



Office of the Superintendent of
Financial Institutions Canada

Bureau du surintendant des
institutions financières Canada

Office of the Chief Actuary

Bureau de l'actuaire en chef

Canada Pension Plan: Fertility Projections

Panel 1: A Primer on Fertility Rates

SOA Annual Meeting 2005
Fertility Symposium



OSFI
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14 November 2005

Canada 

Presentation

- Canada Pension Plan – key assumptions
- Total and cohort fertility rates
- Comparison of G8 countries
- Size and aging of Canadian population
- Sensitivity tests – aging and financial impacts

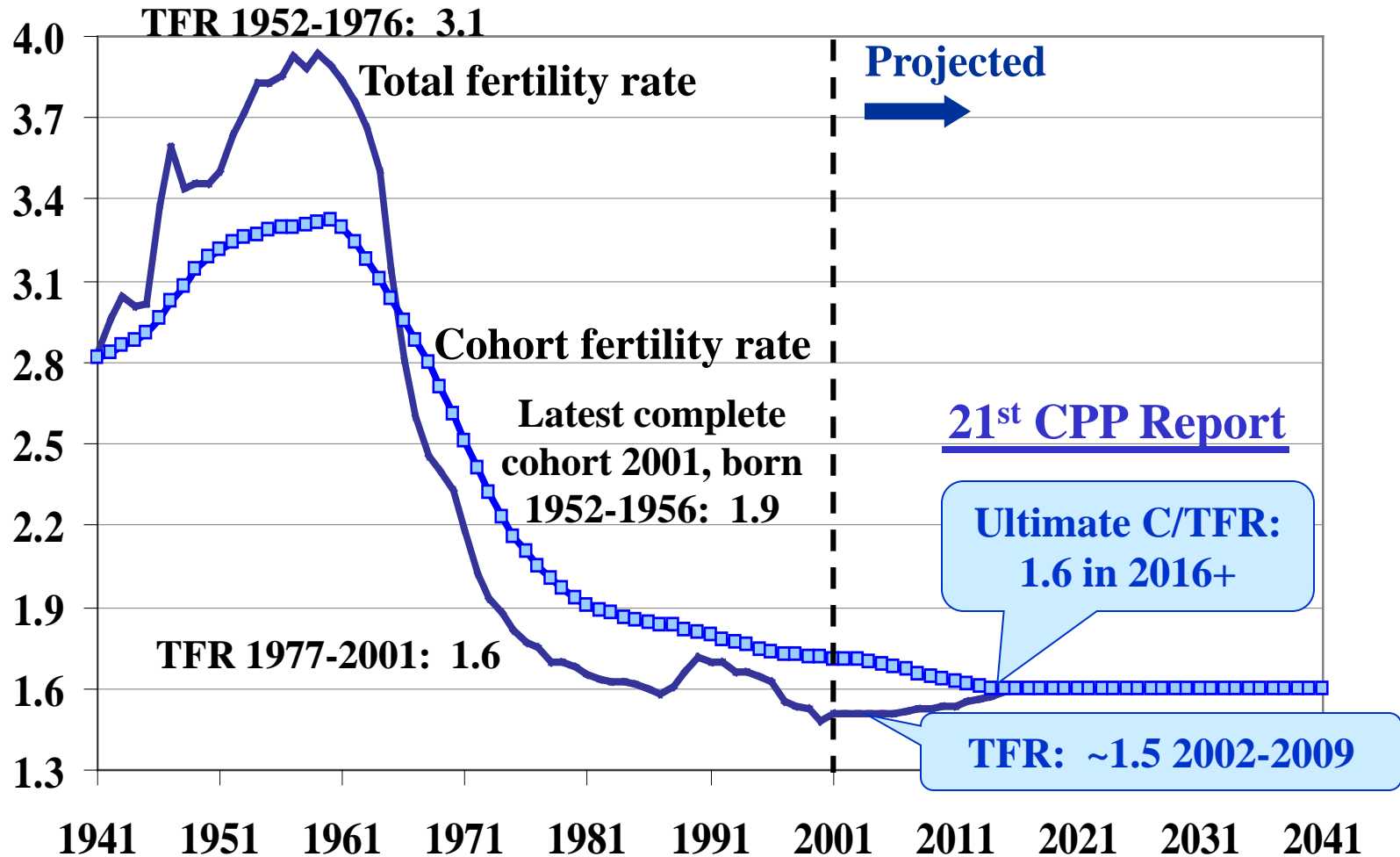


Canada Pension Plan - Key Assumptions

- Fertility rates
- Mortality rates
- Net migration rate
- CPP disability rates
- Retirement rates
- Unemployment rate
- LF participation rates
- Real-wage differential
- CPI increases
- Real rate of investment return



Total and Cohort Fertility Rates^(*)

