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Mortality Trends in Zimbabwe: Implications on Life Assurance Pricing

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09 April 2018



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Mortality Trends in Zimbabwe: Implications on Life Assurance Pricing

Conversion of abridged World Health Organisation (WHO) life tables to complete life tables for Zimbabwe using the Heligman-Pollard Model

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Agenda

Mortality Trends in Zimbabwe

- Background
- Heligman Pollard Model
- Conversion Process
- Results and Analysis

Implications for Life Assurance Pricing

- Relevancy of Life Tables
- Other Considerations



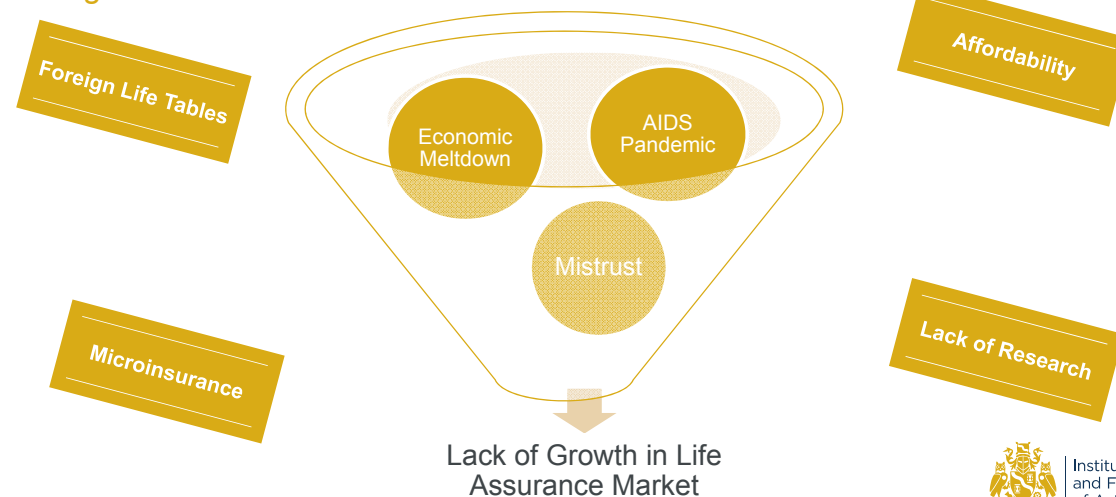
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Mortality Trends In Zimbabwe

Background



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Mortality Trends in Zimbabwe

Heligman- Pollard Model

- $\frac{q_x}{1-q_x} = A^{(x+B)^C} + D \exp\left(-E\left(\ln\left(\frac{x}{F}\right)\right)^2\right) + GH^x$
- The first term, a rapidly decreasing exponential, reflects the fall in mortality in infant and early childhood ages
- The second term, reflects the middle age mortality and reflects the accident hump
- The third term, reflects the near geometric rise in mortality at the adult ages, and is generally considered to represent the ageing or deterioration of the body, i.e. senescent mortality.



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Heligman- Pollard Model: Parameters

A:
Level of
infant
Mortality

B:
Is an age
displacement
accounting
for infant
mortality

C:
Rate of
mortality
decline in
childhood

D:
Severity of
accident
hump

E:
Spread of
accident
hump

F:
Location of
accident
hump

G:
Base level of
senescent
mortality

H:
Rate of
Senescent
Mortality



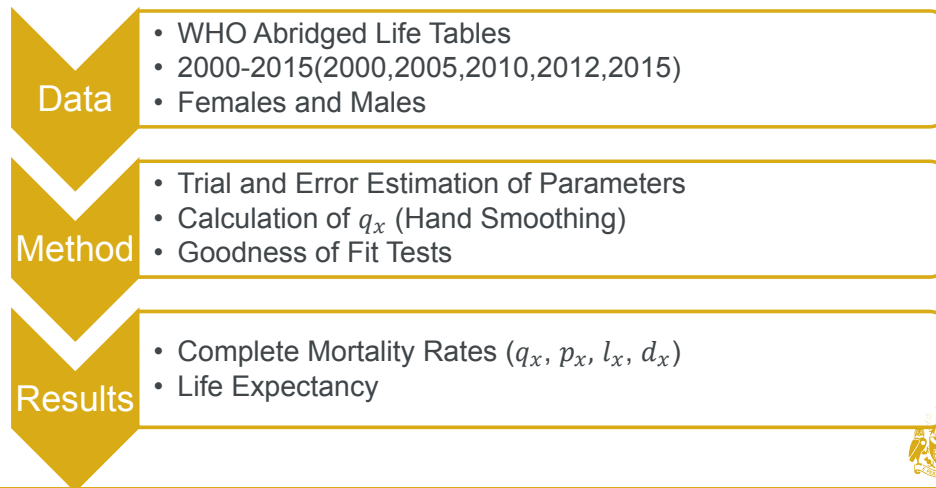
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Conversion Process



