	11,707	48	0.4%	61.2	0.5%	53.4	0.5%
64	12,345	42	0.3%	72.0	0.6%	61.5	0.5%
65	12,860	45	0.3%	83.4	0.6%	69.9	0.5%
66	13,104	56	0.4%	94.0	0.7%	77.8	0.6%
67	12,756	50	0.4%	101.1	0.8%	82.8	0.6%
68	12,089	67	0.6%	105.6	0.9%	85.9	0.7%
69	11,426	79	0.7%	110.0	1.0%	89.1	0.8%
70	10,574	90	0.9%	111.8	1.1%	90.5	0.9%
71	10,230	97	0.9%	118.8	1.2%	96.3	0.9%
72	9,820	90	0.9%	125.5	1.3%	101.8	1.0%
73	9,476	104	1.1%	138.3	1.5%	115.4	1.2%
74	8,974	119	1.3%	148.4	1.7%	128.4	1.4%
75	8,497	113	1.3%	161.6	1.9%	143.0	1.7%
76	8,093	144	1.8%	174.6	2.2%	160.3	2.0%
77	7,701	165	2.1%	190.4	2.5%	179.7	2.3%
78	7,320	157	2.1%	203.9	2.8%	201.4	2.8%
79	6,999	199	2.8%	214.8	3.1%	213.4	3.0%
80	6,612	214	3.2%	226.4	3.4%	223.8	3.4%
81	6,151	208	3.4%	232.2	3.8%	231.7	3.8%
82	5,825	228	3.9%	242.7	4.2%	244.6	4.2%
83	5,535	232	4.2%	255.0	4.6%	259.7	4.7%
84	5,249	294	5.6%	267.6	5.1%	275.6	5.3%
85	4,865	279	5.7%	275.0	5.7%	286.5	5.9%
86	4,537	294	6.5%	284.7	6.3%	300.0	6.6%
87	4,180	323	7.7%	291.7	7.0%	310.6	7.4%
88	3,848	349	9.1%	303.1	7.9%	321.5	8.4%
89	3,440	330	9.6%	306.2	8.9%	323.0	9.4%
90	3,041	367	12.1%	305.9	10.1%	320.5	10.5%
	265,962	4,883	1.8%	5,349.8	2.0%	5,186.6	2.0%



Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Data Summary E-5

Probability of Death - Healthy Retirees

Males - Other Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	208	3	1.4%	1.0	0.5%	1.2	0.6%
56	622	6	1.0%	3.0	0.5%	3.7	0.6%
57	868	5	0.6%	4.5	0.5%	5.5	0.6%
58	1,117	3	0.3%	6.2	0.6%	7.6	0.7%
59	1,363	17	1.2%	8.3	0.6%	9.9	0.7%
60	1,670	13	0.8%	11.1	0.7%	12.9	0.8%
61	1,980	18	0.9%	14.6	0.7%	16.5	0.8%
62	2,461	22	0.9%	20.0	0.8%	22.0	0.9%
63	3,220	22	0.7%	29.4	0.9%	31.1	1.0%
64	3,516	29	0.8%	35.5	1.0%	36.7	1.0%
65	3,833	54	1.4%	42.8	1.1%	43.4	1.1%
66	4,124	37	0.9%	51.7	1.3%	50.8	1.2%
67	4,240	44	1.0%	58.9	1.4%	57.0	1.3%
68	4,105	72	1.8%	62.2	1.5%	60.3	1.5%
69	3,930	68	1.7%	65.8	1.7%	63.3	1.6%
70	3,786	78	2.1%	69.1	1.8%	66.9	1.8%
71	3,879	82	2.1%	78.3	2.0%	75.4	1.9%
72	3,762	80	2.1%	84.3	2.2%	80.6	2.1%
73	3,698	76	2.1%	92.3	2.5%	90.2	2.4%
74	3,563	89	2.5%	99.2	2.8%	99.0	2.8%
75	3,410	103	3.0%	107.4	3.1%	108.1	3.2%
76	3,274	100	3.1%	114.9	3.5%	118.6	3.6%
77	3,154	119	3.8%	124.8	4.0%	130.8	4.1%
78	3,019	144	4.8%	134.5	4.5%	143.5	4.8%
79	2,871	148	5.2%	144.0	5.0%	151.9	5.3%
80	2,705	162	6.0%	152.8	5.6%	159.6	5.9%
81	2,486	164	6.6%	159.2	6.4%	163.6	6.6%
82	2,278	199	8.7%	165.2	7.3%	167.6	7.4%
83	2,050	173	8.4%	165.7	8.1%	168.7	8.2%
84	1,845	147	8.0%	168.0	9.1%	169.9	9.2%
85	1,676	151	9.0%	169.4	10.1%	172.7	10.3%
86	1,456	174	12.0%	163.2	11.2%	168.0	11.5%
87	1,230	180	14.6%	154.7	12.6%	158.7	12.9%
88	1,060	147	13.9%	149.6	14.1%	152.9	14.4%
89	891	152	17.1%	138.9	15.6%	143.6	16.1%
90	723	106	14.7%	125.9	17.4%	129.3	17.9%
	90,073	3,187	3.5%	3,176.5	3.5%	3,241.7	3.6%



Iowa Public Employees' Retirement System
2013-2017 Experience Study (including 2009-2013 data)

Data Summary E-6

Probability of Death - Healthy Retirees

Females - Other Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	291	1	0.3%	0.7	0.2%	0.9	0.3%
56	977	3	0.3%	2.7	0.3%	3.3	0.3%
57	1,395	1	0.1%	4.4	0.3%	5.1	0.4%
58	1,754	4	0.2%	6.4	0.4%	6.9	0.4%
59	2,180	8	0.4%	9.0	0.4%	9.3	0.4%
60	2,583	9	0.3%	11.9	0.5%	11.9	0.5%
61	3,055	16	0.5%	15.8	0.5%	15.4	0.5%
62	3,732	21	0.6%	21.7	0.6%	20.4	0.5%
63	4,555	16	0.4%	29.5	0.6%	27.2	0.6%
64	4,998	22	0.4%	36.0	0.7%	32.6	0.7%
65	5,500	26	0.5%	43.8	0.8%	39.2	0.7%
66	6,053	31	0.5%	53.3	0.9%	47.1	0.8%
67	6,283	30	0.5%	61.0	1.0%	53.6	0.9%
68	6,173	38	0.6%	66.0	1.1%	57.7	0.9%
69	5,921	55	0.9%	69.6	1.2%	60.8	1.0%
70	5,741	51	0.9%	74.1	1.3%	64.9	1.1%
71	5,784	70	1.2%	82.1	1.4%	72.0	1.2%
72	5,659	74	1.3%	88.8	1.6%	77.6	1.4%
73	5,442	85	1.6%	94.3	1.7%	84.4	1.6%
74	5,208	85	1.6%	101.2	1.9%	91.4	1.8%
75	4,966	89	1.8%	106.7	2.1%	98.7	2.0%
76	4,777	102	2.1%	114.7	2.4%	107.7	2.3%
77	4,531	105	2.3%	119.5	2.6%	116.0	2.6%
78	4,334	110	2.5%	126.9	2.9%	126.1	2.9%
79	4,117	133	3.2%	134.6	3.3%	133.0	3.2%
80	3,955	140	3.5%	142.5	3.6%	142.2	3.6%
81	3,699	147	4.0%	147.1	4.0%	148.2	4.0%
82	3,394	135	4.0%	149.2	4.4%	152.0	4.5%
83	3,194	146	4.6%	155.4	4.9%	160.1	5.0%
84	2,991	184	6.2%	161.4	5.4%	168.1	5.6%
85	2,755	184	6.7%	165.0	6.0%	173.9	6.3%
86	2,496	184	7.4%	166.3	6.7%	177.1	7.1%
87	2,248	201	8.9%	169.0	7.5%	179.3	8.0%
88	2,012	190	9.4%	171.0	8.5%	180.3	9.0%
89	1,806	204	11.3%	173.4	9.6%	181.7	10.1%
90	1,581	185	11.7%	169.1	10.7%	178.2	11.3%
	136,140	3,085	2.3%	3,244.1	2.4%	3,204.5	2.4%



Iowa Public Employees' Retirement System
2013-2017 Experience Study (including 2009-2013 data)

Data Summary E-7

Probability of Death - Healthy Retirees
Males - Special Services Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	140	-	0.0%	0.6	0.5%	0.9	0.6%
56	190	3	1.6%	0.9	0.5%	1.3	0.7%
57	202	-	0.0%	1.0	0.5%	1.4	0.7%
58	226	1	0.4%	1.3	0.6%	1.7	0.8%
59	239	1	0.4%	1.5	0.6%	1.9	0.8%
60	241	3	1.2%	1.6	0.7%	2.1	0.9%
61	233	2	0.9%	1.7	0.7%	2.2	0.9%
62	255	2	0.8%	2.1	0.8%	2.5	1.0%
63	259	2	0.8%	2.4	0.9%	2.8	1.1%
64	236	3	1.3%	2.4	1.0%	2.7	1.2%
65	235	1	0.4%	2.6	1.1%	3.0	1.3%
66	208	1	0.5%	2.6	1.3%	2.8	1.4%
67	200	2	1.0%	2.8	1.4%	3.0	1.5%
68	186	1	0.5%	2.8	1.5%	3.0	1.6%
69	162	3	1.9%	2.7	1.7%	2.9	1.8%
70	146	6	4.1%	2.7	1.8%	2.9	2.0%
71	127	5	3.9%	2.6	2.0%	2.7	2.2%
72	116	3	2.6%	2.6	2.2%	2.8	2.4%
73	104	4	3.8%	2.6	2.5%	2.8	2.7%
74	97	2	2.1%	2.7	2.8%	2.9	3.0%
75	82	6	7.3%	2.6	3.1%	2.8	3.4%
76	78	2	2.6%	2.7	3.5%	3.0	3.8%
77	74	3	4.1%	2.9	4.0%	3.2	4.3%
78	69	5	7.2%	3.1	4.5%	3.3	4.8%
79	57	1	1.8%	2.9	5.0%	3.1	5.4%
80	51	3	5.9%	2.9	5.6%	3.1	6.0%
81	40	4	10.0%	2.6	6.4%	2.7	6.7%
82	34	3	8.8%	2.5	7.3%	2.5	7.5%
83	28	3	10.7%	2.3	8.1%	2.3	8.4%
84	22	2	9.1%	2.0	9.1%	2.1	9.4%
85	17	5	29.4%	1.7	10.1%	1.8	10.5%
86	11	1	9.1%	1.2	11.2%	1.3	11.8%
87	10	1	10.0%	1.3	12.6%	1.3	13.1%
88	9	-	0.0%	1.3	14.1%	1.3	14.7%
89	7	1	14.3%	1.1	15.6%	1.1	16.4%
90	5	-	0.0%	0.9	17.4%	0.9	18.2%
	4,396	85	1.9%	75.9	1.7%	84.1	1.9%



Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Data Summary E-8

Probability of Death - Disabled Retirees

Males - Regular Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	222	5	2.3%	6.9	3.1%	5.8	2.6%
56	279	7	2.5%	9.1	3.3%	7.5	2.7%
57	333	11	3.3%	11.4	3.4%	9.3	2.8%
58	375	14	3.7%	13.5	3.6%	10.8	2.9%
59	402	14	3.5%	15.2	3.8%	12.0	3.0%
60	445	17	3.8%	17.5	3.9%	13.8	3.1%
61	488	16	3.3%	20.0	4.1%	15.7	3.2%
62	537	16	3.0%	23.3	4.3%	18.0	3.4%
63	563	19	3.4%	25.5	4.5%	19.7	3.5%
64	555	30	5.4%	26.8	4.8%	20.3	3.7%
65	544	24	4.4%	27.6	5.1%	20.8	3.8%
66	531	23	4.3%	28.3	5.3%	21.4	4.0%
67	481	23	4.8%	27.4	5.7%	20.4	4.2%
68	459	22	4.8%	27.6	6.0%	20.6	4.5%
69	420	20	4.8%	26.3	6.3%	20.0	4.8%
70	370	21	5.7%	24.6	6.6%	18.7	5.1%
71	350	19	5.4%	24.3	6.9%	18.9	5.4%
72	317	23	7.3%	23.3	7.3%	18.3	5.8%
73	297	19	6.4%	23.1	7.8%	18.3	6.2%
74	280	18	6.4%	23.1	8.2%	18.5	6.6%
75	262	13	5.0%	22.8	8.7%	18.6	7.1%
76	239	18	7.5%	22.4	9.4%	18.3	7.6%
77	226	13	5.8%	22.3	9.9%	18.6	8.2%
78	219	18	8.2%	23.1	10.5%	19.5	8.9%
79	194	19	9.8%	21.8	11.3%	18.7	9.6%
80	178	17	9.6%	21.4	12.0%	18.5	10.4%
81	150	17	11.3%	19.1	12.8%	17.0	11.3%
82	125	10	8.0%	16.9	13.6%	15.4	12.3%
83	109	17	15.6%	15.7	14.4%	14.6	13.4%
84	86	13	15.1%	12.9	15.0%	12.5	14.5%
85	67	6	9.0%	11.1	16.5%	10.6	15.8%
86	57	17	29.8%	10.2	18.0%	9.8	17.2%
87	40	10	25.0%	7.8	19.5%	7.5	18.7%
88	29	6	20.7%	6.2	21.3%	5.9	20.2%
89	23	2	8.7%	5.3	23.3%	5.0	21.7%
90	19	2	10.5%	4.7	24.8%	4.4	23.2%
	10,271	559	5.4%	668.7	6.5%	543.7	5.3%



Iowa Public Employees' Retirement System

2013-2017 Experience Study (including 2009-2013 data)

Data Summary E-9

Probability of Death - Disabled Retirees

Females - Regular Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	430	8	1.9%	10.6	2.5%	7.5	1.7%
56	537	14	2.6%	14.0	2.6%	9.7	1.8%
57	596	23	3.9%	16.4	2.7%	11.1	1.9%
58	663	17	2.6%	19.3	2.9%	12.7	1.9%
59	721	23	3.2%	22.2	3.1%	14.3	2.0%
60	778	21	2.7%	25.5	3.3%	15.9	2.1%
61	813	19	2.3%	28.4	3.5%	17.3	2.1%
62	855	21	2.5%	31.8	3.7%	19.0	2.2%
63	853	22	2.6%	33.9	4.0%	19.8	2.3%
64	827	21	2.5%	35.1	4.2%	20.3	2.5%
65	795	23	2.9%	36.1	4.5%	20.7	2.6%
66	770	28	3.6%	37.3	4.8%	21.3	2.8%
67	726	19	2.6%	37.6	5.2%	21.5	3.0%
68	664	24	3.6%	36.1	5.4%	21.1	3.2%
69	609	24	3.9%	35.4	5.8%	20.9	3.4%
70	548	21	3.8%	33.4	6.1%	20.3	3.7%
71	504	21	4.2%	32.8	6.5%	20.2	4.0%
72	453	21	4.6%	31.0	6.8%	19.7	4.4%
73	430	12	2.8%	31.4	7.3%	20.3	4.7%
74	416	17	4.1%	32.9	7.9%	21.4	5.1%
75	360	17	4.7%	30.4	8.4%	20.1	5.6%
76	340	27	7.9%	30.7	9.0%	20.7	6.1%
77	319	25	7.8%	30.7	9.6%	21.1	6.6%
78	280	21	7.5%	28.9	10.3%	20.1	7.2%
79	256	17	6.6%	28.2	11.0%	20.0	7.8%
80	228	20	8.8%	26.9	11.8%	19.4	8.5%
81	192	14	7.3%	24.2	12.6%	17.7	9.2%
82	156	12	7.7%	21.3	13.7%	15.6	10.0%
83	131	10	7.6%	19.4	14.8%	14.2	10.9%
84	109	15	13.8%	17.5	16.0%	12.8	11.8%
85	76	12	15.8%	13.1	17.2%	9.7	12.7%
86	59	7	11.9%	11.0	18.6%	8.1	13.7%
87	42	6	14.3%	8.2	19.6%	6.2	14.8%
88	38	9	23.7%	7.8	20.6%	6.1	15.9%
89	29	2	6.9%	6.2	21.4%	5.0	17.2%
90	26	8	30.8%	5.8	22.5%	4.8	18.5%
	15,629	621	4.0%	891.4	5.7%	576.6	3.7%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary E-10

Probability of Death - Active Members

Males - State Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	201	-	0.000%	0.1	0.028%	0.1	0.043%
26	264	-	0.000%	0.1	0.030%	0.1	0.047%
27	278	-	0.000%	0.1	0.031%	0.1	0.049%
28	336	1	0.298%	0.1	0.032%	0.2	0.051%
29	357	-	0.000%	0.1	0.035%	0.2	0.048%
30	390	-	0.000%	0.1	0.035%	0.2	0.046%
31	427	-	0.000%	0.2	0.036%	0.2	0.046%
32	483	1	0.207%	0.2	0.038%	0.2	0.046%
33	532	-	0.000%	0.2	0.041%	0.2	0.046%
34	580	-	0.000%	0.3	0.046%	0.3	0.047%
35	599	-	0.000%	0.3	0.052%	0.3	0.049%
36	622	-	0.000%	0.4	0.059%	0.3	0.051%
37	621	-	0.000%	0.4	0.065%	0.3	0.052%
38	623	-	0.000%	0.4	0.072%	0.3	0.054%
39	623	-	0.000%	0.5	0.078%	0.3	0.055%
40	637	-	0.000%	0.5	0.084%	0.4	0.056%
41	651	-	0.000%	0.6	0.088%	0.4	0.058%
42	718	-	0.000%	0.7	0.092%	0.4	0.060%
43	781	1	0.128%	0.7	0.096%	0.5	0.062%
44	815	-	0.000%	0.8	0.100%	0.5	0.065%
45	854	2	0.234%	0.9	0.104%	0.6	0.069%
46	834	-	0.000%	0.9	0.110%	0.6	0.075%
47	823	4	0.486%	1.0	0.117%	0.7	0.081%
48	814	1	0.123%	1.0	0.124%	0.7	0.089%
49	886	-	0.000%	1.2	0.131%	0.9	0.099%
50	912	2	0.219%	1.3	0.138%	1.0	0.111%
51	957	2	0.209%	1.4	0.146%	1.2	0.124%
52	1,008	1	0.099%	1.6	0.154%	1.4	0.138%
53	999	1	0.100%	1.6	0.163%	1.5	0.155%
54	1,048	-	0.000%	1.8	0.172%	1.8	0.173%
55	1,056	2	0.189%	1.9	0.181%	2.0	0.192%
56	1,034	2	0.193%	2.0	0.194%	2.2	0.214%
57	1,031	3	0.291%	2.1	0.208%	2.4	0.236%
58	1,018	3	0.295%	2.3	0.227%	2.6	0.260%
59	988	2	0.202%	2.5	0.252%	2.8	0.286%
60	935	1	0.107%	2.6	0.281%	2.9	0.316%
61	876	3	0.342%	2.7	0.314%	3.1	0.350%
62	799	3	0.375%	2.8	0.347%	3.1	0.389%
63	636	4	0.629%	2.4	0.383%	2.8	0.434%
64	486	-	0.000%	2.1	0.429%	2.4	0.486%
	28,532	39	0.137%	42.8	0.150%	42.4	0.149%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary E-11

Probability of Death - Active Members

Females - State Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	336	-	0.000%	0.1	0.015%	0.1	0.017%
26	403	-	0.000%	0.1	0.015%	0.1	0.017%
27	440	-	0.000%	0.1	0.015%	0.1	0.017%
28	535	-	0.000%	0.1	0.015%	0.1	0.018%
29	615	1	0.163%	0.1	0.015%	0.1	0.018%
30	706	-	0.000%	0.1	0.015%	0.1	0.019%
31	748	-	0.000%	0.1	0.015%	0.1	0.019%
32	782	-	0.000%	0.1	0.016%	0.2	0.020%
33	819	-	0.000%	0.1	0.017%	0.2	0.021%
34	881	-	0.000%	0.2	0.018%	0.2	0.022%
35	918	-	0.000%	0.2	0.019%	0.2	0.024%
36	896	-	0.000%	0.2	0.020%	0.2	0.025%
37	956	1	0.105%	0.2	0.021%	0.3	0.027%
38	973	-	0.000%	0.2	0.023%	0.3	0.029%
39	988	-	0.000%	0.3	0.027%	0.3	0.031%
40	1,015	-	0.000%	0.3	0.031%	0.3	0.032%
41	1,031	-	0.000%	0.4	0.034%	0.4	0.035%
42	1,031	-	0.000%	0.4	0.037%	0.4	0.037%
43	1,047	1	0.096%	0.4	0.040%	0.4	0.040%
44	1,065	-	0.000%	0.5	0.043%	0.5	0.043%
45	1,059	1	0.094%	0.5	0.046%	0.5	0.047%
46	1,044	1	0.096%	0.5	0.048%	0.5	0.051%
47	1,030	2	0.194%	0.5	0.052%	0.6	0.056%
48	1,107	2	0.181%	0.6	0.056%	0.7	0.061%
49	1,202	-	0.000%	0.7	0.062%	0.8	0.067%
50	1,274	1	0.078%	0.9	0.068%	0.9	0.074%
51	1,405	2	0.142%	1.0	0.075%	1.2	0.082%
52	1,511	2	0.132%	1.2	0.082%	1.4	0.091%
53	1,593	3	0.188%	1.4	0.088%	1.6	0.100%
54	1,691	4	0.237%	1.6	0.095%	1.9	0.110%
55	1,721	3	0.174%	1.7	0.101%	2.1	0.121%
56	1,676	2	0.119%	1.8	0.109%	2.2	0.133%
57	1,647	3	0.182%	1.9	0.118%	2.4	0.146%
58	1,565	-	0.000%	2.0	0.130%	2.5	0.160%
59	1,443	1	0.069%	2.1	0.142%	2.5	0.175%
60	1,281	3	0.234%	2.0	0.159%	2.4	0.191%
61	1,136	2	0.176%	2.0	0.178%	2.4	0.208%
62	971	1	0.103%	1.9	0.200%	2.2	0.225%
63	709	1	0.141%	1.6	0.224%	1.7	0.244%
64	582	1	0.172%	1.5	0.252%	1.5	0.263%
	41,832	38	0.091%	31.7	0.076%	36.4	0.087%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary E-12

Probability of Death - Active Members

Males - School Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	1,378	1	0.073%	0.4	0.028%	0.6	0.043%
26	1,477	-	0.000%	0.4	0.030%	0.7	0.047%
27	1,481	-	0.000%	0.5	0.031%	0.7	0.049%
28	1,549	-	0.000%	0.5	0.032%	0.8	0.051%
29	1,539	1	0.065%	0.5	0.035%	0.7	0.048%
30	1,626	-	0.000%	0.6	0.035%	0.8	0.046%
31	1,663	-	0.000%	0.6	0.036%	0.8	0.046%
32	1,722	-	0.000%	0.7	0.038%	0.8	0.046%
33	1,767	1	0.057%	0.7	0.041%	0.8	0.046%
34	1,810	-	0.000%	0.8	0.046%	0.9	0.047%
35	1,794	1	0.056%	0.9	0.052%	0.9	0.049%
36	1,802	1	0.055%	1.1	0.059%	0.9	0.051%
37	1,808	-	0.000%	1.2	0.065%	0.9	0.052%
38	1,788	2	0.112%	1.3	0.072%	1.0	0.054%
39	1,759	1	0.057%	1.4	0.078%	1.0	0.055%
40	1,720	2	0.116%	1.4	0.084%	1.0	0.056%
41	1,710	1	0.058%	1.5	0.088%	1.0	0.058%
42	1,808	-	0.000%	1.7	0.092%	1.1	0.060%
43	1,857	1	0.054%	1.8	0.096%	1.2	0.062%
44	1,919	1	0.052%	1.9	0.100%	1.3	0.065%
45	1,953	2	0.102%	2.0	0.104%	1.4	0.069%
46	1,905	3	0.157%	2.1	0.110%	1.4	0.075%
47	1,870	5	0.267%	2.2	0.117%	1.5	0.081%
48	1,835	3	0.163%	2.3	0.124%	1.6	0.089%
49	1,848	2	0.108%	2.4	0.131%	1.8	0.099%
50	1,915	3	0.157%	2.6	0.138%	2.1	0.111%
51	1,987	3	0.151%	2.9	0.146%	2.5	0.124%
52	2,099	1	0.048%	3.2	0.154%	2.9	0.138%
53	2,164	2	0.092%	3.5	0.163%	3.3	0.155%
54	2,247	3	0.134%	3.9	0.172%	3.9	0.173%
55	2,234	-	0.000%	4.0	0.181%	4.3	0.192%
56	2,188	4	0.183%	4.2	0.194%	4.7	0.214%
57	2,076	5	0.241%	4.3	0.208%	4.9	0.236%
58	2,001	5	0.250%	4.5	0.227%	5.2	0.260%
59	1,959	8	0.408%	4.9	0.252%	5.6	0.286%
60	1,830	6	0.328%	5.1	0.281%	5.8	0.316%
61	1,713	6	0.350%	5.4	0.314%	6.0	0.350%
62	1,586	9	0.567%	5.5	0.347%	6.2	0.389%
63	1,343	5	0.372%	5.1	0.383%	5.8	0.434%
64	1,240	3	0.242%	5.3	0.429%	6.0	0.486%
	71,970	91	0.126%	95.6	0.133%	94.5	0.131%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary E-13

Probability of Death - Active Members

Females - School Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	4,445	-	0.000%	0.7	0.015%	0.7	0.015%
26	4,664	-	0.000%	0.7	0.015%	0.7	0.016%
27	4,681	-	0.000%	0.7	0.015%	0.8	0.016%
28	4,773	2	0.042%	0.7	0.015%	0.8	0.016%
29	4,669	-	0.000%	0.7	0.015%	0.8	0.017%
30	4,753	-	0.000%	0.7	0.015%	0.8	0.017%
31	4,915	-	0.000%	0.8	0.015%	0.9	0.017%
32	5,120	2	0.039%	0.8	0.016%	0.9	0.018%
33	5,408	-	0.000%	0.9	0.017%	1.0	0.018%
34	5,566	1	0.018%	1.0	0.018%	1.0	0.019%
35	5,698	1	0.018%	1.1	0.019%	1.1	0.019%
36	5,725	1	0.017%	1.1	0.020%	1.1	0.020%
37	5,749	1	0.017%	1.2	0.021%	1.2	0.021%
38	5,704	-	0.000%	1.3	0.023%	1.3	0.022%
39	5,699	1	0.018%	1.6	0.027%	1.3	0.024%
40	5,757	-	0.000%	1.8	0.031%	1.4	0.025%
41	5,918	1	0.017%	2.0	0.034%	1.6	0.027%
42	6,153	3	0.049%	2.3	0.037%	1.8	0.029%
43	6,482	1	0.015%	2.6	0.040%	2.0	0.031%
44	6,827	5	0.073%	2.9	0.043%	2.2	0.032%
45	6,915	4	0.058%	3.1	0.046%	2.4	0.035%
46	6,914	3	0.043%	3.3	0.048%	2.6	0.037%
47	6,782	-	0.000%	3.5	0.052%	2.7	0.040%
48	6,722	5	0.074%	3.8	0.056%	2.9	0.043%
49	6,760	9	0.133%	4.2	0.062%	3.2	0.047%
50	6,898	3	0.043%	4.7	0.068%	3.5	0.051%
51	7,096	2	0.028%	5.3	0.075%	3.9	0.056%
52	7,312	3	0.041%	6.0	0.082%	4.5	0.061%
53	7,441	4	0.054%	6.6	0.088%	5.0	0.067%
54	7,477	4	0.053%	7.1	0.095%	5.5	0.074%
55	7,322	4	0.055%	7.4	0.101%	6.0	0.082%
56	6,922	7	0.101%	7.6	0.109%	6.3	0.091%
57	6,640	6	0.090%	7.8	0.118%	6.6	0.100%
58	6,340	7	0.110%	8.2	0.130%	7.0	0.110%
59	5,979	7	0.117%	8.5	0.142%	7.2	0.121%
60	5,620	6	0.107%	8.9	0.159%	7.5	0.133%
61	5,175	7	0.135%	9.2	0.178%	7.6	0.146%
62	4,522	6	0.133%	9.0	0.200%	7.2	0.160%
63	3,621	9	0.249%	8.1	0.224%	6.3	0.175%
64	2,961	5	0.169%	7.5	0.252%	5.7	0.191%
	234,125	120	0.051%	155.4	0.066%	126.9	0.054%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary E-14

Probability of Death - Active Members

Males - Other Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	1,059	-	0.000%	0.3	0.032%	0.5	0.047%
26	1,165	-	0.000%	0.4	0.035%	0.6	0.049%
27	1,208	-	0.000%	0.4	0.035%	0.6	0.051%
28	1,257	-	0.000%	0.5	0.036%	0.6	0.048%
29	1,353	-	0.000%	0.5	0.038%	0.6	0.046%
30	1,448	-	0.000%	0.6	0.041%	0.7	0.046%
31	1,515	-	0.000%	0.7	0.046%	0.7	0.046%
32	1,542	1	0.065%	0.8	0.052%	0.7	0.046%
33	1,713	-	0.000%	1.0	0.059%	0.8	0.047%
34	1,753	1	0.057%	1.1	0.065%	0.9	0.049%
35	1,828	-	0.000%	1.3	0.072%	0.9	0.051%
36	1,895	2	0.106%	1.5	0.078%	1.0	0.052%
37	1,811	-	0.000%	1.5	0.084%	1.0	0.054%
38	1,717	-	0.000%	1.5	0.088%	0.9	0.055%
39	1,740	-	0.000%	1.6	0.092%	1.0	0.056%
40	1,681	1	0.059%	1.6	0.096%	1.0	0.058%
41	1,749	1	0.057%	1.7	0.100%	1.0	0.060%
42	1,856	-	0.000%	1.9	0.104%	1.2	0.062%
43	1,933	-	0.000%	2.1	0.110%	1.3	0.065%
44	1,961	1	0.051%	2.3	0.117%	1.4	0.069%
45	2,052	1	0.049%	2.5	0.124%	1.5	0.075%
46	1,975	3	0.152%	2.6	0.131%	1.6	0.081%
47	1,927	3	0.156%	2.7	0.138%	1.7	0.089%
48	1,966	2	0.102%	2.9	0.146%	1.9	0.099%
49	2,055	1	0.049%	3.2	0.154%	2.3	0.111%
50	2,194	3	0.137%	3.6	0.163%	2.7	0.124%
51	2,354	5	0.212%	4.0	0.172%	3.3	0.138%
52	2,439	7	0.287%	4.4	0.181%	3.8	0.155%
53	2,571	3	0.117%	5.0	0.194%	4.4	0.173%
54	2,744	9	0.328%	5.7	0.208%	5.3	0.192%
55	2,799	8	0.286%	6.4	0.227%	6.0	0.214%
56	2,768	6	0.217%	7.0	0.252%	6.5	0.236%
57	2,795	6	0.215%	7.8	0.281%	7.3	0.260%
58	2,732	9	0.329%	8.6	0.314%	7.8	0.286%
59	2,694	7	0.260%	9.3	0.347%	8.5	0.316%
60	2,641	10	0.379%	10.1	0.383%	9.2	0.350%
61	2,492	14	0.562%	10.7	0.429%	9.7	0.389%
62	2,304	12	0.521%	10.9	0.472%	10.0	0.434%
63	1,936	7	0.362%	10.1	0.524%	9.4	0.486%
64	1,669	4	0.240%	9.5	0.569%	9.1	0.545%
	79,291	127	0.160%	150.4	0.190%	129.3	0.163%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary E-15

Probability of Death - Active Members

Females - Other Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	2,459	-	0.000%	0.4	0.015%	0.4	0.017%
26	2,648	-	0.000%	0.4	0.015%	0.4	0.017%
27	2,653	-	0.000%	0.4	0.015%	0.5	0.017%
28	2,705	-	0.000%	0.4	0.015%	0.5	0.018%
29	2,785	-	0.000%	0.4	0.015%	0.5	0.018%
30	2,869	-	0.000%	0.4	0.015%	0.5	0.019%
31	2,897	1	0.035%	0.4	0.015%	0.6	0.019%
32	2,905	3	0.103%	0.5	0.016%	0.6	0.020%
33	2,871	-	0.000%	0.5	0.017%	0.6	0.021%
34	2,864	1	0.035%	0.5	0.018%	0.6	0.022%
35	2,906	1	0.034%	0.5	0.019%	0.7	0.024%
36	2,861	-	0.000%	0.6	0.020%	0.7	0.025%
37	2,827	-	0.000%	0.6	0.021%	0.8	0.027%
38	2,748	-	0.000%	0.6	0.023%	0.8	0.029%
39	2,769	1	0.036%	0.8	0.027%	0.8	0.031%
40	2,650	1	0.038%	0.8	0.031%	0.9	0.032%
41	2,711	1	0.037%	0.9	0.034%	0.9	0.035%
42	2,777	-	0.000%	1.0	0.037%	1.0	0.037%
43	2,847	2	0.070%	1.1	0.040%	1.1	0.040%
44	2,893	2	0.069%	1.2	0.043%	1.2	0.043%
45	2,933	1	0.034%	1.3	0.046%	1.4	0.047%
46	2,873	-	0.000%	1.4	0.048%	1.5	0.051%
47	2,922	-	0.000%	1.5	0.052%	1.6	0.056%
48	3,014	-	0.000%	1.7	0.056%	1.8	0.061%
49	3,138	1	0.032%	1.9	0.062%	2.1	0.067%
50	3,356	5	0.149%	2.3	0.068%	2.5	0.074%
51	3,589	2	0.056%	2.7	0.075%	2.9	0.082%
52	3,815	7	0.183%	3.1	0.082%	3.5	0.091%
53	3,997	3	0.075%	3.5	0.088%	4.0	0.100%
54	4,094	3	0.073%	3.9	0.095%	4.5	0.110%
55	4,095	3	0.073%	4.1	0.101%	5.0	0.121%
56	3,989	8	0.201%	4.4	0.109%	5.3	0.133%
57	3,888	7	0.180%	4.6	0.118%	5.7	0.146%
58	3,769	6	0.159%	4.9	0.130%	6.0	0.160%
59	3,590	6	0.167%	5.1	0.142%	6.3	0.175%
60	3,369	10	0.297%	5.4	0.159%	6.4	0.191%
61	3,186	6	0.188%	5.7	0.178%	6.6	0.208%
62	2,807	3	0.107%	5.6	0.200%	6.3	0.225%
63	2,291	6	0.262%	5.1	0.224%	5.6	0.244%
64	1,971	7	0.355%	5.0	0.252%	5.2	0.263%
	122,331	97	0.079%	85.7	0.070%	98.4	0.080%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary E-16

Probability of Death - Active Members

Males - Special Services Membership

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	510	-	0.000%	0.2	0.032%	0.2	0.047%
26	557	-	0.000%	0.2	0.035%	0.3	0.049%
27	600	-	0.000%	0.2	0.035%	0.3	0.051%
28	627	-	0.000%	0.2	0.036%	0.3	0.048%
29	707	1	0.141%	0.3	0.038%	0.3	0.046%
30	735	-	0.000%	0.3	0.041%	0.3	0.046%
31	829	1	0.121%	0.4	0.046%	0.4	0.046%
32	805	1	0.124%	0.4	0.052%	0.4	0.046%
33	780	-	0.000%	0.5	0.059%	0.4	0.047%
34	777	-	0.000%	0.5	0.065%	0.4	0.049%
35	746	3	0.402%	0.5	0.072%	0.4	0.051%
36	759	-	0.000%	0.6	0.078%	0.4	0.052%
37	777	2	0.257%	0.7	0.084%	0.4	0.054%
38	744	1	0.134%	0.7	0.088%	0.4	0.055%
39	739	-	0.000%	0.7	0.092%	0.4	0.056%
40	731	-	0.000%	0.7	0.096%	0.4	0.058%
41	724	-	0.000%	0.7	0.100%	0.4	0.060%
42	751	-	0.000%	0.8	0.104%	0.5	0.062%
43	794	1	0.126%	0.9	0.110%	0.5	0.065%
44	807	-	0.000%	0.9	0.117%	0.6	0.069%
45	784	2	0.255%	1.0	0.124%	0.6	0.075%
46	773	-	0.000%	1.0	0.131%	0.6	0.081%
47	737	1	0.136%	1.0	0.138%	0.7	0.089%
48	742	-	0.000%	1.1	0.146%	0.7	0.099%
49	726	1	0.138%	1.1	0.154%	0.8	0.111%
50	685	1	0.146%	1.1	0.163%	0.8	0.124%
51	674	-	0.000%	1.2	0.172%	0.9	0.138%
52	666	1	0.150%	1.2	0.181%	1.0	0.155%
53	672	-	0.000%	1.3	0.194%	1.2	0.173%
54	644	1	0.155%	1.3	0.208%	1.2	0.192%
55	605	-	0.000%	1.4	0.227%	1.3	0.214%
56	492	1	0.203%	1.2	0.252%	1.2	0.236%
57	440	1	0.227%	1.2	0.281%	1.1	0.260%
58	419	-	0.000%	1.3	0.314%	1.2	0.286%
59	373	1	0.268%	1.3	0.347%	1.2	0.316%
60	313	1	0.319%	1.2	0.383%	1.1	0.350%
61	296	2	0.676%	1.3	0.429%	1.2	0.389%
62	242	3	1.240%	1.1	0.472%	1.1	0.434%
63	177	-	0.000%	0.9	0.524%	0.9	0.486%
64	152	2	1.316%	0.9	0.569%	0.8	0.545%
	25,111	28	0.112%	33.4	0.133%	27.3	0.109%



APPENDIX F

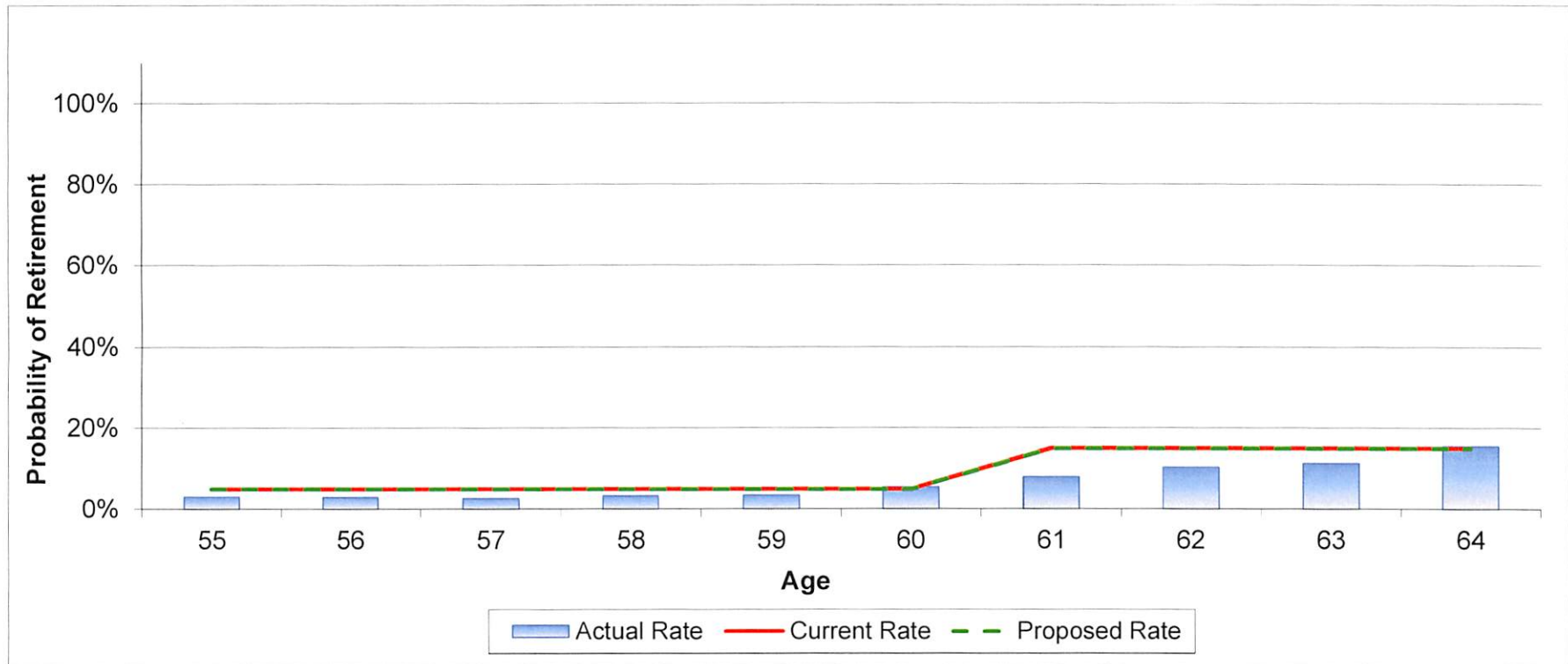
RETIREMENT



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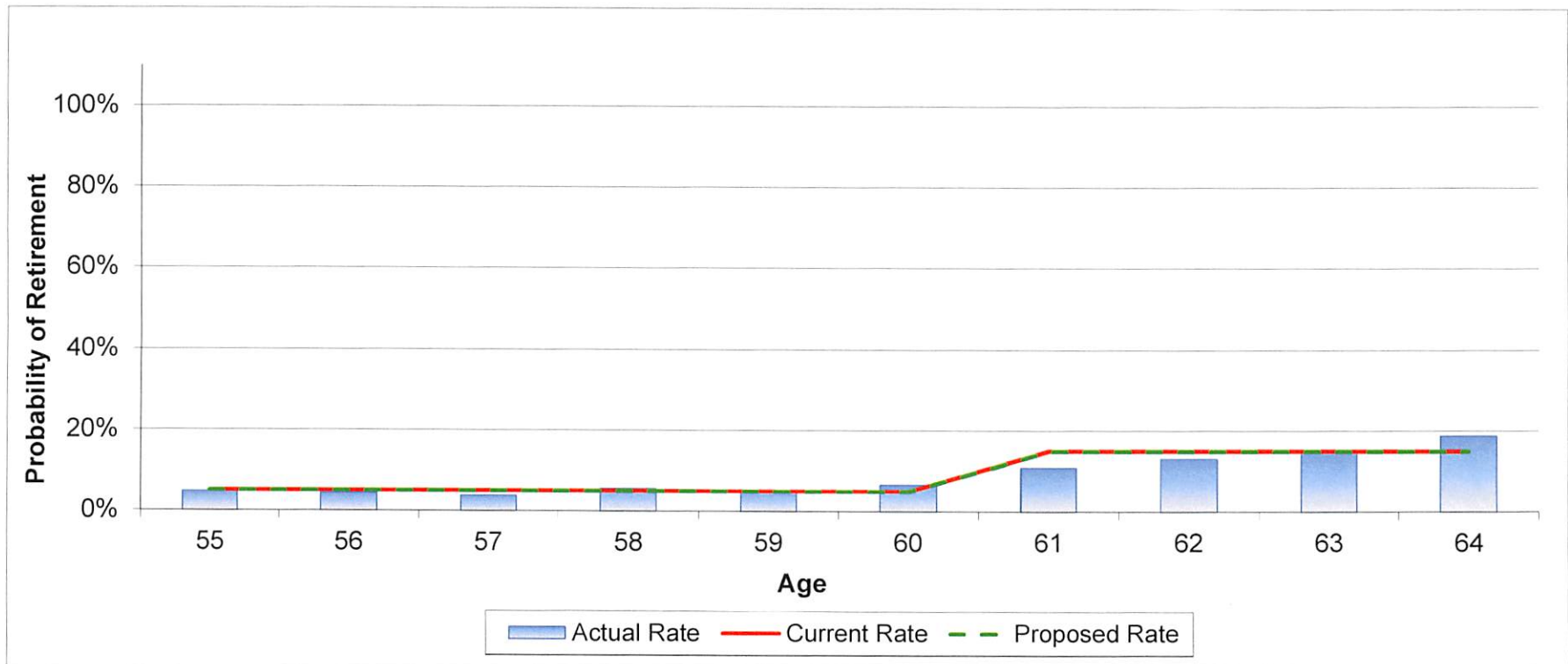
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-1
 Retirement Rates - Early
 State Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	778	1,115	1,115
Actual/Expected		70%	70%



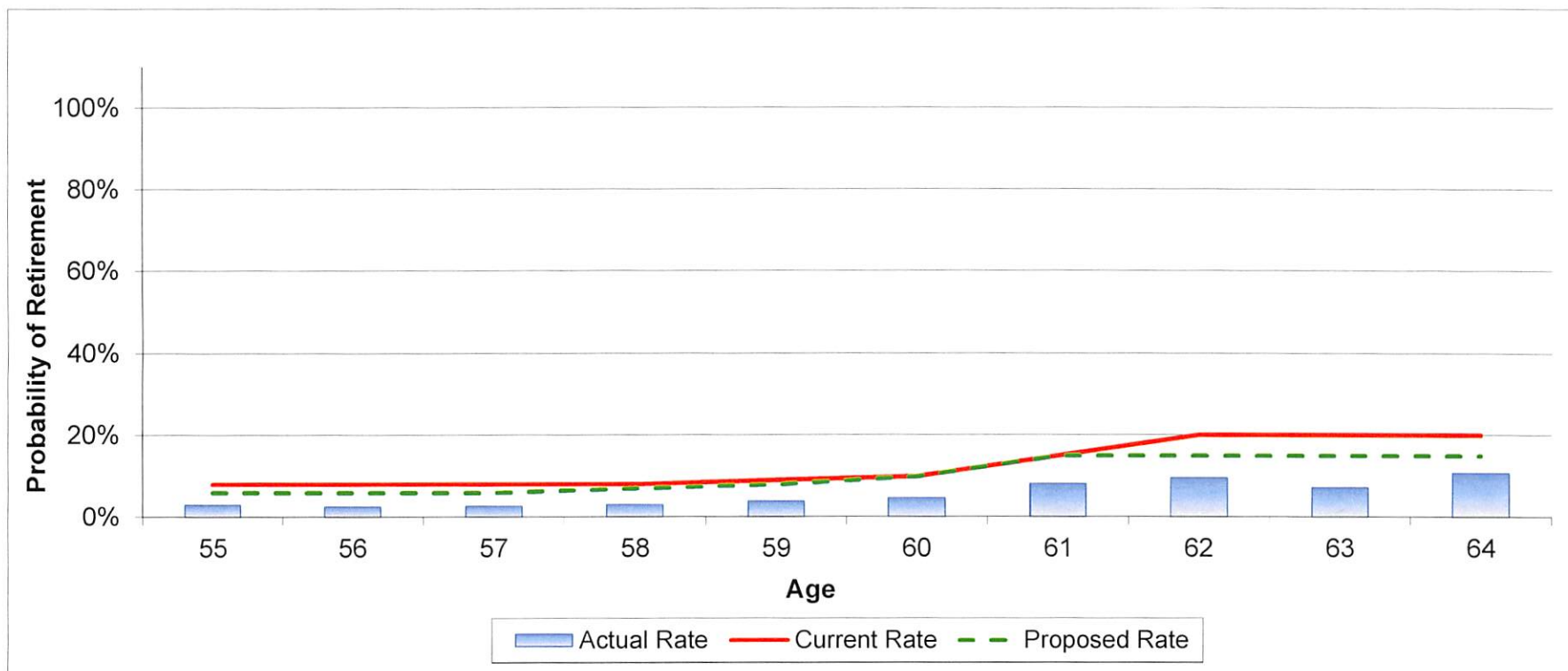
Iowa Public Employees' Retirement System
2013-2017 Experience Study
Exhibit F-2
Retirement Rates - Early
State Membership (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	9,725	10,336	10,336
Actual/Expected		94%	94%



