

Population Projection for the Elderly Japanese by Health Status

Agnes Lievre, INED

Yasuhiko Saito, Nihon University

Presented at REVES 2005, Beijing

Objectives

- Make population projections for those aged 65 and over by health status to 2025 based on the estimated transition probabilities among health states
- Estimate effect of changes in transition probabilities (type of health transition and amount of change) on population size in each health state

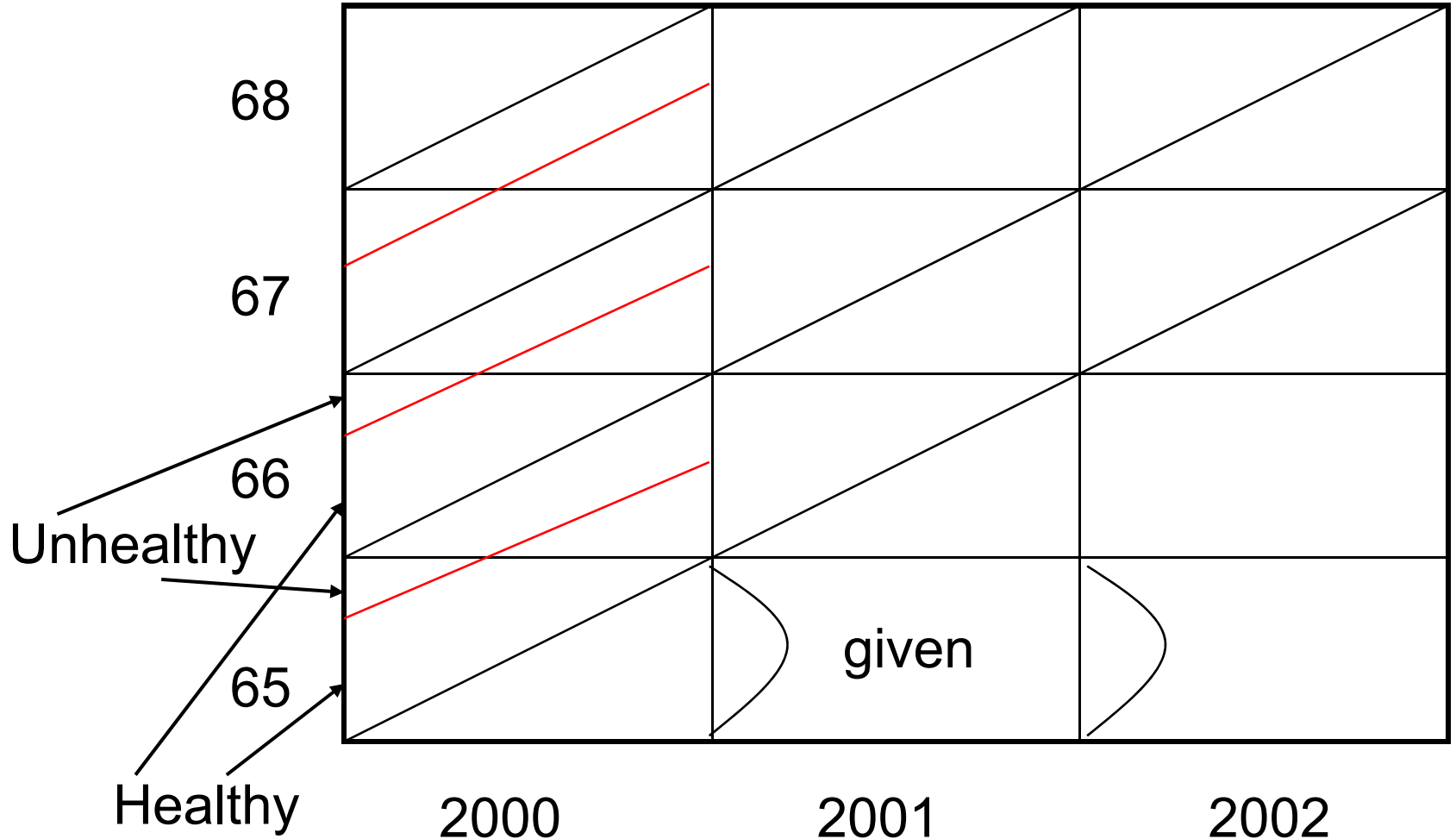
Background

- Why is population aging an issue?
 - increases needs for economic support
 - increases medical expenditures
 - increases needs for long-term care
- In developed countries, there are some reports of improvements in elderly health
- Consequences of population aging would differ by population (65+) health structure

