

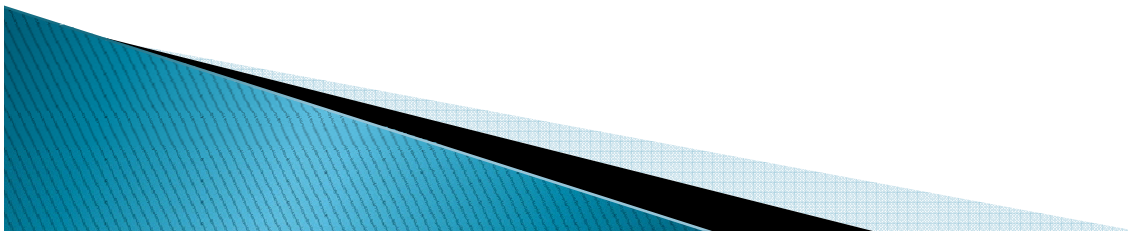
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**Mercer Consulting (India) Pvt. Ltd., India**

**Changing Risks, Expecting the Unexpected**

***17<sup>th</sup> Global Conference of Actuaries & 2015 AGFA***

***2<sup>nd</sup> & 3<sup>rd</sup> February, 2015 Mumbai - India***

# Mortality Studies Canada

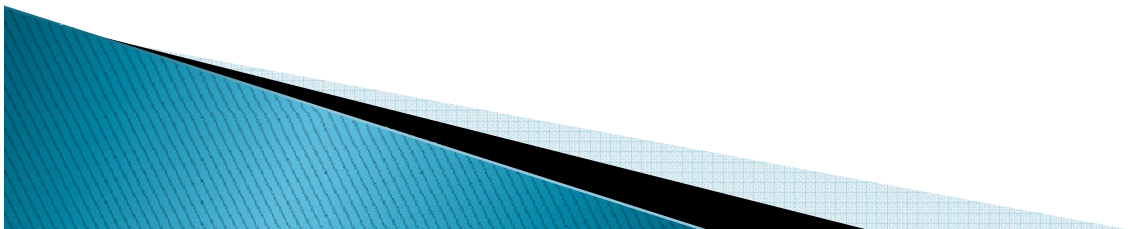


# Overview

- Objectives of mortality studies
- Why Canadian Institute of Actuaries (CIA) conducted mortality study
- Data for the study conducted by CIA
- New mortality tables published in Canada
- Best estimate of mortality rates for a pension plan
- Industry Mortality Study
- Scope of research



