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Mercer Longevity Insights
Your Industry vs the General Population

December 5, 2014

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MARSH & McLENNAN COMPANIES

Agenda

- Welcome
- Longevity – We Are Living Longer!
- Mercer's Industry Longevity Experience Study (MILES)
- Predictions Are Hard To Make, Especially About The Future…
- Questions

Presenters

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LONGEVITY – WE ARE LIVING LONGER!

SOA Mortality Study

- The Society of Actuaries released an exposure draft of a new mortality table (RP-2014) and projection scale (MP-2014) in February 2014.
  - Result was a substantial increase in liabilities relative to tables currently in use.
  - Comments were relatively critical.
  - In the final release, SOA addressed most comments but did not change the results of the study.

- The new SOA mortality table and projection scale can significantly affect:
  - Accounting expense & balance sheet
  - Cash funding costs (as early as 2016, but most likely 2017)
  - Plan administration
  - Reporting/disclosure requirements to governing bodies
  - Disclosed executive compensation
  - Pre-funding of non qualified benefits

SOA Mortality Study
Impact on Life Expectancy

Life Expectancy at Age 65	Current Table	New Table	Increase
Male	19.5 years	21.6 years	+11%
Female	21.3 years	23.8 years	+12%

Life Expectancy at Age 85	Current Table	New Table	Increase
Male	5.9 years	7.2 years	+22%
Female	7.4 years	8.4 years	+14%

Current table: RP2000 with generational projection scale AA
New table: RP2014 with MP2014 generational projection scale

How Much Can Costs Change?
Example of Estimated Plan Liability Impact

Estimated Impact of Mortality Change on Liabilities		
Age	Male	Female
35	11.2%	13.0%
45	8.5%	10.8%
55	6.1%	8.6%
65	6.2%	7.2%
75	11.1%	8.8%
85	16.9%	10.3%

- Plan sponsor liabilities may increase by 5% to 10% or more depending on the characteristics of the plan and the assumptions currently being used

Comparison based on new SOA tables vs RP2000 with static projection to 2020 using scale AA with 5% interest and single life annuity starting at age 62

How Much Can Costs Change?
Example of Estimated Balance Sheet Impact

Illustrative Impact of Mortality Change on Balance Sheet			
	Before	After	Change
PBO	$200M	$220M	10%
Assets	$180M	$180M	0%
Net Liability	$20M	$40M	100%

Plan sponsor liabilities may increase by 5% to 10% or more,

but Net Liabilities Recognized on the Balance Sheet can double, or worse.

Net Liabilities may also go from negative to positive.

What to Expect From Auditors

- Auditors likely to require updated mortality as early as 2014 year-end for corporate financial reporting.

E&Y: *"Sponsors will need to evaluate the effect of the new information on their mortality rate assumptions…conclusions should be supported by well-documented, robust analysis and credible statistics."*

KPMG: *"Companies should consider the SOA's new mortality data…when making mortality assumptions for year-end 2014. Plan sponsors will need to document how they considered available mortality information..."*

PwC: *"Companies should consider this new mortality data for their plans' next measurement date in relation to their plan-specific mortality experience and future expectations. With regard to internal control over financial reporting, they should document how the new tables were considered."*

What to Expect From Auditors

Deloitte:

*"…entities may also be able to consider other available information, such as plan-specific mortality experience**, industry-specific mortality experience***, *or other relevant mortality experience. Entities should **consider their rationale** for changing the approach used in the prior year to select the mortality assumption…*

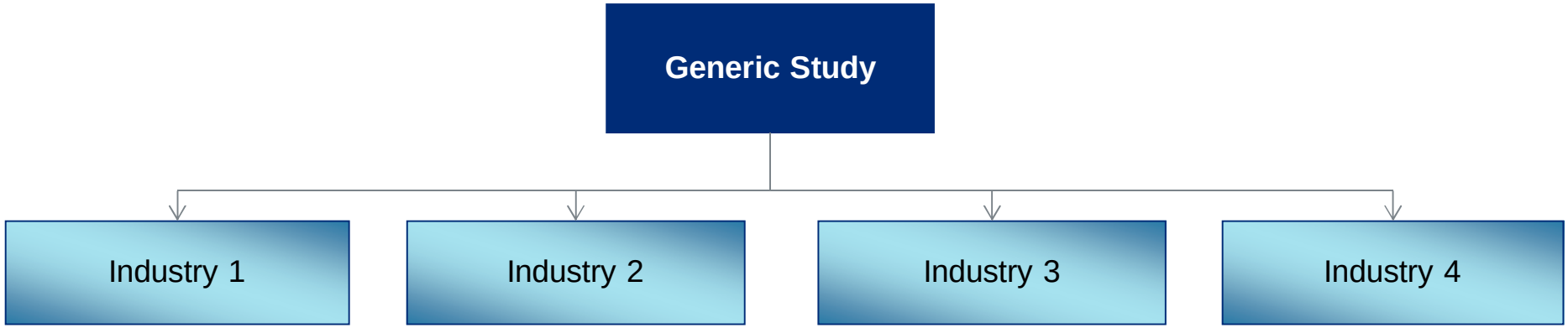
*…entities need to have processes and internal controls in place to ensure proper assessment of all relevant factors, **including potentially contradictory data**, when selecting the mortality assumption. Given the nature of the mortality assumption, **we expect that many entities do not have such expertise internally."***

Bold emphasis added

MERCER'S INDUSTRY LONGEVITY EXPERIENCE STUDY (MILES)

Purpose of Study

- In lieu of a generic study, Mercer believes that better longevity estimates can sometimes be obtained from specific plan or industry data



