

**WISCONSIN RETIREMENT SYSTEM**

**THIRTY-SECOND ANNUAL ACTUARIAL VALUATION AND  
GAIN/LOSS ANALYSIS**

**DECEMBER 31, 2012**

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June 10, 2013

Employee Trust Funds Board  
Wisconsin Department of Employee  
Trust Funds  
801 West Badger Road  
Madison, Wisconsin 53713

Ladies and Gentlemen:

The results of the **December 31, 2012 annual actuarial valuations of non-retired members covered by the Wisconsin Retirement System** are presented in this report. The valuations establish contribution rates for the 2014 calendar year in conformance with Chapter 40 of the Wisconsin Statutes. This report should not be relied upon for any other purpose. The change in the normal cost rates from last year are shown below:

<u>General</u>	<u>Executive</u>	<u>Protective With SS</u>	<u>Protective Without SS</u>
0.7%	1.5%	0.7%	1.7%

The valuations are based upon all current plan provisions related to General, Executive and Elected, and Protective Occupation employment with and without Social Security coverage. The plan provisions evaluated are summarized in Section H of this report.

The individual member statistical data required for the valuations was furnished by the Department of Employee Trust Funds (DETF), together with pertinent data on financial operations. The cooperation of DETF staff in furnishing these materials is acknowledged with appreciation.

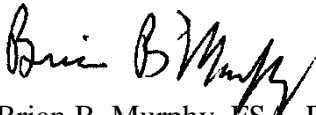
Actuarial valuations are based upon assumptions regarding future activity in specific risk areas including the rates of investment return and payroll growth, eligibility for the various classes of benefits, and longevity among retired lives. The Board adopts these assumptions after considering the advice of the actuary and other professionals. The assumptions and the methods comply with the requirements of Statement No. 25 of the Governmental Accounting Standards Board. Each actuarial valuation takes into account all prior differences between actual and assumed experience in each risk area and adjusts the contribution rates as needed. The December 31, 2012 valuations were based upon assumptions that were recommended in connection with a study of experience during 2009-2011 and benefit provisions in effect on December 31, 2012.

Future actuarial measurements may differ significantly from those presented in this report due to such factors as experience differing from that anticipated by actuarial assumptions, changes in plan provisions, actuarial assumptions/methods or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements

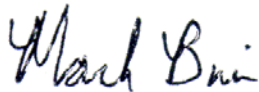
To the best of our knowledge, this report is complete and accurate and was made in accordance with generally recognized actuarial methods. The actuaries submitting this statement are Members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

The valuations were completed by qualified actuaries in accordance with accepted actuarial procedures as prescribed by the Actuarial Standards Board. It is our opinion that the Wisconsin Retirement System is operating in accordance with actuarial principles of level percent-of-payroll financing.

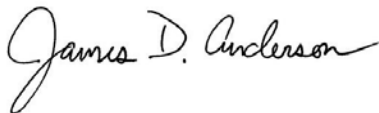
Respectfully submitted,



Brian B. Murphy, FSA, EA, MAAA



Mark Buis, FSA, EA, MAAA



James D. Anderson, FSA, EA, MAAA

BBM/MB/JDA:sc

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## **SECTION A**

### **EXECUTIVE SUMMARY**

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## EXECUTIVE SUMMARY

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### 1. Required Employer Contributions to Support Retirement Benefits

	General Participants		Executives & Elected Officials		Protective Occupation			
					With Soc. Sec.		Without Soc. Sec.	
	2014	2013	2014	2013	2014	2013	2014	2013
Employer Normal Cost	7.00%	6.65%	7.75%	7.00%	10.10%	9.75%	13.70%	12.35%
Participant Normal Cost	7.00%	6.65%	7.75%	7.00%	7.00%	6.65%	7.00%	6.65%
Total Normal Cost	14.0%	13.3%	15.5%	14.0%	17.1%	16.4%	20.7%	19.0%
Unfunded Actuarial Accrued Liability (UAAL)	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%
<b>WRS Average Total</b>	<b>14.0%</b>	<b>13.4%</b>	<b>15.5%</b>	<b>14.0%</b>	<b>17.1%</b>	<b>16.4%</b>	<b>21.0%</b>	<b>19.3%</b>

Under Section 40.05 of the Wisconsin statutes updated for Act 10 and 32 of 2011, contribution rates are now split evenly between the employer normal cost and the participant normal cost for both General Participants and Executive and Elected Officials. For protective occupations, the participant normal cost is set equal to the participant normal cost for General Participants. Act 10 of 2011 eliminated the benefit adjustment contribution.

Rates shown for UAAL are weighted averages of rates that vary by employer units. Contributions to support the Section 40.65 Duty Disability Program and the Accumulated Sick Leave Conversion Credit Program are in addition to the WRS rates shown above.

## EXECUTIVE SUMMARY

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### 2. Reasons for change

There are three general reasons why contribution rates change from one valuation to the next. The first is a change in the benefits or eligibility conditions of the plan. The second is a change in the valuation assumptions used to predict future occurrences. The third is the difference during the year between the plan's actual experience and what the assumptions predicted.

There were no benefit changes reported to the actuary for the year ended December 31, 2012. However, now that the member contribution rate is set equal to half of the total contribution rate, any increase in the member rate will result in an increased benefit amount (and vice-versa). Assumption changes were based on the findings of the recently completed 3-year experience study.

In total, changes in the contribution rate are illustrated on the following chart. Additional detail on gains and losses can be found in Section D of this report.

	<b>General</b>	<b>Executive &amp; Elected</b>	<b>Protective with Soc. Sec.</b>	<b>Protective without Soc. Sec.</b>
2013 Normal Cost Rate	13.3%	14.0%	16.4%	19.0%
Effect of Asset Performance	0.6%	0.8%	0.9%	1.4%
Effect of Assumption Change	0.2%	0.5%	0.1%	0.2%
Effect of Member Rate Change	0.1%	0.3%	0.0%	0.0%
Demographic and Other Experience	(0.2)%	(0.1)%	(0.3)%	0.1%
2014 Normal Cost Rate	14.0%	15.5%	17.1%	20.7%

## EXECUTIVE SUMMARY

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### 3. General Comments

Based upon this valuation, normal cost contribution rates increased for most groups due to investment losses from 2008 and 2011 and changes in actuarial assumptions. Please note that this is the last year of recognition of the 2008 asset loss.

In total, during 2012, investment return was above the assumed 2012 level of 7.2% on a market value basis. Under the asset valuation method, gains and losses are phased in over a five year period, resulting in a 2.1% return on an Actuarial Value of Assets basis in the Core Fund. The Market Value of Assets exceeds the Actuarial Value of Assets by approximately 3% as of the valuation date. The statutory asset valuation method will recognize all of the differences between actuarial value and market value of \$2.5 billion over four future years.

This valuation includes liabilities for future claims under the Long Term Disability Insurance (LTDI) program that became operational late in 1992. Inter-fund transfers between WRS and the LTDI program to support claims currently payable are addressed in a separate report to the Group Insurance and Employee Trust Funds Boards.

**Conclusion.** Based upon the results of the December 31, 2012 regular annual actuarial valuation, it is our opinion that *the Wisconsin Retirement System continues to operate in accordance with actuarial principles of level percent-of-payroll financing.*



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**SECTION B**

**FUNDING RESULTS**

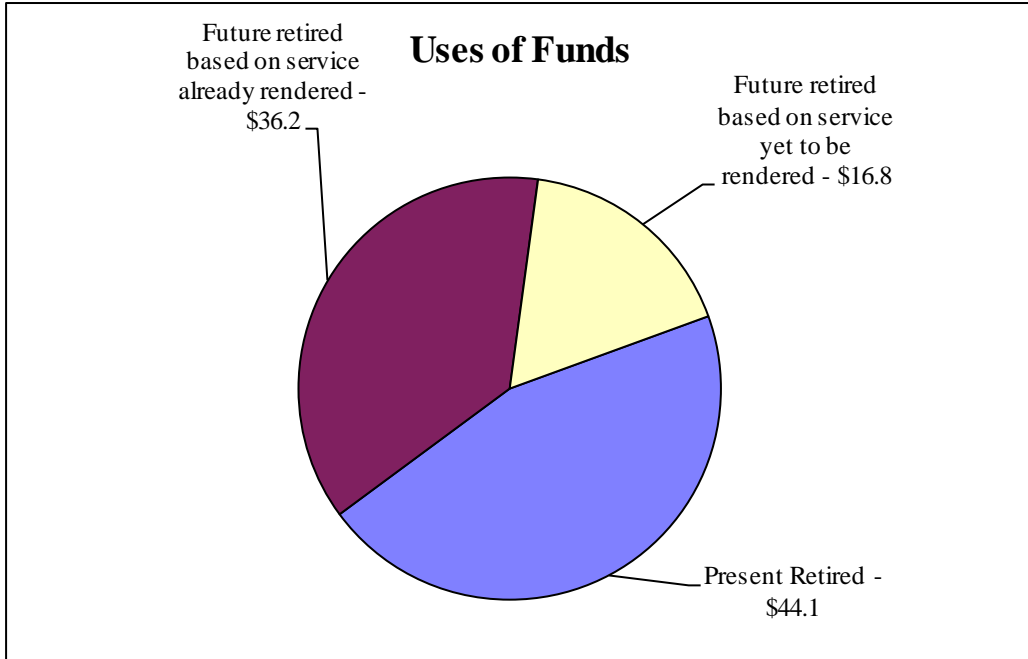
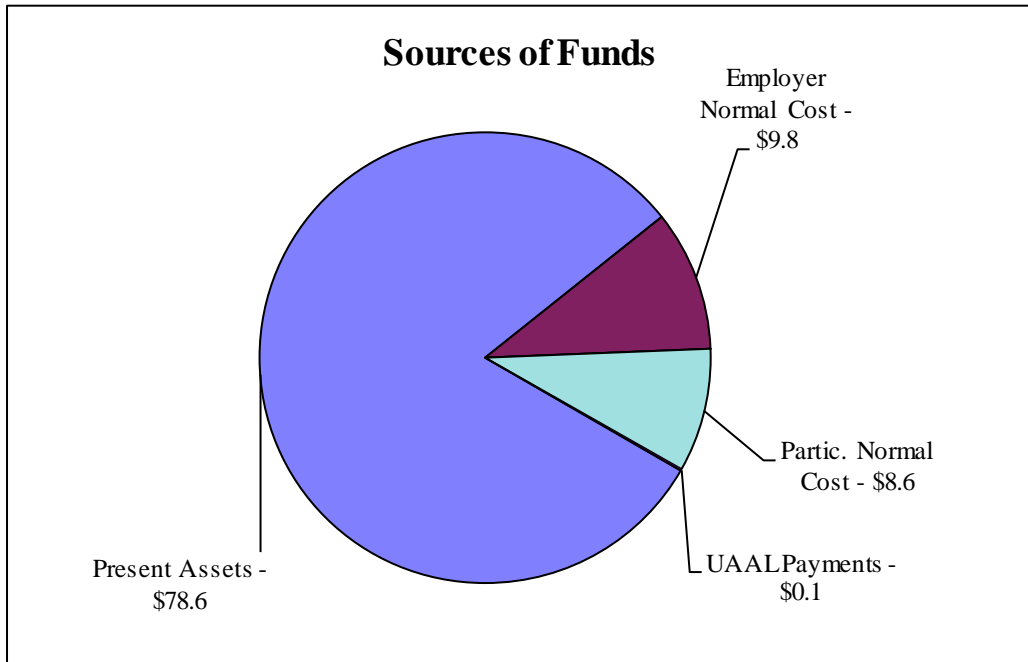
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## DEVELOPMENT OF CONTRIBUTION RATES FOR CALENDAR YEAR 2014

	General	Executive & Elected Officials	Protective Occupation		Average/ Total
			With Soc. Sec.	Without Soc. Sec.	
<b>\$ Millions</b>					
Total Reported Earnings	\$ 11,041.0	\$ 104.1	\$ 1,105.1	\$ 193.5	\$ 12,443.7
Present Value of Future Earnings	108,560.6	761.3	11,589.9	1,913.8	122,825.6
Present Value of Future Benefits	45,711.3	377.7	5,495.1	1,280.0	52,864.1
Non-Retired Assets	29,866.4	233.3	3,441.4	875.0	34,416.1
Unfunded Liability	57.5	0.4	4.7	7.1	69.7
Present Value of Future Normal Costs					
Future Service Portion	14,482.1	95.7	1,868.2	389.7	16,835.7
Exp. Amort. Res. Portion	1,305.3	48.3	180.8	8.2	1,542.6
Total	15,787.4	144.0	2,049.0	397.9	18,378.3
Normal Cost Amortization Years					
Future Service Portion	12.6	8.7	13.7	12.7	12.6
Exp. Amort. Res. Portion	25.0	25.0	25.0	25.0	
Unfunded Liability Amortization Years	16.0	16.0	16.0	16.0	16.0
<b>% 's of Active Member Payroll</b>					
Normal Cost					
Future Service Portion	13.3 %	12.6 %	16.1 %	20.4 %	13.7 %
Exp. Amort. Res. Portion	0.7 %	2.9 %	1.0 %	0.3 %	0.7 %
Total	14.0 %	15.5 %	17.1 %	20.7 %	14.4 %
<b>2014 Normal Cost Rates</b>					
<b>Employer Normal Cost</b>	<b>7.00 %</b>	<b>7.75 %</b>	<b>10.10 %</b>	<b>13.70 %</b>	<b>7.40 %</b>
<b>Participant Normal Cost</b>	<b>7.00 %</b>	<b>7.75 %</b>	<b>7.00 %</b>	<b>7.00 %</b>	<b>7.00 %</b>
<b>Total Normal Cost</b>	<b>14.00 %</b>	<b>15.50 %</b>	<b>17.10 %</b>	<b>20.70 %</b>	<b>14.40 %</b>
Average Unfunded Liability Amortization	0.0 %	0.0 %	0.0 %	0.3 %	0.0 %
<b>Average Total Rate</b>	<b>14.0 %</b>	<b>15.5 %</b>	<b>17.1 %</b>	<b>21.0 %</b>	<b>14.4 %</b>

**FINANCING \$97.1 BILLION\* OF BENEFIT PROMISES  
FOR PRESENT ACTIVE AND RETIRED PARTICIPANTS  
DECEMBER 31, 2012**

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\* Present value of future benefits; all divisions combined.

**DEVELOPMENT OF ACTUARIAL PRESENT VALUES**  
**DECEMBER 31, 2012**  
**(\$ MILLIONS)**

Present Value of Future Benefits for	General	Executives & Elected Officials	Protectives		Total
			With Soc. Sec.	Without Soc. Sec.	
Active Participants					
Service Retirement	\$37,753.8	\$302.2	\$4,838.9	\$ 1,173.0	\$44,067.9
Withdrawal	2,100.2	13.0	202.7	20.2	2,336.1
Death-in-Service	514.6	6.7	57.6	11.5	590.4
Disability	730.9	1.5	63.7	28.4	824.5
Total Active	41,099.5	323.4	5,162.9	1,233.1	47,818.9
Inactive Participants	4,523.0	61.9	322.9	45.2	4,953.0
Variable Adjustment	88.8	0.4	9.4	1.8	100.4
Active and Inactive	45,711.3	385.7	5,495.2	1,280.1	52,872.3
Additional Contributions					141.4
Present Retired					44,055.5
<b>Actuarial Present Value of Future Benefits</b>					<b>\$97,069.2</b>

Computing the actuarial present value of future benefits is the first step in the actuarial valuation process. If the WRS had assets equal to that value, and if future experience were exactly in accordance with assumptions, then the present assets together with future investment income on those assets would be sufficient to pay promised benefits to all present participants, retirees and beneficiaries. *There is no need for the Retirement System to have \$97,069.2 million immediately. What is needed, however, is a plan for obtaining the money in an orderly fashion. That is the purpose of the remainder of the actuarial valuation.*

## EXPERIENCE AMORTIZATION RESERVE (EAR)

Actuarial gains or losses arising from the difference between actual and assumed experience are reflected in the determination of the normal cost. The computed normal cost is made up of two parts: (i) the pure entry-age normal cost (EANC) determined without regard to past gains or losses, and (ii) an experience amortization component. Section 40.04(1) of the Wisconsin Statutes provides authority to maintain accounts and reserves determined to be “useful in achieving the funds’ purposes...” A fundamental WRS objective is stable contribution rates. Accordingly, the experience portion of the normal cost is separately calculated each year and the amortization period is varied upward or downward in order to minimize short-term rate fluctuations. A positive EAR indicates amortization of gains. A negative EAR indicates amortization of losses.

### Development of EAR as of December 31, 2012

	General	Executives & Elected Officials	Protective Occupation		Total
			With Soc. Sec	Without Soc. Sec.	
\$ Millions					
1. Present Value of Future Benefits for Non-Retired	\$45,711.3	\$385.7	\$5,495.2	\$1,280.1	\$52,872.3
2. Present Value of Future Entry Age Normal Costs	14,482.1	103.7	1,868.3	389.8	16,843.9
3. Entry Age Accrued Liability: (1)-(2)	31,229.2	282.0	3,626.9	890.3	36,028.4
4. Non-Retired Assets-WRS	29,852.3	233.1	3,437.0	874.4	34,396.8
-LTDI	14.1	0.2	4.4	0.6	19.3
-Total	29,866.4	233.3	3,441.4	875.0	34,416.1
5. Entry Age Unfunded Accrued Liability: (3)-(4)	1,362.8	48.7	185.5	15.3	1,612.3
6. WRS Frozen Unfunded Accrued Liability	57.5	0.4	4.7	7.1	69.7
<b>7. EAR: (6)-(5)</b>	<b>\$(1,305.3)</b>	<b>\$(48.3)</b>	<b>\$(180.8)</b>	<b>\$ (8.2)</b>	<b>\$(1,542.6)</b>
<b>8. Prior Year EAR</b>	<b>\$ (499.3)</b>	<b>\$(34.4)</b>	<b>\$(51.4)</b>	<b>\$ 40.3</b>	<b>\$(544.8)</b>

**UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAAL)**  
**DECEMBER 31, 2012**

	General	Executives & Elected Officials	Protective Occupation		Totals
			With Soc. Sec	Without Soc. Sec	
Balance January 1, 2012*	\$85,964,599	\$ 589,279	\$5,239,387	\$ 7,482,812	\$99,276,077
Plus: New Employers	7,484	0	0	0	7,484
Less: Adjustments	0	0	0	0	0
Less: Payments	(32,365,842)	(176,850)	(825,111)	(876,014)	(34,243,817)
Plus: Interest	3,859,649	29,695	317,828	475,689	4,682,861
<b>Balance December 31, 2012</b>	<b>\$57,465,890</b>	<b>\$ 442,124</b>	<b>\$4,732,104</b>	<b>\$ 7,082,487</b>	<b>\$69,722,605</b>

\* Beginning of year balances were adjusted from balances reported as of December 31, 2011 as prior year balances were preliminary.

The UAAL is affected year to year by new employers entering the Wisconsin Retirement System, amortization payments, interest assessments, and statutory changes in benefits provided by the Retirement System. The UAAL is being amortized as a level percent of payroll. Since the payroll is assumed to increase with inflation, UAAL payments will also increase. During the first several years of such an amortization program, the payments are less than the interest assessment and the UAAL balance, expressed in terms of nominal dollars, increases from year to year. However, it increases at a lower rate than the payroll. After several years the payments exceed the interest assessment and the outstanding dollar balance will begin to decline.