Method of Population Projection

- Ingredients
 - initial population 65 and over by sex and single years of age (2000 Census)
 - prevalence rates of unhealthy in 2000
 - transition probabilities among health states between 1999 and 2001
 - number of 65 years old by sex from 2001 to 2025
 - mortality schedules by sex and single years of age from 2001 to 2025

Schematic Presentation of Method



3 ways to make projections

- 2000 initial population, 2000 prevalence rates, transition probabilities
- 2000 initial population, 2000 prevalence rates, transition probabilities, number of 65 years old from 2001 to 2005
- 2000 initial population, 2000 prevalence rates, transition probabilities, mortality schedules from 2001 to 2005 (estimated transition probabilities are used to compute mortality ratio)

Definition of Health State

- Healthy/Active
 - no difficulty performing 7 ADLs and 7 IADLs
- Unhealthy/Inactive
 - a lot of difficulty or unable to perform at least 1 ADL/IADL

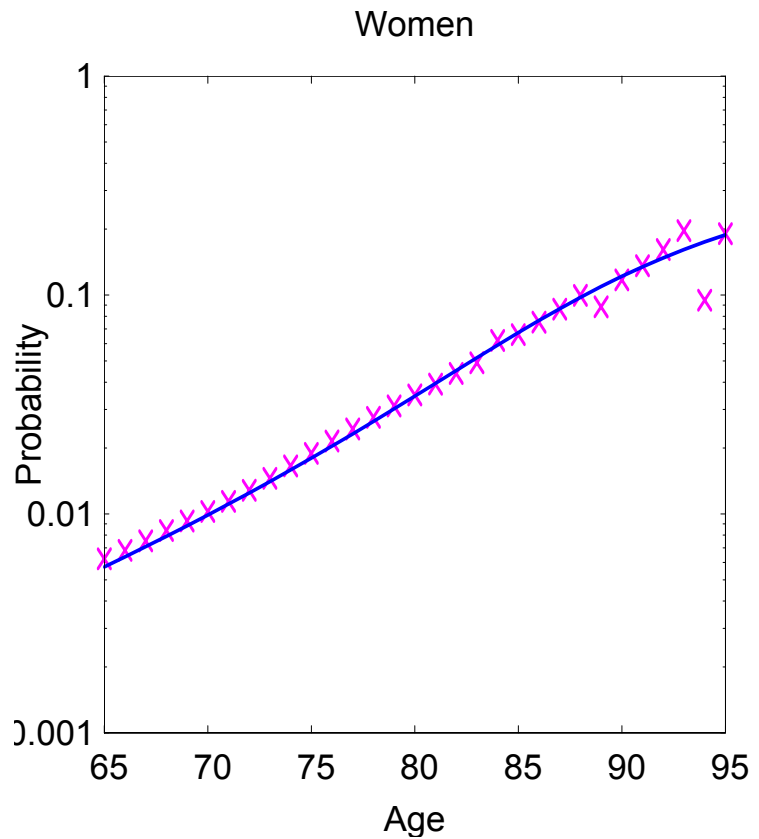
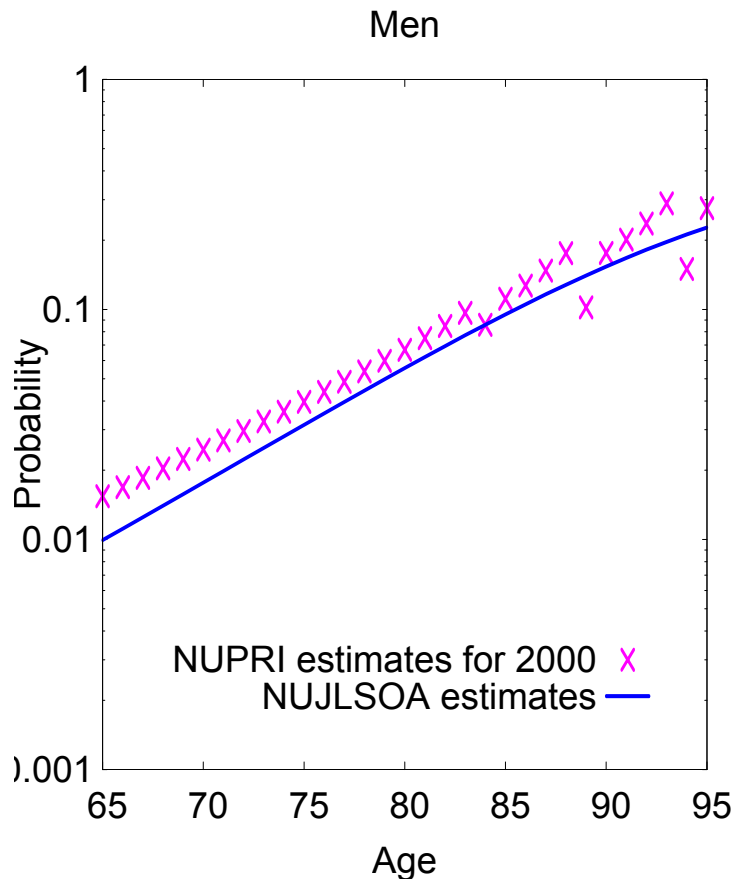
ADL: bathing, dressing, eating, transferring from/to bed/chair, walking in a house, going outside, and toileting