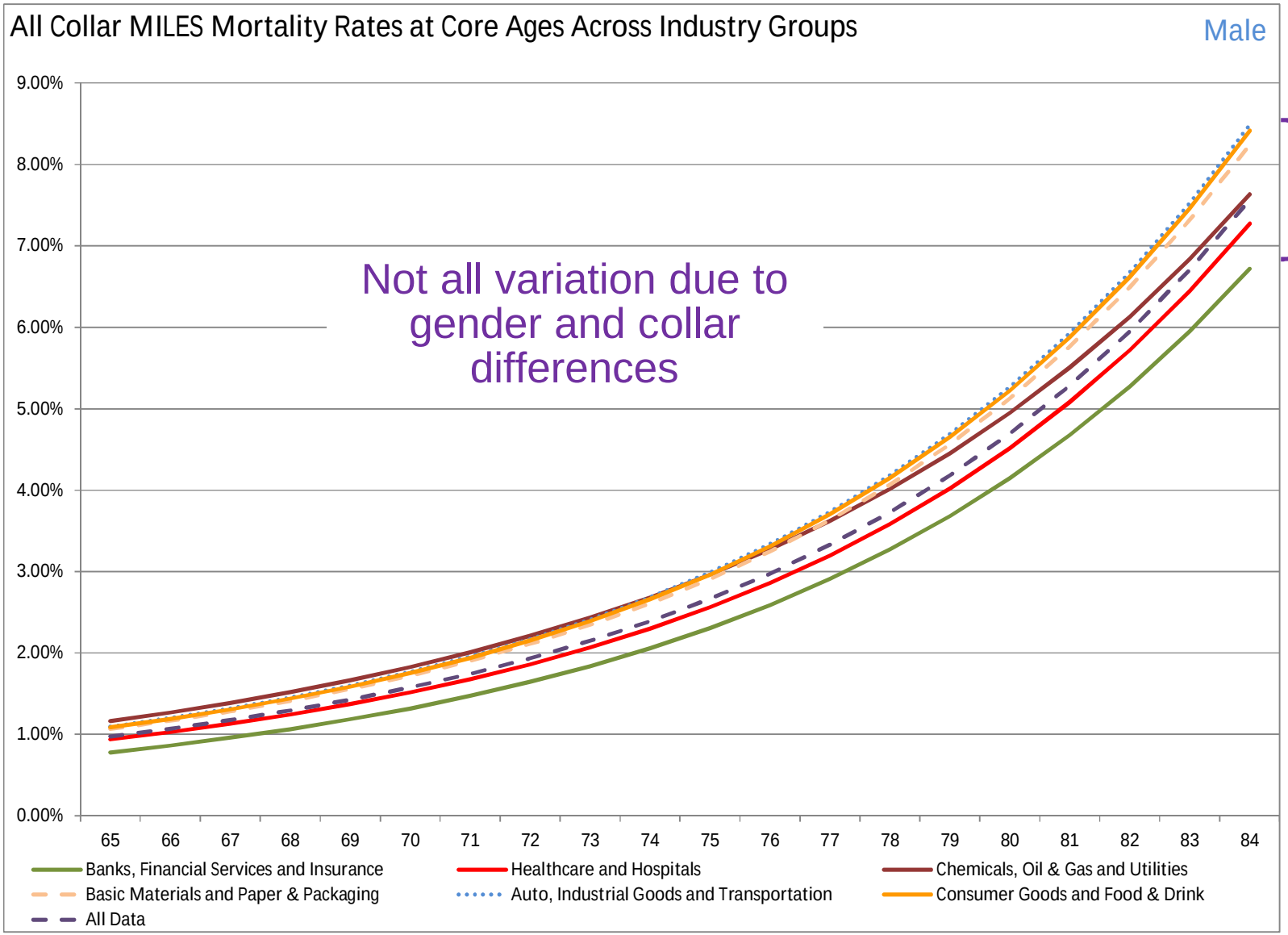
1. **Reduce risk of undervaluing or overvaluing liabilities**
2. **Enhance estimates of future liabilities and cash flows**
3. **Improve quality of reported earnings**