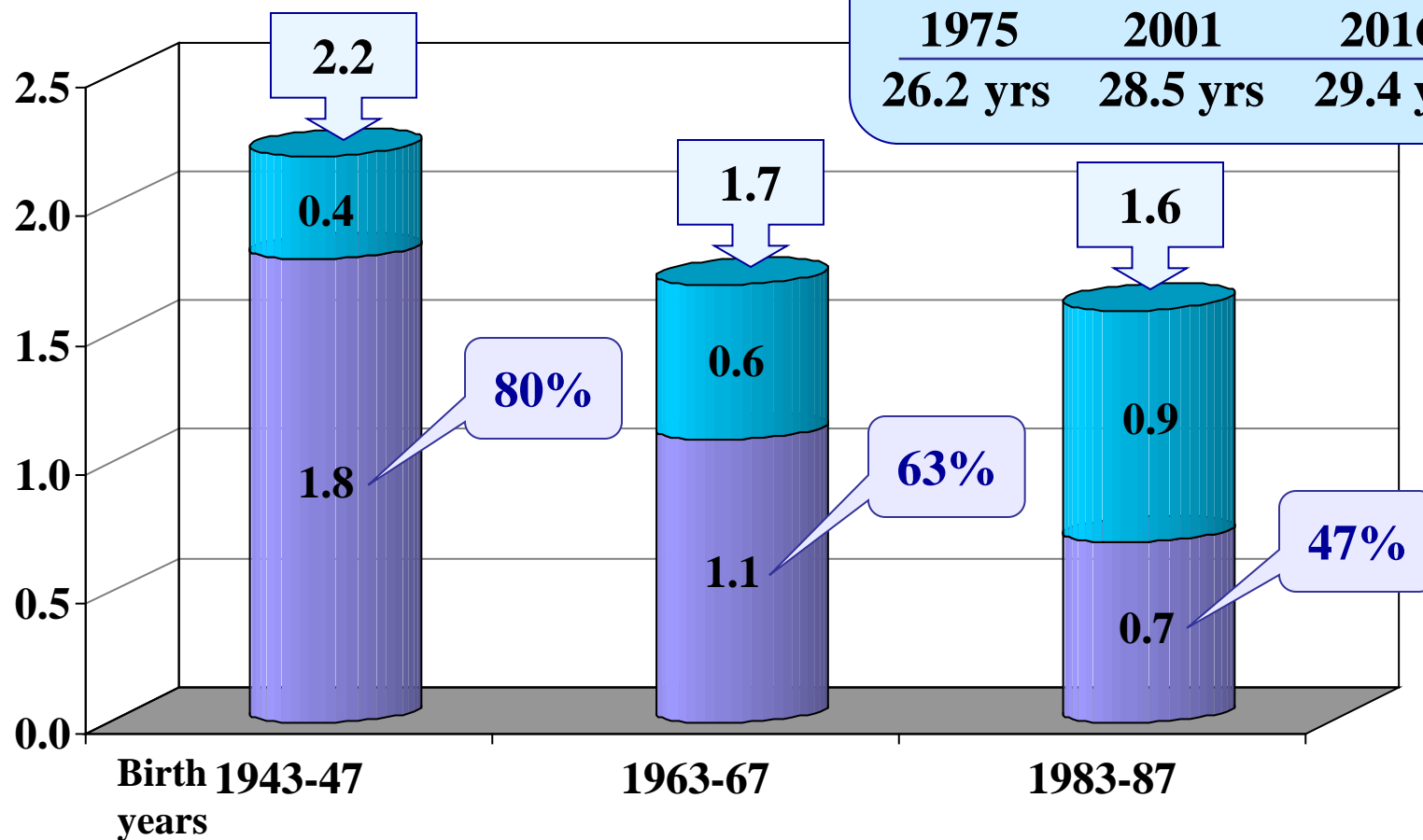


(*) The cohort fertility rate is for a 29 year old female in a given year.



Cohort Fertility Rates

Children per woman



Mean age at motherhood would continue to increase:

1975	2001	2016
26.2 yrs	28.5 yrs	29.4 yrs



Comparison Between the G8 Countries

	Canada ^(*)	France	Germany	Italy	Japan	Russia	UK	USA
Total Fertility Rate								
2005-2010	1.52	1.85	1.34	1.38	1.37	1.40	1.66	2.04
2010-2015	1.56	1.85	1.41	1.41	1.44	1.44	1.70	1.98
2015-2020	1.60	1.85	1.48	1.45	1.51	1.51	1.77	1.91
2020-2025	1.60	1.85	1.55	1.52	1.58	1.58	1.83	1.86

^(*) Projections for Canada are based on the 21st CPP Report. Projections for the other G8 countries are based on United Nations population projections, 2004 revision.

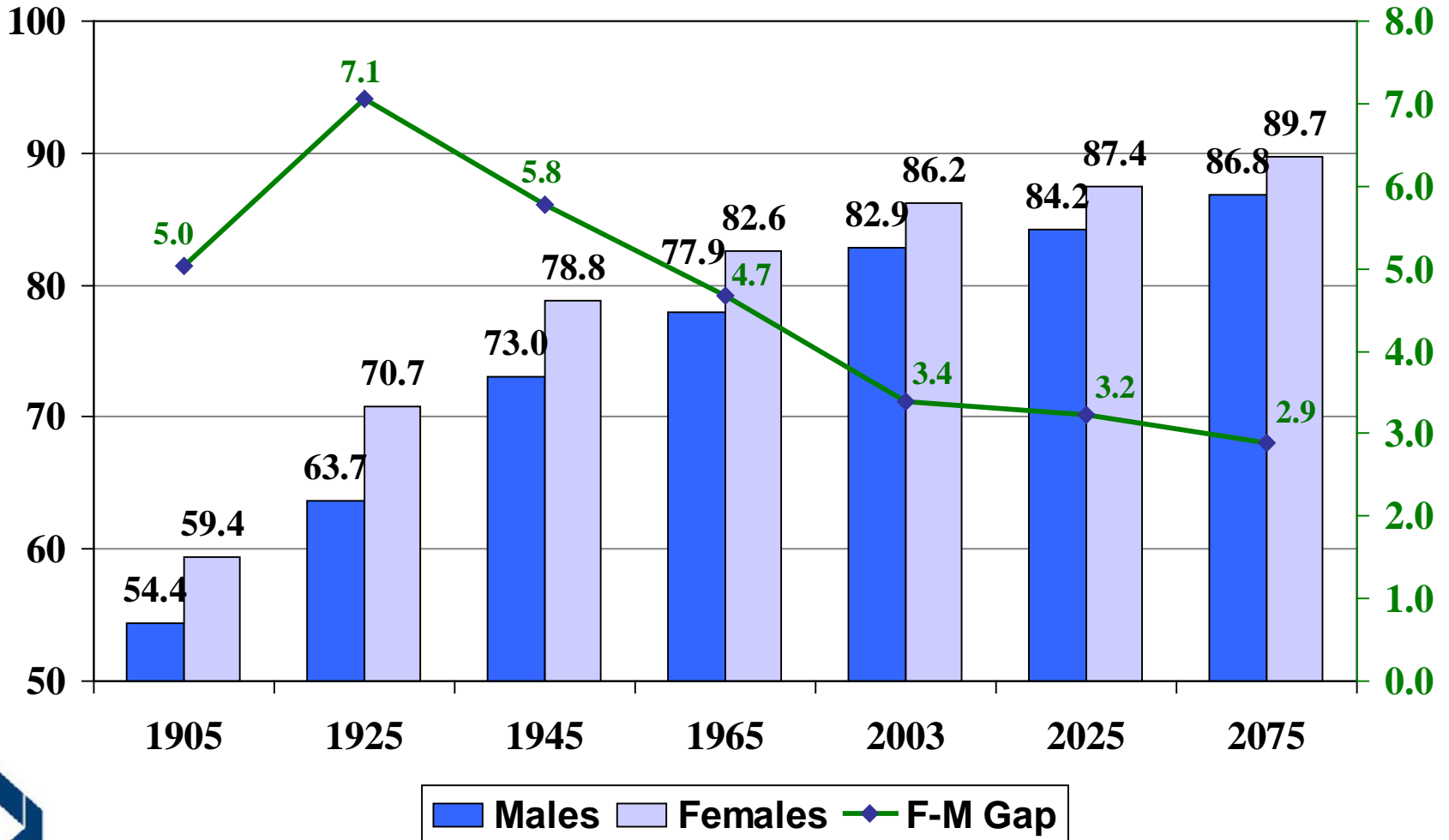


Life Expectancies at Birth

(with improvements after each year shown)