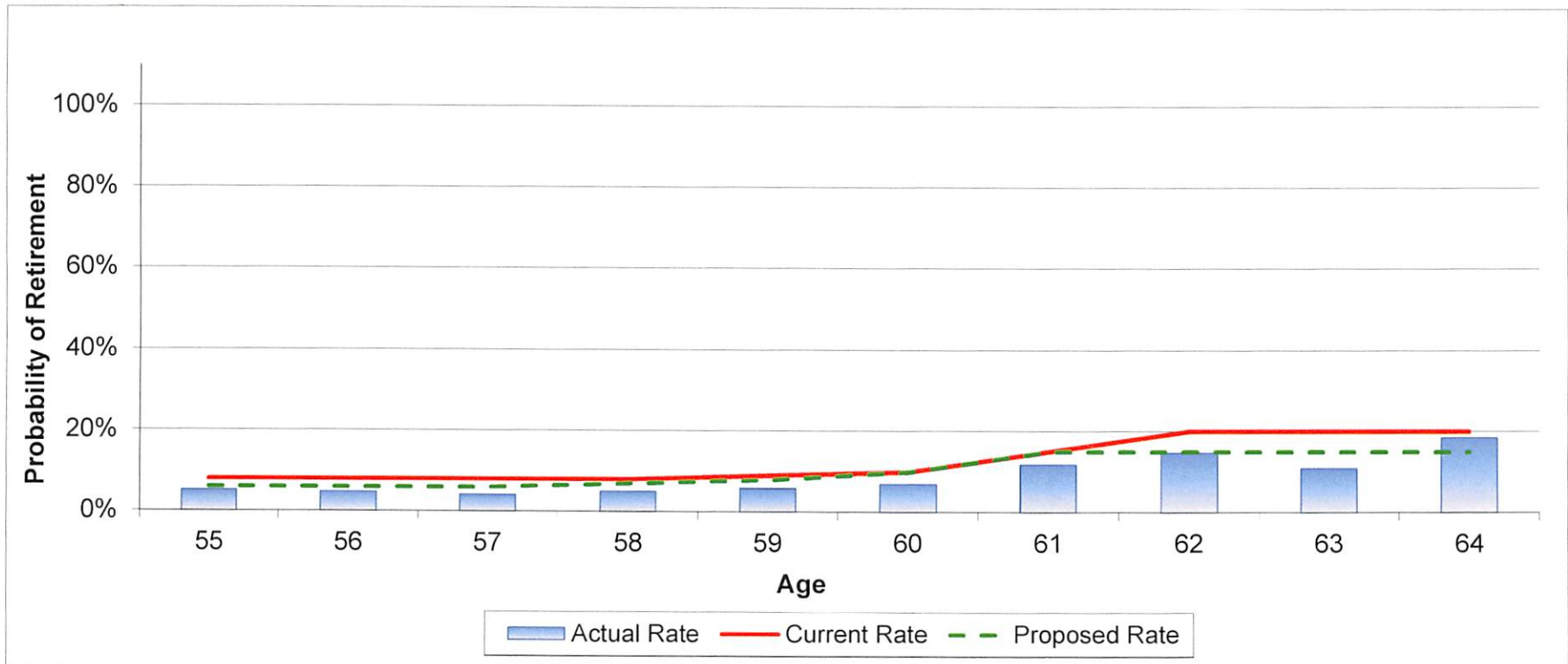
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-3
 Retirement Rates - Early
 School Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	2,677	6,226	5,166
Actual/Expected		43%	52%



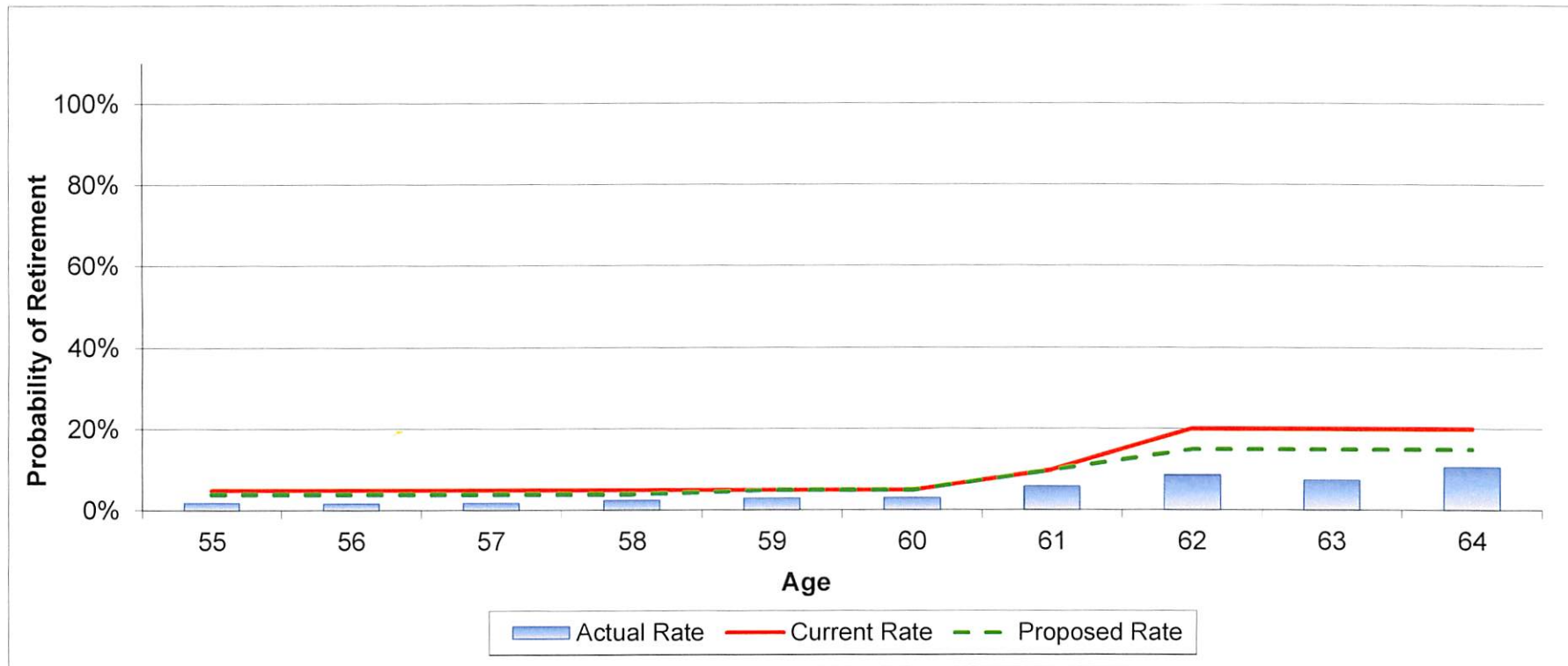
Iowa Public Employees' Retirement System
2013-2017 Experience Study
Exhibit F-4
Retirement Rates - Early
School Membership (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	21,559	32,930	27,388
Actual/Expected		65%	79%



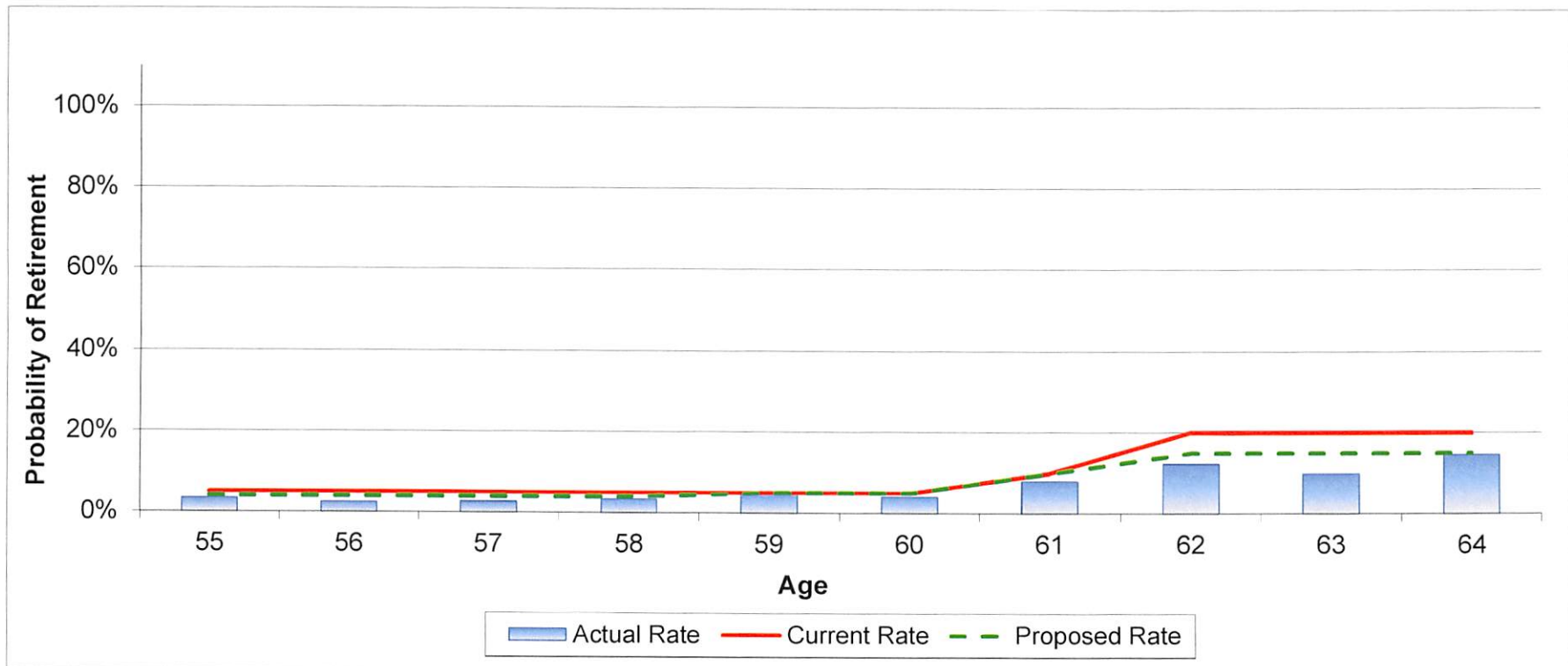
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-5
 Retirement Rates - Early
 Other Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,749	3,741	3,100
Actual/Expected		47%	56%



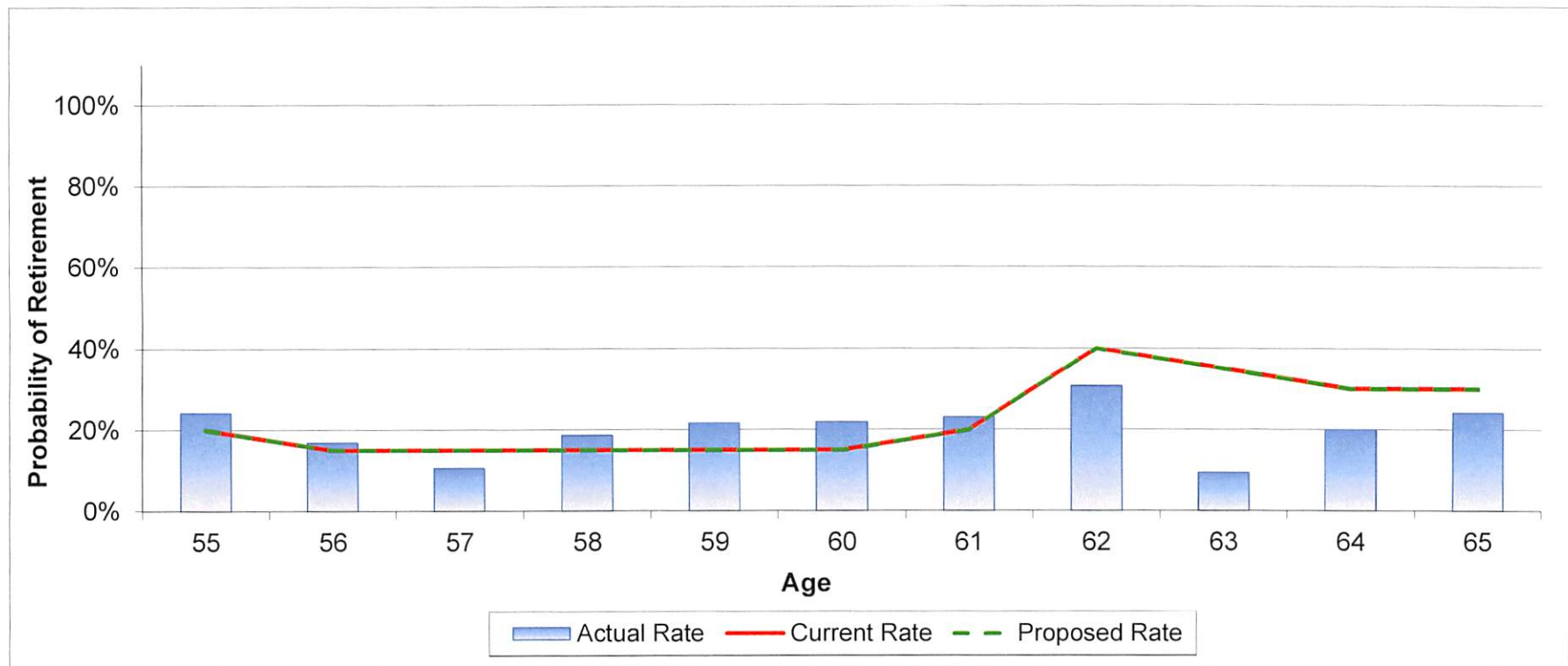
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-6
 Retirement Rates - Early
 Other Membership (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	12,629	18,904	15,916
Actual/Expected		67%	79%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-7
 Retirement Rates - Select Unreduced
 State Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	512	548	548
Actual/Expected		93%	93%

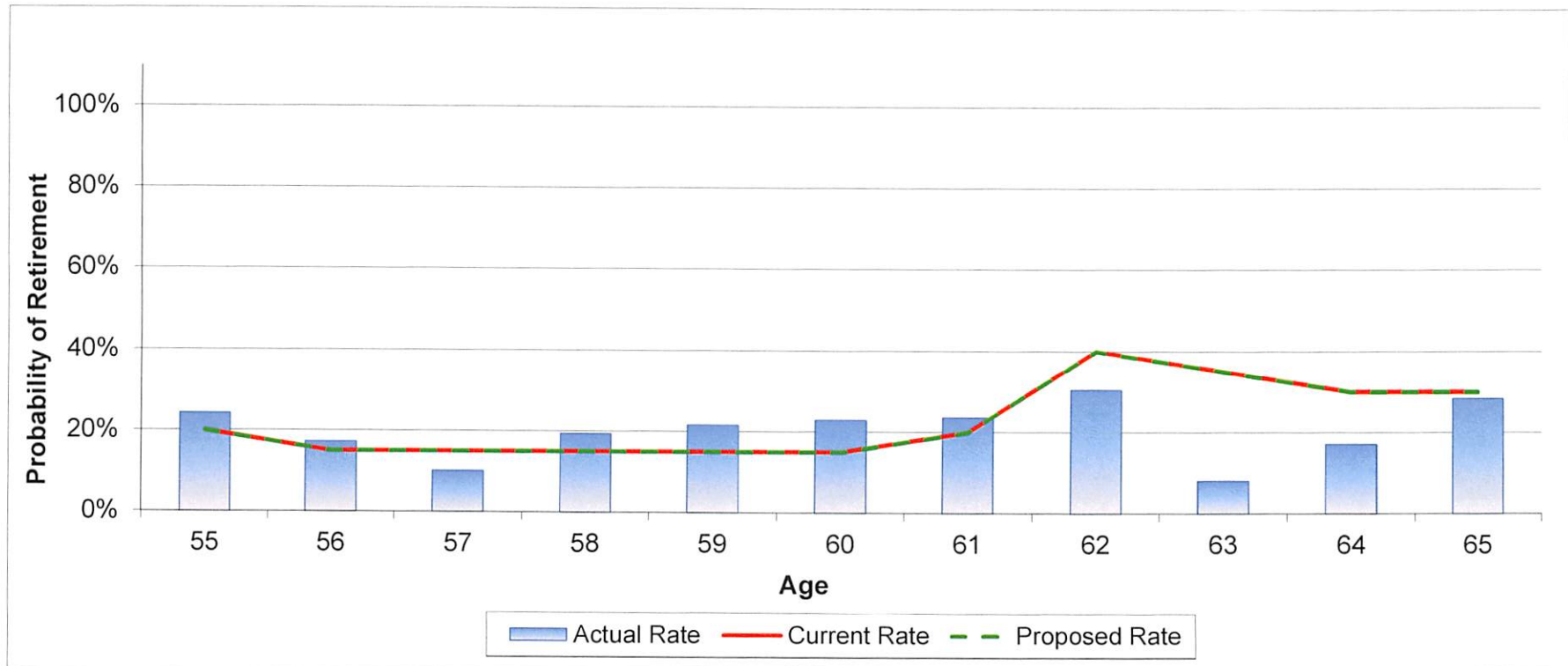


Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit F-8

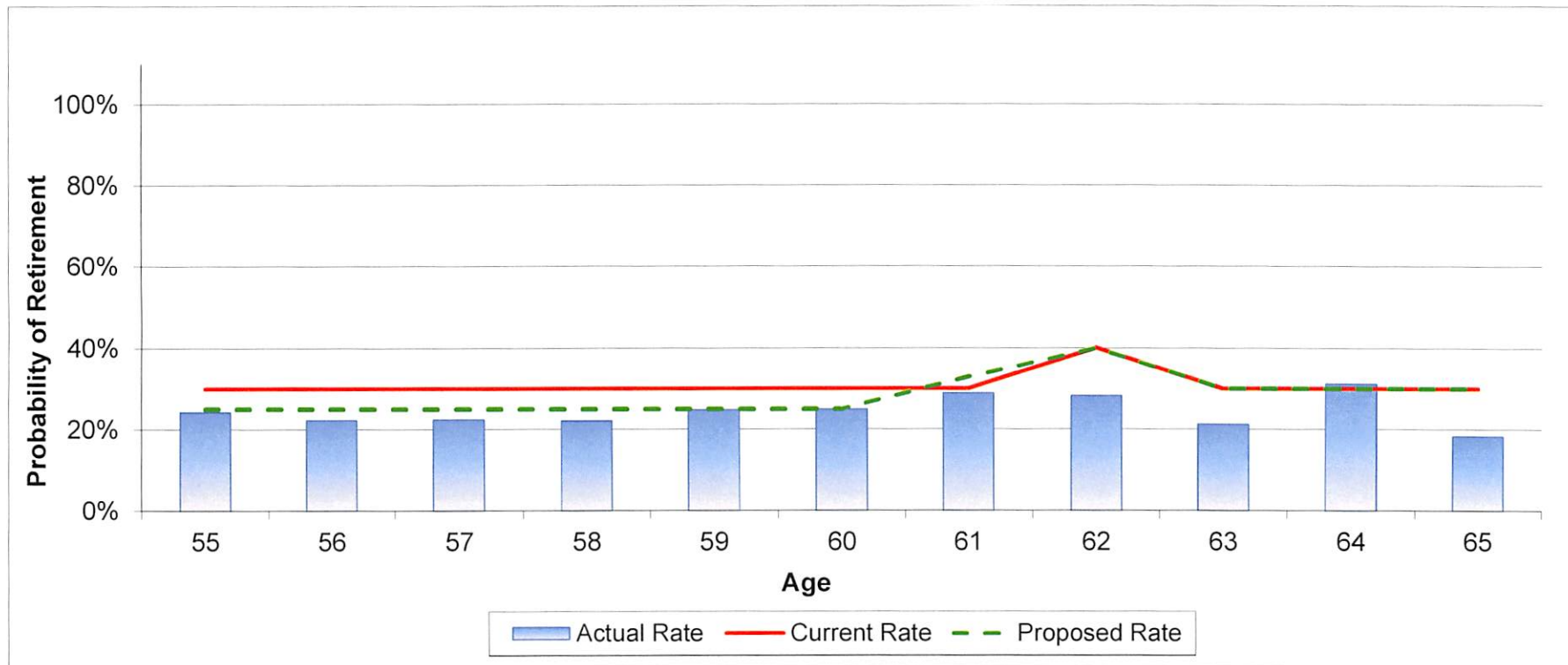
Retirement Rates - Select Unreduced
State Membership (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	8,606	8,517	8,517
Actual/Expected		101%	101%



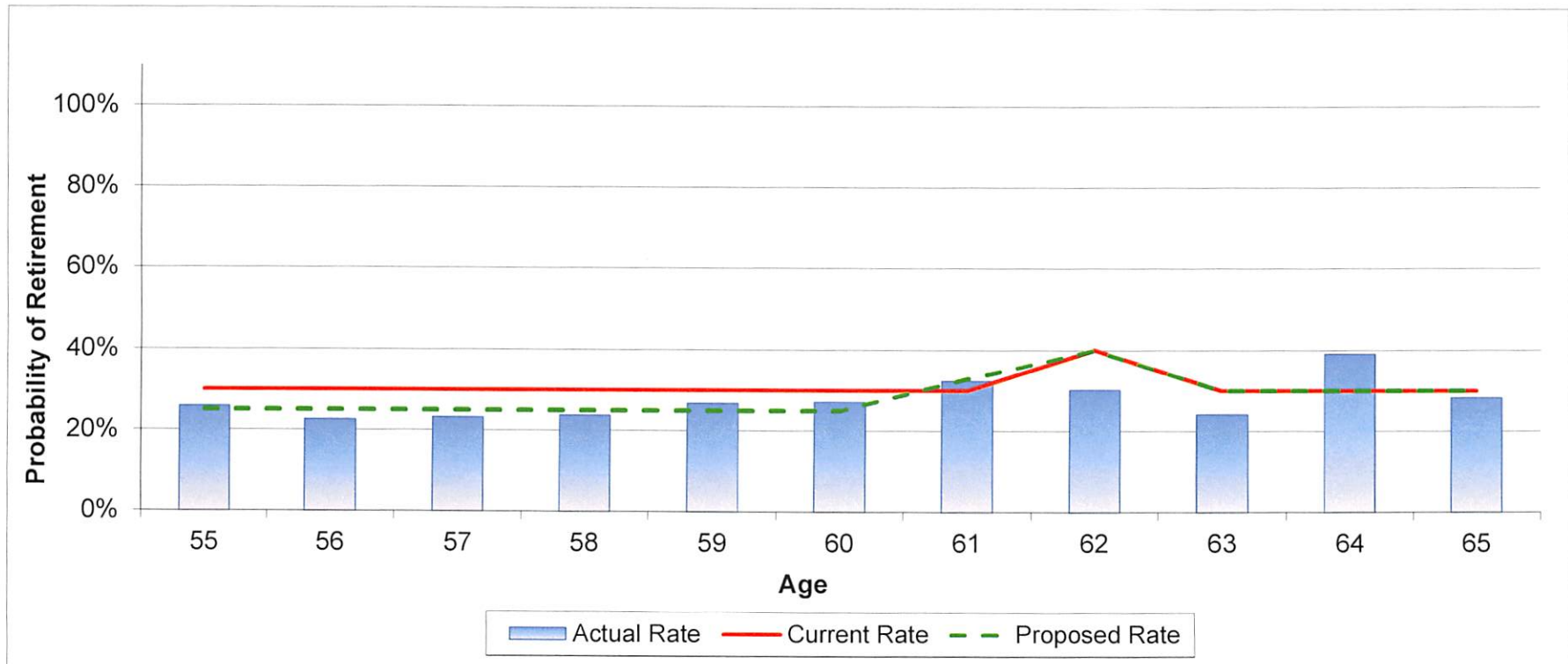
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-9
 Retirement Rates - Select Unreduced
 School Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,608	2,235	2,120
Actual/Expected		72%	76%



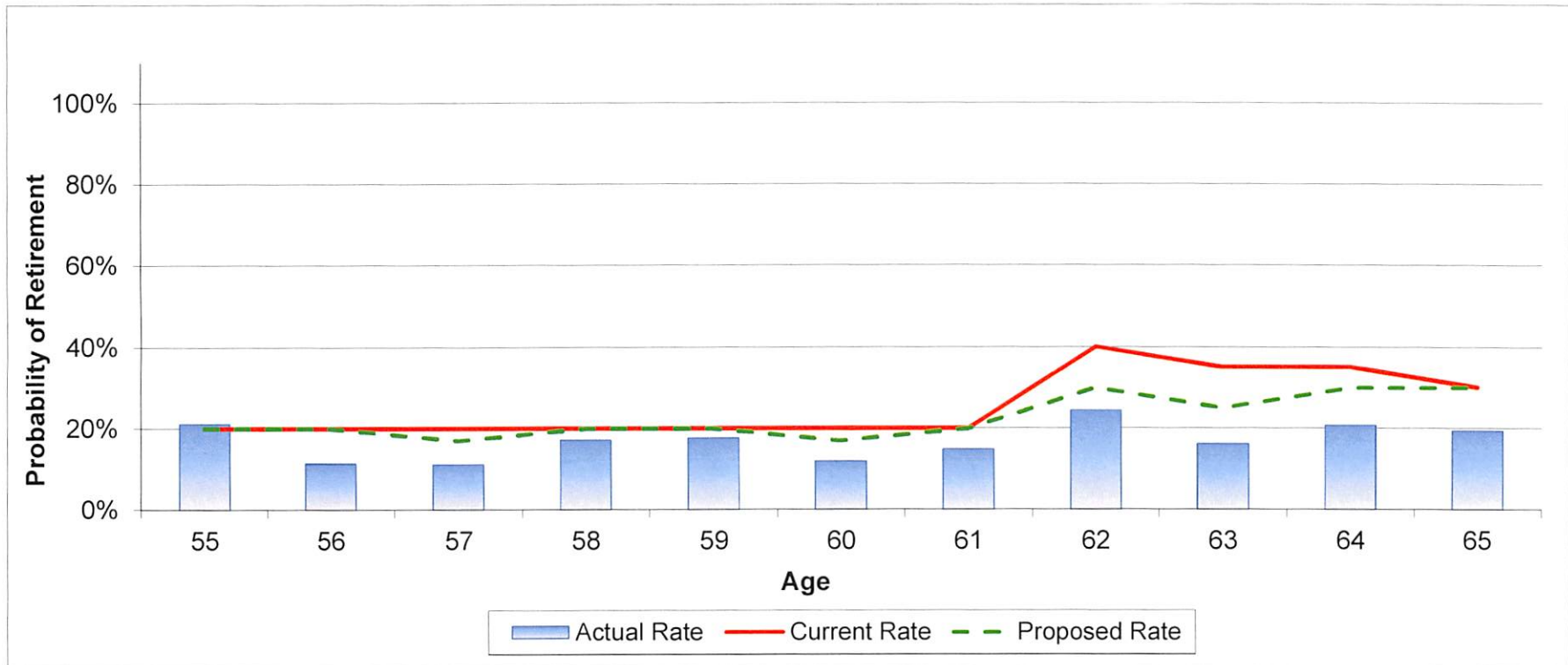
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-10
 Retirement Rates - Select Unreduced
 School Membership (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	21,437	25,864	23,414
Actual/Expected		83%	92%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-11
 Retirement Rates - Select Unreduced
 Other Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	974	1,451	1,322
Actual/Expected		67%	74%

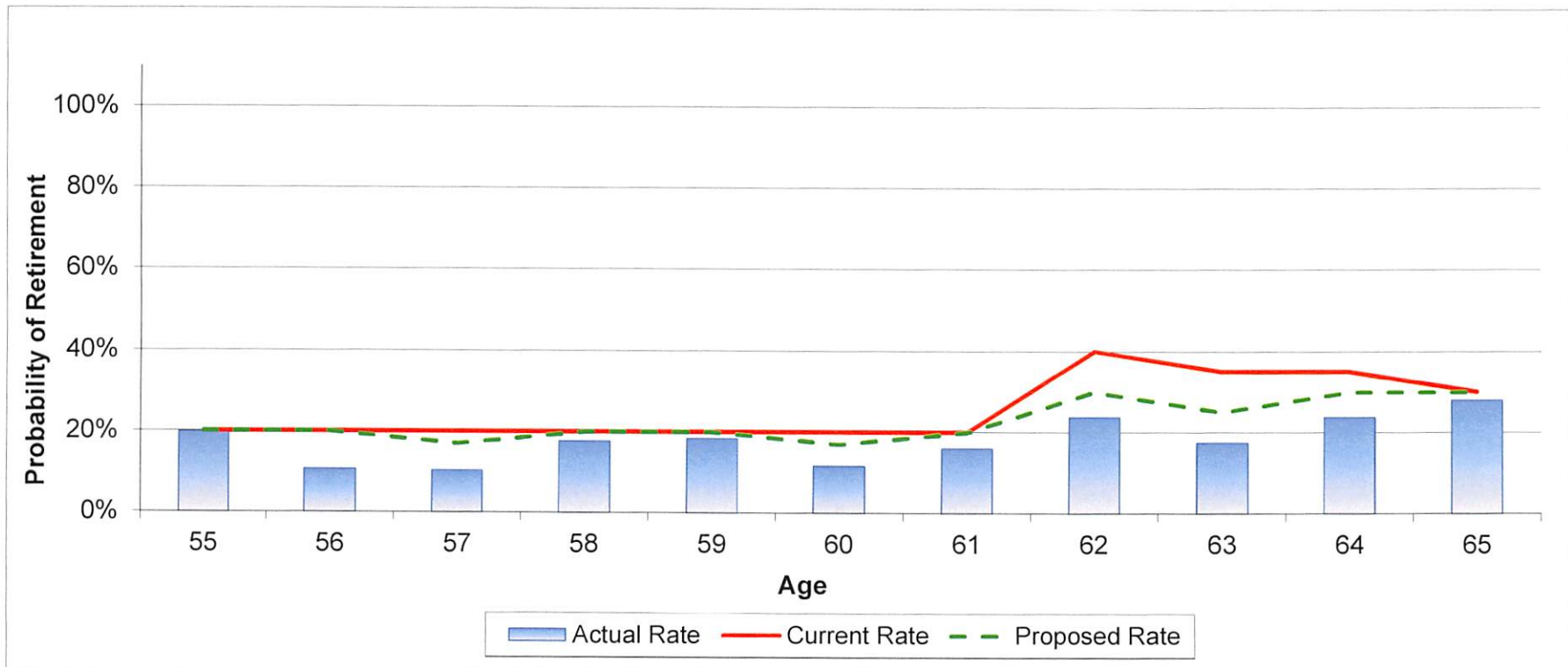


Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit F-12

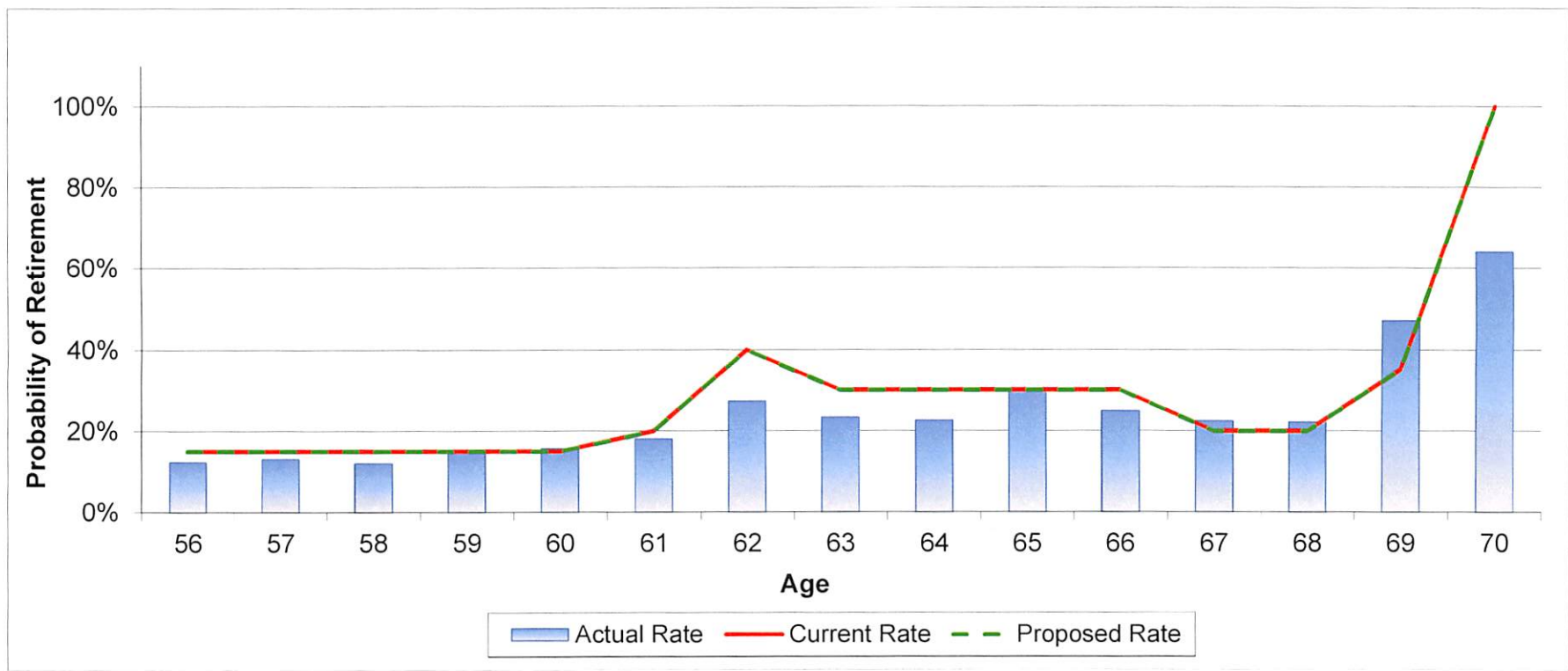
Retirement Rates - Select Unreduced
Other Membership (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	10,403	14,159	12,591
Actual/Expected		73%	83%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-13
 Retirement Rates - Ultimate Unreduced
 State Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,400	1,607	1,607
Actual/Expected		87%	87%

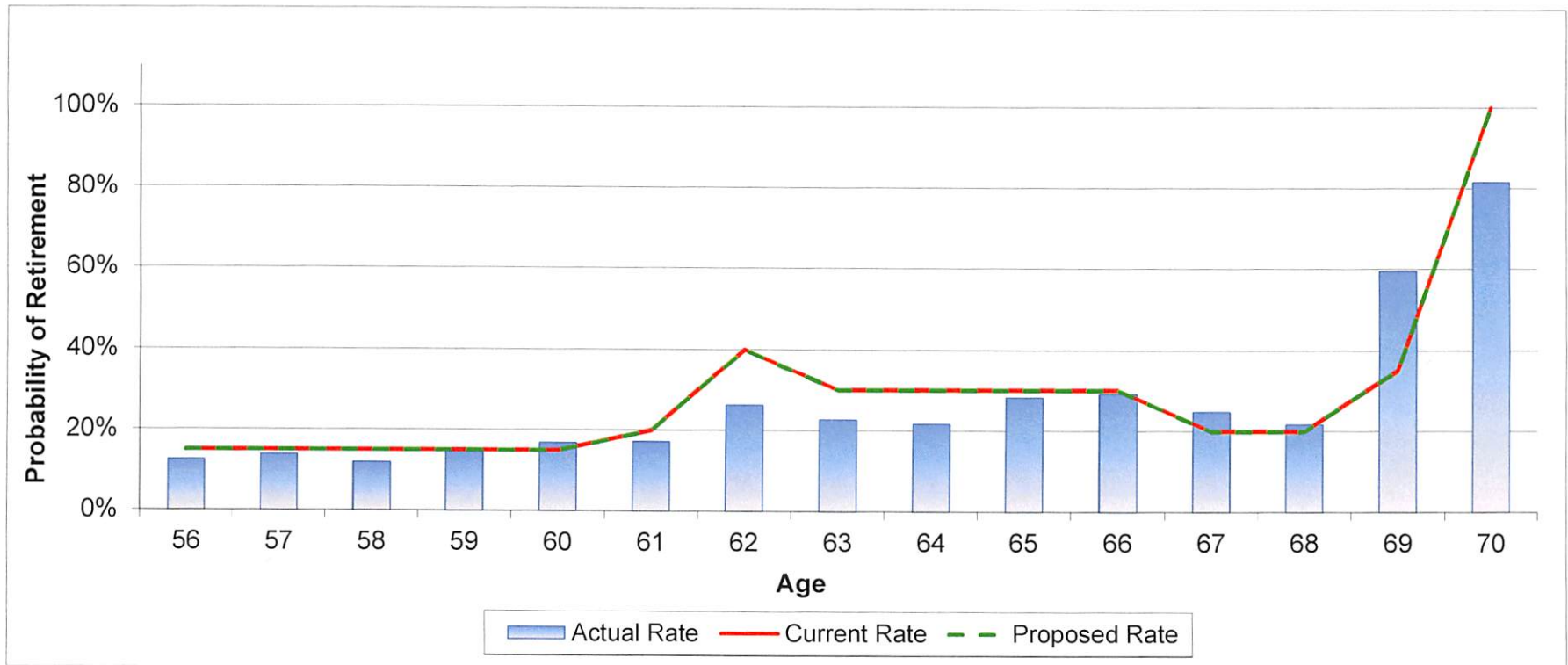


Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit F-14

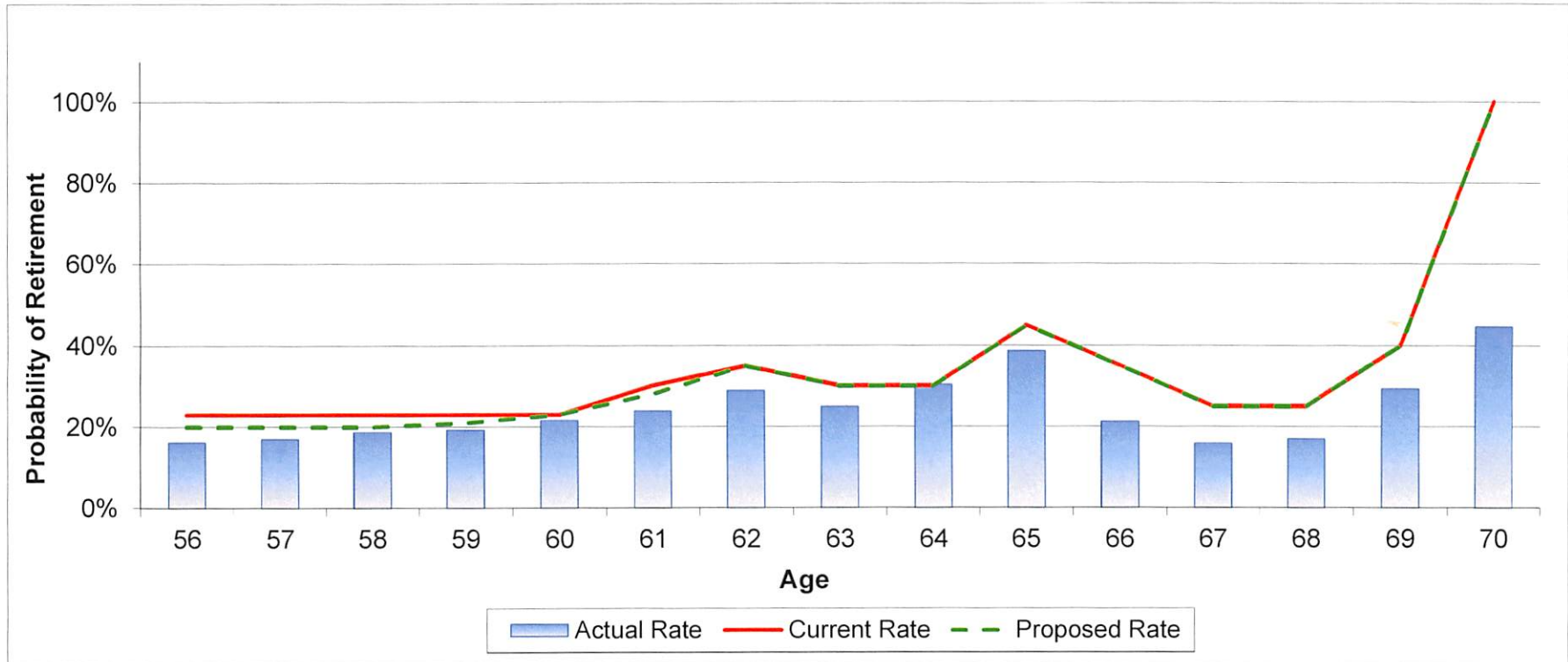
Retirement Rates - Ultimate Unreduced
State Membership (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	27,952	31,760	31,760
Actual/Expected		88%	88%



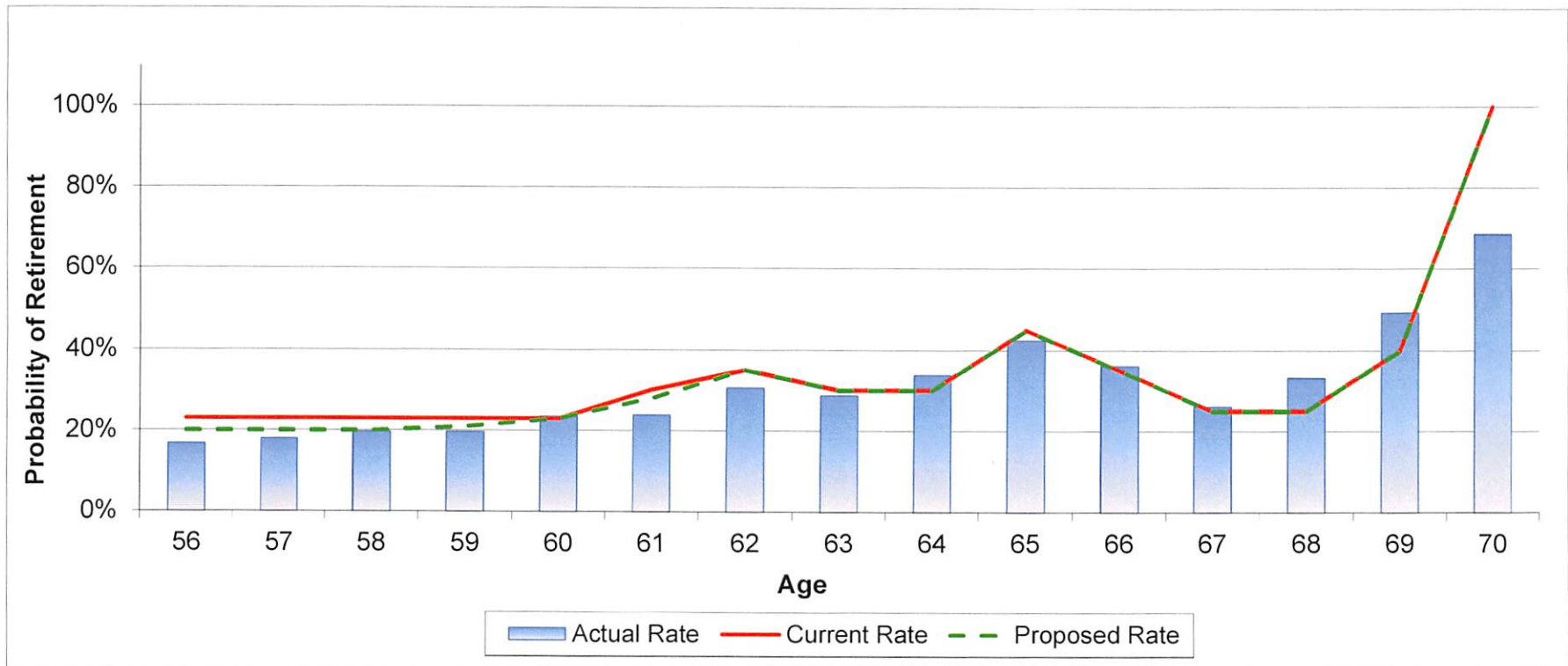
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-15
 Retirement Rates - Ultimate Unreduced
 School Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	4,781	6,529	6,403
Actual/Expected		73%	75%



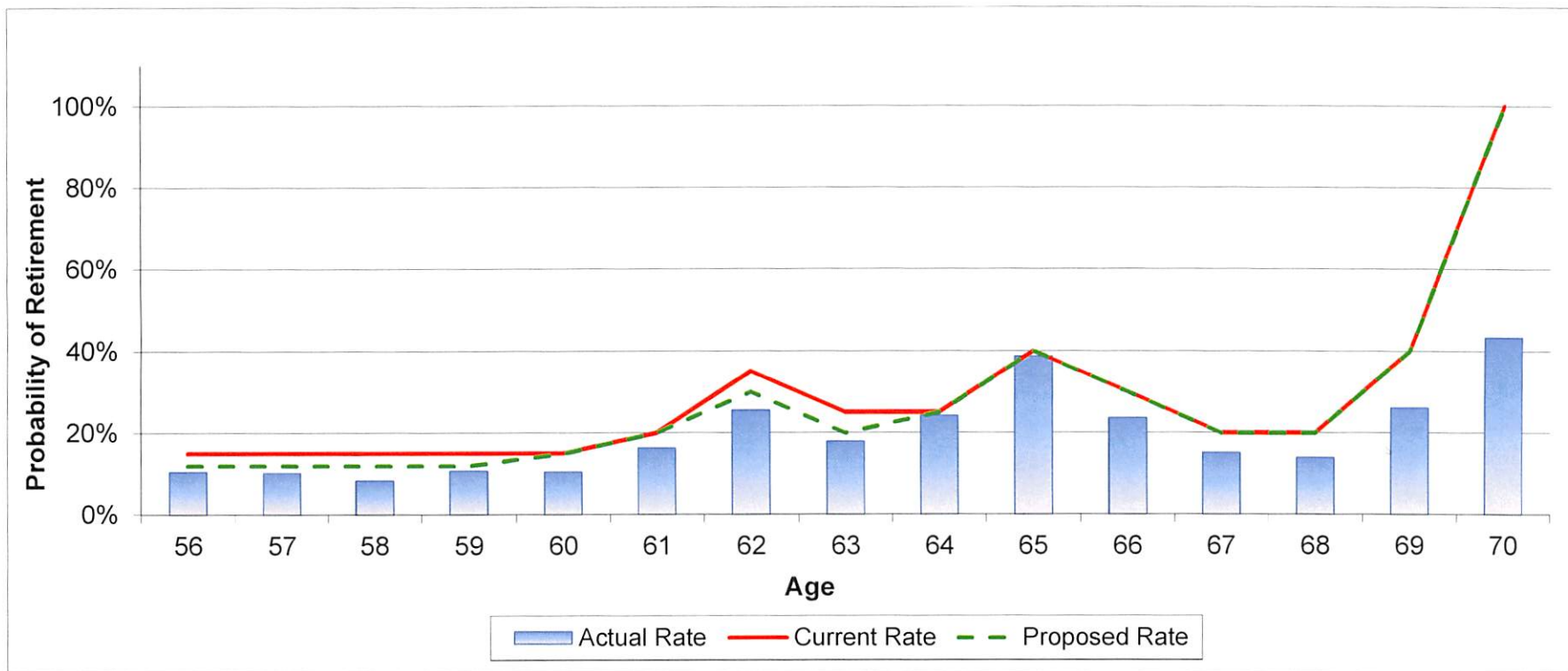
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-16
 Retirement Rates - Ultimate Unreduced
 School Membership (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	73,370	78,998	76,100
Actual/Expected		93%	96%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-17
 Retirement Rates - Ultimate Unreduced
 Other Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	3,318	4,659	4,451
Actual/Expected		71%	75%