IADL: preparing own meals, shopping personal items, managing money, making a phone call, doing light house work, going out alone by using public transportation, and taking medication

Data

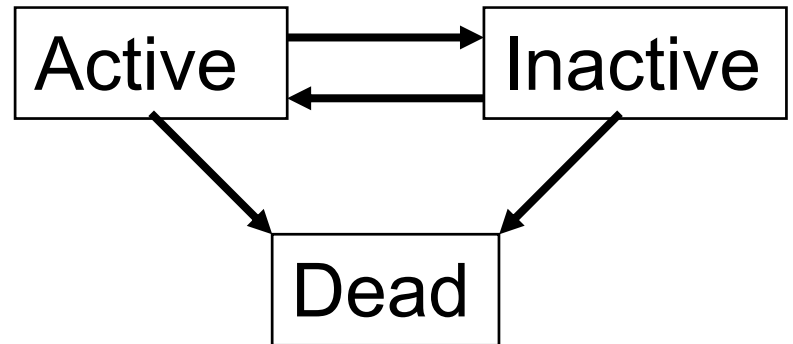
- Nihon University Japanese Longitudinal Study of Aging
 - wave 1 in 1999 and wave 2 in 2001
 - nationally representative sample of non-institutionalized population aged 65 and over in 1999
 - face to face interview survey using structured questionnaire

Annual probability of dying computed from the NUJLSOA and from vital statistics for 2000