Life Exp, years

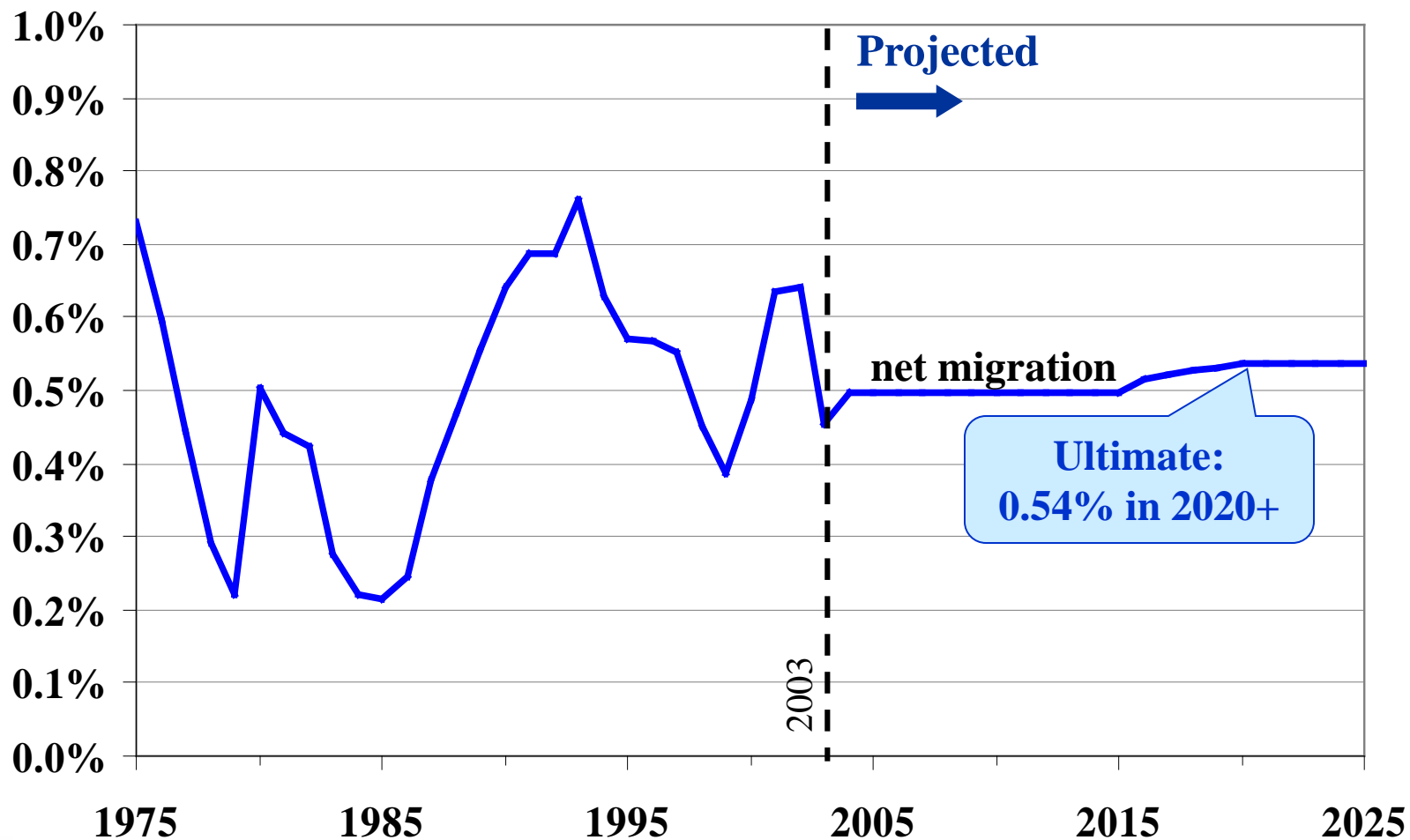
F-M Gap, years



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Evolution of Migration as % of Population

