



The Issuance of New Mortality Tables: What Does it Mean to My Plan?

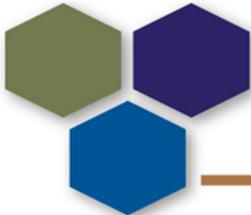
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PAPERS 9th Annual Fall Workshop

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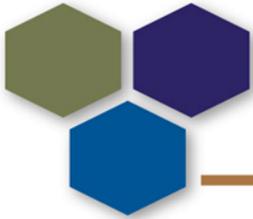


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Agenda

- ◆ We're Living Longer
- ◆ We'll Pay For it
- ◆ What are the New Tables?
- ◆ What's the Impact?
- ◆ Assumption Selection Process
- ◆ There's Always More to Discuss...



We're Living Longer

Social Security to Run Out of Money in 2033

Medicare HI Trust Fund to be Depleted in 2030

National Average for a Shared Room in a Nursing Home is \$77,380 a Year

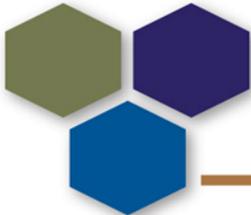
Arnold Foundation Bashes Teacher Pensions

Three-Legged Retirement Income Stool More Wobbly

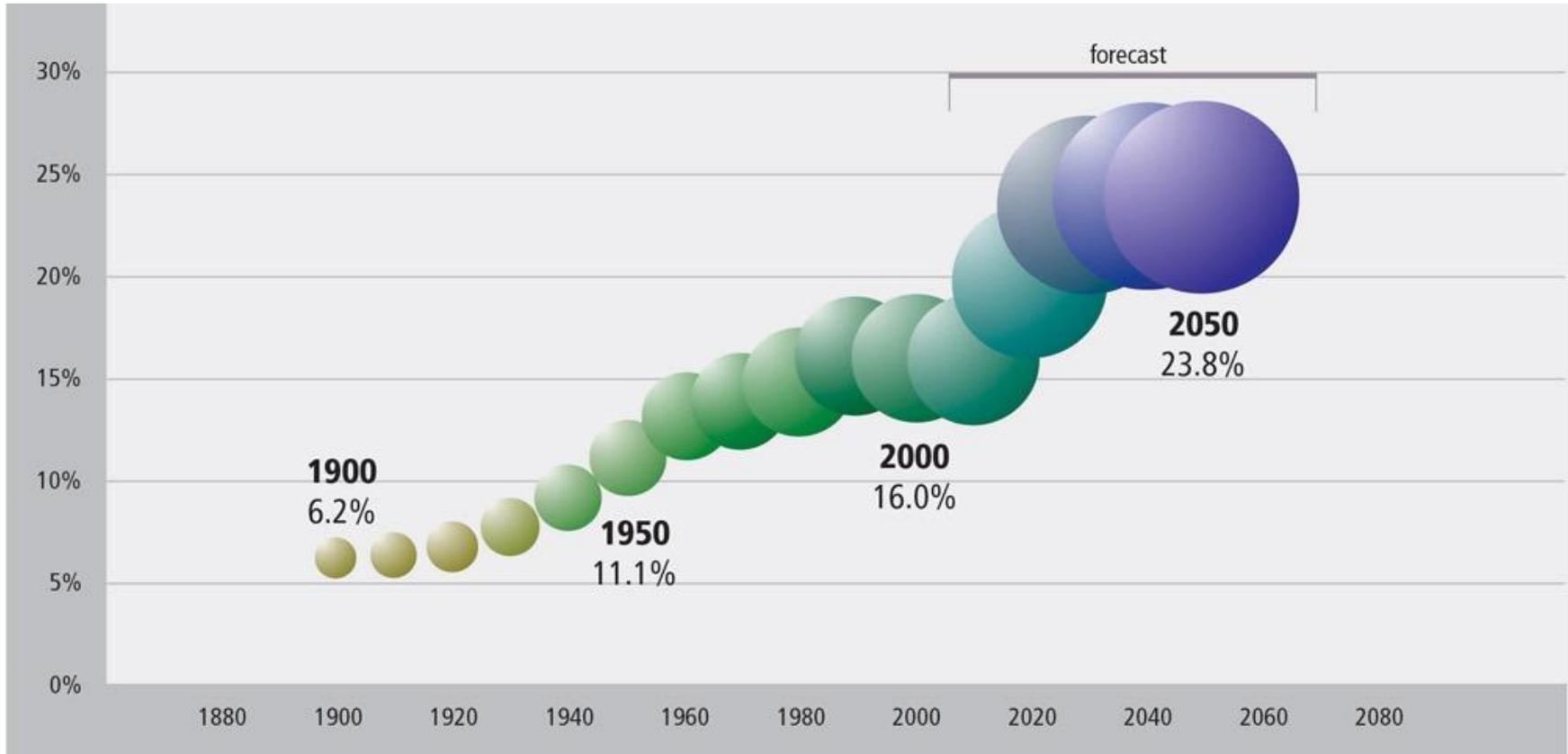
Half of State ACA Exchanges Failing

86% of Americans are Concerned that the Nation Faces a Retirement Crisis

Good News – We're Living Longer!!!



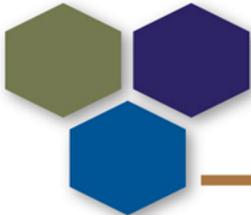
U.S. Senior Citizen Population Expressed as a % of the Total Population