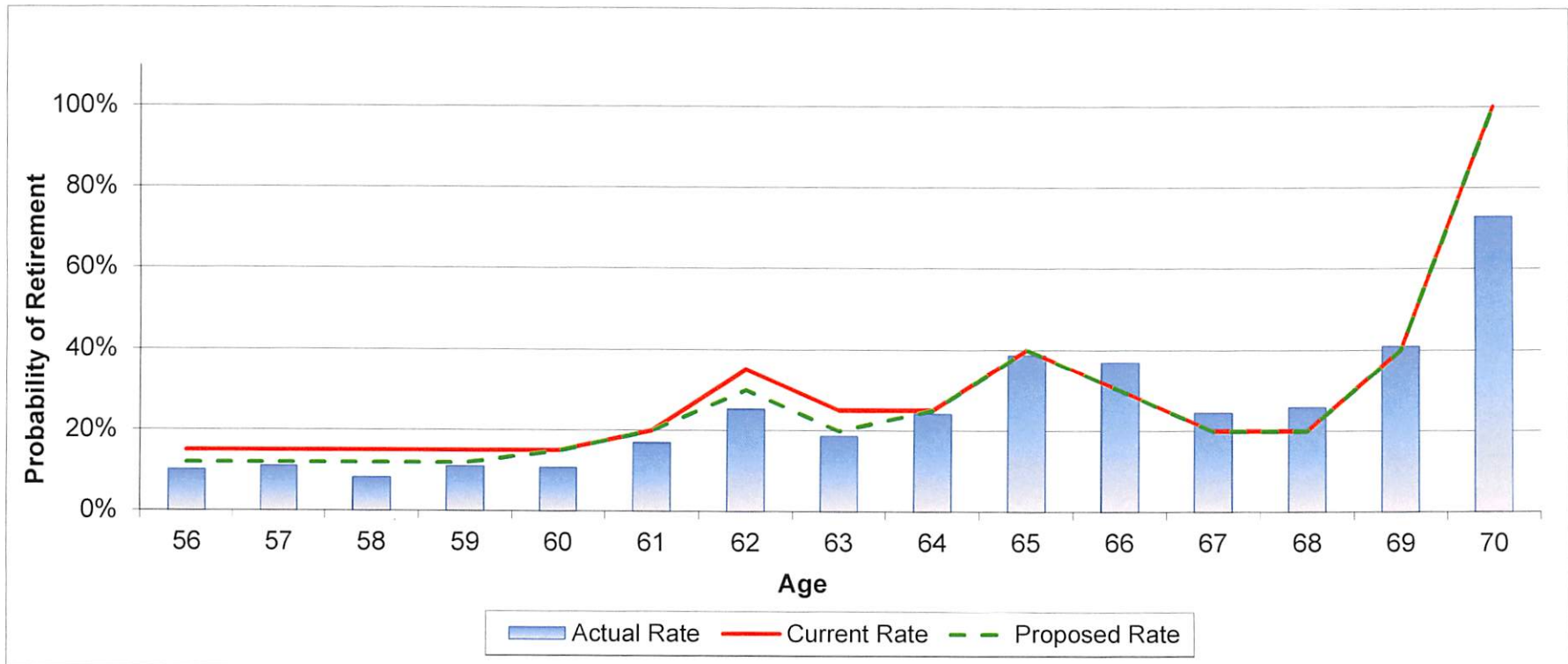


Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit F-18

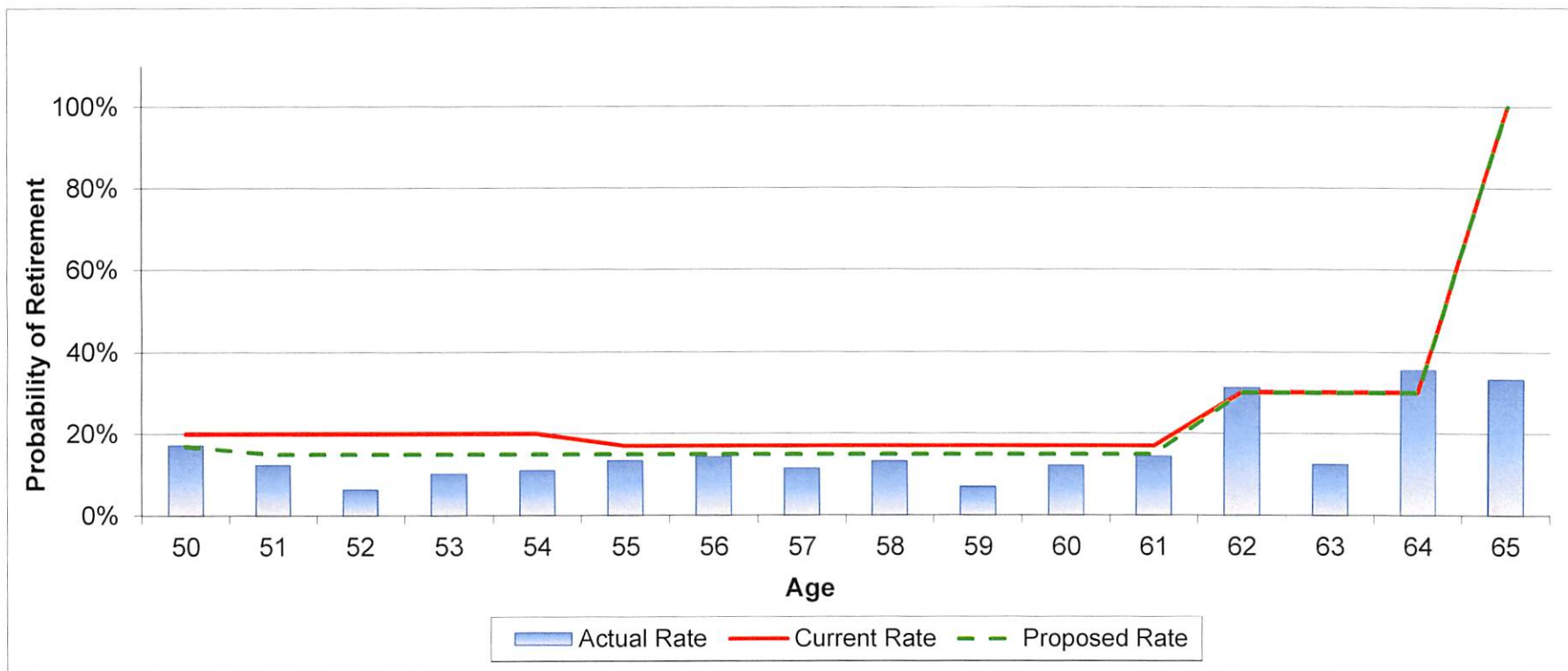
Retirement Rates - Ultimate Unreduced
Other Membership (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	45,116	52,178	48,175
Actual/Expected		86%	94%



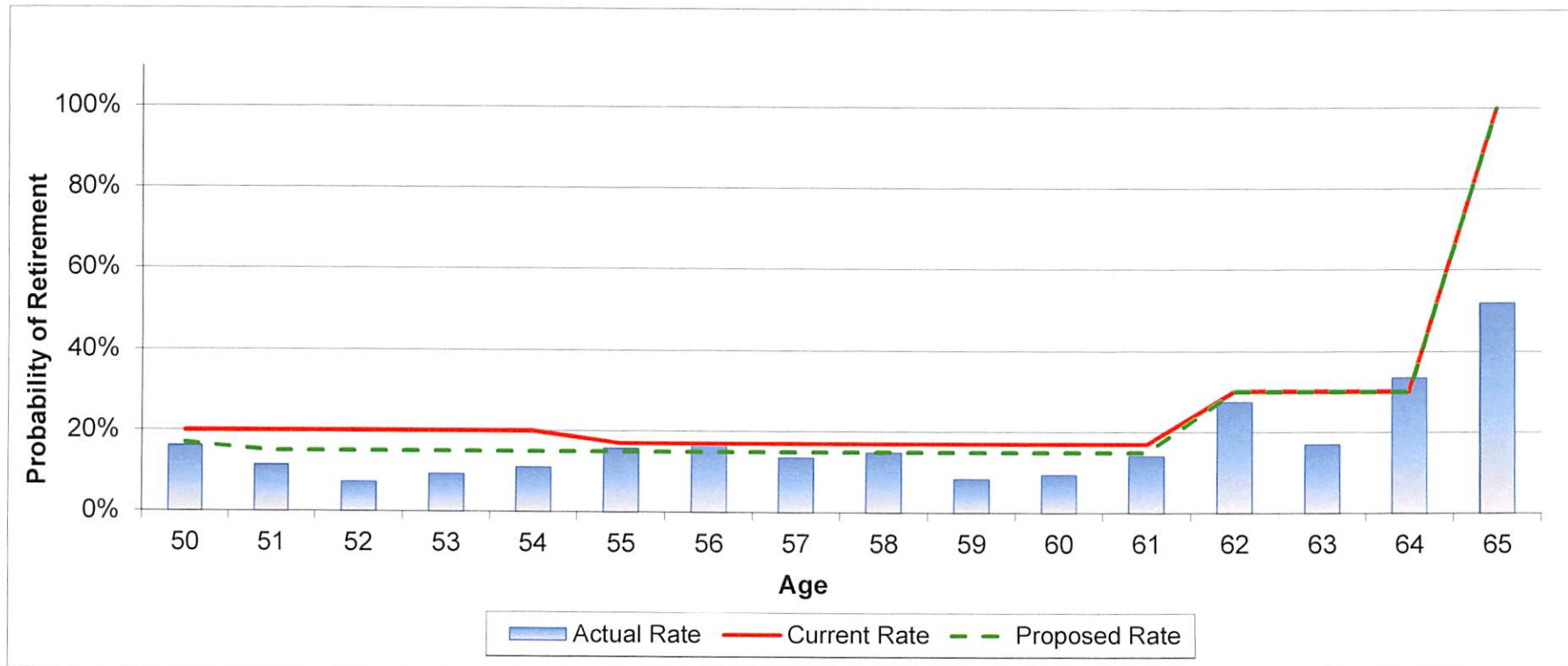
Iowa Public Employees' Retirement System
2013-2017 Experience Study
Exhibit F-19
Retirement Rates
Sheriffs and Deputies



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	154	229	200
Actual/Expected		67%	77%



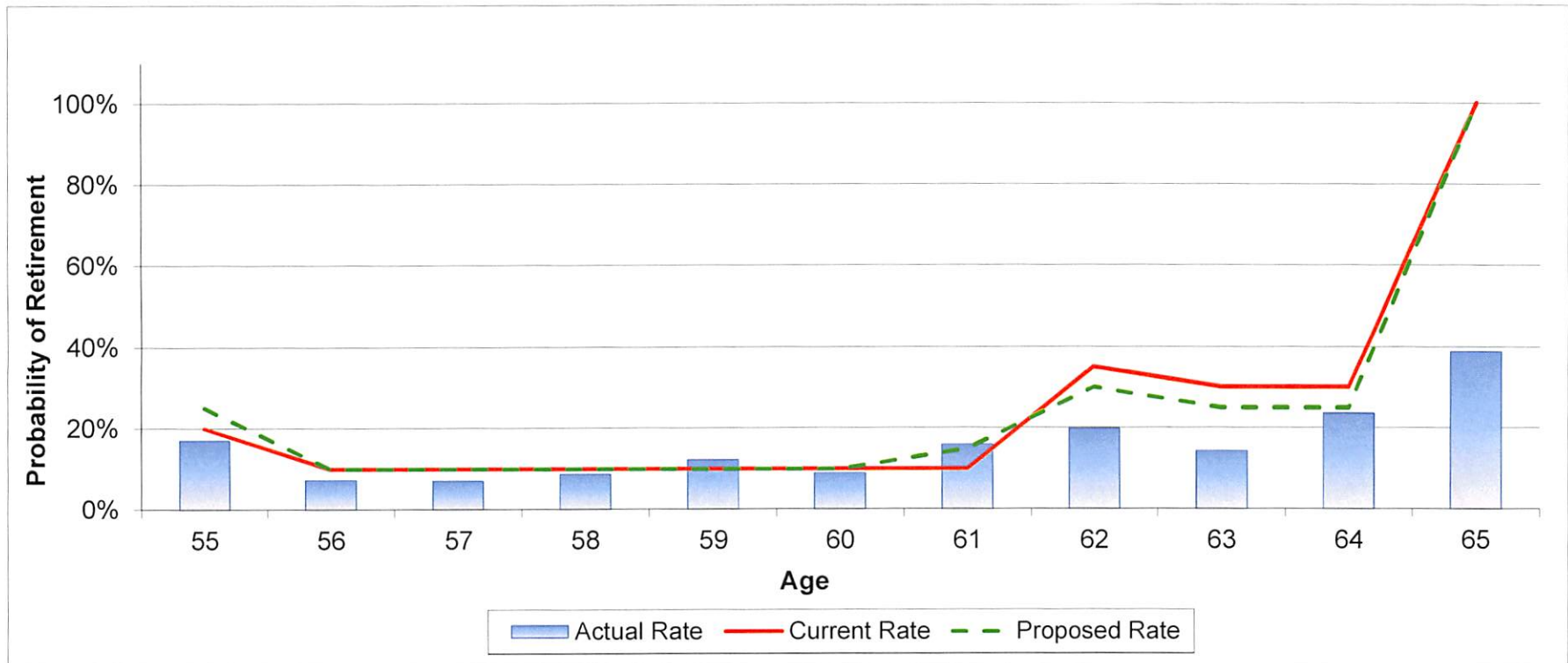
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-20
 Retirement Rates
 Sheriffs and Deputies (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	3,039	4,331	3,763
Actual/Expected		70%	81%



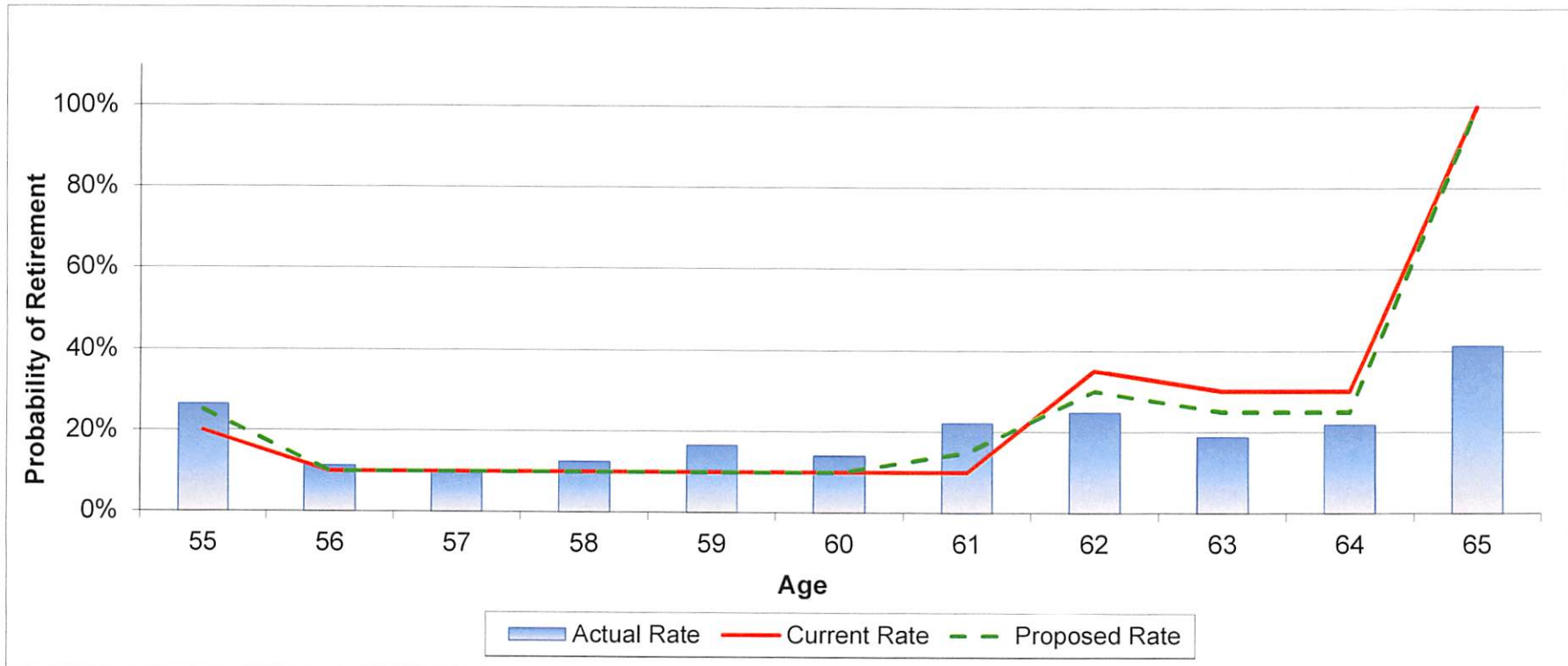
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-21
 Retirement Rates
 Protection Occupations



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	564	754	773
Actual/Expected		75%	73%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit F-22
 Retirement Rates
 Protection Occupations (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	7,638	7,419	7,657
Actual/Expected		103%	100%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-1
Retirement Rates - Early
State Membership

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	2,416	77	3.2%	120.8	5.0%	120.8	5.0%
56	2,219	68	3.1%	111.0	5.0%	111.0	5.0%
57	2,055	56	2.7%	102.8	5.0%	102.8	5.0%
58	1,898	65	3.4%	94.9	5.0%	94.9	5.0%
59	1,724	61	3.5%	86.2	5.0%	86.2	5.0%
60	1,505	83	5.5%	75.3	5.0%	75.3	5.0%
61	1,361	110	8.1%	204.2	15.0%	204.2	15.0%
62	836	87	10.4%	125.4	15.0%	125.4	15.0%
63	709	80	11.3%	106.4	15.0%	106.4	15.0%
64	585	91	15.6%	87.8	15.0%	87.8	15.0%
	15,308	778	5.1%	1,114.5	7.3%	1,114.5	7.3%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-2
Retirement Rates - Early
State Membership (Weighted)

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	30,050	1,435	4.8%	1,502.5	5.0%	1,502.5	5.0%
56	26,054	1,146	4.4%	1,302.7	5.0%	1,302.7	5.0%
57	22,275	846	3.8%	1,113.7	5.0%	1,113.7	5.0%
58	19,437	1,085	5.6%	971.8	5.0%	971.8	5.0%
59	16,753	832	5.0%	837.6	5.0%	837.6	5.0%
60	13,702	927	6.8%	685.1	5.0%	685.1	5.0%
61	12,298	1,339	10.9%	1,844.6	15.0%	1,844.6	15.0%
62	5,397	712	13.2%	809.5	15.0%	809.5	15.0%
63	4,602	677	14.7%	690.3	15.0%	690.3	15.0%
64	3,855	726	18.8%	578.3	15.0%	578.3	15.0%
	154,422	9,725	6.3%	10,336.2	6.7%	10,336.2	6.7%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-3
Retirement Rates - Early
School Membership

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	9,007	268	3.0%	720.6	8.0%	540.4	6.0%
56	7,961	210	2.6%	636.9	8.0%	477.7	6.0%
57	7,367	204	2.8%	589.4	8.0%	442.0	6.0%
58	6,896	216	3.1%	551.7	8.0%	482.7	7.0%
59	6,457	254	3.9%	581.1	9.0%	516.6	8.0%
60	5,909	280	4.7%	590.9	10.0%	590.9	10.0%
61	5,298	435	8.2%	794.7	15.0%	794.7	15.0%
62	3,354	324	9.7%	670.8	20.0%	503.1	15.0%
63	2,875	208	7.2%	575.0	20.0%	431.3	15.0%
64	2,576	278	10.8%	515.2	20.0%	386.4	15.0%
	57,700	2,677	4.6%	6,226.2	10.8%	5,165.7	9.0%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-4
Retirement Rates - Early
School Membership (Weighted)

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	73,496	3,756	5.1%	5,879.7	8.0%	4,409.7	6.0%
56	56,116	2,675	4.8%	4,489.3	8.0%	3,367.0	6.0%
57	47,126	1,913	4.1%	3,770.1	8.0%	2,827.6	6.0%
58	41,301	2,060	5.0%	3,304.1	8.0%	2,891.1	7.0%
59	36,709	2,147	5.8%	3,303.8	9.0%	2,936.7	8.0%
60	31,757	2,211	7.0%	3,175.7	10.0%	3,175.7	10.0%
61	27,344	3,236	11.8%	4,101.6	15.0%	4,101.6	15.0%
62	9,946	1,463	14.7%	1,989.1	20.0%	1,491.8	15.0%
63	7,897	861	10.9%	1,579.3	20.0%	1,184.5	15.0%
64	6,685	1,237	18.5%	1,337.0	20.0%	1,002.8	15.0%
	338,376	21,559	6.4%	32,929.7	9.7%	27,388.5	8.1%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-5
Retirement Rates - Early
Other Membership

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	6,354	126	2.0%	317.7	5.0%	254.2	4.0%
56	6,065	103	1.7%	303.3	5.0%	242.6	4.0%
57	5,836	109	1.9%	291.8	5.0%	233.4	4.0%
58	5,524	135	2.4%	276.2	5.0%	221.0	4.0%
59	5,176	157	3.0%	258.8	5.0%	258.8	5.0%
60	4,798	147	3.1%	239.9	5.0%	239.9	5.0%
61	4,390	258	5.9%	439.0	10.0%	439.0	10.0%
62	3,049	263	8.6%	609.8	20.0%	457.4	15.0%
63	2,679	202	7.5%	535.8	20.0%	401.9	15.0%
64	2,343	249	10.6%	468.6	20.0%	351.5	15.0%
	46,214	1,749	3.8%	3,740.9	8.1%	3,099.5	6.7%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-6
Retirement Rates - Early
Other Membership (Weighted)

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	43,919	1,484	3.4%	2,196.0	5.0%	1,756.8	4.0%
56	40,864	1,019	2.5%	2,043.2	5.0%	1,634.6	4.0%
57	38,055	1,019	2.7%	1,902.8	5.0%	1,522.2	4.0%
58	35,098	1,215	3.5%	1,754.9	5.0%	1,403.9	4.0%
59	31,966	1,461	4.6%	1,598.3	5.0%	1,598.3	5.0%
60	27,902	1,118	4.0%	1,395.1	5.0%	1,395.1	5.0%
61	23,799	1,898	8.0%	2,379.9	10.0%	2,379.9	10.0%
62	11,088	1,366	12.3%	2,217.6	20.0%	1,663.2	15.0%
63	9,325	917	9.8%	1,865.0	20.0%	1,398.8	15.0%
64	7,755	1,133	14.6%	1,551.0	20.0%	1,163.2	15.0%
	269,771	12,629	4.7%	18,903.7	7.0%	15,916.0	5.9%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-7
Retirement Rates - Select Unreduced
State Membership

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	361	87	24.1%	72.2	20.0%	72.2	20.0%
56	201	34	16.9%	30.2	15.0%	30.2	15.0%
57	207	22	10.6%	31.1	15.0%	31.1	15.0%
58	166	31	18.7%	24.9	15.0%	24.9	15.0%
59	148	32	21.6%	22.2	15.0%	22.2	15.0%
60	155	34	21.9%	23.3	15.0%	23.3	15.0%
61	91	21	23.1%	18.2	20.0%	18.2	20.0%
62	417	128	30.7%	166.8	40.0%	166.8	40.0%
63	21	2	9.5%	7.4	35.0%	7.4	35.0%
64	30	6	20.0%	9.0	30.0%	9.0	30.0%
65	476	115	24.2%	142.8	30.0%	142.8	30.0%
	2,273	512	22.5%	547.9	24.1%	547.9	24.1%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-8
Retirement Rates - Select Unreduced
State Membership (Weighted)

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	8,043	1,940	24.1%	1,608.5	20.0%	1,608.5	20.0%
56	4,721	816	17.3%	708.1	15.0%	708.1	15.0%
57	4,895	499	10.2%	734.2	15.0%	734.2	15.0%
58	3,579	696	19.4%	536.9	15.0%	536.9	15.0%
59	3,041	659	21.7%	456.2	15.0%	456.2	15.0%
60	2,957	680	23.0%	443.6	15.0%	443.6	15.0%
61	1,624	384	23.6%	324.8	20.0%	324.8	20.0%
62	6,397	1,954	30.5%	2,558.9	40.0%	2,558.9	40.0%
63	245	20	8.1%	85.7	35.0%	85.7	35.0%
64	388	67	17.2%	116.4	30.0%	116.4	30.0%
65	3,145	892	28.4%	943.5	30.0%	943.5	30.0%
	39,035	8,606	22.0%	8,516.8	21.8%	8,516.8	21.8%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-9
Retirement Rates - Select Unreduced
School Membership

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	549	133	24.2%	164.7	30.0%	137.3	25.0%
56	711	159	22.4%	213.3	30.0%	177.8	25.0%
57	357	80	22.4%	107.1	30.0%	89.3	25.0%
58	294	65	22.1%	88.2	30.0%	73.5	25.0%
59	278	69	24.8%	83.4	30.0%	69.5	25.0%
60	324	81	25.0%	97.2	30.0%	81.0	25.0%
61	336	97	28.9%	100.8	30.0%	110.9	33.0%
62	1,525	431	28.3%	610.0	40.0%	610.0	40.0%
63	155	33	21.3%	46.5	30.0%	46.5	30.0%
64	135	42	31.1%	40.5	30.0%	40.5	30.0%
65	2,279	418	18.3%	683.7	30.0%	683.7	30.0%
	6,943	1,608	23.2%	2,235.4	32.2%	2,119.8	30.5%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-10
Retirement Rates - Select Unreduced
School Membership (Weighted)

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	11,663	3,016	25.9%	3,499.0	30.0%	2,915.9	25.0%
56	16,667	3,770	22.6%	5,000.2	30.0%	4,166.8	25.0%
57	7,782	1,805	23.2%	2,334.7	30.0%	1,945.6	25.0%
58	5,914	1,407	23.8%	1,774.1	30.0%	1,478.4	25.0%
59	4,939	1,325	26.8%	1,481.6	30.0%	1,234.7	25.0%
60	4,904	1,334	27.2%	1,471.1	30.0%	1,225.9	25.0%
61	4,791	1,551	32.4%	1,437.3	30.0%	1,581.0	33.0%
62	15,864	4,790	30.2%	6,345.5	40.0%	6,345.5	40.0%
63	1,344	325	24.2%	403.2	30.0%	403.2	30.0%
64	1,120	437	39.0%	336.1	30.0%	336.1	30.0%
65	5,938	1,677	28.2%	1,781.4	30.0%	1,781.4	30.0%
	80,926	21,437	26.5%	25,864.2	32.0%	23,414.5	28.9%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-11
Retirement Rates - Select Unreduced
Other Membership

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	540	114	21.1%	108.0	20.0%	108.0	20.0%
56	228	26	11.4%	45.6	20.0%	45.6	20.0%
57	196	22	11.2%	39.2	20.0%	33.3	17.0%
58	204	35	17.2%	40.8	20.0%	40.8	20.0%
59	215	38	17.7%	43.0	20.0%	43.0	20.0%
60	259	31	12.0%	51.8	20.0%	44.0	17.0%
61	248	37	14.9%	49.6	20.0%	49.6	20.0%
62	1,005	245	24.4%	402.0	40.0%	301.5	30.0%
63	111	18	16.2%	38.9	35.0%	27.8	25.0%
64	87	18	20.7%	30.5	35.0%	26.1	30.0%
65	2,007	390	19.4%	602.1	30.0%	602.1	30.0%
	5,100	974	19.1%	1,451.4	28.5%	1,321.8	25.9%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-12
Retirement Rates - Select Unreduced
Other Membership (Weighted)

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	10,545	2,084	19.8%	2,109.0	20.0%	2,109.0	20.0%
56	4,424	474	10.7%	884.9	20.0%	884.9	20.0%
57	3,722	389	10.5%	744.3	20.0%	632.7	17.0%
58	3,555	628	17.7%	711.0	20.0%	711.0	20.0%
59	3,672	673	18.3%	734.5	20.0%	734.5	20.0%
60	4,163	486	11.7%	832.7	20.0%	707.8	17.0%
61	3,835	617	16.1%	767.1	20.0%	767.1	20.0%
62	11,901	2,833	23.8%	4,760.5	40.0%	3,570.4	30.0%
63	1,076	188	17.5%	376.4	35.0%	268.9	25.0%
64	682	162	23.7%	238.7	35.0%	204.6	30.0%
65	6,667	1,868	28.0%	2,000.0	30.0%	2,000.0	30.0%
	54,243	10,403	19.2%	14,159.2	26.1%	12,590.9	23.2%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-13
Retirement Rates - Ultimate Unreduced
State Membership

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
56	290	36	12.4%	43.5	15.0%	43.5	15.0%
57	416	55	13.2%	62.4	15.0%	62.4	15.0%
58	519	63	12.1%	77.9	15.0%	77.9	15.0%
59	559	81	14.5%	83.9	15.0%	83.9	15.0%
60	556	87	15.6%	83.4	15.0%	83.4	15.0%
61	560	101	18.0%	112.0	20.0%	112.0	20.0%
62	517	141	27.3%	206.8	40.0%	206.8	40.0%
63	615	144	23.4%	184.5	30.0%	184.5	30.0%
64	453	102	22.5%	135.9	30.0%	135.9	30.0%
65	364	109	29.9%	109.2	30.0%	109.2	30.0%
66	566	141	24.9%	169.8	30.0%	169.8	30.0%
67	409	92	22.5%	81.8	20.0%	81.8	20.0%
68	293	65	22.2%	58.6	20.0%	58.6	20.0%
69	229	108	47.2%	80.2	35.0%	80.1	35.0%
70	117	75	64.1%	117.0	100.0%	117.0	100.0%
	6,463	1,400	21.7%	1,606.8	24.9%	1,606.7	24.9%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-14
Retirement Rates - Ultimate Unreduced
State Membership (Weighted)

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
56	6,670	836	12.5%	1,000.5	15.0%	1,000.5	15.0%
57	9,734	1,354	13.9%	1,460.2	15.0%	1,460.2	15.0%
58	12,324	1,474	12.0%	1,848.6	15.0%	1,848.6	15.0%
59	13,350	1,943	14.6%	2,002.5	15.0%	2,002.5	15.0%
60	13,461	2,273	16.9%	2,019.2	15.0%	2,019.2	15.0%
61	13,339	2,296	17.2%	2,667.9	20.0%	2,667.9	20.0%
62	12,577	3,297	26.2%	5,030.6	40.0%	5,030.6	40.0%
63	13,567	3,081	22.7%	4,070.0	30.0%	4,070.0	30.0%
64	10,277	2,244	21.8%	3,083.2	30.0%	3,083.2	30.0%
65	8,320	2,354	28.3%	2,495.9	30.0%	2,495.9	30.0%
66	7,346	2,147	29.2%	2,203.9	30.0%	2,203.9	30.0%
67	5,062	1,256	24.8%	1,012.4	20.0%	1,012.4	20.0%
68	3,588	779	21.7%	717.6	20.0%	717.6	20.0%
69	2,800	1,667	59.6%	979.9	35.0%	979.9	35.0%
70	1,167	951	81.5%	1,167.2	100.0%	1,167.2	100.0%
	133,582	27,952	20.9%	31,759.6	23.8%	31,759.6	23.8%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-15
Retirement Rates - Ultimate Unreduced
School Membership

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
56	438	71	16.2%	100.7	23.0%	87.6	20.0%
57	992	169	17.0%	228.2	23.0%	198.4	20.0%
58	1,151	215	18.7%	264.7	23.0%	230.2	20.0%
59	1,203	232	19.3%	276.7	23.0%	252.6	21.0%
60	1,217	264	21.7%	279.9	23.0%	279.9	23.0%
61	1,254	300	23.9%	376.2	30.0%	351.1	28.0%
62	1,229	355	28.9%	430.2	35.0%	430.2	35.0%
63	1,934	483	25.0%	580.2	30.0%	580.2	30.0%
64	1,490	452	30.3%	447.0	30.0%	447.0	30.0%
65	1,051	407	38.7%	473.0	45.0%	473.0	45.0%
66	2,503	532	21.3%	876.1	35.0%	876.1	35.0%
67	1,963	314	16.0%	490.8	25.0%	490.8	25.0%
68	1,496	254	17.0%	374.0	25.0%	374.0	25.0%
69	1,207	354	29.3%	482.8	40.0%	482.8	40.0%
70	849	379	44.6%	849.0	100.0%	849.0	100.0%
	19,977	4,781	23.9%	6,529.3	32.7%	6,402.8	32.1%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-16
Retirement Rates - Ultimate Unreduced
School Membership (Weighted)

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
56	9,365	1,571	16.8%	2,153.9	23.0%	1,873.0	20.0%
57	23,106	4,135	17.9%	5,314.4	23.0%	4,621.2	20.0%
58	27,020	5,321	19.7%	6,214.6	23.0%	5,404.0	20.0%
59	28,106	5,539	19.7%	6,464.4	23.0%	5,902.3	21.0%
60	28,499	6,683	23.5%	6,554.8	23.0%	6,554.8	23.0%
61	27,599	6,608	23.9%	8,279.8	30.0%	7,727.8	28.0%
62	26,198	8,011	30.6%	9,169.3	35.0%	9,169.3	35.0%
63	30,708	8,855	28.8%	9,212.5	30.0%	9,212.5	30.0%
64	23,070	7,812	33.9%	6,921.0	30.0%	6,921.0	30.0%
65	16,025	6,790	42.4%	7,211.3	45.0%	7,211.3	45.0%
66	13,183	4,771	36.2%	4,614.1	35.0%	4,614.1	35.0%
67	8,445	2,211	26.2%	2,111.2	25.0%	2,111.2	25.0%
68	5,913	1,964	33.2%	1,478.3	25.0%	1,478.3	25.0%
69	3,814	1,881	49.3%	1,525.8	40.0%	1,525.8	40.0%
70	1,773	1,217	68.6%	1,772.9	100.0%	1,772.9	100.0%
	272,826	73,370	26.9%	78,998.4	29.0%	76,099.5	27.9%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-17
Retirement Rates - Ultimate Unreduced
Other Membership

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
56	464	49	10.6%	69.6	15.0%	55.7	12.0%
57	651	67	10.3%	97.7	15.0%	78.1	12.0%
58	773	65	8.4%	116.0	15.0%	92.8	12.0%
59	893	97	10.9%	134.0	15.0%	107.2	12.0%
60	953	101	10.6%	143.0	15.0%	143.0	15.0%
61	1,040	170	16.3%	208.0	20.0%	208.0	20.0%
62	1,057	270	25.5%	370.0	35.0%	317.1	30.0%
63	1,437	258	18.0%	359.3	25.0%	287.4	20.0%
64	1,210	292	24.1%	302.5	25.0%	302.5	25.0%
65	938	363	38.7%	375.2	40.0%	375.2	40.0%
66	2,190	517	23.6%	657.0	30.0%	657.0	30.0%
67	1,638	249	15.2%	327.6	20.0%	327.6	20.0%
68	1,362	191	14.0%	272.4	20.0%	272.4	20.0%
69	1,112	290	26.1%	444.8	40.0%	444.8	40.0%
70	782	339	43.4%	782.0	100.0%	782.0	100.0%
	16,500	3,318	20.1%	4,658.8	28.2%	4,450.7	27.0%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-18
Retirement Rates - Ultimate Unreduced
Other Membership (Weighted)

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
56	9,574	969	10.1%	1,436.1	15.0%	1,148.9	12.0%
57	13,546	1,493	11.0%	2,031.8	15.0%	1,625.5	12.0%
58	16,065	1,329	8.3%	2,409.7	15.0%	1,927.8	12.0%
59	18,489	2,052	11.1%	2,773.4	15.0%	2,218.7	12.0%
60	19,922	2,153	10.8%	2,988.2	15.0%	2,988.2	15.0%
61	21,379	3,625	17.0%	4,275.8	20.0%	4,275.8	20.0%
62	21,427	5,417	25.3%	7,499.4	35.0%	6,428.0	30.0%
63	24,024	4,500	18.7%	6,005.9	25.0%	4,804.8	20.0%
64	20,346	4,916	24.2%	5,086.5	25.0%	5,086.5	25.0%
65	15,670	6,068	38.7%	6,267.8	40.0%	6,267.8	40.0%
66	14,384	5,312	36.9%	4,315.3	30.0%	4,315.3	30.0%
67	8,881	2,179	24.5%	1,776.2	20.0%	1,776.2	20.0%
68	6,371	1,648	25.9%	1,274.2	20.0%	1,274.2	20.0%
69	4,361	1,783	40.9%	1,744.5	40.0%	1,744.5	40.0%
70	2,293	1,672	72.9%	2,293.0	100.0%	2,293.0	100.0%
	216,731	45,116	20.8%	52,177.9	24.1%	48,175.2	22.2%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-19
Retirement Rates
Sheriffs and Deputies

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
50	111	19	17.1%	22.2	20.0%	18.9	17.0%
51	89	11	12.4%	17.8	20.0%	13.4	15.0%
52	77	5	6.5%	15.4	20.0%	11.6	15.0%
53	68	7	10.3%	13.6	20.0%	10.2	15.0%
54	63	7	11.1%	12.6	20.0%	9.5	15.0%
55	104	14	13.5%	17.7	17.0%	15.6	15.0%
56	97	14	14.4%	16.5	17.0%	14.6	15.0%
57	86	10	11.6%	14.6	17.0%	12.9	15.0%
58	83	11	13.3%	14.1	17.0%	12.5	15.0%
59	71	5	7.0%	12.1	17.0%	10.7	15.0%
60	57	7	12.3%	9.7	17.0%	8.6	15.0%
61	55	8	14.5%	9.4	17.0%	8.3	15.0%
62	45	14	31.1%	13.5	30.0%	13.5	30.0%
63	32	4	12.5%	9.6	30.0%	9.6	30.0%
64	31	11	35.5%	9.3	30.0%	9.3	30.0%
65	21	7	33.3%	21.0	100.0%	21.0	100.0%
	1,090	154	14.1%	229.0	21.0%	199.8	18.3%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-20
Retirement Rates
Sheriffs and Deputies (Weighted)

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
50	2,038	329	16.2%	407.5	20.0%	346.4	17.0%
51	1,729	197	11.4%	345.8	20.0%	259.3	15.0%
52	1,544	114	7.4%	308.7	20.0%	231.6	15.0%
53	1,425	133	9.4%	285.1	20.0%	213.8	15.0%
54	1,328	147	11.0%	265.6	20.0%	199.2	15.0%
55	1,824	288	15.8%	310.2	17.0%	273.7	15.0%
56	1,691	288	17.0%	287.5	17.0%	253.6	15.0%
57	1,527	207	13.5%	259.5	17.0%	229.0	15.0%
58	1,535	228	14.9%	260.9	17.0%	230.2	15.0%
59	1,362	114	8.4%	231.6	17.0%	204.3	15.0%
60	1,155	110	9.5%	196.4	17.0%	173.3	15.0%
61	1,172	166	14.1%	199.2	17.0%	175.7	15.0%
62	921	253	27.5%	276.2	30.0%	276.2	30.0%
63	572	97	17.0%	171.5	30.0%	171.5	30.0%
64	524	176	33.6%	157.2	30.0%	157.2	30.0%
65	368	191	51.9%	368.4	100.0%	368.4	100.0%
	20,714	3,039	14.7%	4,331.1	20.9%	3,763.4	18.2%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-21
Retirement Rates
Protection Occupations

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	697	119	17.1%	139.4	20.0%	174.3	25.0%
56	567	42	7.4%	56.7	10.0%	56.7	10.0%
57	509	36	7.1%	50.9	10.0%	50.9	10.0%
58	492	43	8.7%	49.2	10.0%	49.2	10.0%
59	455	56	12.3%	45.5	10.0%	45.5	10.0%
60	390	35	9.0%	39.0	10.0%	39.0	10.0%
61	363	58	16.0%	36.3	10.0%	54.5	15.0%
62	288	57	19.8%	100.8	35.0%	86.4	30.0%
63	209	30	14.4%	62.7	30.0%	52.3	25.0%
64	174	41	23.6%	52.2	30.0%	43.5	25.0%
65	121	47	38.8%	121.0	100.0%	121.0	100.0%
	4,265	564	13.2%	753.7	17.7%	773.2	18.1%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary F-22
Retirement Rates
Protection Occupations (Weighted)

Age	Exposure	Actual Retirements	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
55	7,597	2,009	26.4%	1,519.5	20.0%	1,899.4	25.0%
56	5,584	630	11.3%	558.4	10.0%	558.4	10.0%
57	5,082	532	10.5%	508.2	10.0%	508.2	10.0%
58	4,810	602	12.5%	481.0	10.0%	481.0	10.0%
59	4,383	730	16.7%	438.3	10.0%	438.3	10.0%
60	3,604	506	14.0%	360.4	10.0%	360.4	10.0%
61	3,376	748	22.2%	337.6	10.0%	506.3	15.0%
62	2,597	643	24.8%	908.9	35.0%	779.0	30.0%
63	1,985	374	18.8%	595.6	30.0%	496.3	25.0%
64	1,645	360	21.9%	493.4	30.0%	411.1	25.0%
65	1,218	504	41.4%	1,218.3	100.0%	1,218.3	100.0%
	41,881	7,638	18.2%	7,419.4	17.7%	7,656.8	18.3%



APPENDIX G

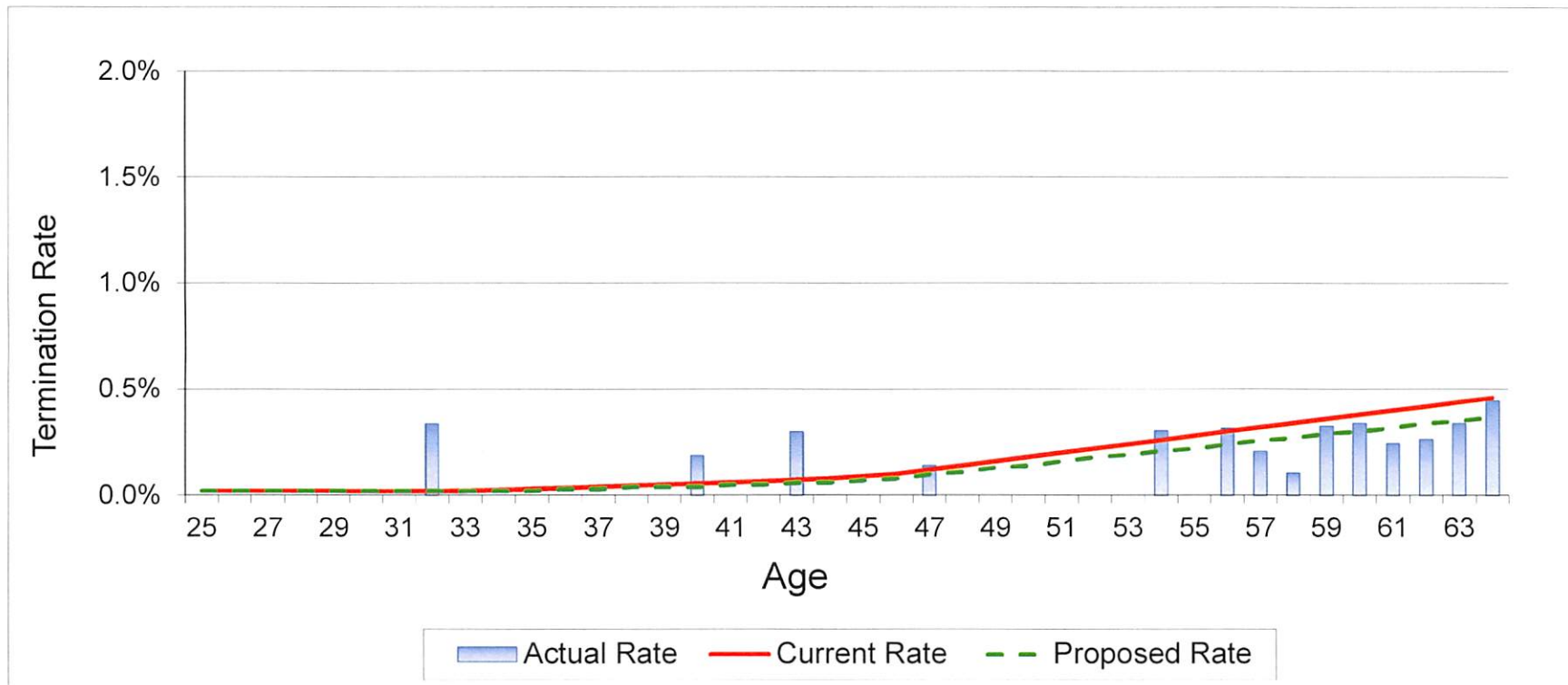
DISABILITY



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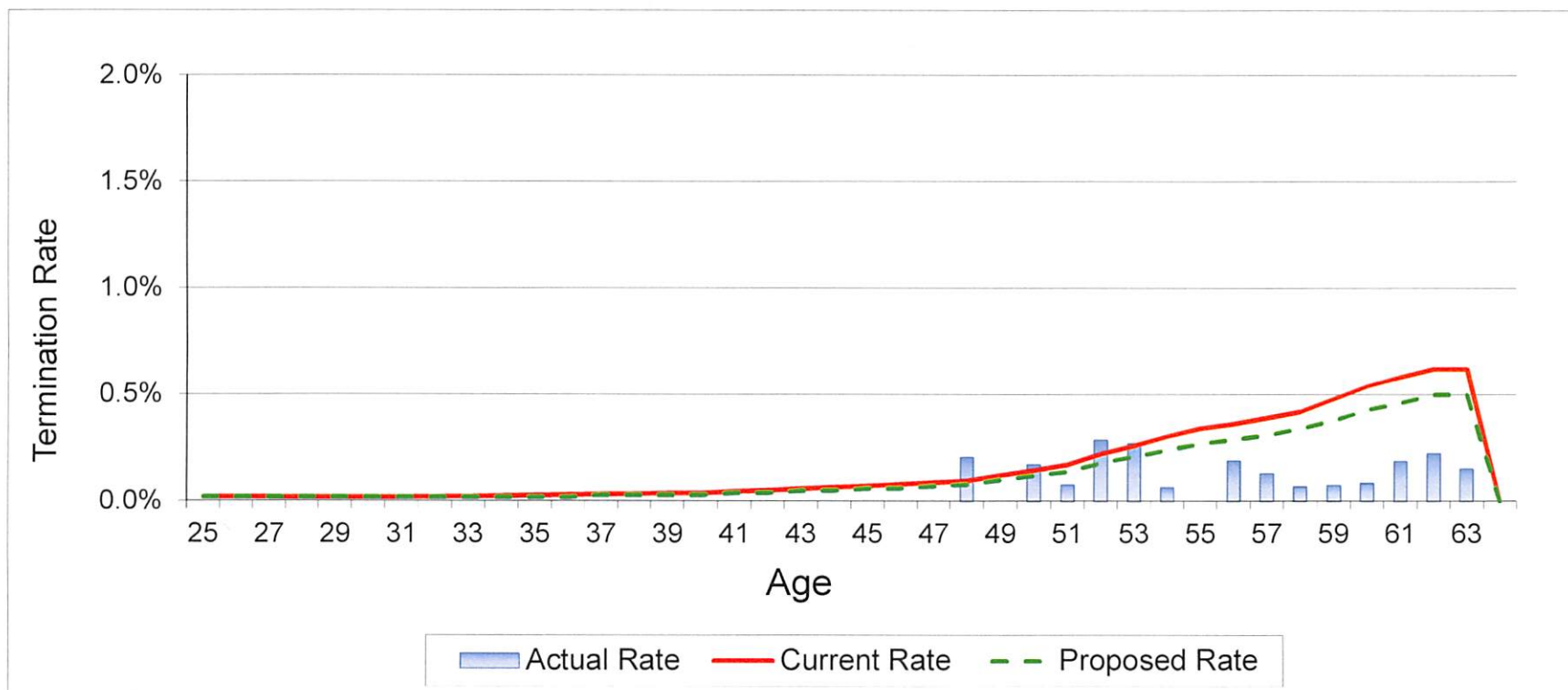
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit G-1
 Rates of Disability
 Males - State Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	28	48	38
Actual/Expected		58%	74%