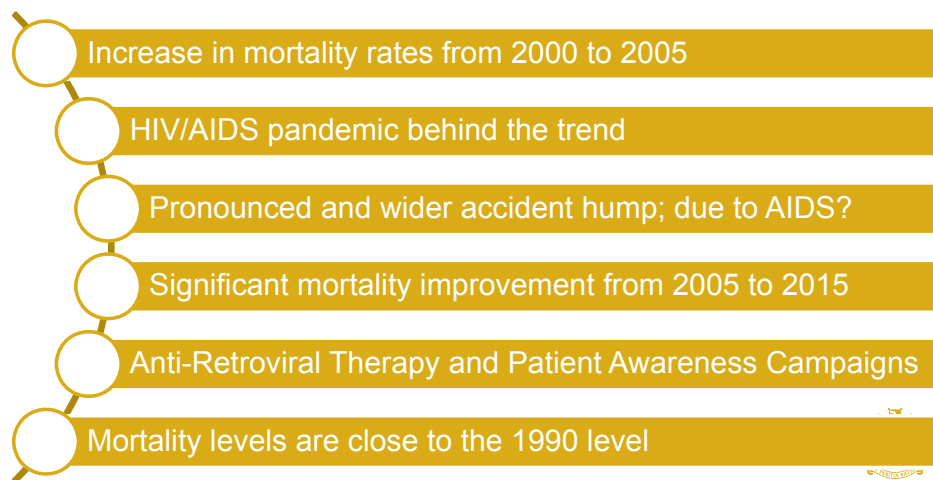
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Results: Trends over the years



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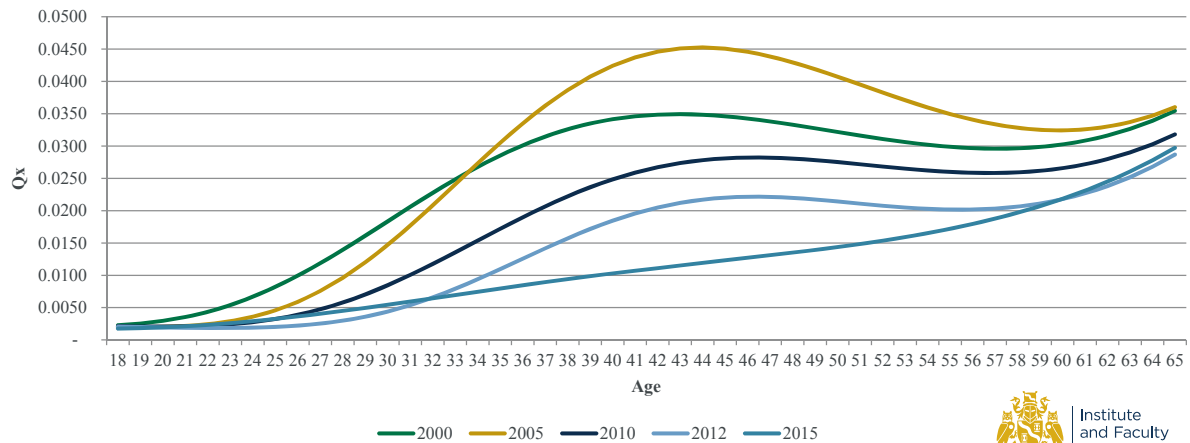
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Results: Male Mortality Rates

