Using Statistics Canada LifePaths Microsimulation Model to Project the Health Status of Canadian Elderly

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SEDAP New Researcher's Conference 2007

Hamilton, Canada
Friday, October 19, 2007

Outline

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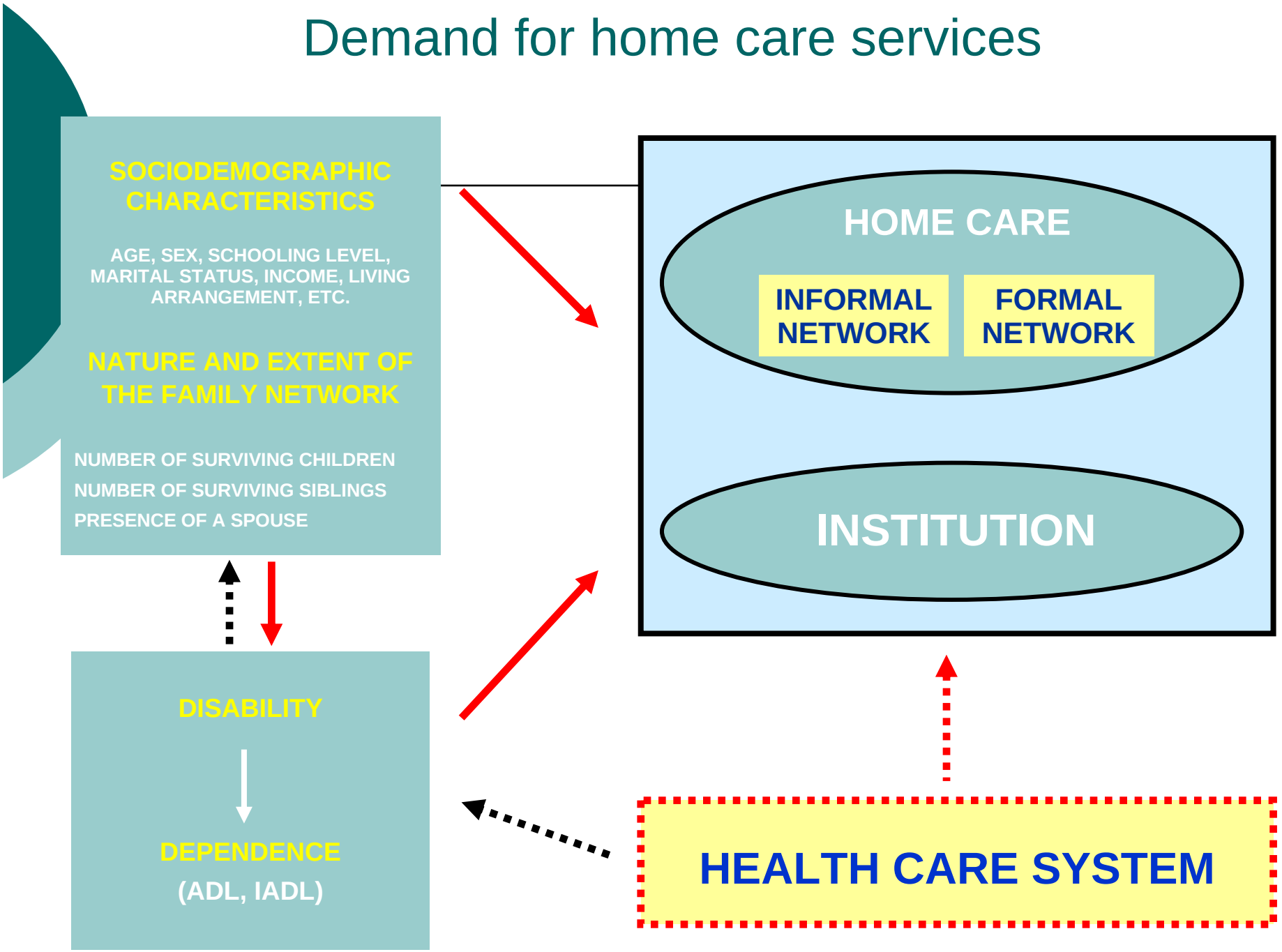
- Research results
- Some limitations
- Conclusion

Research question

- What is the impact of an optimistic disability scenario on future numbers of Canadian elderly in poor health and their chronic homecare needs?