## COMPARATIVE STATEMENT OF COMPUTED CONTRIBUTION RATES

Valuation 12/31	Rate Effective 1/1	General				Executive and Elected			
		Participant	Benefit Adj. Contr.	Employer <sup>1</sup>	Total	Participant	Benefit Adj. Contr.	Employer <sup>1</sup>	Total
1988	1990	5.0 %	1.0 %	6.0 %	12.0 %	5.5 %		11.9 %	17.4 %
1989 <sup>2</sup>	1991	5.0 %	1.1 %	6.1 %	12.2 %	5.5 %	0.1 %	12.0 %	17.6 %
1990	1992	5.0 %	1.2 %	6.2 %	12.4 %	5.5 %	0.1 %	12.0 %	17.6 %
1991	1993	5.0 %	1.2 %	6.2 %	12.4 %	5.5 %	0.1 %	12.0 %	17.6 %
1992	1994	5.0 %	1.2 %	6.1 %	12.3 %	5.5 %	0.1 %	12.0 %	17.6 %
1993	1995	5.0 %	1.2 %	6.1 %	12.3 %	5.5 %	0.1 %	12.0 %	17.6 %
1994	1996	5.0 %	1.5 %	6.4 %	12.9 %	4.6 %	0.0 %	11.1 %	15.7 %
1995	1997	5.0 %	1.4 %	6.3 %	12.7 %	4.7 %	0.0 %	11.2 %	15.9 %
1996	1998	5.0 %	1.2 %	6.1 %	12.3 %	4.7 %	0.0 %	11.2 %	15.9 %
1997	1999	5.0 %	0.8 %	5.8 %	11.6 %	4.3 %	0.0 %	10.8 %	15.1 %
1998	2000	5.0 %	0.5 %	5.5 %	11.0 %	4.1 %	0.0 %	10.6 %	14.7 %
1999	2001	5.0 %	0.2 %	5.1 %	10.3 %	3.9 %	0.0 %	10.4 %	14.3 %
2000	2002	5.0 %	0.2 %	5.1 %	10.3 %	3.1 %	0.0 %	9.6 %	12.7 %
2001 <sup>3</sup>	2003	5.0 %	0.4 %	5.2 %	10.6 %	2.6 %	0.0 %	9.1 %	11.7 %
2002	2004	5.0 %	0.6 %	5.2 %	10.8 %	2.6 %	0.0 %	8.9 %	11.5 %
2003	2005	5.0 %	0.8 %	4.7 %	10.5 %	2.8 %	0.0 %	8.4 %	11.2 %
2004	2006	5.0 %	0.9 %	4.7 %	10.6 %	2.9 %	0.0 %	8.5 %	11.4 %
2005	2007	5.0 %	1.0 %	4.8 %	10.8 %	3.0 %	0.0 %	8.6 %	11.6 %
2006	2008	5.0 %	1.0 %	4.8 %	10.8 %	3.0 %	0.0 %	8.6 %	11.6 %
2007	2009	5.0 %	0.9 %	4.7 %	10.6 %	3.0 %	0.0 %	8.5 %	11.5 %
2008	2010	5.0 %	1.2 %	5.0 %	11.2 %	3.2 %	0.0 %	8.7 %	11.9 %
2009	2011	5.0 %	1.5 %	5.2 %	11.7 %	3.9 %	0.0 %	9.4 %	13.3 %
2010	2012	5.0 %	1.6 %	5.3 %	11.9 %	4.3 %	0.0 %	9.8 %	14.1 %
2011 <sup>4</sup>	2013	6.65 %	N/A	6.75 %	13.4 %	7.00 %	N/A	7.00 %	14.0 %
2012	2014	7.00 %	N/A	7.00 %	14.0 %	7.75 %	N/A	7.75 %	15.5 %

<sup>1</sup> Employer normal cost plus weighted average of unfunded actuarial accrued liability contribution rates.

<sup>2</sup> Benefit change.

<sup>3</sup> Act 11 of 1999 was implemented in 2001.

<sup>4</sup> Act 10 and Act 32 were implemented in 2011.

## COMPARATIVE STATEMENT OF COMPUTED CONTRIBUTION RATES

Valuation 12/31	Rate Effective 1/1	Protective With Social Security				Protective Without Social Security			
		Participant	Benefit Adj. Contr.	Employer <sup>1</sup>	Total	Participant	Benefit Adj. Contr.	Employer <sup>1</sup>	Total
1988	1990	6.0 %	0.9 %	11.2 %	18.1 %	8.0 %		16.9 %	24.9 %
1989 <sup>2</sup>	1991	6.0 %	0.7 %	10.9 %	17.6 %	7.5 %		16.4 %	23.9 %
1990	1992	6.0 %	0.7 %	10.9 %	17.6 %	7.5 %		16.4 %	23.9 %
1991	1993	6.0 %	0.6 %	10.7 %	17.3 %	7.5 %		16.4 %	23.9 %
1992	1994	6.0 %	0.6 %	10.7 %	17.3 %	7.5 %		16.3 %	23.8 %
1993	1995	6.0 %	0.5 %	10.6 %	17.1 %	7.2 %		16.0 %	23.2 %
1994	1996	6.0 %	0.1 %	10.2 %	16.3 %	6.8 %		15.7 %	22.5 %
1995	1997	5.8 %	0.0 %	9.8 %	15.6 %	6.2 %		15.1 %	21.3 %
1996	1998	5.4 %	0.0 %	9.4 %	14.8 %	5.8 %		14.6 %	20.4 %
1997	1999	4.9 %	0.0 %	8.9 %	13.8 %	5.4 %		14.3 %	19.7 %
1998	2000	4.1 %	0.0 %	8.0 %	12.1 %	4.4 %		13.3 %	17.7 %
1999	2001	3.8 %	0.0 %	7.6 %	11.4 %	3.3 %		12.2 %	15.5 %
2000	2002	4.0 %	0.0 %	7.8 %	11.8 %	3.0 %		11.9 %	14.9 %
2001 <sup>3</sup>	2003	4.0 %	0.0 %	7.7 %	11.7 %	2.4 %		11.3 %	13.7 %
2002	2004	4.5 %	0.0 %	8.0 %	12.5 %	3.2 %		11.8 %	15.0 %
2003	2005	4.9 %	0.0 %	8.1 %	13.0 %	3.3 %		11.3 %	14.6 %
2004	2006	5.0 %	0.0 %	8.2 %	13.2 %	3.3 %		11.1 %	14.4 %
2005	2007	5.1 %	0.0 %	8.3 %	13.4 %	3.4 %		11.2 %	14.6 %
2006	2008	5.1 %	0.0 %	8.3 %	13.4 %	3.4 %		11.2 %	14.6 %
2007	2009	5.0 %	0.0 %	8.2 %	13.2 %	3.2 %		10.9 %	14.1 %
2008	2010	5.5 %	0.0 %	8.6 %	14.1 %	3.9 %		11.6 %	15.5 %
2009	2011	5.8 %	0.0 %	8.9 %	14.7 %	4.8 %		12.5 %	17.3 %
2010	2012	5.9 %	0.0 %	9.0 %	14.9 %	4.9 %		12.6 %	17.5 %
2011 <sup>4</sup>	2013	6.65 %	N/A	9.75 %	16.4 %	6.65 %		12.65 %	19.3 %
2012	2014	7.00 %	N/A	10.10 %	17.1 %	7.00 %		14.00 %	21.0 %

<sup>1</sup> Employer normal cost plus weighted average of unfunded actuarial accrued liability contribution rates.

<sup>2</sup> Benefit change.

<sup>3</sup> Act 11 of 1999 was implemented in 2001.

<sup>4</sup> Act 10 and Act 32 were implemented in 2011.



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**SECTION C**  
**FUND ASSETS**

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## DEVELOPMENT OF PARTICIPANT AND EMPLOYER RESERVES DURING THE YEAR

	Participant Accumulation			Employer Accumulation			Grand Total
	Core	Variable	Total	Core	Variable	Total	
Ending Balance December 31, 2011	\$13,291,693,558	\$1,003,250,378	\$14,294,943,936	\$19,822,704,603	\$1,000,117,173	\$20,822,821,776	\$35,117,765,712
Closing Adjustments	99,446,674	(16,493,257)	82,953,417	(71,207,692)	(13,360,051)	(84,567,743)	(1,614,326)
Beginning Balance January 1, 2012	13,391,140,232	986,757,121	14,377,897,353	19,751,496,911	986,757,122	20,738,254,033	35,116,151,386
Revenues:							
Employer Contributions	-	-	-	735,614,895	91,476,527	827,091,422	827,091,422
Participant Contributions	659,284,165	92,186,030	751,470,195	-	-	-	751,470,195
Total Revenues	659,284,165	92,186,030	751,470,195	735,614,895	91,476,527	827,091,422	1,578,561,617
Expenses:							
Separations	25,225,706	1,311,392	26,537,098	-	-	-	26,537,098
Retirement Single Sums	17,076,235	453,120	17,529,355	19,412,003	403,009	19,815,011	37,344,367
Death Benefits	13,748,125	684,193	14,432,318	9,676,469	387,168	10,063,636	24,495,954
Disability Insurance	-	-	-	-	-	-	-
	56,050,067	2,448,704	58,498,771	29,088,471	790,176	29,878,648	88,377,419
Transfers:							
Earnings Allocation	307,958,257	155,407,941	463,366,198	423,363,833	153,074,738	576,438,571	1,039,804,769
Annuities Awarded	(1,209,119,510)	(72,362,508)	(1,281,482,018)	(1,898,597,737)	(74,990,081)	(1,973,587,818)	(3,255,069,836)
Intra-Fund Transfers	6,628,388	303,176	6,931,565	(712,372)	(541,197)	(1,253,568)	5,677,996
Inter-Fund Transfers	12,501,805	(12,501,805)	-	12,485,516	(12,485,516)	-	-
	(882,031,059)	70,846,804	(811,184,255)	(1,463,460,760)	65,057,945	(1,398,402,815)	(2,209,587,071)
<b>Ending December 31, 2012</b>	<b>\$13,112,343,271</b>	<b>\$1,147,341,251</b>	<b>\$14,259,684,522</b>	<b>\$18,994,562,574</b>	<b>\$1,142,501,418</b>	<b>\$20,137,063,992</b>	<b>\$34,396,748,514</b>
Internal Rate of Return	2.4%	15.7%	3.3%	2.2%	15.5%	2.9%	3.0%

**RESERVES FOR NON-RETIRED PARTICIPANTS  
BALANCES BY VALUATION GROUP**

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	Reserve for Year Ended			December 31, 2011 (Total in \$ M illions)
	December 31, 2012			
	Participant	Employer	Total *	
General	\$12,790,066,729	\$17,062,205,586	\$29,852,272,315	\$30,469.9
Executives & Elected	62,651,891	170,441,289	233,093,180	238.3
Protective with Soc. Sec.	1,128,980,691	2,308,026,023	3,437,006,714	3,506.5
Protective w/o Soc. Sec.	277,985,210	596,391,094	874,376,304	903.1
<b>Total</b>	<b>\$14,259,684,521</b>	<b>\$20,137,063,992</b>	<b>\$34,396,748,513</b>	<b>\$35,117.8</b>

\* Totals differ slightly from page C-1 due to rounding.

The above schedule shows the distribution of Participant and Employer reserves among the valuation groups according to WRS accounting records. This separation of assets is needed because the valuation groups are separately experience rated. The assets are pooled for investment purposes.

## CORE INVESTMENT TRUST: MARKET RECOGNITION ACCOUNT

	For the Year Ended December 31						
	2010	2011	2012	2013	2014	2015	2016
Beginning of year							
a. Funding value	\$76,953,180,686	\$78,243,619,565	\$76,984,779,225	\$76,040,596,900	\$77,584,787,814	\$77,841,346,611	\$77,698,407,574
b. Market value	67,482,102,968	73,176,488,762	71,644,332,757	78,491,553,933	78,491,553,933	78,491,553,933	78,491,553,933
End of year							
c. Market value	73,176,488,762	71,644,332,757	78,491,553,933	78,491,553,933	78,491,553,933	78,491,553,933	78,491,553,933
d. Non-investment cash flow (contributions minus benefits)	(2,218,913,828)	(2,398,908,914)	(2,568,933,130)				
e. Investment income							
e1. Total investment income	7,913,299,622	866,752,909	9,416,154,306				
e2. Assumed rate	7.8%	7.2%	7.2%				
e3. Amount for immediate recognition	5,915,810,454	5,547,179,888	5,450,422,511	-	-	-	-
e4. Amount for phased-in recognition: e1-e3	1,997,489,167	(4,680,426,979)	3,965,731,795	-	-	-	-
f. Phased-in recognition of investment income							
f1. Current year: .2 x e4	399,497,833	(936,085,396)	793,146,359	-	-	-	-
f2. First prior year	1,287,632,117	399,497,833	(936,085,396)	793,146,359	-	-	-
f3. Second prior year	(5,369,862,619)	1,287,632,117	399,497,833	(936,085,396)	793,146,359	-	-
f4. Third prior year	211,706,750	(5,369,862,619)	1,287,632,117	399,497,833	(936,085,396)	793,146,359	-
f5. Fourth prior year	1,064,568,171	211,706,750	(5,369,862,619)	1,287,632,117	399,497,833	(936,085,396)	793,146,359
f6. Total MRA recognition	(2,406,457,747)	(4,407,111,314)	(3,825,671,706)	1,544,190,914	256,558,797	(142,939,037)	793,146,359
f7. Amount for TAA recognition	-	-	-	-	-	-	-
f8. Total recognized gain (loss)	(2,406,457,747)	(4,407,111,314)	(3,825,671,706)	1,544,190,914	256,558,797	(142,939,037)	793,146,359
g. Total recognized investment income: e3 + f8	3,509,352,707	1,140,068,574	1,624,750,806	1,544,190,914	256,558,797	(142,939,037)	793,146,359
h. Funding value end of year: a + d + e3 + f8	78,243,619,565	76,984,779,225	76,040,596,900	77,584,787,814	77,841,346,611	77,698,407,574	78,491,553,933
i. Difference between market and funding values	(5,067,130,803)	(5,340,446,468)	2,450,957,032	906,766,119	650,207,322	793,146,359	-
j. Recognized rate of return	4.6%	1.5%	2.1%				
k. Market rate of return	11.9%	1.2%	13.4%				

## RECONCILIATION OF RESERVE ACCOUNTS

The following table reconciles the Market Recognition Account Assets shown on page C-3.

	Reserve for Year Ended		
	December 31, 2012		
	Core	Variable	Total
Non-Retired	\$32,106,905,845	\$2,289,842,669	\$34,396,748,514
Retired	40,591,625,993	3,463,952,390	44,055,578,383
Sick Leave	2,109,630,786		2,109,630,786
Other:			
Duty Disability	494,100,296		494,100,296
Health Insurance	162,824,076		162,824,076
LTDI	227,527,478		227,527,478
ICI	82,126,543		82,126,543
Milwaukee Retirement	149,027,235	19,168,216	168,195,452
WRS Additional Accounts	121,800,013	14,719,294	136,519,307
Other	(4,971,364)		(4,971,364)
Reserves at Funding Value	76,040,596,900	5,787,682,570	81,828,279,470
Deferred Market Gains (MRA)	2,450,957,032		2,450,957,032
<b>Reserves at Fair Value</b>	<b>\$78,491,553,933</b>	<b>\$5,753,795,059</b>	<b>\$84,245,348,992</b>

The following table reconciles the Net Assets at Fair Value for the WRS shown on Page F-2.

	Reserve for Year Ended		
	December 31, 2012		
	Core	Variable	Total
Non-Retired	\$32,106,905,845	\$2,289,842,669	\$34,396,748,514
Retired	40,591,625,993	3,463,952,390	44,055,578,383
WRS Additional Accounts	121,800,013	14,719,294	136,519,307
Deferred Market Gains (MRA)	2,378,635,898		2,378,635,898
Prior Service Receivables			69,722,604
Capital Assets			2,790,657
Administration Reserves			7,857,264
Other			24,468,945
<b>Net Assets Held in Trust</b>	<b>\$75,198,967,748</b>	<b>\$5,768,514,354</b>	<b>\$81,072,321,570</b>

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**SECTION D**  
**GAIN LOSS**

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## ACTIVE MEMBER GAIN/LOSS ANALYSIS

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*Purpose of Gain/Loss Analysis.* Regular actuarial valuations provide information about the composite change in computed contribution rates and total liabilities -- whether or not the rates and related liabilities are increasing or decreasing, and by how much. However, valuations do not show the portion of the change attributable to each risk area within the Retirement System financial mechanism: the rate of recognized investment income on plan assets; the rates of withdrawal of active participants who leave covered employment; the rates of mortality; the rates of disability; the rates of salary increases; and the assumed ages at actual retirement. In an actuarial valuation, assumptions are made as to what these rates will be for the next year and for decades in the future.

*The objective of a gain and loss analysis is to determine the portion of the change that is attributable to each risk area.*

The fact that actual experience differs from assumed experience should be expected. The future cannot be predicted with complete precision. Further, year-to-year statistical fluctuations occur, even in very large groups. This year's report reflects just a single year's experience. Changes in the valuation assumed experience for a risk area should be made only when the differences between assumed and actual experience have been observed to be sizable and persistent. One year's gain and loss analysis may or may not be indicative of *long-term trends, which are the basis of actuarial assumptions*. However, a persistent series of gains and losses can indicate a need for an assumption change or a method change, even if on a demographic basis, the assumptions appear to model reality well. In the Wisconsin Retirement System, longer term trends are reviewed in connection with the regular 3-year investigation of experience (the most recent 3-year investigation covered the period January 1, 2009 to December 31, 2011). It is the results of the 3-year investigation that lead to recommendations for changes in the actuarial assumptions.

### **Overall Experience**

Overall experience resulted in a net actuarial loss of \$650 million for the 2012 calendar year. The loss was primarily attributable to continued recognition of investment returns that were below the assumed rate for 2008 and 2011. When combined with changes in cost due to assumption changes and demographic experience, the net result was an increase in the overall 2014 contribution rate of 0.7% of payroll.

## POPULATION DEVELOPMENT DURING CALENDAR YEAR 2012

	General	Executive & Elected	Protective		Total	Expected
			With S.S.	Without S.S.		
<b>Beginning Census</b>	232,519	1,393	19,610	2,711	256,233	
(-) Normal Retirement	2,977	30	457	78	3,542	3,760
(-) Early Retirement	3,795	11	92	6	3,904	3,909
(-) Death	262	2	26	0	290	277
(-) Disability Retirement						
-Total disabilities approved	164	0	11	3	178	248
-Less pending at beginning of year	61	0	5	2	68	
-Net new from active status	103	0	6	1	110	
(-) Other Separations	12,071	73	550	32	12,726	10,800
(-) Transfers Out	1,244	19	264	4	1,531	
(+) Transfers In	1,253	75	160	43	1,531	
(+) New Entrants	18,445	75	978	94	19,592	
<b>Ending Census</b>	231,765	1,408	19,353	2,727	255,253	

This schedule reconciles the active member populations reported in connection with the December 31, 2012 and the prior year valuations on an actual and expected basis. Assumptions related to population development are a primary focus of the gain/loss analysis. They generally tend to be more stable than economic assumptions, and therefore, measurements have more meaning. Please note also that the table above represents changes in actual and expected counts of members. Beginning with the 2009 valuations, some of the actuarial assumptions (retirement, turnover, etc.) are based on liability weighted rates. Therefore, comparing actual to expected member counts alone may not form the basis for our conclusions.



