Impacts on Economic Security Programs of Rapidly Shifting Demographics

Robert L. Brown, PhD
FCIA, FSA, ACAS
Canada pension fund won't fall, official says

Canada pension fund won't fall, official says

The average Canadian couple aged 35 to 45 would spend almost $150,000 on their government pensions.

PENSIONS

Sitting on a retirement bubble, too deep, warns senior health care plan.

Retirement

Form of old-age security system won't be "unsustainable," says minister.

Oversized

"We need to get serious about the future of our retirement system," said the minister.

Decline

As a result, the minister said, Canadians are spending more on insurance and health care.

Growing pains

"We need to address these issues," he said, "so that we can provide for Canadians who are nearing retirement age."

Pension plans

"The government is committed to providing more support for Canadians," he added.

Former pensioner

"We hear from former pensioners, especially those who have offers from large pension plans," he said.

"We need to make sure these offers are sustainable," he said.
# Life Expectancy in Canada

<table>
<thead>
<tr>
<th>Year</th>
<th>At Birth</th>
<th></th>
<th>At Age 65</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>1921</td>
<td>58.8</td>
<td>60.6</td>
<td>13.0</td>
<td>13.6</td>
</tr>
<tr>
<td>1961</td>
<td>68.4</td>
<td>74.2</td>
<td>13.5</td>
<td>16.1</td>
</tr>
<tr>
<td>1991</td>
<td>74.6</td>
<td>80.9</td>
<td>15.7</td>
<td>19.9</td>
</tr>
</tbody>
</table>
## Life Expectancy in the United States

<table>
<thead>
<tr>
<th>Year</th>
<th>At Birth</th>
<th>At Age 65</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>1920</td>
<td>55.6</td>
<td>57.6</td>
</tr>
<tr>
<td>1960</td>
<td>66.8</td>
<td>73.2</td>
</tr>
<tr>
<td>1990</td>
<td>71.8</td>
<td>78.8</td>
</tr>
<tr>
<td>1998</td>
<td>73.4</td>
<td>79.4</td>
</tr>
</tbody>
</table>
Life Expectancy in Mexico

<table>
<thead>
<tr>
<th>Year</th>
<th>At Birth</th>
<th></th>
<th>At Age 65</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>1960</td>
<td>56.2</td>
<td>59.4</td>
<td>13.8</td>
</tr>
<tr>
<td>1980</td>
<td>64.0</td>
<td>69.9</td>
<td>15.2</td>
</tr>
<tr>
<td>1990</td>
<td>68.7</td>
<td>73.8</td>
<td>16.3</td>
</tr>
</tbody>
</table>
Total Fertility Rates

1922 to 1988

Year

Canada
United States
Number of Live Births

Canada, 1920 to 1994

Number of Births (Thousands)

Year

Number of Births

Canada, 1920 to 1994
Age Pyramid, 1991

- Effect of excess male mortality
- Decline in births during World War I
- Upturn in births after WWII
- Baby boom
- Recent drop in fertility
- Decline in births during Depression and disruption of immigration until end of WWII

For a total population of 100,000
Age Pyramid, 1996

Watered down baby boom echo

Decline of births caused by decrease in women of childbearing age

For a total population of 100,000
Changes in the Canadian Age Structure
Changes in the Mexican Age Structure

Projected Mexican Population, 2020

Age Group

Population: Male - Female (in millions)

1995 Population □ 2020 Population □
Changes in the Mexican Age Structure

Projected Mexican Population, 2050

Population: Male - Female (in millions)

- 2020 Population
- 2050 Population
## Distribution of Canadian Population by Age-Group

### 1956 to 2036

<table>
<thead>
<tr>
<th>Age</th>
<th>1956</th>
<th>1976</th>
<th>1996</th>
<th>2016</th>
<th>2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 20</td>
<td>39.4</td>
<td>35.6</td>
<td>26.7</td>
<td>22.0</td>
<td>20.2</td>
</tr>
<tr>
<td>20-64</td>
<td>52.9</td>
<td>55.8</td>
<td>61.1</td>
<td>61.4</td>
<td>55.0</td>
</tr>
<tr>
<td>65+</td>
<td>7.7</td>
<td>8.6</td>
<td>12.2</td>
<td>16.6</td>
<td>24.8</td>
</tr>
<tr>
<td>75+</td>
<td>2.5</td>
<td>3.2</td>
<td>5.1</td>
<td>7.1</td>
<td>12.8</td>
</tr>
<tr>
<td>85+</td>
<td>0.4</td>
<td>0.7</td>
<td>1.2</td>
<td>2.2</td>
<td>3.8</td>
</tr>
</tbody>
</table>
Historical and Future Median Age
Canada, 1851 to 2051

[Graph showing the historical and future median age in Canada from 1851 to 2051.]
Growth in the Dependency Ratio
Age 65+/Labour Force 2050/1996