Industry Groupings – Comparison of Mercer Experience to SOA Study

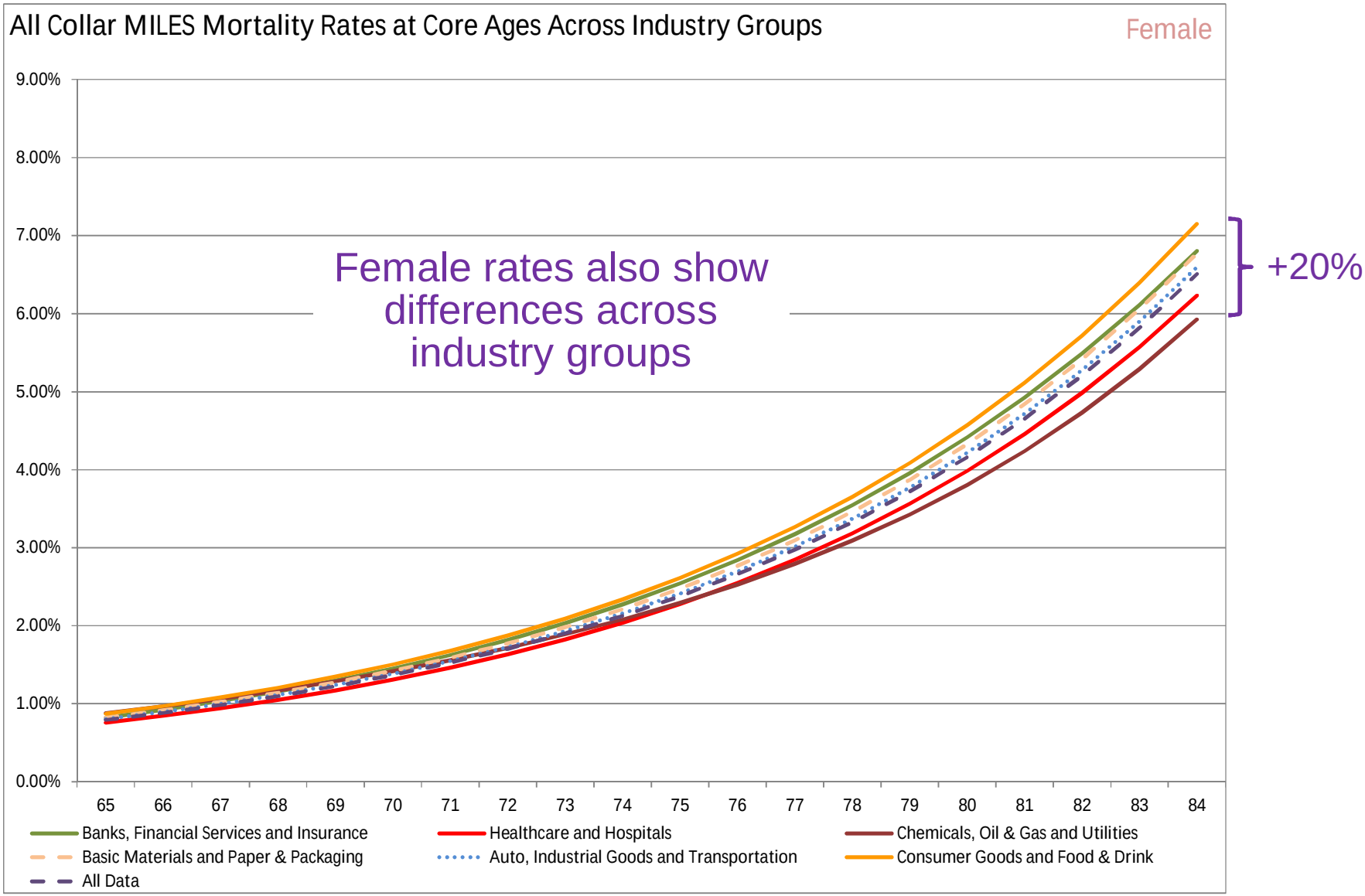
Banking, Finance and Insurance	Shows 3¼% fewer deaths, Approx. ¾% more liability
Healthcare and hospitals	Shows 4¾% fewer deaths Approx. 1% more liability
Chemicals, Oil & Gas and Utilities	Shows very similar longevity
Basic Materials, Paper & Packaging	Shows 4½% more deaths Approx. 1% less liability
Auto, Transportation and Industrial Goods	Shows 7% more deaths Approx. 1½% less liability
Consumer Goods and Food & Drink	Shows 9½% more deaths Approx. 2% less liability
All-industry	Shows 1% fewer deaths Fewer male, more female

Mercer study experience by collar compared to RP-2014 backed up to 2010 using MP-2014. Assumes male/female distribution per industry and RP-2014 no collar rates. All-industry includes additional sponsors not in 6 groups above.

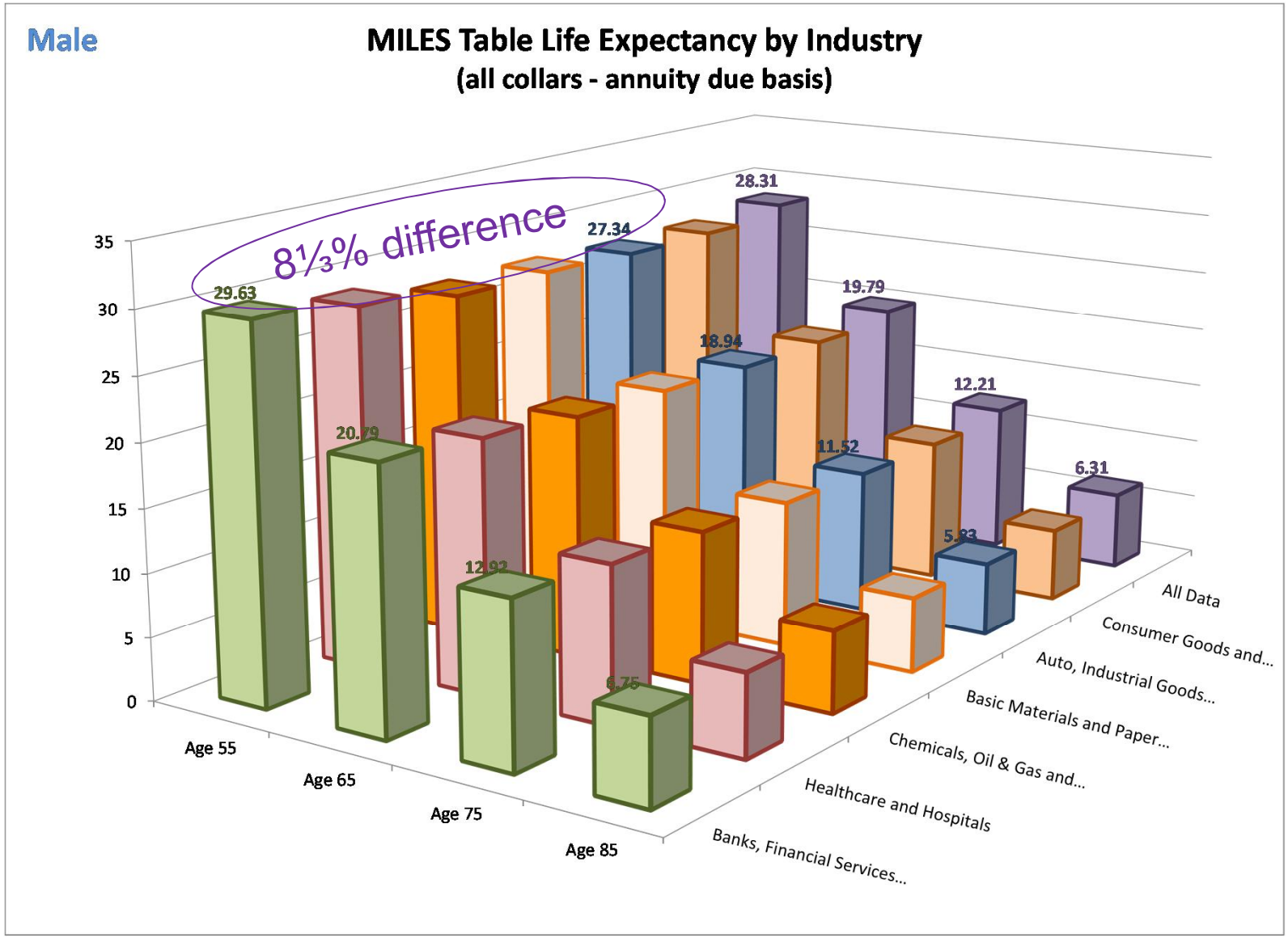
Mercer Industry Longevity Experience Study (MILES)
Variations in male mortality rates by industry group