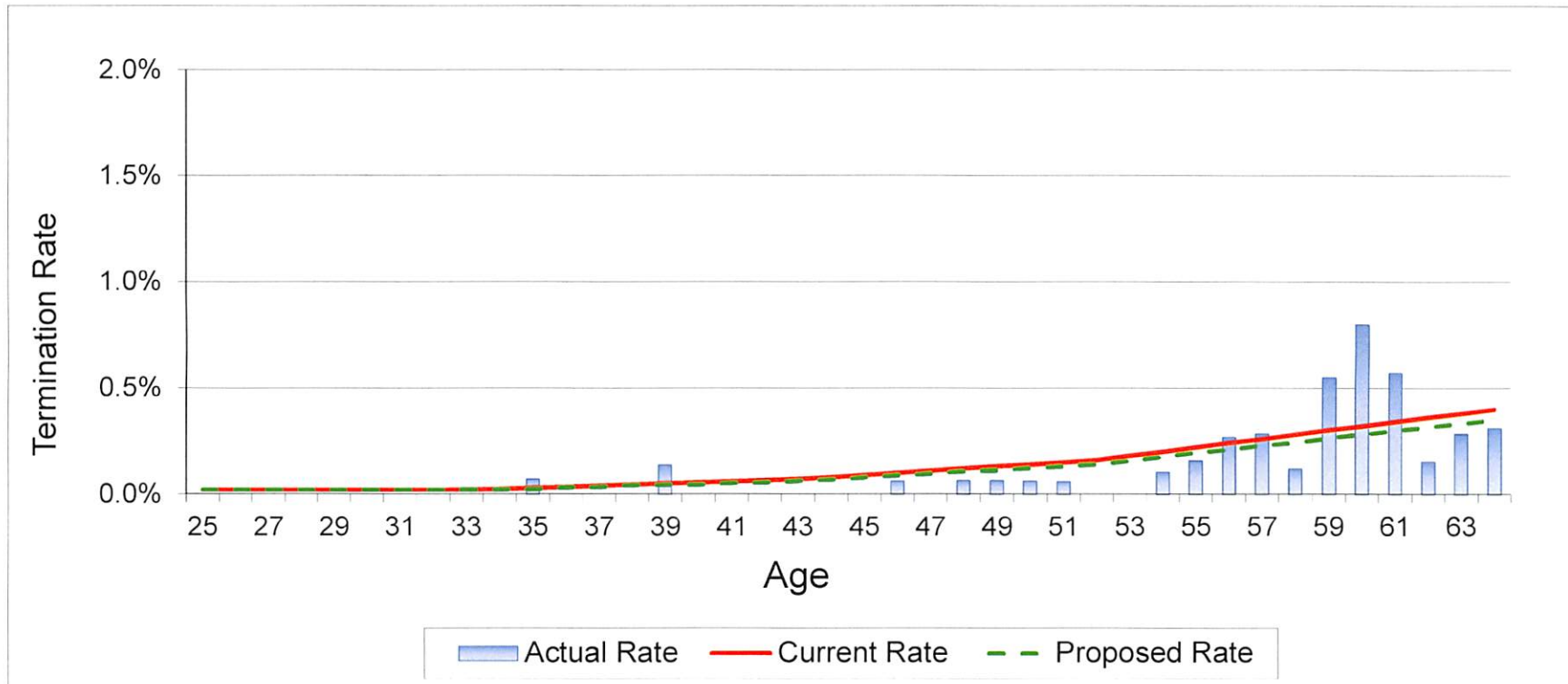
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit G-2
 Rates of Disability
 Females - State Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	27	76	61
Actual/Expected		36%	44%



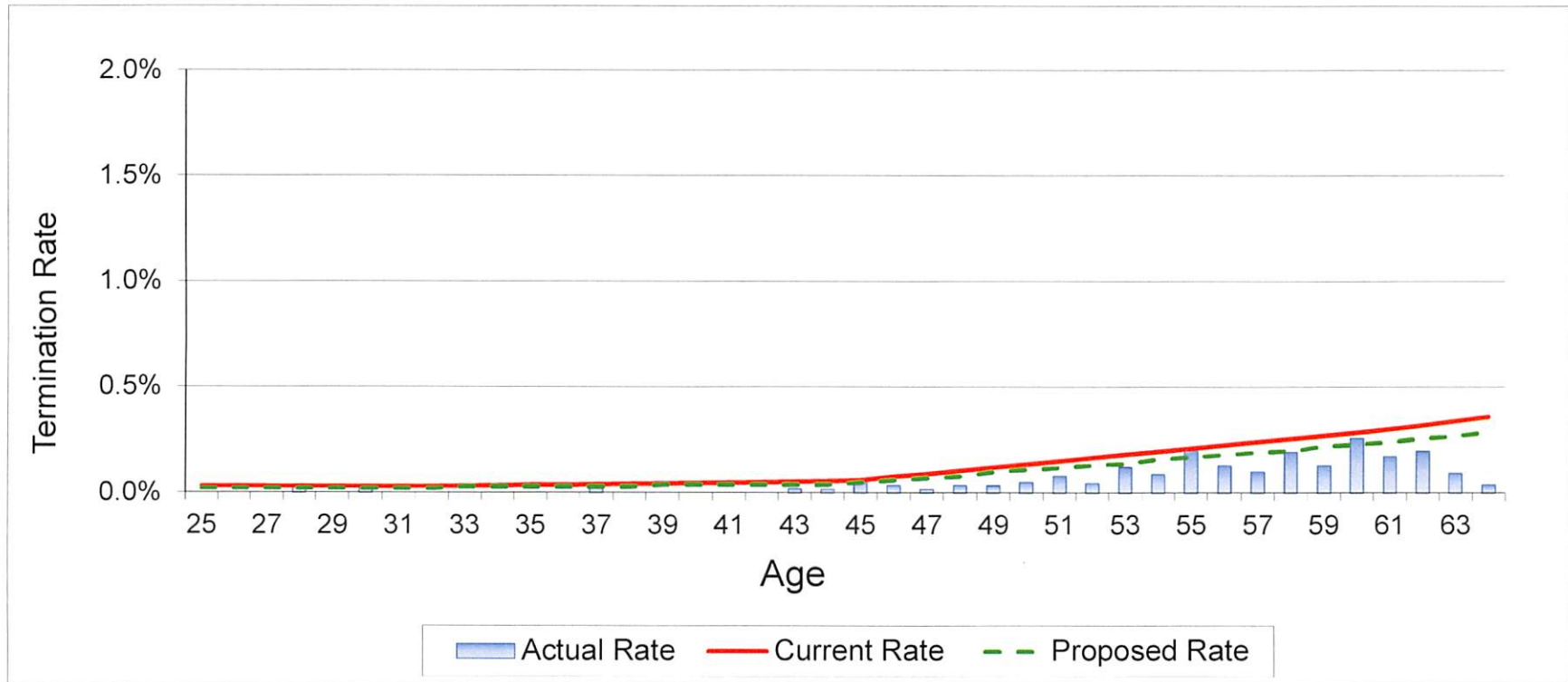
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit G-3
 Rates of Disability
 Males - School Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	62	78	69
Actual/Expected		79%	90%



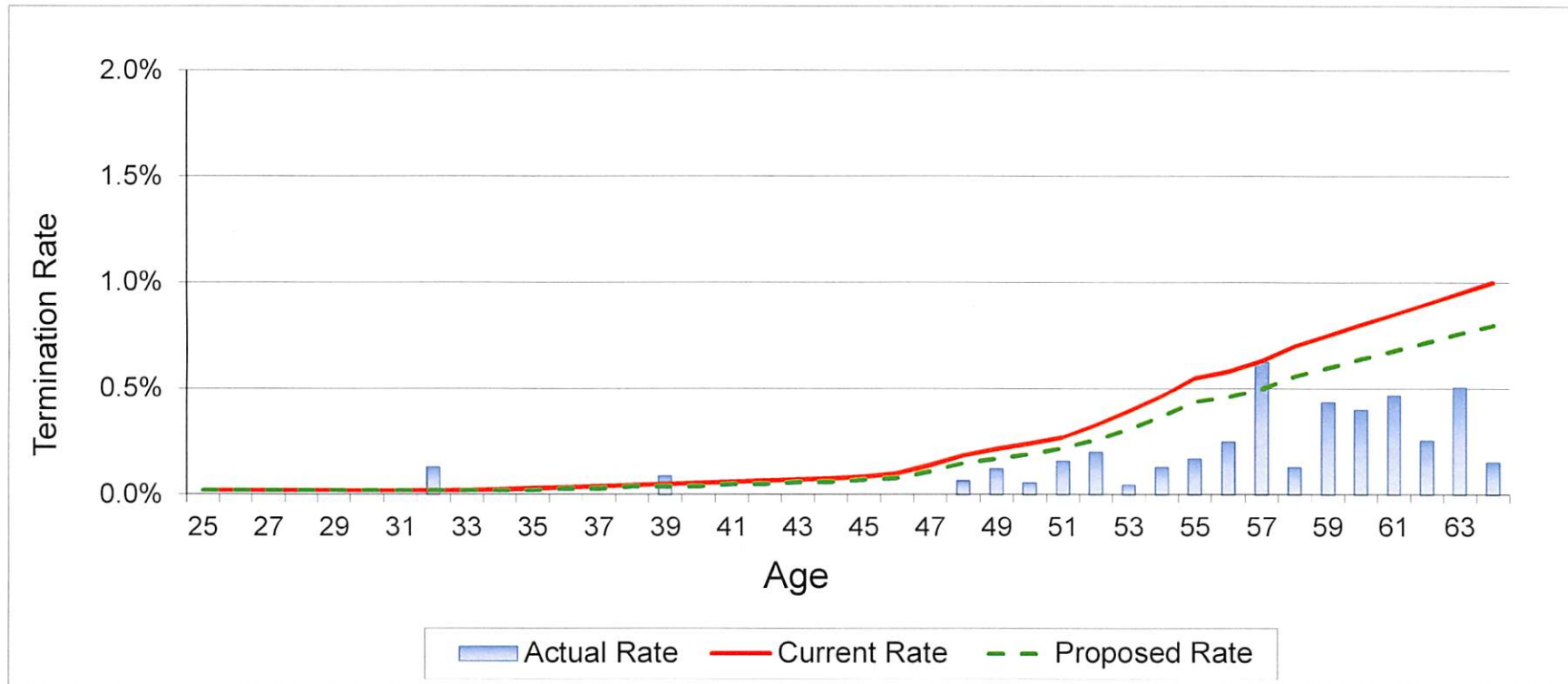
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit G-4
 Rates of Disability
 Females - School Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	118	240	192
Actual/Expected		49%	61%



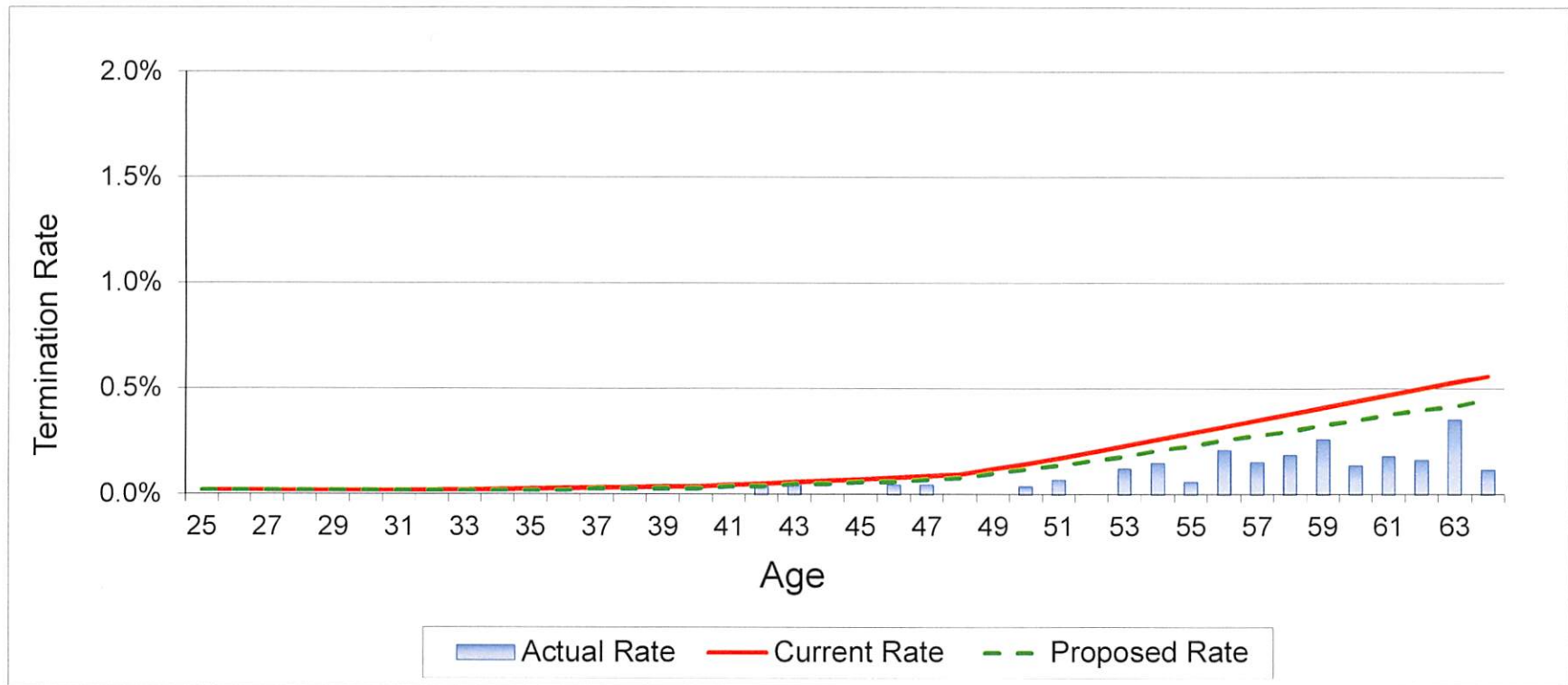
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit G-5
 Rates of Disability
 Males - Other Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	89	211	169
Actual/Expected		42%	53%



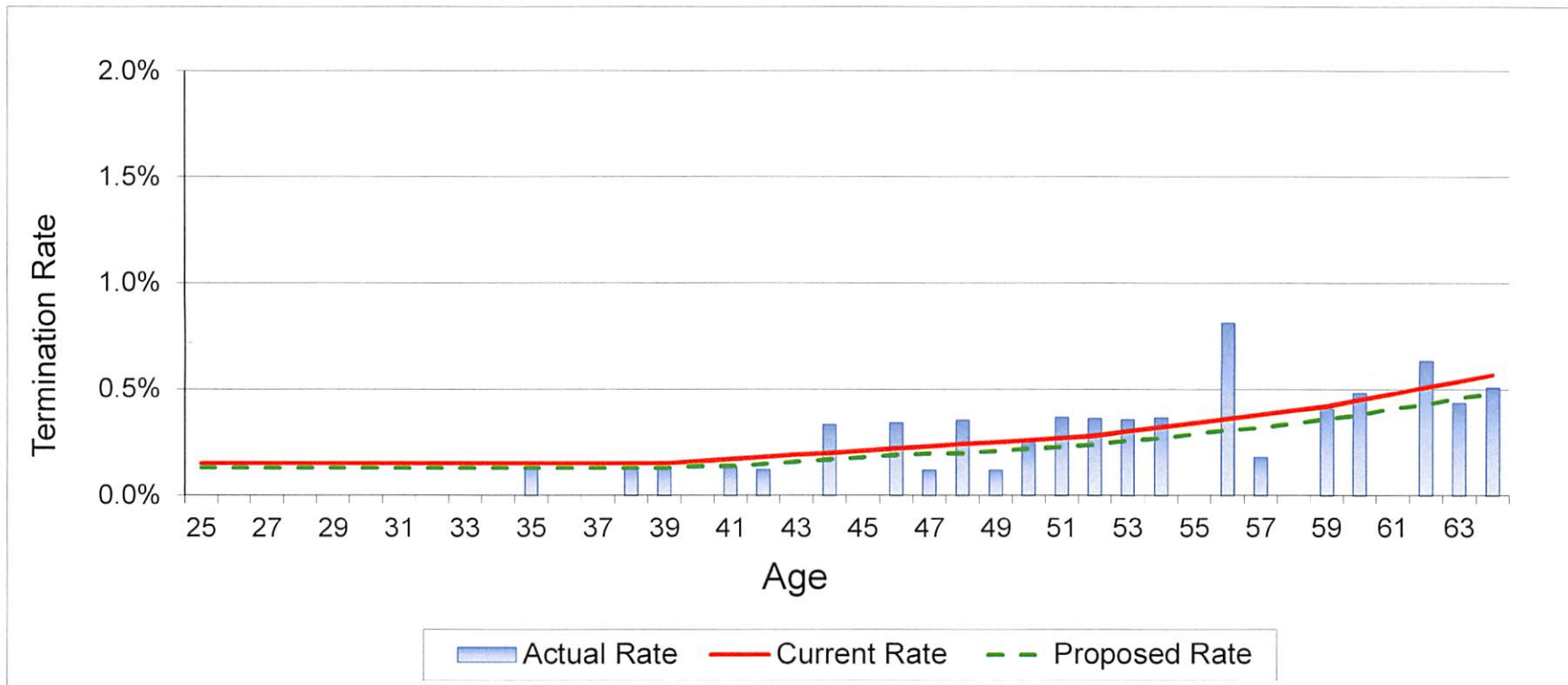
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit G-6
Rates of Disability
Females - Other Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	66	166	134
Actual/Expected		40%	49%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit G-7
 Rates of Disability
 Special Services



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	44	61	52
Actual/Expected		72%	85%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary G-1
Rates of Disability
Males - State Membership

Age	Exposure	Actual Disabilities	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	20	-	0.000%	0.0	0.020%	0.0	0.020%
26	48	-	0.000%	0.0	0.020%	0.0	0.020%
27	72	-	0.000%	0.0	0.020%	0.0	0.020%
28	116	-	0.000%	0.0	0.020%	0.0	0.020%
29	155	-	0.000%	0.0	0.020%	0.0	0.020%
30	201	-	0.000%	0.0	0.020%	0.0	0.020%
31	256	-	0.000%	0.1	0.020%	0.1	0.020%
32	298	1	0.336%	0.1	0.020%	0.1	0.020%
33	345	-	0.000%	0.1	0.022%	0.1	0.020%
34	419	-	0.000%	0.1	0.025%	0.1	0.020%
35	439	-	0.000%	0.1	0.030%	0.1	0.020%
36	457	-	0.000%	0.2	0.035%	0.1	0.030%
37	465	-	0.000%	0.2	0.040%	0.1	0.030%
38	497	-	0.000%	0.2	0.045%	0.2	0.040%
39	503	-	0.000%	0.3	0.050%	0.2	0.040%
40	534	1	0.187%	0.3	0.055%	0.2	0.040%
41	547	-	0.000%	0.3	0.060%	0.3	0.050%
42	610	-	0.000%	0.4	0.065%	0.3	0.050%
43	669	2	0.299%	0.5	0.070%	0.4	0.060%
44	708	-	0.000%	0.6	0.080%	0.4	0.060%
45	742	-	0.000%	0.7	0.090%	0.5	0.070%
46	735	-	0.000%	0.7	0.100%	0.6	0.080%
47	719	1	0.139%	0.9	0.120%	0.7	0.100%
48	703	-	0.000%	1.0	0.140%	0.8	0.110%
49	784	-	0.000%	1.3	0.160%	1.0	0.130%
50	826	-	0.000%	1.5	0.180%	1.2	0.140%
51	884	-	0.000%	1.8	0.200%	1.4	0.160%
52	920	-	0.000%	2.0	0.220%	1.7	0.180%
53	928	-	0.000%	2.2	0.240%	1.8	0.190%
54	985	3	0.305%	2.6	0.260%	2.1	0.210%
55	990	-	0.000%	2.8	0.280%	2.2	0.220%
56	955	3	0.314%	2.9	0.300%	2.3	0.240%
57	956	2	0.209%	3.1	0.320%	2.5	0.260%
58	947	1	0.106%	3.2	0.340%	2.6	0.270%
59	920	3	0.326%	3.3	0.360%	2.7	0.290%
60	883	3	0.340%	3.4	0.380%	2.6	0.300%
61	820	2	0.244%	3.3	0.400%	2.6	0.320%
62	757	2	0.264%	3.2	0.420%	2.6	0.340%
63	590	2	0.339%	2.6	0.440%	2.1	0.350%
64	449	2	0.445%	2.1	0.460%	1.7	0.370%
	23,852	28	0.117%	47.7	0.200%	38.2	0.160%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary G-2
Rates of Disability
Females - State Membership

Age	Exposure	Actual Disabilities	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	35	-	0.000%	0.0	0.020%	0.0	0.020%
26	82	-	0.000%	0.0	0.020%	0.0	0.020%
27	134	-	0.000%	0.0	0.020%	0.0	0.020%
28	203	-	0.000%	0.0	0.020%	0.0	0.020%
29	276	-	0.000%	0.1	0.020%	0.1	0.020%
30	367	-	0.000%	0.1	0.020%	0.1	0.020%
31	473	-	0.000%	0.1	0.020%	0.1	0.020%
32	525	-	0.000%	0.1	0.020%	0.1	0.020%
33	587	-	0.000%	0.1	0.022%	0.1	0.020%
34	665	-	0.000%	0.2	0.025%	0.1	0.020%
35	682	-	0.000%	0.2	0.027%	0.1	0.020%
36	702	-	0.000%	0.2	0.030%	0.1	0.020%
37	763	-	0.000%	0.2	0.032%	0.2	0.030%
38	801	-	0.000%	0.3	0.034%	0.2	0.030%
39	839	-	0.000%	0.3	0.036%	0.3	0.030%
40	858	-	0.000%	0.3	0.038%	0.3	0.030%
41	856	-	0.000%	0.4	0.044%	0.3	0.040%
42	854	-	0.000%	0.4	0.051%	0.3	0.040%
43	886	-	0.000%	0.5	0.057%	0.4	0.050%
44	918	-	0.000%	0.6	0.065%	0.5	0.050%
45	925	-	0.000%	0.7	0.072%	0.6	0.060%
46	912	-	0.000%	0.7	0.080%	0.5	0.060%
47	899	-	0.000%	0.8	0.087%	0.6	0.070%
48	976	2	0.205%	0.9	0.095%	0.8	0.080%
49	1,083	-	0.000%	1.3	0.120%	1.1	0.100%
50	1,169	2	0.171%	1.7	0.145%	1.4	0.120%
51	1,303	1	0.077%	2.2	0.170%	1.8	0.140%
52	1,396	4	0.287%	3.1	0.220%	2.5	0.180%
53	1,473	4	0.272%	3.8	0.260%	3.1	0.210%
54	1,565	1	0.064%	4.7	0.300%	3.8	0.240%
55	1,603	-	0.000%	5.5	0.340%	4.3	0.270%
56	1,573	3	0.191%	5.7	0.360%	4.6	0.290%
57	1,536	2	0.130%	6.0	0.390%	4.8	0.310%
58	1,464	1	0.068%	6.1	0.420%	5.0	0.340%
59	1,340	1	0.075%	6.4	0.480%	5.1	0.380%
60	1,191	1	0.084%	6.4	0.540%	5.1	0.430%
61	1,063	2	0.188%	6.2	0.580%	4.9	0.460%
62	898	2	0.223%	5.6	0.620%	4.5	0.500%
63	660	1	0.152%	4.1	0.620%	3.3	0.500%
64	537	-	0.000%	-	0.000%	-	0.000%
	35,072	27	0.077%	76.0	0.217%	61.2	0.175%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary G-3
Rates of Disability
Males - School Membership

Age	Exposure	Actual Disabilities	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	81	-	0.000%	0.0	0.020%	0.0	0.020%
26	223	-	0.000%	0.0	0.020%	0.0	0.020%
27	494	-	0.000%	0.1	0.020%	0.1	0.020%
28	818	-	0.000%	0.2	0.020%	0.2	0.020%
29	933	-	0.000%	0.2	0.020%	0.2	0.020%
30	1,058	-	0.000%	0.2	0.020%	0.2	0.020%
31	1,187	-	0.000%	0.2	0.020%	0.2	0.020%
32	1,277	-	0.000%	0.3	0.020%	0.3	0.020%
33	1,342	-	0.000%	0.3	0.022%	0.3	0.021%
34	1,404	-	0.000%	0.4	0.025%	0.3	0.022%
35	1,409	1	0.071%	0.4	0.030%	0.3	0.024%
36	1,435	-	0.000%	0.5	0.035%	0.5	0.032%
37	1,480	-	0.000%	0.6	0.040%	0.5	0.034%
38	1,477	-	0.000%	0.7	0.045%	0.6	0.042%
39	1,453	2	0.138%	0.7	0.050%	0.6	0.044%
40	1,420	-	0.000%	0.8	0.055%	0.7	0.046%
41	1,399	-	0.000%	0.8	0.060%	0.8	0.054%
42	1,475	-	0.000%	1.0	0.065%	0.8	0.056%
43	1,552	-	0.000%	1.1	0.070%	1.0	0.064%
44	1,612	-	0.000%	1.3	0.080%	1.1	0.068%
45	1,648	-	0.000%	1.5	0.090%	1.3	0.078%
46	1,612	1	0.062%	1.6	0.100%	1.4	0.088%
47	1,593	-	0.000%	1.8	0.110%	1.6	0.098%
48	1,538	1	0.065%	1.8	0.120%	1.7	0.108%
49	1,555	1	0.064%	2.0	0.130%	1.7	0.112%
50	1,605	1	0.062%	2.2	0.140%	2.0	0.122%
51	1,679	1	0.060%	2.5	0.150%	2.2	0.132%
52	1,794	-	0.000%	2.9	0.160%	2.5	0.142%
53	1,851	-	0.000%	3.3	0.180%	2.9	0.156%
54	1,919	2	0.104%	3.8	0.200%	3.4	0.176%
55	1,908	3	0.157%	4.2	0.220%	3.7	0.196%
56	1,859	5	0.269%	4.5	0.240%	3.9	0.210%
57	1,761	5	0.284%	4.6	0.260%	4.1	0.230%
58	1,680	2	0.119%	4.7	0.280%	4.1	0.244%
59	1,633	9	0.551%	4.9	0.300%	4.3	0.264%
60	1,501	12	0.799%	4.8	0.320%	4.3	0.284%
61	1,398	8	0.572%	4.8	0.340%	4.2	0.298%
62	1,298	2	0.154%	4.7	0.360%	4.1	0.318%
63	1,061	3	0.283%	4.0	0.380%	3.5	0.332%
64	964	3	0.311%	3.9	0.400%	3.4	0.352%
	55,386	62	0.112%	78.2	0.141%	68.9	0.124%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary G-4

Rates of Disability

Females - School Membership

Age	Exposure	Actual Disabilities	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	244	-	0.000%	0.1	0.030%	0.0	0.020%
26	865	-	0.000%	0.3	0.030%	0.2	0.020%
27	1,895	-	0.000%	0.6	0.030%	0.4	0.020%
28	2,612	1	0.038%	0.8	0.030%	0.5	0.020%
29	2,942	-	0.000%	0.9	0.030%	0.6	0.020%
30	3,249	1	0.031%	1.0	0.030%	0.6	0.020%
31	3,520	-	0.000%	1.1	0.030%	0.7	0.020%
32	3,694	-	0.000%	1.1	0.030%	0.7	0.020%
33	3,933	-	0.000%	1.3	0.032%	1.2	0.030%
34	4,081	-	0.000%	1.4	0.034%	1.2	0.030%
35	4,153	-	0.000%	1.5	0.036%	1.2	0.030%
36	4,251	-	0.000%	1.6	0.038%	1.3	0.030%
37	4,196	1	0.024%	1.7	0.040%	1.3	0.030%
38	4,138	-	0.000%	1.7	0.042%	1.2	0.030%
39	4,119	-	0.000%	1.8	0.044%	1.6	0.040%
40	4,182	-	0.000%	1.9	0.046%	1.7	0.040%
41	4,441	-	0.000%	2.1	0.048%	1.8	0.040%
42	4,795	-	0.000%	2.4	0.050%	1.9	0.040%
43	5,090	1	0.020%	2.6	0.052%	2.0	0.040%
44	5,447	1	0.018%	3.0	0.055%	2.2	0.040%
45	5,578	3	0.054%	3.3	0.060%	2.8	0.050%
46	5,715	2	0.035%	4.3	0.075%	3.4	0.060%
47	5,717	1	0.017%	5.1	0.090%	4.0	0.070%
48	5,695	2	0.035%	6.0	0.105%	4.6	0.080%
49	5,815	2	0.034%	7.0	0.120%	5.8	0.100%
50	5,924	3	0.051%	8.0	0.135%	6.5	0.110%
51	6,195	5	0.081%	9.3	0.150%	7.4	0.120%
52	6,478	3	0.046%	10.7	0.165%	8.4	0.130%
53	6,629	8	0.121%	11.9	0.180%	9.3	0.140%
54	6,734	6	0.089%	13.1	0.195%	10.8	0.160%
55	6,585	13	0.197%	13.8	0.210%	11.2	0.170%
56	6,222	8	0.129%	14.0	0.225%	11.2	0.180%
57	5,981	6	0.100%	14.4	0.240%	11.4	0.190%
58	5,707	11	0.193%	14.6	0.255%	11.4	0.200%
59	5,370	7	0.130%	14.5	0.270%	11.8	0.220%
60	5,027	13	0.259%	14.3	0.285%	11.6	0.230%
61	4,642	8	0.172%	13.9	0.300%	11.1	0.240%
62	4,073	8	0.196%	13.0	0.320%	10.6	0.260%
63	3,230	3	0.093%	11.0	0.340%	8.7	0.270%
64	2,606	1	0.038%	9.4	0.360%	7.6	0.290%
	181,770	118	0.065%	240.4	0.132%	192.0	0.106%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary G-5
Rates of Disability
Males - Other Membership

Age	Exposure	Actual Disabilities	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	154	-	0.000%	0.0	0.020%	0.0	0.020%
26	209	-	0.000%	0.0	0.020%	0.0	0.020%
27	344	-	0.000%	0.1	0.020%	0.1	0.020%
28	430	-	0.000%	0.1	0.020%	0.1	0.020%
29	527	-	0.000%	0.1	0.020%	0.1	0.020%
30	657	-	0.000%	0.1	0.020%	0.1	0.020%
31	723	-	0.000%	0.1	0.020%	0.1	0.020%
32	772	1	0.130%	0.2	0.020%	0.2	0.020%
33	893	-	0.000%	0.2	0.022%	0.2	0.020%
34	975	-	0.000%	0.2	0.025%	0.2	0.020%
35	1,106	-	0.000%	0.3	0.030%	0.2	0.020%
36	1,168	-	0.000%	0.4	0.035%	0.4	0.030%
37	1,183	-	0.000%	0.5	0.040%	0.4	0.030%
38	1,116	-	0.000%	0.5	0.045%	0.4	0.040%
39	1,141	1	0.088%	0.6	0.050%	0.5	0.040%
40	1,137	-	0.000%	0.6	0.055%	0.5	0.040%
41	1,208	-	0.000%	0.7	0.060%	0.6	0.050%
42	1,326	-	0.000%	0.9	0.065%	0.7	0.050%
43	1,400	-	0.000%	1.0	0.070%	0.8	0.060%
44	1,460	-	0.000%	1.1	0.075%	0.9	0.060%
45	1,531	-	0.000%	1.3	0.085%	1.1	0.070%
46	1,484	-	0.000%	1.5	0.100%	1.2	0.080%
47	1,444	-	0.000%	2.0	0.140%	1.6	0.110%
48	1,523	1	0.066%	2.8	0.184%	2.3	0.150%
49	1,637	2	0.122%	3.5	0.214%	2.8	0.170%
50	1,759	1	0.057%	4.2	0.240%	3.3	0.190%
51	1,897	3	0.158%	5.1	0.270%	4.2	0.220%
52	1,985	4	0.202%	6.5	0.326%	5.2	0.260%
53	2,141	1	0.047%	8.4	0.392%	6.6	0.310%
54	2,304	3	0.130%	10.6	0.462%	8.5	0.370%
55	2,368	4	0.169%	13.0	0.550%	10.4	0.440%
56	2,392	6	0.251%	13.9	0.580%	11.0	0.460%
57	2,399	15	0.625%	15.1	0.630%	12.0	0.500%
58	2,333	3	0.129%	16.3	0.700%	13.1	0.560%
59	2,294	10	0.436%	17.2	0.750%	13.8	0.600%
60	2,261	9	0.398%	18.1	0.800%	14.5	0.640%
61	2,139	10	0.468%	18.2	0.850%	14.5	0.680%
62	1,952	5	0.256%	17.6	0.900%	14.1	0.720%
63	1,583	8	0.505%	15.0	0.950%	12.0	0.760%
64	1,309	2	0.153%	13.1	1.000%	10.5	0.800%
	56,664	89	0.157%	211.3	0.373%	169.0	0.298%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary G-6

Rates of Disability

Females - Other Membership

Age	Exposure	Actual Disabilities	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	366	-	0.000%	0.1	0.020%	0.1	0.020%
26	527	-	0.000%	0.1	0.020%	0.1	0.020%
27	775	-	0.000%	0.2	0.020%	0.2	0.020%
28	975	-	0.000%	0.2	0.020%	0.2	0.020%
29	1,185	-	0.000%	0.2	0.020%	0.2	0.020%
30	1,340	-	0.000%	0.3	0.020%	0.3	0.020%
31	1,463	-	0.000%	0.3	0.020%	0.3	0.020%
32	1,509	-	0.000%	0.3	0.020%	0.3	0.020%
33	1,559	-	0.000%	0.3	0.022%	0.3	0.020%
34	1,603	-	0.000%	0.4	0.025%	0.3	0.020%
35	1,690	-	0.000%	0.5	0.027%	0.3	0.020%
36	1,687	-	0.000%	0.5	0.030%	0.3	0.020%
37	1,741	-	0.000%	0.6	0.032%	0.5	0.030%
38	1,759	-	0.000%	0.6	0.034%	0.5	0.030%
39	1,775	-	0.000%	0.6	0.036%	0.5	0.030%
40	1,772	-	0.000%	0.7	0.038%	0.5	0.030%
41	1,843	-	0.000%	0.8	0.044%	0.7	0.040%
42	1,905	1	0.052%	1.0	0.051%	0.8	0.040%
43	1,984	1	0.050%	1.1	0.057%	1.0	0.050%
44	2,024	-	0.000%	1.3	0.065%	1.0	0.050%
45	2,098	-	0.000%	1.5	0.072%	1.3	0.060%
46	2,150	1	0.047%	1.7	0.080%	1.3	0.060%
47	2,143	1	0.047%	1.9	0.087%	1.5	0.070%
48	2,265	-	0.000%	2.2	0.095%	1.8	0.080%
49	2,414	-	0.000%	2.9	0.120%	2.4	0.100%
50	2,624	1	0.038%	3.8	0.145%	3.1	0.120%
51	2,826	2	0.071%	4.8	0.170%	4.0	0.140%
52	3,053	-	0.000%	6.1	0.200%	4.9	0.160%
53	3,262	4	0.123%	7.5	0.230%	5.9	0.180%
54	3,375	5	0.148%	8.8	0.260%	7.1	0.210%
55	3,399	2	0.059%	9.9	0.290%	7.8	0.230%
56	3,335	7	0.210%	10.7	0.320%	8.7	0.260%
57	3,276	5	0.153%	11.5	0.350%	9.2	0.280%
58	3,185	6	0.188%	12.1	0.380%	9.6	0.300%
59	3,072	8	0.260%	12.6	0.410%	10.1	0.330%
60	2,904	4	0.138%	12.8	0.440%	10.2	0.350%
61	2,768	5	0.181%	13.0	0.470%	10.5	0.380%
62	2,449	4	0.163%	12.2	0.500%	9.8	0.400%
63	1,974	7	0.355%	10.5	0.530%	8.3	0.420%
64	1,721	2	0.116%	9.6	0.560%	7.7	0.450%
	83,775	66	0.079%	166.0	0.198%	133.6	0.160%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary G-7
Rates of Disability
Special Services

Age	Exposure	Actual Disabilities	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
25	120	-	0.000%	0.2	0.150%	0.2	0.130%
26	220	-	0.000%	0.3	0.150%	0.3	0.130%
27	324	-	0.000%	0.5	0.150%	0.4	0.130%
28	411	-	0.000%	0.6	0.150%	0.5	0.130%
29	502	-	0.000%	0.8	0.150%	0.7	0.130%
30	568	-	0.000%	0.9	0.150%	0.7	0.130%
31	654	-	0.000%	1.0	0.150%	0.9	0.130%
32	677	-	0.000%	1.0	0.150%	0.9	0.130%
33	697	-	0.000%	1.0	0.150%	0.9	0.130%
34	743	-	0.000%	1.1	0.150%	1.0	0.130%
35	746	1	0.134%	1.1	0.150%	1.0	0.130%
36	778	-	0.000%	1.2	0.150%	1.0	0.130%
37	782	-	0.000%	1.2	0.150%	1.0	0.130%
38	752	1	0.133%	1.1	0.150%	1.0	0.130%
39	759	1	0.132%	1.1	0.150%	1.0	0.130%
40	762	-	0.000%	1.2	0.160%	1.1	0.140%
41	748	1	0.134%	1.3	0.170%	1.0	0.140%
42	814	1	0.123%	1.5	0.180%	1.2	0.150%
43	887	-	0.000%	1.7	0.190%	1.4	0.160%
44	899	3	0.334%	1.8	0.200%	1.5	0.170%
45	880	-	0.000%	1.8	0.210%	1.6	0.180%
46	876	3	0.342%	1.9	0.220%	1.7	0.190%
47	834	1	0.120%	1.9	0.230%	1.7	0.200%
48	845	3	0.355%	2.0	0.240%	1.7	0.200%
49	841	1	0.119%	2.1	0.250%	1.8	0.210%
50	805	2	0.248%	2.1	0.260%	1.8	0.220%
51	817	3	0.367%	2.2	0.270%	1.9	0.230%
52	827	3	0.363%	2.3	0.280%	2.0	0.240%
53	838	3	0.358%	2.5	0.300%	2.2	0.260%
54	821	3	0.365%	2.6	0.320%	2.2	0.270%
55	753	-	0.000%	2.6	0.340%	2.2	0.290%
56	616	5	0.812%	2.2	0.360%	1.9	0.310%
57	556	1	0.180%	2.1	0.380%	1.8	0.320%
58	533	-	0.000%	2.1	0.400%	1.8	0.340%
59	492	2	0.407%	2.1	0.420%	1.8	0.360%
60	416	2	0.481%	1.9	0.450%	1.6	0.380%
61	402	-	0.000%	1.9	0.480%	1.6	0.410%
62	315	2	0.635%	1.6	0.510%	1.4	0.430%
63	230	1	0.435%	1.2	0.540%	1.1	0.460%
64	197	1	0.508%	1.1	0.570%	0.9	0.480%
	25,737	44	0.171%	61.0	0.237%	52.1	0.202%



APPENDIX H

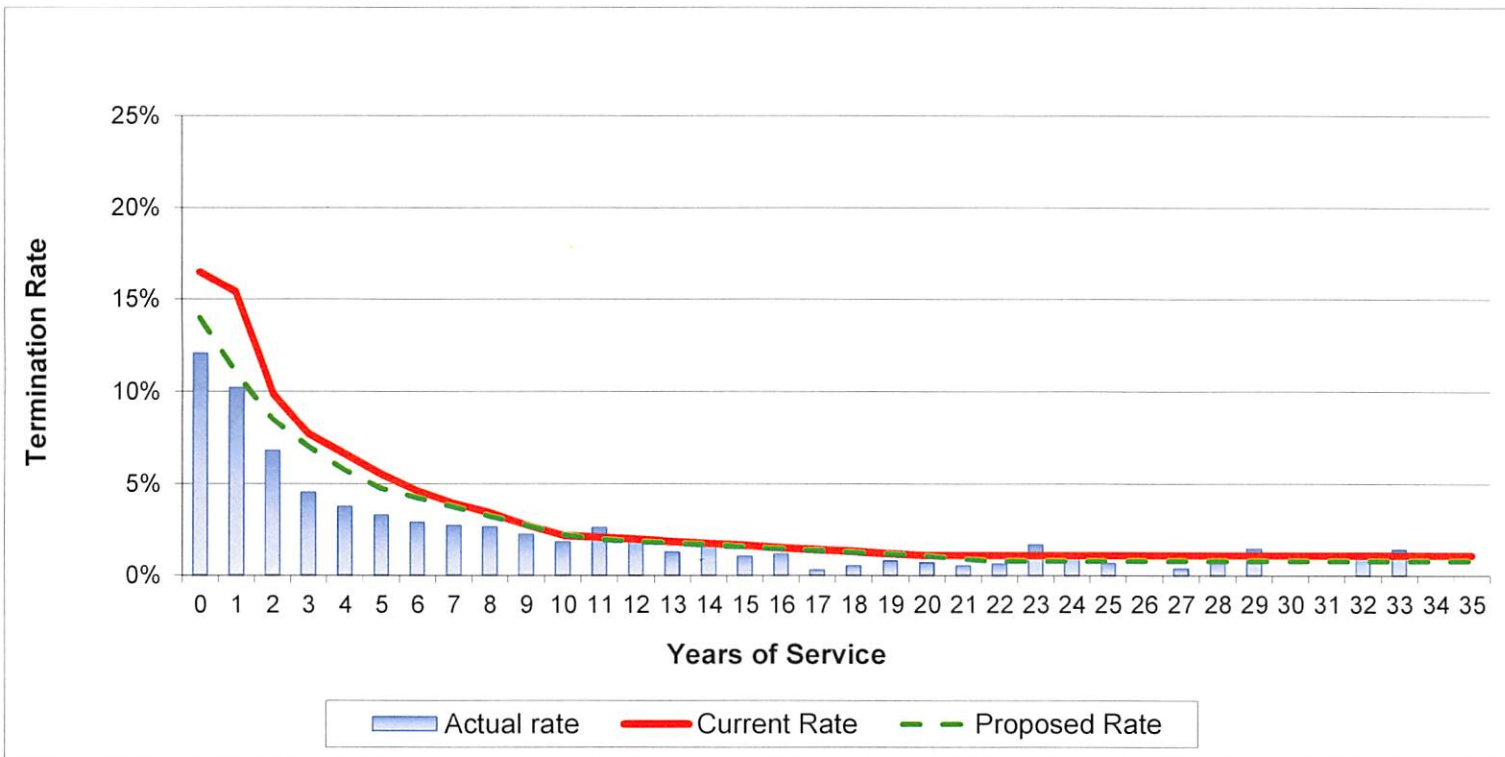
TERMINATION OF EMPLOYMENT



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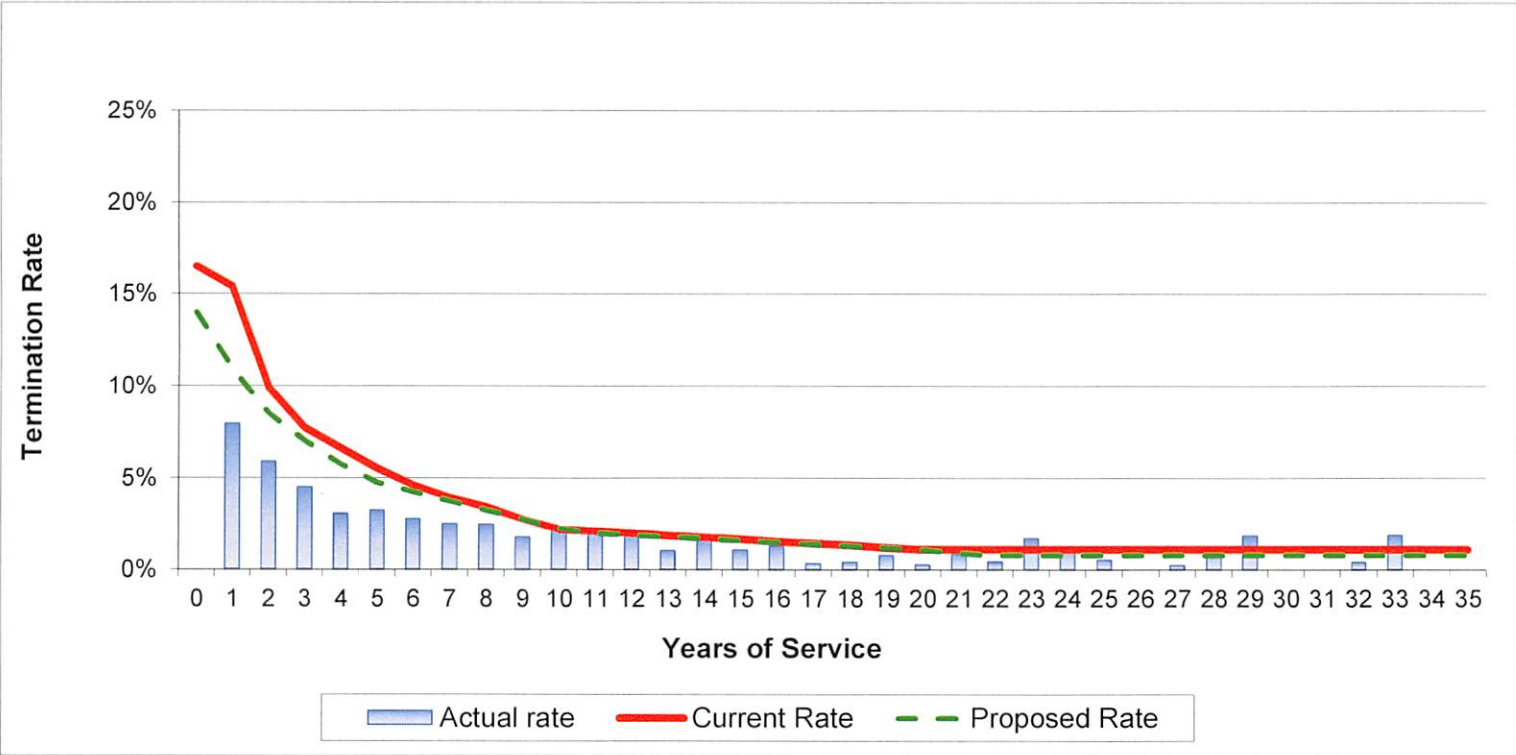
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit H-1
 Termination of Employment
 State Membership - Males



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	678	989	847
Actual/Expected		69%	80%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit H-2
 Termination of Employment
 State Membership - Males (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	18,968	29,322	26,244
Actual/Expected		65%	72%