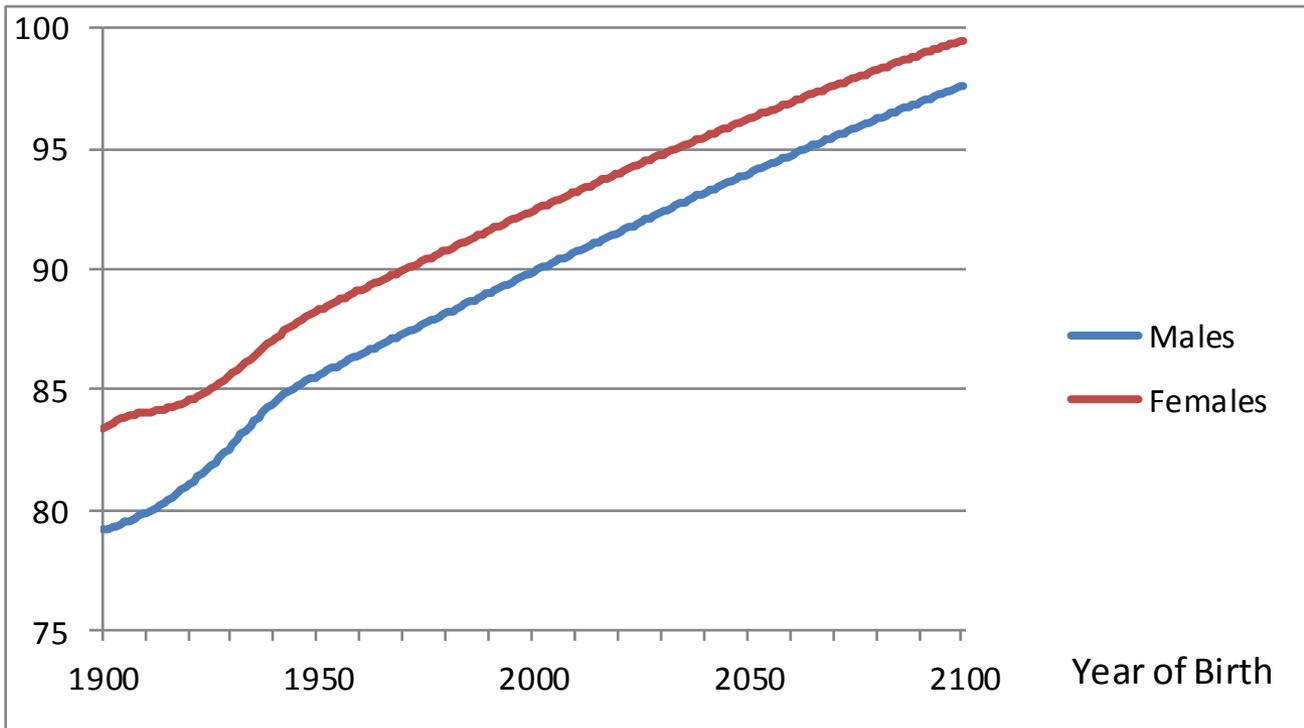
Source: U.S. Census Bureau

We're Living Longer