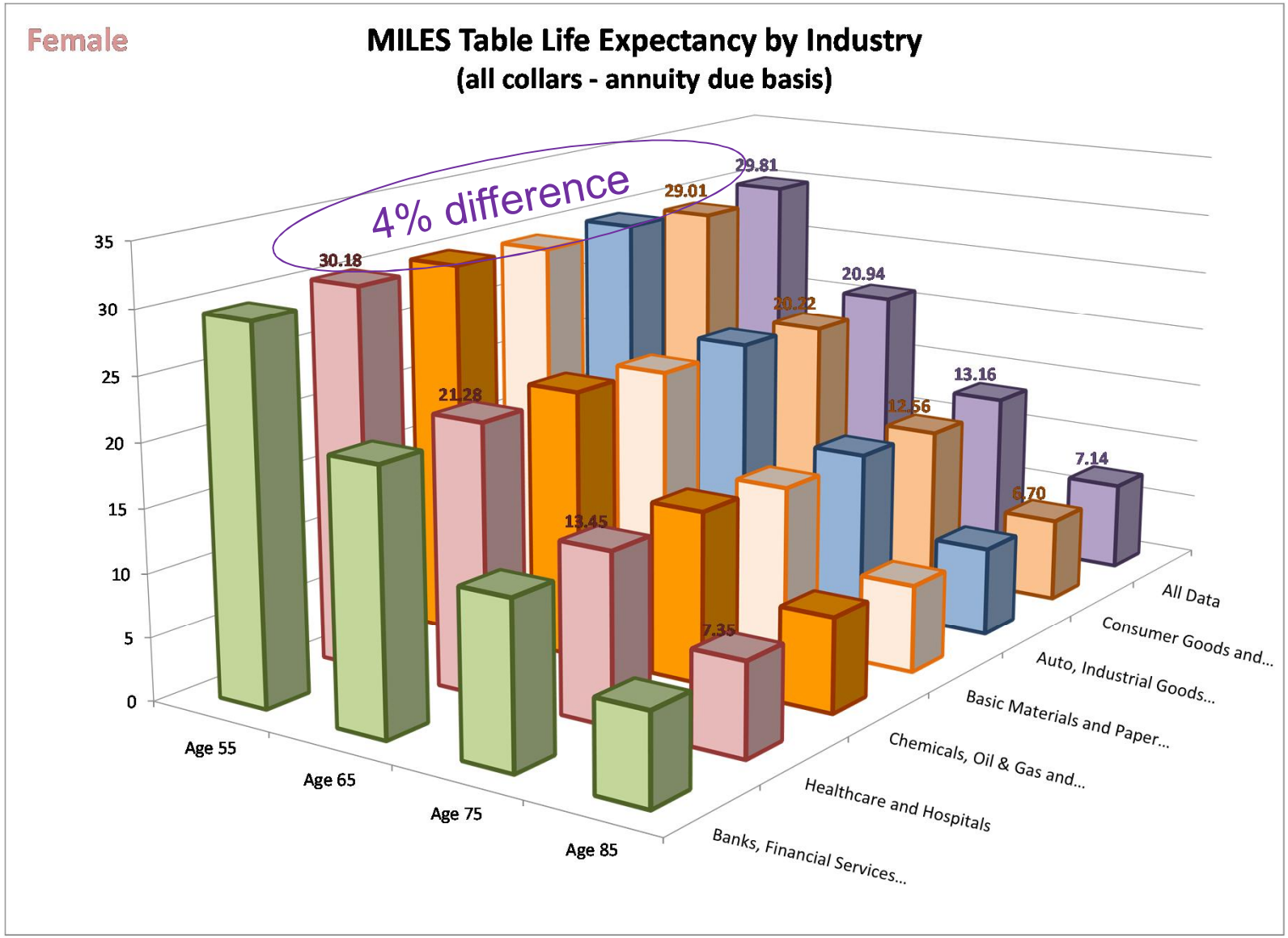
Mercer Industry Longevity Experience Study (MILES)
Variations in female mortality rates by industry group



