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# Mortality projections for Social Security Programs in Canada and the United States

*Presentation to the 15th International Conference of Social Security Actuaries and Statisticians of ISSA, Helsinki, Finland*



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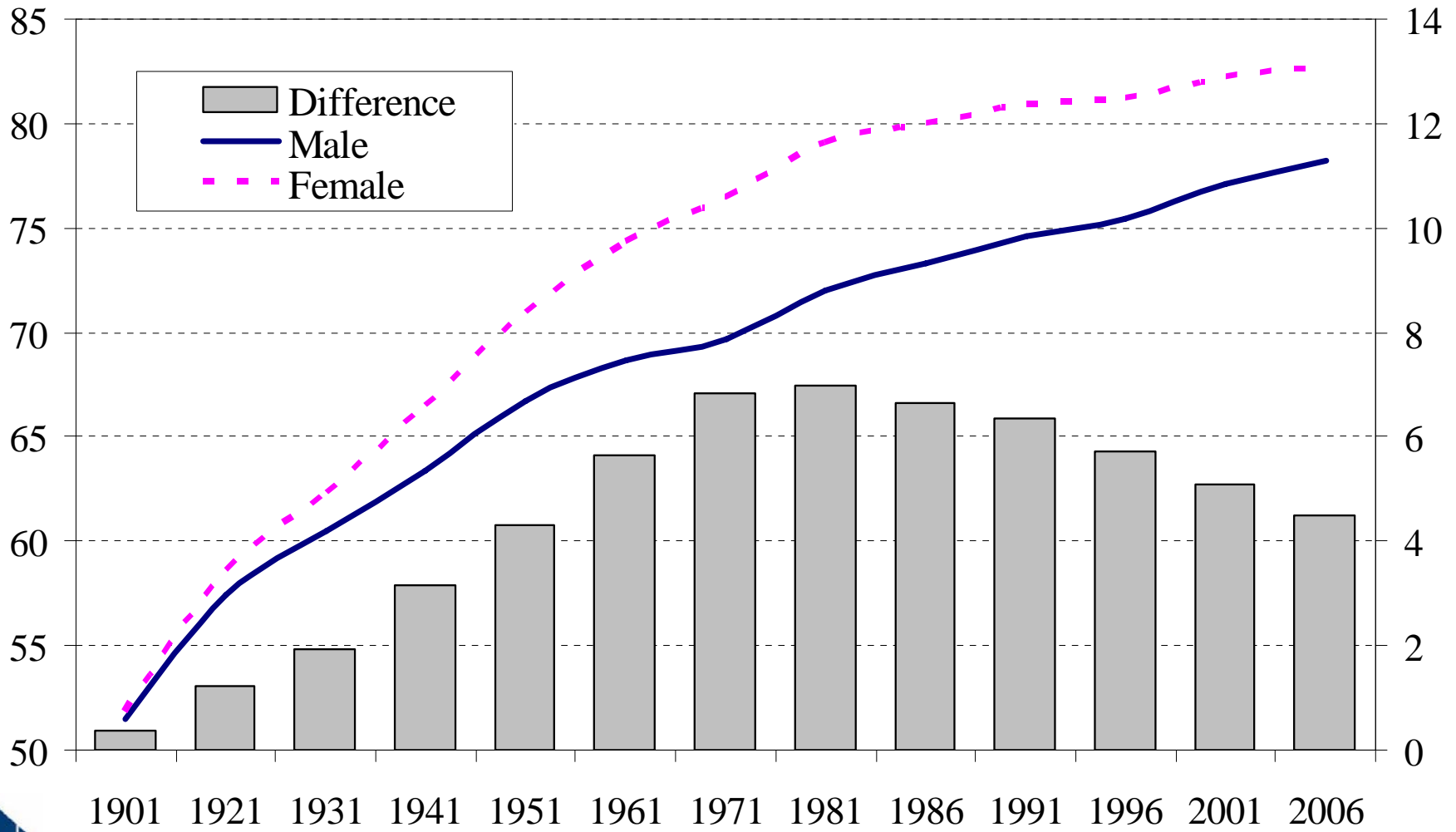
*24 May 2007*