Demand for home care services



Method

- Use Statistics Canada LifePaths Microsimulation Model to project future health status of Canadian elderly according to two scenarios :
  1. Base LifePaths scenario : Gains in life expectancy are observed as well as increases in disability free and with disability life expectancy;
  2. Healthy scenario : All added years in life expectancy are disability free years.
- A first comparison with a group of European countries* will be done to assess the specificities of Canadian aging.

*FELICIE countries: Belgium, Czech Republic, England and Wales, Finland, France, Germany, Italy, Netherlands, Portugal

What does health status mean?

- With Canadian health survey data, we can define four health status:
  - No disability
  - Mild disability
  - Moderate disability
  - Severe disability
- Institutionalized people are all considered in severe disability ;
- To evaluate the health status of a population, demographers and epidemiologists have created an indicator based on life tables parameters. Here, what is used is the Disability Free Life Expectancy (DFLE) ;
- Life Expectancy (all health status combined) (LE) can be divided in two parts: DFLE and Life Expectancy with Disability (LEWD) ;
- Then, $LE_x = DFLE_x + LEWD_x$ (x = age) ;
- LEWD can be calculated by multiplying persons-years in the life table by disability rates by age (Sullivan Method).

Compression of morbidity : our healthy scenario

- The healthy scenario keeps the LEWD at the same level throughout the projection period, meaning that all added years in life expectancy are disability free years.
- In this paper, all added disability free years will be added to DFLE at age 45 as our target population is the elderly aged 75 + from year 2001 to 2031.

LifePaths Microsimulation Model

Variables used in our research project

A	Age
S	Sex
SL	Schooling level
R	Region
MS	Marital status
PB	Place of birth
AS	Age of spouse
SC	Surviving children
D	Disability

Institution / priv. hsld.

Mortality

Research results

- Canadian people aged 75+ in poor health according to two scenarios, 2001 to 2031 :
  - Total population ;
  - Population without surviving children ;
  - Population not married and without surviving children.

Table 1. Canadian people aged 75+ in poor health*, according to two scenarios, 2001 to 2031

		Men		Women	
Year		Base scenario	Healthy scenario	Base scenario	Healthy scenario
n_{2001}		196 019	192 900	307 787	302 924
Standardized to 100 in 2001	2001	100	100	100	100
	2011	149	122	134	110
	2021	213	170	180	145
	2031	333	271	270	226

*People in poor health are those moderately or severely disabled.

Table 2. Canadian people aged 75+ in poor health,* without surviving children, according to two scenarios, 2001 to 2031

		Men		Women	
Year		Base scenario	Healthy scenario	Base scenario	Healthy scenario
n_{2001}		49 606	48 768	59 125	58 421
Standardized to 100 in 2001	2001	100	100	100	100
	2011	128	106	108	89
	2021	163	131	127	103
	2031	277	223	224	182

*People in poor health are those moderately or severely disabled.

Table 3. Canadian people aged 75+ in poor health,* not married** and without surviving children, according to two scenarios, 2001 to 2031

		Men		Women	
Year		Base scenario	Healthy scenario	Base scenario	Healthy scenario
n_{2001}		29 590	29 063	49 744	49 131
Standardized to 100 in 2001	2001	100	100	100	100
	2011	137	113	106	87
	2021	178	142	120	96
	2031	323	255	204	161

*People in poor health are those moderately or severely disabled.
**Married people include people in Common-Law Union.