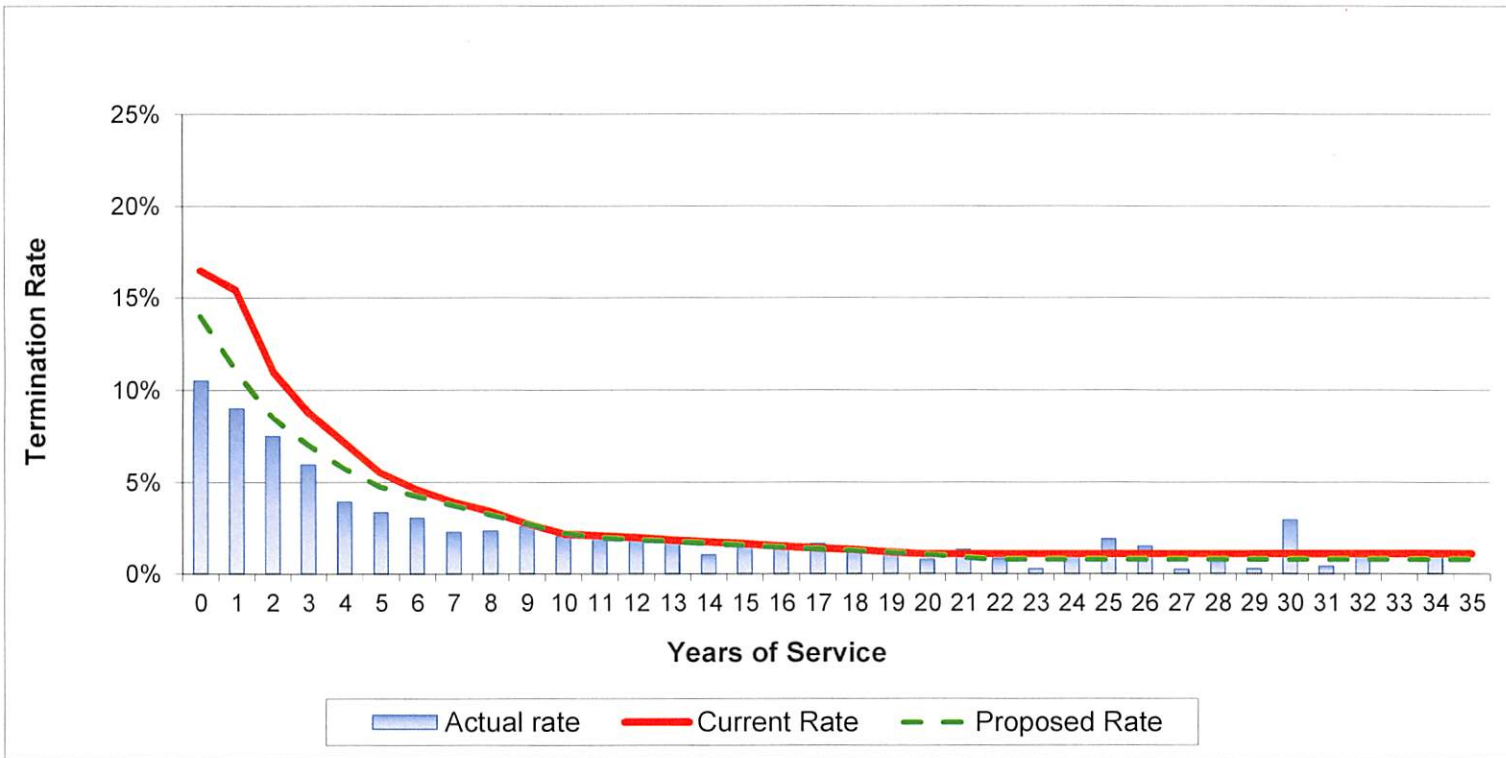
Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit H-3

Termination of Employment

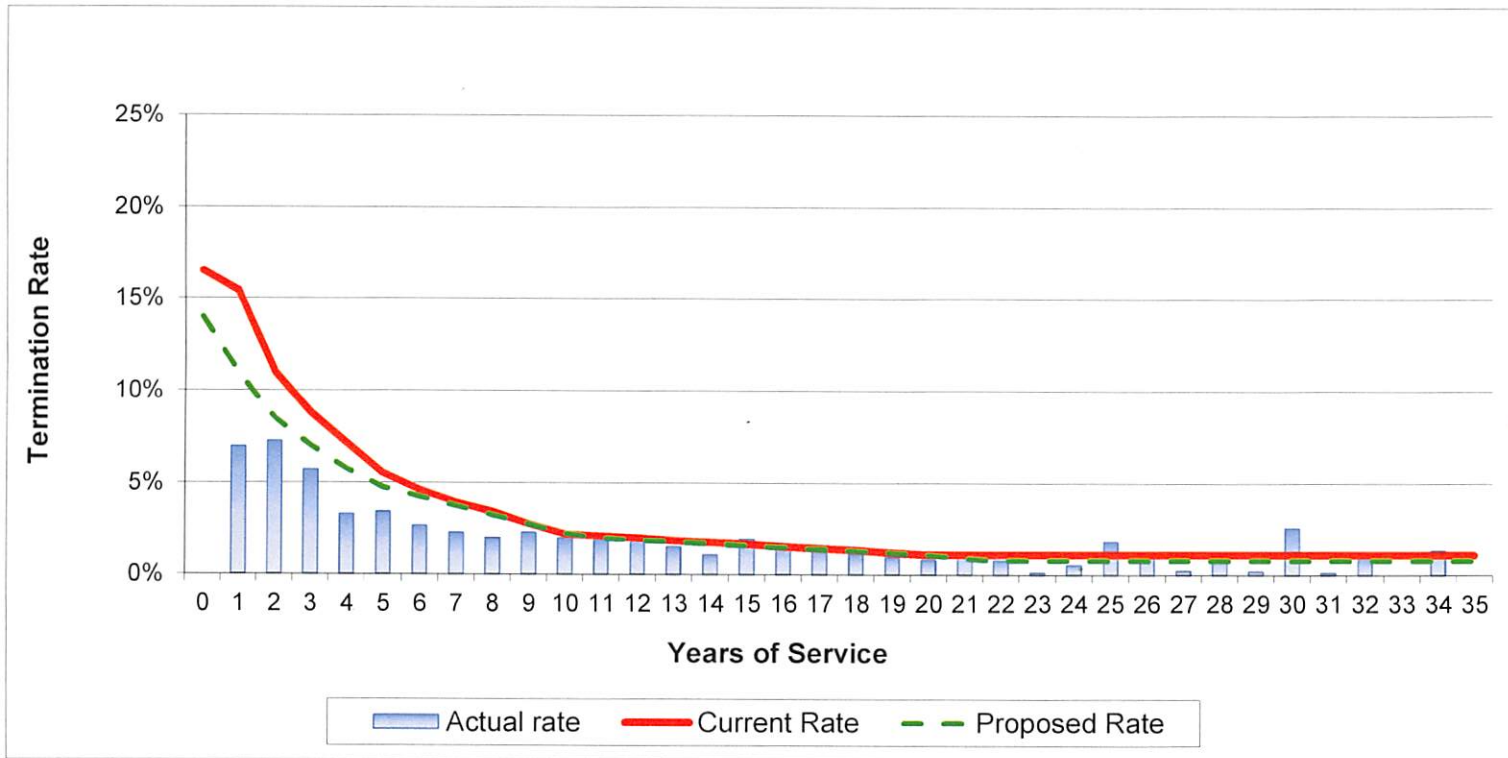
State Membership - Females



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,015	1,485	1,236
Actual/Expected		68%	82%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit H-4
 Termination of Employment
 State Membership - Females (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	29,797	39,454	34,803
Actual/Expected		76%	86%



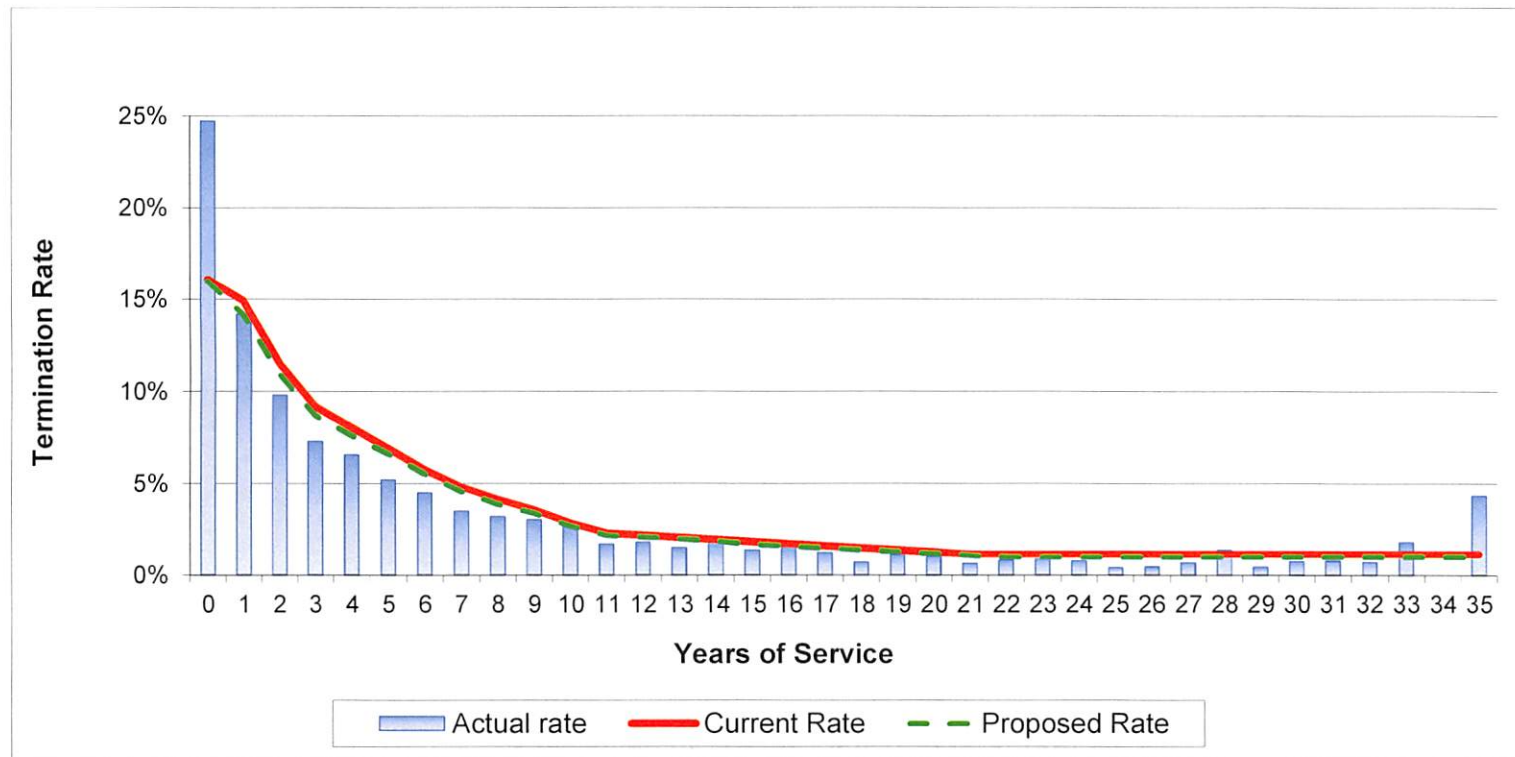
Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit H-5

Termination of Employment

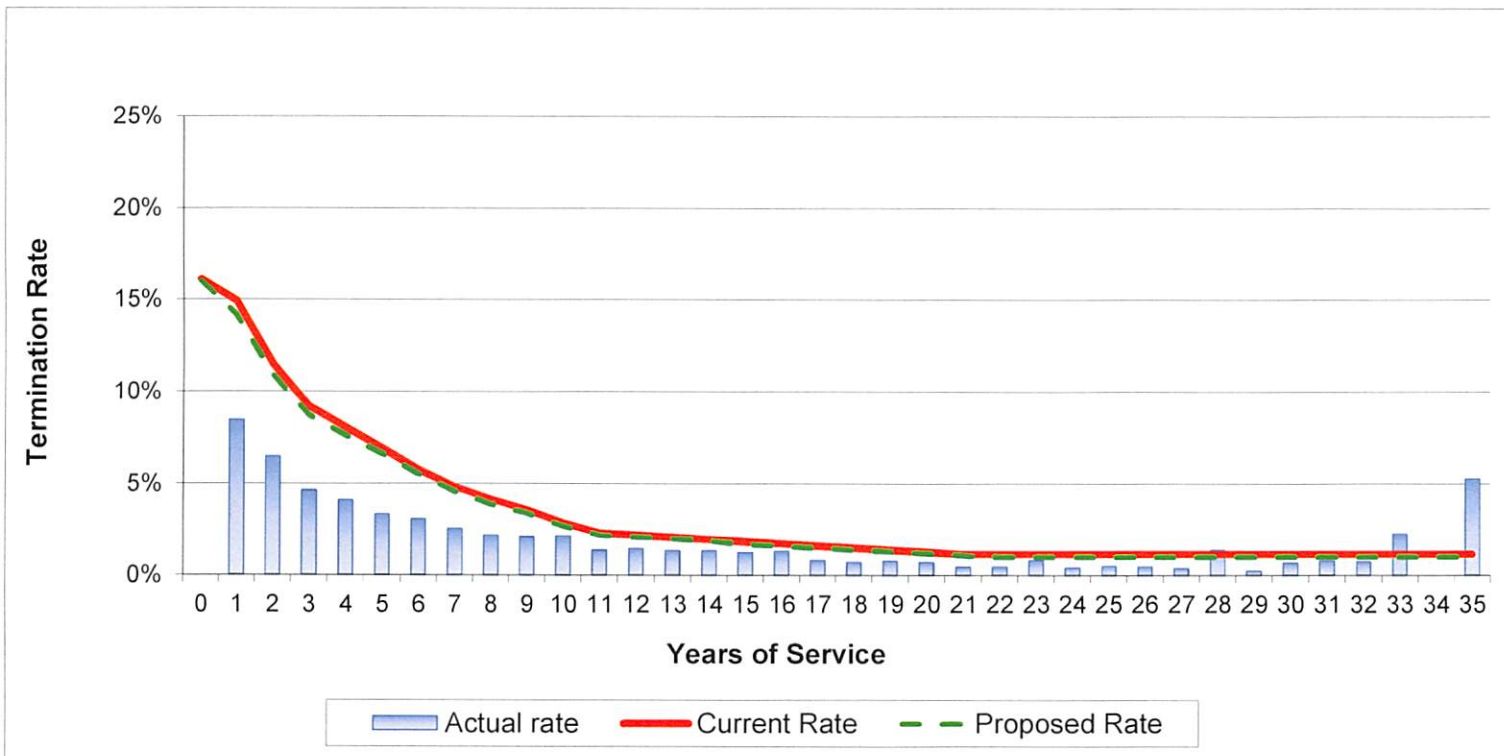
School Membership - Males



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	3,270	3,422	3,267
Actual/Expected		96%	100%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit H-6
 Termination of Employment
 School Membership - Males (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	43,256	75,857	70,835
Actual/Expected		57%	61%



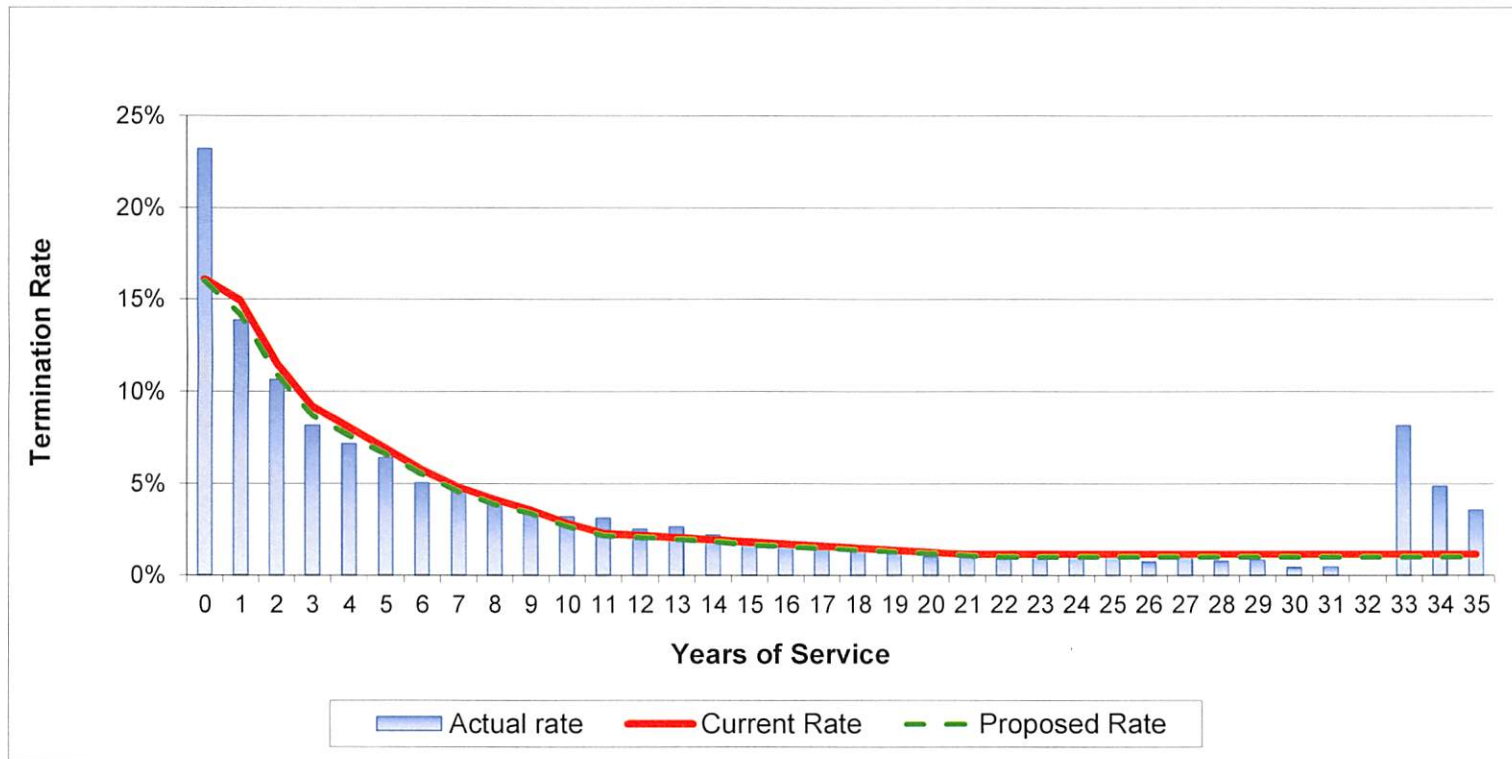
Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit H-7

Termination of Employment

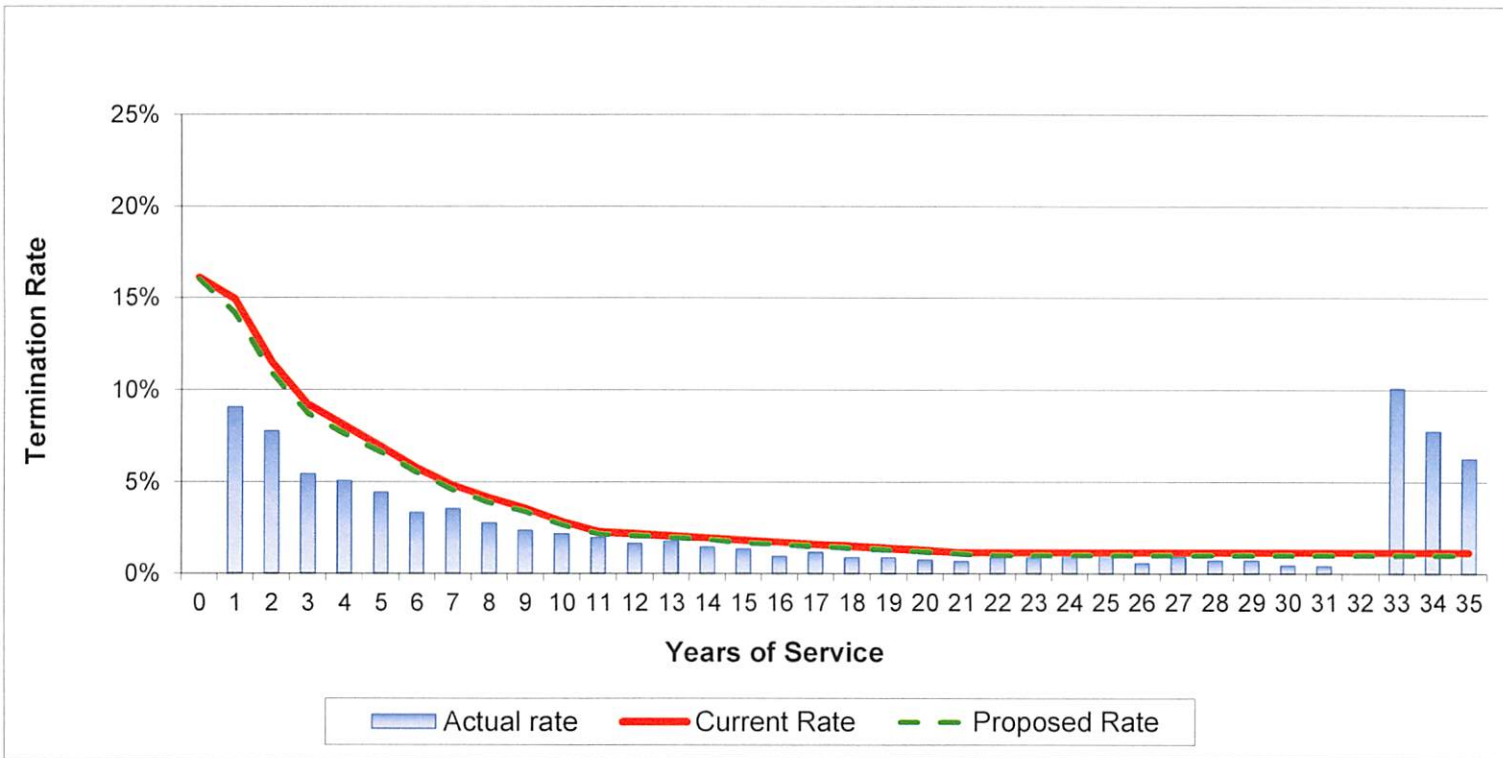
School Membership - Females



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	11,762	11,603	11,070
Actual/Expected		101%	106%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit H-8
 Termination of Employment
 School Membership - Females (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	133,022	193,948	181,694
Actual/Expected		69%	73%



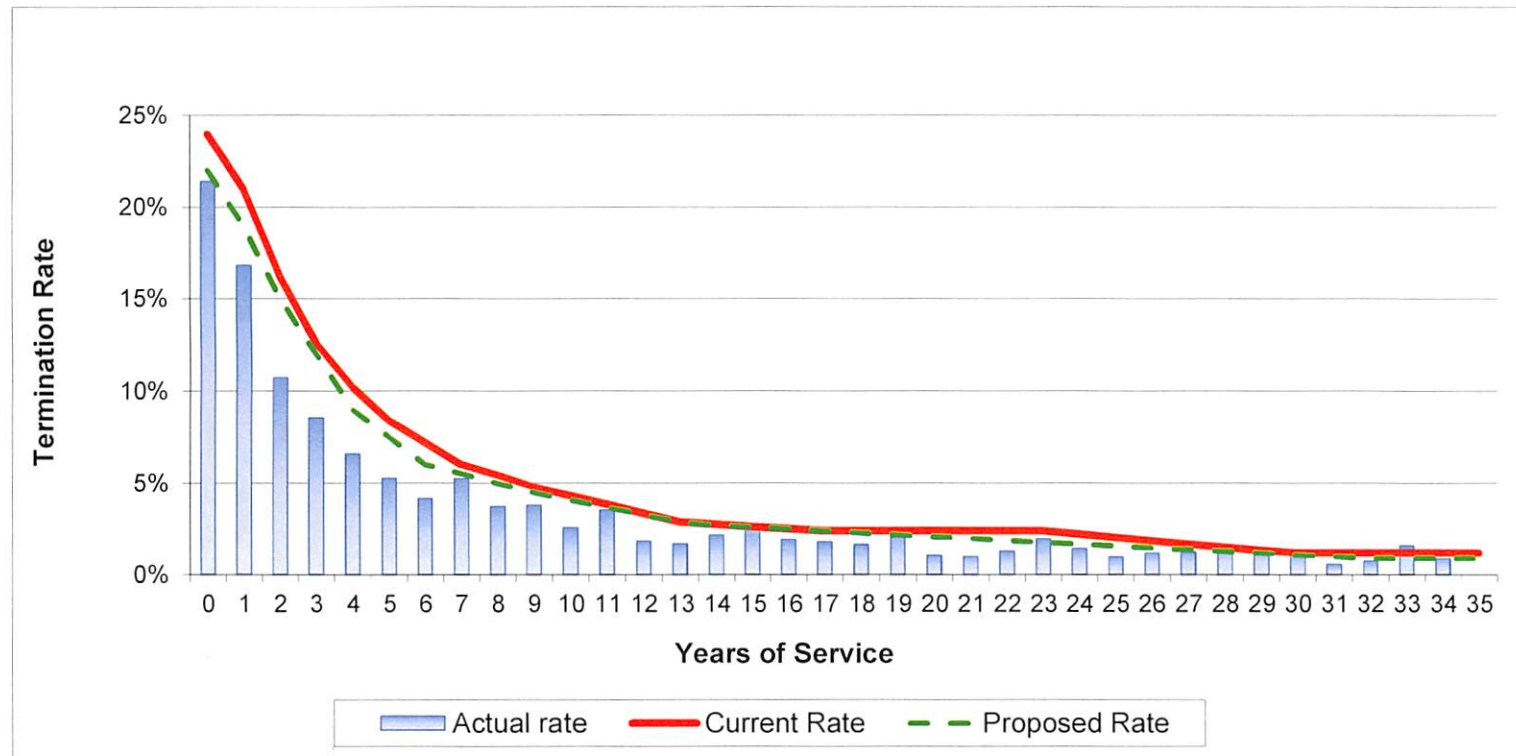
Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit H-9

Termination of Employment

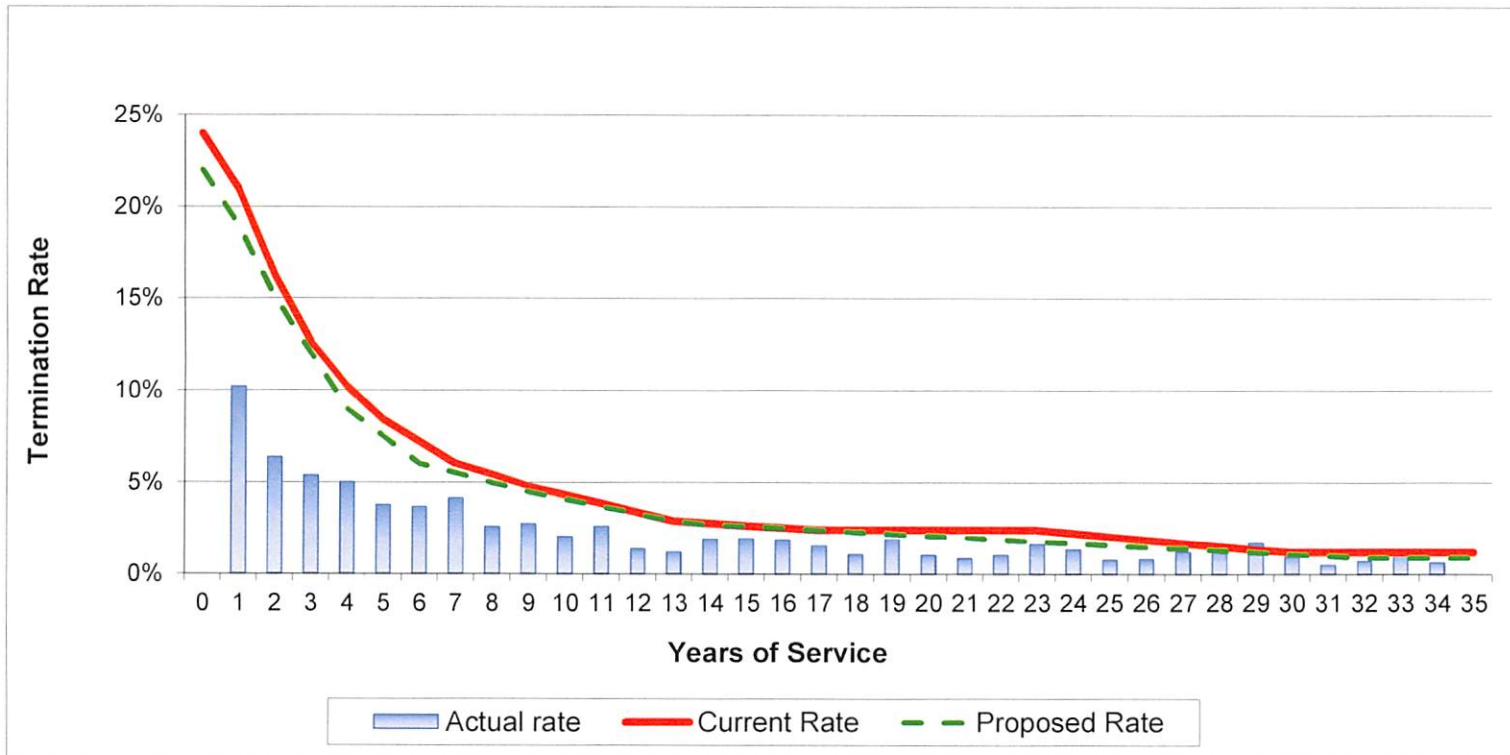
Other Membership - Males



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	4,705	6,148	5,625
Actual/Expected		77%	84%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit H-10
 Termination of Employment
 Other Membership - Males (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	53,651	100,458	91,686
Actual/Expected		53%	59%



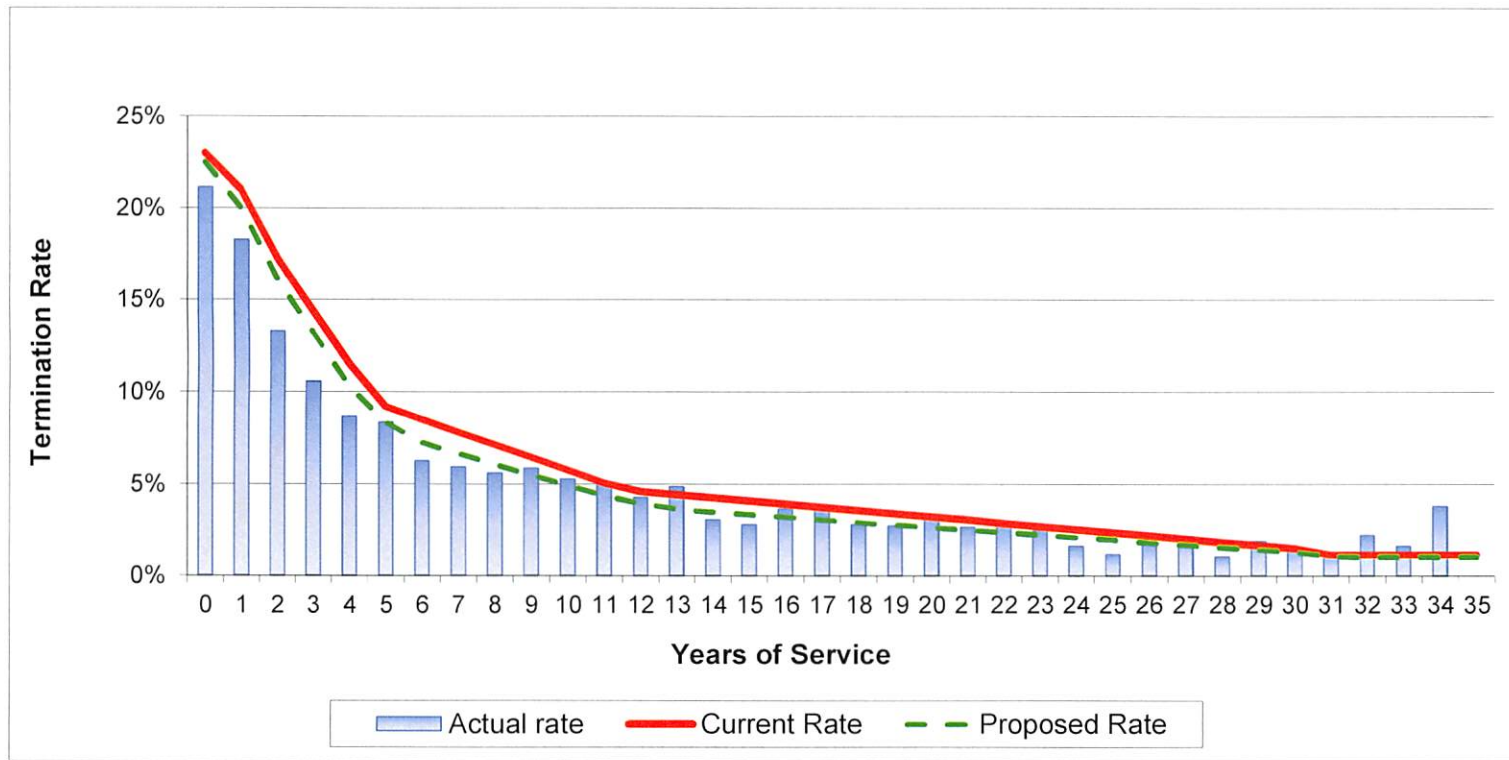
Iowa Public Employees' Retirement System

2013-2017 Experience Study

Exhibit H-11

Termination of Employment

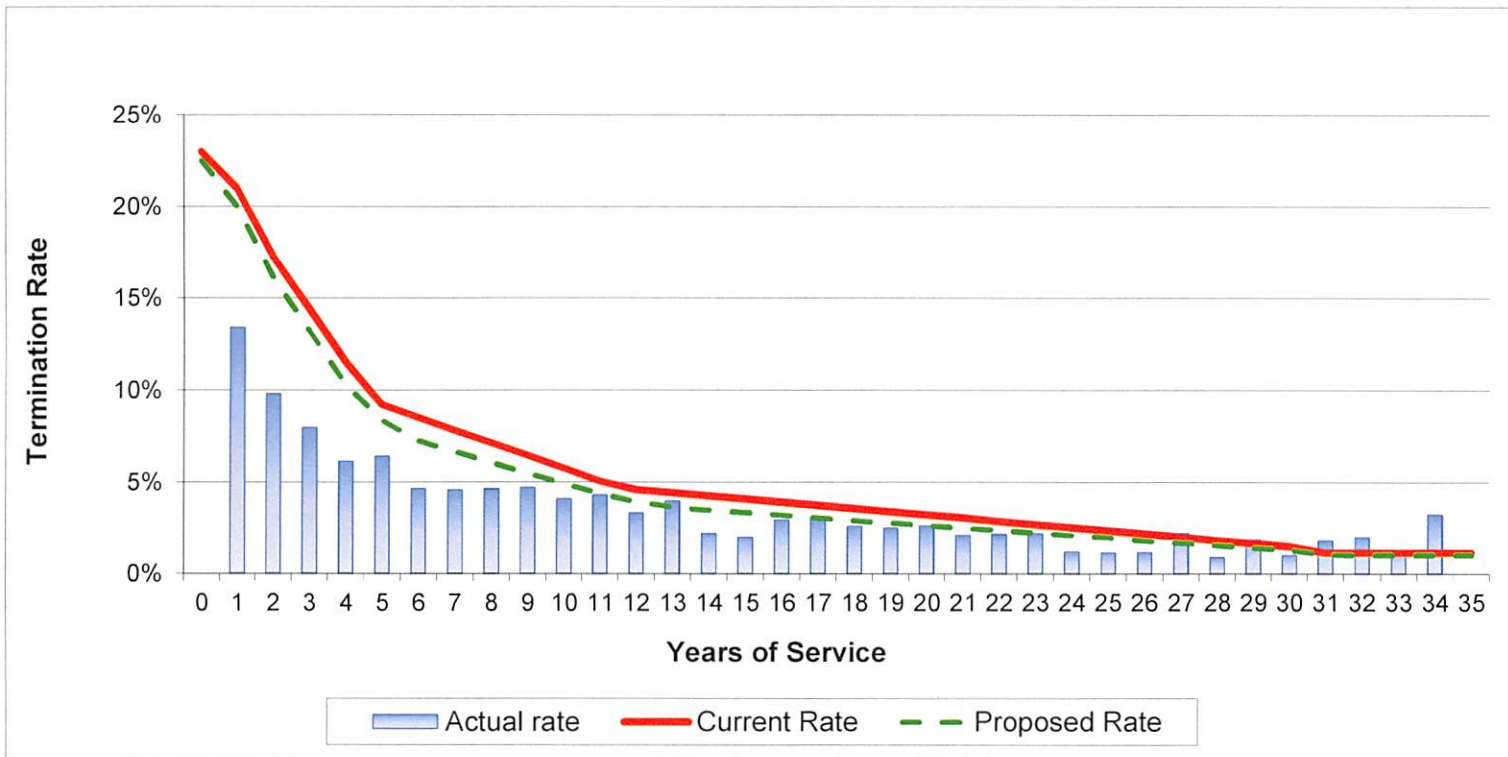
Other Membership - Females



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	9,819	11,624	10,763
Actual/Expected		84%	91%



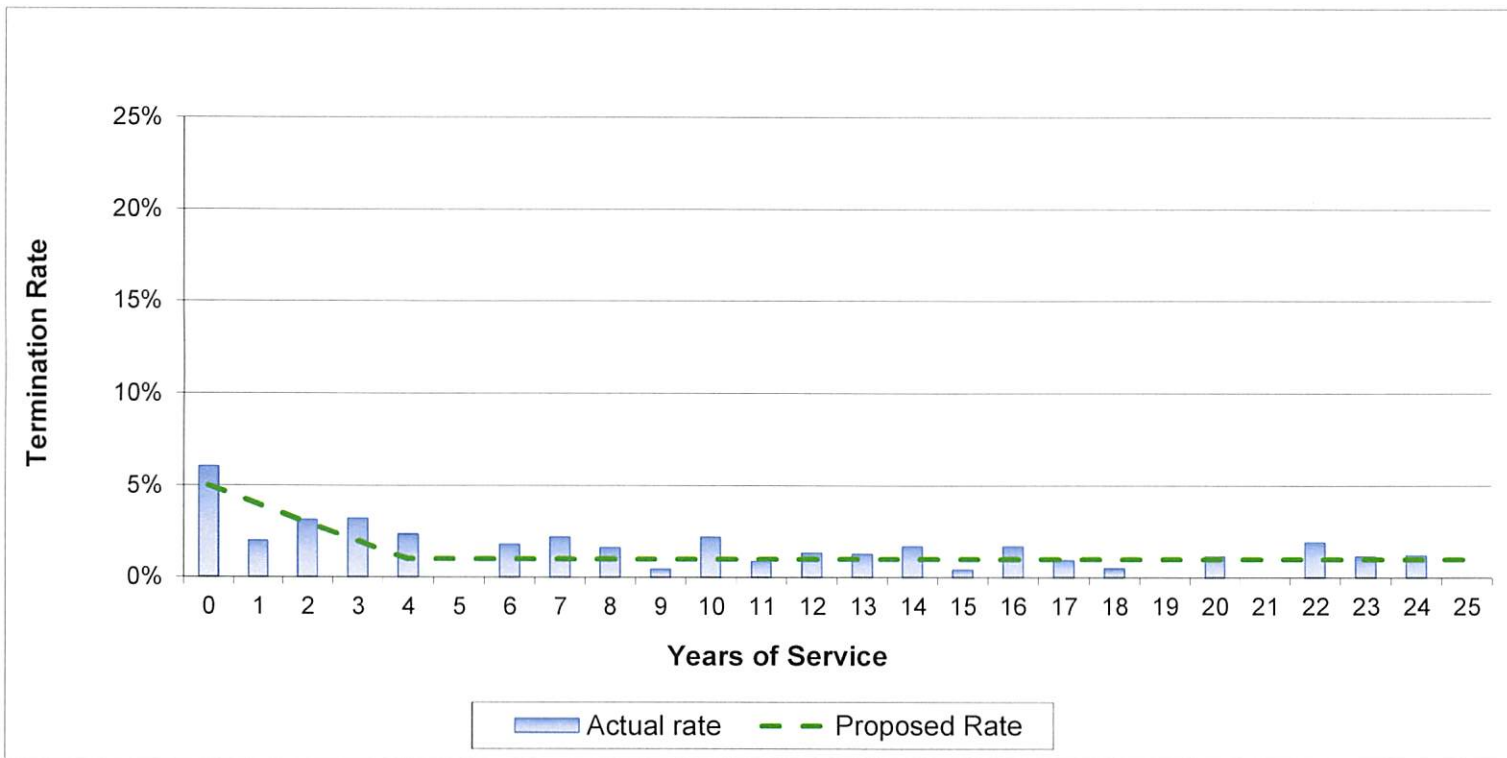
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit H-12
 Termination of Employment
 Other Membership - Females (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	105,956	158,393	136,887
Actual/Expected		67%	77%



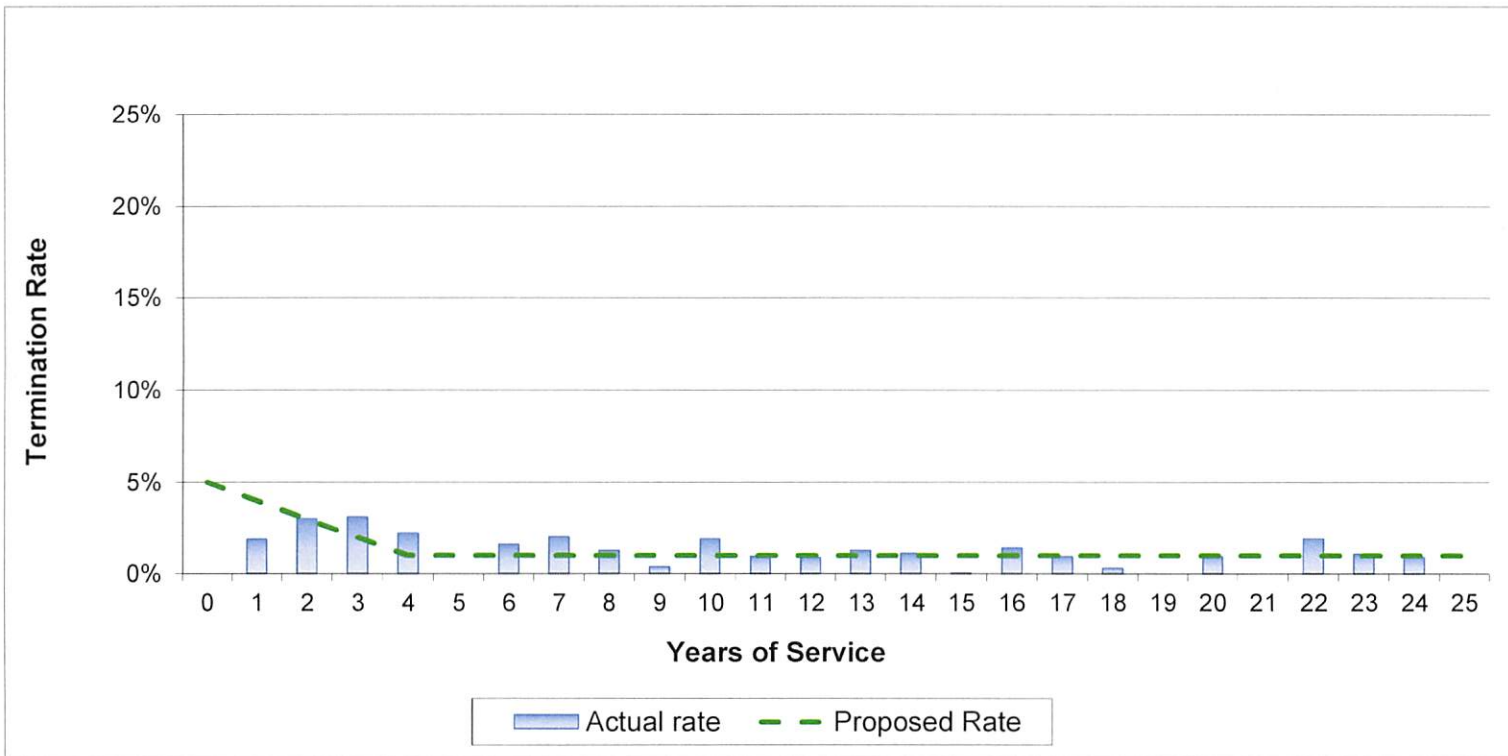
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit H-13
 Termination of Employment
 Sheriffs and Deputies Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	76	NA	68
Actual/Expected		NA	112%



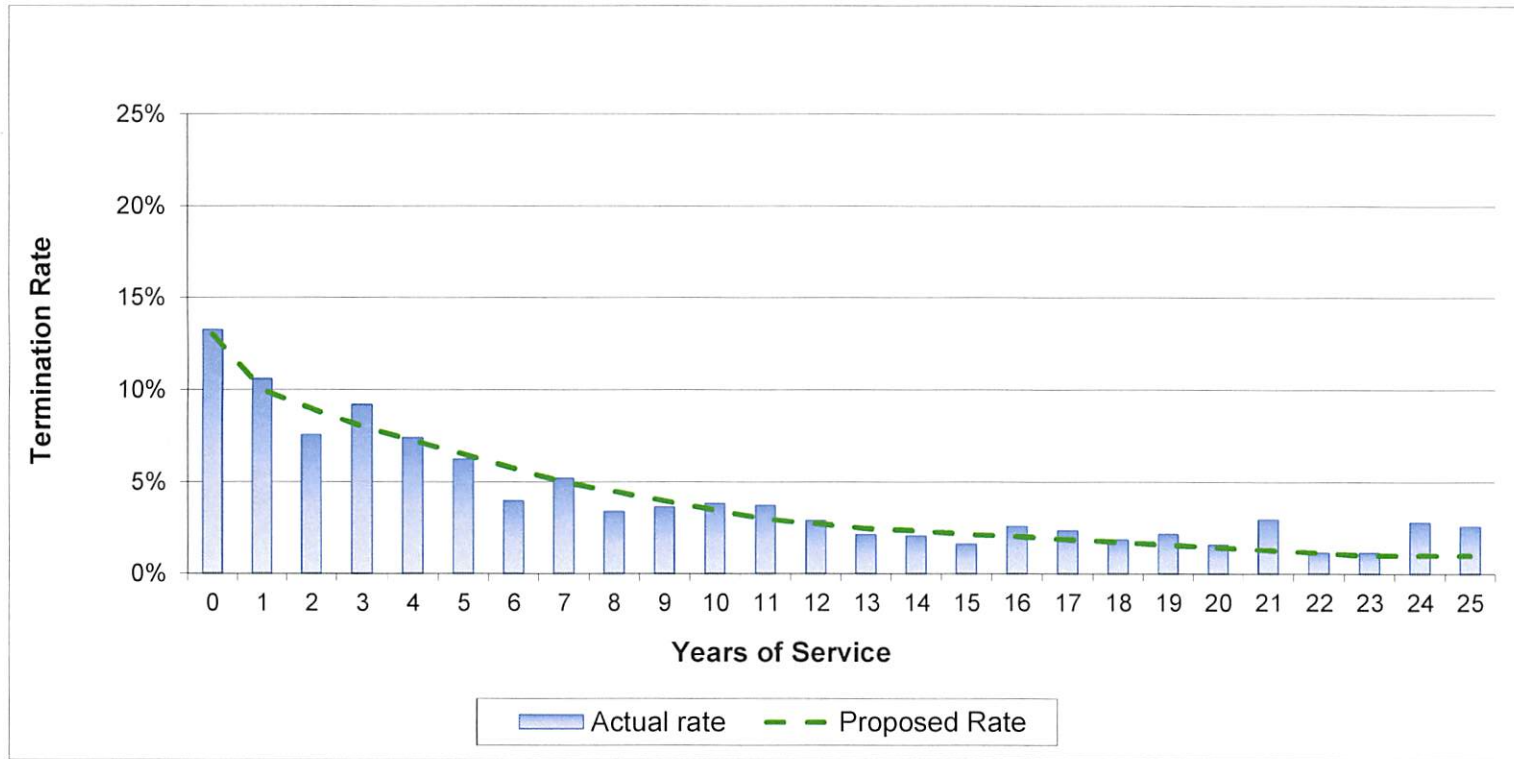
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit H-14
 Termination of Employment
 Sheriffs and Deputies Membership (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	3,307	NA	3,743
Actual/Expected		NA	88%