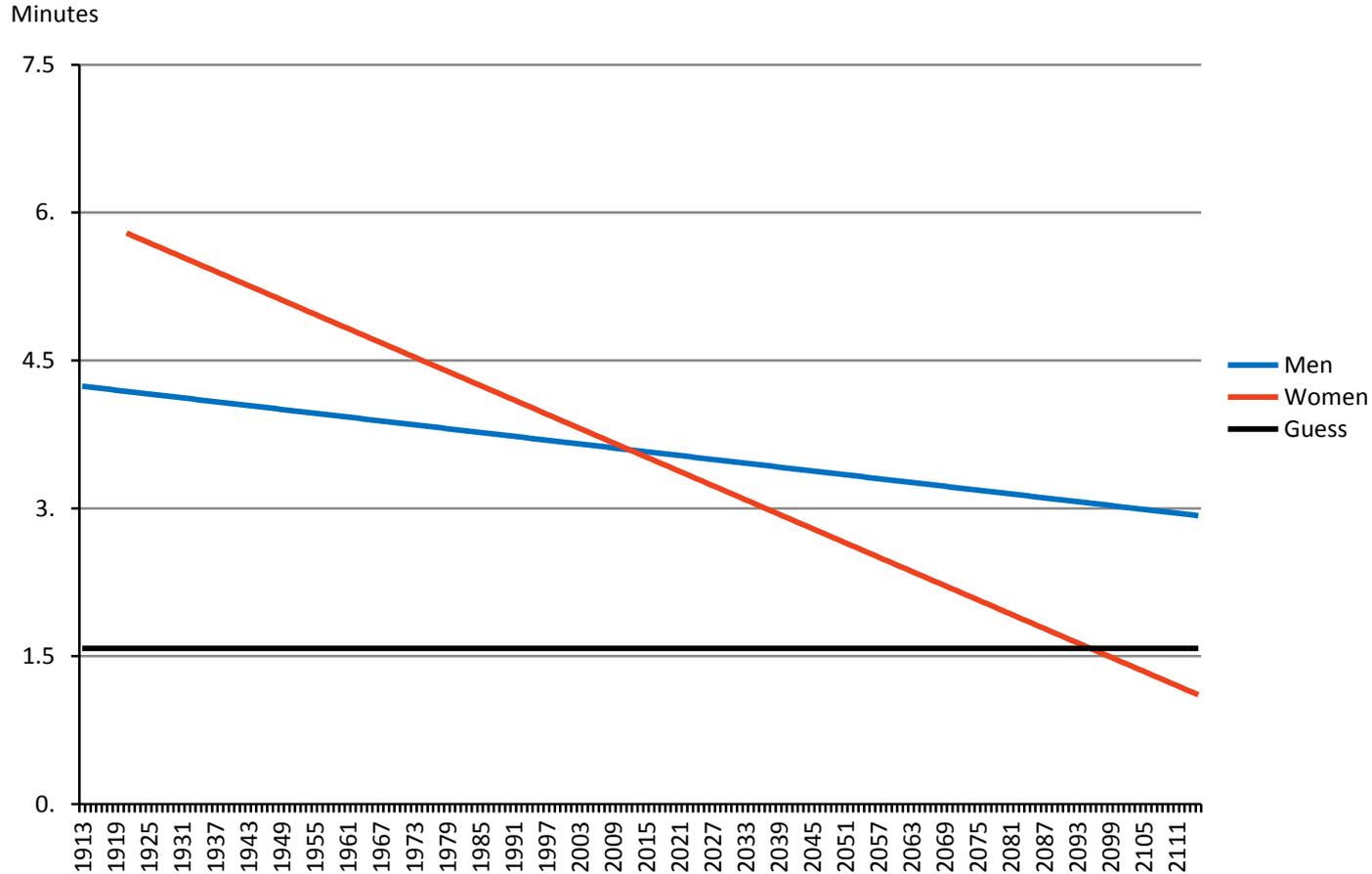
Projected Age at Death by Year of Birth for People Who Live to Age 65