Male Mortality Trends over the period 2000-2015



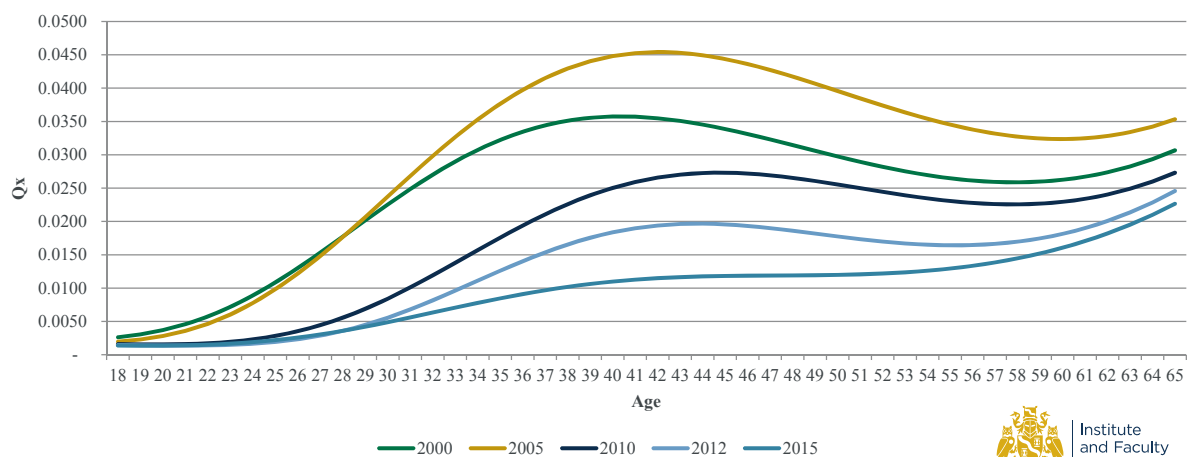
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Results: Female Mortality Rates

Female Mortality Trends over the period 2000-2015

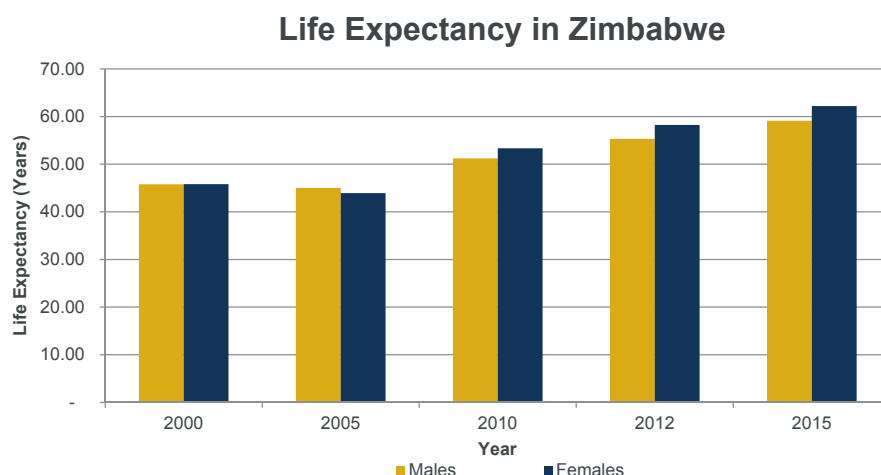


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Results: Life Expectancy



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Results: Life Expectancy and impact on gender

- Drop in Life Expectancy (2000 to 2005) and significant improvement since then. 42% increase in life expectancy since 2005 and 31% increase in life expectancy for males since 2005.
- 8 years increase in life expectancy from 2010 to 2015
- Anti Retroviral Therapy program has been increasing in coverage
- Still below 1990 levels (59.72 and 62.99 for males and females respectively).
- Concentration on HIV/AIDS at the expense of other diseases? Non-communicable diseases and road traffic accidents.
- Early and pronounced accident hump for females.



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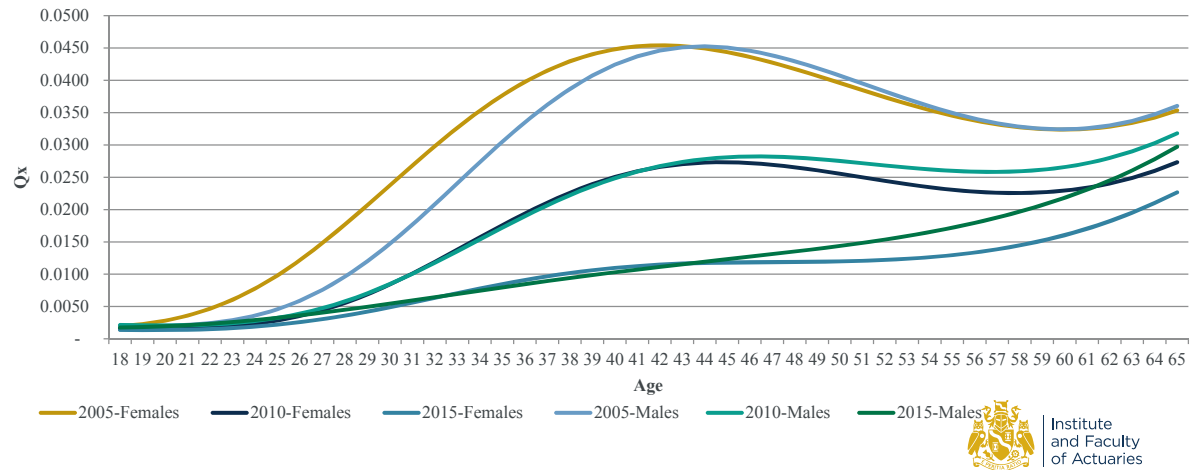
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Accident Hump: Differences across Gender