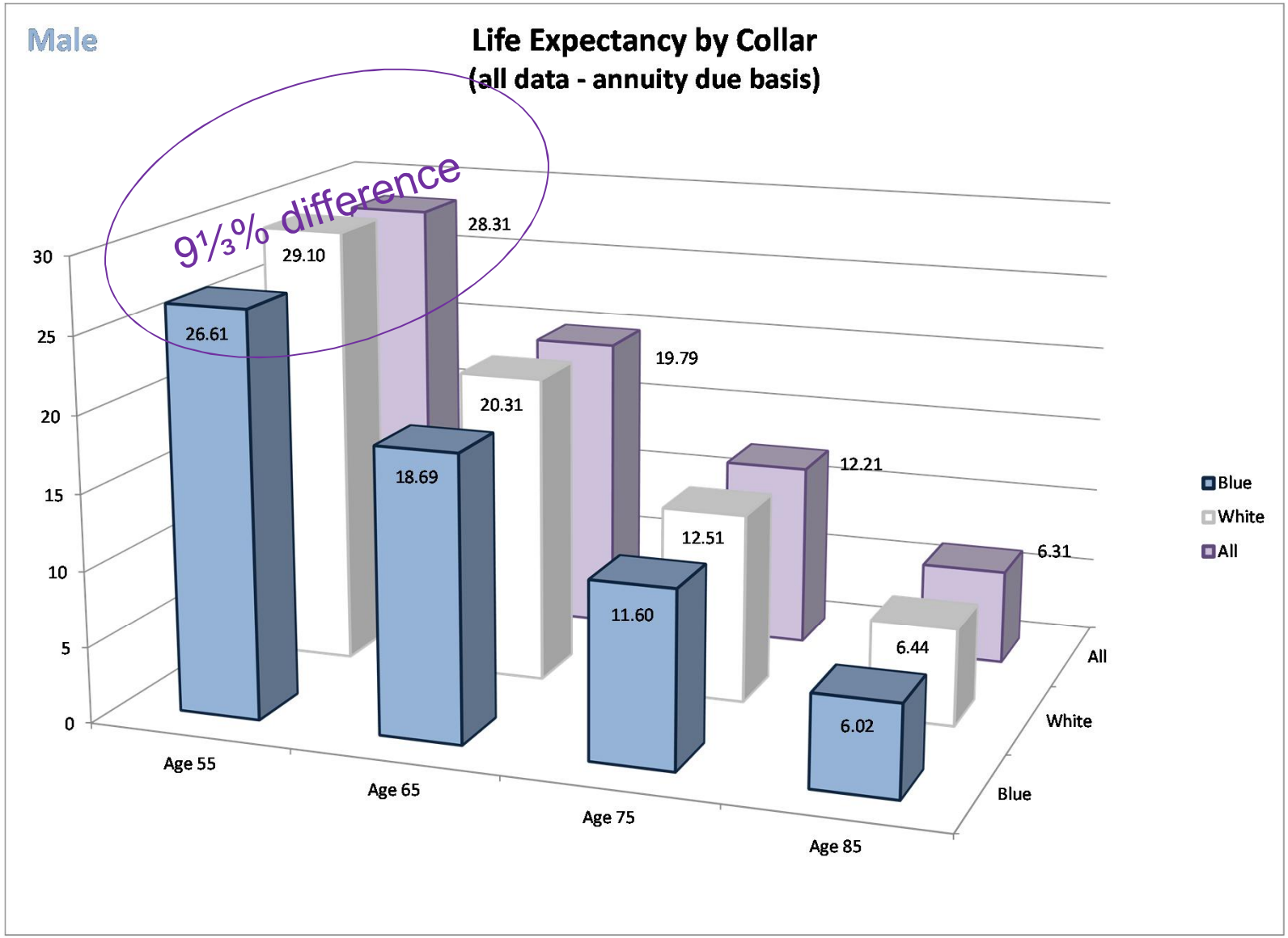
Mercer Industry Longevity Experience Study (MILES)
Variations in male life expectancy by industry group



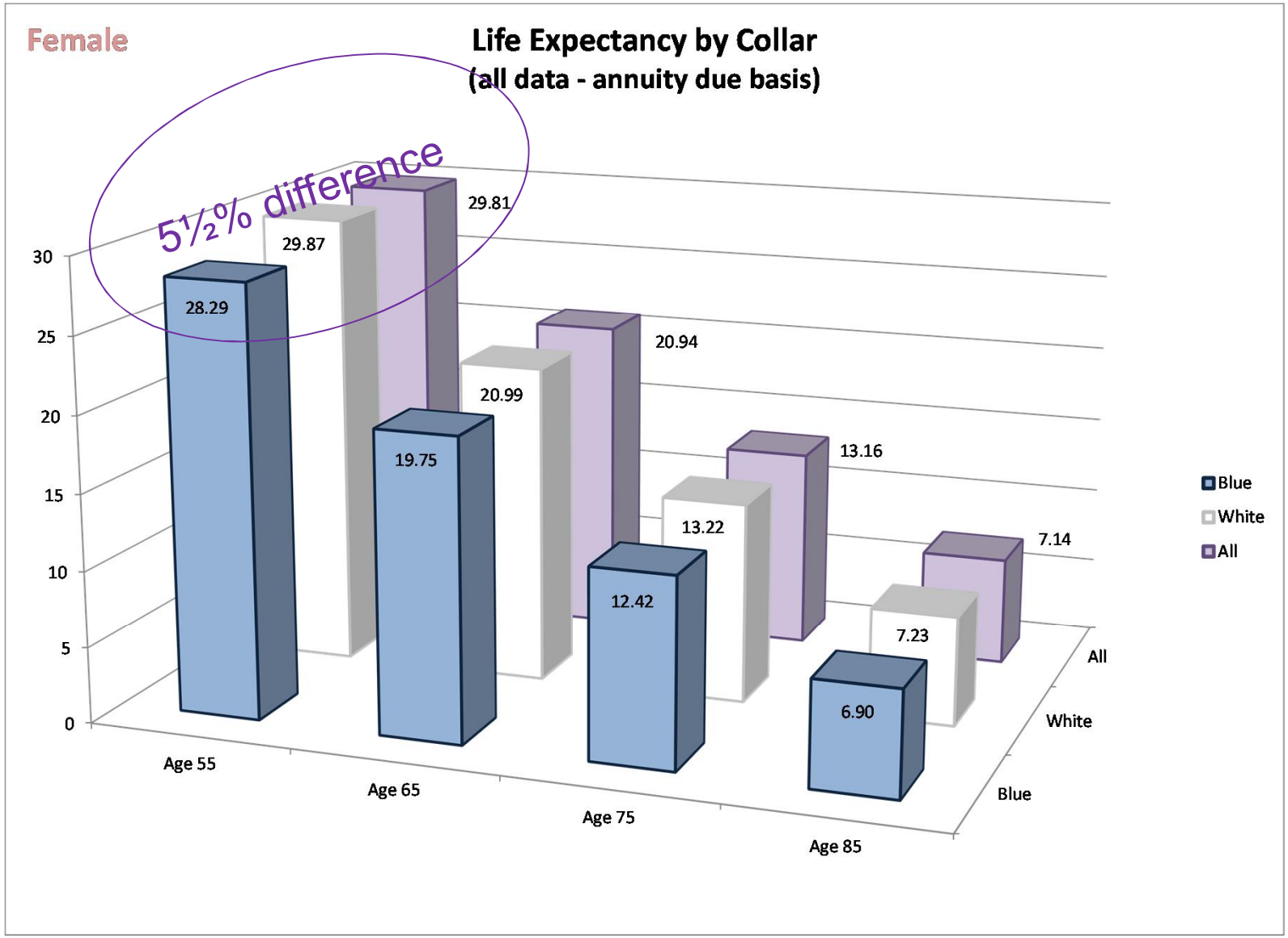
Mercer Industry Longevity Experience Study (MILES)
Variations in female life expectancy by industry group