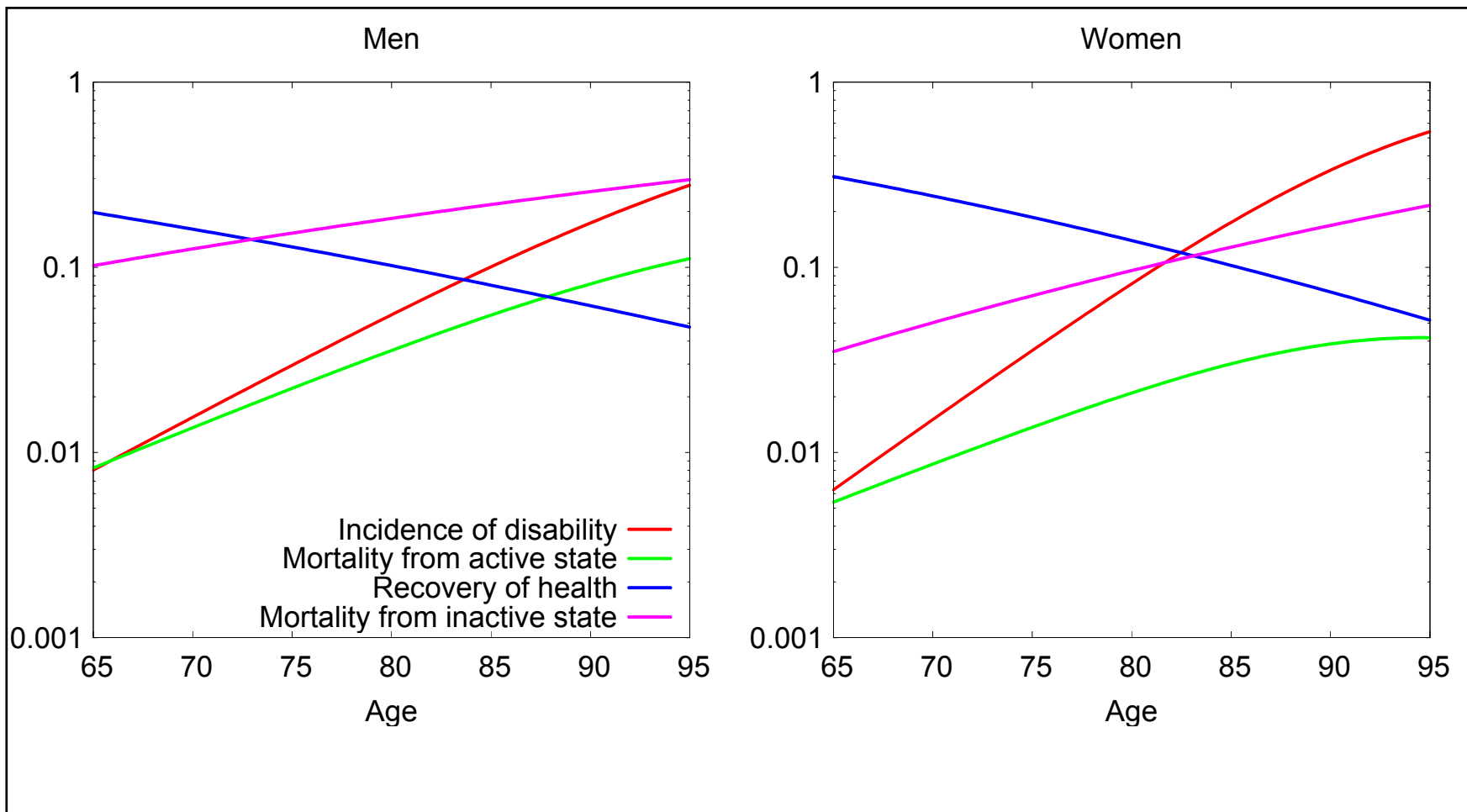


Estimating Ingredients

- Prevalence rates
 - average of prevalence rates in 1999 and 2001
- Transition probabilities
 - IMaCh