Canada 

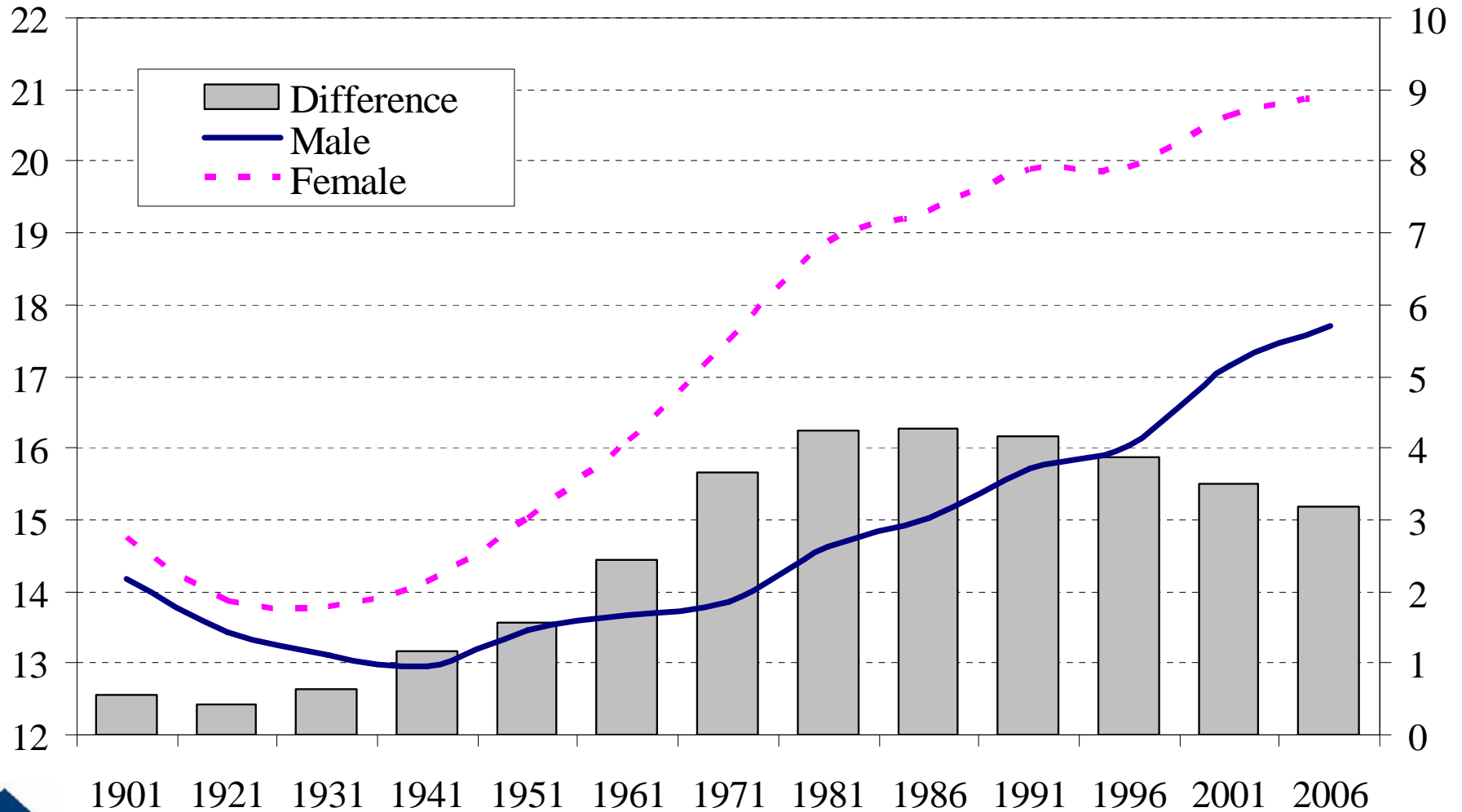
# Presentation

- **General Population Mortality Trends in Canada**
- **Mortality Projections for Social Security Programs in Canada**
- **Stochastic Process**
- **Future Challenges – World Comparison**