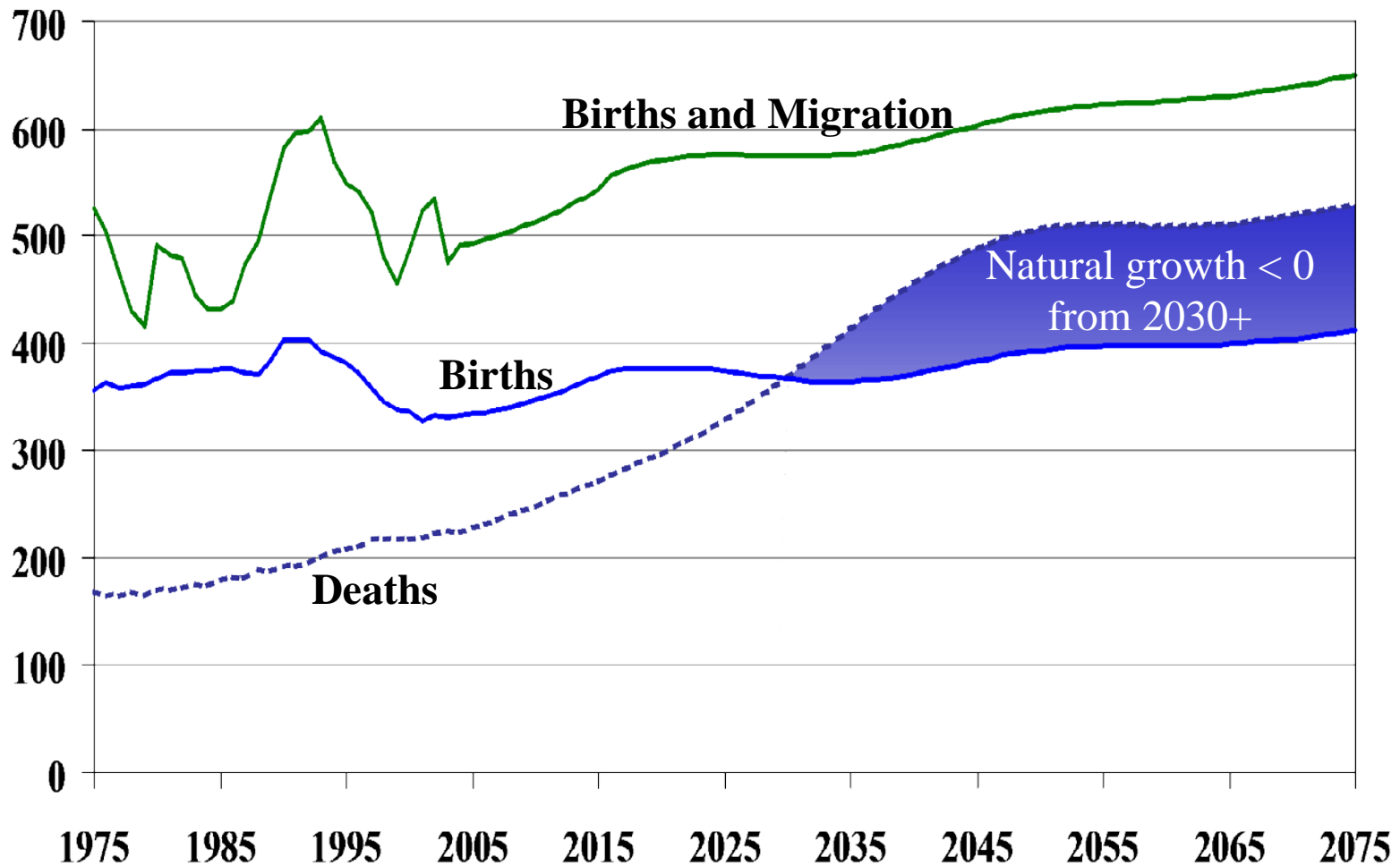


Population Projections – Size & Aging

- The Canadian population is aging.
- Mean age in 2003: 37.6 years
2030: 43.1 years
- Population will continue to age from low fertility, increasing life expectancies, and aging of baby boomers.
- Net migrants relatively younger than population → will impede aging of population.
- Population will continue to increase, but at declining rate due to projected low fertility.
- Total dependency ratio (< 20 & $65+$) / ($20-64$) will increase from 61/100 in 2003 → 78/100 in 2030.

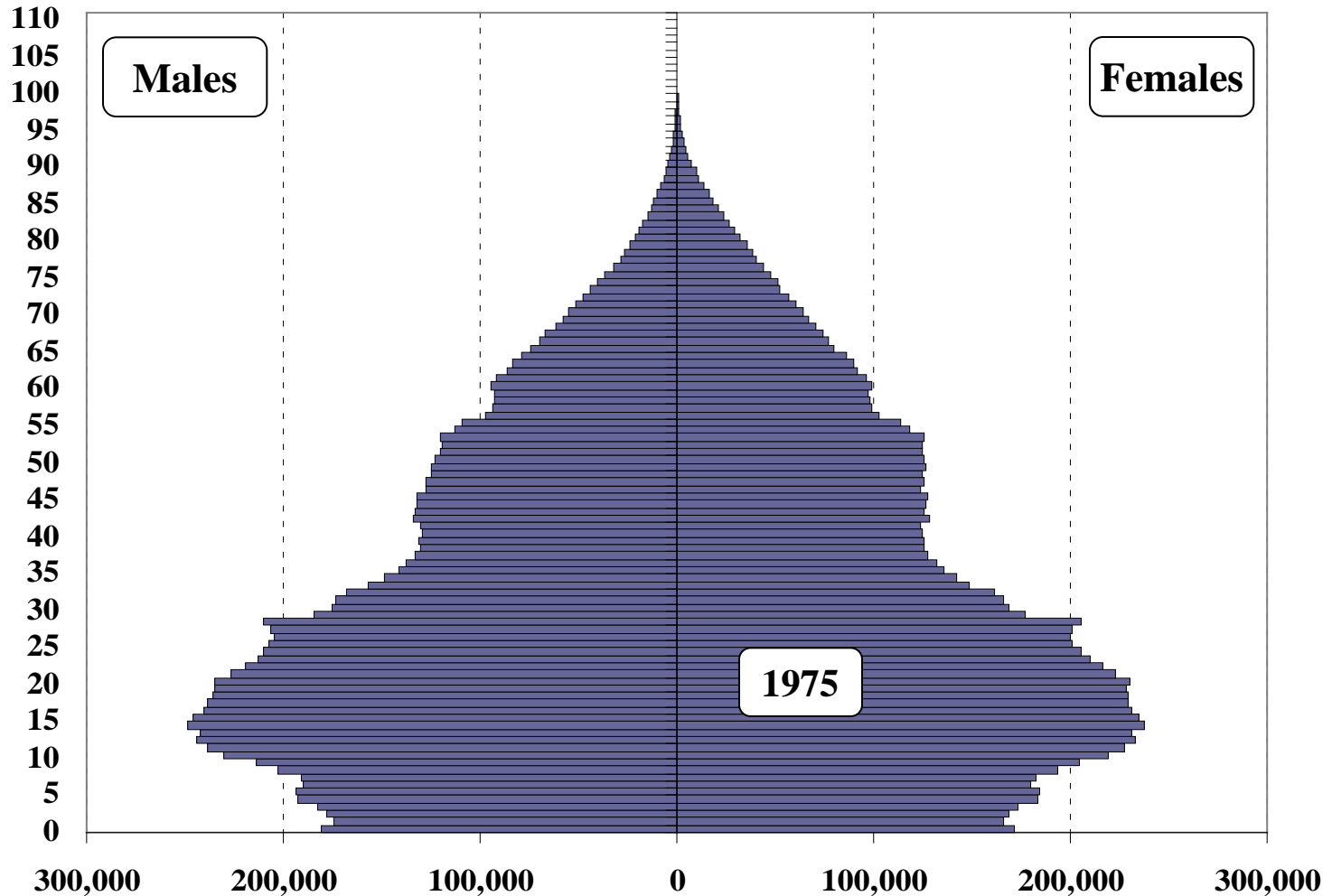


Components of Population Growth (thousands)