Mercer Industry Longevity Experience Study (MILES)
Variations in male life expectancy by collar



Mercer Industry Longevity Experience Study (MILES)
Variations in female life expectancy by collar



Options to address mortality issue

Accept the SOA tables

- "Average" experience for many unrelated employers
- Significant increase in liabilities
- Need to explain/demonstrate to auditor how information was assessed to select the assumption
  - May be difficult to do without 'back-testing' assumption

Use a MILES table

- "Average" experience for many companies with similar industry characteristics
- May more accurately predict plan experience
- Analyze impact on liabilities
- Need to explain/demonstrate to auditor how information was assessed to select the assumption
  - May be easier to do than just accepting SOA tables blindly
  - White paper to be provided to auditors as 'backup'

Company specific study

- Optimal /most defensible way of selecting a mortality assumption for those with enough experience
- Most time consuming and costly
- Company must have enough data to evaluate
  - Company-specific table for those with substantial data
  - High-level comparison of overall experience to existing table for those with less data

Plan design or pension risk transfer actions can further mitigate the impact on liabilities. Window of opportunity to settle through cashout may close after 2015 or 2016.

PREDICTIONS ARE HARD TO MAKE,
ESPECIALLY ABOUT THE FUTURE

- YOGI BERRA -

Selecting a Rate of Future Longevity Improvement

- The good news is that we are living longer, and longevity continues to improve. The questions now are by “How Much?” and “Over What Period?”
- Generational projection of improvements
  - Continuous projection of mortality improvements for all future years
  - Supported by experience of last 100+ years
  - Contrasts with “static” projection of improvements for a specified number of years for all participants
- Two-dimensional (2D) projection of improvements
  - Rate of improvement varies by age and by year
  - Allows for recognition of recent high rates of improvement grading down to lower long-term rate of improvement
  - Contrasts with one-dimensional (age-only) projection that had been commonly used
    - 2D approach is computationally somewhat more challenging than 1D approach

Selecting a Rate of Future Longevity Improvement
The Projection Scale Matters

- Updating the projection scale from AA to MP-2014 accounts for a significant portion of the liability increase associated with the new tables
- MP-2014 is based on Social Security longevity data through 2007
  - Rates of improvement assumed after 2007 are heavily influenced by a recent period of substantial improvement in the early 2000s
  - These rates were used to project mortality forward from 2006 to 2014 in developing the RP-2014 table
- Alternative approaches reflect a lower rate of improvement after 2007
  - Social Security data is available through 2010 and generally shows a lower rate of improvement for 2008-2010 than is assumed by MP-2014

SOA Mortality Study / Alternative Projection Scales
Impact on Life Expectancy

Life Expectancy at Age 65	Current Table	New Table, Projected after 2007 Using			Increase
		MMP-2007	MSS-2007	MP-2014	
Male	19.5 yrs	20.6 yrs	20.8 yrs	21.6 yrs	6% - 11%
Female	21.3 yrs	22.7 yrs	22.4 yrs	23.8 yrs	5% - 12%

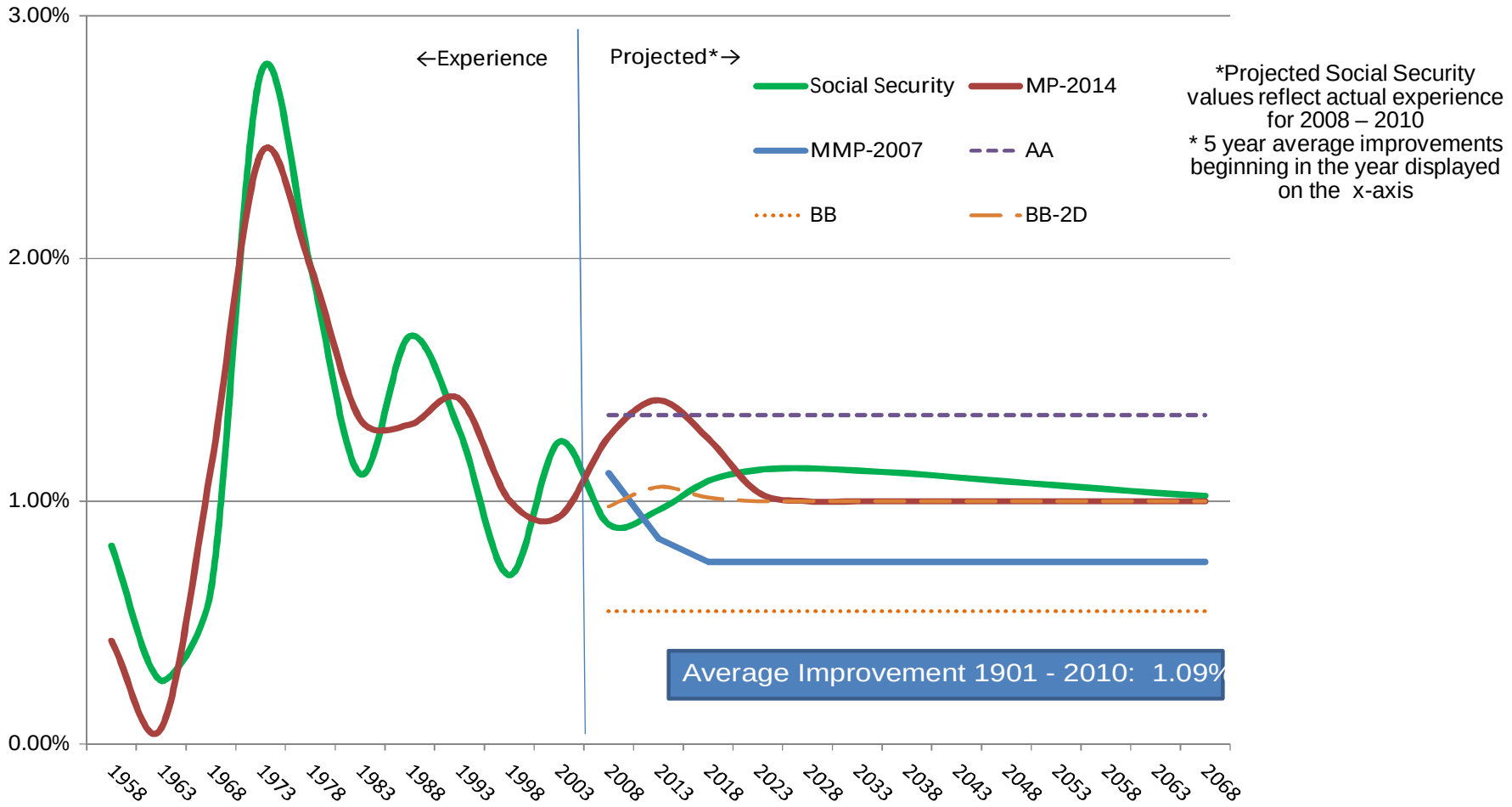
Life Expectancy at Age 85	Current Table	New Table, Projected after 2007 Using			Increase
		MMP-2007	MSS-2007	MP-2014	
Male	5.9 yrs	6.8 yrs	6.7 yrs	7.2 yrs	14% - 22%
Female	7.4 yrs	7.9 yrs	7.6 yrs	8.4 yrs	3% - 14%