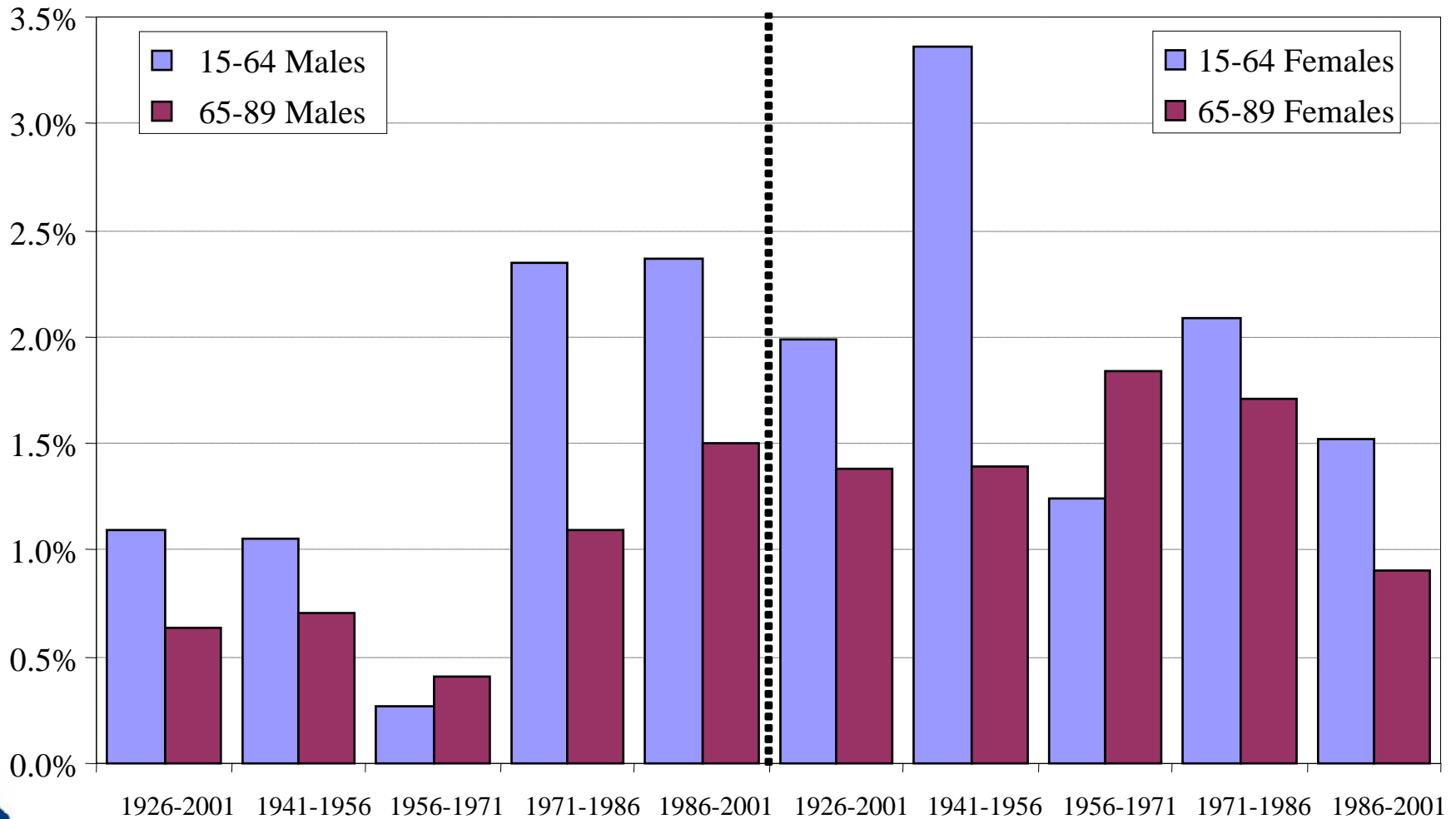
# Life Expectancy at Birth



# Life Expectancy at Age 65



# Average Annual Rates of Mortality Improvement (2001 Population-Weighted)



# Presentation

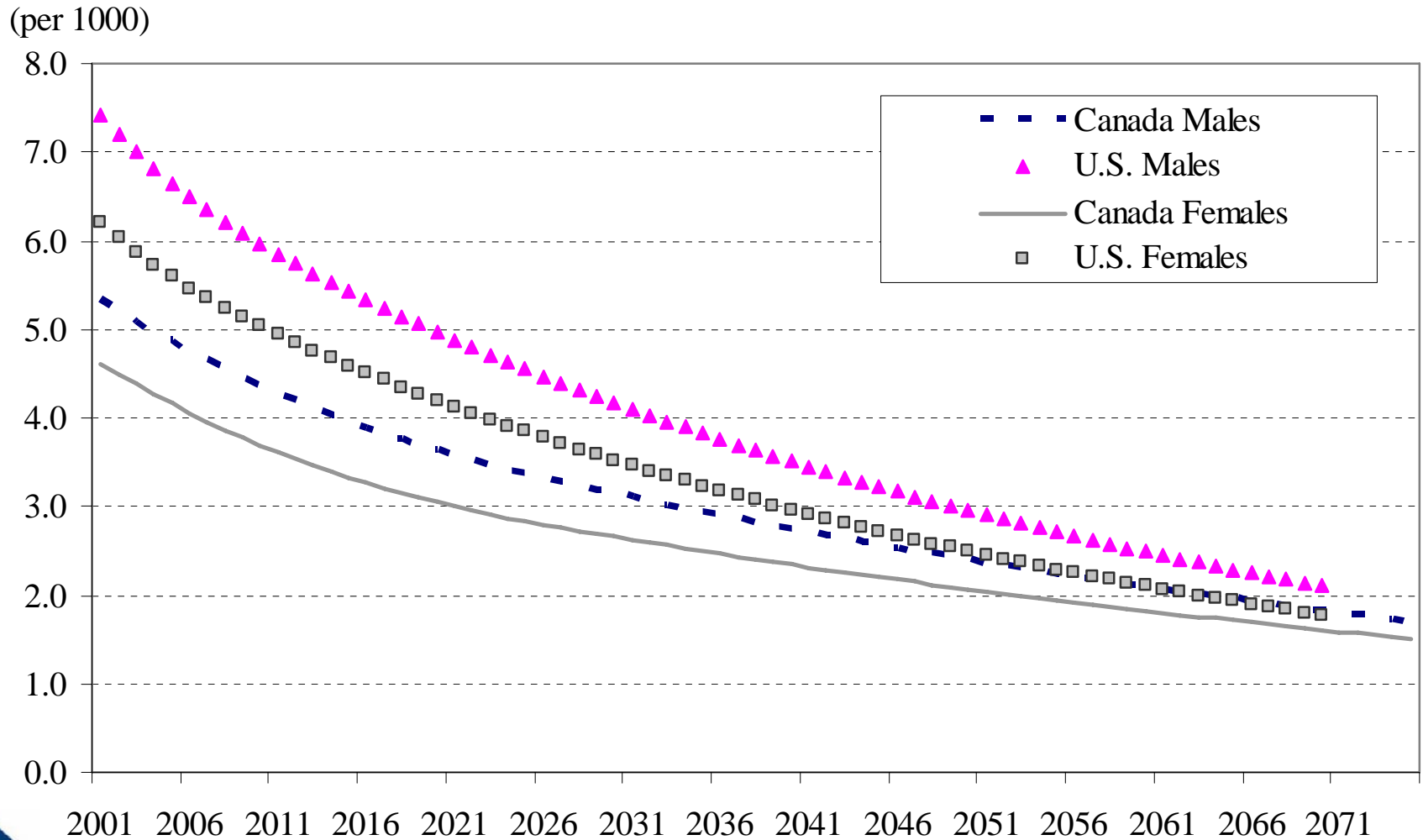
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# Assumed Annual Rates of Improvement