# Objectives of Mortality Study



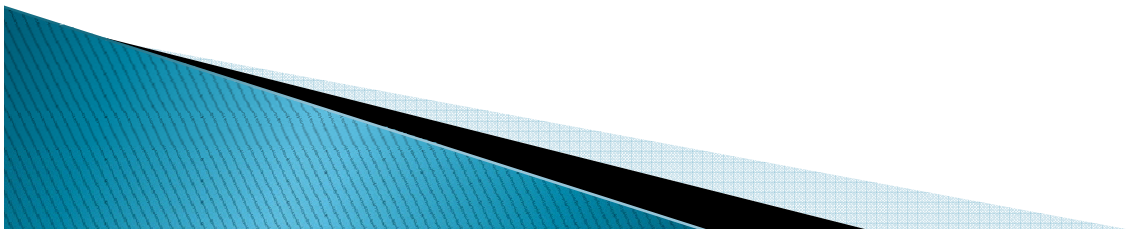
# Typical Objectives

Study pensioners' mortality experience

Study mortality improvement rates

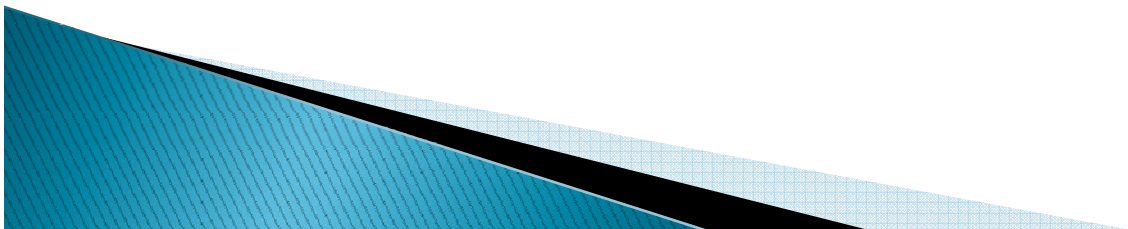
Develop and maintain a mortality table

Create mortality projection scale

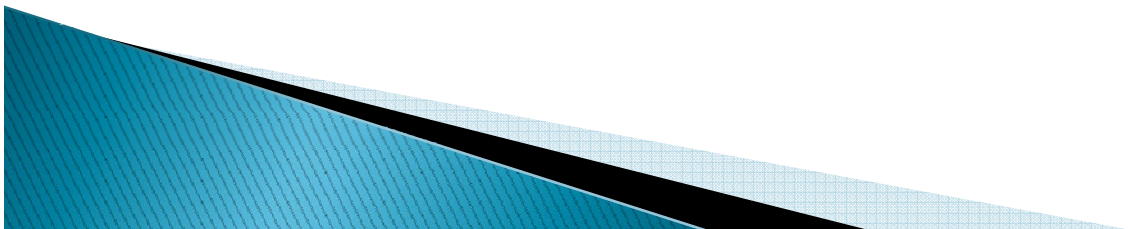


# Additional Objectives of Study Conducted by CIA

- To check if mortality tables based on US data were still valid to reflect mortality experience of Canadian population
- To develop new mortality tables and improvement scale for Canada (if required)



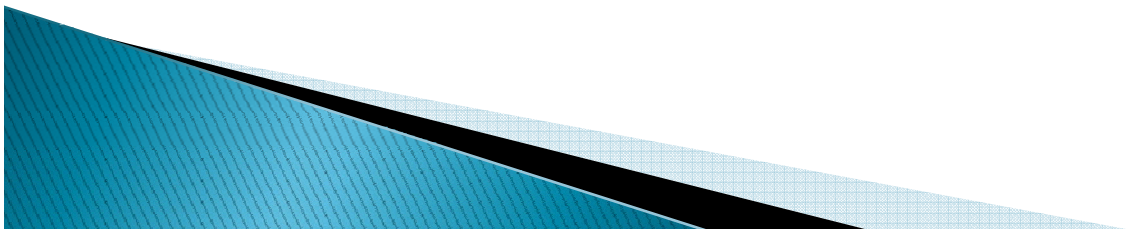
# Data Collection, Scrutiny and Analysis by CIA subcommittee



- Data from 1999 to 2008 was used for the study
- Data collected from the pension plan contributors
- Irrelevant data flagged and rejected

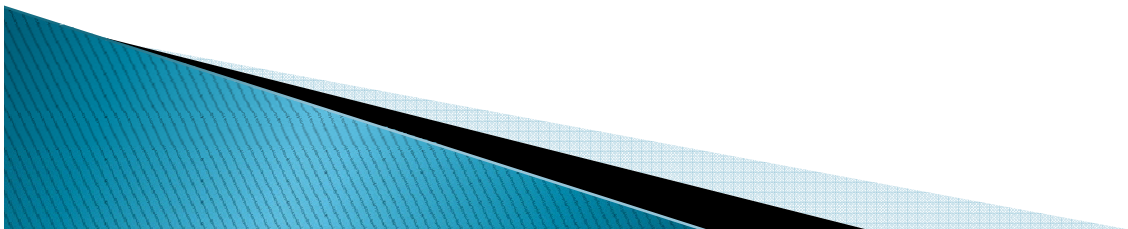
## Example

- Data rejected if number of deaths were less than 20 in a particular year
- Upper limit and lower limit applied on the monthly income
- Active participants data not included in the study– salaries data not reliable