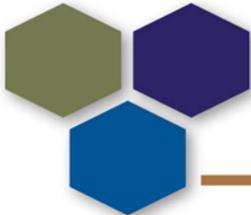
A male who is 65 today (born in 1950) is projected to live to age 85.6. A female is projected to live to age 88.3. A male born today who lives to age 65 is expected to live to age 91.2 and a female to age 93.6.



Projection of the Mile Record by Gender of Runner

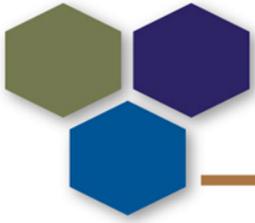


Actual data for men through 1999; women through 1996. The projection indicates that in the very near future, possibly yet in 2015, the women's mile record will be faster than the men's record, and by the end of the century the women's record will be just over a minute.



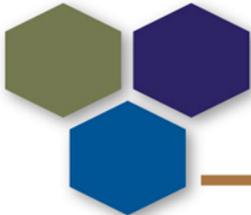
Discussion

- ◆ 65 year old women are living about 6 years longer than they used to.
- ◆ Men about 5 years longer than they used to.
- ◆ That is roughly a 30% to 40% increase in life expectancy at 65. The increase affects long term costs of Defined Benefit plans materially. In a DB plan, the effects can be spread across generations, and among both active members, employers, and to some extent, retirees.
- ◆ People relying primarily on Defined Contribution income will find their retirement lifestyle challenged.
- ◆ Roughly half of the population will outlive their life expectancy and will have yet greater challenges.



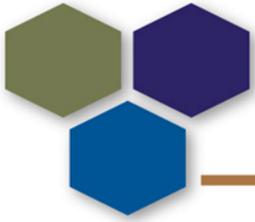
Reasons for Increased Life Expectancy

- ◆ Improvements in the treatment and prevention of infectious & chronic diseases
- ◆ Advances in Medical technology
- ◆ Increased access to health care generally
- ◆ Better sanitation
- ◆ Health consciousness