## COMMENTS

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### Population Results

**Normal Retirements** varied by group and gender. Overall, there were fewer normal retirements than expected. In general, fewer normal retirements than assumed often creates a gain. However, looking at counts alone is not always an accurate predictor of whether a gain or loss occurs. If there are fewer retirements in shorter service, lower paid groups and more retirements than expected in longer service, higher paid groups, there will be a net loss to the System even if the actual total counts might be equal to or less than expected. In order to account for this, retirement rates are now developed partially on a liability weighted methodology. The net result for this past year was a small loss.

**Early Retirements** were very close to expected, overall producing a small loss.

**Deaths** among active participants were very close to expected. The net result for the past year was a small gain.

**Disabilities** were less than expected and produced a gain. This means that the reserves needed for the disability benefit were slightly smaller than the reserves that had been held for retirement benefits.

**Other Separations** varied by group, gender, and service but were overall higher than expected. The net result for the past year was a small gain.

**In total**, the population risk areas (retirement, death, disability, and other separations) produced gains and losses that almost entirely offset each other, producing a small net loss during 2012.

### Economic Results

Although on a market value basis, **investment return** was 13.4%, investment activity produced a loss for all groups due to the operation of the MRA. The recognized investment loss of \$1.43 billion was partially absorbed by a \$160 million loss in the combined value of variable excess benefits and money purchase benefits (as shown on page D-10), resulting in a net investment loss of about \$1.27 billion.

**Pay Increases** were less than expected in most groups, producing a gain.

## COMMENTS

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### **Other Analysis**

The schedule on page D-8 analyzes gains or losses due to sources other than the demographic and economic areas. The **Reserve difference** produced a loss of about \$26 million. This is primarily attributable to adjustments related to estimated annuities for which final computations have now been made. The **Re-established liability** represents the liability for new or rehired active members who were not active in the prior year. Typically, it is expected that a new hire will have very little liability. However, often new members appear with more than one year of service or with liability greater than contributions made on their behalf. Although this amount is difficult to determine accurately due to the timing of contribution amounts, we estimate the Re-established liability loss at about \$55 million.

**ACTUAL VS. EXPECTED CHANGES IN EXPERIENCE AMORTIZATION RESERVE (EAR) - CALENDAR  
YEAR DECEMBER 31, 2012  
(\$ MILLIONS)**

	December 31, 2012				
	General	Executive & Elected	Protective		Total
			With S.S.	Without S.S.	
(1) Entry Age UAAL at start of year	\$ 590.5	\$ 34.7	\$ 52.7	\$ (33.8)	\$ 644.1
(2) Normal cost from last valuation (Total)	1,489.0	12.9	189.7	40.7	1,732.3
(3) Actual contributions	1,361.0	15.2	168.3	34.1	1,578.6
(4) Interest	47.1	2.4	4.6	(2.2)	51.9
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	765.6	34.8	78.7	(29.4)	849.7
(6) Change in actuarial assumptions	66.4	6.8	29.3	5.6	108.1
(7) Other changes	0.0	0.0	0.0	0.0	0.0
(8) Expected UAAL after changes: (5) + (6) + (7)	832.0	41.6	108.0	(23.8)	957.8
(9) Actual Entry Age UAAL at end of year	1,362.8	48.7	185.5	15.3	1,612.3
<b>(10) Gain (loss): (8) - (9)</b>	<b>\$ (530.8)</b>	<b>\$ (7.1)</b>	<b>\$ (77.5)</b>	<b>\$ (39.1)</b>	<b>\$ (654.5)</b>

The gain loss analysis is intended to explain the financial effect of differences between actual and assumed experience in basic risk areas: Investment income, pay increases, retirement rates, turnover rates, etc. In order for the gain loss analysis to proceed, the change in the Entry Age Unfunded Actuarial Accrued Liabilities from one year to the next is analyzed to remove the effect of expected changes. The table above develops this year's gain or loss (line 10) which is added to the Experience Amortization Reserve (EAR). When the EAR increases "unexpectedly," this is favorable experience and downward pressure is exerted on contribution rates. Similarly, an unexpected decrease in the EAR is unfavorable experience and upward pressure is exerted on contribution rates. In addition to the gain or (loss) described in line 10, non-recurring changes in lines 6 and 7 also may affect contribution rates.

By measuring gains and losses each year and, to the extent possible, determining the "responsible" assumptions, insight is gained into how well the actuarial assumptions estimate WRS liabilities. Such information aids in understanding financial effects of emerging trends and is particularly useful during preparation of the WRS experience study.

**GAIN/LOSS ANALYSIS  
2012 EXPERIENCE  
DIVISIONS COMBINED**

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**ACTUARIAL GAINS & LOSSES DURING CALENDAR YEAR 2012**  
**(\$ MILLIONS)**

Type of Activity	General	Executive & Elected	Protective		Total
			With S.S.	Without S.S.	
<b>Decrement Risk Areas</b>					
Normal Retirement	\$ (4.7)	\$ 2.2	\$ (13.7)	\$ (1.1)	\$ (17.3)
Early Retirement	(30.9)	(0.2)	(0.9)	0.5	(31.5)
Disability Retirement	15.2	0.1	1.5	0.6	17.4
Death with Benefit	0.5	0.0	0.0	(0.1)	0.4
Other Separations	20.2	(1.9)	(0.8)	(1.2)	16.3
<b>Economic Risk Areas</b>					
Salary Increases	610.0	1.4	100.8	6.2	718.4
Investment Return	(1,058.3)	(13.0)	(154.4)	(40.3)	(1,266.0)
<b>Other Activity</b>	(82.8)	4.3	(10.0)	(3.7)	(92.2)
<b>Total Gain (Loss)</b>	<b>\$ (530.8)</b>	<b>\$(7.1)</b>	<b>\$ (77.5)</b>	<b>\$(39.1)</b>	<b>\$(654.5)</b>
<b>-% of Accrued Liability</b>	<b>(1.8)%</b>	<b>(3.0)%</b>	<b>(2.3)%</b>	<b>(4.5)%</b>	<b>(1.9)%</b>

**ANALYSIS OF OTHER ACTIVITY**  
**(\$ MILLIONS)**

	General	Executive & Elected	Protective		Total
			With S.S.	Without S.S.	
Expected Reserve Transfers					
Normal Retirement	\$1,280	\$14	\$ 255	\$69	\$1,618
Early Retirement	1,104	5	50	5	1,164
Death	40	0	4	0	44
Disability Retirement	36	0	3	1	40
Deferred Retirement	338	3	22	11	374
Expected Total Reserve Transfers	2,798	22	334	86	3,240
Actual Reserve Transfer (From Retiree Report)	2,825	25	330	86	3,266
<b>Reserve Difference</b>	(27)	(3)	4	0	(26)
Expected Refunds	35	0	1	0	36
Actual Refunds	24	0	2	1	27
<b>Refund Difference</b>	11	0	(1)	(1)	9
<b>Re-established Liability</b>	(49)	0	(5)	(1)	(55)
Total Explained Difference	(65)	(3)	(2)	(2)	(72)
Unknown Difference	(18)	7	(9)	(2)	(21)
Total Other Activity	(83)	4	(10)	(4)	(92)
Other Activity as % of Liabilities	(0.28)%	1.72 %	(0.29)%	(0.46)%	(0.27)%

This schedule analyzes reserve transfers and contribution refunds and shows the portion of “other” activity that can be explained by those sources. Amounts may not sum due to rounding.

**COMPARATIVE SCHEDULE OF EXPERIENCE  
5-YEAR HISTORY OF GAINS AND (LOSSES)  
(\$ MILLIONS)**

Year	Normal & Early Retmt.	Disability Retmt.	Other Separations*	Salary Increases	Investment Return	Other	Total
<b>GENERAL</b>							
2008	\$ (7.4)	\$ 20.3	\$ (28.5)	\$ 66.3	\$ (832.7)	\$ (144.0)	\$ (926.0)
2009	20.2	18.7	(60.6)	360.5	(762.1)	(47.0)	(470.3)
2010	9.6	19.8	(48.3)	628.8	(739.1)	(82.3)	(210.5)
2011	(126.8)	16.9	(2.0)	270.1	(1,247.5)	(125.6)	(1,214.9)
2012	<b>(35.6)</b>	<b>15.2</b>	<b>20.7</b>	<b>610.0</b>	<b>(1,058.3)</b>	<b>(82.8)</b>	<b>(530.8)</b>
<b>EXECUTIVE &amp; ELECTED</b>							
2008	\$ 2.2	\$ 0.1	\$ (1.5)	\$ (1.3)	\$ (2.8)	\$ (4.1)	\$ (7.4)
2009	(0.1)	0.1	(1.2)	7.9	(10.4)	(5.0)	(8.7)
2010	(0.5)	0.1	(1.0)	6.7	(8.3)	(1.8)	(4.8)
2011	(2.0)	0.1	1.4	5.2	(10.2)	(7.2)	(12.7)
2012	<b>2.0</b>	<b>0.1</b>	<b>(1.9)</b>	<b>1.4</b>	<b>(13.0)</b>	<b>4.3</b>	<b>(7.1)</b>
<b>PROTECTIVE WITH SOCIAL SECURITY</b>							
2008	\$ 4.2	\$ 2.2	\$ (6.8)	\$ 4.6	\$ (144.7)	\$ (7.4)	\$ (147.9)
2009	9.1	1.9	(9.1)	74.6	(110.9)	(4.2)	(38.6)
2010	6.3	1.5	(7.2)	106.8	(101.9)	(11.0)	(5.5)
2011	(21.7)	1.4	(3.5)	30.6	(183.5)	(20.4)	(197.1)
2012	<b>(14.6)</b>	<b>1.5</b>	<b>(0.8)</b>	<b>100.8</b>	<b>(154.4)</b>	<b>(10.0)</b>	<b>(77.5)</b>
<b>PROTECTIVE WITHOUT SOCIAL SECURITY</b>							
2008	\$ 1.2	\$ 0.8	\$ 0.3	\$ 1.6	\$ (46.9)	\$ (3.0)	\$ (46.0)
2009	3.4	0.8	(1.3)	5.7	(28.6)	(2.6)	(22.6)
2010	3.4	0.6	(0.5)	30.0	(26.4)	(3.7)	3.4
2011	1.0	0.6	(1.3)	7.9	(50.9)	(5.9)	(48.6)
2012	<b>(0.6)</b>	<b>0.6</b>	<b>(1.3)</b>	<b>6.2</b>	<b>(40.3)</b>	<b>(3.7)</b>	<b>(39.1)</b>

\* Includes separation due to death.

**GAIN (LOSS) FROM INVESTMENT INCOME DURING CALENDAR YEAR**  
**(\$ MILLIONS)**

	General	Executive & Elected	Protective		Total
			With SS	Without SS	
(1) Beginning of Year Active Participant Assets					
(a) Participant Accumulation Reserve (PAR)	\$12,791.1	\$63.3	\$1,150.6	\$290.0	\$14,295.0
(b) PAR Closing Adjustment	74.6	0.4	6.3	1.7	83.0
(c) Employer Accumulation Reserve (EAR)	17,678.7	175.0	2,355.9	613.1	20,822.7
(d) EAR Closing Adjustment	(72.1)	(0.7)	(9.4)	(2.4)	(84.6)
(e) Total	30,472.3	238.0	3,503.4	902.4	35,116.1
(2) End of Year Active Participant Assets					
(a) Participant Accumulation Reserve	12,790.1	62.7	1,129.0	278.0	14,259.8
(b) Employer Accumulation Reserve	17,062.2	170.4	2,308.0	596.4	20,137.0
(c) Total	29,852.3	233.1	3,437.0	874.4	34,396.8
(3) Investment Earnings Credited					
(a) Participant Accumulation Reserve	413.3	1.6	39.0	9.5	463.4
(b) Employer Accumulation Reserve	492.5	4.0	63.6	16.3	576.4
(c) Total	905.8	5.6	102.6	25.8	1,039.8
(4) Average Balance: $.5 \times \{(1e)+(2c)-(3c)\}$	29,709.4	232.8	3,418.9	875.5	34,236.6
(5) Expected Earnings: $.072 \times (4)$	2,139.1	16.8	246.2	63.0	2,465.1
(6) Gain (Loss) for Year from Investment Experience: $(3c)-(5)$	(1,233.3)	(11.2)	(143.6)	(37.2)	(1,425.3)
(7) Portion applied to Change in Variable Excess Reserve and Money Purchase Minimum Benefit	(175.0)	1.8	10.8	3.1	(159.3)
<b>(8) Remaining Gain (Loss): (6)-(7)</b>	<b>\$ (1,058.3)</b>	<b>\$ (13.0)</b>	<b>\$ (154.4)</b>	<b>\$(40.3)</b>	<b>\$ (1,266.0)</b>



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**SECTION E**  
**CENSUS DATA**

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**ACTIVE PARTICIPANTS INCLUDED IN VALUATIONS**  
**DECEMBER 31, 2012**

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Active participants included in the valuations totaled 255,253 with an annual payroll totaling \$12,443.7 million, as follows:

Valuation Group	Number	Annual Earnings (\$M illions)	Group Averages			
			Earnings	Age	Years of Service	Contribs.
General	231,765	\$11,041.0	\$47,639	46.1	11.7	\$46,924
Executive Group & Elected Officials	1,408	104.1	73,968	55.0	13.8	85,764
Protective Occupation with Social Security	19,353	1,105.1	57,104	40.7	12.8	53,556
Protective Occupation without Social Security	2,727	193.5	70,949	41.5	14.5	71,513
<b>Total Active Participants</b>	<b>255,253</b>	<b>\$12,443.7</b>	<b>\$48,751</b>	<b>45.7</b>	<b>11.8</b>	<b>\$47,903</b>
Prior Year	256,232	\$12,354.1	\$48,215	45.7	11.8	\$48,721

Group averages are not used in the valuation, but are shown here for their general interest.

**INACTIVE PARTICIPANTS INCLUDED IN VALUATIONS  
DECEMBER 31, 2012**

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**Inactive participants** included in the valuations totaled 150,007 as follows:

Valuation Group	Number	Group Averages		
		Age	Service	Money Purchase Balance
General	144,421	47.0	3.0	\$12,067
Executive Group & Elected Officials	641	53.9	4.2	24,649
Protective Occupation with Social Security	4,742	41.6	3.9	15,144
Protective Occupation without Social Security	203	43.1	7.1	41,901
<b>Total Inactive Participants</b>	<b>150,007</b>	<b>46.9</b>	<b>3.0</b>	<b>\$12,258</b>
Prior Year	146,927	46.7	3.0	\$12,639

The valuations also included 3,950 QDRO cases whose average age was 51.4 years. These accounts for divorced spouses of WRS participants have been established in accordance with Wisconsin Domestic Relations Law.

**GENERAL PARTICIPANTS AS OF DECEMBER 31, 2012**  
**BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Ages	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
15-19	94							94	\$ 1,541,496
20-24	4,363	19						4,382	115,990,695
25-29	15,079	2,084	16					17,179	612,552,713
30-34	10,527	10,472	1,975	11				22,985	992,921,091
35-39	7,753	6,658	9,430	1,123	2			24,966	1,215,129,967
40-44	7,817	5,821	7,339	7,182	1,257	16		29,432	1,490,977,707
45-49	7,535	5,953	6,584	5,789	6,552	1,115	12	33,540	1,688,129,454
50-54	6,557	6,238	7,085	5,541	6,051	5,223	1,746	38,441	1,923,696,428
55	1,077	1,046	1,407	1,088	1,127	1,006	1,008	7,759	397,386,368
56	1,080	983	1,325	1,050	1,128	891	995	7,452	373,980,889
57	909	850	1,182	981	972	802	967	6,663	339,521,964
58	836	843	1,224	986	902	681	869	6,341	322,078,672
59	831	758	1,016	913	853	678	719	5,768	290,793,915
60	713	664	969	851	783	549	704	5,233	262,268,993
61	664	621	877	764	730	495	638	4,789	239,847,697
62	596	521	672	606	605	431	519	3,950	191,225,048
63	426	434	531	481	445	294	423	3,034	153,332,369
64	390	353	435	394	358	252	298	2,480	120,083,960
65	329	259	348	274	269	209	241	1,929	92,459,864
66	293	231	251	193	183	121	189	1,461	69,828,072
67	174	116	139	91	92	59	99	770	35,073,694
68	175	109	101	82	69	53	75	664	27,952,069
69	155	90	77	41	46	33	64	506	19,993,672
70	144	66	64	46	35	36	58	449	18,667,028
71	127	49	32	23	23	12	38	304	11,083,176
72	85	38	30	34	16	5	19	227	7,660,226
73	89	24	26	12	18	8	24	201	6,549,894
74	64	23	15	11	8	4	20	145	4,950,419
75 & Up	268	146	64	39	32	17	55	621	15,305,936
<b>Totals</b>	<b>69,150</b>	<b>45,469</b>	<b>43,214</b>	<b>28,606</b>	<b>22,556</b>	<b>12,990</b>	<b>9,780</b>	<b>231,765</b>	<b>\$11,040,983,476</b>

**EXECUTIVE GROUP AND ELECTED OFFICIALS  
AS OF DECEMBER 31, 2012  
BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Ages	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24									
25-29	14	1						15	\$ 747,097
30-34	19	6						25	1,306,155
35-39	36	23	22	1				82	5,597,586
40-44	43	28	22	21	4			118	8,215,017
45-49	48	22	30	26	25	5		156	11,231,854
50-54	63	33	29	33	45	21	11	235	18,376,774
55	15	7	10	6	6	4	9	57	4,567,609
56	4	2	6	4	7	11	10	44	3,462,124
57	8	6	6	9	6	7	7	49	4,448,483
58	10	7	2	4	10	2	13	48	3,349,634
59	19	12	6	8	6	8	11	70	5,290,720
60	14	4	4	3	9	6	9	49	4,161,293
61	18	5	8	5	9	11	13	69	5,596,148
62	5	6	3	11	5	12	11	53	4,613,689
63	11	5	8	7	9	10	2	52	3,956,388
64	12	3	6	3	4	6	11	45	3,819,814
65	12	10	4	5	2	4	6	43	3,461,375
66	6	11	4	5	1	6	10	43	3,375,345
67	8	3	1	1	6	3	3	25	1,666,717
68	10		1	2		1	3	17	1,412,049
69	3	3	3	2	4		4	19	1,501,825
70	11	4	2		2	1	1	21	1,016,758
71	3	1		2	2			8	481,262
72	10	2	1	2	2		5	22	1,246,355
73	3			1			2	6	252,903
74	10		2					12	184,899
75 & Up	16	3		3		1	2	25	807,366
<b>Totals</b>	<b>431</b>	<b>207</b>	<b>180</b>	<b>164</b>	<b>164</b>	<b>119</b>	<b>143</b>	<b>1,408</b>	<b>\$104,147,239</b>