Female Mortality Trends over the period 2000-2015



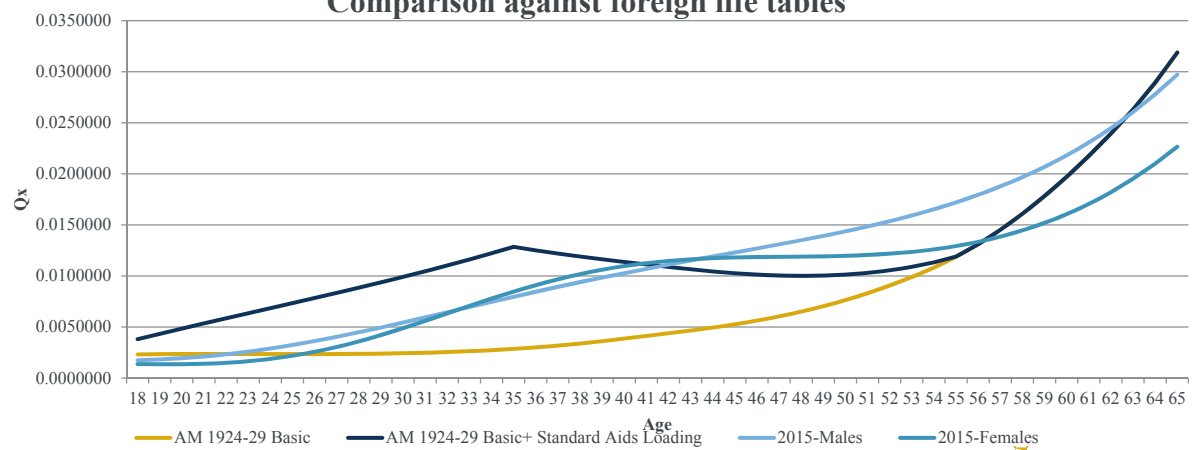
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Implications on Life Assurance Pricing

Applicable Life Tables

Comparison against foreign life tables

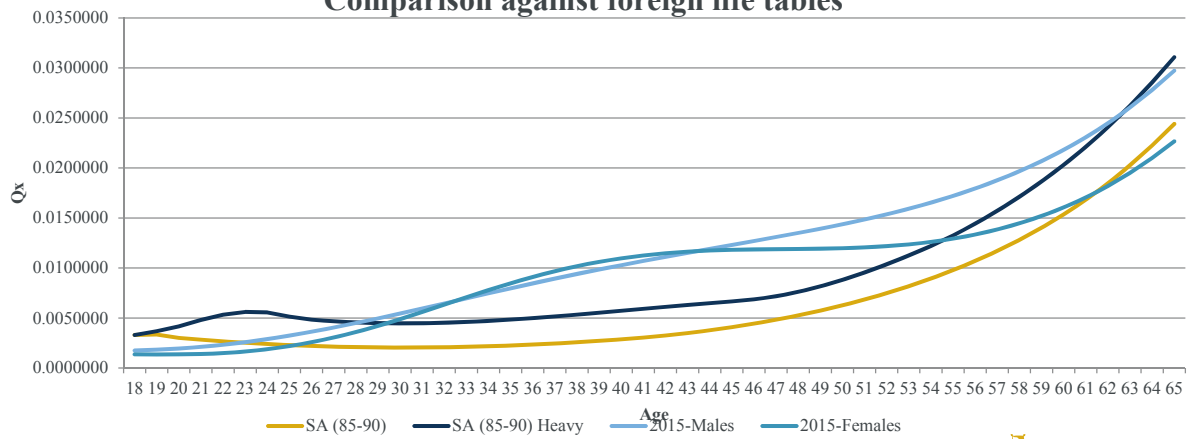


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Implications on Life Assurance Pricing Applicable Life Tables