# Results of CIA Study



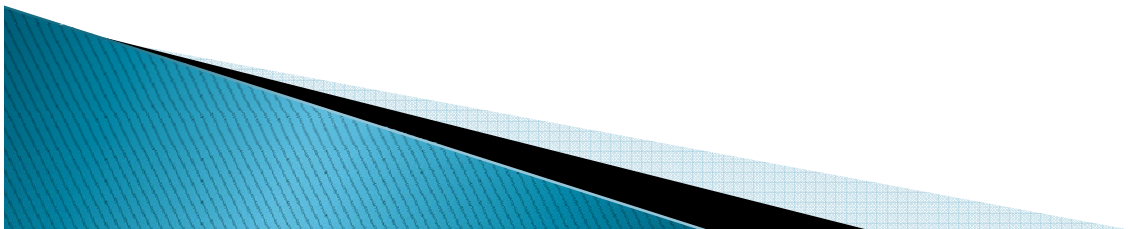
# CIA Published Mortality Tables

2014  
Mortality  
table  
(CPM 2014)

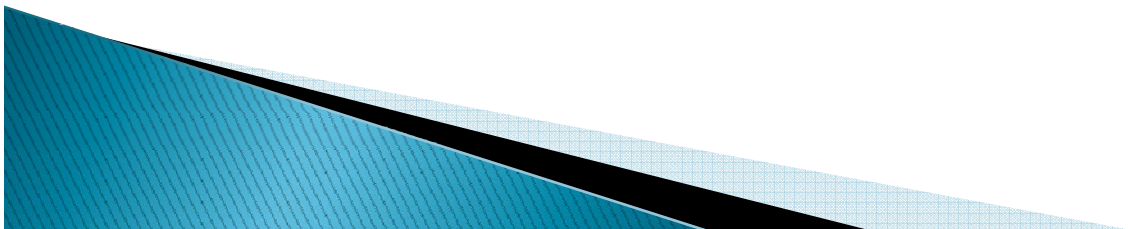
2014 Public  
Mortality  
table  
(CPM 2014  
Publ)

2014 Private  
Mortality  
table  
(CPM 2014  
Priv)

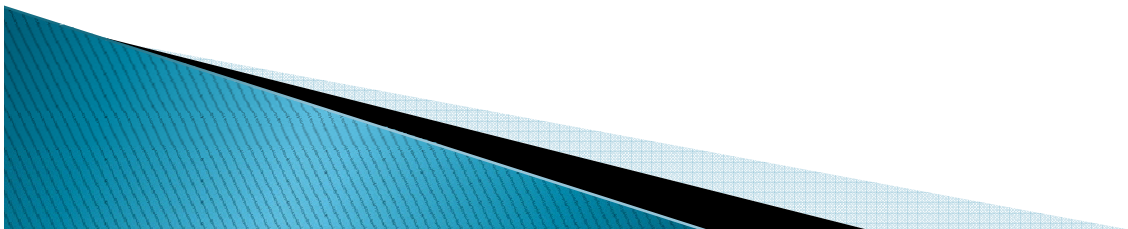
# Steps Involved to Best Estimate Mortality Rates for a Pension Plan



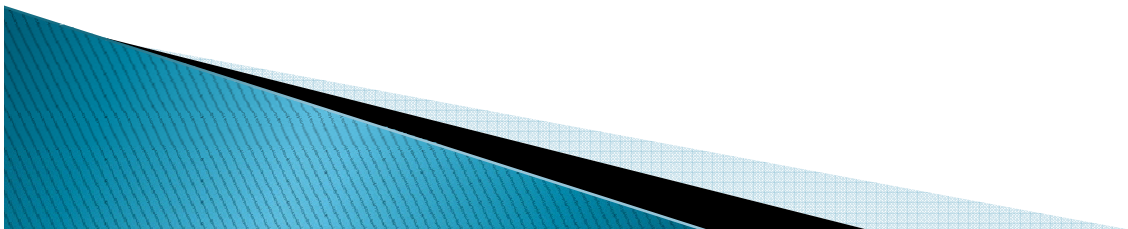
- Check data credibility
- Analyze mortality experience
- Adjustment to base mortality table
- Adjustment for future improvements in mortality