**PROTECTIVE OCCUPATION PARTICIPANTS WITH SOCIAL SECURITY  
AS OF DECEMBER 31, 2012  
BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Ages	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
15-19	5							5	\$ 141,618
20-24	485	8						493	17,622,981
25-29	1,548	688	6					2,242	104,350,595
30-34	721	1,532	711	6				2,970	156,346,675
35-39	351	662	1,628	451	2			3,094	176,480,898
40-44	245	391	1,021	1,575	410	1		3,643	218,196,120
45-49	156	240	500	760	1,119	273	2	3,050	192,726,774
50	19	38	74	104	160	155	13	563	36,586,089
51	27	39	62	77	136	146	25	512	32,971,388
52	13	35	73	66	94	166	39	486	31,992,649
53	16	21	57	57	89	101	43	384	25,090,923
54	15	36	58	55	68	71	43	346	21,962,981
55	16	24	46	31	68	51	53	289	18,316,958
56	14	23	47	35	40	33	48	240	14,211,843
57	12	28	31	48	30	33	36	218	12,652,276
58	11	21	30	33	33	25	38	191	11,186,410
59	6	15	18	19	30	21	21	130	7,590,761
60	12	8	28	28	20	16	18	130	7,236,908
61	5	9	22	14	22	18	16	106	5,951,361
62	4	10	22	14	11	10	18	89	5,072,956
63	7	6	10	8	6	2	10	49	2,545,630
64	6	7	10	6	9	6	4	48	2,468,358
65	3	2	6	2	3	1	4	21	1,057,482
66	3	3	5	1	4	1	3	20	1,064,144
67		2	1	4			1	8	385,815
68	1		3	2	1		1	8	416,102
69	1							1	1,435
70 & Up	8	2	3	2	1		1	17	505,111
<b>Totals</b>	<b>3,710</b>	<b>3,850</b>	<b>4,472</b>	<b>3,398</b>	<b>2,356</b>	<b>1,130</b>	<b>437</b>	<b>19,353</b>	<b>\$1,105,133,241</b>

**PROTECTIVE OCCUPATION PARTICIPANTS WITHOUT SOCIAL SECURITY  
AS OF DECEMBER 31, 2012  
BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Ages	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	42							42	\$ 1,911,793
25-29	194	76						270	14,912,005
30-34	125	191	63					379	23,969,377
35-39	45	88	234	64				431	29,816,269
40-44	17	57	175	214	68			531	38,704,746
45-49	8	18	75	139	178	47	1	466	35,156,454
50	2	1	5	14	37	32		91	7,037,012
51	1	2	8	15	27	42	4	99	8,189,994
52		3	2	10	24	34	15	88	7,057,376
53	1		6	18	24	24	12	85	6,983,628
54		2	3	8	20	18	13	64	5,112,345
55		1	1	4	16	18	8	48	3,805,964
56	3		1	5	13	12	7	41	3,264,773
57					8	8	3	19	1,517,316
58				5	8	10	7	30	2,502,484
59		2	1	3	8	6	4	24	1,914,686
60					3	1	4	8	680,233
61				1	2	1	1	5	400,969
62			1		1	1	2	5	443,841
65		1						1	97,380
<b>Totals</b>	<b>438</b>	<b>442</b>	<b>575</b>	<b>500</b>	<b>437</b>	<b>254</b>	<b>81</b>	<b>2,727</b>	<b>\$193,478,645</b>

**ACTIVE PARTICIPANTS  
AS OF DECEMBER 31, 2012  
BY YEARS OF SERVICE AND GENDER**

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Completed Years of Service	Males	Females	Totals	Valuation Payroll	
				Total	Average
0	6,891	13,217	20,108	\$ 515,914,276	\$25,657
1	6,089	11,193	17,282	555,909,243	32,167
2	4,554	8,326	12,880	457,257,740	35,501
3	3,650	7,457	11,107	415,588,065	37,417
4	4,223	8,129	12,352	500,227,450	40,498
5	4,166	7,515	11,681	500,841,193	42,877
6	3,654	6,790	10,444	464,994,102	44,523
7	3,287	6,405	9,692	437,224,510	45,112
8	3,185	6,168	9,353	439,337,949	46,973
9	2,961	5,837	8,798	418,414,823	47,558
10	3,184	6,151	9,335	464,507,425	49,760
11	3,993	6,442	10,435	535,646,594	51,332
12	4,061	6,285	10,346	547,972,839	52,965
13	3,588	5,828	9,416	514,548,672	54,646
14	3,556	5,353	8,909	496,405,998	55,720
15 & Up	35,471	47,644	83,115	5,178,951,722	62,311
<b>Totals</b>	<b>96,513</b>	<b>158,740</b>	<b>255,253</b>	<b>\$12,443,742,601</b>	<b>\$48,751</b>

Average

Age	45.7	45.7	45.7
Service	12.7	11.3	11.8



## COMPARATIVE STATEMENT OF ACTIVE PARTICIPANTS IN VALUATIONS

Valuation 12/31	General				Executive and Elected			
	No.	Earnings			No.	Earnings		
		\$ Millions	Average	% Incr.		\$ Millions	Average	% Incr.
1988	183,498	\$ 4,362	\$ 23,770	4.2%	1,491	48	31,916	4.1%
1989	187,925	4,579	24,365	2.5%	1,492	50	33,450	4.8%
1990	196,101	4,948	25,234	3.6%	1,502	63	35,193	5.2%
1991	202,048	5,357	26,517	5.1%	1,496	56	37,535	6.7%
1992	207,882	5,747	27,643	4.2%	1,463	58	39,598	5.5%
1993	210,627	6,084	28,886	4.5%	1,452	60	41,476	4.7%
1994	214,280	6,342	29,595	2.5%	1,450	63	43,528	4.9%
1995	216,434	6,597	30,479	3.0%	1,475	67	45,135	3.7%
1996	219,265	6,832	31,160	2.2%	1,459	67	45,967	1.8%
1997	222,888	7,128	31,980	2.6%	1,455	71	48,881	6.3%
1998	227,017	7,457	32,847	2.7%	1,450	73	50,664	3.6%
1999*	229,657	7,704	34,445	4.9%	1,468	77	53,263	5.1%
2000	234,076	8,335	35,610	3.4%	1,486	83	55,582	4.4%
2001	238,944	8,746	36,605	2.8%	1,486	85	57,060	2.7%
2002	240,990	9,007	37,377	2.1%	1,476	87	58,865	3.2%
2003	239,696	9,273	38,686	3.5%	1,468	86	58,336	-0.9%
2004	238,943	9,501	39,764	2.8%	1,469	89	60,379	3.5%
2005	237,501	9,661	40,678	2.3%	1,452	90	61,788	2.3%
2006	236,877	9,933	41,935	3.1%	1,436	93	64,480	4.4%
2007	237,124	10,278	43,344	3.4%	1,427	95	66,320	2.9%
2008**	238,994	10,806	45,216	4.3%	1,430	101	70,316	6.0%
2009	240,401	11,098	46,165	2.1%	1,427	101	70,786	0.7%
2010	239,959	11,195	46,655	1.1%	1,418	101	71,394	0.9%
2011	232,518	10,947	47,080	0.9%	1,393	99	70,802	- 0.8%
2012	231,765	11,041	47,639	1.2%	1,408	104	73,968	4.5%

\* After change in method of calculating average pay.

\*\* Some groups had a 27 period payroll during 2008.

## COMPARATIVE STATEMENT OF ACTIVE PARTICIPANTS IN VALUATIONS

Valuation 12/31	Protective With Social Security				Protective Without Social Security			
	No.	Earnings			No.	Earnings		
		\$ Millions	Average	% Incr.		\$ Millions	Average	% Incr.
1988	10,392	\$ 286	\$ 27,560	2.7%	2,607	83	31,671	3.8%
1989	10,551	300	28,414	3.1%	2,582	83	32,267	1.9%
1990	11,167	332	29,738	4.7%	2,603	88	33,806	4.8%
1991	11,666	357	30,606	2.9%	2,585	92	35,650	5.5%
1992	12,160	390	32,049	4.7%	2,622	100	38,007	6.6%
1993	12,388	408	32,928	2.7%	2,611	103	39,371	3.6%
1994	12,825	436	34,005	3.3%	2,612	106	40,633	3.2%
1995	13,434	467	34,747	2.2%	2,630	112	42,478	4.5%
1996	13,820	495	35,807	3.1%	2,625	116	44,063	3.7%
1997	14,232	536	37,625	5.1%	2,654	121	45,568	3.4%
1998	14,810	570	38,509	2.3%	2,658	127	47,733	4.8%
1999*	16,483	649	39,864	3.5%	2,691	131	48,947	2.5%
2000	16,970	717	42,263	6.0%	2,685	135	50,423	3.0%
2001	17,981	772	42,914	1.5%	2,715	142	52,339	3.8%
2002	18,325	804	43,871	2.2%	2,709	148	54,603	4.3%
2003	18,660	856	45,891	4.6%	2,714	154	56,673	3.8%
2004	18,964	896	47,266	3.0%	2,709	159	58,546	3.3%
2005	19,036	920	48,330	2.3%	2,689	162	60,241	2.9%
2006	19,297	977	50,622	4.7%	2,692	167	62,153	3.2%
2007	19,757	1,036	52,419	3.5%	2,695	174	64,449	3.7%
2008**	20,038	1,099	54,859	4.7%	2,724	181	66,502	3.2%
2009	20,205	1,124	55,636	1.4%	2,733	189	69,149	4.0%
2010	20,019	1,125	56,184	1.0%	2,754	189	68,559	-0.9%
2011	19,610	1,119	57,065	1.6%	2,711	189	69,898	2.0%
2012	19,353	1,105	57,104	0.1%	2,727	193	70,949	1.5%

\* After change in method of calculating average pay.

\*\* Some groups had a 27 period payroll during 2008.

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**SECTION F**

**FINANCIAL REPORTING**

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## SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

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Valuation Date	December 31, 2012
Actuarial Cost Method	Frozen Entry Age
Amortization Method	Level Percent -- Closed Period
Amortization Period	30 Year closed from date of participation in WRS
Asset Valuation Method	5-Year Smoothed Market (Closed)
Actuarial Assumptions	
Net Investment Rate of Return	5.5%
Weighted based on assumed rate for:	
Retired participants	5.0%
Post-retirement active participants	5.0%
Pre-retirement active participants	7.2%
Projected Salary Increases*	3.3% to 8.8%
Payroll Growth Rate	3.2%
Population Growth Rate	0.0%

\* Includes merit and seniority increases that vary by service plus wage inflation of 3.2%/year.

## STATEMENT OF NET PLAN ASSETS (\$ THOUSANDS)

	2012	2011
Assets		
Cash and Cash Equivalents	\$ 3,375,378	\$ 2,144,106
Securities Lending Collateral	1,243,643	1,104,863
Prepaid Expenses	23,947	22,072
Total Short Term Assets	4,642,968	3,271,041
Receivables		
Contributions	129,209	136,288
Prior Service Contributions	69,723	115,225
Benefits Overpayment	3,272	3,656
Due from other Trust Funds	5,462	5,850
Miscellaneous	2,160	1,718
Interest and Dividends	238,681	223,267
Investment Sales	408,823	120,144
Total Receivables	857,330	606,148
Investments at Fair Value		
Fixed Income	24,984,157	22,086,357
Financial Futures Contracts	8,548	(14,366)
Preferred Securities	146,332	118,760
Convertible Securities	45,831	73,807
Stocks	43,097,203	41,739,937
Options	(930)	(665)
Limited Partnerships	9,692,096	8,963,592
Real Estate	618,926	462,809
Foreign Currency Contracts	(11,569)	7,837
Multi Asset Investments	2,942,024	1,676,804
Total Investments	81,522,618	75,114,872
Capital Assets	2,791	2,066
<b>Total Assets</b>	<b>87,025,707</b>	<b>78,994,127</b>
Liabilities:		
Fixed Investment Due Other Programs	3,111,475	3,111,475
Variable Investment Due Other Programs	17,709	17,709
Obligation Under Reverse Repo Agreement	996,024	0
Short Sell Obligations	40,097	0
Securities Lending Collateral Liability	1,243,643	1,104,863
Collateral Due to Counterparty	1,340	0
Benefits Payable	287,236	292,300
Unearned Revenue	146	146
Due To Other Trust Funds	1,330	59
Miscellaneous Payables	107,723	107,443
Investment Payables	146,663	452,127
<b>Total Liabilities</b>	<b>5,953,386</b>	<b>5,086,122</b>
<b>Net Assets in Trust for Pension Benefits</b>	<b>\$81,072,321</b>	<b>\$73,908,005</b>

## STATEMENT OF CHANGES IN ASSETS (\$ THOUSANDS)

	Activity During Year	
	2012	2011
Additions:		
Contributions:		
Employer Contributions	\$ 799,350	\$ 749,920
Employee Contributions	757,151	797,856
Total Contributions	1,556,501	1,547,776
Investment Income:		
Net Appreciation (Depreciation) in Fair Value of Investments	8,151,500	(891,180)
Interest	682,029	669,575
Dividends	1,141,840	1,026,732
Securities Lending Income	26,836	21,920
Other	149,407	116,757
Less		
Current Income Distributed	0	35,986
SWIB Investment Expense	290,608	241,413
Investment Income Distributed to Securities Lending Rebates and Fees	2,293	2,254
Net Investment Income	9,858,711	664,151
Interest on Prior Service Receivable	4,683	6,668
Miscellaneous Income	93,914	849
Total Additions	11,513,809	2,219,444
Deductions:		
Benefits and Refunds:		
Retirement, Disability, and Beneficiary	4,208,150	4,136,884
Separation Benefits	26,563	28,006
Total Benefits and Refunds	4,234,713	4,164,890
ETF Administrative Expenses	21,542	18,620
Other Expenses	93,236	0
Total Deductions	4,349,491	4,183,510
Net Increase (Decrease)	7,164,318	(1,964,066)
Net Assets Held in Trust:		
Beginning of Year	\$73,908,005	\$75,872,072
<b>End of Year</b>	<b>\$81,072,322</b>	<b>\$73,908,005</b>

**SCHEDULE OF FUNDING PROGRESS & ACCRUED LIABILITIES**  
**\$ MILLIONS**

<b>Valuation Date Dec. 31</b>	<b>Actuarial Value of Assets (a)</b>	<b>Actuarial Accrued Liability (AAL) Frozen Entry Age (b)</b>	<b>Unfunded AAL (UAAL) (b) - (a)</b>	<b>Funded Ratio** (a)/(b)</b>	<b>Covered Payroll (c)</b>	<b>UAAL as a Percent of Covered Payroll [(b) - (a)] / (c)</b>
2000	\$ 51,824.6	\$ 53,993.6	\$ 2,169.0	96.0 %	\$ 9,322.5	23.3 %
2001	58,024.3	60,134.7	2,110.4	96.5 %	9,917.7	21.3 %
2002	57,861.9	59,618.8	1,756.9	97.1 %	10,126.6	17.4 %
2003*	62,685.3	63,211.7	526.4	99.2 %	10,502.4	5.0 %
2004	66,209.4	66,622.3	412.9	99.4 %	10,897.6	3.8 %
2005	68,615.1	68,987.5	372.5	99.5 %	10,973.4	3.4 %
2006	73,415.3	73,735.8	320.5	99.6 %	11,308.2	2.8 %
2007	79,791.9	80,079.7	287.8	99.6 %	11,720.2	2.5 %
2008	77,159.4	77,412.0	252.6	99.7 %	12,289.6	2.1 %
2009	78,911.3	79,104.6	193.3	99.8 %	12,622.2	1.5 %
2010	80,626.9	80,758.8	131.9	99.8 %	12,744.0	1.0 %
2011	78,940.0	79,039.3	99.3	99.9 %	12,855.6	0.8 %
2012	78,613.0	78,682.7	69.7	99.9 %	12,627.6	0.6 %

\*Affected by prepayment of UAAL in connection with Pension Obligation Bond issued by the state and various local government employers.

\*\*The funded ratios shown above are based on the statutory Frozen Initial Liability Valuation Method and are not suitable for comparison with Plans using other valuation methods.

## SOLVENCY TEST (\$MILLIONS)

Valuation Date Dec. 31	Valuation Assets	Accrued Liability for				Percent Funded for			
		Annuitants and Beneficiaries	Member Contribs.	Active & Inactive Members	Total	Annuitants and Beneficiaries	Participant Contributions	Active & Inactive Members	Total
1999	\$49,403.7	\$21,290.7	\$12,769.6	\$17,489.2	\$51,549.5	100.0%	100.0%	87.7%	95.8%
2000	51,824.6	22,918.0	12,869.7	18,205.9	53,993.6	100.0%	100.0%	88.1%	96.0%
2001	58,024.3	25,881.5	14,275.3	19,977.9	60,134.7	100.0%	100.0%	89.4%	96.5%
2002	57,861.9	26,041.7	14,022.9	19,554.2	59,618.8	100.0%	100.0%	91.0%	97.1%
2003	62,685.3	28,707.8	14,503.1	20,000.8	63,211.7	100.0%	100.0%	97.4%	99.2%
2004	66,209.4	30,829.9	15,050.3	20,742.1	66,622.3	100.0%	100.0%	98.0%	99.4%
2005	68,615.1	32,668.0	15,155.3	21,164.2	68,987.5	100.0%	100.0%	98.2%	99.5%
2006	73,415.3	35,774.7	15,902.4	22,058.7	73,735.8	100.0%	100.0%	98.5%	99.6%
2007	79,791.9	39,675.1	16,795.4	23,609.2	80,079.7	100.0%	100.0%	98.8%	99.6%
2008	77,159.4	38,372.6	16,045.3	22,994.1	77,412.0	100.0%	100.0%	98.9%	99.7%
2009	78,911.3	39,734.2	16,156.6	23,213.8	79,104.6	100.0%	100.0%	99.2%	99.8%
2010	80,626.9	41,139.0	16,253.6	23,366.2	80,758.8	100.0%	100.0%	99.4%	99.8%
2011	78,940.0	43,609.4	14,434.4	20,995.5	79,039.3	100.0%	100.0%	99.5%	99.9%
2012	78,613.0	44,055.5	14,401.1	20,226.1	78,682.7	100.0%	100.0%	99.7%	99.9%

## CONTRIBUTIONS REQUIRED AND CONTRIBUTIONS MADE

Year Ended December 31	Annual Required Contribution	Percent Contributed *
1999	\$435.2	100.0%
2000	422.1	96.3%
2001	412.9	99.6%
2002	426.9	99.8%
2003	462.7	334.0%
2004	497.6	121.0%
2005	535.6	108.0%
2006	569.0	104.0%
2007	614.0	105.0%
2008	644.8	105.0%
2009	699.3	108.0%
2010	686.7	108.0%
2011	784.1	104.0%
2012	826.1	100.0%

\* Includes additional UAAL payments when amount is greater than 100%.

Employers did not make the full actuarially required contribution for 2000 through 2002. In lieu of the full contribution, employers were allowed to recognize a credit due to a distribution from the TAA in accordance with the provisions of Act 11 of 1999.



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## **SECTION G**

### **METHODS AND ASSUMPTIONS**

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## ACTUARIAL VALUATION METHOD

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The actuarial funding method prescribed in the statute for WRS is the **Frozen Initial Liability Method**. Under this method, the amount of remaining unfunded actuarial accrued liabilities at any valuation date is affected only by the monthly amortization payments, compound interest, the added liability created by new employer units, and any added liabilities caused by changes in benefit provisions.

Actuarial gains or losses arising from the difference between actual and assumed experience are reflected in the determination of the normal cost. In this manner, experience gains or losses in any year are amortized (spread) over the average future working lifetime of the active participant group - a period of approximately 20 years. Hence, the computed normal cost is made up of two parts:

- The pure entry-age normal cost (EANC) determined without regard to past gains or losses, and;
- an experience amortization component.