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>190%</td>
</tr>
<tr>
<td>Italy</td>
<td>170%</td>
</tr>
<tr>
<td>Canada</td>
<td>130%</td>
</tr>
<tr>
<td>France</td>
<td>100%</td>
</tr>
<tr>
<td>USA</td>
<td>90%</td>
</tr>
<tr>
<td>UK</td>
<td>60%</td>
</tr>
<tr>
<td>Sweden</td>
<td>50%</td>
</tr>
</tbody>
</table>
Dependency Ratios Relative to the United States

1954=1

Year

Canada  Japan
France  Sweden
Italy  UK
U.S. Population in 2000

 Millions

 Echo Boomers
 Generation "Y"
 Generation "X"
 Boomers
Wave Surfers and Junior Boomers

<table>
<thead>
<tr>
<th>Wave Surfers</th>
<th>Junior Boomers</th>
</tr>
</thead>
<tbody>
<tr>
<td>By age 30, earned</td>
<td>By age 30, earned</td>
</tr>
<tr>
<td>$\frac{1}{3}$</td>
<td>$10%$</td>
</tr>
<tr>
<td>more than their fathers</td>
<td>less than their fathers</td>
</tr>
</tbody>
</table>

- **Wave Surfers**
  - 1945
  - 1955

- **Junior Boomers**
  - 1956
  - 1965
...ON THE OTHER HAND, THERE'S INCREASING STATISTICAL EVIDENCE TO SUPPORT THE THEORY THAT IT'S SIMPLY A MIRAGE...
I've run the numbers, Ted. If we don't start saving more money, we won't have enough to retire on.

Hee Hee Hee

Hoo, boy, that was a good one.

I can't take the credit. Our parents are the ones who played the joke on us.
Public Pension Plans

% of people who are confident they will receive Old Age Security and CPP/QPP benefits

<table>
<thead>
<tr>
<th>Age</th>
<th>% Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-29</td>
<td>29%</td>
</tr>
<tr>
<td>30-39</td>
<td>23%</td>
</tr>
<tr>
<td>40-49</td>
<td>29%</td>
</tr>
<tr>
<td>50-64</td>
<td>47%</td>
</tr>
<tr>
<td>65 &amp; Over</td>
<td>85%</td>
</tr>
</tbody>
</table>
Falling Pension Returns

What each dollar paid into CPP brings in benefits at age 65

Born in 1920

$1 IN $7.00 OUT

Born in 1960

$1 IN $2.60 OUT

Born in 1980

$1 IN $1.00 OUT
Fertility Rates vs. Female Labour Force Participation Rates

1966 to 1987

- Total Fertility Rate
- Female Labour Force Participation Rate
% of Married Mothers With Children Under Six Working Outside the Home
Sources of Retirement Income

- Government
- Private Pensions
- Individual Savings
- Work Earnings
Income from Government-Administered Plans, 1993
## Private Pension Plans

<table>
<thead>
<tr>
<th></th>
<th>Plan%</th>
<th>Members%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defined Benefit</td>
<td>40%</td>
<td>90%</td>
</tr>
<tr>
<td>Defined Contribution</td>
<td>60%</td>
<td>10%</td>
</tr>
</tbody>
</table>
Registered Savings Plans

- Contributions tax deductible (limits)
- Investment income grows tax free
- Benefits fully taxable when taken
- “Deferred Wage” philosophy
RRSP Deposits

![Graph showing RRSP Deposits from 1990 to 1998](Image)
**Non-Registered Annual Savings For 70% Replacement**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age Start</th>
<th>Age at Retirement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Male</td>
<td>25</td>
<td>14.1</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>19.8</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>32.9</td>
</tr>
<tr>
<td>Female</td>
<td>25</td>
<td>17.5</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>24.5</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>40.9</td>
</tr>
</tbody>
</table>
Registered Annual Savings For 70% Replacement

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age Start</th>
<th>Age at Retirement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Male</td>
<td>25</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>19.9</td>
</tr>
<tr>
<td>Female</td>
<td>25</td>
<td>7.0</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>11.7</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>23.2</td>
</tr>
</tbody>
</table>
Problems With Fringe Benefits

- Overall cost
- Size and age of labour force
- FAS 106
Average Age of Workforce
Insurance Costs

Relative Costs (age 37=1)

- Life Insurance
- STD
- LTD
- EHC

Age
Projected Group Benefit Costs

No inflation in cost of extended health care as percentage of payroll
Cost of Claims

Extended Health Care

Increase since 1988

Year

Dec 87  Dec 88  Dec 89  Dec 90  Dec 91  Dec 92

+14%  +17%  +14%  +12%  +13%

Pharmacare/More Claims

New Treatments

General Drugs & Service Costs

General Inflation

+75%  +50%  +25%  +0%

Increase since 1988
Projected Group Benefit Costs

5% annual inflation in cost of extended health care as percentage of payroll
Projected Group Benefit Costs

10% annual inflation in cost of extended health care as percentage of payroll
Indexes of Social Security Costs

1981 = 100

- Social Security
- Health
- Population
Aging Population

It’s Effect On Health Care Costs

Relative per capita costs of health care for males and females by age

![Graph showing relative per capita costs of health care for males and females by age.](image-url)
Government Gain