Figure 1. Trends in total population (all health status) and people in poor health, aged 75+, Canada and FELICIE countries

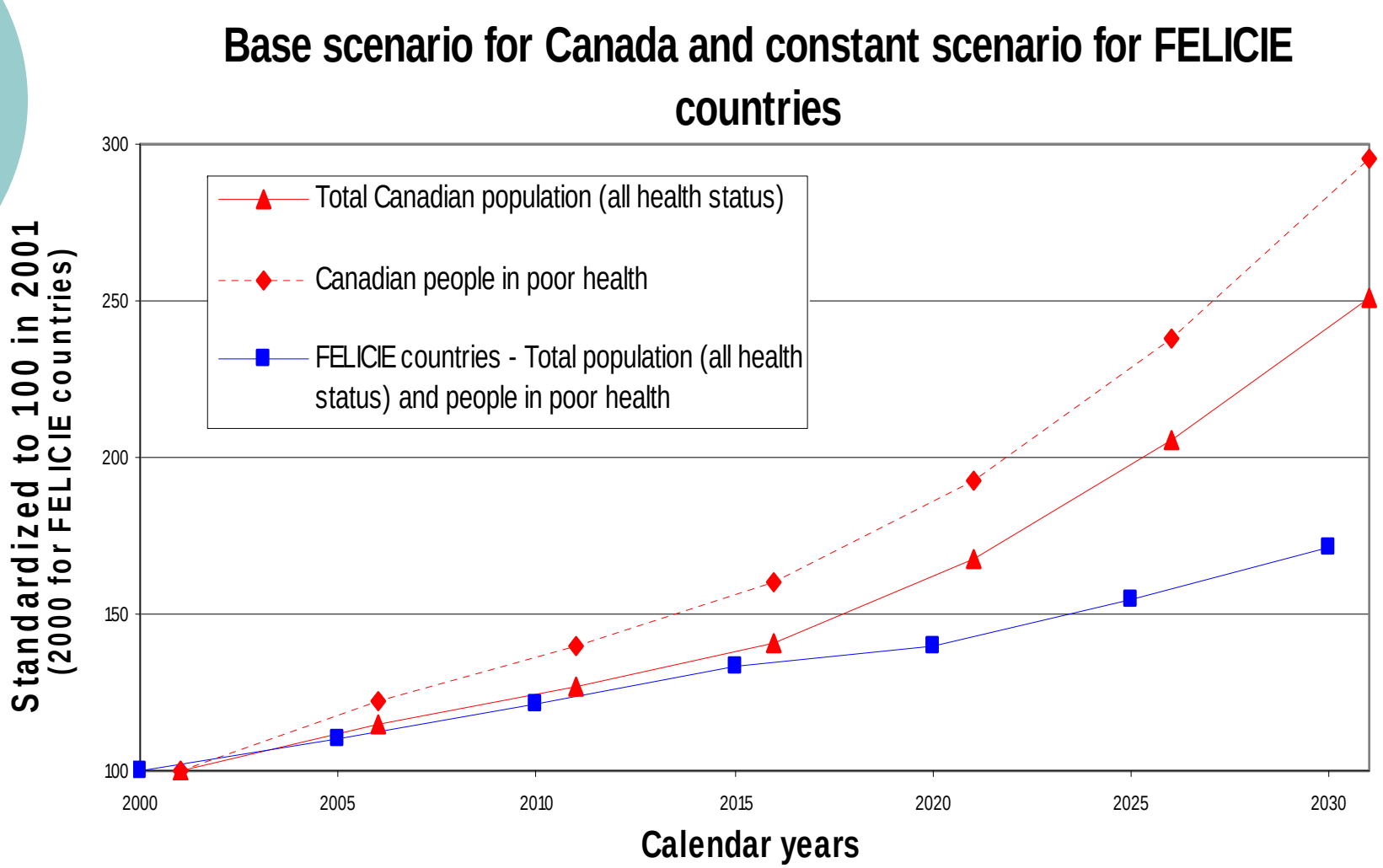
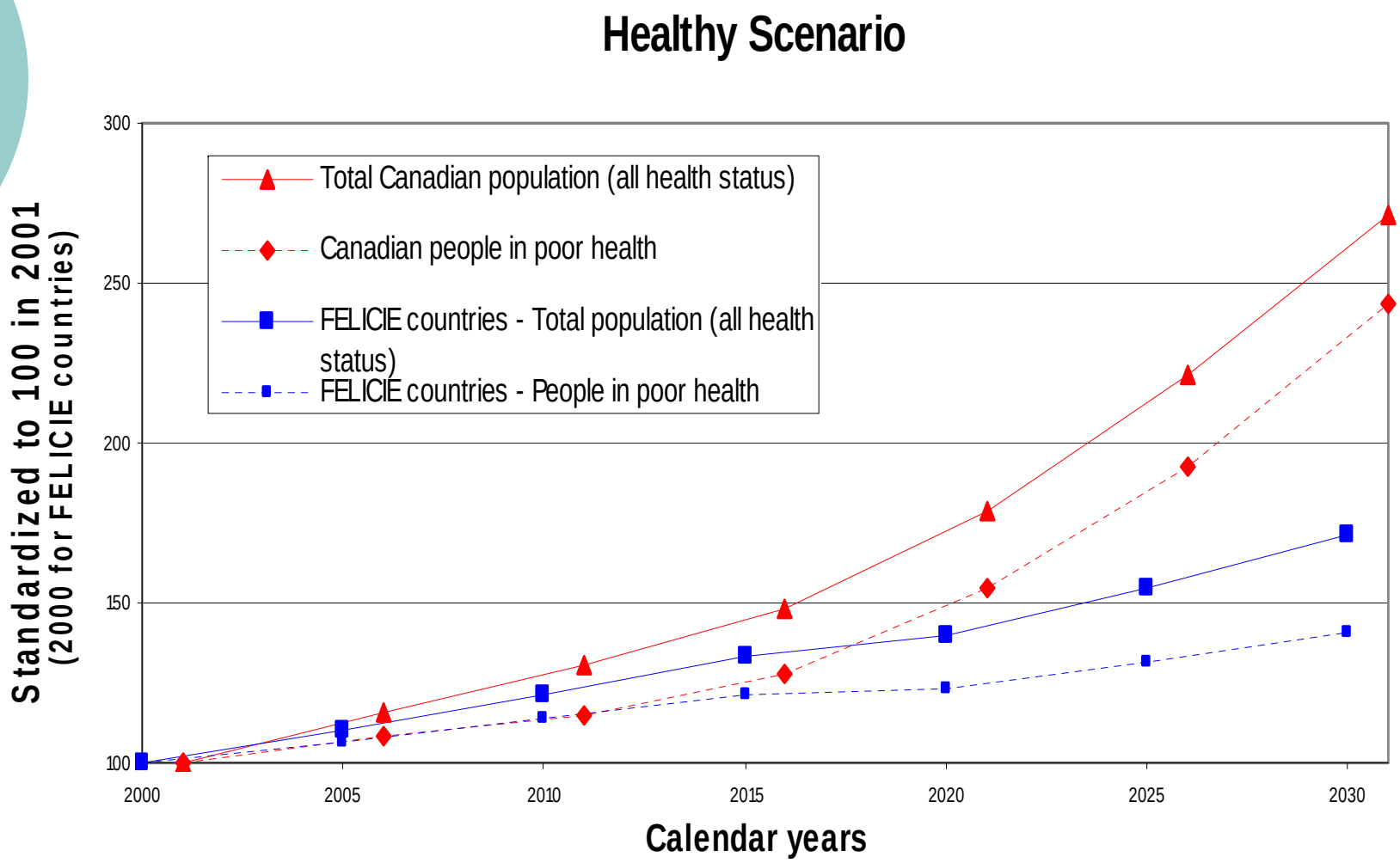