Section 40.04(1) of the Wisconsin Statutes provides authority to maintain accounts and reserves determined to be “useful in achieving the funds’ purposes - - -”. A fundamental WRS objective is stable contribution rates. Accordingly, based on the authority granted under Section 40.04, the experience portion of the normal cost is separately calculated each year and the amortization period is varied upward or downward in order to minimize short-term rate fluctuations. The policy regarding the EAR amortization period is described below:

- The standard period is set 20 years.
- The standard period is reconsidered as part of each triennial experience study (no changes were made with the most recent experience study).
- Temporary interim changes in the period are made only when there are large, but mostly offsetting market gains and losses known to be flowing through the MRA that would otherwise result in contribution rate volatility. Large changes would be defined as those which, over a 2-year period, were expected to result in contribution rate changes of at least 0.4% of payroll.
- The minimum and maximum EAR amortization periods are 10 years and 30 years respectively.
- The amortization policy will be applied in the same manner to market gains and losses flowing through the MRA.
- For 2012, a 25 year period was used.
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## ASSET VALUATION METHOD

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An essential step in the valuation process is comparing valuation assets with computed liabilities. Computed liabilities result from actuarial calculations involving the covered population, the benefits, and actuarial assumptions. Valuation assets are those assets that are recognized and available to fund the System's liabilities. WRS assets are invested in the Core Investment Trust, and in the Variable Investment Trust, both of which are managed by the State of Wisconsin Investment Board (SWIB). Assets in the Variable Investment Trust are marked to market each year. Assets in the Core Investment Trust (most of the assets) are valued (or recognized) using an "asset valuation method."

Asset valuation methods are distinguished by the timing of the recognition of investment return. Total investment return is the sum of ordinary income and capital value changes. Under a book value approach, ordinary income is recognized immediately and capital gains (or losses) are recognized only when securities are sold. Book value investment return is directly affected by the timing of sales activity and underlying experience may be distorted. Under a pure market value approach, ordinary investment income and all capital value changes are recognized immediately. Because of market volatility, use of pure market values in retirement funding can result in volatile contribution rates and unstable financial ratios, contrary to WRS objectives.

The asset valuation method used for WRS valuations is statutory, and is referred to as the "Market Recognition Account" or MRA. Act 11 of 1999 closed the former Transaction Amortization Account (TAA) and created the Market Recognition Account (MRA). The MRA recognizes assumed returns fully each year. Differences between actual and assumed returns are phased in over a closed 5-year period. The objective is to give recognition to long-term changes in asset values while minimizing the effect of short-term fluctuations in the capital markets. In accordance with its smoothing objective, the MRA will tend to exceed the market value when the markets are doing poorly, and will fall short of the market value when markets are doing well. Some retirement systems set limits on the amount by which the recognized value of assets can differ from the market value.

**SUMMARY OF ASSUMPTIONS  
USED FOR ANNUAL ACTUARIAL VALUATIONS  
ASSUMPTIONS ADOPTED BY ETF BOARD AFTER  
CONSULTING WITH ACTUARY**

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**ECONOMIC ASSUMPTIONS**

For determining plan liabilities, the discount rate is 5.0% for retired participants, 5.0% for active and inactive participants following retirement, and 7.2% for active participants prior to their retirement. A valuation performed assuming 5.5% discount rate for all participants at all stages of life, reproduces the results of an actuarial valuation using the 5% post-retirement and 7.2% pre-retirement assumptions. Thus, it can be said that **the net discount rate assumed in the valuations was 5.5% per year, compounded annually (net after administrative expenses).**

The **Wage Inflation Rate** assumed in this valuation was 3.20% per year. The wage inflation rate is defined to be the portion of total pay increases for an individual that are due to macro economic forces including productivity, price inflation, and labor market conditions. The wage inflation rate does not include pay changes rated to individual merit and seniority effects.

No specific **Price Inflation** assumption is required to perform this valuation, since there are no benefits that are linked to price increases. However, a price inflation assumption on the order of 2.0% to 2.7% would be consistent with the other economic assumptions.

The assumed **Real Rate of Return** over wage inflation is defined to be the portion of total investment return that is more than the assumed total wage growth rate. Considering other economic assumptions, the 7.2% pre-retirement investment return rate translates to an assumed real rate of return over wage inflation of 4.0%. The assumed real rate of return over price inflation would be higher – on the order of 4.5% to 5.2%, considering both an inflation assumption and an average expense provision.

**Pay increase assumptions** for individual active members are shown for sample services below. Part of the assumption for each age is for merit and/or seniority increase, and the other 3.2% recognizes wage inflation, including price inflation, productivity increases, and other macro economic forces.

% Merit and Longevity Increase Next Year						
Service	Gen.	University Teachers	Public School Teachers	Protective		Exec. & Elec.
				With S.S.	w/o S.S.	
1	3.5 %	3.2 %	5.8 %	4.8 %	5.5 %	2.0 %
2	3.5 %	3.2 %	5.8 %	4.8 %	5.5 %	2.0 %
3	3.1 %	3.1 %	5.4 %	4.1 %	4.7 %	2.0 %
4	2.8 %	3.0 %	5.1 %	3.5 %	3.8 %	1.9 %
5	2.5 %	2.9 %	4.7 %	2.8 %	3.0 %	1.9 %
10	1.5 %	2.4 %	3.2 %	1.1 %	0.9 %	1.6 %
15	1.1 %	1.7 %	1.8 %	0.8 %	0.5 %	1.2 %
20	0.9 %	1.1 %	0.8 %	0.7 %	0.4 %	0.7 %
25	0.6 %	0.8 %	0.4 %	0.6 %	0.3 %	0.4 %
30	0.4 %	0.6 %	0.2 %	0.5 %	0.2 %	0.3 %

## DECREMENT PROBABILITIES

The Active Member Population is assumed to remain constant. For purposes of financing the unfunded liabilities and amortizing the EAR, total payroll is assumed to grow at the wage inflation rate – 3.20% per year.

The mortality table used to measure mortality for retired participants was the Wisconsin 2012 Mortality Table, as adopted by the Board in connection with the 2009-2011 Experience Study. The rates in this table were based on actual WRS experience projected to 2017 with scale BB to allow for future improvements (margin) in mortality. Sample retirement values from this table are shown below. This assumption is used to measure the probabilities of participants dying before retirement and the probabilities of each benefit payment being made after retirement.

### Single Life Retirement Values Wisconsin 2012 Mortality Table with 5% Interest

Sample Attained Ages	Present Value of \$1 Monthly for Life		Future Life Expectancy (years)	
	Males	Females	Males	Females
40	\$209.20	\$214.70	42.9	46.1
45	200.43	207.06	38.1	41.3
50	189.60	197.69	33.3	36.5
55	176.75	186.37	28.7	31.8
60	162.35	172.92	24.4	27.2
65	145.13	156.75	20.1	22.7
70	125.71	137.76	16.1	18.4
75	104.34	116.43	12.4	14.3
80	82.05	93.57	9.0	10.7
85	61.28	70.89	6.3	7.6

The values shown above are for non-disabled participants. For disabled participants, the following table was used:

Sample Attained Ages	Present Value of \$1 Monthly for Life		Future Life Expectancy (years)	
	Males	Females	Males	Females
40	\$195.27	\$204.53	35.7	39.9
45	183.23	194.56	30.9	35.1
50	169.52	182.61	26.4	30.4
55	153.66	168.39	22.1	25.8
60	135.14	151.44	18.0	21.4
65	114.76	131.73	14.1	17.2
70	92.83	109.91	10.6	13.2
75	71.03	86.92	7.6	9.7
80	52.06	64.92	5.2	6.8
85	36.73	47.23	3.5	4.7

## ACTIVE PARTICIPANT MORTALITY RATES

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Sample Attained Ages	Mortality Rates	
	Males	Females
20	0.000155	0.000089
25	0.000184	0.000097
30	0.000229	0.000129
35	0.000398	0.000230
40	0.000540	0.000329
45	0.000717	0.000519
50	0.000966	0.000765
55	0.002228	0.001345
60	0.003147	0.001935
65	0.004814	0.002974
70	0.007979	0.005057
75	0.013576	0.009155
80	0.024949	0.017103

This assumption is used to measure the probability of participants dying while in service.

# RATES OF RETIREMENT FOR THOSE ELIGIBLE TO RETIRE

## Normal Retirement

Age	General		Public School		University		Protective*		Exec. & Elected
	Male	Female	Male	Female	Male	Female	With S.S.	W/O S.S.	
50							6%	4%	
51							7%	4%	
52							8%	5%	
53							23%	17%	
54							18%	25%	
55							17%	21%	
56							16%	27%	
57	20%	17%	40%	27%	13%	14%	16%	30%	15%
58	20%	17%	35%	27%	13%	14%	16%	30%	15%
59	20%	17%	25%	27%	13%	13%	16%	30%	15%
60	20%	20%	28%	27%	13%	13%	18%	26%	10%
61	20%	20%	25%	27%	13%	19%	18%	15%	13%
62	27%	27%	36%	34%	15%	19%	22%	20%	13%
63	32%	28%	32%	27%	15%	19%	29%	40%	12%
64	24%	25%	24%	23%	15%	18%	16%	40%	12%
65	24%	25%	24%	28%	15%	22%	30%	40%	12%
66	30%	29%	25%	30%	20%	23%	20%	40%	20%
67	24%	20%	24%	28%	18%	17%	15%	40%	17%
68	17%	18%	24%	26%	18%	17%	25%	40%	15%
69	17%	18%	24%	20%	18%	17%	20%	40%	15%
70	17%	18%	20%	20%	20%	20%	100%	100%	13%
71	17%	18%	20%	20%	20%	20%	100%	100%	13%
72	17%	15%	20%	20%	15%	20%	100%	100%	25%
73	17%	15%	20%	20%	15%	20%	100%	100%	10%
74	17%	15%	20%	20%	15%	20%	100%	100%	10%
75	100%	100%	100%	100%	100%	100%	100%	100%	100%

\* Includes early retirements.

## Early Retirement

Age	% Retiring Next Year							Exec. & Elected
	General		Public School		University			
	Male	Female	Male	Female	Male	Female		
55	8.0%	6.1%	12.0%	11.0%	4.8%	5.5%	4.5%	
56	8.0%	6.4%	12.0%	11.0%	3.0%	5.5%	4.5%	
57	4.3%	4.2%	12.0%	11.0%	2.0%	4.0%	4.5%	
58	5.3%	5.5%	12.0%	11.0%	2.5%	4.0%	4.5%	
59	5.5%	5.3%	12.0%	11.0%	4.0%	6.5%	4.5%	
60	7.5%	8.1%	12.0%	15.0%	4.0%	6.5%	4.5%	
61	8.0%	7.0%	12.0%	15.0%	7.5%	7.5%	4.5%	
62	14.0%	15.0%	20.0%	20.0%	7.0%	10.0%		
63	16.0%	15.0%	20.0%	20.0%	7.5%	10.0%		
64	17.0%	15.0%	20.0%	20.0%	8.0%	13.0%		

The assumed rates of separation from employment prior to service retirement due to disability and other causes are shown below for sample ages. For other terminations it was assumed that a percentage depending on age of participants terminating after age 35 with 5 or more years service will leave their contributions on deposit and be paid a benefit at normal retirement age and that the remaining participants would take a separation benefit. The percentage taking a separation benefit is 25% at age 35, grading downward to 0% at retirement eligibility. All participants terminating prior to normal retirement age with less than 5 years of service were assumed to take a separation benefit.

**Assumed Termination Rates  
by Attained Age and Years of Service**

Age	Service	% of Active Participants Terminating								
		Protective		Public Schools		University		Exec. & Elected	General	
		With Soc. Sec.	Without Soc. Sec.	Males	Females	Males	Females		Males	Females
	0	15.0%	4.0%	17.7%	15.0%	18.3%	22.0%	20.0%	17.5%	19.5%
	1	7.0%	3.5%	11.4%	10.5%	15.0%	15.0%	14.0%	13.0%	13.5%
	2	4.3%	2.1%	7.3%	7.1%	11.3%	12.5%	14.0%	8.5%	10.0%
	3	3.8%	1.3%	5.2%	5.5%	9.6%	10.0%	10.0%	6.8%	8.0%
	4	3.4%	1.2%	3.9%	4.6%	8.5%	9.5%	10.0%	6.0%	7.4%
	5	2.6%	1.1%	3.0%	4.0%	7.5%	8.0%	9.0%	4.5%	6.0%
	6	2.5%	1.0%	2.8%	3.5%	7.0%	7.0%	8.5%	4.0%	5.0%
	7	2.3%	0.9%	2.5%	3.0%	5.5%	6.0%	8.0%	3.5%	4.5%
	8	2.0%	0.8%	2.0%	2.5%	4.3%	5.0%	7.5%	3.0%	4.0%
	9	1.7%	0.7%	1.8%	2.3%	3.2%	4.0%	7.0%	2.5%	3.8%
25	10 & Over	1.7%	0.7%	1.8%	2.2%	3.2%	5.0%	6.0%	2.5%	3.8%
30		1.6%	0.7%	1.4%	1.9%	3.2%	4.5%	5.1%	2.5%	3.3%
35		1.4%	0.7%	1.2%	1.4%	3.1%	4.0%	4.2%	2.1%	2.8%
40		1.2%	0.6%	1.1%	1.1%	2.7%	3.4%	3.7%	1.6%	2.2%
45		1.1%	0.6%	1.0%	0.9%	2.1%	2.6%	3.3%	1.3%	1.8%
50		1.0%	0.5%	1.0%	0.9%	1.6%	1.8%	3.1%	1.1%	1.6%
55		1.0%	0.5%	1.0%	0.9%	1.4%	1.5%	3.0%	1.1%	1.5%
60		1.0%	0.5%	1.0%	0.9%	1.4%	1.5%	3.0%	1.1%	1.5%

**Disability Rates**

Age	% of Active Participants Becoming Disabled									
	Protective		Public Schools		University		Exec. & Elected		General	
	With SS	WO SS	Males	Females	Males	Females	Males	Females	Males	Females
20	0.01%	0.04%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.01%	0.01%
25	0.01%	0.04%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.01%	0.01%
30	0.01%	0.04%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.01%	0.03%
35	0.02%	0.04%	0.01%	0.01%	0.01%	0.03%	0.01%	0.01%	0.01%	0.04%
40	0.03%	0.07%	0.02%	0.02%	0.01%	0.04%	0.01%	0.01%	0.04%	0.05%
45	0.05%	0.13%	0.04%	0.06%	0.02%	0.04%	0.01%	0.01%	0.07%	0.07%
50	0.08%	0.74%	0.11%	0.12%	0.04%	0.07%	0.02%	0.02%	0.15%	0.11%
55	1.21%	0.54%	0.21%	0.17%	0.11%	0.10%	0.09%	0.09%	0.29%	0.20%
60	2.04%	0.16%	0.34%	0.25%	0.14%	0.15%	0.11%	0.11%	0.51%	0.29%



## MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

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<b>Expenses:</b>	Assumed investment return is net of administrative and investment expenses.
<b>Marriage Assumption:</b>	80% of males and 70% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
<b>Pay Increase Timing:</b>	Beginning of (calendar) year for most people. Middle of calendar year for teachers.
<b>Pay Annualization:</b>	Reported pay for members with less than twelve contributing months was annualized by the ratio of 12 to the number of contributing months in the year.
<b>Final Average Salary:</b>	For present value of future benefit purposes, final average salary was calculated in accordance with pay increase assumptions, but was not permitted to fall below the final average salary reported in the data.
<b>Decrement Timing:</b>	Decrements of all types are assumed to occur mid-year.
<b>Decrement Operation:</b>	Disability and Turnover operate during the retirement pattern.
<b>Decrement Relativity:</b>	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
<b>Eligibility Testing:</b>	Eligibility for benefits is determined based upon the age nearest birthday and total service (in all benefit groups) nearest whole year on the date the decrement is assumed to occur.
<b>Benefit Service:</b>	Exact fractional service on the decrement date is used to determine the amount of benefit payable.
<b>Non-Benefit Service:</b>	Liabilities for service in divisions other than the division in which the individual is currently active are calculated as indexed deferred vested benefits. Benefits are indexed in accordance with the salary adjustment factors for the division where the member was formerly employed. People are assumed to retire at the earliest age that full benefits will become available. The liabilities are assigned to the division in which the service was rendered.
<b>Service Credit Accruals:</b>	It is assumed that members accrue one year of service credit per year.

## MISCELLANEOUS AND TECHNICAL ASSUMPTIONS (CONCLUDED)

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<b>Incidence of Contributions:</b>	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
<b>Assumed Retirement for Deferred Members</b>	Members with a deferred vested benefit were assumed to retire at age 65 for General members, age 54 for Protective members and age 62 for Executive and Elected members.
<b>Normal Form of Benefit:</b>	The assumed normal form of benefit is a straight life benefit, except where otherwise noted.
<b>Disability Valuation:</b>	<p>The Post-10/15/92 Disability benefit consists of one benefit payable to age 65 (10% of FAE) plus another benefit payable on and after age 65 (WRS benefit accrued to date of disability plus 7% of FAE during disability). For valuation purposes, the 7% of FAE portion of the post 65 benefit was added to the 40% of FAE benefit prior to age 65.</p> <p>Additionally, there are certain cases in which the disability benefit at the member's normal retirement age is larger than the member's benefit under the normal retirement benefit formula. To account for this, an adjustment is made to the member's normal retirement benefit present value calculation which is equal to 15% of the difference between the present values of the LTDI benefit and the normal retirement benefit.</p>
<b>Variable Excess Benefits:</b>	These benefits are valued by increasing the otherwise calculated liabilities by an amount equal to twice the value of the variable excess. (The variable excess is the difference between the variable account and the variable at core account, summed over all participants.)
<b>Liability Adjustments:</b>	Final Average Salaries were increased 2.5% (3.0% for Executive and Elected and 3.5% for Protectives) to account for additional contingencies in actual benefit amount calculated at the time of retirement.
<b>Amortization Payoff Reserve:</b>	Additional reserves in the amount of \$61,341,176 (discounted from the year 2029 to the current valuation date) were added to general group liabilities to account for the possibility that some non-state employers may never be able to pay off their unfunded actuarial accrued liability.

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**SECTION H**  
**PLAN PROVISIONS**

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**SUMMARY OF BENEFIT PROVISIONS EVALUATED  
DECEMBER 31, 2012 ACTUARIAL VALUATION**

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**Normal Retirement Eligibility**

The age a participant becomes eligible for an unreduced age and service annuity is:

General		Protective		Executive & Elected	
Age	Service	Age	Service	Age	Service
65	Any*	54	Any*	62	Any*
57	30	53	25	57	30

\* Participants first employed after 1989 and terminated before April 24, 1998 must have creditable service in 5 calendar years.

**Normal Retirement Annuity**

The age and service annuity payable at Normal Retirement Age is based on Final Average Earnings (FAE) and Creditable Service (CS) as follows:

Multiplier for Service Rendered			Group
Before 2000	Between 2000 and 2011	After 2011	
2.165%	2.0%	1.6%	Executive group and elected officials
2.165%	2.0%	2.0%	Protective occupation participants covered by Social Security
2.665%	2.5%	2.5%	Protective occupation participants not covered by Social Security
1.765%	1.6%	1.6%	All other participants

FAE is generally the average of the 3 highest years of earnings (July 1 - June 30 for teachers, educational support staff, and judges; calendar year for others) preceding retirement. These years do not have to be consecutive. For legislators and state constitutional officers who are ineligible to receive pay increases during their term, FAE is the statutory rate of earnings at termination.

Maximum formula annuity is 85% of FAE for protective occupation participants not covered by Social Security, 65% of FAE for protectives covered by Social Security, and 70% for all other participants. If greater than the formula amount, an annuity equal to the actuarial equivalent of two times the required accumulated contributions is paid in lieu of the formula amount.