Age	<u>Males</u>		<u>Females</u>	
	<u>2002-2006</u>	<u>2026+</u>	<u>2002-2006</u>	<u>2026+</u>
	%	%	%	%
0	2.25	1.35	2.50	1.25
45-64	2.50	0.65	1.65	0.55
65-84	1.80	0.50	1.05	0.50
85-99	0.10	0.40	0.05	0.40

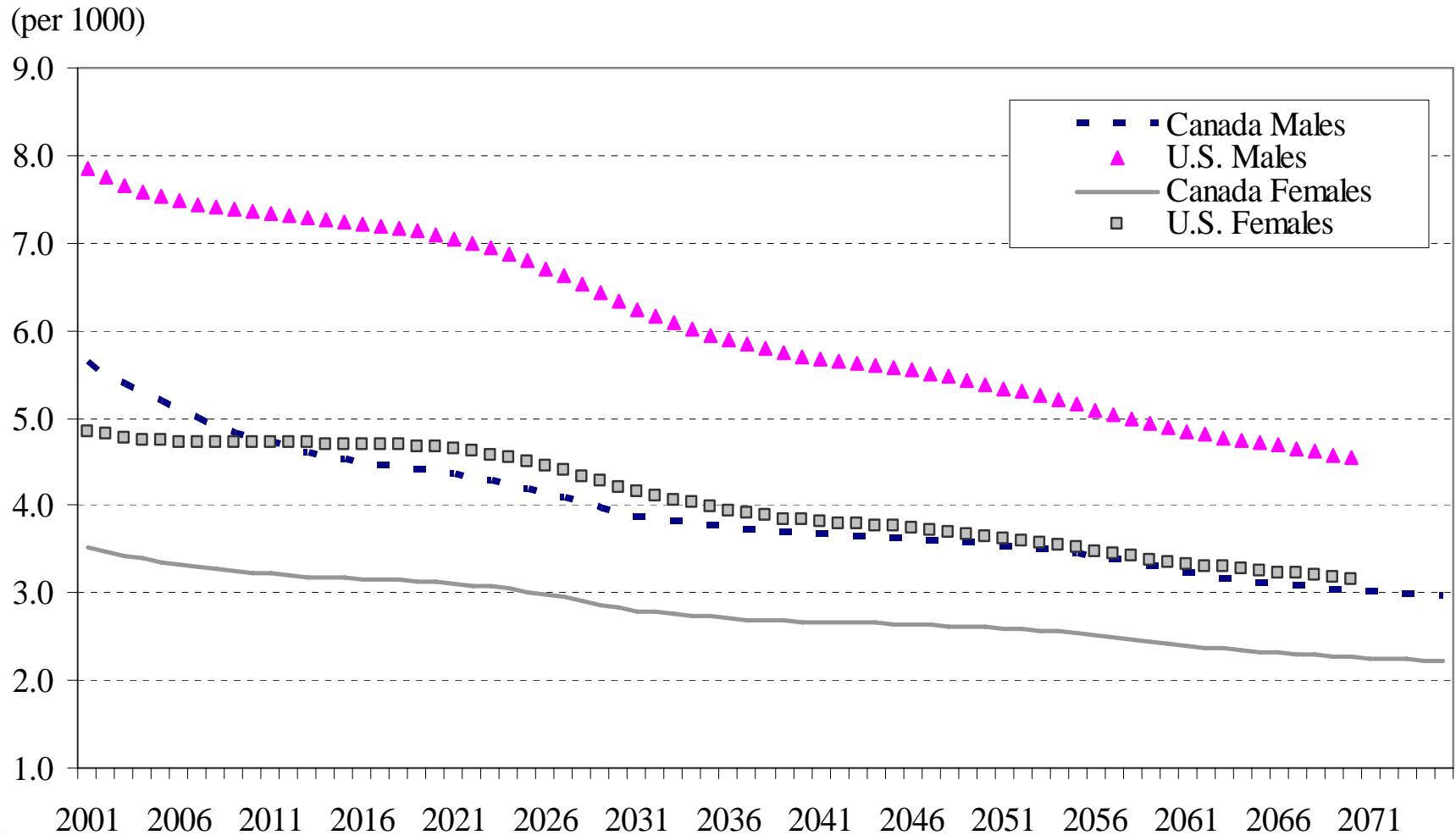
For the next 25 years (2002-2026), the average annual rates of mortality improvement is respectively 1.2% and 0.8% for males and females aged between 65 and 84.

