Mortality of Canada Pension Plan and Old Age Security Beneficiaries: Implications for Public Pensions

37th Annual Meeting of the Canadian Economics Association

31 May 2003
Presentation

• Canadian Mortality Trends
• Mortality Projections
• CPP Retirement Beneficiary Mortality
• CPP Survivor Beneficiary Mortality
• OAS Beneficiary Mortality
• Future Challenges
Life Expectancy at Birth (LTC)
Life Expectancy at Age 65 (LTC)

- Male
- Female

Difference

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Probability of surviving

« 70% of males would die between 74 and 94 »
*Globe and Mail, March 2002*

- \( e_0 = 57 \)
- \( e_0 = 75 \)
- \( e_0 = 85 \)
Probability of surviving

« 70% of females would die between 77 and 96 »

Globe and Mail, March 2002

1921 F
1996 F
2050 F

e₀=58

e₀=81

e₀=88
Average Annual Population-Weighted Mortality Improvement Rates

- 0.0%
- 0.5%
- 1.0%
- 1.5%
- 2.0%
- 2.5%


Males
Females
Expected Average Age at Death by Attained Age

- Male
- Female
Comparison of Survival Curves for Males

1995-1997 LTC

Improvement in qx of 90%

Increased Life Span to 146
Comparison of Survival Curves for Females

- **1995-1997 LTC**
- **Improvement in qx of 85%**
- **Increased Life Span to 135**

![Graph showing survival curves for females with different scenarios of life expectancy improvement.](image-url)
Life Expectancy at Birth - Male

Difference

AR18

SSA
Life Expectancy at Birth - Female

- Difference
- AR18
- SSA
Life Expectancy at Age 65 - Male
Life Expectancy at Age 65 - Female
Probability of Surviving from Birth to Age 18

- Male
- Female

% Probability from 1966 to 2062
Probability of Surviving from Age 18 to Age 65

Female

Male


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Average Number of Years lived Between the Ages 18 and 65
Probability of Surviving from Age 65 To

% (Males)

Calendar Year


Age 70
Age 75
Age 80
Age 85
Age 90
Age 95
Age 100
Probability of Surviving from Age 65 To
CPP Retirement Beneficiary Mortality Ratios
(By Level of Pension – Males)

{(CPP vs LTC-Q)

Age

0-25%
25-50%
50-75%
75-100%

65 70 75 80 85 90
CPP Retirement Beneficiary Mortality Ratios
(By Level of Pension – Females)

(CPP vs LTC-Q)

Age

0-25%
25-50%
50-75%
75-100%
## CPP Retirement Beneficiary Life Expectancies

(By Level of Pension - Males)

<table>
<thead>
<tr>
<th>Age</th>
<th>0-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-100%</th>
<th>All 1995-97 C-QLT</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>17.7</td>
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### CPP Retirement Beneficiary Life Expectancies

*By Level of Pension - Females*

<table>
<thead>
<tr>
<th>Age</th>
<th>0-25%</th>
<th>25-50%</th>
<th>50-75%</th>
<th>75-100%</th>
<th>All</th>
<th>1995-97 C-QLT</th>
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CPP Survivor Beneficiary Mortality Ratios

(CPP vs LTC-Q)

Age

Males
Females
## CPP Survivor Life Expectancies

<table>
<thead>
<tr>
<th>Age</th>
<th>Males</th>
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<th>Females</th>
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<td>General Population</td>
<td>CPP</td>
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<td>6.7</td>
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<td>3.7</td>
<td>4.7</td>
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### Evolution of OAS Beneficiaries - Male

(in thousands)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>1985</th>
<th>2000</th>
<th>2025</th>
<th>2050</th>
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<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
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<td>%</td>
</tr>
<tr>
<td>65-69</td>
<td>393</td>
<td>36.2%</td>
<td>530</td>
<td>32.7%</td>
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<tr>
<td>70-79</td>
<td>518</td>
<td>47.8%</td>
<td>786</td>
<td>48.5%</td>
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<tr>
<td>80+</td>
<td>173</td>
<td>15.9%</td>
<td>304</td>
<td>18.8%</td>
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<tr>
<td>All</td>
<td>1,084</td>
<td>100.0%</td>
<td>1,620</td>
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## Evolution of OAS Beneficiaries - Female
(in thousands)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>1985</th>
<th>2000</th>
<th>2025</th>
<th>2050</th>
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<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>65-69</td>
<td>465</td>
<td>31.3%</td>
<td>568</td>
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<tr>
<td>70-79</td>
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<td>1,487</td>
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<td>2,157</td>
<td>100.0%</td>
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</table>
Future challenges

• Life expectancy at birth of 100 is practically impossible in the next half century unless there are dramatic medical and scientific breakthroughs.

• Future mortality improvements are expected to come more slowly and at older ages, as mortality rates at younger ages are already very low.

• In the context of CPP, more and more contributors are expected to reach the retirement age of 65.

• CPP retirement beneficiaries are expected to receive their benefit for a longer period.