**Early Retirement.** Any participant who has attained age 55 and any Protective occupation participant who has attained age 50 may apply for an early retirement annuity. The benefit is reduced 0.4% for each month that the annuity effective date precedes the Normal Retirement Age. For Non-Protective participants terminating after 6/30/90, the 0.4% is reduced for months after the attainment of age 57 and before the annuity effective date by .001111% for each month of creditable service.

**Voluntary Termination Before Immediate Benefit Eligibility.** Participant may either (i) receive a refund of accumulated contributions, or (ii) leave contributions on deposit and apply for a retirement annuity on or after the minimum retirement age based upon age and accrued service at time of termination.

**Post-Retirement Adjustments.** Annuities are increased annually if the investment income credited to retired life funds is in excess of the assumed benefit rate (presently 5%), other plan experiences are within projected ranges, and the resulting adjustment would be at least 0.5%.

**Disability Annuity.** Eligibility: generally total and permanent incapacity to engage in gainful employment. Participant must have completed at least 6 months of creditable service (in at least 5 out of the last 7 calendar years) preceding application for disability. Service requirement is waived if disability is from service-related causes.

For protective occupations, eligibility also can be met if a member has 15 years of service, is between the ages of 50 and 55 and unable to safely and efficiently perform one's duties.

**Disability Amounts.** Amounts payable in case of disability depend upon the plan from which payment is made and are described below.

	<b>Pre-10/16/92 WRS Plan</b>	<b>Post-10/15/92 LTDI Plan</b>
<b>Participants covered</b>	Participants hired before 10/16/92 who do not elect LTDI coverage.	Participants entering after 10/15/92 and participants on 10/15/92 who elect LTDI coverage.
<b>Benefit to age 65*</b>	WRS formula benefit based on service projected to normal retirement age.	40% of FAE for participants covered by Social Security; 50% of FAE for non-covered participants who cannot qualify for Social Security disability benefits.
<b>Benefit at age 65*</b>	Continuation of pre-65 amount.	WRS benefit accrued to date of disability plus 7% of FAE money purchase benefit during disability period, both of which are adjusted in accordance with dividend rate.

\* Conversion age is later for participants becoming disabled after age 61.

**Death-in-Service.**

- (a) Prior to age 50 for Protective participants, age 55 for others, the benefit is the equivalent of twice the accumulated employee contributions required and all additional contributions and employer amounts contributed prior to 1974 for teachers, or 1966 for others.
- (b) After age 50 for Protective participants, age 55 for others, the benefit is the amount that would have been paid if participant had retired and elected 100% survivor option. Benefit is payable to any natural living person.

**Interest Credits.** For years after 1999, and for people with some active service after 1999, participant core accounts (including the variable at core accounts) are credited with interest at the full (core) effective rate. For others, accounts are credited with interest as follows:

<b>Date of Participation</b>	<b>Rate Credited For Purpose of</b>	
	<b>Money Purchase</b>	<b>Refunds</b>
	<b>Minimum</b>	
Prior to 1982	Actual	Actual
January 1, 1982 & Later	5%	3%

Participant variable accounts are credited with interest based on the earnings in the variable portfolio.

**Contribution Rates.** The financial objective of WRS is to establish and receive contributions that will remain level from year to year and decade to decade.

Statutory required participant contributions prior to July 1, 2011 were as follows:

General	5.0%
Executives & Elected Officials	5.5
Protectives	
- With Social Security	6.0
- Without Social Security	8.0

Statutory required participant contributions after July 1, 2011 are set equal to one-half of the actuarially determined rate for General participants and Executive and Elected Officials. Participant contributions for Protective participants are set equal to the participant contribution for General members.

**Normal Form of Benefit.** The normal form of benefit is a straight life annuity with no death benefits. Optional forms of benefit which are actuarially reduced are listed below:

- A life annuity with 60 or 180 monthly payments guaranteed.
- A joint survivorship annuity with 75% continued to beneficiary.
- A joint survivorship annuity with 100% continued to beneficiary.
- A joint survivorship annuity reduced 25% upon either your death or your beneficiary's death.
- A joint survivorship annuity with 100% continued to beneficiary combined with 180 monthly payments guaranteed.

For formula benefit calculations, optional forms are calculated at the lower of the current age or age 62 (Normal Retirement Age for Protective occupations).

**Vesting.** Participants hired prior to July 1, 2011 vest immediately. After July 1, 2011, participants vest after 5 years of service.

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## **APPENDIX 1**

### **GLOSSARY**

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## GLOSSARY

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**Actuarial Accrued Liability.** The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”

**Accrued Service.** The service credited under the plan which was rendered before the date of the actuarial valuation.

**Actuarial Assumptions.** Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

**Actuarial Cost Method.** A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

**Actuarial Equivalent.** A series of payments is called an actuarial equivalent of another series of payments if the two series have the same actuarial present value.

**Actuarial Present Value.** The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

**Amortization.** Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

**Experience Gain (Loss).** A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

## **GLOSSARY (CONCLUDED)**

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**Normal Cost.** The annual cost assumed, under the actuarial funding method, for current and subsequent plan years. Sometimes referred to as “current service cost”. Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

**Plan Termination Liability.** The actuarial present value of future plan benefits based on the assumption that there will be no future accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a “going-concern” basis and is not normally determined in a routine actuarial valuation.

**Reserve Account.** An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

**Unfunded Actuarial Accrued Liability.** The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”

**Valuation Assets.** The value of current plan assets recognized for valuation purposes. Generally based on book value plus a portion of unrealized appreciation or depreciation.

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**APPENDIX 2**  
**VALUATION PROCESS**

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## FINANCIAL PRINCIPLES & OPERATIONAL TECHNIQUES OF THE WISCONSIN RETIREMENT SYSTEM

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**Benefit Promises Made Which Must be Paid For.** A retirement program is an orderly means of handing out, keeping track of, and financing contingent retirement promises. As each participant of the Retirement System acquires a unit of service credit he is, in effect, handed an “IOU” which reads: “The Wisconsin Retirement System promises to pay you one unit of annuity benefits, payments in cash commencing when you retire.”

The principal related financial question is: *When shall the money required to cover the “IOU” be contributed?* This year, when the benefit of the participant’s unit of service is received? Or, some future year, when the “IOU” becomes a cash demand?

*The law governing the Wisconsin Retirement System financing intends that the money to cover an “IOU” is contributed in the year the “IOU” is handed out.* In this way contribution rates expressed as percents of participant payroll can be determined so as to remain approximately level from year to year and decade to decade as long as the basic experience and make-up of the group of participants does not change significantly. This means that for equivalent benefits each generation of Wisconsin taxpayers will contribute at approximately the same payroll rates.

Translated into actuarial terminology, the level percent-of-payroll contribution objective means that the contribution rate must total at least:

**Normal Cost** (the current discounted value of benefits likely to be paid on account of participants’ service rendered in the current year)

... plus ...

**Interest on Unfunded Actuarial Accrued Liabilities** (unfunded actuarial accrued liabilities are the difference between (i) the present value of future benefits and (ii) the present value of future normal costs, and reduced by the assets on hand at the valuation date).

If contributions to the system are less than the preceding amount, the difference, **plus investment earnings not realized thereon**, will have to be contributed at some later time, or benefits will have to be reduced, to satisfy the fundamental equation under which all retirement programs must operate; that is:

$$\mathbf{B = C + I - E}$$

Benefit payments to any group of participants and their beneficiaries cannot exceed

Contributions received on behalf of the group  
... plus ...  
Ivestment earnings on those contributions  
... minus ...  
Expenses incurred in operating the program.

There are retirement programs (Social Security is an example) designed to defer the bulk of contributions far into the future. The present contribution rate for such systems is artificially low, but is destined to increase relentlessly to a level which may be greatly in excess of the level percent-of-payroll rate.

A by-product of a level percent-of-payroll contribution objective is the accumulation of invested assets for varying periods of time. Investment income becomes the third and largest contributor to the retirement system and the amount is directly related to the amount of contributions and investment performance.

**Computing Contribution Rates To Finance Benefits.** From a given schedule of benefits and from the data furnished, the actuary calculates the contribution rates **by means of an actuarial valuation** - the technique of assigning monetary values to the risks assumed in operating a retirement program.

## ACTUARIAL METHOD AND ASSUMPTIONS USED IN VALUATIONS

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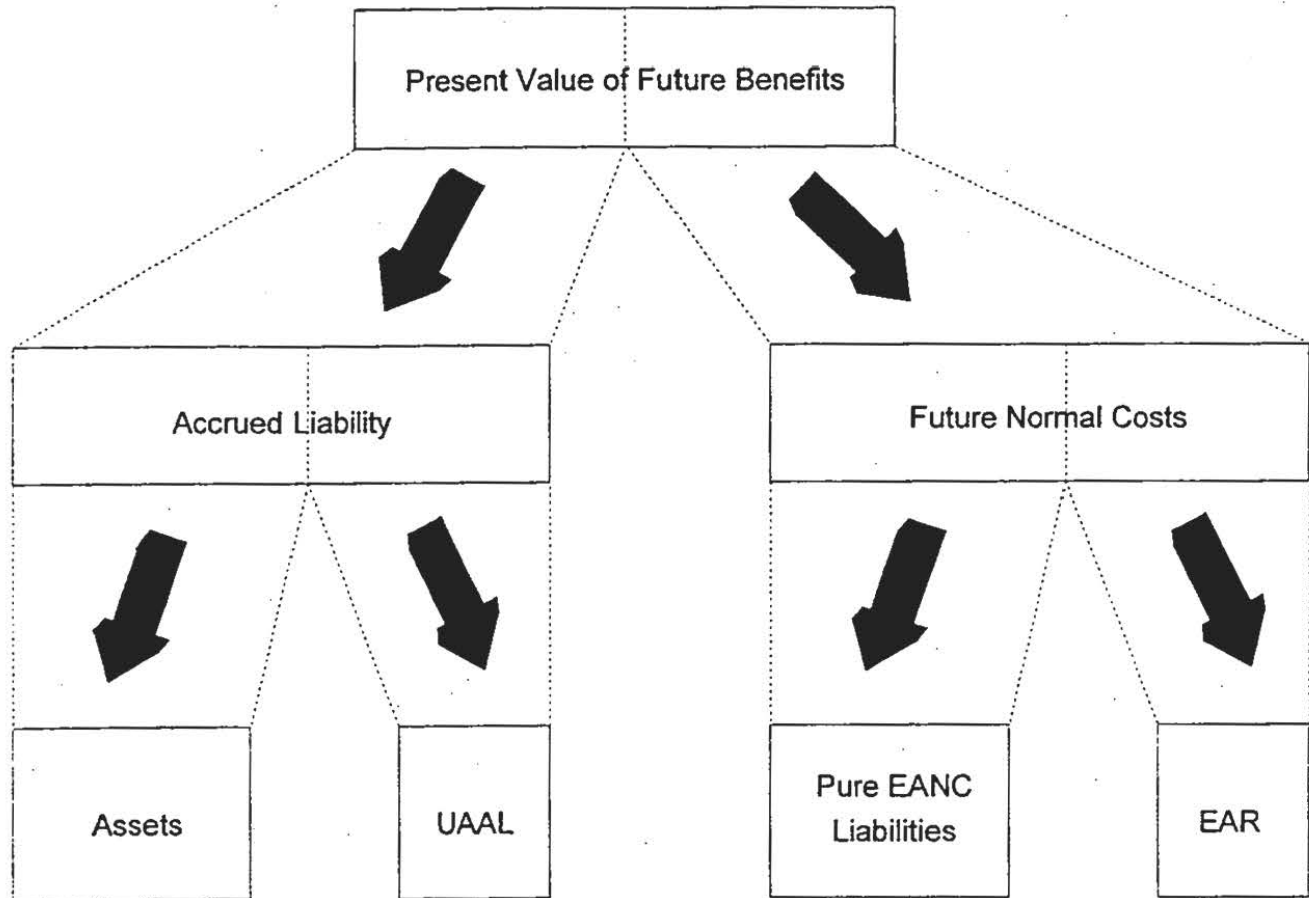
The principal areas of risk assumption are:

- long-term *rates of investment income* likely to be generated by system assets
- *rates of mortality* among participants, retirants and beneficiaries
- *rates of withdrawal* of active participants
- *rates of disability* among participants
- *patterns of salary increases* to be experienced by participants
- the age and service *distribution of actual retirements*

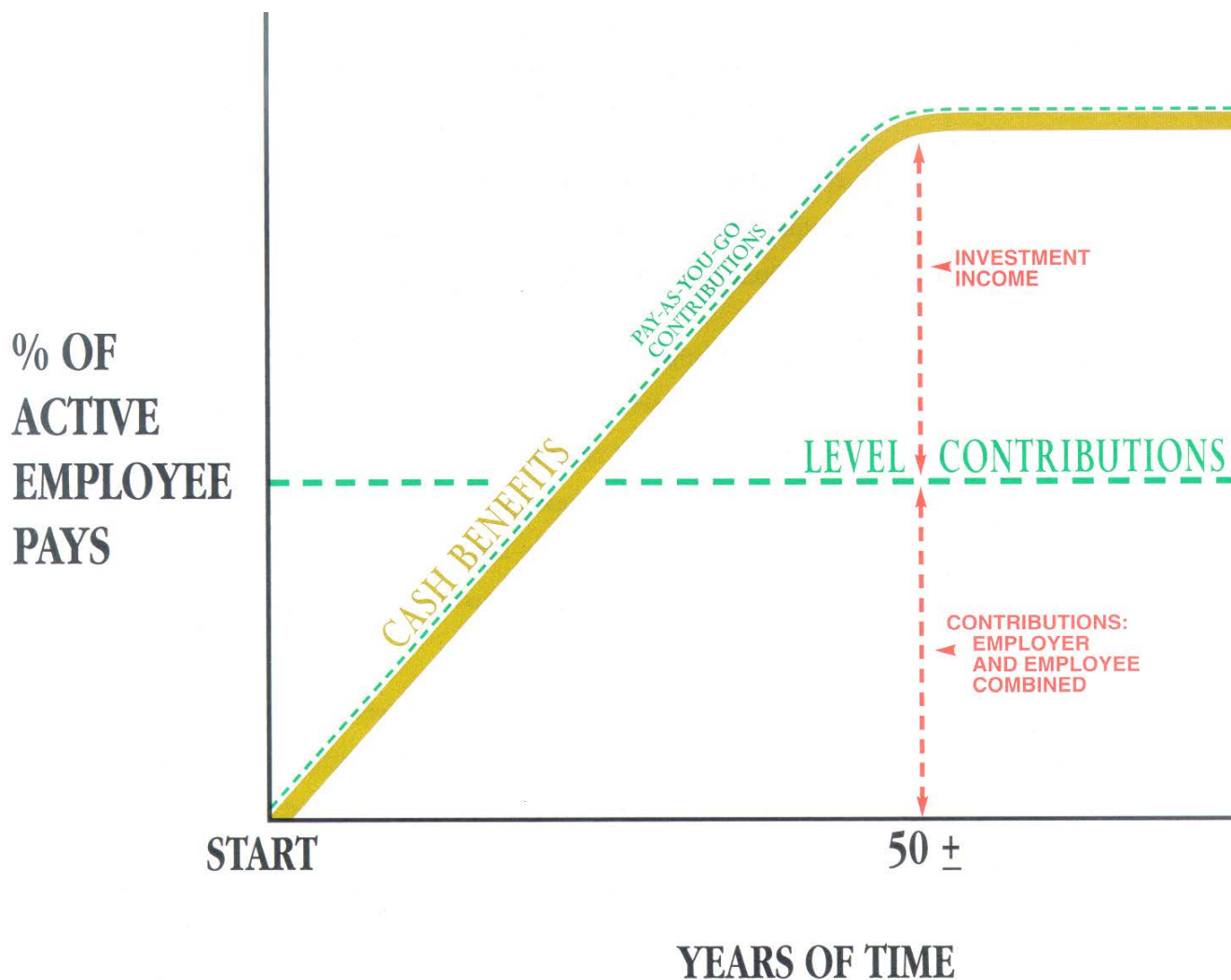
In an actuarial valuation, the actuary projects the monetary effect of each risk assumption for each distinct experience group, for the next year and for each year over the next half-century or longer.

Once actual risk experience has occurred and been observed, it will not coincide exactly with assumed risk experience, regardless of the skill of the actuary, the completeness of the data, and the precision of the calculations. Each valuation provides a complete recalculation of assumed future risk experience and takes into account all past differences between assumed and actual risk experience. The result is a continual series of small adjustments to the computed contribution rate. From time to time it becomes necessary to adjust the package of risk measurements to reflect basic experience trends -- but not random year-to-year fluctuations.

## The Actuarial Valuation Process



- UAAL:** Unfunded actuarial accrued liabilities are amortized over a fixed period of years.
  
- Pure EANC:** Entry age normal cost liabilities are financed over the working lifetimes of WRS participants.
  
- EAR:** The Experience Amortization Reserve portion of future normal costs is financed over varying periods which are selected to optimize contribution rate stability.