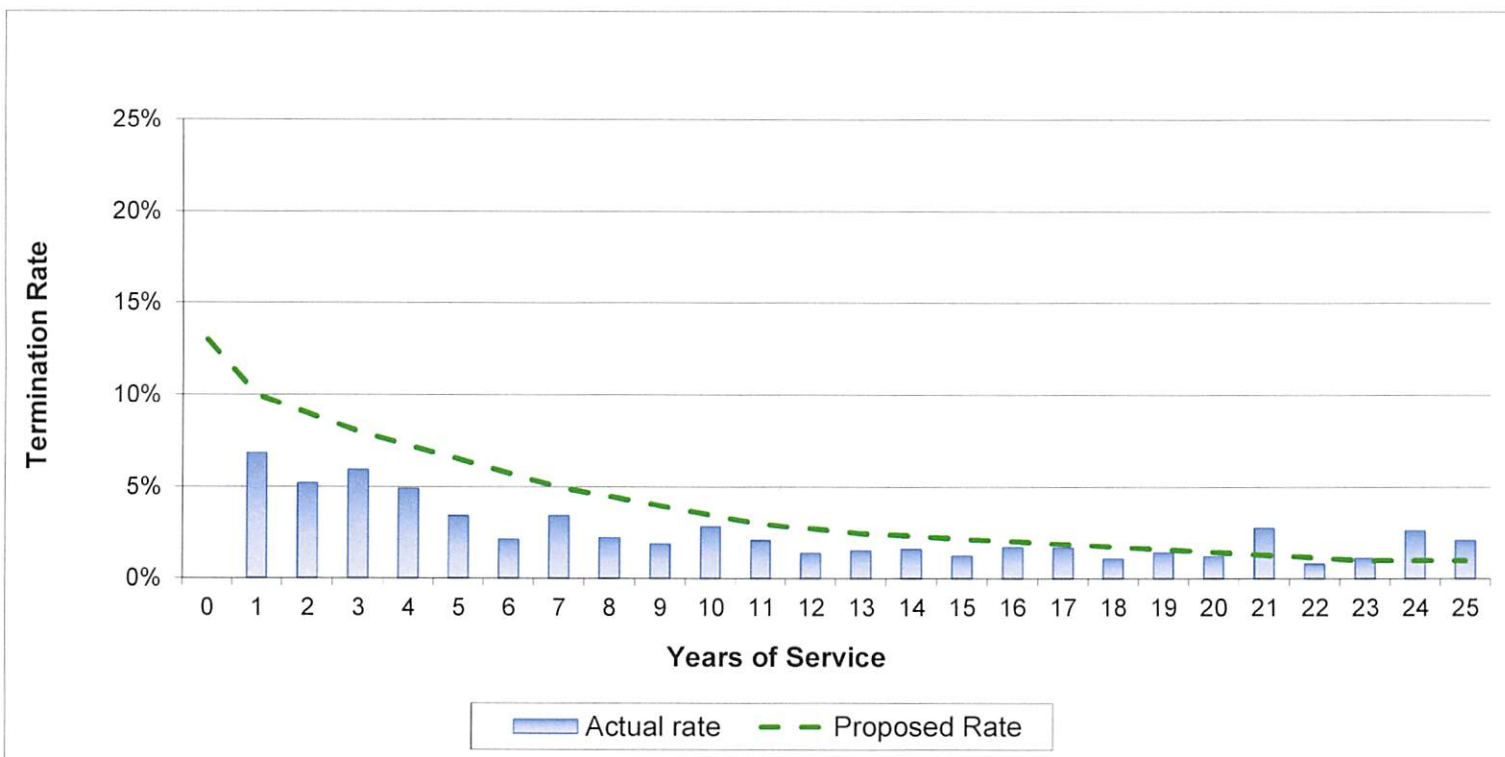
Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit H-15
 Termination of Employment
 Protection Occupations Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,271	NA	1,275
Actual/Expected		NA	100%



Iowa Public Employees' Retirement System
 2013-2017 Experience Study
 Exhibit H-16
 Termination of Employment
 Protection Occupations Membership (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	19,775	NA	27,739
Actual/Expected		NA	71%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary H-1
Termination of Employment
State Membership - Males

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	1,216	147	12.1%	200.6	16.5%	170.2	14.0%
1	1,252	128	10.2%	192.8	15.4%	137.7	11.0%
2	1,091	74	6.8%	108.0	9.9%	92.7	8.5%
3	1,014	46	4.5%	78.1	7.7%	71.0	7.0%
4	931	35	3.8%	61.4	6.6%	53.5	5.8%
5	1,030	34	3.3%	56.7	5.5%	48.9	4.8%
6	1,067	31	2.9%	49.3	4.6%	45.3	4.3%
7	1,019	28	2.7%	40.4	4.0%	38.2	3.8%
8	1,013	27	2.7%	34.5	3.4%	32.9	3.3%
9	789	18	2.3%	21.7	2.8%	21.7	2.8%
10	703	13	1.8%	15.5	2.2%	15.8	2.3%
11	571	15	2.6%	11.9	2.1%	11.4	2.0%
12	548	11	2.0%	10.9	2.0%	10.4	1.9%
13	616	8	1.3%	11.5	1.9%	11.1	1.8%
14	650	12	1.8%	11.4	1.8%	11.1	1.7%
15	731	8	1.1%	12.1	1.7%	11.7	1.6%
16	742	9	1.2%	11.4	1.5%	11.1	1.5%
17	649	2	0.3%	9.3	1.4%	9.1	1.4%
18	555	3	0.5%	7.3	1.3%	7.2	1.3%
19	502	4	0.8%	6.1	1.2%	6.0	1.2%
20	429	3	0.7%	4.7	1.1%	4.7	1.1%
21	367	2	0.5%	4.0	1.1%	3.3	0.9%
22	313	2	0.6%	3.4	1.1%	2.5	0.8%
23	293	5	1.7%	3.2	1.1%	2.3	0.8%
24	269	3	1.1%	3.0	1.1%	2.2	0.8%
25	292	2	0.7%	3.2	1.1%	2.3	0.8%
26	295	-	0.0%	3.2	1.1%	2.4	0.8%
27	252	1	0.4%	2.8	1.1%	2.0	0.8%
28	238	2	0.8%	2.6	1.1%	1.9	0.8%
29	203	3	1.5%	2.2	1.1%	1.6	0.8%
30	147	-	0.0%	1.6	1.1%	1.2	0.8%
31	128	-	0.0%	1.4	1.1%	1.0	0.8%
32	98	1	1.0%	1.1	1.1%	0.8	0.8%
33	70	1	1.4%	0.8	1.1%	0.6	0.8%
34	55	-	0.0%	0.6	1.1%	0.4	0.8%
35	27	-	0.0%	0.3	1.1%	0.2	0.8%
	20,165	678	3.4%	989.1	4.2%	846.7	4.2%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary H-2

Termination of Employment

State Membership - Males (Weighted)

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	-	-	0.0%	-	16.5%	-	14.0%
1	5,253	418	7.9%	808.9	15.4%	577.8	11.0%
2	10,173	601	5.9%	1,007.2	9.9%	864.7	8.5%
3	15,030	678	4.5%	1,157.3	7.7%	1,052.1	7.0%
4	19,042	582	3.1%	1,256.8	6.6%	1,094.9	5.8%
5	27,990	904	3.2%	1,539.4	5.5%	1,329.5	4.8%
6	36,211	1,002	2.8%	1,672.9	4.6%	1,539.0	4.3%
7	41,778	1,044	2.5%	1,654.4	4.0%	1,566.7	3.8%
8	49,175	1,221	2.5%	1,676.9	3.4%	1,598.2	3.3%
9	44,662	799	1.8%	1,228.2	2.8%	1,228.2	2.8%
10	45,102	992	2.2%	992.2	2.2%	1,014.8	2.3%
11	41,592	952	2.3%	869.3	2.1%	831.8	2.0%
12	43,778	856	2.0%	866.8	2.0%	831.8	1.9%
13	53,566	558	1.0%	1,001.7	1.9%	964.2	1.8%
14	61,680	996	1.6%	1,085.6	1.8%	1,048.6	1.7%
15	75,448	810	1.1%	1,244.9	1.7%	1,207.2	1.6%
16	83,562	1,066	1.3%	1,286.8	1.5%	1,253.4	1.5%
17	79,222	278	0.4%	1,132.9	1.4%	1,109.1	1.4%
18	71,982	298	0.4%	950.2	1.3%	935.8	1.3%
19	67,888	530	0.8%	821.4	1.2%	814.7	1.2%
20	61,760	183	0.3%	679.4	1.1%	679.4	1.1%
21	55,619	470	0.8%	611.8	1.1%	500.6	0.9%
22	50,131	217	0.4%	551.4	1.1%	401.0	0.8%
23	50,440	870	1.7%	554.8	1.1%	403.5	0.8%
24	49,257	580	1.2%	541.8	1.1%	394.1	0.8%
25	55,777	306	0.5%	613.6	1.1%	446.2	0.8%
26	59,477	-	0.0%	654.2	1.1%	475.8	0.8%
27	51,154	135	0.3%	562.7	1.1%	409.2	0.8%
28	50,391	457	0.9%	554.3	1.1%	403.1	0.8%
29	44,925	825	1.8%	494.2	1.1%	359.4	0.8%
30	32,700	-	0.0%	359.7	1.1%	261.6	0.8%
31	29,545	-	0.0%	325.0	1.1%	236.4	0.8%
32	20,250	81	0.4%	222.8	1.1%	162.0	0.8%
33	13,865	259	1.9%	152.5	1.1%	110.9	0.8%
34	11,528	-	0.0%	126.8	1.1%	92.2	0.8%
35	5,715	-	0.0%	62.9	1.1%	45.7	0.8%
	1,515,667	18,968	1.3%	29,321.7	1.7%	26,243.5	1.7%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary H-3
Termination of Employment
State Membership - Females

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	1,700	179	10.5%	280.5	16.5%	238.0	14.0%
1	1,926	174	9.0%	296.6	15.4%	211.9	11.0%
2	1,641	123	7.5%	180.5	11.0%	139.5	8.5%
3	1,340	80	6.0%	117.9	8.8%	93.8	7.0%
4	1,218	48	3.9%	87.1	7.2%	70.0	5.8%
5	1,419	48	3.4%	78.0	5.5%	67.4	4.8%
6	1,524	47	3.1%	70.4	4.6%	64.8	4.3%
7	1,565	36	2.3%	62.0	4.0%	58.7	3.8%
8	1,637	39	2.4%	55.8	3.4%	53.2	3.3%
9	1,384	36	2.6%	38.1	2.8%	38.1	2.8%
10	1,218	25	2.1%	26.8	2.2%	27.4	2.3%
11	986	19	1.9%	20.6	2.1%	19.7	2.0%
12	870	17	2.0%	17.2	2.0%	16.5	1.9%
13	918	16	1.7%	17.2	1.9%	16.5	1.8%
14	958	10	1.0%	16.9	1.8%	16.3	1.7%
15	1,058	18	1.7%	17.5	1.7%	16.9	1.6%
16	986	17	1.7%	15.2	1.5%	14.8	1.5%
17	843	14	1.7%	12.1	1.4%	11.8	1.4%
18	747	10	1.3%	9.9	1.3%	9.7	1.3%
19	602	7	1.2%	7.3	1.2%	7.2	1.2%
20	506	4	0.8%	5.6	1.1%	5.6	1.1%
21	446	6	1.3%	4.9	1.1%	4.0	0.9%
22	374	3	0.8%	4.1	1.1%	3.0	0.8%
23	369	1	0.3%	4.1	1.1%	3.0	0.8%
24	414	4	1.0%	4.6	1.1%	3.3	0.8%
25	467	9	1.9%	5.1	1.1%	3.7	0.8%
26	456	7	1.5%	5.0	1.1%	3.6	0.8%
27	389	1	0.3%	4.3	1.1%	3.1	0.8%
28	371	3	0.8%	4.1	1.1%	3.0	0.8%
29	341	1	0.3%	3.8	1.1%	2.7	0.8%
30	270	8	3.0%	3.0	1.1%	2.2	0.8%
31	247	1	0.4%	2.7	1.1%	2.0	0.8%
32	195	2	1.0%	2.1	1.1%	1.6	0.8%
33	167	-	0.0%	1.8	1.1%	1.3	0.8%
34	156	2	1.3%	1.7	1.1%	1.2	0.8%
35	89	-	0.0%	1.0	1.1%	0.7	0.8%
	29,797	1,015	3.4%	1,485.3	4.1%	1,236.2	4.1%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary H-4
Termination of Employment
State Membership - Females (Weighted)

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	-	-	0.0%	-	16.5%	-	14.0%
1	7,017	488	7.0%	1,080.5	15.4%	771.8	11.0%
2	13,460	976	7.3%	1,480.6	11.0%	1,144.1	8.5%
3	17,372	992	5.7%	1,528.7	8.8%	1,216.0	7.0%
4	22,373	742	3.3%	1,599.6	7.2%	1,286.4	5.8%
5	34,296	1,174	3.4%	1,886.3	5.5%	1,629.1	4.8%
6	45,736	1,225	2.7%	2,113.0	4.6%	1,943.8	4.3%
7	57,272	1,313	2.3%	2,268.0	4.0%	2,147.7	3.8%
8	70,854	1,413	2.0%	2,416.1	3.4%	2,302.8	3.3%
9	70,128	1,616	2.3%	1,928.5	2.8%	1,928.5	2.8%
10	70,552	1,387	2.0%	1,552.1	2.2%	1,587.4	2.3%
11	64,875	1,216	1.9%	1,355.9	2.1%	1,297.5	2.0%
12	63,815	1,244	1.9%	1,263.5	2.0%	1,212.5	1.9%
13	72,819	1,108	1.5%	1,361.7	1.9%	1,310.7	1.8%
14	82,079	895	1.1%	1,444.6	1.8%	1,395.4	1.7%
15	98,116	1,914	2.0%	1,618.9	1.7%	1,569.9	1.6%
16	97,097	1,573	1.6%	1,495.3	1.5%	1,456.5	1.5%
17	89,900	1,231	1.4%	1,285.6	1.4%	1,258.6	1.4%
18	85,728	942	1.1%	1,131.6	1.3%	1,114.5	1.3%
19	73,102	689	0.9%	884.5	1.2%	877.2	1.2%
20	64,796	521	0.8%	712.8	1.1%	712.8	1.1%
21	60,368	740	1.2%	664.0	1.1%	543.3	0.9%
22	52,508	410	0.8%	577.6	1.1%	420.1	0.8%
23	55,650	75	0.1%	612.2	1.1%	445.2	0.8%
24	65,588	361	0.5%	721.5	1.1%	524.7	0.8%
25	77,880	1,420	1.8%	856.7	1.1%	623.0	0.8%
26	78,614	1,003	1.3%	864.8	1.1%	628.9	0.8%
27	69,669	164	0.2%	766.4	1.1%	557.4	0.8%
28	70,312	614	0.9%	773.4	1.1%	562.5	0.8%
29	66,842	141	0.2%	735.3	1.1%	534.7	0.8%
30	52,988	1,367	2.6%	582.9	1.1%	423.9	0.8%
31	49,467	67	0.1%	544.1	1.1%	395.7	0.8%
32	38,936	351	0.9%	428.3	1.1%	311.5	0.8%
33	33,461	-	0.0%	368.1	1.1%	267.7	0.8%
34	31,872	426	1.3%	350.6	1.1%	255.0	0.8%
35	18,230	-	0.0%	200.5	1.1%	145.8	0.8%
	2,023,772	29,797	1.5%	39,454.2	1.7%	34,802.5	1.7%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary H-5
Termination of Employment
School Membership - Males

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	3,545	877	24.7%	570.7	16.1%	567.2	16.0%
1	5,070	720	14.2%	758.0	15.0%	719.9	14.2%
2	4,234	416	9.8%	486.9	11.5%	461.5	10.9%
3	3,467	253	7.3%	319.0	9.2%	301.6	8.7%
4	2,937	193	6.6%	236.4	8.1%	223.2	7.6%
5	2,653	138	5.2%	183.1	6.9%	175.1	6.6%
6	2,481	112	4.5%	142.7	5.8%	136.5	5.5%
7	2,378	83	3.5%	114.9	4.8%	109.4	4.6%
8	2,367	76	3.2%	98.0	4.1%	92.3	3.9%
9	2,232	68	3.0%	79.6	3.6%	75.9	3.4%
10	1,992	54	2.7%	57.3	2.9%	53.8	2.7%
11	1,865	32	1.7%	42.9	2.3%	41.0	2.2%
12	1,723	31	1.8%	37.6	2.2%	36.2	2.1%
13	1,710	26	1.5%	35.4	2.1%	34.2	2.0%
14	1,730	31	1.8%	33.8	2.0%	32.9	1.9%
15	1,735	24	1.4%	31.9	1.8%	29.5	1.7%
16	1,644	25	1.5%	28.4	1.7%	26.3	1.6%
17	1,533	19	1.2%	24.7	1.6%	23.0	1.5%
18	1,391	10	0.7%	20.8	1.5%	19.5	1.4%
19	1,266	14	1.1%	17.5	1.4%	16.5	1.3%
20	1,185	12	1.0%	15.0	1.3%	14.2	1.2%
21	1,073	7	0.7%	12.3	1.2%	11.8	1.1%
22	989	8	0.8%	11.4	1.2%	9.9	1.0%
23	906	8	0.9%	10.4	1.2%	9.1	1.0%
24	777	6	0.8%	8.9	1.2%	7.8	1.0%
25	709	3	0.4%	8.2	1.2%	7.1	1.0%
26	643	3	0.5%	7.4	1.2%	6.4	1.0%
27	586	4	0.7%	6.7	1.2%	5.9	1.0%
28	513	7	1.4%	5.9	1.2%	5.1	1.0%
29	457	2	0.4%	5.3	1.2%	4.6	1.0%
30	400	3	0.8%	4.6	1.2%	4.0	1.0%
31	261	2	0.8%	3.0	1.2%	2.6	1.0%
32	138	1	0.7%	1.6	1.2%	1.4	1.0%
33	55	1	1.8%	0.6	1.2%	0.6	1.0%
34	50	-	0.0%	0.6	1.2%	0.5	1.0%
35	23	1	4.3%	0.3	1.2%	0.2	1.0%
	56,718	3,270	5.8%	3,421.6	5.8%	3,266.5	5.8%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary H-6

Termination of Employment

School Membership - Males (Weighted)

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	-	-	0.0%	-	16.1%	-	16.0%
1	12,882	1,089	8.5%	1,925.9	15.0%	1,829.3	14.2%
2	27,428	1,771	6.5%	3,154.3	11.5%	2,989.7	10.9%
3	37,856	1,748	4.6%	3,482.7	9.2%	3,293.5	8.7%
4	45,025	1,854	4.1%	3,624.5	8.1%	3,421.9	7.6%
5	54,356	1,821	3.3%	3,750.5	6.9%	3,587.5	6.6%
6	64,802	1,985	3.1%	3,726.1	5.8%	3,564.1	5.5%
7	77,012	1,965	2.6%	3,719.7	4.8%	3,542.5	4.6%
8	93,489	2,046	2.2%	3,870.4	4.1%	3,646.1	3.9%
9	104,328	2,184	2.1%	3,719.3	3.6%	3,547.1	3.4%
10	108,009	2,309	2.1%	3,105.3	2.9%	2,916.2	2.7%
11	113,613	1,550	1.4%	2,613.1	2.3%	2,499.5	2.2%
12	117,567	1,702	1.4%	2,568.8	2.2%	2,468.9	2.1%
13	128,640	1,750	1.4%	2,662.8	2.1%	2,572.8	2.0%
14	145,139	1,972	1.4%	2,837.5	2.0%	2,757.6	1.9%
15	162,528	2,007	1.2%	2,990.5	1.8%	2,763.0	1.7%
16	168,257	2,186	1.3%	2,902.4	1.7%	2,692.1	1.6%
17	171,599	1,406	0.8%	2,762.7	1.6%	2,574.0	1.5%
18	170,046	1,193	0.7%	2,542.2	1.5%	2,380.6	1.4%
19	164,462	1,307	0.8%	2,269.6	1.4%	2,138.0	1.3%
20	163,183	1,146	0.7%	2,064.3	1.3%	1,958.2	1.2%
21	157,830	734	0.5%	1,815.0	1.2%	1,736.1	1.1%
22	154,839	745	0.5%	1,780.6	1.2%	1,548.4	1.0%
23	149,652	1,200	0.8%	1,721.0	1.2%	1,496.5	1.0%
24	136,054	575	0.4%	1,564.6	1.2%	1,360.5	1.0%
25	128,848	676	0.5%	1,481.8	1.2%	1,288.5	1.0%
26	120,710	587	0.5%	1,388.2	1.2%	1,207.1	1.0%
27	112,000	425	0.4%	1,288.0	1.2%	1,120.0	1.0%
28	102,435	1,416	1.4%	1,178.0	1.2%	1,024.4	1.0%
29	93,916	225	0.2%	1,080.0	1.2%	939.2	1.0%
30	87,565	590	0.7%	1,007.0	1.2%	875.6	1.0%
31	58,637	451	0.8%	674.3	1.2%	586.4	1.0%
32	29,436	225	0.8%	338.5	1.2%	294.4	1.0%
33	9,094	208	2.3%	104.6	1.2%	90.9	1.0%
34	8,497	-	0.0%	97.7	1.2%	85.0	1.0%
35	3,945	208	5.3%	45.4	1.2%	39.5	1.0%
	3,483,679	43,256	1.2%	75,857.4	2.0%	70,835.1	2.0%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary H-7
Termination of Employment
School Membership - Females

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	9,954	2,310	23.2%	1,602.6	16.1%	1,592.6	16.0%
1	17,732	2,461	13.9%	2,650.9	15.0%	2,517.9	14.2%
2	14,844	1,580	10.6%	1,707.1	11.5%	1,618.0	10.9%
3	12,347	1,007	8.2%	1,135.9	9.2%	1,074.2	8.7%
4	10,585	757	7.2%	852.1	8.1%	804.5	7.6%
5	9,590	613	6.4%	661.7	6.9%	632.9	6.6%
6	9,142	461	5.0%	525.7	5.8%	502.8	5.5%
7	8,999	431	4.8%	434.7	4.8%	414.0	4.6%
8	8,723	346	4.0%	361.1	4.1%	340.2	3.9%
9	8,112	290	3.6%	289.2	3.6%	275.8	3.4%
10	7,455	240	3.2%	214.3	2.9%	201.3	2.7%
11	6,778	213	3.1%	155.9	2.3%	149.1	2.2%
12	6,362	161	2.5%	139.0	2.2%	133.6	2.1%
13	6,186	165	2.7%	128.1	2.1%	123.7	2.0%
14	5,916	131	2.2%	115.7	2.0%	112.4	1.9%
15	5,572	107	1.9%	102.5	1.8%	94.7	1.7%
16	5,148	86	1.7%	88.8	1.7%	82.4	1.6%
17	4,571	67	1.5%	73.6	1.6%	68.6	1.5%
18	4,102	57	1.4%	61.3	1.5%	57.4	1.4%
19	3,680	51	1.4%	50.8	1.4%	47.8	1.3%
20	3,299	33	1.0%	41.7	1.3%	39.6	1.2%
21	2,838	34	1.2%	32.6	1.2%	31.2	1.1%
22	2,496	29	1.2%	28.7	1.2%	25.0	1.0%
23	2,226	26	1.2%	25.6	1.2%	22.3	1.0%
24	1,936	23	1.2%	22.3	1.2%	19.4	1.0%
25	1,774	23	1.3%	20.4	1.2%	17.7	1.0%
26	1,504	11	0.7%	17.3	1.2%	15.0	1.0%
27	1,339	17	1.3%	15.4	1.2%	13.4	1.0%
28	1,175	9	0.8%	13.5	1.2%	11.8	1.0%
29	1,063	9	0.8%	12.2	1.2%	10.6	1.0%
30	925	4	0.4%	10.6	1.2%	9.3	1.0%
31	622	3	0.5%	7.2	1.2%	6.2	1.0%
32	312	-	0.0%	3.6	1.2%	3.1	1.0%
33	49	4	8.2%	0.6	1.2%	0.5	1.0%
34	41	2	4.9%	0.5	1.2%	0.4	1.0%
35	28	1	3.6%	0.3	1.2%	0.3	1.0%
	187,425	11,762	6.3%	11,603.4	5.9%	11,069.7	5.9%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary H-8

Termination of Employment

School Membership - Females (Weighted)

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	-	-	0.0%	-	16.1%	-	16.0%
1	36,045	3,258	9.0%	5,388.7	15.0%	5,118.3	14.2%
2	76,454	5,926	7.8%	8,792.3	11.5%	8,333.5	10.9%
3	104,973	5,688	5.4%	9,657.5	9.2%	9,132.7	8.7%
4	128,736	6,521	5.1%	10,363.2	8.1%	9,783.9	7.6%
5	152,702	6,751	4.4%	10,536.5	6.9%	10,078.3	6.6%
6	183,475	6,154	3.4%	10,549.8	5.8%	10,091.1	5.5%
7	221,947	7,859	3.5%	10,720.0	4.8%	10,209.6	4.6%
8	260,398	7,248	2.8%	10,780.5	4.1%	10,155.5	3.9%
9	285,887	6,802	2.4%	10,191.9	3.6%	9,720.2	3.4%
10	308,346	6,673	2.2%	8,864.9	2.9%	8,325.3	2.7%
11	317,061	6,240	2.0%	7,292.4	2.3%	6,975.4	2.2%
12	334,032	5,476	1.6%	7,298.6	2.2%	7,014.7	2.1%
13	360,612	6,453	1.8%	7,464.7	2.1%	7,212.2	2.0%
14	379,836	5,517	1.5%	7,425.8	2.0%	7,216.9	1.9%
15	396,877	5,346	1.3%	7,302.5	1.8%	6,746.9	1.7%
16	403,471	3,782	0.9%	6,959.9	1.7%	6,455.5	1.6%
17	393,854	4,578	1.2%	6,341.1	1.6%	5,907.8	1.5%
18	382,343	3,363	0.9%	5,716.0	1.5%	5,352.8	1.4%
19	374,484	3,305	0.9%	5,167.9	1.4%	4,868.3	1.3%
20	365,847	2,695	0.7%	4,628.0	1.3%	4,390.2	1.2%
21	338,919	2,338	0.7%	3,897.6	1.2%	3,728.1	1.1%
22	326,513	2,911	0.9%	3,754.9	1.2%	3,265.1	1.0%
23	308,854	2,703	0.9%	3,551.8	1.2%	3,088.5	1.0%
24	287,108	2,856	1.0%	3,301.7	1.2%	2,871.1	1.0%
25	280,390	3,198	1.1%	3,224.5	1.2%	2,803.9	1.0%
26	249,987	1,464	0.6%	2,874.9	1.2%	2,499.9	1.0%
27	232,517	2,147	0.9%	2,673.9	1.2%	2,325.2	1.0%
28	212,640	1,490	0.7%	2,445.4	1.2%	2,126.4	1.0%
29	199,849	1,448	0.7%	2,298.3	1.2%	1,998.5	1.0%
30	180,490	806	0.4%	2,075.6	1.2%	1,804.9	1.0%
31	126,640	511	0.4%	1,456.4	1.2%	1,266.4	1.0%
32	64,556	-	0.0%	742.4	1.2%	645.6	1.0%
33	7,437	751	10.1%	85.5	1.2%	74.4	1.0%
34	6,176	479	7.8%	71.0	1.2%	61.8	1.0%
35	4,558	285	6.3%	52.4	1.2%	45.6	1.0%
	8,294,015	133,022	1.6%	193,948.4	2.2%	181,694.4	2.2%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary H-9

Termination of Employment

Other Membership - Males

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	6,867	1,470	21.4%	1,648.1	24.0%	1,510.7	22.0%
1	6,771	1,141	16.9%	1,421.9	21.0%	1,286.5	19.0%
2	5,120	550	10.7%	829.4	16.2%	768.0	15.0%
3	4,133	354	8.6%	520.8	12.6%	496.0	12.0%
4	3,421	226	6.6%	348.9	10.2%	307.9	9.0%
5	3,154	166	5.3%	264.9	8.4%	236.6	7.5%
6	2,834	118	4.2%	204.0	7.2%	170.0	6.0%
7	2,603	136	5.2%	156.2	6.0%	143.2	5.5%
8	2,329	87	3.7%	125.8	5.4%	116.5	5.0%
9	1,967	75	3.8%	94.4	4.8%	88.5	4.5%
10	1,716	44	2.6%	74.1	4.3%	70.4	4.1%
11	1,558	55	3.5%	59.8	3.8%	57.6	3.7%
12	1,511	28	1.9%	50.8	3.4%	49.9	3.3%
13	1,568	27	1.7%	45.2	2.9%	45.2	2.9%
14	1,607	35	2.2%	44.4	2.8%	43.4	2.7%
15	1,520	41	2.7%	40.1	2.6%	40.1	2.6%
16	1,337	26	1.9%	33.7	2.5%	33.7	2.5%
17	1,109	20	1.8%	26.6	2.4%	26.6	2.4%
18	963	16	1.7%	23.1	2.4%	22.1	2.3%
19	854	19	2.2%	20.5	2.4%	18.8	2.2%
20	746	8	1.1%	17.9	2.4%	15.7	2.1%
21	688	7	1.0%	16.5	2.4%	13.8	2.0%
22	606	8	1.3%	14.5	2.4%	11.5	1.9%
23	607	12	2.0%	14.6	2.4%	10.9	1.8%
24	548	8	1.5%	12.2	2.2%	9.3	1.7%
25	502	5	1.0%	10.2	2.0%	8.0	1.6%
26	408	5	1.2%	7.6	1.9%	6.1	1.5%
27	317	4	1.3%	5.3	1.7%	4.4	1.4%
28	268	4	1.5%	4.0	1.5%	3.5	1.3%
29	208	3	1.4%	2.7	1.3%	2.5	1.2%
30	179	2	1.1%	2.1	1.2%	2.0	1.1%
31	173	1	0.6%	2.1	1.2%	1.7	1.0%
32	133	1	0.8%	1.6	1.2%	1.2	0.9%
33	125	2	1.6%	1.5	1.2%	1.1	0.9%
34	113	1	0.9%	1.4	1.2%	1.0	0.9%
35	70	-	0.0%	0.8	1.2%	0.6	0.9%
	58,633	4,705	8.0%	6,147.9	9.6%	5,625.0	9.6%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary H-10

Termination of Employment

Other Membership - Males (Weighted)

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	-	-	0.0%	-	24.0%	-	22.0%
1	23,505	2,399	10.2%	4,936.1	21.0%	4,466.0	19.0%
2	41,459	2,632	6.3%	6,716.4	16.2%	6,218.9	15.0%
3	53,247	2,856	5.4%	6,709.1	12.6%	6,389.7	12.0%
4	62,953	3,139	5.0%	6,421.2	10.2%	5,665.8	9.0%
5	75,308	2,836	3.8%	6,325.8	8.4%	5,648.1	7.5%
6	83,142	3,055	3.7%	5,986.2	7.2%	4,988.5	6.0%
7	91,260	3,777	4.1%	5,475.6	6.0%	5,019.3	5.5%
8	94,904	2,432	2.6%	5,124.8	5.4%	4,745.2	5.0%
9	90,600	2,472	2.7%	4,348.8	4.8%	4,077.0	4.5%
10	92,606	1,888	2.0%	4,000.6	4.3%	3,796.8	4.1%
11	94,153	2,467	2.6%	3,615.5	3.8%	3,483.7	3.7%
12	100,636	1,384	1.4%	3,381.4	3.4%	3,321.0	3.3%
13	115,266	1,385	1.2%	3,319.7	2.9%	3,319.7	2.9%
14	123,376	2,353	1.9%	3,405.2	2.8%	3,331.2	2.7%
15	127,399	2,492	2.0%	3,363.3	2.6%	3,363.3	2.6%
16	121,375	2,235	1.8%	3,058.7	2.5%	3,058.7	2.5%
17	108,901	1,674	1.5%	2,613.6	2.4%	2,613.6	2.4%
18	104,671	1,143	1.1%	2,512.1	2.4%	2,407.4	2.3%
19	99,992	1,919	1.9%	2,399.8	2.4%	2,199.8	2.2%
20	91,243	957	1.0%	2,189.8	2.4%	1,916.1	2.1%
21	88,833	767	0.9%	2,132.0	2.4%	1,776.7	2.0%
22	80,537	841	1.0%	1,932.9	2.4%	1,530.2	1.9%
23	83,882	1,384	1.7%	2,013.2	2.4%	1,509.9	1.8%
24	79,452	1,072	1.3%	1,763.8	2.2%	1,350.7	1.7%
25	77,411	593	0.8%	1,579.2	2.0%	1,238.6	1.6%
26	65,723	526	0.8%	1,222.5	1.9%	985.8	1.5%
27	54,020	656	1.2%	907.5	1.7%	756.3	1.4%
28	46,487	604	1.3%	697.3	1.5%	604.3	1.3%
29	37,165	637	1.7%	490.6	1.3%	446.0	1.2%
30	32,669	312	1.0%	392.0	1.2%	359.4	1.1%
31	31,449	165	0.5%	377.4	1.2%	314.5	1.0%
32	25,844	189	0.7%	310.1	1.2%	232.6	0.9%
33	24,264	263	1.1%	291.2	1.2%	218.4	0.9%
34	22,377	146	0.7%	268.5	1.2%	201.4	0.9%
35	14,637	-	0.0%	175.6	1.2%	131.7	0.9%
	2,560,748	53,651	2.1%	100,457.6	3.6%	91,686.1	3.6%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary H-11
Termination of Employment
Other Membership - Females

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	12,041	2,546	21.1%	2,769.4	23.0%	2,709.2	22.5%
1	12,600	2,303	18.3%	2,644.4	21.0%	2,519.2	20.0%
2	9,445	1,258	13.3%	1,629.3	17.3%	1,523.0	16.1%
3	7,298	771	10.6%	1,049.1	14.4%	962.4	13.2%
4	6,063	526	8.7%	697.2	11.5%	621.5	10.3%
5	5,333	445	8.3%	490.6	9.2%	445.3	8.4%
6	4,674	293	6.3%	397.8	8.5%	339.1	7.3%
7	4,331	257	5.9%	338.7	7.8%	288.4	6.7%
8	3,987	223	5.6%	284.3	7.1%	241.8	6.1%
9	3,438	202	5.9%	221.4	6.4%	188.1	5.5%
10	2,961	156	5.3%	170.3	5.8%	145.8	4.9%
11	2,579	132	5.1%	130.5	5.1%	113.0	4.4%
12	2,395	102	4.3%	110.2	4.6%	94.6	4.0%
13	2,306	112	4.9%	102.1	4.4%	84.3	3.7%
14	2,319	71	3.1%	98.7	4.3%	80.6	3.5%
15	2,147	60	2.8%	87.7	4.1%	72.2	3.4%
16	1,897	69	3.6%	74.2	3.9%	61.0	3.2%
17	1,661	60	3.6%	62.1	3.7%	51.0	3.1%
18	1,354	38	2.8%	48.3	3.6%	39.7	2.9%
19	1,170	32	2.7%	39.7	3.4%	32.7	2.8%
20	1,045	34	3.3%	33.6	3.2%	27.8	2.7%
21	897	24	2.7%	27.3	3.0%	22.6	2.5%
22	754	21	2.8%	21.7	2.9%	18.0	2.4%
23	686	17	2.5%	18.5	2.7%	15.4	2.3%
24	613	10	1.6%	15.5	2.5%	13.0	2.1%
25	599	7	1.2%	14.1	2.4%	11.9	2.0%
26	553	10	1.8%	12.1	2.2%	10.2	1.8%
27	461	10	2.2%	9.3	2.0%	7.9	1.7%
28	385	4	1.0%	7.1	1.8%	6.0	1.6%
29	314	6	1.9%	5.2	1.7%	4.5	1.4%
30	281	4	1.4%	4.2	1.5%	3.6	1.3%
31	256	3	1.2%	2.9	1.2%	2.8	1.1%
32	222	5	2.3%	2.6	1.2%	2.3	1.0%
33	181	3	1.7%	2.1	1.2%	1.9	1.0%
34	131	5	3.8%	1.5	1.2%	1.3	1.0%
35	74	-	0.0%	0.9	1.2%	0.8	1.0%
	97,451	9,819	10.1%	11,624.4	11.0%	10,762.8	11.0%



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary H-12

Termination of Employment

Other Membership - Females (Weighted)

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	-	-	0.0%	-	23.0%	-	22.5%
1	34,165	4,582	13.4%	7,170.5	21.0%	6,830.9	20.0%
2	58,344	5,729	9.8%	10,064.3	17.3%	9,408.0	16.1%
3	72,122	5,732	7.9%	10,367.6	14.4%	9,511.1	13.2%
4	85,187	5,218	6.1%	9,796.5	11.5%	8,731.6	10.3%
5	96,670	6,168	6.4%	8,893.7	9.2%	8,072.0	8.4%
6	104,174	4,820	4.6%	8,865.2	8.5%	7,557.8	7.3%
7	117,775	5,382	4.6%	9,210.0	7.8%	7,843.8	6.7%
8	126,513	5,844	4.6%	9,020.4	7.1%	7,673.0	6.1%
9	124,861	5,855	4.7%	8,041.0	6.4%	6,829.9	5.5%
10	122,818	5,058	4.1%	7,062.0	5.8%	6,048.8	4.9%
11	119,265	5,124	4.3%	6,034.8	5.1%	5,223.8	4.4%
12	123,190	4,094	3.3%	5,666.7	4.6%	4,866.0	4.0%
13	131,247	5,199	4.0%	5,811.0	4.4%	4,795.4	3.7%
14	142,396	3,132	2.2%	6,058.9	4.3%	4,951.8	3.5%
15	146,361	2,936	2.0%	5,975.2	4.1%	4,919.6	3.4%
16	141,947	4,158	2.9%	5,550.1	3.9%	4,563.6	3.2%
17	133,698	3,971	3.0%	4,997.0	3.7%	4,102.9	3.1%
18	117,332	3,062	2.6%	4,182.9	3.6%	3,440.7	2.9%
19	108,456	2,709	2.5%	3,679.4	3.4%	3,032.7	2.8%
20	102,800	2,721	2.6%	3,310.1	3.2%	2,734.5	2.7%
21	94,816	2,008	2.1%	2,889.5	3.0%	2,392.9	2.5%
22	84,273	1,821	2.2%	2,422.8	2.9%	2,012.0	2.4%
23	80,374	1,765	2.2%	2,172.1	2.7%	1,809.4	2.3%
24	75,638	909	1.2%	1,913.6	2.5%	1,599.7	2.1%
25	77,975	898	1.2%	1,838.2	2.4%	1,542.9	2.0%
26	76,433	896	1.2%	1,670.1	2.2%	1,408.3	1.8%
27	68,727	1,539	2.2%	1,383.1	2.0%	1,172.7	1.7%
28	60,278	541	0.9%	1,109.1	1.8%	946.4	1.6%
29	49,645	937	1.9%	827.8	1.7%	711.8	1.4%
30	46,383	470	1.0%	693.4	1.5%	601.8	1.3%
31	44,220	796	1.8%	508.5	1.2%	475.4	1.1%
32	38,167	769	2.0%	438.9	1.2%	391.2	1.0%
33	31,818	402	1.3%	365.9	1.2%	326.1	1.0%
34	22,027	712	3.2%	253.3	1.2%	225.8	1.0%
35	12,956	-	0.0%	149.0	1.2%	132.8	1.0%
	3,073,051	105,956	3.4%	158,392.9	4.5%	136,887.2	4.5%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary H-13
Termination of Employment
Sheriffs and Deputies Membership

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	133	8	6.0%			6.7	5.0%
1	200	4	2.0%			8.0	4.0%
2	223	7	3.1%			6.7	3.0%
3	218	7	3.2%			4.4	2.0%
4	212	5	2.4%			2.1	1.0%
5	215	-	0.0%			2.2	1.0%
6	219	4	1.8%			2.2	1.0%
7	227	5	2.2%			2.3	1.0%
8	241	4	1.7%			2.4	1.0%
9	230	1	0.4%			2.3	1.0%
10	226	5	2.2%			2.3	1.0%
11	225	2	0.9%			2.3	1.0%
12	223	3	1.3%			2.2	1.0%
13	233	3	1.3%			2.3	1.0%
14	232	4	1.7%			2.3	1.0%
15	244	1	0.4%			2.4	1.0%
16	235	4	1.7%			2.4	1.0%
17	212	2	0.9%			2.1	1.0%
18	200	1	0.5%			2.0	1.0%
19	179	-	0.0%			1.8	1.0%
20	175	2	1.1%			1.8	1.0%
21	156	-	0.0%			1.6	1.0%
22	103	2	1.9%			1.0	1.0%
23	88	1	1.1%			0.9	1.0%
24	83	1	1.2%			0.8	1.0%
25	66	-	0.0%			0.7	1.0%
	4,998	76	1.5%			67.9	1.4%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary H-14
Termination of Employment
Sheriffs and Deputies Membership (Weighted)

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	-	-	0.0%			-	5.0%
1	914	17	1.9%			36.6	4.0%
2	2,263	68	3.0%			67.9	3.0%
3	3,524	110	3.1%			70.5	2.0%
4	4,741	106	2.2%			47.4	1.0%
5	6,198	-	0.0%			62.0	1.0%
6	7,707	125	1.6%			77.1	1.0%
7	9,308	191	2.1%			93.1	1.0%
8	11,501	147	1.3%			115.0	1.0%
9	12,570	48	0.4%			125.7	1.0%
10	13,580	260	1.9%			135.8	1.0%
11	15,220	143	0.9%			152.2	1.0%
12	16,678	147	0.9%			166.8	1.0%
13	18,843	240	1.3%			188.4	1.0%
14	20,479	225	1.1%			204.8	1.0%
15	23,635	4	0.0%			236.4	1.0%
16	24,942	354	1.4%			249.4	1.0%
17	24,570	235	1.0%			245.7	1.0%
18	24,113	78	0.3%			241.1	1.0%
19	22,220	-	0.0%			222.2	1.0%
20	23,444	222	0.9%			234.4	1.0%
21	22,173	-	0.0%			221.7	1.0%
22	15,812	308	1.9%			158.1	1.0%
23	14,283	155	1.1%			142.8	1.0%
24	13,530	123	0.9%			135.3	1.0%
25	11,284	-	0.0%			112.8	1.0%
	363,531	3,307	0.9%			3,743.2	1.0%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary H-15
Termination of Employment
Protecion Occupations Membership

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	1,739	231	13.3%			226.1	13.0%
1	2,029	215	10.6%			202.9	10.0%
2	1,693	128	7.6%			152.4	9.0%
3	1,391	128	9.2%			111.3	8.0%
4	1,243	92	7.4%			90.1	7.3%
5	1,269	79	6.2%			82.5	6.5%
6	1,310	52	4.0%			75.3	5.8%
7	1,247	65	5.2%			62.4	5.0%
8	1,143	39	3.4%			51.4	4.5%
9	966	35	3.6%			38.6	4.0%
10	805	31	3.9%			28.2	3.5%
11	723	27	3.7%			21.7	3.0%
12	652	19	2.9%			17.9	2.8%
13	701	15	2.1%			17.5	2.5%
14	724	15	2.1%			17.0	2.4%
15	736	12	1.6%			16.2	2.2%
16	725	19	2.6%			14.9	2.1%
17	635	15	2.4%			12.1	1.9%
18	532	10	1.9%			9.3	1.8%
19	460	10	2.2%			7.4	1.6%
20	373	6	1.6%			5.4	1.5%
21	303	9	3.0%			3.9	1.3%
22	260	3	1.2%			3.0	1.2%
23	262	3	1.1%			2.6	1.0%
24	250	7	2.8%			2.5	1.0%
25	229	6	2.6%			2.3	1.0%
	22,400	1,271	5.7%			1,274.8	5.7%



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary H-16
Termination of Employment
Protection Occupations Membership (Weighted)

Duration	Exposure	Actual Terminations	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
0	-	-	0.0%			-	13.0%
1	6,005	410	6.8%			600.5	10.0%
2	11,623	605	5.2%			1,046.0	9.0%
3	14,957	887	5.9%			1,196.6	8.0%
4	18,963	930	4.9%			1,374.8	7.3%
5	26,117	894	3.4%			1,697.6	6.5%
6	34,528	737	2.1%			1,985.4	5.8%
7	39,976	1,372	3.4%			1,998.8	5.0%
8	43,910	989	2.3%			1,976.0	4.5%
9	41,795	789	1.9%			1,671.8	4.0%
10	38,874	1,103	2.8%			1,360.6	3.5%
11	38,151	799	2.1%			1,144.5	3.0%
12	38,591	527	1.4%			1,061.3	2.8%
13	47,515	723	1.5%			1,187.9	2.5%
14	54,060	862	1.6%			1,270.4	2.4%
15	59,653	736	1.2%			1,312.4	2.2%
16	64,650	1,116	1.7%			1,325.3	2.1%
17	60,770	1,013	1.7%			1,154.6	1.9%
18	55,206	589	1.1%			966.1	1.8%
19	50,582	717	1.4%			809.3	1.6%
20	43,783	537	1.2%			634.9	1.5%
21	37,271	1,037	2.8%			484.5	1.3%
22	33,936	271	0.8%			390.3	1.2%
23	36,784	411	1.1%			367.8	1.0%
24	36,648	968	2.6%			366.5	1.0%
25	35,517	753	2.1%			355.2	1.0%
	969,868	19,775	2.0%			27,739.1	2.9%