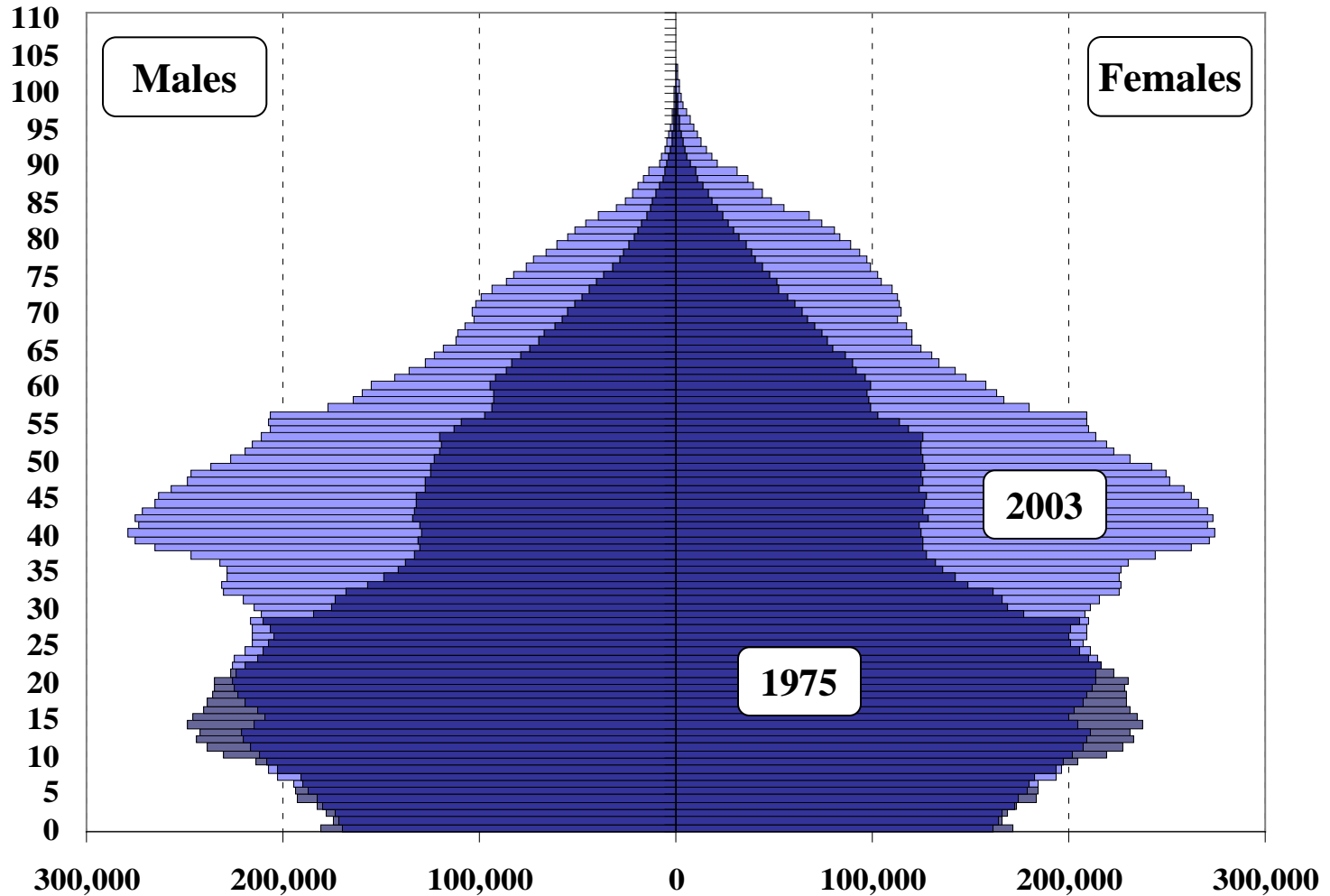
Age Structure of Canada

1975



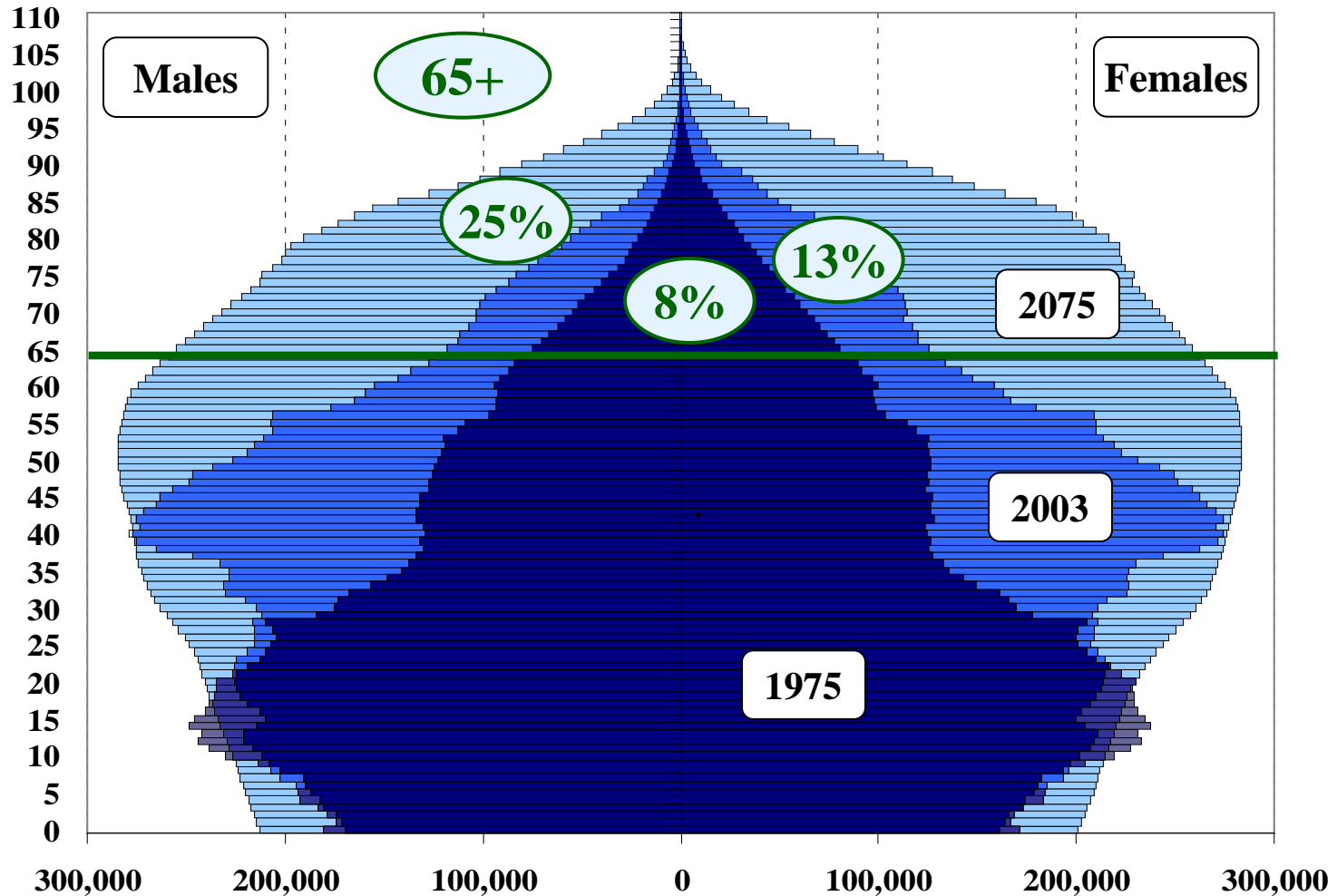
Age Structure of Canada

1975, 2003



Age Structure of Canada

1975, 2003, 2075



Sensitivity Tests

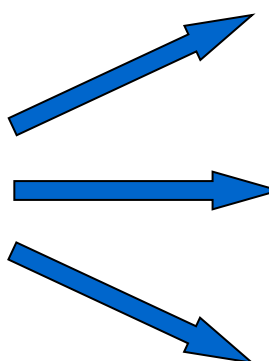
- **OBJECTIVE:** Measure the effect of alternative assumptions on financial results of the CPP.
- Most sensitivity tests performed one assumption at a time, holding rest at their best-estimate levels.
- 2 tests performed per assumption → wide range of potential experience.
- “Low-cost” scenario ⇒ decrease in contribution rate.
- “High-cost” scenario ⇒ increase in contribution rate.
- Changes in fertility rate have small short-term impact on financial position, but long-term impact can be significant.