Estimated Annual Transition Probabilities

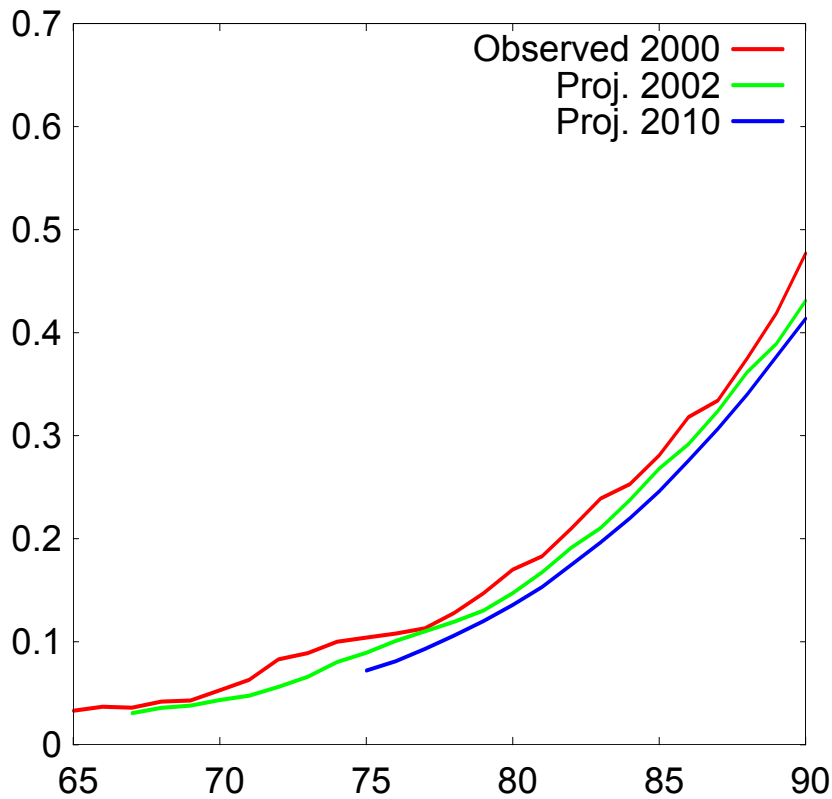


Existing Population Projection

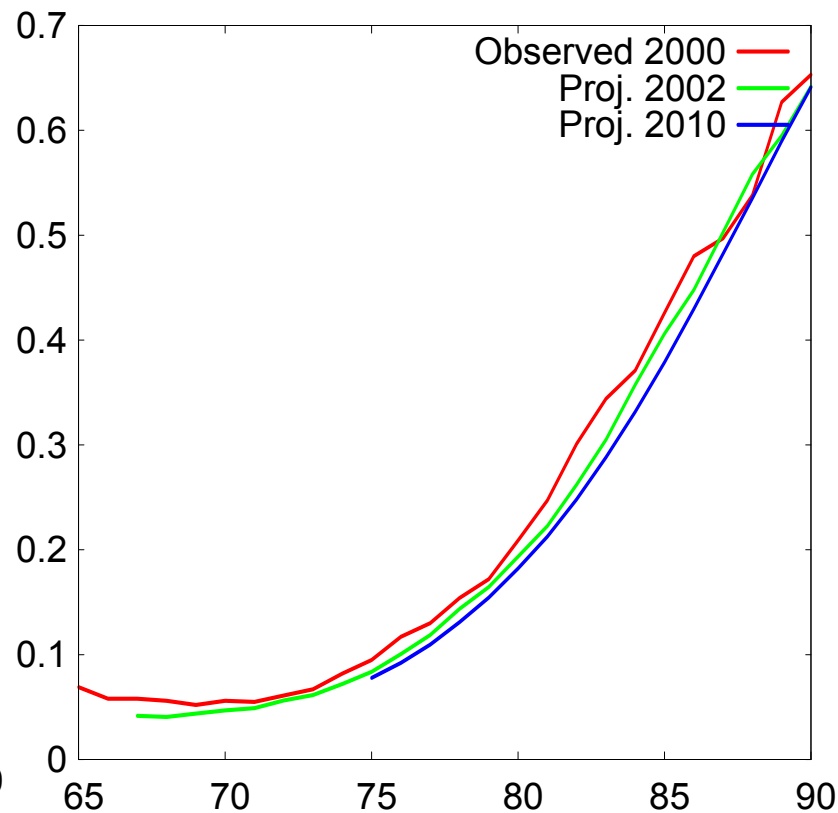
- Population projection by Nihon University Population Research Institute (NUPRI)
- Number of 65years old from 2001 to 2025

Observed prevalence of persons with functional disabilities in 2000 and prevalence based on projection for 2002 and 2010 by sex