Tax Receipts vs. Time

- 40 million
- 30 million
- 20 million
- 10 million
- (10 million)
- (20 million)
- (30 million)


Time
Net Cost of RPP/RRSPs and Health Care

1991 to 2041 ($Billions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Net RPP/RRSPs</th>
<th>Health Care</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>(14.9)</td>
<td>41.6</td>
<td>56.5</td>
</tr>
<tr>
<td>1996</td>
<td>(15.1)</td>
<td>45.9</td>
<td>61.0</td>
</tr>
<tr>
<td>2001</td>
<td>(14.6)</td>
<td>49.6</td>
<td>64.2</td>
</tr>
<tr>
<td>2006</td>
<td>(13.4)</td>
<td>53.2</td>
<td>66.6</td>
</tr>
<tr>
<td>2011</td>
<td>(10.5)</td>
<td>56.8</td>
<td>67.3</td>
</tr>
<tr>
<td>2016</td>
<td>(5.7)</td>
<td>61.3</td>
<td>67.0</td>
</tr>
<tr>
<td>2021</td>
<td>(0.2)</td>
<td>66.4</td>
<td>66.6</td>
</tr>
<tr>
<td>2026</td>
<td>5.4</td>
<td>71.3</td>
<td>65.9</td>
</tr>
<tr>
<td>2031</td>
<td>10.8</td>
<td>75.9</td>
<td>65.1</td>
</tr>
<tr>
<td>2036</td>
<td>14.3</td>
<td>79.2</td>
<td>64.9</td>
</tr>
<tr>
<td>2041</td>
<td>15.5</td>
<td>81.1</td>
<td>65.6</td>
</tr>
</tbody>
</table>
Life Expectancy of Men in the United States
Getting Older

Population aged 65+ as a percentage of population 20-64

- 19% in 1991
- 21% in 2000
- 34% in 2025
- 39% in 2050
- 41% in 2075
- 43% in 2100

Year
Impact of Demographic Shifts

1950 to 2025

[Graph showing the impact of youth and aged dependency ratios over time from 1950 to 2025.]
Wealth Transfer Index

WTI = \( \frac{(1.866 \times Y) + (1 \times U) + (4.636 \times A)}{LF} \)

Y = Youth, 0-19
U = those Unemployed
A = Aged, 65 and over
LF = the projected employed Labour Force
Wealth Transfer Index

1976 to 2041

WTI

Year

1976 to 2041

WTI

Year
Retirement Age
Actual and Expected

Overlay plots of actual vs predicted average retirement age for Canada (1976 to 1995)
Retirement Age

*Using Six Year Lag*

Overlay plots of actual vs predicted average retirement age for Canada (1982 to 1995)
Median Retirement Age in Canada

With Productivity Improvements of 0.0% pa (1996 to 2047)
Equivalent Age at Retirement in Canada

<table>
<thead>
<tr>
<th>Year</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1966</td>
<td>65.00</td>
</tr>
<tr>
<td>1991</td>
<td>68.36</td>
</tr>
<tr>
<td>2011</td>
<td>69.86</td>
</tr>
<tr>
<td>2031</td>
<td>70.72</td>
</tr>
</tbody>
</table>
Other Countries

- Females from 60-65
- Full pension after 40 years (now 37.5)
- Males from 61-65, Females from 56-60
- Males from 60-65, Females from 57-60
- All shift from 65-67
- Females from 60-65
Median Retirement Age in Canada

With Productivity Improvements of 0.9% pa (1996 to 2047)
Median Retirement Age in Canada

With Productivity Improvements of 1.5% pa (1996 to 2047)
Median Retirement Age in Canada

With Productivity Improvements of 1.29% pa (1996 to 2047)
Market Response to Later Retirement

Workers Bargain For More Favorable Arrangement
May Prefer Flexible Pension to Higher Wages
May Be Against Pension Regs or Income Tax Act
Retirement Is A Multi-Phased Transition
Market Response to Later Retirement

Best Educated Most Likely to Return to Work

Would Prefer Bridge Job With Lifetime E'er

Older Workers Are An Asset

Need More Flexible Systems
Baby Boom Economic Impact

- Improved productivity
- Low real interest rates until 2015
- Incentives for later retirement
- Desire for flexibility with security
- Liquidation after 2015
When Boomers Cash Out
When Boomers Cash Out

![Bar chart showing the financial impact of baby boomers cashing out over the years 1995 to 2065. The chart indicates significant financial shifts, with years like 2025, 2035, and 2045 showing notable changes. The x-axis represents years from 1995 to 2065, and the y-axis represents financial impact in trillions of dollars, ranging from +$0.5 to -$4.0.](image-url)
Public Policy Alternatives

- Fertility
- Immigration
Public Policy Alternatives

- Fertility
- Immigration
- Economic growth
- Age of entitlement
Innovative Products

- Living benefits
- Registered long-term care
- Flexible pensions
- Reverse mortgages
- Prefer personal control
Silver in the Senior Market Place