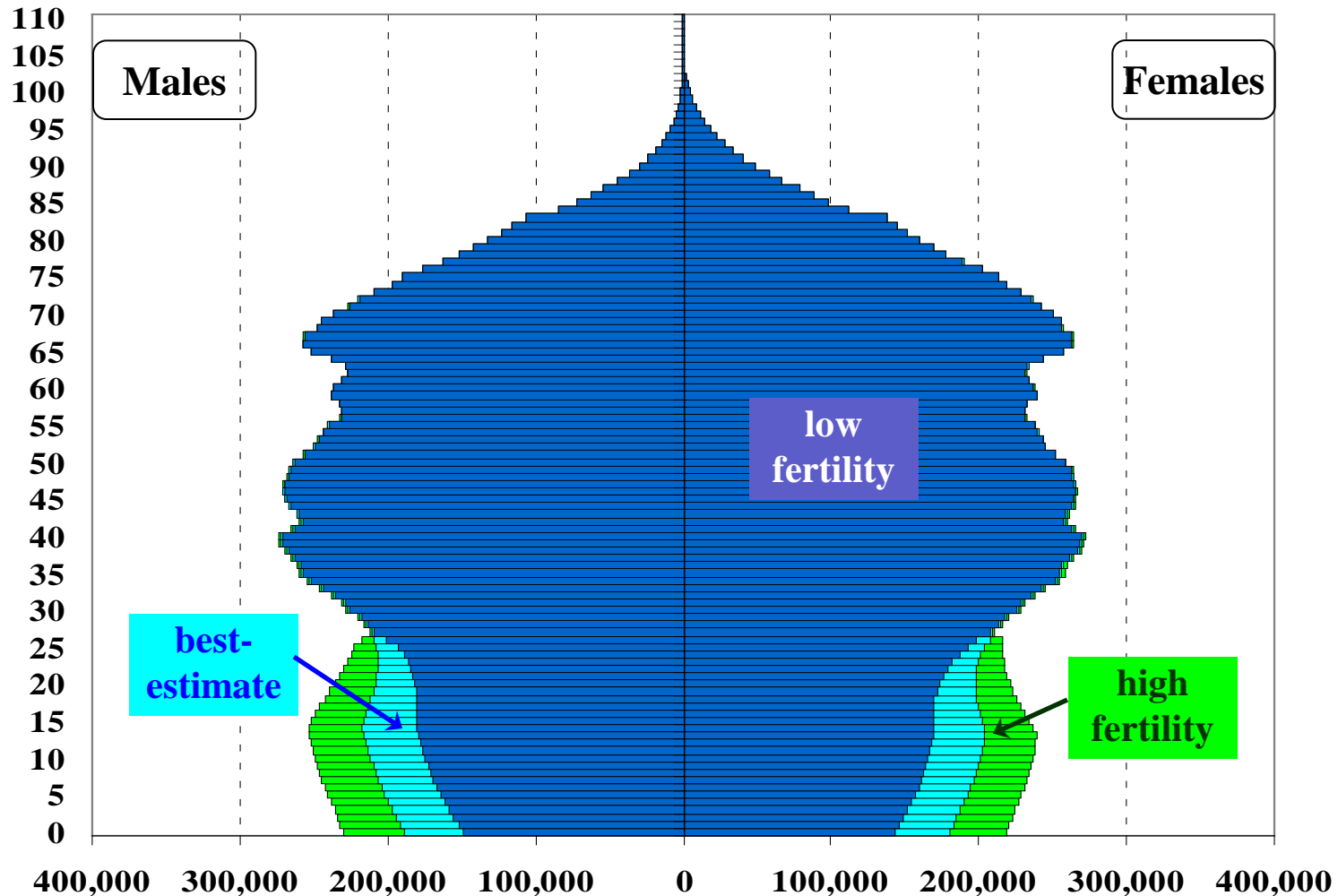
Sensitivity Tests - Fertility

Total Fertility Rate

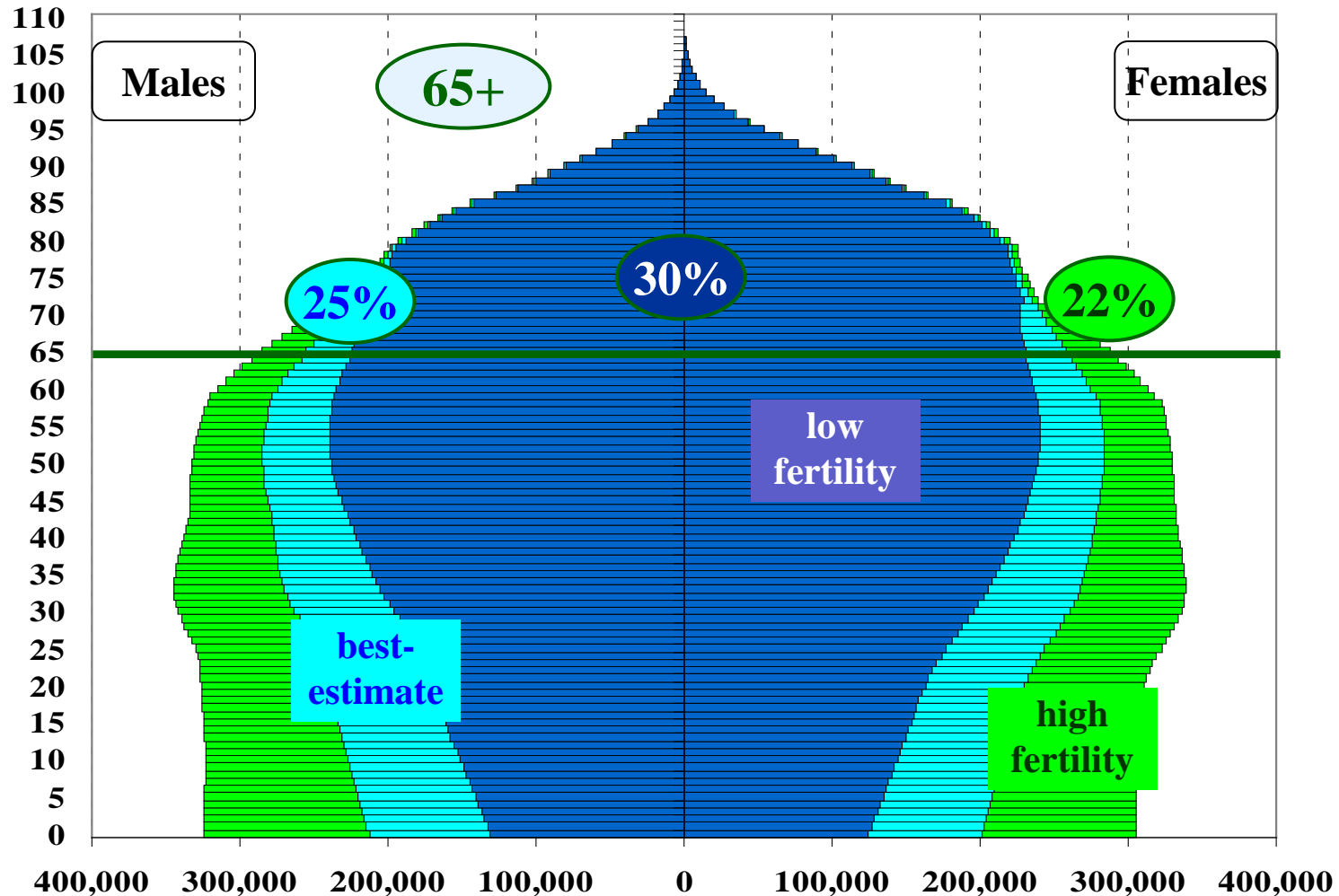
Assumption	2001	2016+
Low fertility		1.30
Best-Estimate	1.51	1.60
High fertility		1.90