Figure 2. Trends in total population (all health status) and people in poor health, aged 75+, Canada and FELICIE countries



Some Limitations

- In the current version of *LifePaths*, there are no transition probabilities for a certain number of variables, for example living arrangement, necessary to reach our main research objectives.
- Consequently, using cross-sectional information, we estimate the probabilities of classifying each factor/covariate pattern in the different categories of these variables.

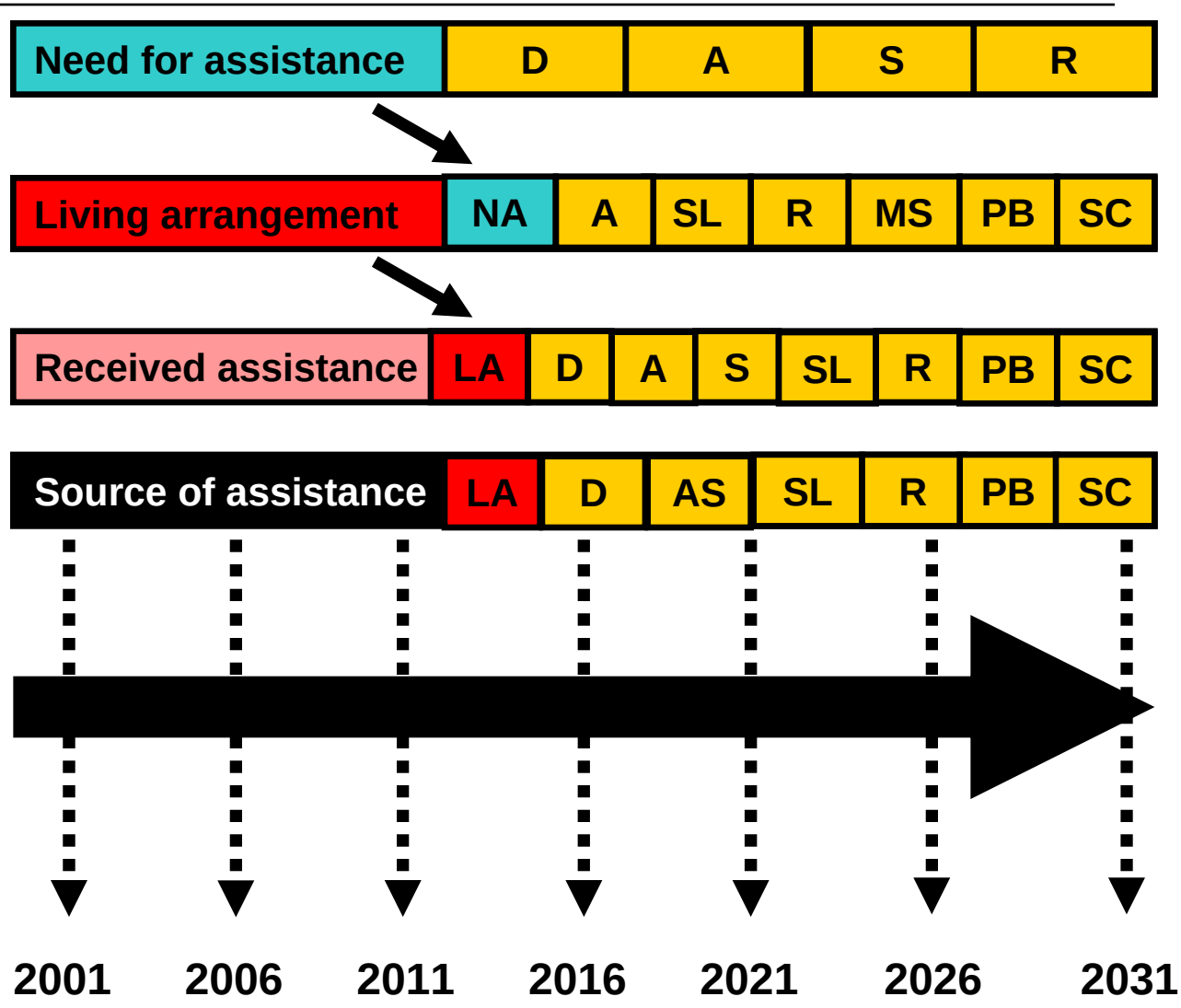
Micro-simulation
(LifePaths)

Age	A
Sex	S
Schooling level	SL
Region	R
Marital status	MS
Age of spouse	AS
Place of birth	PB
Surviving children	SC
Disability	D

Institution / priv. hsld.

Mortality

Cross-sectional



Conclusion

- The healthy scenario would have more impact on future numbers of Canadian elderly in poor health because the Base scenario creates by itself an expansion of morbidity.
- Up to 2015, trends in total population (all health status) and people in poor health aged 75+ are similar. From 2015 on, the impact of a larger baby-boom in Canada differentiates considerably Canada from FELICIE countries both in terms of total population (all health status) and people in poor health.
- In that context, the issue of homecare needs and homecare services will be of greater importance in Canada than in FELICIE countries.