# Projected Mortality rates (Birth to age 1)

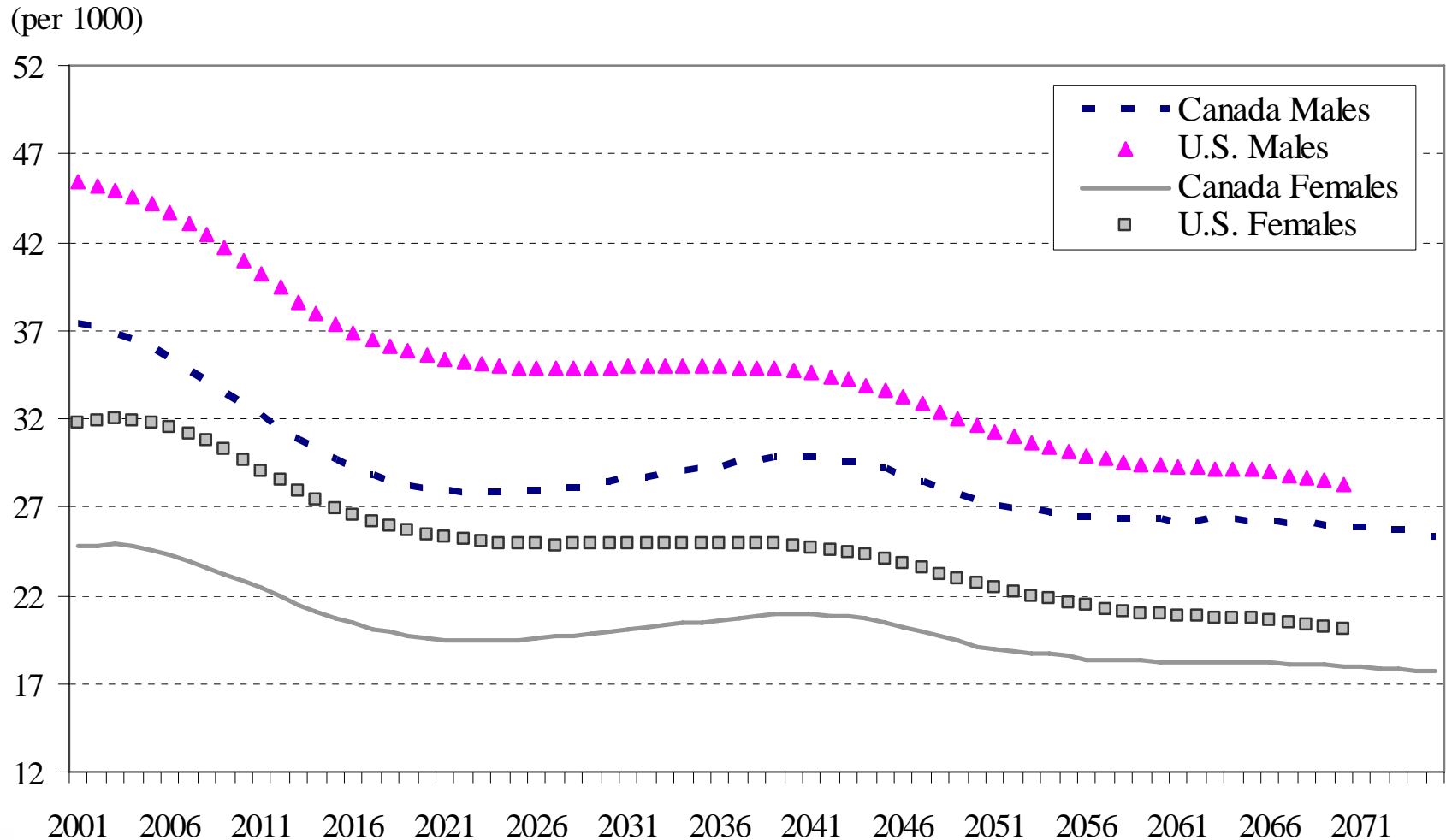




# Projected Mortality rates (Ages 45 to 64)

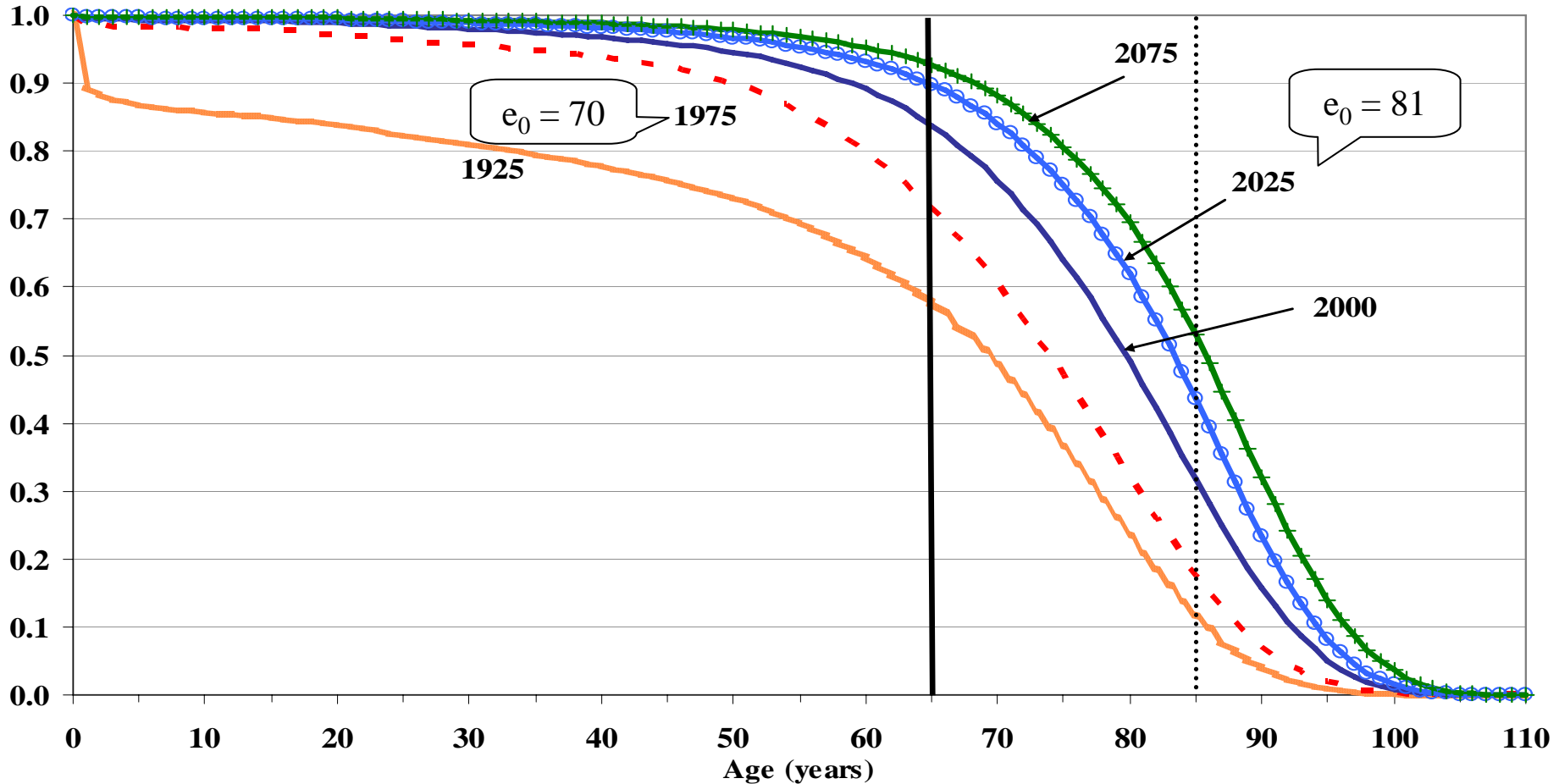