APPENDIX I

PROBABILITY OF ELECTING A VESTED BENEFIT



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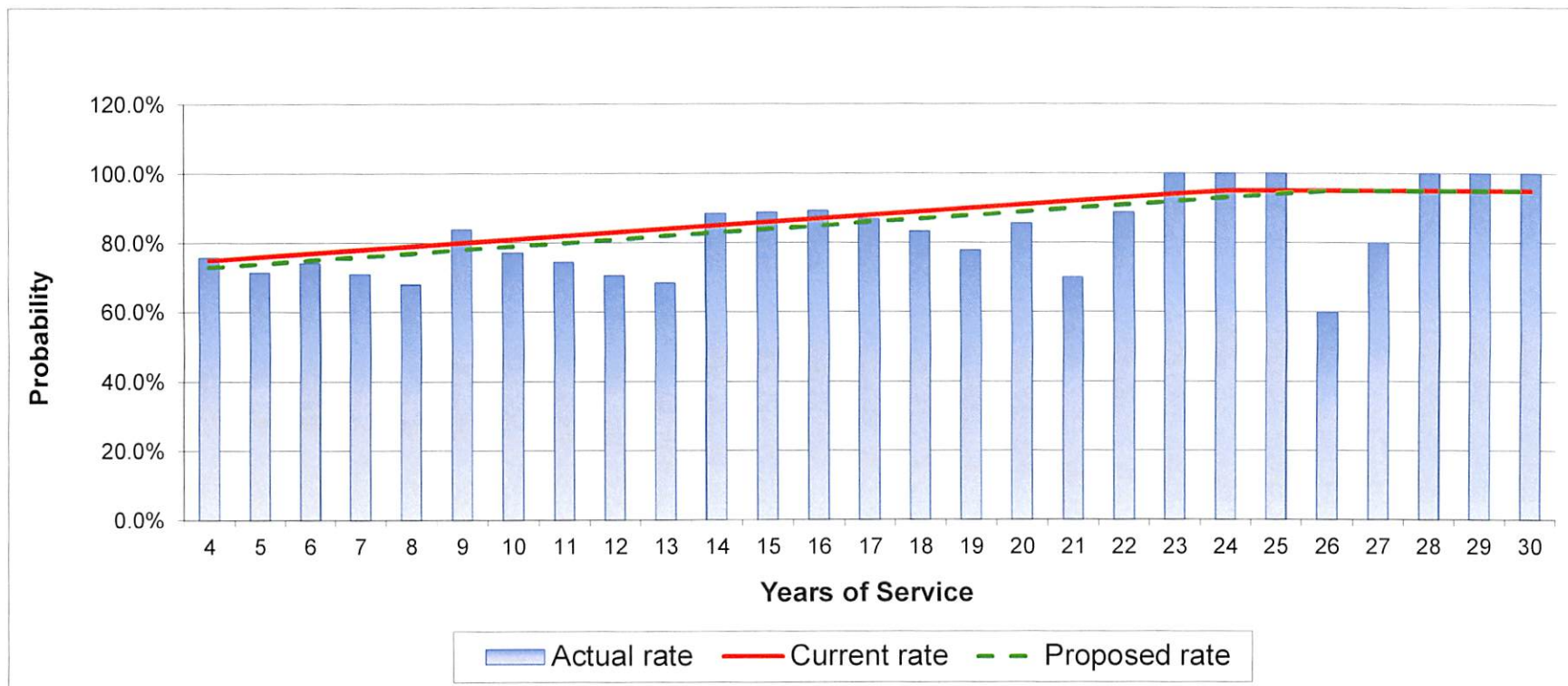
Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Exhibit I-1

Probability of Electing a Vested Benefit

School Membership - Males



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,000	1,051	1,025
Actual/Expected		95%	98%

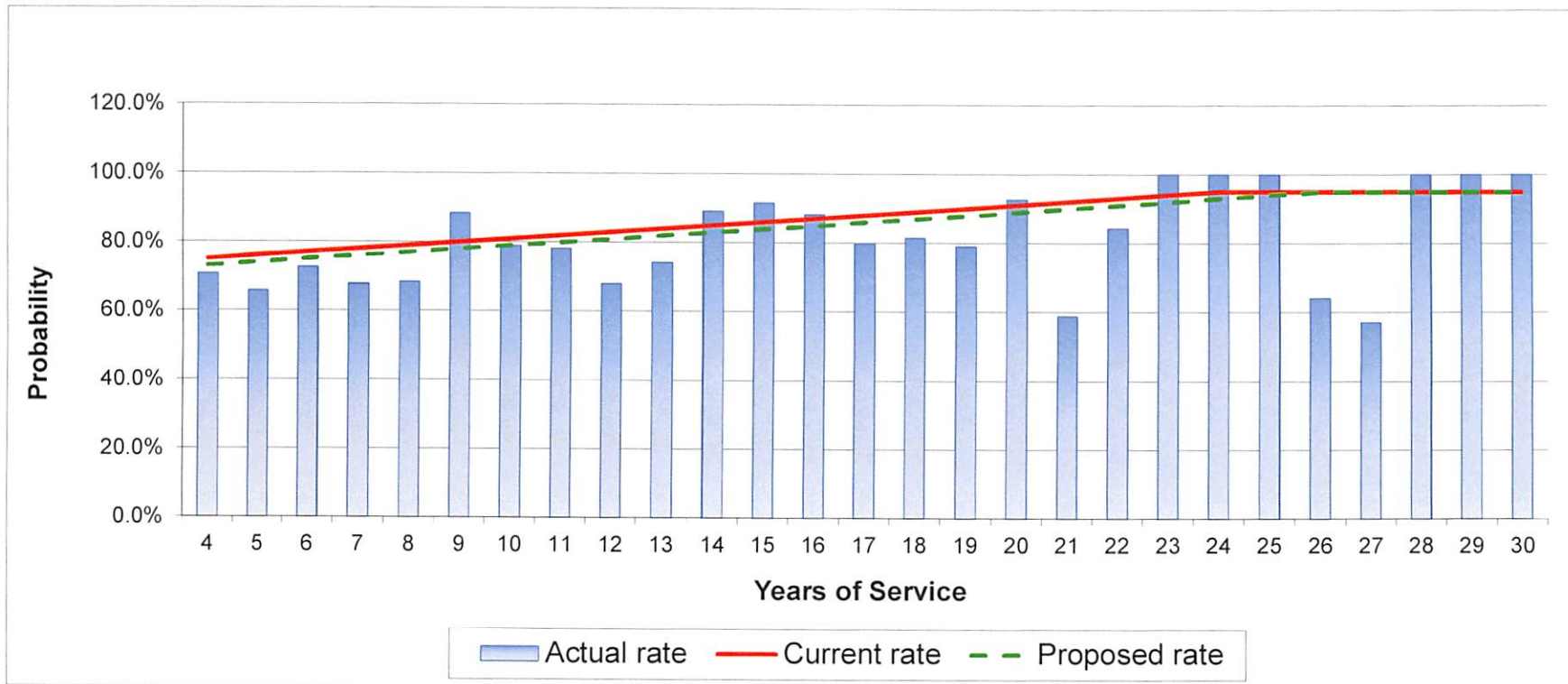


Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Exhibit I-2

Probability of Electing a Vested Benefit
School Membership - Males (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	37,602	40,261	39,390
Actual/Expected		93%	95%



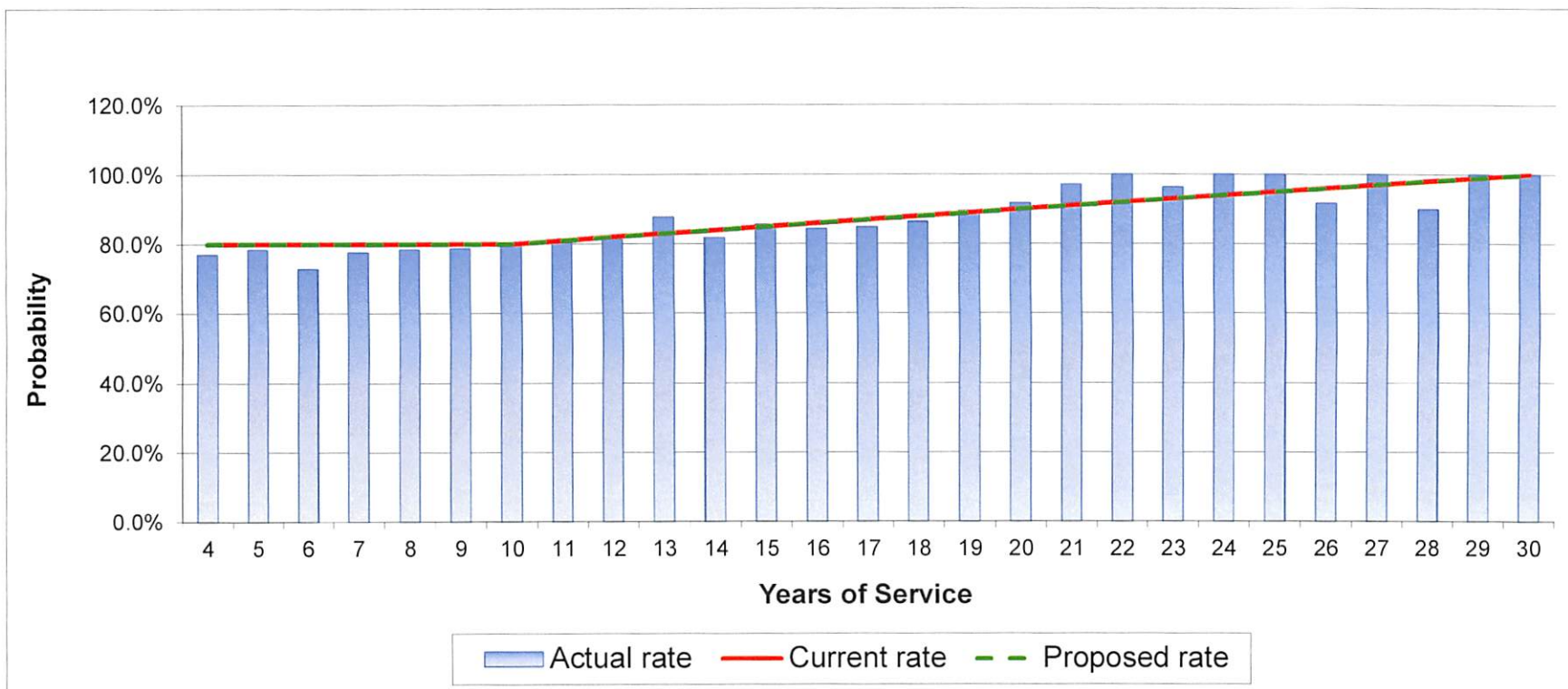
Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Exhibit I-3

Probability of Electing a Vested Benefit

School Membership - Females



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	4,396	4,499	4,499
Actual/Expected		98%	98%

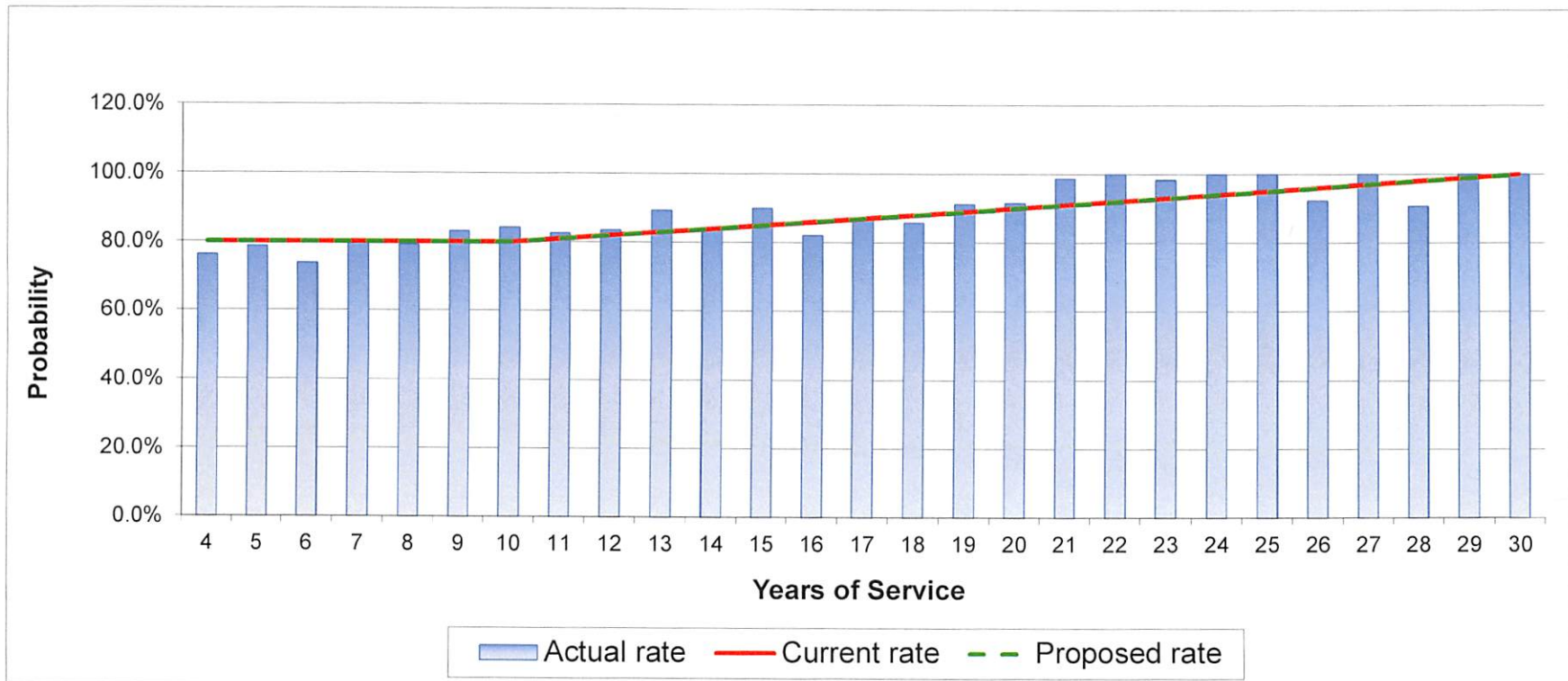


Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Exhibit I-4

Probability of Electing a Vested Benefit
School Membership - Females (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	116,171	115,107	115,107
Actual/Expected		101%	101%



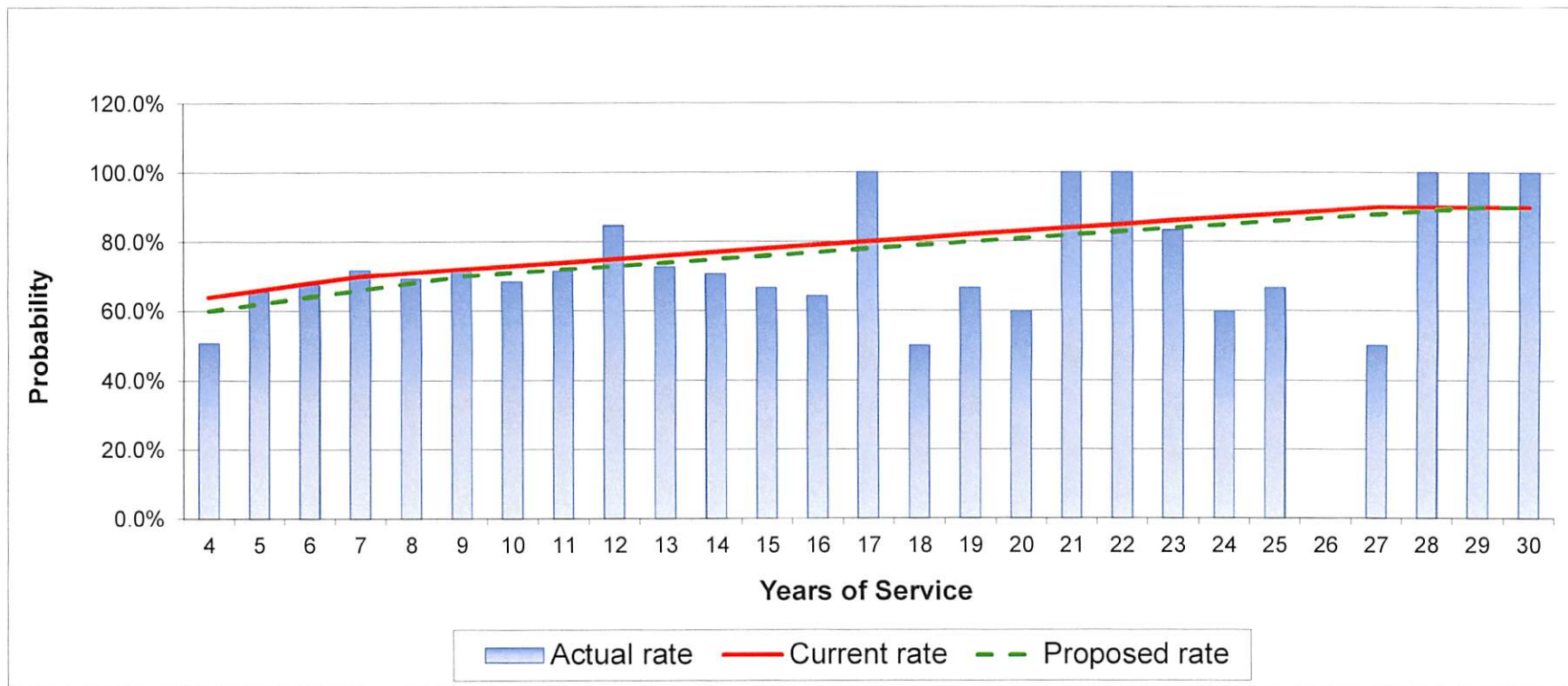
Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Exhibit I-5

Probability of Electing a Vested Benefit

State Membership - Males



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	281	302	289
Actual/Expected		93%	97%

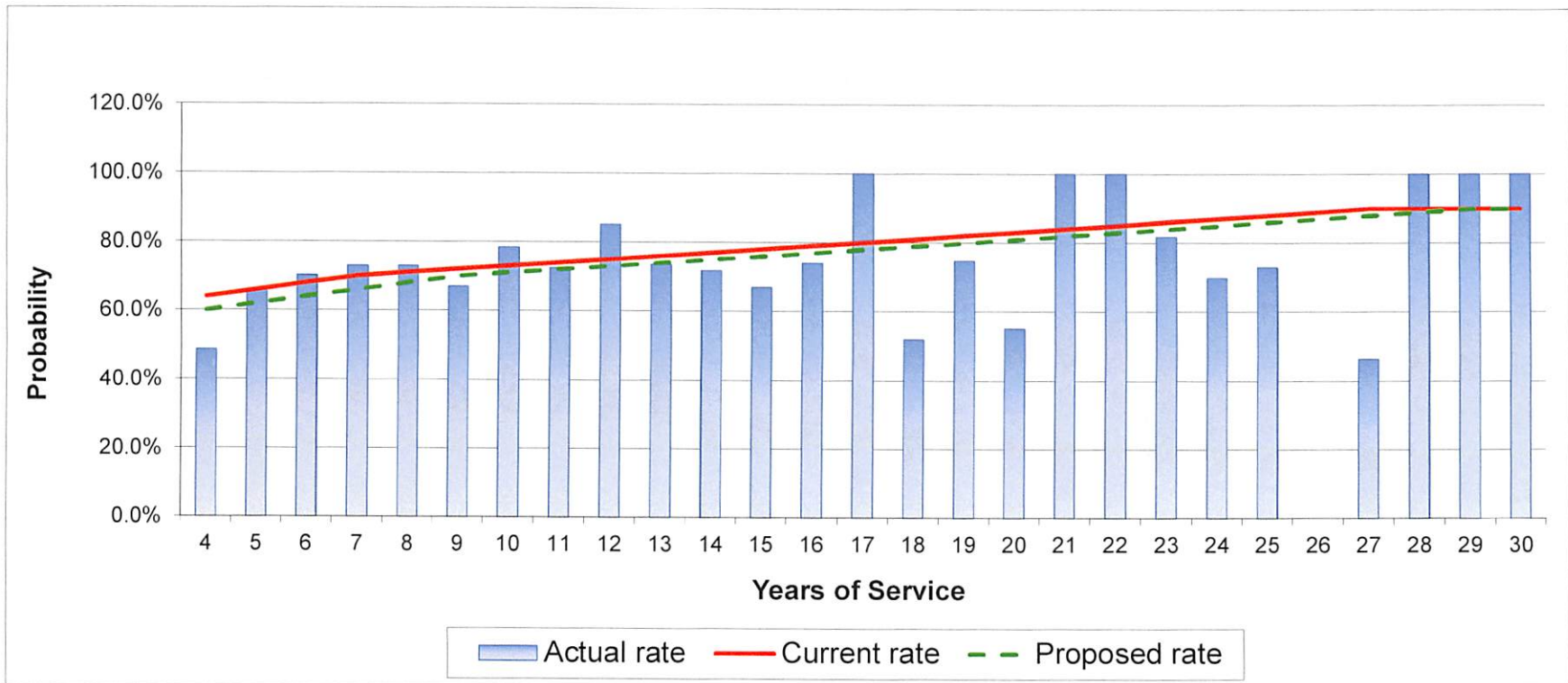


Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Exhibit I-6

Probability of Electing a Vested Benefit
State Membership - Males (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	16,931	17,819	17,248
Actual/Expected		95%	98%



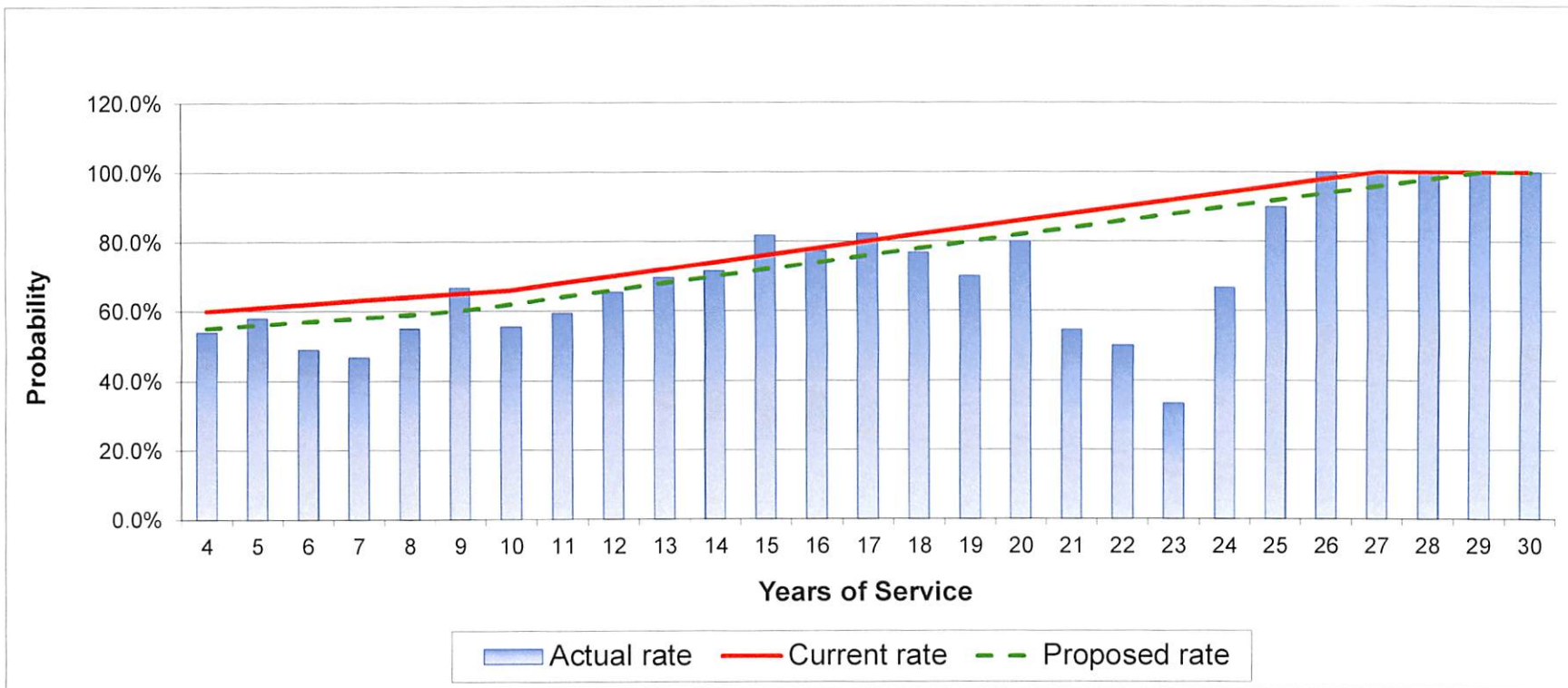
Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Exhibit I-7

Probability of Electing a Vested Benefit

State Membership - Females



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	454	513	478
Actual/Expected		88%	95%

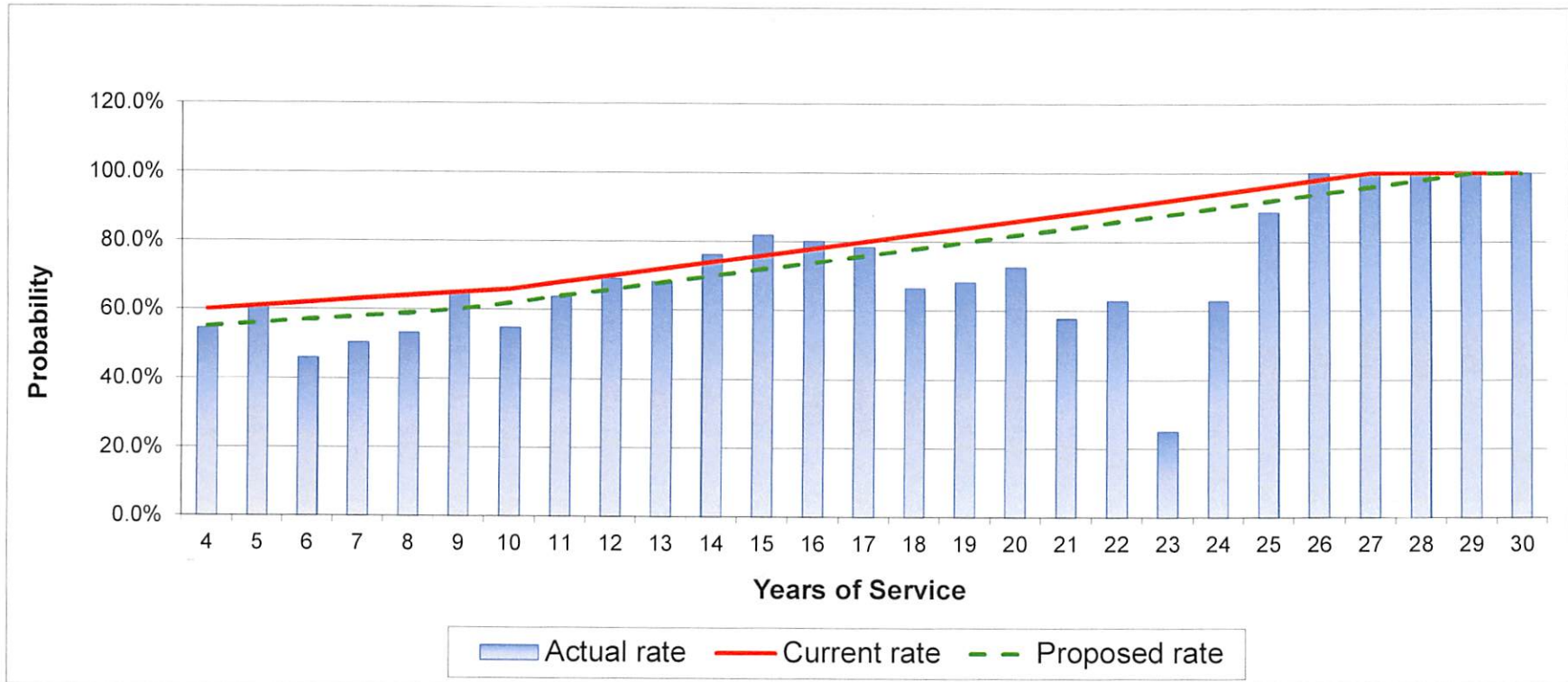


Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Exhibit I-8

Probability of Electing a Vested Benefit
State Membership - Females (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	26,497	29,405	27,762
Actual/Expected		90%	95%



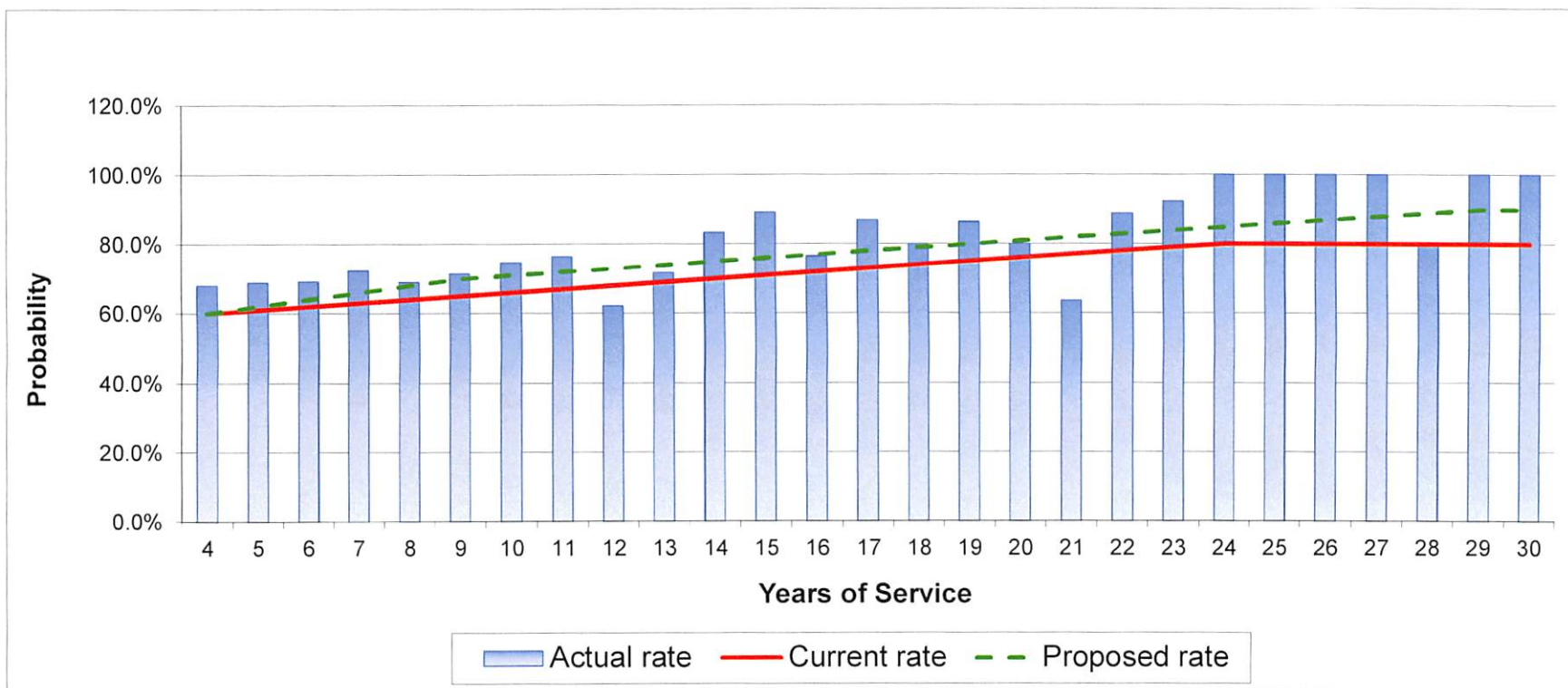
Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Exhibit I-9

Probability of Electing a Vested Benefit

Other Membership - Males



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	1,192	1,063	1,109
Actual/Expected		112%	107%

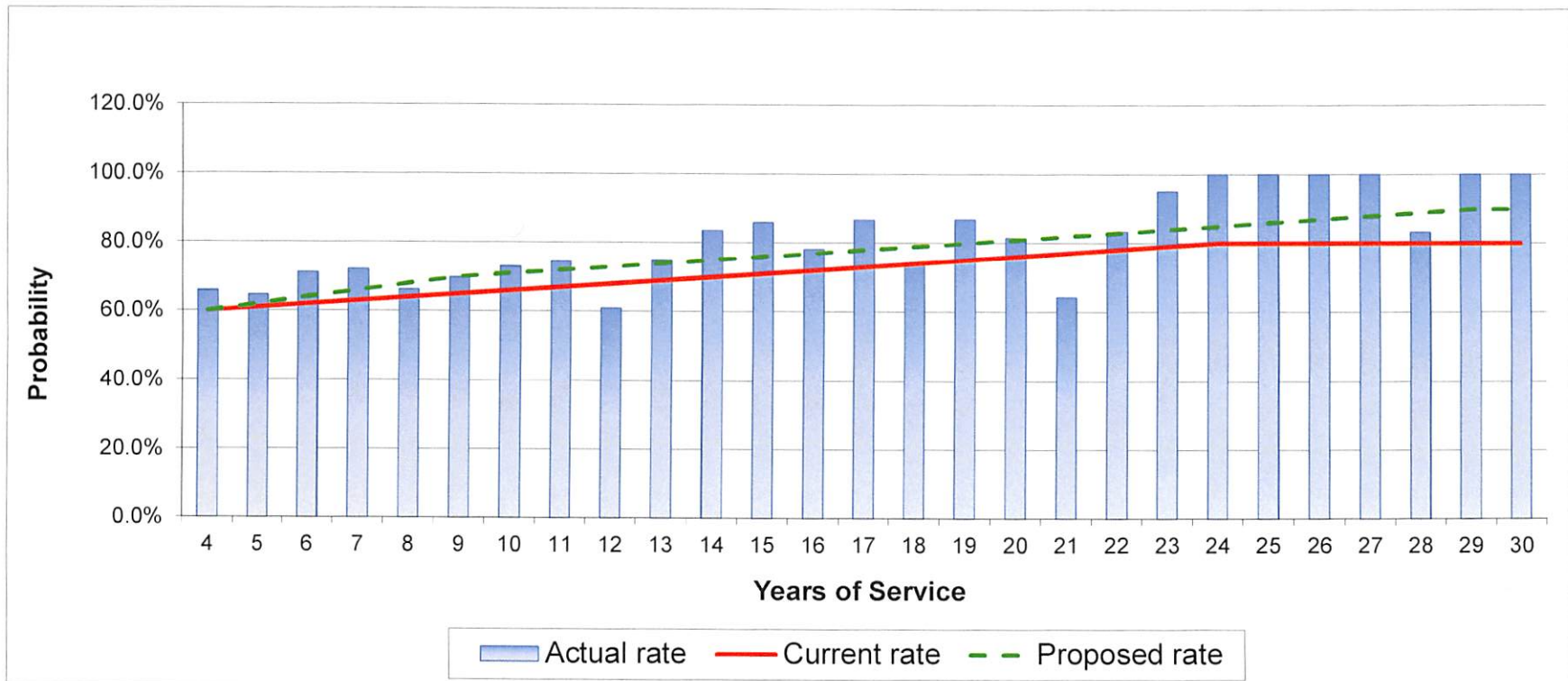


Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Exhibit I-10

Probability of Electing a Vested Benefit
Other Membership - Males (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	45,149	40,725	43,137
Actual/Expected		111%	105%



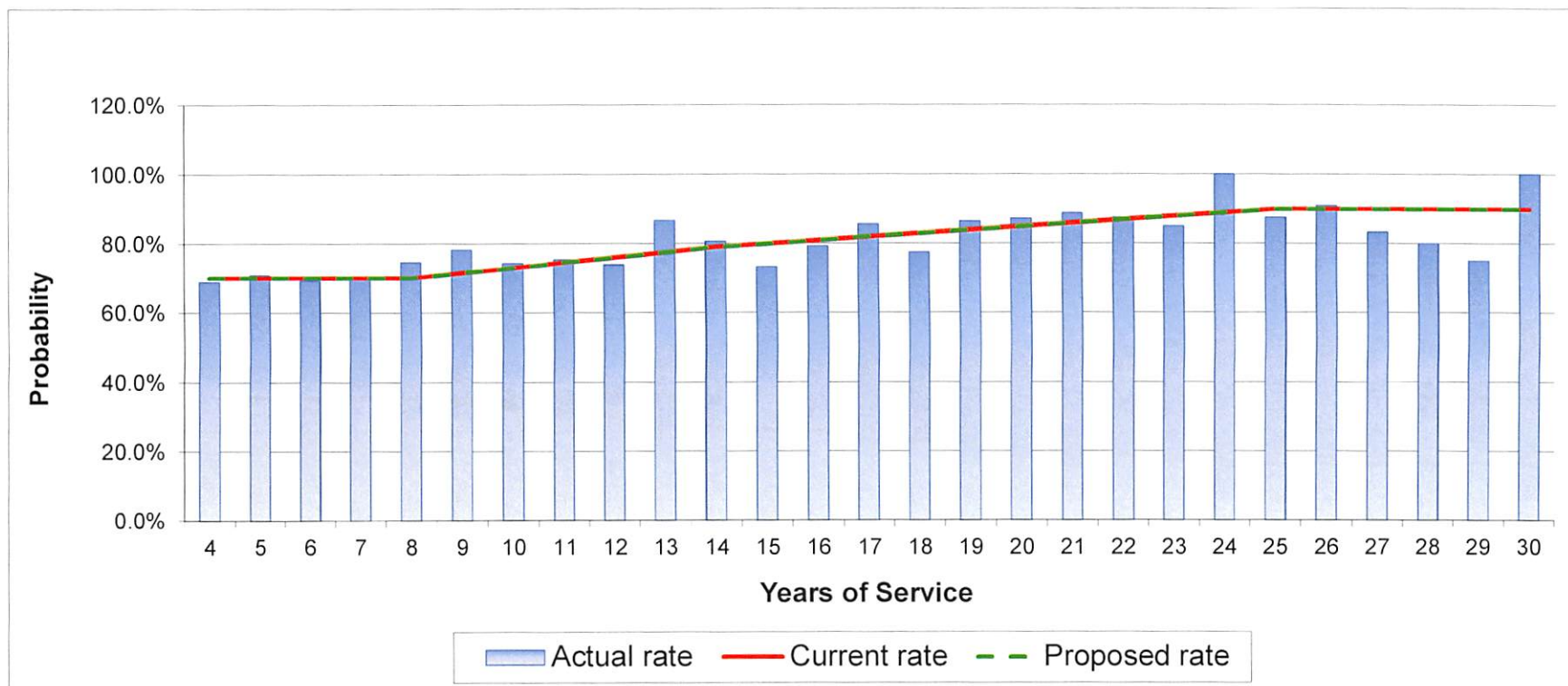
Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Exhibit I-11

Probability of Electing a Vested Benefit

Other Membership - Females



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Count	2,926	2,892	2,892
Actual/Expected		101%	101%

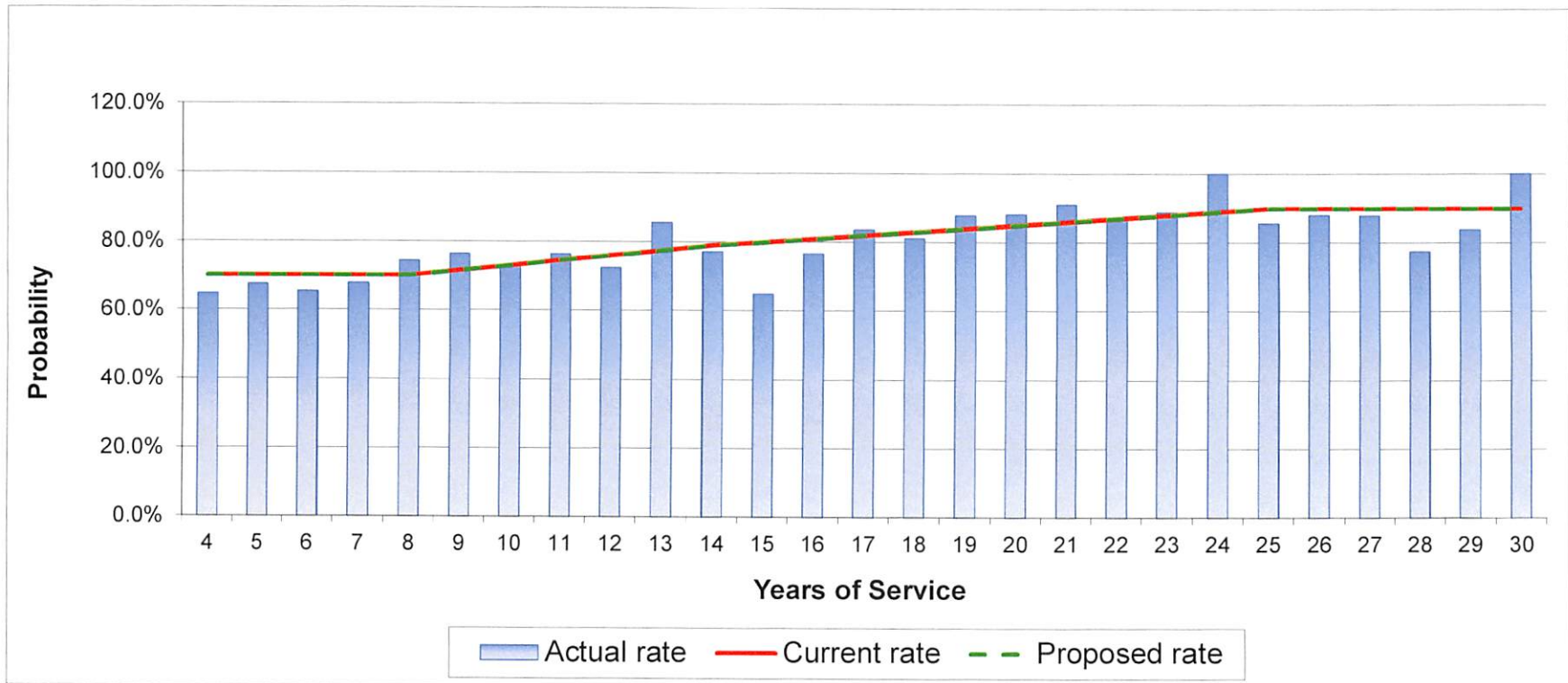


Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Exhibit I-12

Probability of Electing a Vested Benefit
Other Membership - Females (Weighted)



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	87,240	88,015	88,015
Actual/Expected		99%	99%



Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Data Summary I-1

Probability of Electing a Vested Benefit

School Membership - Males

Duration	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
4	255	193	75.7%	191.3	75.0%	186.2	73.0%
5	193	138	71.5%	146.7	76.0%	142.8	74.0%
6	151	112	74.2%	116.3	77.0%	113.3	75.0%
7	117	83	70.9%	91.3	78.0%	88.9	76.0%
8	112	76	67.9%	88.5	79.0%	86.2	77.0%
9	81	68	84.0%	64.8	80.0%	63.2	78.0%
10	70	54	77.1%	56.7	81.0%	55.3	79.0%
11	43	32	74.4%	35.3	82.0%	34.4	80.0%
12	44	31	70.5%	36.5	83.0%	35.6	81.0%
13	38	26	68.4%	31.9	84.0%	31.2	82.0%
14	35	31	88.6%	29.8	85.0%	29.1	83.0%
15	27	24	88.9%	23.2	86.0%	22.7	84.0%
16	28	25	89.3%	24.4	87.0%	23.8	85.0%
17	23	20	87.0%	20.2	88.0%	19.8	86.0%
18	12	10	83.3%	10.7	89.0%	10.4	87.0%
19	18	14	77.8%	16.2	90.0%	15.8	88.0%
20	14	12	85.7%	12.7	91.0%	12.5	89.0%
21	10	7	70.0%	9.2	92.0%	9.0	90.0%
22	9	8	88.9%	8.4	93.0%	8.2	91.0%
23	8	8	100.0%	7.5	94.0%	7.4	92.0%
24	6	6	100.0%	5.7	95.0%	5.6	93.0%
25	3	3	100.0%	2.9	95.0%	2.8	94.0%
26	5	3	60.0%	4.8	95.0%	4.8	95.0%
27	5	4	80.0%	4.8	95.0%	4.8	95.0%
28	7	7	100.0%	6.7	95.0%	6.7	95.0%
29	2	2	100.0%	1.9	95.0%	1.9	95.0%
30	3	3	100.0%	2.9	95.0%	2.9	95.0%
	1,319	1,000	75.8%	1,050.9	79.7%	1,025.0	77.7%



Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Data Summary I-2

Probability of Electing a Vested Benefit

School Membership - Males (Weighted)

Duration	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
4	2,626	1,854	70.6%	1,969.4	75.0%	1,916.9	73.0%
5	2,770	1,821	65.7%	2,105.4	76.0%	2,050.0	74.0%
6	2,737	1,985	72.5%	2,107.2	77.0%	2,052.5	75.0%
7	2,902	1,965	67.7%	2,263.4	78.0%	2,205.4	76.0%
8	2,990	2,046	68.4%	2,362.3	79.0%	2,302.5	77.0%
9	2,470	2,184	88.4%	1,975.9	80.0%	1,926.5	78.0%
10	2,922	2,309	79.0%	2,367.1	81.0%	2,308.6	79.0%
11	1,985	1,550	78.1%	1,627.4	82.0%	1,587.7	80.0%
12	2,507	1,702	67.9%	2,081.0	83.0%	2,030.8	81.0%
13	2,359	1,750	74.2%	1,981.6	84.0%	1,934.4	82.0%
14	2,213	1,972	89.1%	1,880.9	85.0%	1,836.6	83.0%
15	2,194	2,007	91.5%	1,886.9	86.0%	1,843.0	84.0%
16	2,476	2,186	88.3%	2,154.4	87.0%	2,104.9	85.0%
17	1,818	1,451	79.8%	1,599.9	88.0%	1,563.6	86.0%
18	1,465	1,193	81.4%	1,303.8	89.0%	1,274.5	87.0%
19	1,652	1,307	79.1%	1,486.8	90.0%	1,453.8	88.0%
20	1,237	1,146	92.7%	1,125.6	91.0%	1,100.9	89.0%
21	1,246	734	58.9%	1,146.7	92.0%	1,121.8	90.0%
22	883	745	84.4%	821.4	93.0%	803.8	91.0%
23	1,200	1,200	100.0%	1,127.8	94.0%	1,103.8	92.0%
24	575	575	100.0%	546.3	95.0%	534.8	93.0%
25	676	676	100.0%	642.2	95.0%	635.4	94.0%
26	915	587	64.2%	869.0	95.0%	869.0	95.0%
27	746	425	57.0%	708.4	95.0%	708.4	95.0%
28	1,416	1,416	100.0%	1,345.4	95.0%	1,345.4	95.0%
29	225	225	100.0%	213.8	95.0%	213.8	95.0%
30	590	590	100.0%	560.8	95.0%	560.8	95.0%
	47,796	37,602	78.7%	40,261.0	84.2%	39,389.7	82.4%



Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Data Summary I-3

Probability of Electing a Vested Benefit

School Membership - Females

Duration	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
4	982	757	77.1%	785.6	80.0%	785.6	80.0%
5	783	614	78.4%	626.4	80.0%	626.4	80.0%
6	632	461	72.9%	505.6	80.0%	505.6	80.0%
7	556	432	77.7%	444.8	80.0%	444.8	80.0%
8	441	346	78.5%	352.8	80.0%	352.8	80.0%
9	368	290	78.8%	294.4	80.0%	294.4	80.0%
10	300	240	80.0%	240.0	80.0%	240.0	80.0%
11	265	213	80.4%	214.7	81.0%	214.7	81.0%
12	198	161	81.3%	162.4	82.0%	162.4	82.0%
13	188	165	87.8%	156.0	83.0%	156.0	83.0%
14	160	131	81.9%	134.4	84.0%	134.4	84.0%
15	125	107	85.6%	106.3	85.0%	106.3	85.0%
16	102	86	84.3%	87.7	86.0%	87.7	86.0%
17	79	67	84.8%	68.7	87.0%	68.7	87.0%
18	66	57	86.4%	58.1	88.0%	58.1	88.0%
19	57	51	89.5%	50.7	89.0%	50.7	89.0%
20	36	33	91.7%	32.4	90.0%	32.4	90.0%
21	35	34	97.1%	31.9	91.0%	31.9	91.0%
22	29	29	100.0%	26.7	92.0%	26.7	92.0%
23	27	26	96.3%	25.1	93.0%	25.1	93.0%
24	23	23	100.0%	21.6	94.0%	21.6	94.0%
25	23	23	100.0%	21.9	95.0%	21.9	95.0%
26	12	11	91.7%	11.5	96.0%	11.5	96.0%
27	17	17	100.0%	16.5	97.0%	16.5	97.0%
28	10	9	90.0%	9.8	98.0%	9.8	98.0%
29	9	9	100.0%	8.9	99.0%	8.9	99.0%
30	4	4	100.0%	4.0	100.0%	4.0	100.0%
	5,527	4,396	79.5%	4,498.8	81.4%	4,498.8	81.4%



Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Data Summary I-4

Probability of Electing a Vested Benefit School Membership - Females (Weighted)

Duration	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
4	8,565	6,521	76.1%	6,852.4	80.0%	6,852.4	80.0%
5	8,624	6,777	78.6%	6,899.2	80.0%	6,899.2	80.0%
6	8,349	6,154	73.7%	6,678.9	80.0%	6,678.9	80.0%
7	9,907	7,880	79.5%	7,925.5	80.0%	7,925.5	80.0%
8	9,165	7,248	79.1%	7,332.3	80.0%	7,332.3	80.0%
9	8,179	6,802	83.2%	6,543.4	80.0%	6,543.4	80.0%
10	7,925	6,673	84.2%	6,339.7	80.0%	6,339.7	80.0%
11	7,555	6,240	82.6%	6,119.5	81.0%	6,119.5	81.0%
12	6,554	5,476	83.6%	5,374.0	82.0%	5,374.0	82.0%
13	7,227	6,453	89.3%	5,998.7	83.0%	5,998.7	83.0%
14	6,602	5,517	83.6%	5,545.4	84.0%	5,545.4	84.0%
15	5,940	5,346	90.0%	5,049.2	85.0%	5,049.2	85.0%
16	4,604	3,782	82.2%	3,959.3	86.0%	3,959.3	86.0%
17	5,285	4,578	86.6%	4,597.9	87.0%	4,597.9	87.0%
18	3,922	3,363	85.7%	3,451.4	88.0%	3,451.4	88.0%
19	3,622	3,305	91.2%	3,223.7	89.0%	3,223.7	89.0%
20	2,944	2,695	91.5%	2,649.9	90.0%	2,649.9	90.0%
21	2,369	2,338	98.7%	2,155.6	91.0%	2,155.6	91.0%
22	2,911	2,911	100.0%	2,678.1	92.0%	2,678.1	92.0%
23	2,748	2,703	98.3%	2,556.1	93.0%	2,556.1	93.0%
24	2,856	2,856	100.0%	2,684.8	94.0%	2,684.8	94.0%
25	3,198	3,198	100.0%	3,038.2	95.0%	3,038.2	95.0%
26	1,586	1,464	92.3%	1,522.8	96.0%	1,522.8	96.0%
27	2,147	2,147	100.0%	2,082.4	97.0%	2,082.4	97.0%
28	1,642	1,490	90.8%	1,608.7	98.0%	1,608.7	98.0%
29	1,448	1,448	100.0%	1,433.7	99.0%	1,433.7	99.0%
30	806	806	100.0%	806.2	100.0%	806.2	100.0%
	136,681	116,171	85.0%	#####	84.2%	#####	84.2%



Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Data Summary I-5

Probability of Electing a Vested Benefit

State Membership - Males

Duration	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
4	69	35	50.7%	44.2	64.0%	41.4	60.0%
5	52	34	65.4%	34.3	66.0%	32.2	62.0%
6	46	31	67.4%	31.3	68.0%	29.4	64.0%
7	39	28	71.8%	27.3	70.0%	25.7	66.0%
8	39	27	69.2%	27.7	71.0%	26.5	68.0%
9	25	18	72.0%	18.0	72.0%	17.5	70.0%
10	19	13	68.4%	13.9	73.0%	13.5	71.0%
11	21	15	71.4%	15.5	74.0%	15.1	72.0%
12	13	11	84.6%	9.8	75.0%	9.5	73.0%
13	11	8	72.7%	8.4	76.0%	8.1	74.0%
14	17	12	70.6%	13.1	77.0%	12.8	75.0%
15	12	8	66.7%	9.4	78.0%	9.1	76.0%
16	14	9	64.3%	11.1	79.0%	10.8	77.0%
17	2	2	100.0%	1.6	80.0%	1.6	78.0%
18	6	3	50.0%	4.9	81.0%	4.7	79.0%
19	6	4	66.7%	4.9	82.0%	4.8	80.0%
20	5	3	60.0%	4.2	83.0%	4.1	81.0%
21	2	2	100.0%	1.7	84.0%	1.6	82.0%
22	2	2	100.0%	1.7	85.0%	1.7	83.0%
23	6	5	83.3%	5.2	86.0%	5.0	84.0%
24	5	3	60.0%	4.4	87.0%	4.3	85.0%
25	3	2	66.7%	2.6	88.0%	2.6	86.0%
26	1	-	0.0%	0.9	89.0%	0.9	87.0%
27	2	1	50.0%	1.8	90.0%	1.8	88.0%
28	2	2	100.0%	1.8	90.0%	1.8	89.0%
29	3	3	100.0%	2.7	90.0%	2.7	90.0%
30	-	-	100.0%	-	90.0%	-	90.0%
	422	281	66.6%	302.0	71.6%	289.2	68.5%



Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Data Summary I-6

Probability of Electing a Vested Benefit

State Membership - Males (Weighted)

Duration	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
4	1,198	582	48.6%	766.4	64.0%	718.5	60.0%
5	1,376	904	65.7%	907.8	66.0%	852.8	62.0%
6	1,429	1,002	70.1%	971.7	68.0%	914.5	64.0%
7	1,432	1,044	72.9%	1,002.5	70.0%	945.3	66.0%
8	1,676	1,221	72.9%	1,189.9	71.0%	1,139.6	68.0%
9	1,193	799	67.0%	858.6	72.0%	834.8	70.0%
10	1,264	992	78.5%	922.5	73.0%	897.2	71.0%
11	1,315	952	72.4%	973.4	74.0%	947.1	72.0%
12	1,005	856	85.1%	754.0	75.0%	733.9	73.0%
13	759	558	73.5%	576.8	76.0%	561.6	74.0%
14	1,388	996	71.8%	1,068.5	77.0%	1,040.7	75.0%
15	1,210	810	67.0%	943.5	78.0%	919.3	76.0%
16	1,441	1,066	74.0%	1,138.8	79.0%	1,110.0	77.0%
17	278	278	100.0%	222.6	80.0%	217.1	78.0%
18	573	298	52.0%	464.1	81.0%	452.6	79.0%
19	709	530	74.8%	581.2	82.0%	567.0	80.0%
20	332	183	55.2%	275.8	83.0%	269.2	81.0%
21	470	470	100.0%	394.6	84.0%	385.2	82.0%
22	217	217	100.0%	184.6	85.0%	180.3	83.0%
23	1,063	870	81.8%	914.2	86.0%	893.0	84.0%
24	831	580	69.8%	722.7	87.0%	706.1	85.0%
25	420	306	72.8%	369.6	88.0%	361.2	86.0%
26	224	-	0.0%	199.3	89.0%	194.8	87.0%
27	292	135	46.4%	262.5	90.0%	256.7	88.0%
28	457	457	100.0%	410.9	90.0%	406.3	89.0%
29	825	825	100.0%	742.8	90.0%	742.8	90.0%
30	-	-	100.0%	-	90.0%	-	90.0%
	23,375	16,931	72.4%	17,819.5	76.2%	17,247.6	73.8%



Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Data Summary I-7

Probability of Electing a Vested Benefit

State Membership - Females

Duration	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
4	89	48	53.9%	53.4	60.0%	49.0	55.0%
5	83	48	57.8%	50.6	61.0%	46.5	56.0%
6	96	47	49.0%	59.5	62.0%	54.7	57.0%
7	77	36	46.8%	48.5	63.0%	44.7	58.0%
8	71	39	54.9%	45.4	64.0%	41.9	59.0%
9	54	36	66.7%	35.1	65.0%	32.4	60.0%
10	45	25	55.6%	29.7	66.0%	27.9	62.0%
11	32	19	59.4%	21.8	68.0%	20.5	64.0%
12	26	17	65.4%	18.2	70.0%	17.2	66.0%
13	23	16	69.6%	16.6	72.0%	15.6	68.0%
14	14	10	71.4%	10.4	74.0%	9.8	70.0%
15	22	18	81.8%	16.7	76.0%	15.8	72.0%
16	22	17	77.3%	17.2	78.0%	16.3	74.0%
17	17	14	82.4%	13.6	80.0%	12.9	76.0%
18	13	10	76.9%	10.7	82.0%	10.1	78.0%
19	10	7	70.0%	8.4	84.0%	8.0	80.0%
20	5	4	80.0%	4.3	86.0%	4.1	82.0%
21	11	6	54.5%	9.7	88.0%	9.2	84.0%
22	6	3	50.0%	5.4	90.0%	5.2	86.0%
23	3	1	33.3%	2.8	92.0%	2.6	88.0%
24	6	4	66.7%	5.6	94.0%	5.4	90.0%
25	10	9	90.0%	9.6	96.0%	9.2	92.0%
26	7	7	100.0%	6.9	98.0%	6.6	94.0%
27	1	1	100.0%	1.0	100.0%	1.0	96.0%
28	3	3	100.0%	3.0	100.0%	2.9	98.0%
29	1	1	100.0%	1.0	100.0%	1.0	100.0%
30	8	8	100.0%	8.0	100.0%	8.0	100.0%
	755	454	60.1%	513.0	67.9%	478.5	63.4%



Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Data Summary I-8

Probability of Electing a Vested Benefit State Membership - Females (Weighted)

Duration	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
4	1,359	742	54.6%	815.5	60.0%	747.6	55.0%
5	1,935	1,174	60.7%	1,180.4	61.0%	1,083.7	56.0%
6	2,666	1,225	45.9%	1,652.7	62.0%	1,519.4	57.0%
7	2,609	1,313	50.3%	1,643.4	63.0%	1,512.9	58.0%
8	2,654	1,413	53.2%	1,698.4	64.0%	1,565.7	59.0%
9	2,500	1,616	64.6%	1,625.0	65.0%	1,500.0	60.0%
10	2,529	1,387	54.8%	1,669.4	66.0%	1,568.2	62.0%
11	1,906	1,216	63.8%	1,296.2	68.0%	1,220.0	64.0%
12	1,802	1,244	69.0%	1,261.6	70.0%	1,189.5	66.0%
13	1,623	1,108	68.3%	1,168.4	72.0%	1,103.5	68.0%
14	1,173	895	76.3%	868.3	74.0%	821.4	70.0%
15	2,336	1,914	81.9%	1,775.5	76.0%	1,682.1	72.0%
16	1,962	1,573	80.2%	1,530.7	78.0%	1,452.2	74.0%
17	1,570	1,231	78.4%	1,256.1	80.0%	1,193.3	76.0%
18	1,415	942	66.6%	1,160.6	82.0%	1,104.0	78.0%
19	1,010	689	68.2%	848.5	84.0%	808.1	80.0%
20	717	521	72.6%	616.4	86.0%	587.7	82.0%
21	1,284	740	57.6%	1,129.9	88.0%	1,078.6	84.0%
22	652	410	62.9%	586.5	90.0%	560.5	86.0%
23	299	75	24.9%	275.5	92.0%	263.6	88.0%
24	574	361	62.8%	539.5	94.0%	516.5	90.0%
25	1,601	1,420	88.7%	1,537.2	96.0%	1,473.1	92.0%
26	1,003	1,003	100.0%	983.4	98.0%	943.3	94.0%
27	164	164	100.0%	164.0	100.0%	157.4	96.0%
28	614	614	100.0%	614.2	100.0%	601.9	98.0%
29	141	141	100.0%	140.5	100.0%	140.5	100.0%
30	1,367	1,367	100.0%	1,367.4	100.0%	1,367.4	100.0%
	39,467	26,497	67.1%	29,405.1	74.5%	27,761.8	70.3%



Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Data Summary I-9

Probability of Electing a Vested Benefit

Other Membership - Males

Duration	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
4	335	228	68.1%	201.0	60.0%	201.0	60.0%
5	244	168	68.9%	148.8	61.0%	151.3	62.0%
6	172	119	69.2%	106.6	62.0%	110.1	64.0%
7	189	137	72.5%	119.1	63.0%	124.7	66.0%
8	126	87	69.0%	80.6	64.0%	85.7	68.0%
9	105	75	71.4%	68.2	65.0%	73.5	70.0%
10	59	44	74.6%	38.9	66.0%	41.9	71.0%
11	72	55	76.4%	48.2	67.0%	51.8	72.0%
12	45	28	62.2%	30.6	68.0%	32.9	73.0%
13	39	28	71.8%	26.9	69.0%	28.9	74.0%
14	42	35	83.3%	29.4	70.0%	31.5	75.0%
15	46	41	89.1%	32.7	71.0%	35.0	76.0%
16	34	26	76.5%	24.5	72.0%	26.2	77.0%
17	23	20	87.0%	16.8	73.0%	17.9	78.0%
18	20	16	80.0%	14.8	74.0%	15.8	79.0%
19	22	19	86.4%	16.5	75.0%	17.6	80.0%
20	10	8	80.0%	7.6	76.0%	8.1	81.0%
21	11	7	63.6%	8.5	77.0%	9.0	82.0%
22	9	8	88.9%	7.0	78.0%	7.5	83.0%
23	13	12	92.3%	10.3	79.0%	10.9	84.0%
24	8	8	100.0%	6.4	80.0%	6.8	85.0%
25	5	5	100.0%	4.0	80.0%	4.3	86.0%
26	5	5	100.0%	4.0	80.0%	4.4	87.0%
27	4	4	100.0%	3.2	80.0%	3.5	88.0%
28	5	4	80.0%	4.0	80.0%	4.5	89.0%
29	3	3	100.0%	2.4	80.0%	2.7	90.0%
30	2	2	100.0%	1.6	80.0%	1.8	90.0%
	1,648	1,192	72.3%	1,062.7	64.5%	1,109.1	67.3%



Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Data Summary I-10

Probability of Electing a Vested Benefit

Other Membership - Males (Weighted)

Duration	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
4	4,817	3,169	65.8%	2,890.4	60.0%	2,890.4	60.0%
5	4,455	2,874	64.5%	2,717.3	61.0%	2,761.8	62.0%
6	4,311	3,068	71.2%	2,673.1	62.0%	2,759.3	64.0%
7	5,239	3,778	72.1%	3,300.3	63.0%	3,457.5	66.0%
8	3,672	2,432	66.2%	2,350.2	64.0%	2,497.1	68.0%
9	3,543	2,472	69.8%	2,302.9	65.0%	2,480.1	70.0%
10	2,588	1,888	73.0%	1,708.3	66.0%	1,837.7	71.0%
11	3,310	2,467	74.5%	2,218.0	67.0%	2,383.5	72.0%
12	2,275	1,384	60.8%	1,546.9	68.0%	1,660.6	73.0%
13	1,941	1,450	74.7%	1,339.1	69.0%	1,436.1	74.0%
14	2,816	2,353	83.6%	1,971.0	70.0%	2,111.7	75.0%
15	2,901	2,492	85.9%	2,059.4	71.0%	2,204.4	76.0%
16	2,860	2,235	78.1%	2,059.2	72.0%	2,202.3	77.0%
17	1,929	1,674	86.7%	1,408.3	73.0%	1,504.8	78.0%
18	1,560	1,143	73.3%	1,154.2	74.0%	1,232.1	79.0%
19	2,209	1,919	86.9%	1,656.9	75.0%	1,767.4	80.0%
20	1,175	957	81.5%	892.7	76.0%	951.5	81.0%
21	1,195	767	64.2%	920.0	77.0%	979.8	82.0%
22	1,009	841	83.3%	787.2	78.0%	837.7	83.0%
23	1,457	1,384	95.0%	1,151.2	79.0%	1,224.1	84.0%
24	1,072	1,072	100.0%	857.9	80.0%	911.5	85.0%
25	593	593	100.0%	474.8	80.0%	510.4	86.0%
26	526	526	100.0%	420.8	80.0%	457.7	87.0%
27	656	656	100.0%	525.2	80.0%	577.7	88.0%
28	725	604	83.3%	580.3	80.0%	645.6	89.0%
29	637	637	100.0%	509.4	80.0%	573.1	90.0%
30	312	312	100.0%	249.5	80.0%	280.7	90.0%
	59,784	45,149	75.5%	40,724.6	68.1%	43,136.5	72.2%



Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Data Summary I-11

Probability of Electing a Vested Benefit

Other Membership - Females

Duration	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
4	765	527	68.9%	535.5	70.0%	535.5	70.0%
5	628	445	70.9%	439.6	70.0%	439.6	70.0%
6	423	293	69.3%	296.1	70.0%	296.1	70.0%
7	367	257	70.0%	256.9	70.0%	256.9	70.0%
8	299	223	74.6%	209.3	70.0%	209.3	70.0%
9	258	202	78.3%	184.5	71.5%	184.5	71.5%
10	210	156	74.3%	153.3	73.0%	153.3	73.0%
11	175	132	75.4%	130.4	74.5%	130.4	74.5%
12	138	102	73.9%	104.9	76.0%	104.9	76.0%
13	129	112	86.8%	100.0	77.5%	100.0	77.5%
14	88	71	80.7%	69.5	79.0%	69.5	79.0%
15	82	60	73.2%	65.6	80.0%	65.6	80.0%
16	87	69	79.3%	70.5	81.0%	70.5	81.0%
17	70	60	85.7%	57.4	82.0%	57.4	82.0%
18	49	38	77.6%	40.7	83.0%	40.7	83.0%
19	37	32	86.5%	31.1	84.0%	31.1	84.0%
20	39	34	87.2%	33.2	85.0%	33.2	85.0%
21	27	24	88.9%	23.2	86.0%	23.2	86.0%
22	24	21	87.5%	20.9	87.0%	20.9	87.0%
23	20	17	85.0%	17.6	88.0%	17.6	88.0%
24	10	10	100.0%	8.9	89.0%	8.9	89.0%
25	8	7	87.5%	7.2	90.0%	7.2	90.0%
26	11	10	90.9%	9.9	90.0%	9.9	90.0%
27	12	10	83.3%	10.8	90.0%	10.8	90.0%
28	5	4	80.0%	4.5	90.0%	4.5	90.0%
29	8	6	75.0%	7.2	90.0%	7.2	90.0%
30	4	4	100.0%	3.6	90.0%	3.6	90.0%
	3,973	2,926	73.6%	2,892.1	72.8%	2,892.1	72.8%



Iowa Public Employees' Retirement System

2013 - 2017 Experience Study

Data Summary I-12

Probability of Electing a Vested Benefit Other Membership - Females (Weighted)

Duration	Exposure	Actual Remaining	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
4	8,069	5,223	64.7%	5,648.2	70.0%	5,648.2	70.0%
5	9,144	6,168	67.4%	6,401.1	70.0%	6,401.1	70.0%
6	7,373	4,820	65.4%	5,161.2	70.0%	5,161.2	70.0%
7	7,944	5,382	67.8%	5,560.7	70.0%	5,560.7	70.0%
8	7,868	5,844	74.3%	5,507.8	70.0%	5,507.8	70.0%
9	7,665	5,855	76.4%	5,480.2	71.5%	5,480.2	71.5%
10	6,912	5,058	73.2%	5,045.7	73.0%	5,045.7	73.0%
11	6,705	5,124	76.4%	4,995.4	74.5%	4,995.4	74.5%
12	5,653	4,094	72.4%	4,296.3	76.0%	4,296.3	76.0%
13	6,069	5,199	85.7%	4,703.7	77.5%	4,703.7	77.5%
14	4,056	3,132	77.2%	3,204.0	79.0%	3,204.0	79.0%
15	4,527	2,936	64.9%	3,621.2	80.0%	3,621.2	80.0%
16	5,417	4,158	76.8%	4,387.5	81.0%	4,387.5	81.0%
17	4,739	3,971	83.8%	3,886.4	82.0%	3,886.4	82.0%
18	3,771	3,062	81.2%	3,129.8	83.0%	3,129.8	83.0%
19	3,084	2,709	87.8%	2,590.5	84.0%	2,590.5	84.0%
20	3,085	2,721	88.2%	2,622.3	85.0%	2,622.3	85.0%
21	2,205	2,008	91.1%	1,896.2	86.0%	1,896.2	86.0%
22	2,100	1,821	86.7%	1,827.4	87.0%	1,827.4	87.0%
23	1,987	1,765	88.9%	1,748.4	88.0%	1,748.4	88.0%
24	909	909	100.0%	808.8	89.0%	808.8	89.0%
25	1,049	898	85.6%	944.4	90.0%	944.4	90.0%
26	1,017	896	88.1%	915.4	90.0%	915.4	90.0%
27	1,751	1,539	87.9%	1,576.1	90.0%	1,576.1	90.0%
28	698	541	77.5%	628.6	90.0%	628.6	90.0%
29	1,117	937	84.0%	1,004.9	90.0%	1,004.9	90.0%
30	470	470	100.0%	422.6	90.0%	422.6	90.0%
	115,384	87,240	75.6%	88,014.7	76.3%	88,014.7	76.3%



APPENDIX J

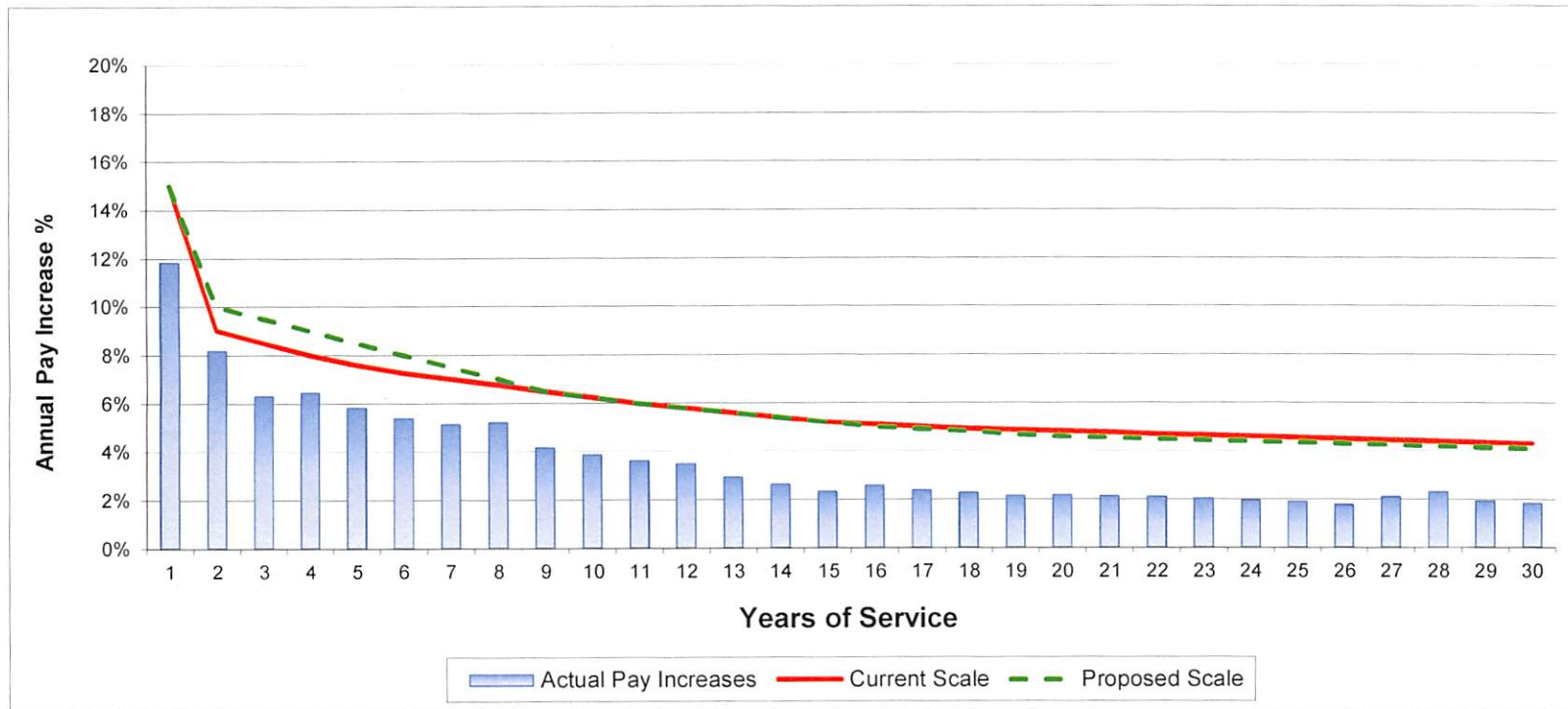
SALARY INCREASES



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Iowa Public Employees' Retirement System
2013-2017 Experience Study
Exhibit J-1
Salary Increases
State Membership

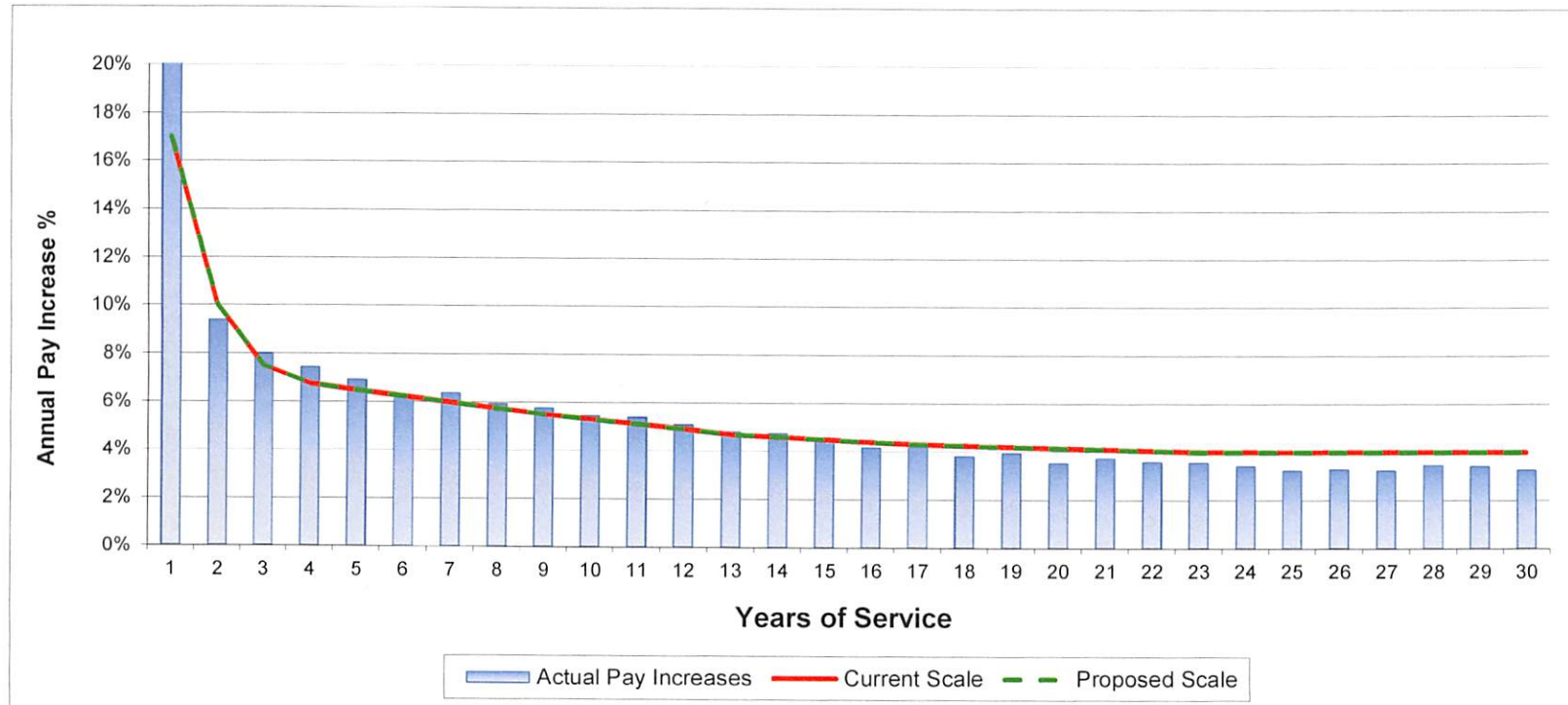


	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	3.86%	6.19%	6.32%

Note: Assumed wage inflation of 4% during the study period is reflected in both the current and proposed assumptions. The new assumed wage inflation of 3.25% will be used in future valuations.



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Exhibit J-2
Salary Increases
School Membership

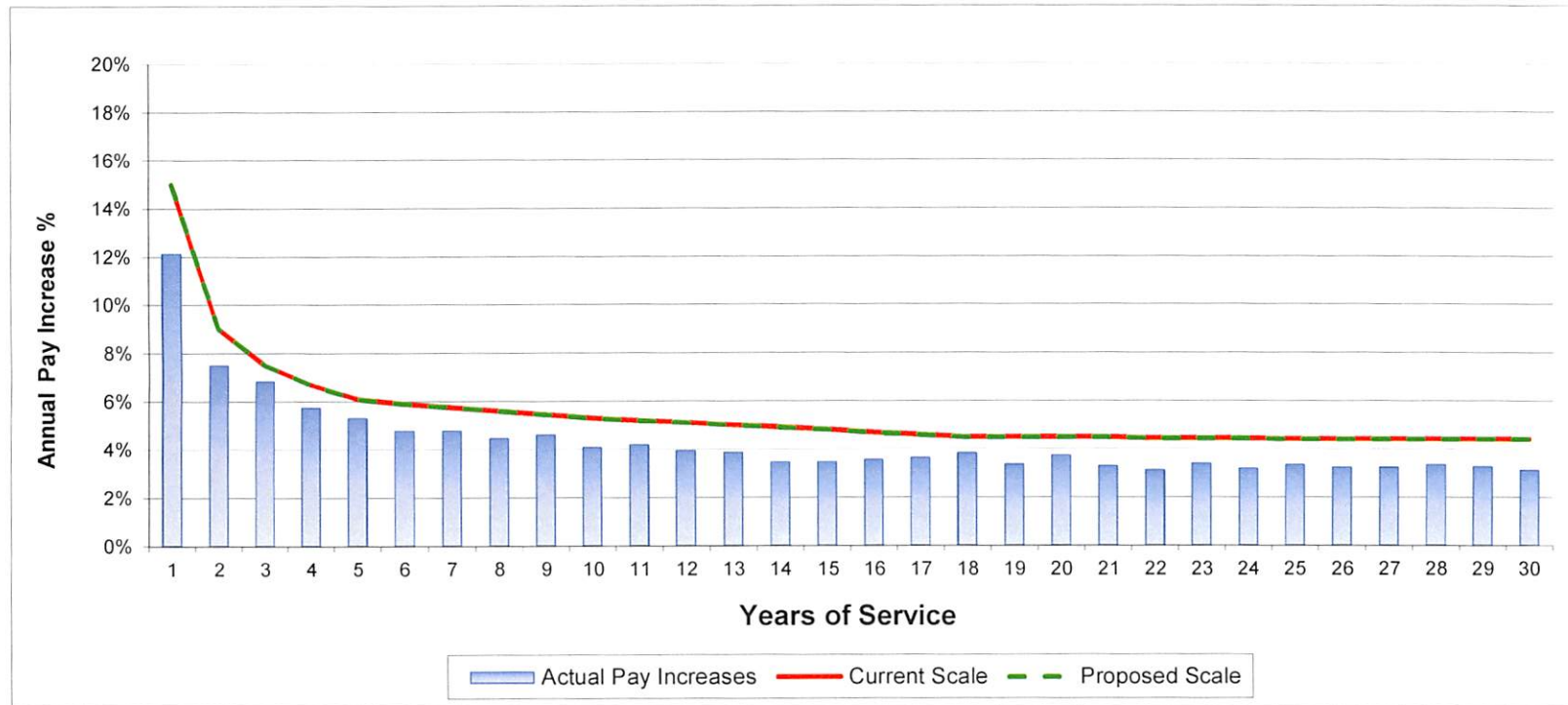


	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	5.88%	5.75%	5.75%

Note: Assumed wage inflation of 4% during the study period is reflected in both the current and proposed assumptions. The new assumed wage inflation of 3.25% will be used in future valuations.



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Exhibit J-3
Salary Increases
Other Membership

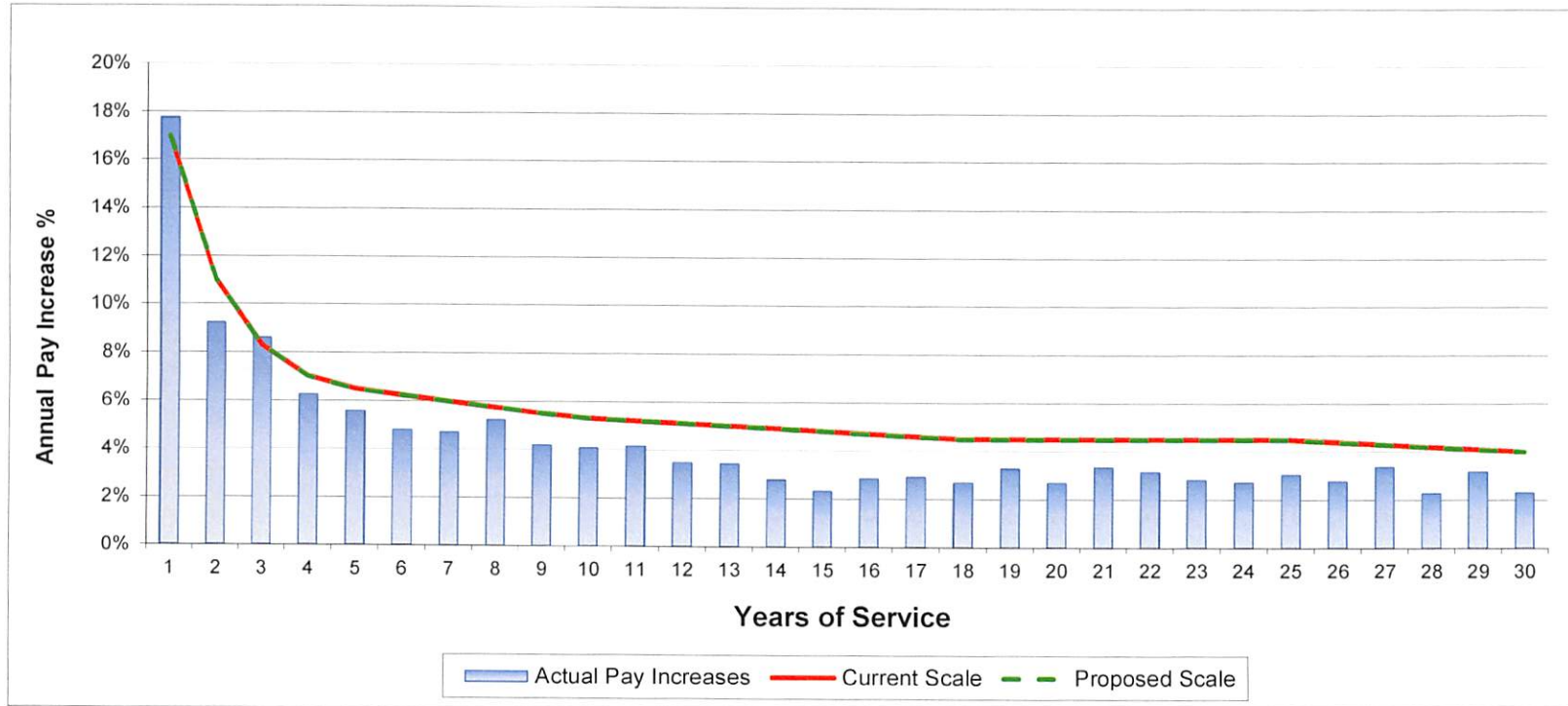


	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	5.10%	6.31%	6.31%

Note: Assumed wage inflation of 4% during the study period is reflected in both the current and proposed assumptions. The new assumed wage inflation of 3.25% will be used in future valuations.



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Exhibit J-4
Salary Increases
Special Services Membership



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Total Salary Increases	4.81%	6.09%	6.09%

Note: Assumed wage inflation of 4% during the study period is reflected in both the current and proposed assumptions. The new assumed wage inflation of 3.25% will be used in future valuations.



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary J-1

Salary Increases

State Membership

Duration	Initial Salary (Millions)	Subsequent Salary (Millions)	Actual Rate	Current Expected (Millions)	Current Rate	Proposed Expected (Millions)	Proposed Rate
1	122.1	136.5	11.8%	140.4	15.0%	140.4	15.0%
2	123.0	133.0	8.2%	134.1	9.0%	135.3	10.0%
3	117.2	124.6	6.3%	127.2	8.5%	128.3	9.5%
4	116.9	124.4	6.5%	126.2	8.0%	127.4	9.0%
5	143.1	151.4	5.8%	154.0	7.6%	155.3	8.5%
6	158.6	167.1	5.4%	170.1	7.3%	171.2	8.0%
7	167.1	175.7	5.1%	178.8	7.0%	179.7	7.5%
8	177.3	186.6	5.2%	189.3	6.8%	189.8	7.0%
9	154.8	161.2	4.1%	164.8	6.5%	164.8	6.5%
10	142.5	148.0	3.9%	151.4	6.3%	151.4	6.3%
11	122.8	127.2	3.6%	130.2	6.0%	130.2	6.0%
12	115.6	119.7	3.5%	122.4	5.8%	122.4	5.8%
13	128.6	132.3	2.9%	135.8	5.6%	135.8	5.6%
14	138.0	141.6	2.6%	145.4	5.4%	145.4	5.4%
15	156.1	159.7	2.3%	164.2	5.2%	164.2	5.2%
16	153.1	157.1	2.6%	160.9	5.1%	160.8	5.0%
17	140.9	144.2	2.4%	147.9	5.0%	147.8	4.9%
18	126.8	129.7	2.3%	133.1	4.9%	132.9	4.8%
19	110.2	112.6	2.2%	115.6	4.9%	115.4	4.7%
20	98.3	100.4	2.2%	103.0	4.8%	102.8	4.6%
21	85.5	87.3	2.1%	89.5	4.8%	89.4	4.6%
22	75.8	77.4	2.1%	79.3	4.7%	79.2	4.5%
23	75.8	77.4	2.0%	79.4	4.7%	79.2	4.5%
24	80.9	82.5	2.0%	84.7	4.6%	84.5	4.4%
25	90.6	92.3	1.9%	94.7	4.6%	94.6	4.4%
26	95.2	96.9	1.8%	99.5	4.5%	99.3	4.3%
27	87.2	89.0	2.1%	91.1	4.5%	90.9	4.3%
28	87.3	89.3	2.3%	91.1	4.4%	90.9	4.2%
29	82.3	83.9	1.9%	85.9	4.4%	85.7	4.2%
30	72.4	73.7	1.8%	75.5	4.3%	75.4	4.1%
	3,545.9	3,682.9	3.9%	3,765.2	6.2%	3,770.1	6.3%

Note: Assumed wage inflation of 4% during the study period is reflected in both the current and proposed assumptions. The new assumed wage inflation of 3.25% will be used in future valuations.



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary J-2
Salary Increases
School Membership

Duration	Initial Salary (Millions)	Subsequent Salary (Millions)	Actual Rate	Current Expected (Millions)	Current Rate	Proposed Expected (Millions)	Proposed Rate
1	476.9	581.1	21.8%	558.0	17.0%	558.0	17.0%
2	519.3	567.9	9.4%	571.2	10.0%	571.2	10.0%
3	489.1	528.2	8.0%	525.8	7.5%	525.8	7.5%
4	450.4	483.9	7.4%	480.8	6.8%	480.8	6.7%
5	437.3	467.5	6.9%	465.7	6.5%	465.7	6.5%
6	442.0	469.5	6.2%	469.6	6.3%	469.6	6.3%
7	458.7	487.9	6.4%	486.2	6.0%	486.2	6.0%
8	479.6	508.1	5.9%	507.2	5.8%	507.2	5.8%
9	476.8	504.3	5.8%	503.0	5.5%	503.0	5.5%
10	459.7	484.7	5.4%	484.0	5.3%	484.0	5.3%
11	438.1	461.7	5.4%	460.4	5.1%	460.4	5.1%
12	426.9	448.5	5.1%	447.8	4.9%	447.8	4.9%
13	434.0	454.8	4.8%	454.4	4.7%	454.4	4.7%
14	440.4	461.1	4.7%	460.6	4.6%	460.6	4.6%
15	449.0	469.0	4.5%	469.2	4.5%	469.2	4.5%
16	439.6	457.9	4.2%	458.9	4.4%	458.9	4.4%
17	418.8	437.0	4.3%	436.8	4.3%	436.8	4.3%
18	395.7	410.8	3.8%	412.5	4.3%	412.5	4.3%
19	375.0	389.7	3.9%	390.7	4.2%	390.7	4.2%
20	356.3	368.9	3.5%	371.0	4.2%	371.0	4.2%
21	328.2	340.4	3.7%	341.7	4.1%	341.7	4.1%
22	306.9	317.9	3.6%	319.3	4.1%	319.3	4.1%
23	288.4	298.7	3.6%	299.9	4.0%	299.9	4.0%
24	262.8	271.7	3.4%	273.3	4.0%	273.3	4.0%
25	250.4	258.6	3.3%	260.4	4.0%	260.4	4.0%
26	225.3	232.7	3.3%	234.3	4.0%	234.3	4.0%
27	204.2	210.8	3.3%	212.4	4.0%	212.4	4.0%
28	189.3	195.9	3.5%	196.9	4.0%	196.9	4.0%
29	174.9	180.9	3.4%	181.9	4.0%	181.9	4.0%
30	159.4	164.6	3.3%	165.8	4.0%	165.8	4.0%
	11,253.3	11,914.9	5.9%	11,900.0	5.7%	11,900.0	5.7%

Note: Assumed wage inflation of 4% during the study period is reflected in both the current and proposed assumptions. The new assumed wage inflation of 3.25% will be used in future valuations.



Iowa Public Employees' Retirement System

2013-2017 Experience Study

Data Summary J-3

Salary Increases

Other Membership

Duration	Initial Salary (Millions)	Subsequent Salary (Millions)	Actual Rate	Current Expected (Millions)	Current Rate	Proposed Expected (Millions)	Proposed Rate
1	548.3	614.9	12.1%	630.6	15.0%	630.6	15.0%
2	510.2	548.4	7.5%	556.1	9.0%	556.1	9.0%
3	443.2	473.4	6.8%	476.5	7.5%	476.5	7.5%
4	409.0	432.5	5.7%	436.4	6.7%	436.4	6.7%
5	391.4	412.2	5.3%	415.3	6.1%	415.3	6.1%
6	367.8	385.4	4.8%	389.5	5.9%	389.5	5.9%
7	353.0	369.9	4.8%	373.3	5.8%	373.3	5.8%
8	332.6	347.4	4.5%	351.2	5.6%	351.2	5.6%
9	294.2	307.8	4.6%	310.3	5.5%	310.3	5.5%
10	266.9	277.8	4.1%	281.0	5.3%	281.0	5.3%
11	245.2	255.5	4.2%	258.0	5.2%	258.0	5.2%
12	243.8	253.4	3.9%	256.2	5.1%	256.2	5.1%
13	251.5	261.2	3.9%	264.1	5.0%	264.1	5.0%
14	262.4	271.5	3.5%	275.3	4.9%	275.3	4.9%
15	256.1	265.0	3.5%	268.4	4.8%	268.4	4.8%
16	236.3	244.7	3.6%	247.4	4.7%	247.4	4.7%
17	213.1	220.8	3.6%	222.9	4.6%	222.9	4.6%
18	191.8	199.2	3.8%	200.4	4.5%	200.4	4.5%
19	178.4	184.3	3.4%	186.4	4.5%	186.4	4.5%
20	166.9	173.1	3.7%	174.4	4.5%	174.4	4.5%
21	153.8	158.9	3.3%	160.7	4.5%	160.7	4.5%
22	138.9	143.3	3.1%	145.1	4.5%	145.1	4.5%
23	140.4	145.2	3.4%	146.7	4.5%	146.7	4.5%
24	138.5	142.9	3.2%	144.6	4.5%	144.6	4.5%
25	136.9	141.4	3.3%	142.9	4.4%	142.9	4.4%
26	128.2	132.3	3.2%	133.8	4.4%	133.8	4.4%
27	110.9	114.5	3.2%	115.8	4.4%	115.8	4.4%
28	96.6	99.8	3.3%	100.8	4.4%	100.8	4.4%
29	81.6	84.3	3.3%	85.2	4.4%	85.2	4.4%
30	73.6	75.8	3.1%	76.8	4.4%	76.8	4.4%
	7,361.4	7,736.6	5.1%	7,826.0	6.3%	7,826.0	6.3%

Note: Assumed wage inflation of 4% during the study period is reflected in both the current and proposed assumptions. The new assumed wage inflation of 3.25% will be used in future valuations.



Iowa Public Employees' Retirement System
2013-2017 Experience Study
Data Summary J-4
Salary Increases
Special Services Membership

Duration	Initial Salary (Millions)	Subsequent Salary (Millions)	Actual Rate	Current Expected (Millions)	Current Rate	Proposed Expected (Millions)	Proposed Rate
1	63.9	75.2	17.7%	74.7	17.0%	74.7	17.0%
2	64.6	70.6	9.2%	71.7	11.0%	71.7	11.0%
3	58.9	64.0	8.6%	63.8	8.3%	63.8	8.3%
4	57.6	61.2	6.3%	61.6	7.0%	61.6	7.0%
5	64.4	68.0	5.6%	68.6	6.5%	68.6	6.5%
6	71.8	75.3	4.8%	76.3	6.3%	76.3	6.3%
7	72.6	76.0	4.7%	77.0	6.0%	77.0	6.0%
8	72.5	76.2	5.2%	76.6	5.8%	76.6	5.8%
9	64.6	67.3	4.2%	68.1	5.5%	68.1	5.5%
10	55.8	58.1	4.1%	58.8	5.3%	58.8	5.3%
11	53.2	55.4	4.1%	56.0	5.2%	56.0	5.2%
12	52.2	54.0	3.5%	54.8	5.1%	54.8	5.1%
13	57.9	59.9	3.4%	60.8	5.0%	60.8	5.0%
14	60.2	61.9	2.8%	63.1	4.9%	63.1	4.9%
15	63.0	64.5	2.3%	66.1	4.8%	66.1	4.8%
16	64.1	65.9	2.8%	67.1	4.7%	67.1	4.7%
17	57.9	59.6	2.9%	60.6	4.6%	60.6	4.6%
18	51.5	52.9	2.7%	53.9	4.5%	53.9	4.5%
19	45.0	46.4	3.3%	47.0	4.5%	47.0	4.5%
20	40.1	41.2	2.7%	41.9	4.5%	41.9	4.5%
21	32.6	33.7	3.3%	34.1	4.5%	34.1	4.5%
22	28.6	29.5	3.1%	29.9	4.5%	29.9	4.5%
23	28.8	29.6	2.8%	30.1	4.5%	30.1	4.5%
24	28.1	28.9	2.7%	29.4	4.5%	29.4	4.5%
25	26.7	27.5	3.0%	27.9	4.5%	27.9	4.5%
26	25.4	26.1	2.8%	26.6	4.4%	26.6	4.4%
27	21.0	21.7	3.4%	21.9	4.3%	21.9	4.3%
28	18.4	18.8	2.3%	19.2	4.2%	19.2	4.2%
29	17.6	18.2	3.2%	18.4	4.1%	18.4	4.1%
30	14.0	14.3	2.3%	14.5	4.0%	14.5	4.0%
	1,433.0	1,501.9	4.8%	1,520.3	6.1%	1,520.3	6.1%

Note: Assumed wage inflation of 4% during the study period is reflected in both the current and proposed assumptions. The new assumed wage inflation of 3.25% will be used in future valuations.