**CASH BENEFITS LINE.** This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

**LEVEL CONTRIBUTION LINE.** Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

Economic Risk Areas

- Rates of investment return
- Rates of pay increase
- Changes in active member group size

Non-Economic Risk Areas

- Ages at actual retirement
- Rates of mortality
- Rates of withdrawal of active members (turnover)
- Rates of disability



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## **APPENDIX 3**

### **GAIN/LOSS EXHIBITS**

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**GENERAL MALES  
WITHDRAWAL EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male Service-Based Withdrawals**

<b>Service Index</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
1	378	2,098	0.1802	0.1750	367
2	546	3,566	0.1531	0.1300	464
3	296	2,375	0.1246	0.0850	202
4	208	2,290	0.0908	0.0680	156
5	187	2,412	0.0775	0.0600	145
6	115	2,005	0.0574	0.0450	90
7	88	1,682	0.0523	0.0400	67
8	91	1,581	0.0576	0.0350	55
9	56	1,331	0.0421	0.0300	40
10	72	1,464	0.0492	0.0250	37
<b>Totals</b>	<b>2,037</b>	<b>20,804</b>	<b>0.0979</b>	<b>0.0780</b>	<b>1,623</b>

**Male Age-Based Withdrawals**

<b>Age</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
25-29	-	5	0.0000	0.0250	-
30-34	6	386	0.0155	0.0250	10
35-39	38	1,411	0.0269	0.0180	25
40-44	64	2,630	0.0243	0.0150	39
45-49	93	4,032	0.0231	0.0120	48
50-54	122	6,183	0.0197	0.0110	68
Over 54	135	11,070	0.0122		135
<b>Totals</b>	<b>458</b>	<b>25,717</b>	<b>0.0178</b>	<b>0.0126</b>	<b>325</b>

**GENERAL FEMALES  
WITHDRAWAL EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Female Service-Based Withdrawals**

<b>Service Index</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
1	880	4,777	0.1842	0.1950	932
2	1,190	7,815	0.1523	0.1350	1,055
3	682	5,624	0.1213	0.1000	562
4	537	5,389	0.0996	0.0800	431
5	442	5,112	0.0865	0.0740	378
6	320	4,378	0.0731	0.0600	263
7	251	3,905	0.0643	0.0500	195
8	198	3,646	0.0543	0.0450	164
9	186	3,501	0.0531	0.0400	140
10	157	3,480	0.0451	0.0375	131
Totals	4,843	47,627	0.1017	0.0893	4,251

**Female Age-Based Withdrawals**

<b>Age</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
25-29	2	21	0.0952	0.0375	1
30-34	32	615	0.0520	0.0300	18
35-39	70	2,113	0.0331	0.0260	55
40-44	113	3,579	0.0316	0.0200	72
45-49	140	5,901	0.0237	0.0170	100
50-54	202	9,282	0.0218	0.0150	139
Over 54	285	18,326	0.0156		285
Totals	844	39,837	0.0212	0.0168	670

**PUBLIC SCHOOLS MALES  
WITHDRAWAL EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male Service-Based Withdrawals**

<b>Service Index</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
1	76	591	0.1286	0.1770	105
2	99	1,084	0.0913	0.1140	124
3	76	779	0.0976	0.0730	57
4	43	770	0.0558	0.0520	40
5	41	792	0.0518	0.0390	31
6	43	814	0.0528	0.0300	24
7	33	764	0.0432	0.0280	21
8	25	821	0.0305	0.0250	21
9	23	766	0.0300	0.0200	15
10	22	770	0.0286	0.0180	14
Totals	481	7,951	0.0605	0.0568	452

**Male Age-Based Withdrawals**

<b>Age</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
25-29	-	-	N/A	0.0180	-
30-34	5	276	0.0181	0.0120	3
35-39	28	1,885	0.0149	0.0115	22
40-44	45	2,618	0.0172	0.0105	27
45-49	51	2,592	0.0197	0.0100	26
50-54	41	2,516	0.0163	0.0095	24
Over 54	21	3,263	0.0064		21
Totals	191	13,150	0.0145	0.0094	123

**PUBLIC SCHOOLS FEMALES  
WITHDRAWAL EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Female Service-Based Withdrawals**

<b>Service Index</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
1	195	1,798	0.1085	0.1500	270
2	249	2,850	0.0874	0.1050	299
3	211	2,384	0.0885	0.0710	169
4	171	2,420	0.0707	0.0550	133
5	156	2,598	0.0600	0.0460	120
6	143	2,532	0.0565	0.0400	101
7	97	2,424	0.0400	0.0350	85
8	91	2,346	0.0388	0.0300	70
9	85	2,277	0.0373	0.0250	57
10	75	2,279	0.0329	0.0230	52
<b>Totals</b>	<b>1,473</b>	<b>23,908</b>	<b>0.0616</b>	<b>0.0567</b>	<b>1,356</b>

**Female Age-Based Withdrawals**

<b>Age</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
25-29	-	-	N/A	0.0220	-
30-34	6	759	0.0079	0.0170	13
35-39	87	4,597	0.0189	0.0120	55
40-44	105	6,144	0.0171	0.0095	58
45-49	92	6,340	0.0145	0.0092	58
50-54	108	6,447	0.0168	0.0090	58
Over 54	102	9,038	0.0113		102
<b>Totals</b>	<b>500</b>	<b>33,325</b>	<b>0.0150</b>	<b>0.0103</b>	<b>344</b>

**UNIVERSITY MALES  
WITHDRAWAL EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male Service-Based Withdrawals**

<b>Service Index</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
1	72	373	0.1930	0.1830	68
2	110	635	0.1732	0.1500	95
3	92	614	0.1498	0.1130	69
4	70	503	0.1392	0.0960	48
5	42	529	0.0794	0.0850	45
6	41	427	0.0960	0.0750	32
7	32	389	0.0823	0.0700	27
8	21	342	0.0614	0.0550	19
9	19	377	0.0504	0.0430	16
10	12	320	0.0375	0.0320	10
<b>Totals</b>	<b>511</b>	<b>4,509</b>	<b>0.1133</b>	<b>0.0951</b>	<b>429</b>

**Male Age-Based Withdrawals**

<b>Age</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
25-29	-	-	N/A	0.0320	-
30-34	-	26	0.0000	0.0320	1
35-39	6	183	0.0328	0.0310	6
40-44	16	501	0.0319	0.0250	13
45-49	17	748	0.0227	0.0180	13
50-54	16	919	0.0174	0.0140	13
Over 54	2	2,562	0.0008		2
<b>Totals</b>	<b>57</b>	<b>4,939</b>	<b>0.0115</b>	<b>0.0097</b>	<b>48</b>

**UNIVERSITY FEMALES  
WITHDRAWAL EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Female Service-Based Withdrawals**

<b>Service Index</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
1	71	426	0.1667	0.2200	94
2	122	776	0.1572	0.1500	116
3	109	683	0.1596	0.1250	85
4	71	667	0.1064	0.1000	67
5	61	669	0.0912	0.0950	64
6	55	537	0.1024	0.0800	43
7	35	523	0.0669	0.0700	37
8	18	431	0.0418	0.0600	26
9	17	436	0.0390	0.0500	22
10	20	391	0.0512	0.0400	16
<b>Totals</b>	<b>579</b>	<b>5,539</b>	<b>0.1045</b>	<b>0.1029</b>	<b>570</b>

**Female Age-Based Withdrawals**

<b>Age</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
25-29	-	-	N/A	0.0500	-
30-34	-	55	0.0000	0.0420	2
35-39	13	247	0.0526	0.0390	10
40-44	16	510	0.0314	0.0310	16
45-49	27	750	0.0360	0.0230	17
50-54	27	930	0.0290	0.0150	14
Over 54	14	2,014	0.0070		14
<b>Totals</b>	<b>97</b>	<b>4,506</b>	<b>0.0215</b>	<b>0.0162</b>	<b>73</b>

**PROTECTIVE WITH SOCIAL SECURITY  
WITHDRAWAL EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male and Female Service-Based Withdrawals**

<b>Service Index</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
1	59	417	0.1415	0.1500	63
2	60	777	0.0772	0.0700	54
3	34	627	0.0542	0.0430	27
4	42	800	0.0525	0.0380	30
5	49	931	0.0526	0.0340	32
6	36	901	0.0400	0.0260	23
7	21	766	0.0274	0.0250	19
8	26	701	0.0371	0.0230	16
9	32	765	0.0418	0.0200	15
10	14	755	0.0185	0.0170	13
<b>Totals</b>	<b>373</b>	<b>7,440</b>	<b>0.0501</b>	<b>0.0392</b>	<b>292</b>

**Male and Female Age-Based Withdrawals**

<b>Age</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
25-29	-	10	0.0000	0.0170	-
30-34	20	744	0.0269	0.0150	11
35-39	35	2,092	0.0167	0.0130	27
40-44	48	3,031	0.0158	0.0110	33
45-49	36	2,662	0.0135	0.0105	28
50-54	20	2,150	0.0093	0.0100	22
Over 54	18	1,470	0.0122		18
<b>Totals</b>	<b>177</b>	<b>12,159</b>	<b>0.0146</b>	<b>0.0114</b>	<b>139</b>



**PROTECTIVE WITHOUT SOCIAL SECURITY  
WITHDRAWAL EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male and Female Service-Based Withdrawals**

<b>Service Index</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
1	3	26	0.1154	0.0400	1
2	1	75	0.0133	0.0350	3
3	2	88	0.0227	0.0210	2
4	1	92	0.0109	0.0130	1
5	1	105	0.0095	0.0120	1
6	-	85	0.0000	0.0110	1
7	1	110	0.0091	0.0100	1
8	1	65	0.0154	0.0090	1
9	-	85	0.0000	0.0080	1
10	-	90	0.0000	0.0070	1
<b>Totals</b>	<b>10</b>	<b>821</b>	<b>0.0122</b>	<b>0.0158</b>	<b>13</b>

**Male and Female Age-Based Withdrawals**

<b>Age</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
25-29	-	-	N/A	0.0070	-
30-34	1	64	0.0156	0.0070	-
35-39	2	292	0.0068	0.0065	2
40-44	4	447	0.0089	0.0060	3
45-49	1	448	0.0022	0.0055	2
50-54	8	426	0.0188	0.0050	2
<b>Totals</b>	<b>16</b>	<b>1,677</b>	<b>0.0095</b>	<b>0.0054</b>	<b>9</b>

**EXECUTIVE AND ELECTED MALES  
WITHDRAWAL EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male and Female Service-Based Withdrawals**

<b>Service Index</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
1	13	75	0.1733	0.2000	15
2	19	159	0.1195	0.1400	22
3	16	60	0.2667	0.1400	8
4	7	57	0.1228	0.1000	6
5	5	47	0.1064	0.1000	5
6	6	59	0.1017	0.0900	5
7	2	27	0.0741	0.0850	2
8	-	49	0.0000	0.0800	4
9	-	35	0.0000	0.0750	3
10	2	39	0.0513	0.0700	3
<b>Totals</b>	<b>70</b>	<b>607</b>	<b>0.1153</b>	<b>0.1203</b>	<b>73</b>

**Male and Female Age-Based Withdrawals**

<b>Age</b>	<b>Withdrawals</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Withdrawals</b>
25-29	-	-	N/A	0.0600	-
30-34	-	-	N/A	0.0450	-
35-39	-	15	0.0000	0.0400	1
40-44	1	44	0.0227	0.0350	2
45-49	-	72	0.0000	0.0320	2
50-54	1	131	0.0076	0.0300	4
Over 54	1	471	0.0021		1
<b>Totals</b>	<b>3</b>	<b>733</b>	<b>0.0041</b>	<b>0.0136</b>	<b>10</b>

**GENERAL  
DISABILITY EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male Disability Experience**

<b>Age</b>	<b>Disabilities</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Disabilities</b>
Under 20	-	-	N/A	0.0001	-
20-24	-	22	0.0000	0.0001	-
25-29	-	554	0.0000	0.0001	-
30-34	-	1,932	0.0000	0.0001	-
35-39	-	2,741	0.0000	0.0002	-
40-44	2	3,885	0.0005	0.0005	2
45-49	3	5,258	0.0006	0.0007	4
50-54	10	7,463	0.0013	0.0020	15
55-59	10	6,328	0.0016	0.0035	22
60-64	9	3,550	0.0025	0.0070	25
65-69	-	718	0.0000	0.0027	2
70-74	-	202	0.0000	0.0024	-
75 and over	-	-	N/A	0.0024	-
<b>Totals</b>	<b>34</b>	<b>32,653</b>	<b>0.0010</b>	<b>0.0021</b>	<b>70</b>

**Female Disability Experience**

<b>Age</b>	<b>Disabilities</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Disabilities</b>
Under 20	-	-	N/A	0.0001	-
20-24	-	34	0.0000	0.0001	-
25-29	-	1,094	0.0000	0.0001	-
30-34	-	3,204	0.0000	0.0003	1
35-39	-	4,375	0.0000	0.0004	2
40-44	1	6,100	0.0002	0.0006	3
45-49	1	9,380	0.0001	0.0008	7
50-54	16	13,408	0.0012	0.0013	18
55-59	17	12,189	0.0014	0.0025	31
60-64	13	6,946	0.0019	0.0032	22
65-69	-	1,472	0.0000	0.0025	4
70-74	-	305	0.0000	0.0021	1
75 and over	-	-	N/A	0.0021	-
<b>Totals</b>	<b>48</b>	<b>58,507</b>	<b>0.0008</b>	<b>0.0015</b>	<b>89</b>

The people shown on this page are cases involving \$40.63 disability benefits and includes those who were either active or inactive with pending benefits at the beginning of the year. The LTDI plan is described in a separate report.

**PUBLIC SCHOOLS  
DISABILITY EXPERIENCE  
DURING CALENDAR YEAR 2012**

**Male Disability Experience**

<b>Age</b>	<b>Disabilities</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Disabilities</b>
Under 20	-	-	N/A	0.0001	-
20-24	-	2	0.0000	0.0001	-
25-29	-	275	0.0000	0.0001	-
30-34	-	2,011	0.0000	0.0001	-
35-39	-	2,772	0.0000	0.0001	-
40-44	-	3,090	0.0000	0.0002	1
45-49	1	2,923	0.0003	0.0005	1
50-54	2	2,781	0.0007	0.0018	5
55-59	1	1,843	0.0005	0.0023	4
60-64	2	803	0.0025	0.0041	3
65-69	-	137	0.0000	0.0058	1
70-74	-	28	0.0000	0.0060	-
75 and over	-	-	N/A	0.0060	-
<b>Totals</b>	<b>6</b>	<b>16,665</b>	<b>0.0004</b>	<b>0.0009</b>	<b>15</b>

**Female Disability Experience**

<b>Age</b>	<b>Disabilities</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Disabilities</b>
Under 20	-	-	N/A	0.0001	-
20-24	-	-	N/A	0.0001	-
25-29	-	1,139	0.0000	0.0001	-
30-34	-	5,957	0.0000	0.0001	1
35-39	-	6,762	0.0000	0.0001	1
40-44	-	7,603	0.0000	0.0003	2
45-49	3	7,579	0.0004	0.0010	8
50-54	4	7,450	0.0005	0.0014	10
55-59	7	5,553	0.0013	0.0021	11
60-64	-	2,583	0.0000	0.0029	7
65-69	-	323	0.0000	0.0016	1
70-74	-	56	0.0000	0.0014	-
75 and over	-	-	N/A	0.0014	-
<b>Totals</b>	<b>14</b>	<b>45,005</b>	<b>0.0003</b>	<b>0.0009</b>	<b>41</b>

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**UNIVERSITY  
DISABILITY EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male Disability Experience**

<b>Age</b>	<b>Disabilities</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Disabilities</b>
Under 20	-	-	N/A	0.0001	-
20-24	-	-	N/A	0.0001	-
25-29	-	43	0.0000	0.0001	-
30-34	-	280	0.0000	0.0001	-
35-39	-	597	0.0000	0.0001	-
40-44	-	998	0.0000	0.0001	-
45-49	-	1,090	0.0000	0.0003	-
50-54	-	1,142	0.0000	0.0005	1
55-59	-	1,208	0.0000	0.0015	2
60-64	-	785	0.0000	0.0014	1
65-69	-	168	0.0000	0.0017	-
70-74	-	29	0.0000	0.0015	-
75 and over	-	-	N/A	0.0015	-
Totals	-	6,340	0.0000	0.0006	4

**Female Disability Experience**

<b>Age</b>	<b>Disabilities</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Disabilities</b>
Under 20	-	-	N/A	0.0001	-
20-24	-	-	N/A	0.0001	-
25-29	-	68	0.0000	0.0001	-
30-34	-	490	0.0000	0.0001	-
35-39	-	802	0.0000	0.0004	-
40-44	-	1,032	0.0000	0.0005	-
45-49	-	1,118	0.0000	0.0004	-
50-54	-	1,223	0.0000	0.0009	1
55-59	1	1,149	0.0009	0.0012	1
60-64	-	697	0.0000	0.0018	1
65-69	-	120	0.0000	0.0012	-
70-74	-	22	0.0000	0.0010	-
75 and over	-	-	N/A	0.0010	-
Totals	1	6,721	0.0001	0.0004	3

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**PROTECTIVE WITH SOCIAL SECURITY  
DISABILITY EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male and Female Disability Experience**

<b>Age</b>	<b>Disabilities</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Disabilities</b>
Under 20	-	-	N/A	0.0001	-
20-24	-	22	0.0000	0.0001	-
25-29	-	881	0.0000	0.0001	-
30-34	-	2,418	0.0000	0.0001	-
35-39	-	2,845	0.0000	0.0003	1
40-44	1	3,503	0.0003	0.0004	1
45-49	1	2,928	0.0003	0.0006	2
50-54	4	1,933	0.0021	0.0009	2
55-59	-	508	0.0000	0.0196	10
60-64	-	221	0.0000	0.0210	5
65-69	-	39	0.0000	0.0014	-
70-74	-	-	N/A	0.0014	-
75 and over	-	-	N/A	0.0014	-
<b>Totals</b>	<b>6</b>	<b>15,298</b>	<b>0.0004</b>	<b>0.0014</b>	<b>21</b>

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**PROTECTIVE WITHOUT SOCIAL SECURITY  
DISABILITY EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male and Female Disability Experience**

<b>Age</b>	<b>Disabilities</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Disabilities</b>
Under 20	-	-	N/A	0.0004	-
20-24	-	-	N/A	0.0004	-
25-29	-	91	0.0000	0.0004	-
30-34	-	268	0.0000	0.0004	-
35-39	-	400	0.0000	0.0005	-
40-44	-	512	0.0000	0.0008	-
45-49	1	466	0.0021	0.0016	1
50-54	-	341	0.0000	0.0112	4
55-59	-	25	0.0000	0.0016	-
60-64	-	3	0.0000	0.0016	-
65-69	-	2	0.0000	0.0016	-
70-74	-	-	N/A	0.0016	-
75 and over	-	-	N/A	0.0016	-
<b>Totals</b>	<b>1</b>	<b>2,108</b>	<b>0.0005</b>	<b>0.0024</b>	<b>5</b>

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**EXECUTIVE AND ELECTED  
DISABILITY EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male and Female Disability Experience**

<b>Age</b>	<b>Disabilities</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Disabilities</b>
Under 20	-	-	N/A	0.0000	-
20-24	-	-	N/A	0.0000	-
25-29	-	1	0.0000	0.0000	-
30-34	-	5	0.0000	0.0000	-
35-39	-	39	0.0000	0.0001	-
40-44	-	70	0.0000	0.0001	-
45-49	-	101	0.0000	0.0002	-
50-54	-	166	0.0000	0.0003	-
55-59	-	182	0.0000	0.0012	-
60-64	-	143	0.0000	0.0011	-
65-69	-	61	0.0000	0.0009	-
70-74	-	20	0.0000	0.0009	-
75 and over	-	-	N/A	0.0009	-
<b>Totals</b>	-	<b>788</b>	<b>N/A</b>	<b>N/A</b>	-

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**GENERAL  
PAY INCREASE ASSUMPTION  
DURING CALENDAR YEAR 2012**

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**Service-Based Pay Increase Experience**

<b>Service Group</b>		<b>Total % Increase</b>	
<b>Beginning of Year</b>	<b>Number</b>	<b>Actual</b>	<b>Expected</b>
1-5	35,834	7.47 %	7.45 %
6-10	25,103	2.83 %	5.90 %
11-15	22,934	1.87 %	5.25 %
16-20	13,922	1.67 %	5.00 %
21-25	11,306	1.28 %	4.75 %
26-30	6,560	1.15 %	4.50 %
31-35	4,197	0.87 %	4.30 %
36-40	1,273	0.72 %	4.20 %
Over 40	162	1.17 %	4.10 %
<b>Total</b>	<b>121,291</b>		

**PUBLIC SCHOOLS  
PAY INCREASE ASSUMPTION  
DURING CALENDAR YEAR 2012**

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**Service-Based Pay Increase Experience**

<b>Service Group</b>		<b>Total % Increase</b>	
<b>Beginning of Year</b>	<b>Number</b>	<b>Actual</b>	<b>Expected</b>
1-5	14,645	11.16 %	9.75 %
6-10	15,056	4.03 %	8.00 %
11-15	15,996	2.79 %	6.70 %
16-20	11,589	1.88 %	5.25 %
21-25	8,658	1.52 %	4.55 %
26-30	4,512	1.36 %	4.25 %
31-35	2,020	1.42 %	4.20 %
36-40	477	1.53 %	4.10 %
Over 40	85	(0.37)%	4.05 %
<b>Total</b>	<b>73,038</b>		

**UNIVERSITY  
PAY INCREASE ASSUMPTION  
DURING CALENDAR YEAR 2012**

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**Service-Based Pay Increase Experience**

<b>Service Group</b>		<b>Total % Increase</b>	
<b>Beginning of Year</b>	<b>Number</b>	<b>Actual</b>	<b>Expected</b>
1-5	4,985	12.68 %	7.15 %
6-10	3,842	1.69 %	6.75 %
11-15	3,452	1.29 %	6.10 %
16-20	1,985	1.14 %	5.50 %
21-25	1,669	0.70 %	4.90 %
26-30	1,021	0.74 %	4.75 %
31-35	495	(0.46)%	4.50 %
36-40	205	0.04 %	4.35 %
Over 40	83	(0.70)%	4.20 %
<b>Total</b>	<b>17,737</b>		