# Projected Mortality rates (Ages 65 to 84)



# Survival Curves at Birth for Canadian Males

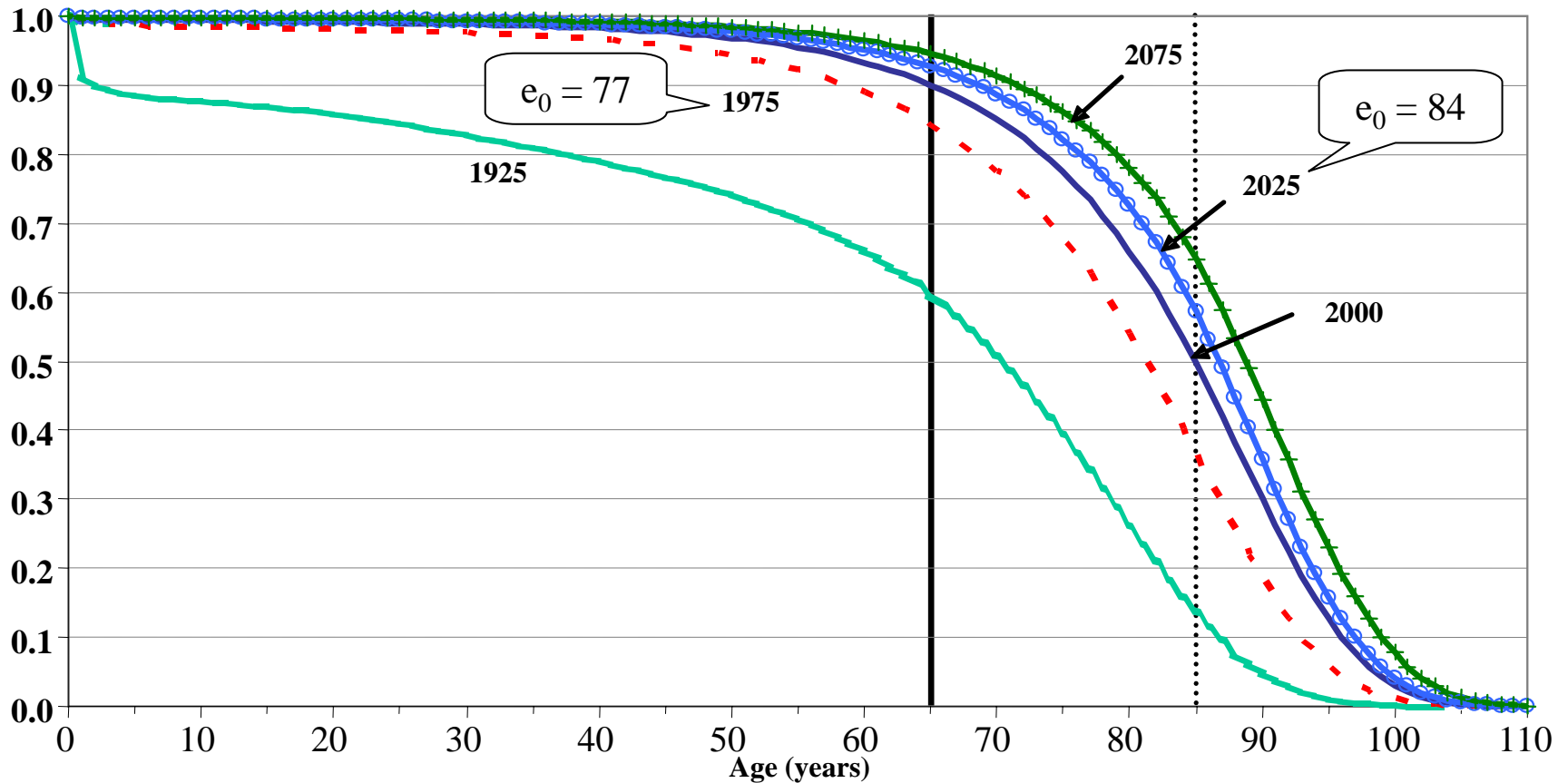
Probability of surviving  
from birth to given age