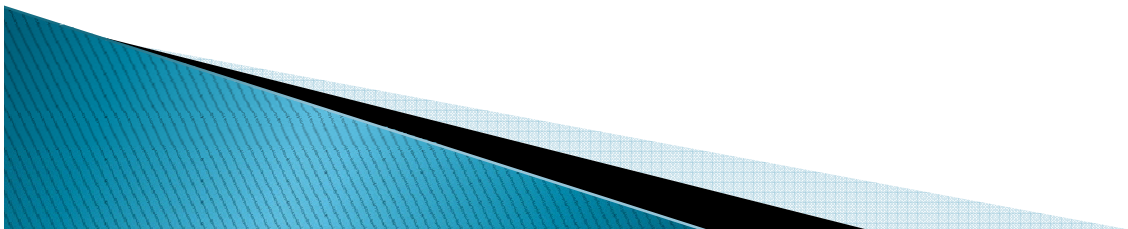
# Industry Mortality Study in Canada



- Study to analyse industry specific pensioners' mortality experience for pension plans
- Industries covered
  - Paper & forest industry
  - Metals & minerals industry
  - Universities
  - Financial industry
- Homogeneous data groups were created based on collar type and industry

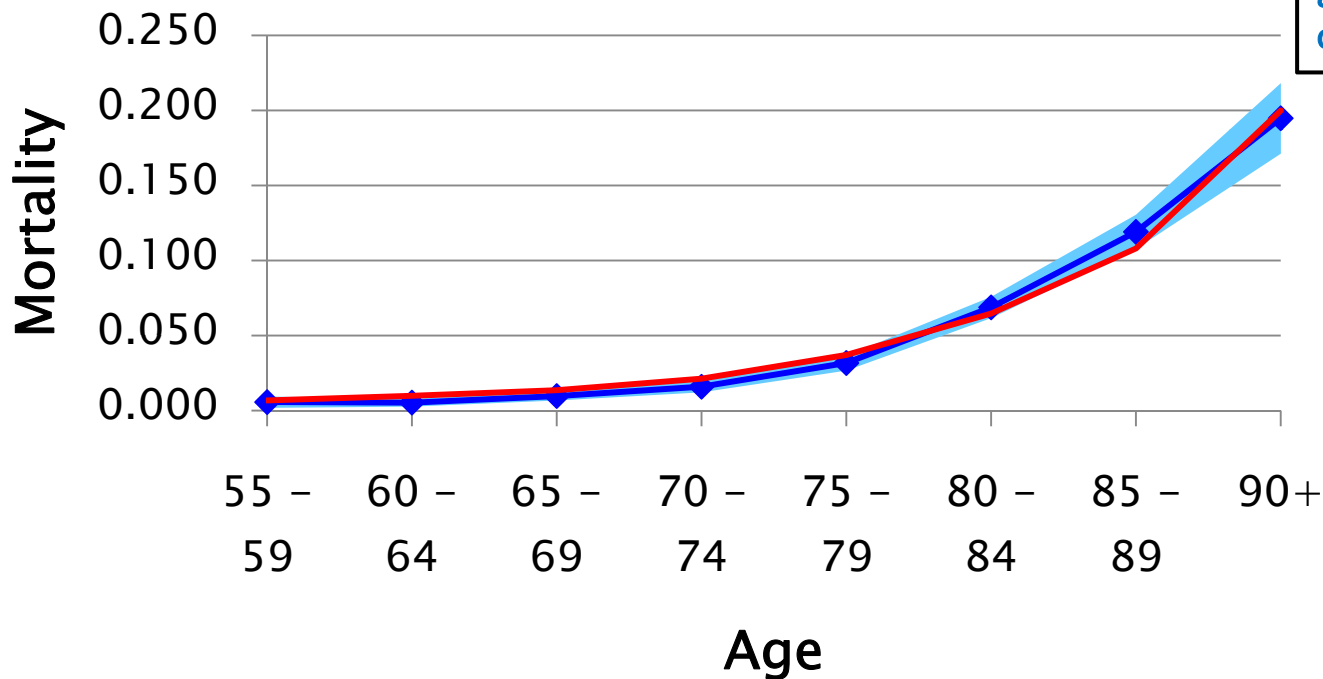


- The study provides credible information on the difference in mortality experience for blue and white collar male participants based on the mortality experience observed weighted by pension amounts.
- The study provides adjustment factors by collar type that can be applied to the standard mortality tables