Increased Life Expectancy

- ◆ Varies by
 - ▶ Employee type
 - ▶ Geographic region

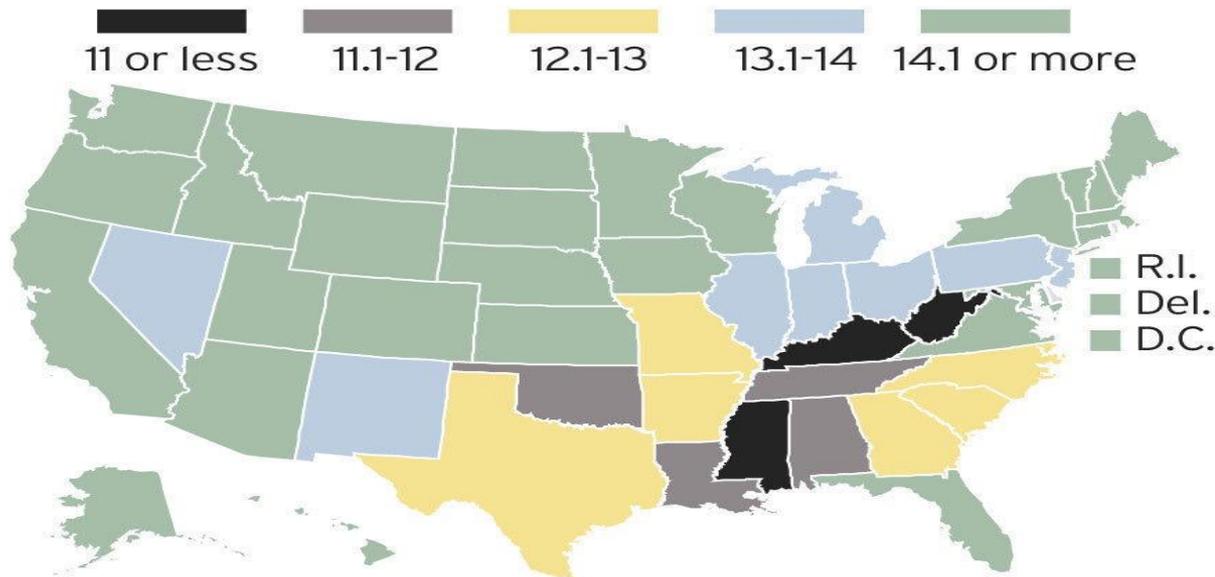


Life Expectancy by Region

Healthy life expectancy

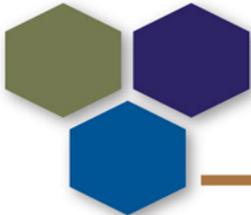
New data shows that healthy years after age 65 vary by region, according to the Centers for Disease Control and Prevention:

Expected healthy years remaining beyond age 65:



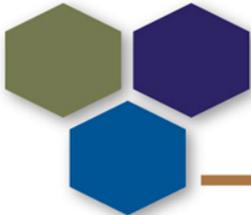
Source: Centers for Disease Control and Prevention

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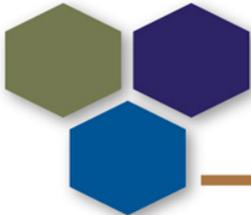
We're Living Longer

- ◆ Methods for reflecting mortality improvement
- ◆ Static Assumption
 - ▶ Uses fixed mortality tables with all rates lowered from past experience
 - ▶ Pre-anticipates future experience
 - ▶ Doesn't allow for future fluctuations
- ◆ Generational Assumption
 - ▶ Sets today's mortality rates at current experience
 - ▶ Assumes each future year's rates will be a bit lower than the last
 - ▶ Pre-anticipates future generations will differ from past



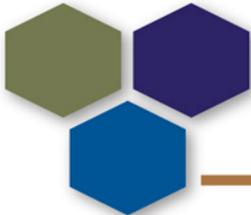
We'll Pay For It

- ◆ Pension benefits are generally payable for life
- ◆ Longer lives mean more payments
- ◆ More payments mean higher liabilities – *unless we have already anticipated the longer lives*
- ◆ Do we really have to reflect future improvement?
 - ▶ As the actuary, we are tasked with computing how much you need to set aside today to pay promised benefits when due
 - ▶ This includes anticipating that today's active members are expected to live longer than today's retirees
 - ▶ Can we afford to set aside anything less?



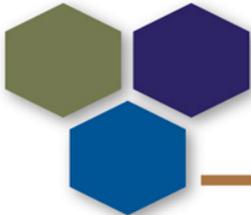
We'll Pay For It

- ◆ The impact of a change in mortality assumption will depend on what you're changing from and what you're changing to
 - ▶ How close is the current assumption on recent experience?
 - ▶ What's the current provision for future improvement?
- ◆ Specific examples coming in a few slides



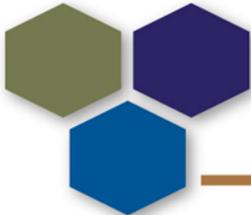
What are the New Tables?

