Mortality Improvements in South Africa: What is going on?

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Gen Re
Agenda

1. My question
2. Why do people die
3. What do we know about South African mortality
4. What are the financial impacts
5. Where to from here
My questions

• Question 1: Why do South African actuaries not seem to care all that much about mortality improvements?

• Question 2: What is actually going on with mortality in South Africa?
We are in a very different place to our developed world colleagues

• Developed countries have excellent data and are doing very detailed analysis on mortality improvement by disease

• Mortality improvements are a very high priority in developed countries

• So what do we know, and what do we need to do?
## Life Expectancy

<table>
<thead>
<tr>
<th>Key</th>
<th>UK</th>
<th>US</th>
<th>Brazil</th>
<th>India</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life expectancy at birth (years)</td>
<td>80</td>
<td>79</td>
<td>73</td>
<td>65</td>
<td>54</td>
</tr>
<tr>
<td>Life expectancy at age 60 (years)</td>
<td>23</td>
<td>23</td>
<td>21</td>
<td>16</td>
<td>17</td>
</tr>
</tbody>
</table>
Why do people die

Death

Unnatural Causes (accidents, violence)

Natural Causes

Non-communicable (heart attack, cancer, stroke)

Communicable (HIV, flu, tuberculosis, dysentry)
# All Cause Mortality

<table>
<thead>
<tr>
<th>Country</th>
<th>Communicable</th>
<th>Non-communicable</th>
<th>Accidental</th>
<th>All Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>36</td>
<td>401</td>
<td>25</td>
<td>462</td>
</tr>
<tr>
<td>United States</td>
<td>34</td>
<td>418</td>
<td>53</td>
<td>505</td>
</tr>
<tr>
<td>Brazil</td>
<td>97</td>
<td>534</td>
<td>76</td>
<td>707</td>
</tr>
<tr>
<td>India</td>
<td>363</td>
<td>685</td>
<td>99</td>
<td>1,174</td>
</tr>
<tr>
<td>South Africa</td>
<td>983</td>
<td>635</td>
<td>72</td>
<td>1,691</td>
</tr>
</tbody>
</table>

- Deaths per 100,000 population
- WHO statistics
## Non-communicable Mortality

<table>
<thead>
<tr>
<th>Country</th>
<th>Cancer</th>
<th>Cardiovascular</th>
<th>Respiratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>137</td>
<td>142</td>
<td>34</td>
</tr>
<tr>
<td>United States</td>
<td>124</td>
<td>156</td>
<td>34</td>
</tr>
<tr>
<td>Brazil</td>
<td>115</td>
<td>237</td>
<td>44</td>
</tr>
<tr>
<td>India</td>
<td>75</td>
<td>317</td>
<td>154</td>
</tr>
<tr>
<td>South Africa</td>
<td>155</td>
<td>262</td>
<td>62</td>
</tr>
</tbody>
</table>
## Non-natural Cause Mortality

<table>
<thead>
<tr>
<th>Country</th>
<th>Road Traffic Accident</th>
<th>Violence</th>
<th>Other</th>
<th>All Accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>5</td>
<td>1</td>
<td>20</td>
<td>26</td>
</tr>
<tr>
<td>United States</td>
<td>14</td>
<td>6</td>
<td>32</td>
<td>52</td>
</tr>
<tr>
<td>Brazil</td>
<td>22</td>
<td>28</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>India</td>
<td>19</td>
<td>5</td>
<td>76</td>
<td>100</td>
</tr>
<tr>
<td>South Africa</td>
<td>20</td>
<td>29</td>
<td>23</td>
<td>72</td>
</tr>
</tbody>
</table>
South Africa
South African Lives

Diversity is great but......
South African Lives

Heterogeneity

Socio-economic class

Race

Region

High socio-economic class

Employed

Insured

Traditional Life Insurance

Group Life Insurance

Limited UW products

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South African Lives

- Different drivers of mortality within each group drive mortality improvements

- At **population level** - external forces
  - AIDS & Anti Retro Virals (ARV)
  - Social upliftment
  - Primary Health Care
  - Income & Education -> middle class

- **Traditional insurance** market
  - Medical advances
  - Similar drivers to UK and US?
Data
South African Data

- The biggest obstacle?