Current table: RP2000 with generational projection scale AA
New table: RP2014 with generational projection as shown above

Comparing Six Predictions of the Future

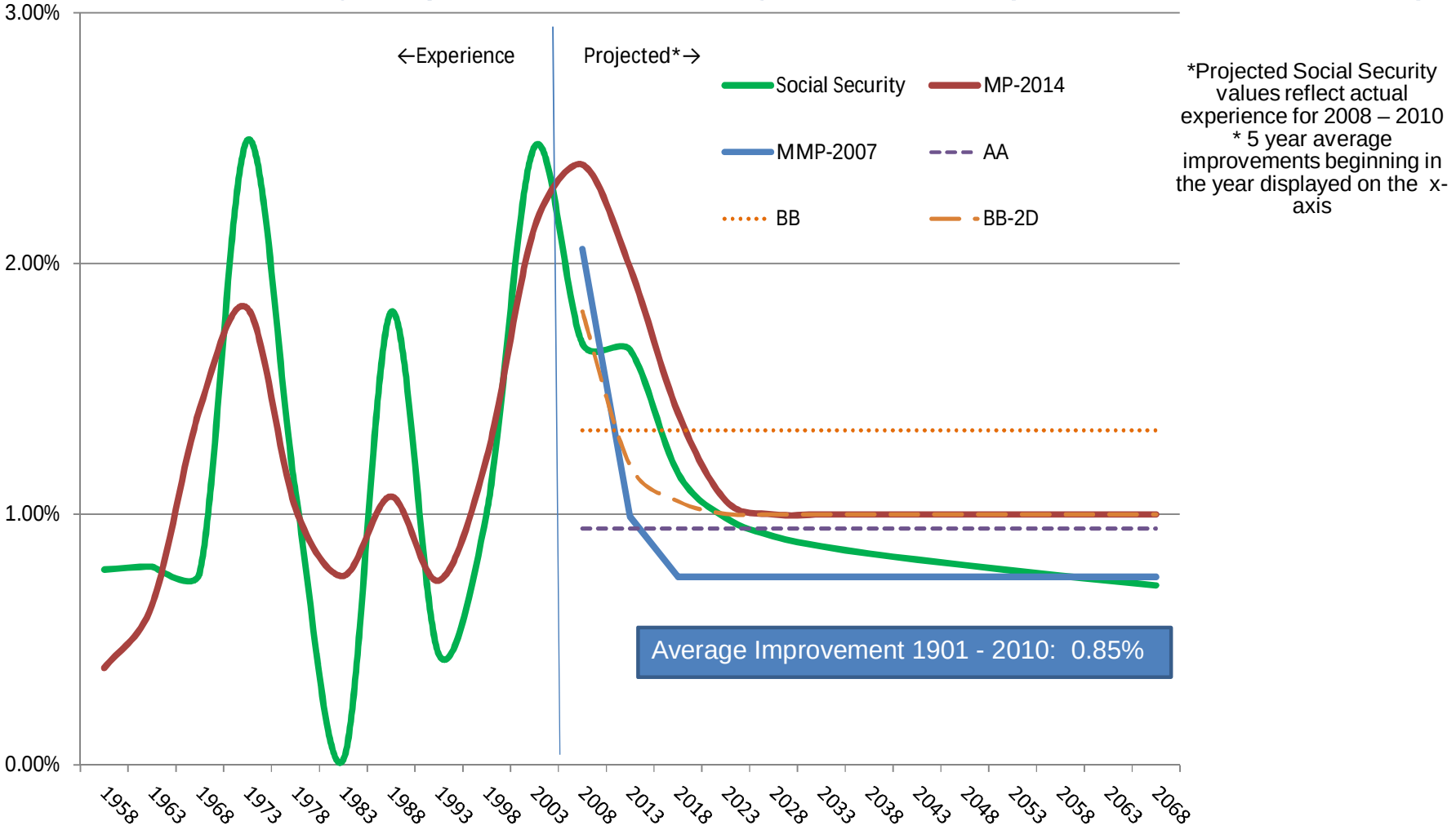
Scale	Definition
AA	SOA Projection Scale, published in 1995; recommended for use with RP-2000 tables
BB 2D	Two-dimensional interim table published by RPEC in 2012 for use with RP-2000 prior to release of RP-2014
BB	One-dimensional (age only) simplification of BB 2D designed to be used generationally with RP-2000
MP 2014	Two-dimensional projection scale released in conjunction with RP-2014. Used to adjust mortality experience from 2006 to 2014 in developing the RP-2014 table
MMP 2007	Mercer-developed alternative to MP-2014 using same methodology as MP-2014, but shorter grade-down period and lower ultimate rate of improvement
MSS 2007	Mercer-developed scale reflecting historical and projected improvements published by the Social Security Administration