- ◆ In October 2014, the Retirement Plans Experience Committee (RPEC) of the Society of Actuaries issued new mortality tables
- ◆ RP-2014 base mortality tables for males and females
- ◆ MP-2014 mortality improvement scales
- ◆ The last full set of tables issued by the RPEC were the RP-2000 tables issued in the 2000



What are the New Tables?

- ◆ The RP-2014 mortality tables are based on
 - ▶ Private sector defined benefit plan data
 - ▶ Same rates for the entire country (no regional variation)
 - ▶ Data submitted from 2004 through 2008
- ◆ Variations considered
 - ▶ Separate tables for Employees and Annuitants
 - ▶ Disabled
 - ▶ Data split out for Blue Collar and White Collar
 - ▶ Similar breakdown for Top and Bottom Quartile



What are the New Tables?

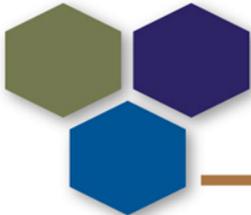
- ◆ The MP-2014 mortality improvement tables are based on Social Security data
- ◆ Separate tables for males and females
- ◆ Same rates for the entire country
- ◆ Reflects data from 1950 to 2009

What's the Impact?

		Monthly Deferred-to-62 Annuity Due Values; Generational @ 2014					Percentage Change of Moving to RP- 2014 (with MP-2014) from:			
Base Rates		UP-94	RP-2000	RP-2000	RP-2000	RP-2014	UP-94	RP-2000	RP-2000	RP-2000
Proj. Scale		AA	AA	BB	MP-2014	MP-2014	AA	AA	BB	MP-2014
Age										
Males	25	0.5865	0.5910	0.5898	0.5976	0.5995	2.2%	1.4%	1.6%	0.3%
	35	1.2495	1.2571	1.2561	1.2742	1.2787	2.3%	1.7%	1.8%	0.4%
	45	2.6624	2.6817	2.6862	2.7246	2.7297	2.5%	1.8%	1.6%	0.2%
	55	5.7213	5.7603	5.8002	5.8829	5.8813	2.8%	2.1%	1.4%	0.0%
	65	9.4508	9.4554	9.6028	9.8074	9.7714	3.4%	3.3%	1.8%	-0.4%
	75	7.2112	7.0691	7.3281	7.6262	7.7127	7.0%	9.1%	5.2%	1.1%
	85	4.6461	4.3658	4.6596	4.9090	5.0667	9.1%	16.1%	8.7%	3.2%
Females	25	0.6004	0.5904	0.6145	0.6240	0.6289	4.8%	6.5%	2.3%	0.8%
	35	1.2875	1.2641	1.3112	1.3326	1.3434	4.3%	6.3%	2.5%	0.8%
	45	2.7677	2.7148	2.8061	2.8519	2.8729	3.8%	5.8%	2.4%	0.7%
	55	5.9888	5.8815	6.0553	6.1651	6.1832	3.2%	5.1%	2.1%	0.3%
	65	9.9738	9.7805	10.0306	10.2451	10.2104	2.4%	4.4%	1.8%	-0.3%
	75	7.9534	7.7168	7.9938	8.2487	8.2562	3.8%	7.0%	3.3%	0.1%
	85	5.2959	5.1617	5.4676	5.7444	5.6622	6.9%	9.7%	3.6%	-1.4%

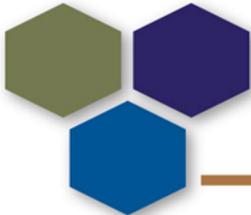
Table D-3

Based on an 8% interest rate.



What's the Impact?