- Population Tables
  - South African Life Tables (SALT)
  - Since 1921 - last tables 1984 -1986 (by race)
  - Statistics South Africa post 1986 (combined)
  - Table for the period 1996 to 2001 (Dorrington, et al 2004)
  - Currently updating this for 2004 to 2009

- What about Insurance Tables
South African Data

• Insurance investigations
  • Assured Lives Mortality
    • Continuous Statistical Investigations (CS):
      • 2004 – 2008 but end of this year
  • Annuitant Mortality
    • CSI Annuitant Report 2001-2004
    • Annuitant Mortality Investigation, 1995 – 1999

• Standard Tables
  • SA85-90 Mortality Tables (Dorrington, RE,& Rosenberg, SB 1996)
  • SA56-62 Mortality Tables (Report: Mortality Standing Committee 1974)
  • South African Annuitant Standard Mortality Tables 1996–2000
Mortality Improvement Research


- Mortality improvements observed but disregarded:
  - The implied improvements of 3% for men and 6% for women were much higher than those observed in the UK.
  - The period over which the trends were looked at was too short.
  - The improvements seen were not consistent with other mortality studies conducted.
  - The pattern of the improvements did not match that observed in the UK either.
South African Mortality Improvements
SA Mortality Improvements

- Crude calculations based on
  - SALT since 1921 - last tables 1984 -1986 (by race)
  - Table for the period 1996 to 2001 (Dorrington, et al 2004)
SA Mortality Improvements

- Looked at three scenarios in terms of duration

<table>
<thead>
<tr>
<th>Period</th>
<th>Years</th>
<th>Number of tables used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term</td>
<td>1948 – 1998</td>
<td>50</td>
</tr>
<tr>
<td>Medium Term</td>
<td>1975 – 1998</td>
<td>23</td>
</tr>
<tr>
<td>Short Term</td>
<td>1982 – 1998</td>
<td>16</td>
</tr>
</tbody>
</table>
Crude Improvement Factors SA tables

Males

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Crude Improvement Factors SA tables

Females

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Impact of Mortality Improvements
Impact of Mortality Improvements

- What does a 1% mortality improvement mean to me?
- Annuities and Insurance Products
- Impact on Present Value or Annual Level Premium
- Impact of interest rates
Increase in Present Value of Annuity

7% Discount Rate

2% p.a. improvement
3% p.a. improvement
4% p.a. improvement
Increase in Present Value of Annuity

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Reduction in Level Premium for WOL

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Industry Views
South African Actuaries

- Surveyed members of Life Assurance and Retirement Matters Committees of the Actuarial Society of South Africa
- 32 surveyed from Life Insurers and Consulting Actuaries
- Looking to ascertain
  - General views of mortality improvements
  - Views of research available
  - Assumptions being used in market
  - Importance of the topic
South African Industry Survey

- Work completed by the CSI is outdated and/or inconclusive
- Not enough reliable data in the SA industry to enable a credible mortality improvement analysis
- A lack of appreciation for the extent of longevity risk - other risks (e.g. HIV AIDS) have taken priority
- The resources in the industry are committed towards the most pressing short-term issues
  - Solvency Assessment and Management (Solvency II)
  - Treating Customers Fairly
South African Industry Survey

• There is an overreliance on the research emanating from the United Kingdom
  • results from the UK are adjusted for use in SA (without substantive evidence for the adjustments) or;
  • they aren’t adjusted and there is concern that these are then overly conservative.
• There is some concern that this could have negative implications under the new “Treating Customers Fairly” framework.
• Pension fund trustees have taken actuaries to task for assumptions set by reference to overseas longevity
Are Mortality Improvements a Concern?

![Bar chart showing percentages of responses to the question about concern regarding mortality improvements.](chart.png)
Enough SA Specific Research?

Yes  No

0%  100%

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Average Long-term mortality improvement experienced?
Mortality Improvement Assumptions
Conclusion

• An issue that seems to be very important
  • Based on views of those surveyed
  • Potential financial / economic impact

• Moving to action
  • Response to HIV and AIDS

• Solution
  • Longevity Committee?
  • Ensuring your data can be used for this purpose?
  • More involvement at national level?
  • Dedicate resources?