Comparison against foreign life tables



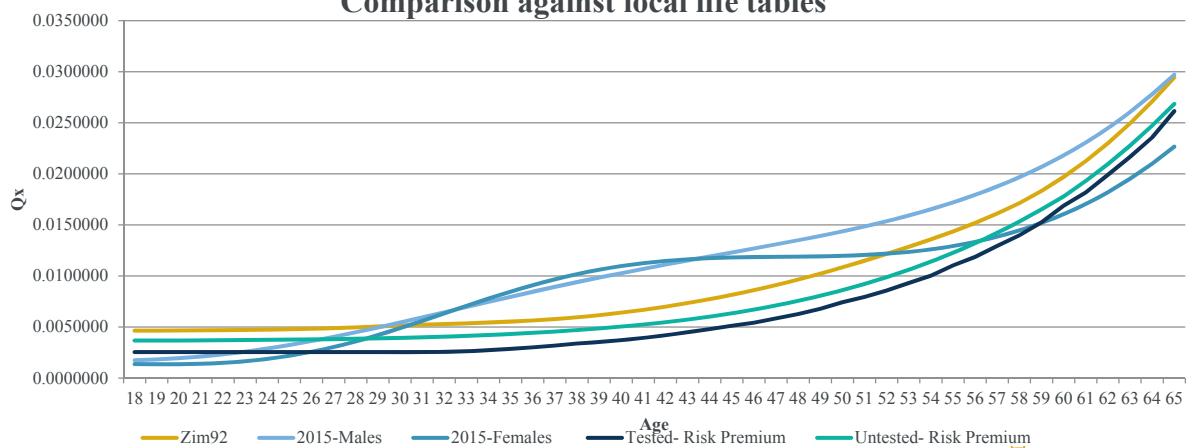
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Implications on Life Assurance Pricing Applicable Life Tables

Comparison against local life tables



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Implications on Life Assurance Pricing

Applicable Life Tables

- Foreign Life tables don't have the same shape as compared to the derived life tables.
- Attempts to put HIV Loadings may not be accurate. Is there potential to overcharge clients.
- Which is better? Adjusting local life tables or adjusting foreign life tables?
- Future mortality improvements (Anti-retroviral therapy/ Rise of Non Communicable Diseases)
- Margins in pricing for prudence?



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Implications on Life Assurance Pricing

Other Considerations

HIV Loadings

- Decline cover for HIV+ positive
- Load?
- HIV+ only products

MicroInsurance

- Population life tables more accurate?
- \$1 Premium for \$1000 of cover. Underpriced?
- Market is dominated by funeral cash plans.

Gender

- Different rates for females and males
- Gender Mix in pricing

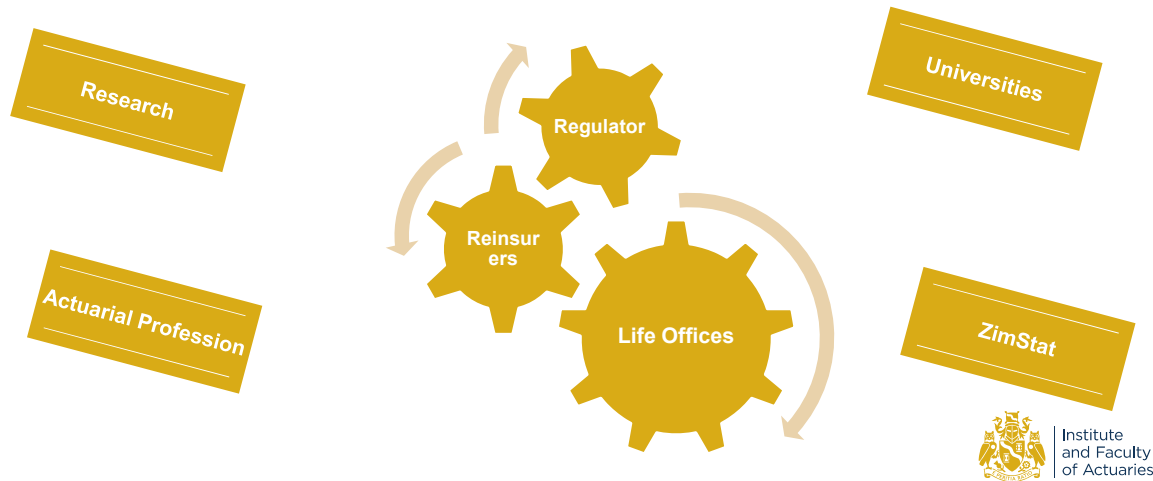


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Implications on Life Assurance Pricing Going Forward



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Questions

Comments

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