- ◆ Hypothetical immature plan
- ◆ \$1 billion of Actuarial Accrued Liability
- ◆ \$800 million in assets (80% funded)
- ◆ Active Liability is 70% of total
- ◆ Active Payroll \$350 million
- ◆ Assumed rate of return 7.50%
- ◆ Assumed payroll growth 3.0%
- ◆ 20-Year Amortization
- ◆ Switching from UP94/Scale AA to RP-2014/Scale MP-2014 (both fully generational)



What's the Impact?

◆ Immature Plan

Impact on the Unfunded (\$Millions)

	Mortality Assumption		<i>Relative Change</i>
	Old	New	
Active AAL	\$ 700	\$ 721	3.00%
Retired AAL	300	318	6.00%
Actuarial Accrued Liability	\$ 1,000	\$ 1,039	3.90%
Actuarial Value of Assets	800	800	
Unfunded Actuarial Accrued Liability	\$ 200	\$ 239	19.50%
Absolute Increase (\$Million)		\$ 39	

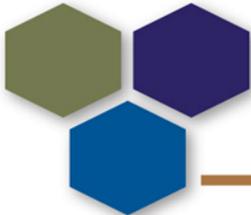


What's the Impact?

◆ Immature Plan

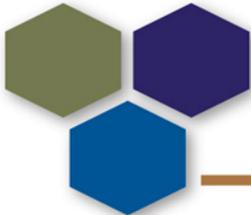
Impact on the Contribution Rates (% of Payroll)

	Mortality Assumption		<i>Relative Change</i>
	Old	New	
Total Normal Cost Rate	12.20%	12.57%	3.00%
Member Contribution Rate	<u>5.00%</u>	<u>5.00%</u>	0.00%
Employer Normal Cost Rate	7.20%	7.57%	5.08%
Amortization Payment	<u>4.31%</u>	<u>5.15%</u>	19.50%
Total Contribution Rate	11.51%	12.72%	10.51%
Absolute Increase (% of Payroll)		1.21%	



What's the Impact?

- ◆ Hypothetical mature plan
- ◆ \$1 billion of Actuarial Accrued Liability
- ◆ \$800 million in assets (80% funded)
- ◆ Retiree Liability is 70% of total
- ◆ Active Payroll \$150 million
- ◆ Assumed rate of return 7.50%
- ◆ Assumed payroll growth 3.0%
- ◆ 20-Year Amortization
- ◆ Switching from UP94/Scale AA to RP-2014/Scale MP-2014 (both fully generational)

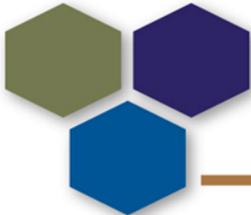


What's the Impact?

◆ Mature Plan

Impact on the Unfunded (\$Millions)

	Mortality Assumption		<i>Relative Change</i>
	Old	New	
Active AAL	\$ 300	\$ 309	3.00%
Retired AAL	700	742	6.00%
Actuarial Accrued Liability	\$ 1,000	\$ 1,051	5.10%
Actuarial Value of Assets	800	800	
Unfunded Actuarial Accrued Liability	\$ 200	\$ 251	25.50%
Absolute Increase (\$Million)		\$ 51	

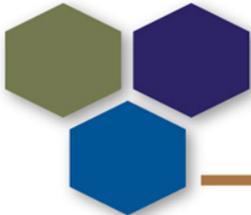


What's the Impact?

◆ Mature Plan

Impact on the Contribution Rates (% of Payroll)

	Mortality Assumption		<i>Relative Change</i>
	Old	New	
Total Normal Cost Rate	12.20%	12.57%	3.00%
Member Contribution Rate	<u>5.00%</u>	<u>5.00%</u>	0.00%
Employer Normal Cost Rate	7.20%	7.57%	5.08%
Amortization Payment	<u>10.07%</u>	<u>12.63%</u>	25.50%
Total Contribution Rate	17.27%	20.20%	16.97%
Absolute Increase (% of Payroll)		2.93%	