Age Structure Under Varying Fertility Assumptions 2030

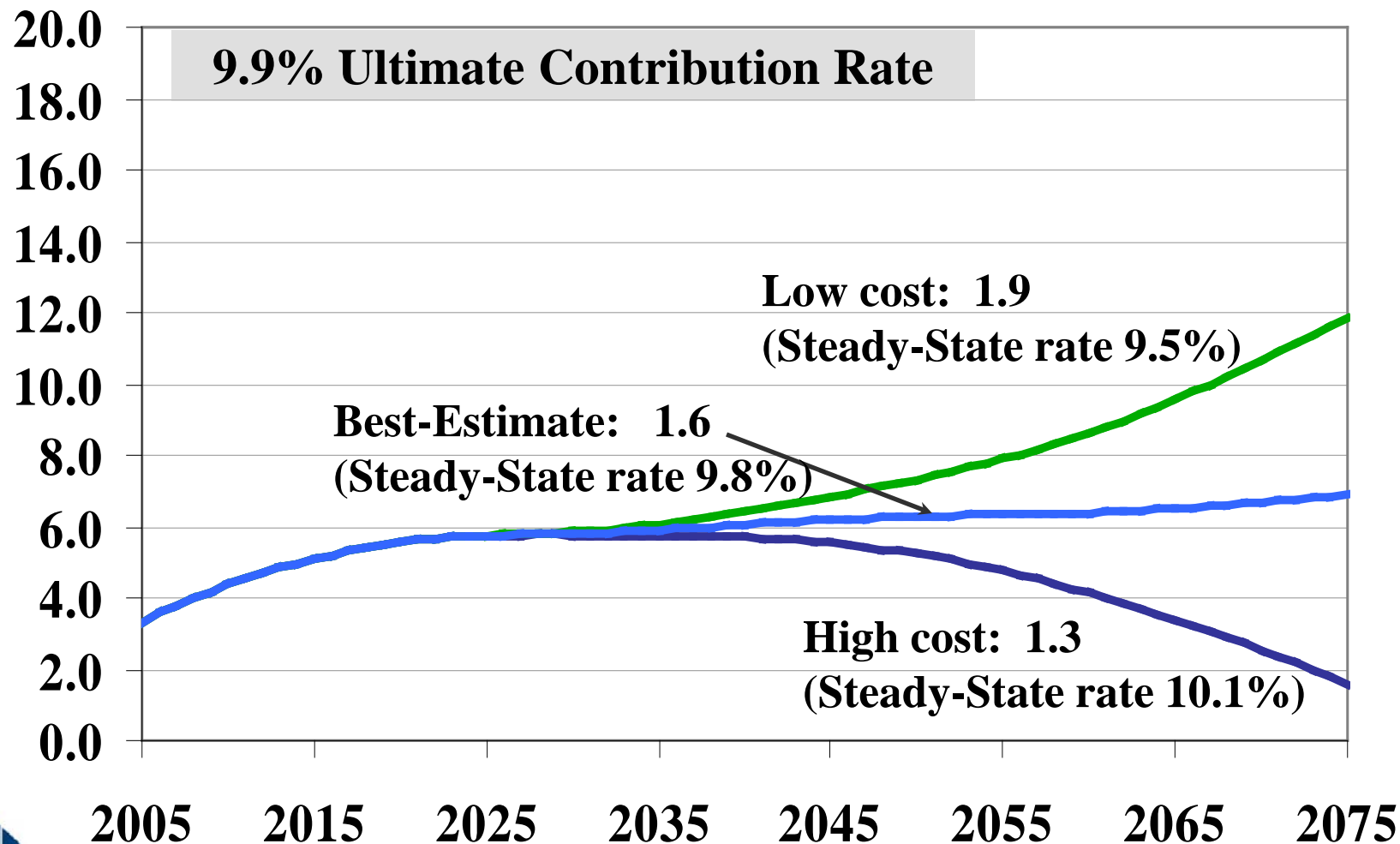


Age Structure Under Varying Fertility Assumptions 2075

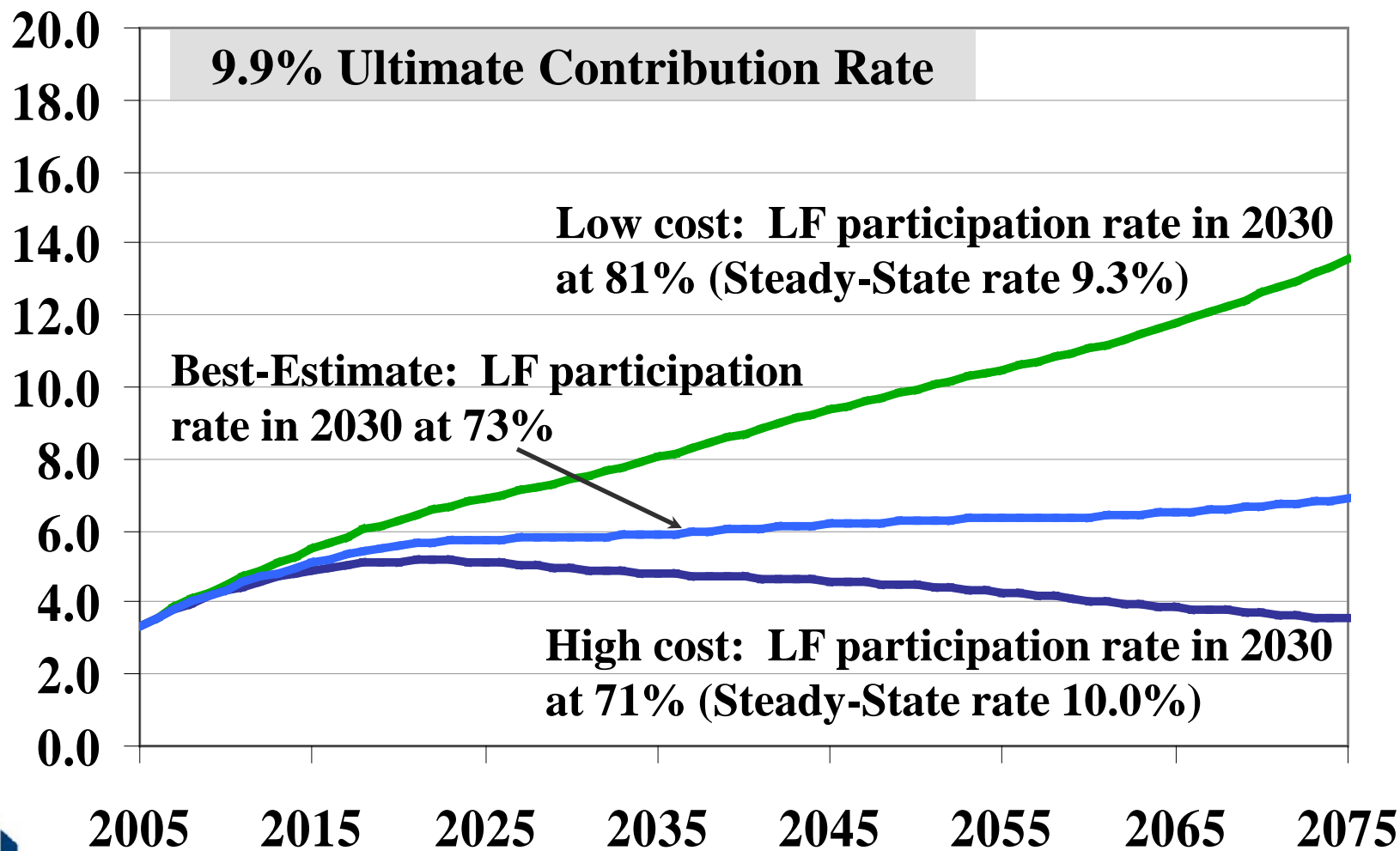


Sensitivity Test – Fertility

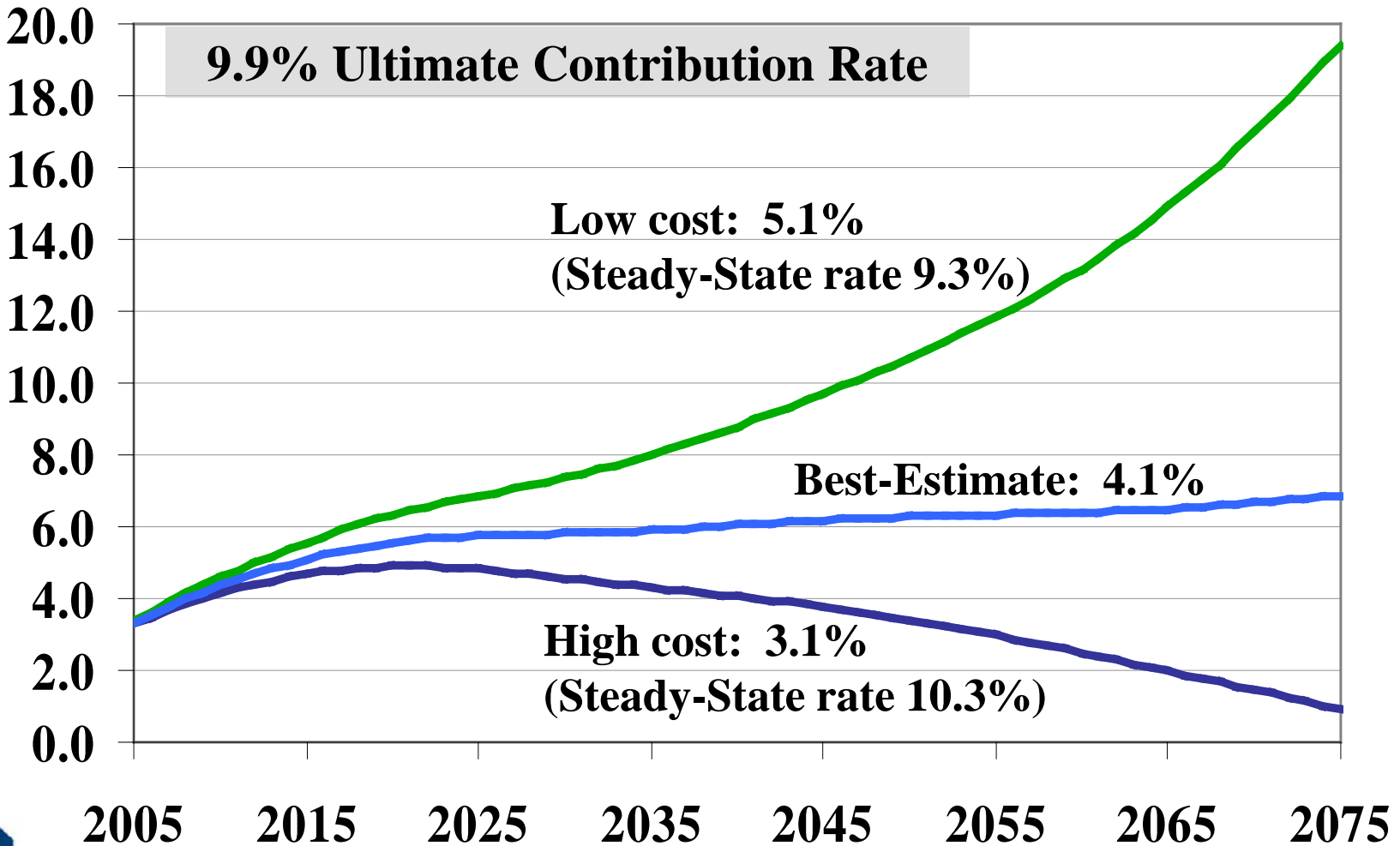
CPP Asset/Expenditure Ratio



Sensitivity Test – Employment CPP Asset/Expenditure Ratio



Sensitivity Test – Real Rate of Return CPP Asset/Expenditure Ratio





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Thank you.

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