Men



Women



Scenarios

Mortality: from NUPRI's population projection

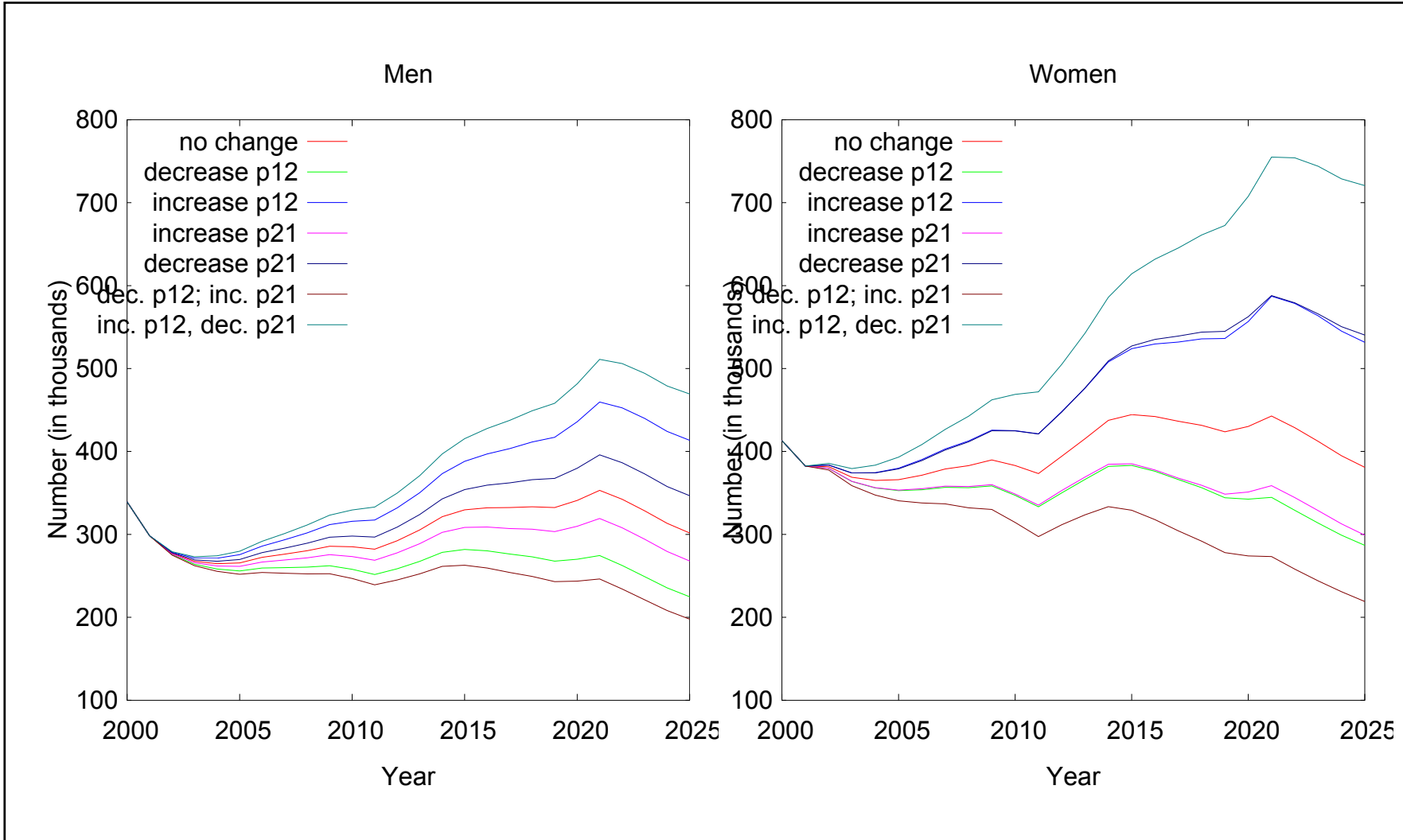
Disability: Scenarios based on observed changes in mortality between 1980 and 1995

- No change in transition probabilities over time
- Change in one or several transition probabilities
 - > Improvement
 - > Deterioration

Proportion of elderly males and females aged 65 to 94 in active and inactive states among the initial population in 2000 and projected numbers for year 2025 according to different scenarios (in thousands). P12: incidence; p21 recovery