# Graphical Representation

## Actual vs Expected Mortality (Weighted on Pension)

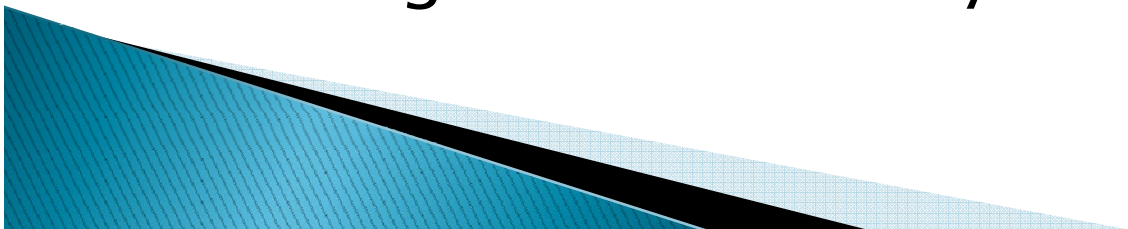


Experience mortality rates are lower than standard table at younger retirement ages and higher at older retirement ages

95% Confidence Band ◆ Actual Rate — CPM2014 Private

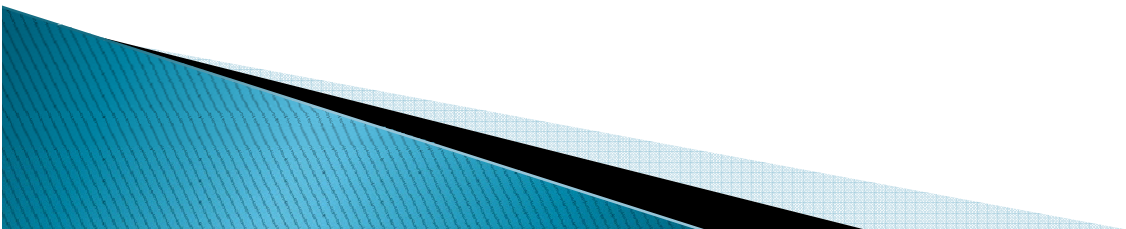


- The study concluded that the a/e ratio weighted by pension amounts are lower than those based only on lives
- This result is consistent with the CIA study conclusion that mortality rates are lower for retirees with higher pension amounts
- The study can lead to more realistic liabilities to the DB pension plans and less exposure to external factors such as having to rely on more general mortality studies



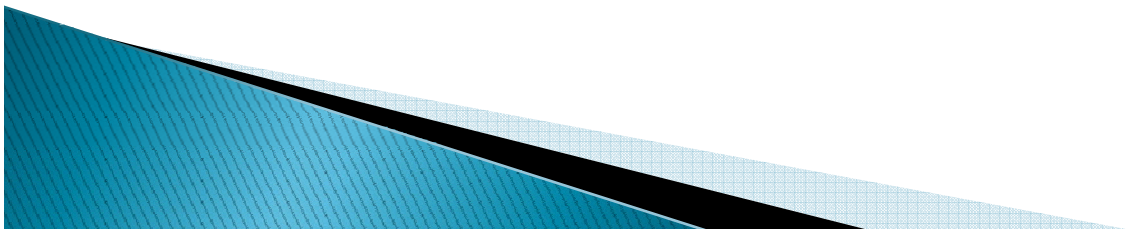
# Scope of Research

- Province
- Form of Payment



# References

- Final Report  
Canadian Pensioners' Mortality  
Pension Experience Subcommittee–  
Research Committee  
<http://www.cia-ica.ca/docs/default-source/2014/214013e.pdf>



Thank You