**70% of males could expect to die between ages 17 and 83 (1925),  
between 65 to 91 (2000) and between 71 and 94 (2050)**

# Survival Curves at Birth for Canadian Females

Probability of surviving from birth to given age



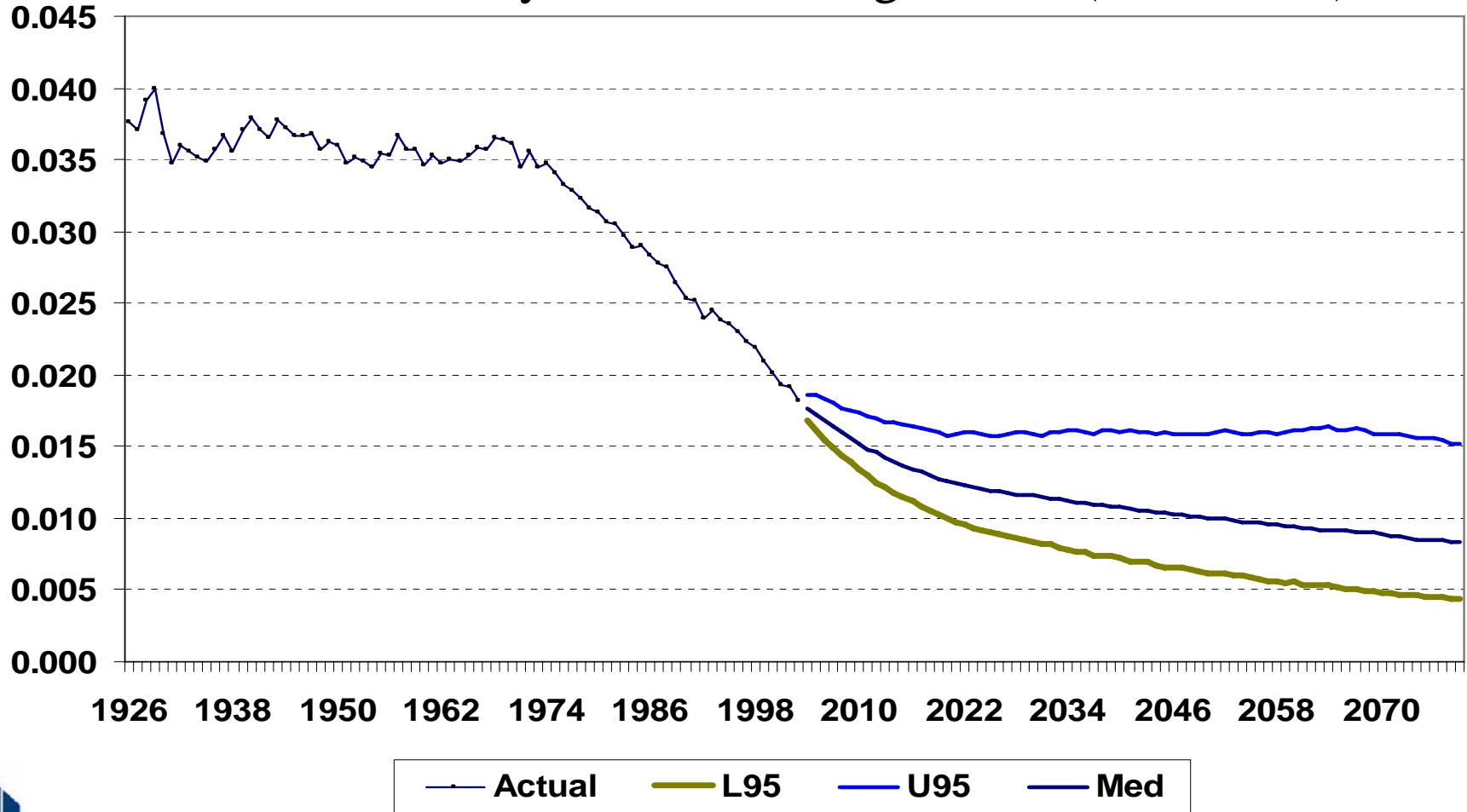
**70% of females could expect to die between ages 24 and 84 (1925), between 71 and 94 (2000) and between 74 and 96 (2050)**