Average Annual Mortality Improvement for Ages 45 – 64 (Males and Females)



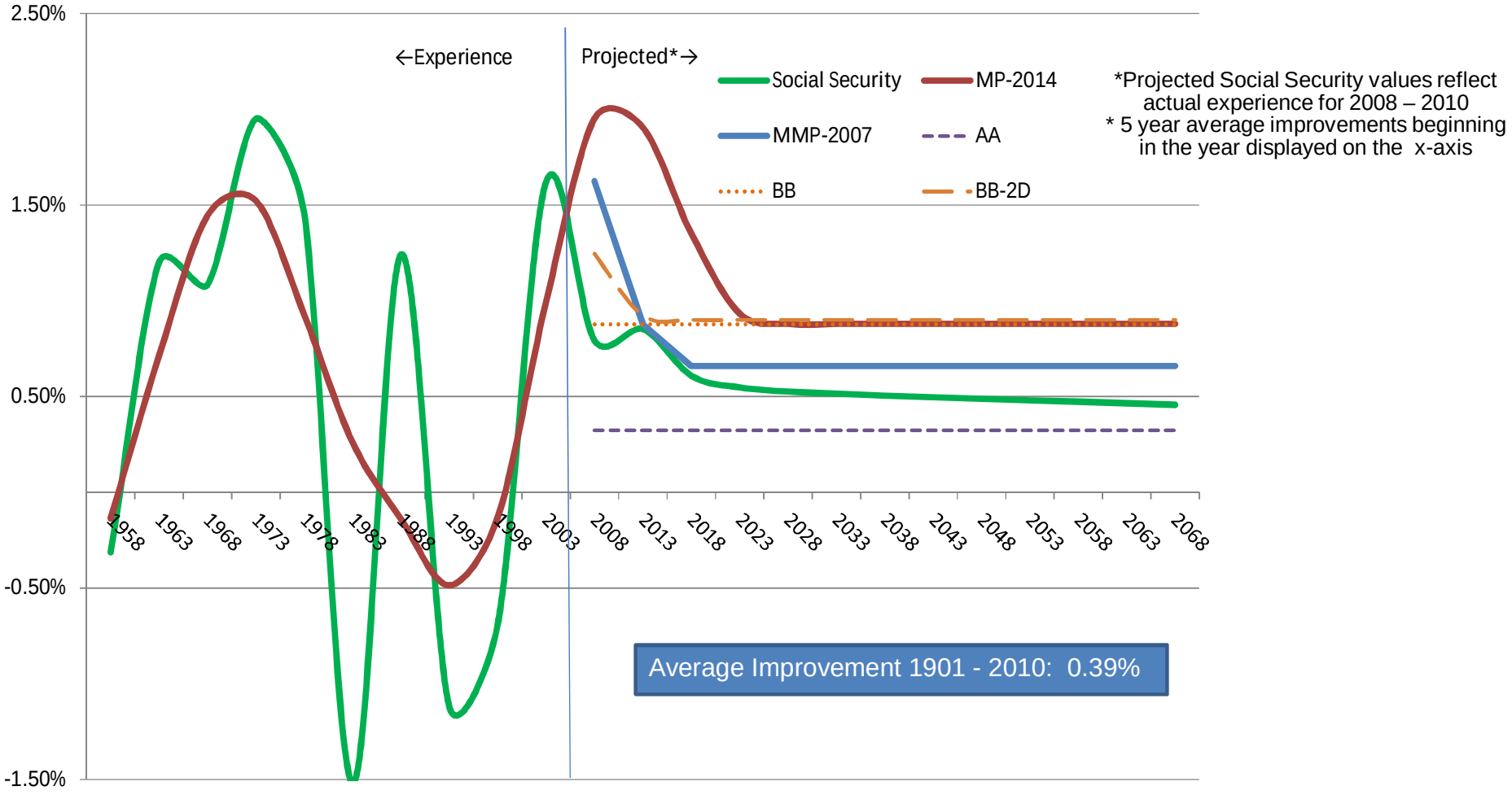
- Historical record shows rapid changes in the rate of mortality improvement

Average Annual Mortality Improvement for Ages 65 – 84 (Males and Females)



- Improvements from ages 65-84 drive much of the effect of the new tables on pension liabilities.
- MP-2014 would result in average annual improvement of 1.82% for 1999-2027; well in excess of 1.25% average for 1963-1991, which is the highest observed for any 28-year period thus far

Average Annual Mortality Improvement for Ages 85 – 99 (Males and Females)



- Rates of mortality improvement after age 85 have generally been much lower and are assumed to remain that way

Mercer View of Mortality Improvement Scales

- The future is uncertain, but based on our research, reasonable and defendable views of the future would include:
  - MP 2014,
  - MMP 2007, or
  - MSS 2007

- In some circumstances, other historical projection scales may be appropriate, but they will need additional support based upon individual facts and circumstances

WHAT’S NEXT?

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- **Know your options!**
- **Understand:** Small changes in liability can have a big balance sheet impact
- **Select:** Assumptions must be a company's best estimate
  - What industry, or company specific table might be a better estimate than a generic table?
  - What basis for future improvement is appropriate?
- **Document:** How will you document these selections?
- **Control**: This is your opportunity to own your assumption process, and not have generic assumptions applied indiscriminately upon you.

Questions

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