Mortality perspective - Canada
IAA Mortality Committee,
Los Angeles 2012
Agenda

• General population
• Life insurance
• Annuities
• Pensions
General Population
General Population

• Life expectancy at birth (2012 estimate)
  – Males: 78.9
  – Females: 84.2
• Life expectancies with mortality improvements (Canadian Pension Plan reports):

<table>
<thead>
<tr>
<th></th>
<th>2009 Report</th>
<th></th>
<th>2006 Report</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Males</td>
</tr>
<tr>
<td>At birth</td>
<td>85.4</td>
<td>88.3</td>
<td>84.7</td>
</tr>
<tr>
<td>At 65</td>
<td>20.2</td>
<td>22.6</td>
<td>19.6</td>
</tr>
</tbody>
</table>
Male Mortality Improvement rates by age groups and era

<table>
<thead>
<tr>
<th>Attained Age</th>
<th>Observation Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-64</td>
<td>1931-2001</td>
</tr>
<tr>
<td>65-89</td>
<td>1966-2001</td>
</tr>
</tbody>
</table>

Improvement: 0.0%, 0.5%, 1.0%, 1.5%, 2.0%, 2.5%
Female MI rates by age groups and era

<table>
<thead>
<tr>
<th>Attained Age</th>
<th>Observation Years</th>
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</thead>
<tbody>
<tr>
<td>15-64</td>
<td>1931-2001</td>
</tr>
<tr>
<td>65-89</td>
<td>1966-2001</td>
</tr>
<tr>
<td></td>
<td>1991-2001</td>
</tr>
</tbody>
</table>

Improvement

- 0.0%
- 0.5%
- 1.0%
- 1.5%
- 2.0%
- 2.5%
Life Insurance
Life Insurance Industry

- Canadian Individual Life Insurance Industry Experience (2008-09)

<table>
<thead>
<tr>
<th></th>
<th>E= '97-'04</th>
<th>E= '86-'92</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
<td>1989</td>
</tr>
<tr>
<td>Males</td>
<td>87.2%</td>
<td>60.8%</td>
</tr>
<tr>
<td>Females</td>
<td>90.7%</td>
<td>68.1%</td>
</tr>
</tbody>
</table>

- The table above indicates rough annual mortality improvement rates of 3.1% per year for males and 2.5% for females
Historical Mortality Improvement Rates: Hardy Study
Population Data (1921-2002)
CIA Mortality Improvement Rates

- Annuity Minimum
- Insurance Maximum
- Proposed Best estimate
CIA Mortality Improvement Rates vs Mod AA
(Mod => min 1.5% (ages 0 to 50) and 1% (51 to 80))
Annuities
Annuities

- No Canadian annuitant table yet released
- Table typically used as “expected”: 1983 IAM Basic
- Draft table (CIP2005) presented in a Research Paper in October 2006
- Based on data from industry (1988-2001); single life data only
- Distinguishes gender, issue age and duration
- Based on income
- Being reviewed by peers for possible release; no timeline set
- Industry studies carried out annually by the Canadian Institute of Actuaries as illustrated in next 2 slides
Industry Experience (E= 1983 IAM Basic)

Male Aggregate, by Income

Policy Year


Actual/Expected

170.00% 160.00% 150.00% 140.00% 130.00% 120.00% 110.00% 100.00% 90.00% 80.00% 70.00%

Single  Joint  Survivor
Industry Experience (E= 1983 IAM Basic)

Female Aggregate, by Income

Actual/Expected

%  
120.00%  
110.00%  
100.00%  
90.00%  
80.00%  
70.00%  
60.00%

Policy Year


Single
Joint
Survivor

Mortality perspective - Canada

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Pensions

- Mandated table for solvency: UP94 with generational mortality improvements using scale AA
- UP94 was derived from US Civil Service Retirement System and Social Security as well as Canadian Public Service data from 1985-89
- Because of this solvency requirement, funding may follow suit