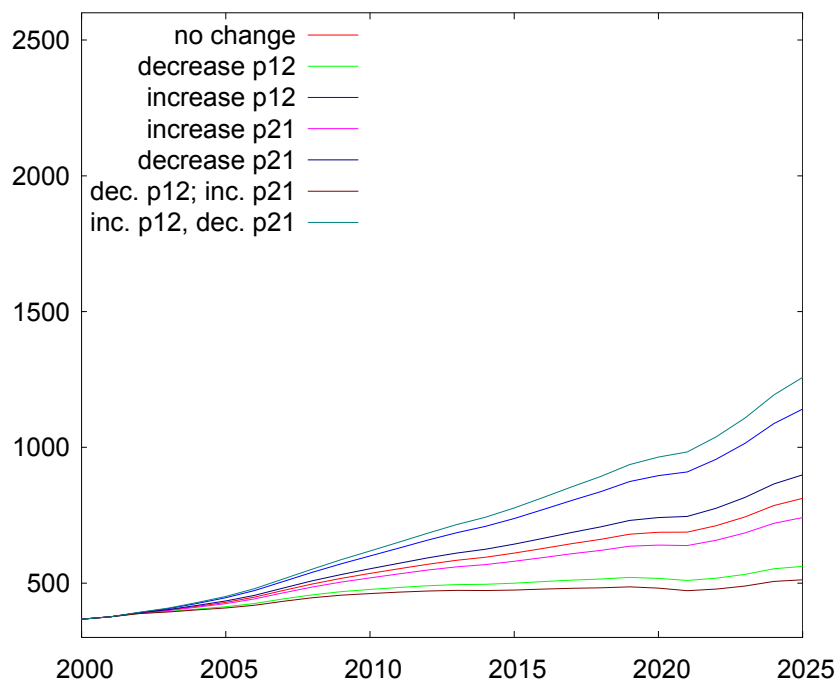
	Males			Females		
	Active	Inactive	% of inactive	Active	Inactive	% of inactive
Initial population in 2000	8276	941	10.20%	10622	2073	16.30%
Scenarios for proj. in 2025						
<i>No change</i>	14151	1951	12.10%	15980	4138	20.60%
<i>Improvement</i>						
Decrease p12	14650	1452	9.00%	17186	2932	14.60%
Increase p21	14294	1807	11.20%	16445	3672	18.30%
Dec.p12 and inc. p21	14756	1345	8.40%	17524	2593	12.90%
<i>Deterioration</i>						
Increase p12	13528	2573	16.00%	14661	5456	27.10%
Decrease p21	13978	2123	13.20%	15326	4791	23.80%
Inc.p12 and dec. p21	13306	2795	17.40%	13875	6242	31.00%

Evolution of the number of inactive males and females aged 65-74 from 2000 to 2025 according to different scenarios

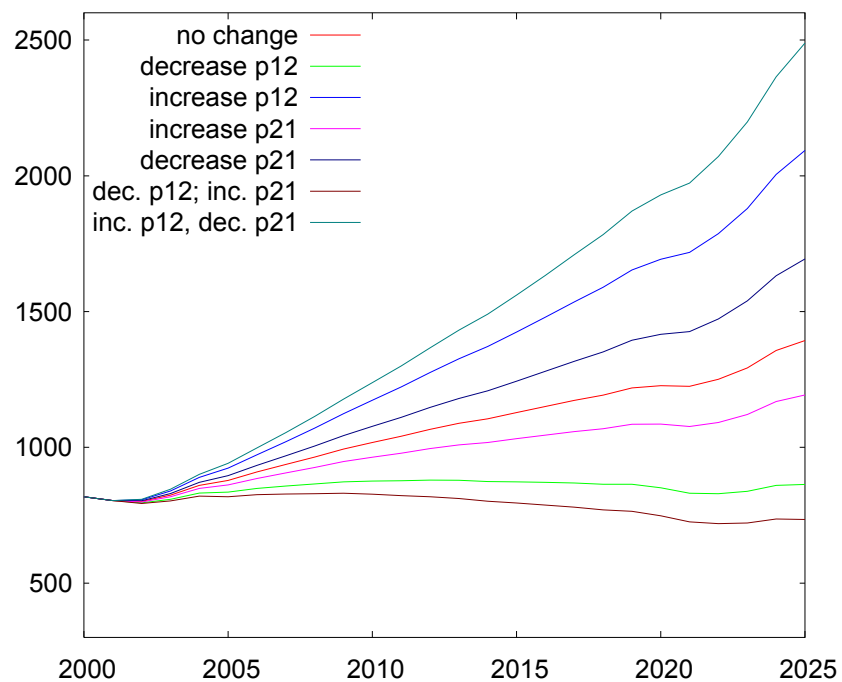


Evolution of the number of inactive males and females aged 75-84 from 2000 to 2025 according to different scenarios