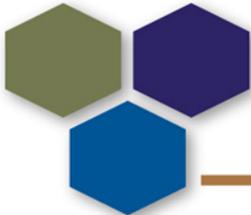
Assumption Selection Process

◆ Board Governance

- ▶ GFOA Best Practice recommends an experience study at least every 5 years
- ▶ Level of depth of experience study (or assumption review) may vary depending on plan size

◆ Actuarial Practice for all Assumptions

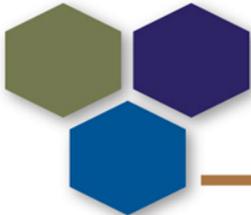
- ▶ Must be reasonable
- ▶ Must have a rationale
- ▶ Must be appropriate for the purpose of the measurement
- ▶ For funding pensions, assuming future mortality improvement is a necessity



Assumption Selection Process

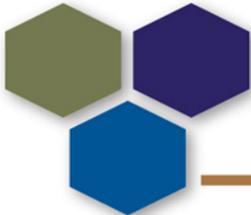
◆ Base Mortality Tables

- ▶ May use published tables
- ▶ May consider plan factors (e.g., Blue/White Collar) keeping in mind private/public sector differences
- ▶ Large plans may adjust published tables by reflecting some or all of plan's experience
- ▶ Small plans may find it hard to rely on plan's experience – lack of statistical credibility
- ▶ The tricky part: how do we define large and small?
- ▶ IRS regulation for private sector pensions says 1,000 deaths in experience study period (probably better as a rule of thumb than rigid rule)



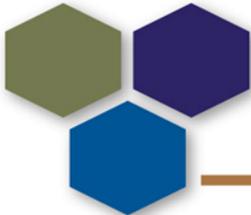
Assumption Selection Process

- ◆ Mortality Improvement Assumption
 - ▶ May use published tables
 - ▶ MP-2014 was not split out by Blue/White Collar
 - ▶ Need a HUGE amount of data since we're measuring small changes (improvements) of small numbers (mortality rates)
 - ▶ Very, very hard to come up with a plan specific mortality improvement assumption
 - Must support assumption with valid analysis



There's Always More to Discuss...

- ◆ Auditors may ask if you have considered the most recent information including MP-2015
- ◆ RPEC anticipates issuing annual updates
- ◆ As we learn more and get better data, our understanding of any actuarial assumption can change
- ◆ RPEC is always reviewing methodology and may develop new models in the future



There's Always More to Discuss...

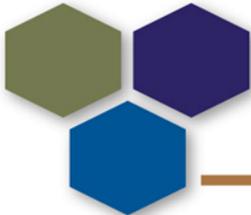
- ◆ Can mortality rates continue to improve indefinitely?
 - ▶ What about the obesity epidemic?
 - ▶ NIH study anticipates that improvements from decreased smoking rates will outpace obesity until at least 2040
- ◆ RPEC is currently collecting data from public sector plans for separate mortality study expected to be published in 2018



There's Always More to Discuss

◆ References

- ▶ GRS Perspectives
- ▶ RP-2014 report
- ▶ MP-2014 report
- ▶ MP-2015 report



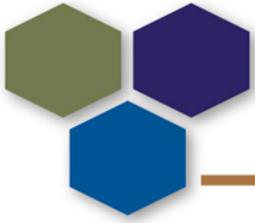
There's Always More to Discuss

- ◆ News Flash: MP-2015 was released in October 2015!
- ◆ Same methodology as MP-2014
- ◆ Reflects two more years of data: 2010 and 2011
- ◆ Less future improvement expected (but still expecting improvement)
- ◆ Implication is updating from MP-2014 to MP-2015 would reduce liabilities
- ◆ When is the last time you saw a mortality assumption change reduce pension liabilities?



Disclaimers

- ◆ This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- ◆ Readers are cautioned to examine original source materials and to consult with subject matter experts before making decisions related to the subject matter of this presentation.
- ◆ This presentation expresses the views of the author and does not necessarily express the views of Gabriel, Roeder, Smith & Company.



Acknowledgement

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