**PROTECTIVE WITH SOCIAL SECURITY  
PAY INCREASE ASSUMPTION  
DURING CALENDAR YEAR 2012**

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**Male and Female Service-Based Pay Increase Experience**

<b>Service Group</b>		<b>Total % Increase</b>	
<b>Beginning of Year</b>	<b>Number</b>	<b>Actual</b>	<b>Expected</b>
1-5	3,204	10.73 %	8.75 %
6-10	3,683	2.05 %	5.50 %
11-15	4,439	0.67 %	4.90 %
16-20	3,237	(0.07)%	4.80 %
21-25	2,241	0.08 %	4.70 %
26-30	1,029	(0.04)%	4.60 %
31-35	317	(1.03)%	4.50 %
36-40	59	(0.00)%	4.40 %
Over 40	6	(0.49)%	4.20 %
<b>Total</b>	<b>18,215</b>		

**PROTECTIVE WITHOUT SOCIAL SECURITY  
PAY INCREASE ASSUMPTION  
DURING CALENDAR YEAR 2012**

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**Male and Female Service-Based Pay Increase Experience**

<b>Service Group</b>		<b>Total % Increase</b>	
<b>Beginning of Year</b>	<b>Number</b>	<b>Actual</b>	<b>Expected</b>
1-5	375	12.58 %	9.50 %
6-10	433	2.68 %	5.30 %
11-15	567	3.09 %	4.60 %
16-20	473	3.20 %	4.50 %
21-25	447	3.21 %	4.40 %
26-30	225	2.68 %	4.30 %
31-35	66	2.27 %	4.20 %
36-40	4	2.47 %	4.10 %
Over 40	-	N/A	4.05 %
<b>Total</b>	<b>2,590</b>		

**EXECUTIVE AND ELECTED  
PAY INCREASE ASSUMPTION  
DURING CALENDAR YEAR 2012**

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**Service-Based Pay Increase Experience**

<b>Service Group</b>		<b>Total % Increase</b>	
<b>Beginning of Year</b>	<b>Number</b>	<b>Actual</b>	<b>Expected</b>
1-5	369	13.14 %	6.00 %
6-10	195	3.39 %	5.75 %
11-15	153	2.09 %	5.50 %
16-20	161	1.17 %	5.00 %
21-25	136	1.23 %	4.50 %
26-30	113	(0.08)%	4.40 %
31-35	79	1.23 %	4.30 %
36-40	43	0.89 %	4.20 %
Over 40	9	4.82 %	4.10 %
<b>Total</b>	<b>1,258</b>		

**GENERAL MALES  
NORMAL RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male Age-Based Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
57	64	296	0.2162	0.2000	59
58	63	312	0.2019	0.2000	62
59	50	275	0.1818	0.2000	55
60	48	274	0.1752	0.2000	55
61	45	230	0.1957	0.2000	46
62	70	213	0.3286	0.2700	58
63	55	161	0.3416	0.3200	52
64	34	111	0.3063	0.2400	27
65	107	559	0.1914	0.2400	134
66	112	417	0.2686	0.3000	125
67	40	238	0.1681	0.2400	57
68	30	203	0.1478	0.1700	35
69	21	166	0.1265	0.1700	28
70	21	137	0.1533	0.1700	23
71	10	116	0.0862	0.1700	20
72	9	84	0.1071	0.1700	14
73	6	68	0.0882	0.1700	12
74	2	64	0.0313	0.1700	11
Totals	787	3,924	0.2006	0.2225	873
75 & Over	28	275			275
Totals	815	4,199			1,148

**GENERAL MALES  
EARLY RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male Age-Based Early Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
55	103	1,574	0.0654	0.0800	126
56	91	1,503	0.0605	0.0800	120
57	43	1,164	0.0369	0.0425	49
58	69	1,121	0.0616	0.0525	59
59	51	966	0.0528	0.0550	53
60	80	1,021	0.0784	0.0750	77
61	76	848	0.0896	0.0800	68
62	108	688	0.1570	0.1400	96
63	81	530	0.1528	0.1600	85
64	53	463	0.1145	0.1700	79
Totals	755	9,878	0.0764	0.0822	812



**GENERAL FEMALES  
NORMAL RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Female Age-Based Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
57	56	346	0.1618	0.1700	59
58	54	318	0.1698	0.1700	54
59	41	280	0.1464	0.1700	48
60	37	248	0.1492	0.2000	50
61	40	237	0.1688	0.2000	47
62	40	182	0.2198	0.2700	49
63	37	159	0.2327	0.2800	45
64	31	120	0.2583	0.2500	30
65	268	999	0.2683	0.2500	250
66	175	663	0.2640	0.2900	192
67	95	403	0.2357	0.2000	81
68	53	305	0.1738	0.1800	55
69	44	270	0.1630	0.1800	49
70	36	214	0.1682	0.1800	39
71	22	120	0.1833	0.1800	22
72	11	111	0.0991	0.1500	17
73	11	73	0.1507	0.1500	11
74	8	76	0.1053	0.1500	11
Totals	1,059	5,124	0.2067	0.2164	1,109
75 & Over	29	310			310
Totals	1,088	5,434			1,419

**GENERAL FEMALES  
EARLY RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Female Age-Based Early Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
55	139	2,991	0.0465	0.0610	182
56	120	2,724	0.0441	0.0640	174
57	85	2,280	0.0373	0.0420	96
58	98	2,193	0.0447	0.0550	121
59	97	2,001	0.0485	0.0530	106
60	133	1,808	0.0736	0.0810	146
61	131	1,626	0.0806	0.0700	114
62	213	1,390	0.1532	0.1500	209
63	174	1,109	0.1569	0.1500	166
64	160	1,013	0.1579	0.1500	152
<b>Totals</b>	<b>1,350</b>	<b>19,135</b>	<b>0.0706</b>	<b>0.0766</b>	<b>1,466</b>

**PUBLIC SCHOOL MALES  
NORMAL RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male Age-Based Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
57	53	168	0.3155	0.4000	67
58	29	99	0.2929	0.3500	35
59	22	96	0.2292	0.2500	24
60	23	84	0.2738	0.2800	24
61	22	78	0.2821	0.2500	20
62	22	65	0.3385	0.3600	23
63	11	40	0.2750	0.3200	13
64	9	31	0.2903	0.2400	7
65	36	146	0.2466	0.2400	35
66	26	85	0.3059	0.2500	21
67	7	52	0.1346	0.2400	12
68	5	41	0.1220	0.2400	10
69	3	22	0.1364	0.2400	5
70	3	27	0.1111	0.2000	5
71	2	17	0.1176	0.2000	3
72	-	10	0.0000	0.2000	2
73	-	5	0.0000	0.2000	1
74	1	12	0.0833	0.2000	2
Totals	274	1,078	0.2542	0.2866	309
75 & Over	1	17			17
Totals	275	1,095			326

**PUBLIC SCHOOL MALES  
EARLY RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male Age-Based Early Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
55	84	597	0.1407	0.1200	72
56	59	468	0.1261	0.1200	56
57	30	290	0.1034	0.1200	35
58	35	288	0.1215	0.1200	35
59	30	200	0.1500	0.1200	24
60	33	222	0.1486	0.1200	27
61	35	197	0.1777	0.1200	24
62	26	150	0.1733	0.2000	30
63	32	132	0.2424	0.2000	26
64	20	102	0.1961	0.2000	20
Totals	384	2,646	0.1451	0.1319	349

**PUBLIC SCHOOL FEMALES  
NORMAL RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Female Age-Based Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
57	69	277	0.2491	0.2700	75
58	77	279	0.2760	0.2700	75
59	60	182	0.3297	0.2700	49
60	55	165	0.3333	0.2700	45
61	40	139	0.2878	0.2700	38
62	42	114	0.3684	0.3400	39
63	23	67	0.3433	0.2700	18
64	16	46	0.3478	0.2300	11
65	95	328	0.2896	0.2800	92
66	46	157	0.2930	0.3000	47
67	25	98	0.2551	0.2800	27
68	16	83	0.1928	0.2600	22
69	9	44	0.2045	0.2000	9
70	10	34	0.2941	0.2000	7
71	3	22	0.1364	0.2000	4
72	2	18	0.1111	0.2000	4
73	4	22	0.1818	0.2000	4
74	2	17	0.1176	0.2000	3
Totals	594	2,092	0.2839	0.2720	569
75 & Over	7	46			46
Totals	601	2,138			615

**PUBLIC SCHOOL FEMALES  
EARLY RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Female Age-Based Early Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
55	179	1,555	0.1151	0.1100	171
56	155	1,401	0.1106	0.1100	154
57	92	909	0.1012	0.1100	100
58	96	869	0.1105	0.1100	96
59	99	819	0.1209	0.1100	90
60	105	758	0.1385	0.1500	114
61	105	646	0.1625	0.1500	97
62	131	548	0.2391	0.2000	110
63	77	370	0.2081	0.2000	74
64	69	261	0.2644	0.2000	52
<b>Totals</b>	<b>1,108</b>	<b>8,136</b>	<b>0.1362</b>	<b>0.1300</b>	<b>1,058</b>

**UNIVERSITY MALES  
NORMAL RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male Age-Based Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
57	3	18	0.1667	0.1300	2
58	-	29	0.0000	0.1300	4
59	7	33	0.2121	0.1300	4
60	4	40	0.1000	0.1300	5
61	4	45	0.0889	0.1300	6
62	5	57	0.0877	0.1500	9
63	5	40	0.1250	0.1500	6
64	2	32	0.0625	0.1500	5
65	31	176	0.1761	0.1500	26
66	19	130	0.1462	0.2000	26
67	7	78	0.0897	0.1800	14
68	6	75	0.0800	0.1800	14
69	10	59	0.1695	0.1800	11
70	6	46	0.1304	0.2000	9
71	1	28	0.0357	0.2000	6
72	3	25	0.1200	0.1500	4
73	3	21	0.1429	0.1500	3
74	1	11	0.0909	0.1500	2
Totals	117	943	0.1241	0.1654	156
75 & Over	4	46			46
Totals	121	989			202

**UNIVERSITY MALES  
EARLY RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male Age-Based Early Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
55	4	271	0.0148	0.0475	13
56	6	248	0.0242	0.0300	7
57	8	245	0.0327	0.0200	5
58	3	232	0.0129	0.0250	6
59	6	212	0.0283	0.0400	8
60	12	192	0.0625	0.0400	8
61	4	188	0.0213	0.0750	14
62	10	165	0.0606	0.0700	12
63	8	124	0.0645	0.0750	9
64	10	116	0.0862	0.0800	9
<b>Totals</b>	<b>71</b>	<b>1,993</b>	<b>0.0356</b>	<b>0.0457</b>	<b>91</b>



**UNIVERSITY FEMALES  
NORMAL RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Female Age-Based Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
57	3	21	0.1429	0.1400	3
58	2	29	0.0690	0.1400	4
59	-	24	0.0000	0.1300	3
60	4	42	0.0952	0.1300	5
61	4	36	0.1111	0.1900	7
62	3	26	0.1154	0.1900	5
63	3	22	0.1364	0.1900	4
64	3	20	0.1500	0.1800	4
65	9	96	0.0938	0.2200	21
66	15	66	0.2273	0.2300	15
67	8	61	0.1311	0.1700	10
68	6	30	0.2000	0.1700	5
69	3	26	0.1154	0.1700	4
70	7	20	0.3500	0.2000	4
71	-	15	0.0000	0.2000	3
72	1	10	0.1000	0.2000	2
73	1	11	0.0909	0.2000	2
74	1	4	0.2500	0.2000	1
Totals	73	559	0.1306	0.1825	102
75 & Over	4	12			12
Totals	77	571			114

**UNIVERSITY FEMALES  
EARLY RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Female Age-Based Early Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
55	14	254	0.0551	0.0550	14
56	12	239	0.0502	0.0550	13
57	6	205	0.0293	0.0400	8
58	14	247	0.0567	0.0400	10
59	12	204	0.0588	0.0650	13
60	19	172	0.1105	0.0650	11
61	5	174	0.0287	0.0750	13
62	18	138	0.1304	0.1000	14
63	16	115	0.1391	0.1000	12
64	11	98	0.1122	0.1300	13
Totals	127	1,846	0.0688	0.0655	121

**PROTECTIVE WITH SOCIAL SECURITY  
NORMAL RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male and Female Age-Based Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
50	23	349	0.0659	0.0600	21
51	29	322	0.0901	0.0700	23
52	44	325	0.1354	0.0800	26
53	76	278	0.2734	0.2300	64
54	66	379	0.1741	0.1800	68
55	60	315	0.1905	0.1700	54
56	48	280	0.1714	0.1600	45
57	46	234	0.1966	0.1600	37
58	34	189	0.1799	0.1600	30
59	17	147	0.1156	0.1600	24
60	31	143	0.2168	0.1800	26
61	24	123	0.1951	0.1800	22
62	13	77	0.1688	0.2200	17
63	10	55	0.1818	0.2900	16
64	4	36	0.1111	0.1600	6
65	11	28	0.3929	0.3000	8
66	6	21	0.2857	0.2000	4
67	2	7	0.2857	0.1500	1
68	1	6	0.1667	0.2500	2
69	2	4	0.5000	0.2000	1
70	-	1	0.0000	1.0000	1
71	1	3	0.3333	1.0000	3
72	-	3	0.0000	1.0000	3
73	1	3	0.3333	1.0000	3
74	-	-	N/A	1.0000	-
Totals	549	3,328	0.1650	0.1517	505
75 & Over	-	1			1
Totals	549	3,329			506

**PROTECTIVE WITHOUT SOCIAL SECURITY  
NORMAL RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male and Female Age-Based Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
50	3	77	0.0390	0.0350	3
51	1	73	0.0137	0.0375	3
52	5	75	0.0667	0.0450	3
53	14	67	0.2090	0.1700	11
54	12	61	0.1967	0.2500	15
55	7	58	0.1207	0.2100	12
56	12	38	0.3158	0.2700	10
57	7	40	0.1750	0.3000	12
58	4	28	0.1429	0.3000	8
59	7	22	0.3182	0.3000	7
60	4	13	0.3077	0.2600	3
61	2	7	0.2857	0.1500	1
62	3	5	0.6000	0.2000	1
63	-	-	N/A	0.4000	-
64	-	-	N/A	0.4000	-
65	3	5	0.6000	0.4000	2
66	-	-	N/A	0.4000	-
67	-	-	N/A	0.4000	-
68	-	-	N/A	0.4000	-
69	-	-	N/A	0.4000	-
70	-	-	N/A	1.0000	-
71	-	-	N/A	1.0000	-
72	-	-	N/A	1.0000	-
73	-	-	N/A	1.0000	-
74	-	-	N/A	1.0000	-
<b>Totals</b>	<b>84</b>	<b>569</b>	<b>0.1476</b>	<b>0.1599</b>	<b>91</b>
<b>75 &amp; Over</b>	<b>-</b>	<b>-</b>	<b>N/A</b>		<b>-</b>
<b>Totals</b>	<b>84</b>	<b>569</b>			<b>91</b>

**EXECUTIVE AND ELECTED  
NORMAL RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male and Female Age-Based Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
57	-	8	0.0000	0.1500	1
58	2	17	0.1176	0.1500	3
59	-	9	0.0000	0.1500	1
60	-	8	0.0000	0.1000	1
61	1	12	0.0833	0.1300	2
62	2	45	0.0444	0.1300	6
63	-	36	0.0000	0.1200	4
64	4	37	0.1081	0.1200	4
65	3	37	0.0811	0.1200	4
66	4	28	0.1429	0.2000	6
67	4	19	0.2105	0.1700	3
68	3	16	0.1875	0.1500	2
69	-	13	0.0000	0.1500	2
70	-	8	0.0000	0.1300	1
71	1	13	0.0769	0.1300	2
72	1	7	0.1429	0.2500	2
73	1	5	0.2000	0.1000	1
74	-	2	0.0000	0.1000	-
Totals	26	320	0.0813	0.1406	45
75 & Over	4	20			20
Totals	30	340			65

**EXECUTIVE AND ELECTED  
EARLY RETIREMENT EXPERIENCE  
DURING CALENDAR YEAR 2012**

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**Male and Female Age-Based Early Retirement Experience**

<b>Age</b>	<b>Retirements</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Retirements</b>
55	2	49	0.0408	0.0450	2
56	-	39	0.0000	0.0450	2
57	-	27	0.0000	0.0450	1
58	-	42	0.0000	0.0450	2
59	-	25	0.0000	0.0450	1
60	3	38	0.0789	0.0450	2
61	5	45	0.1111	0.0450	2
62	-	9	0.0000	0.0450	-
63	-	10	0.0000	0.0450	-
64	-	7	0.0000	0.0450	-
Over 64	1	77	0.0130		
<b>Totals</b>	<b>11</b>	<b>368</b>			<b>12</b>

**DEATH-IN-SERVICE  
DURING CALENDAR YEAR 2012**

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**Male**

<b>Age</b>	<b>Deaths</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Deaths</b>
Under 20	-	24	0.0000	0.0001	-
20-24	3	1,373	0.0022	0.0002	-
25-29	2	6,528	0.0003	0.0002	1
30-34	4	9,757	0.0004	0.0003	3
35-39	9	11,135	0.0008	0.0005	5
40-44	9	13,320	0.0007	0.0006	8
45-49	12	13,892	0.0009	0.0008	11
50-54	26	15,352	0.0017	0.0014	21
55-59	25	13,362	0.0019	0.0027	36
60-64	33	8,141	0.0041	0.0035	28
65-69	12	2,615	0.0046	0.0060	16
70-74	5	709	0.0071	0.0097	7
75 and over	2	2	1.0000	0.0170	-
<b>Totals</b>	<b>142</b>	<b>96,210</b>	<b>0.0015</b>	<b>0.0014</b>	<b>136</b>

**Female**

<b>Age</b>	<b>Deaths</b>	<b>Exposure</b>	<b>Crude Rates</b>	<b>Current Rates</b>	<b>Expected Deaths</b>
Under 20	-	44	0.0000	0.0001	-
20-24	-	2,461	0.0000	0.0001	-
25-29	3	11,600	0.0003	0.0001	1
30-34	1	15,908	0.0001	0.0002	3
35-39	6	16,889	0.0004	0.0003	4
40-44	7	20,402	0.0003	0.0004	8
45-49	14	23,523	0.0006	0.0006	14
50-54	41	26,774	0.0015	0.0009	25
55-59	32	23,693	0.0014	0.0016	37
60-64	28	13,492	0.0021	0.0023	31
65-69	9	3,690	0.0024	0.0036	13
70-74	4	776	0.0052	0.0064	5
75 and over	3	-	N/A	0.0116	-
<b>Totals</b>	<b>148</b>	<b>159,252</b>	<b>0.0009</b>	<b>0.0009</b>	<b>141</b>



June 10, 2013

Mr. Robert Conlin  
Wisconsin Department of Employee  
Trust Funds  
801 West Badger Road  
Madison, Wisconsin 53713

**Re: Report of Thirty-second Annual Actuarial Valuation**

Dear Bob:

Enclosed are 40 bound color copies and 20 stapled black and white copies of the December 31, 2012 regular annual actuarial valuations.

Sincerely,

Mark Buis, FSA, EA, MAAA

MB:sc  
Enclosures