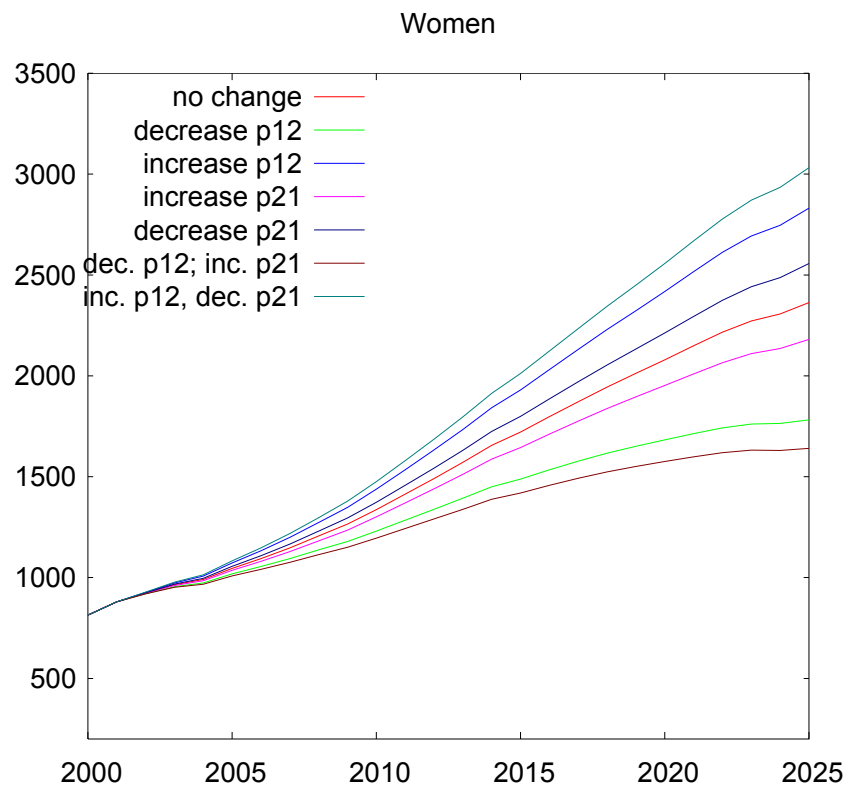
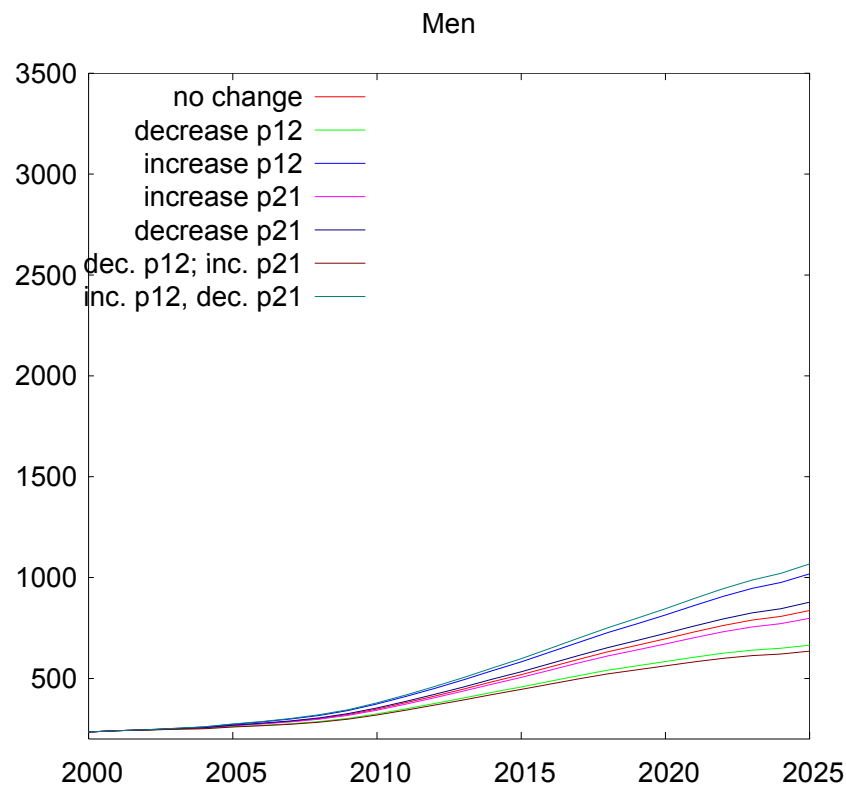
Men



Women



Evolution of the number of inactive males and females aged 85-94 from 2000 to 2025 according to different scenarios



Conclusion

- In terms of absolute numbers, the decline in mortality implies an increase of aged people exposed to the risk of becoming disabled.
- Our projections suggest a decline of the prevalence of disability assuming the transition probabilities remain constant
- This decline would be higher if we observe an improvement in the incidence of and recovery from disability.

Next step

- examine economic impact of the change in the future, for instance, medical expenditure
- estimate health expectancy