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# Stochastic Process

## Canada: Mortality Rates, Male Age 65-69 (1926-2079)



# Stochastic Process

## Canadian Life Expectancies, with improvements after the year shown

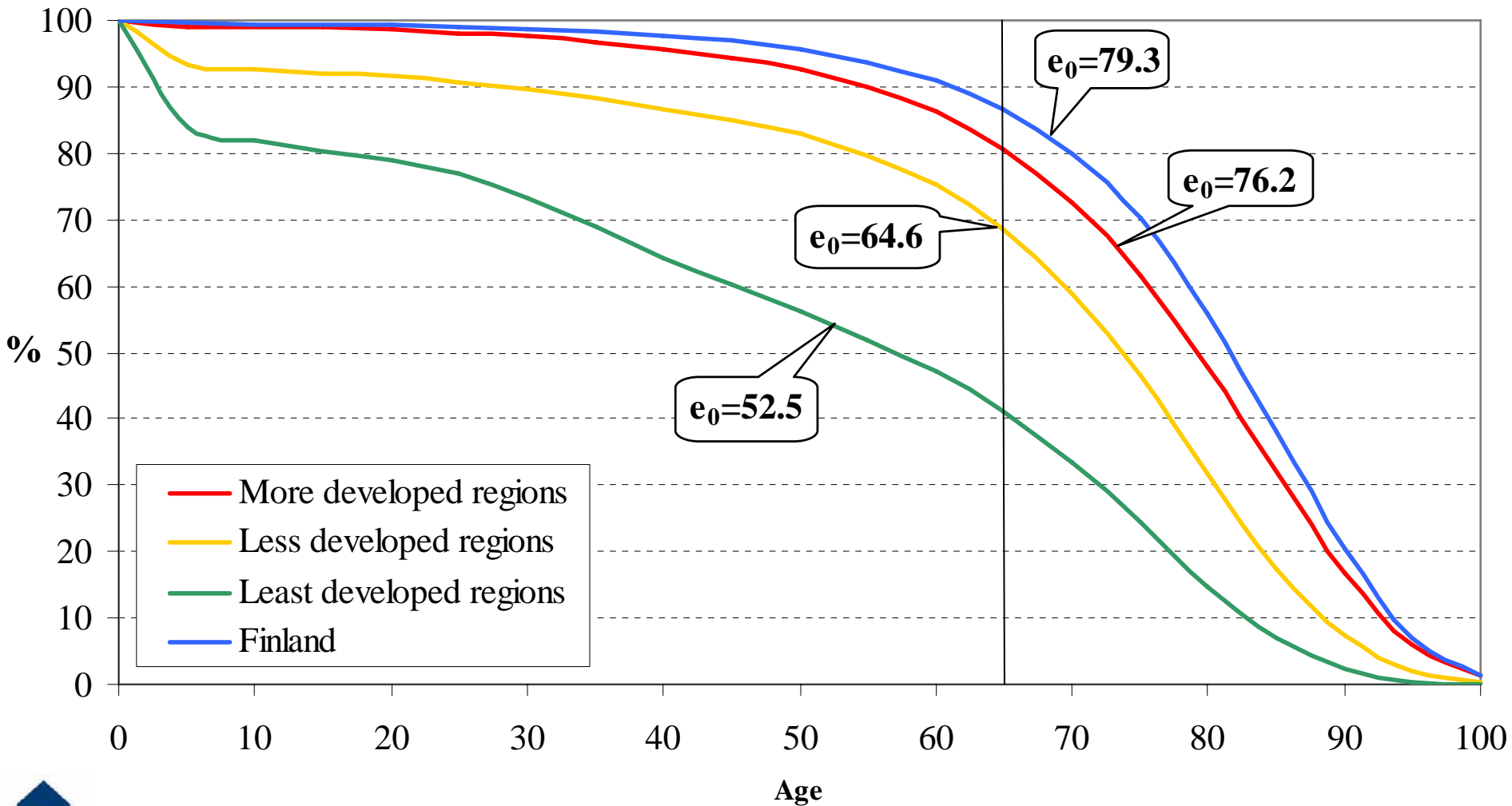
		Actuarial	Stochastic	Lower 95%	Higher
		Report	Process	CI	95% CI
At birth					
Males	2025	84.2	84.4	78.7	88.4
	2050	85.5	85.5	80.4	89.5
Females	2025	87.4	87.3	79.8	92.0
	2050	88.6	88.4	81.3	92.7
At 65					
Males	2025	19.6	19.9	17.1	22.3
	2050	20.5	21.1	16.9	24.2
Females	2025	22.3	22.5	18.4	25.5
	2050	23.2	23.5	17.7	27.5

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# Probability of Surviving (World comparison)



Source: United Nations Population Division, Period 2005-2010

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*Thank you Kiitos*



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