Supplementary Material for

A multi-state transition model among older adults receiving home care services: A population-based cohort study

Content of Supplementary Material

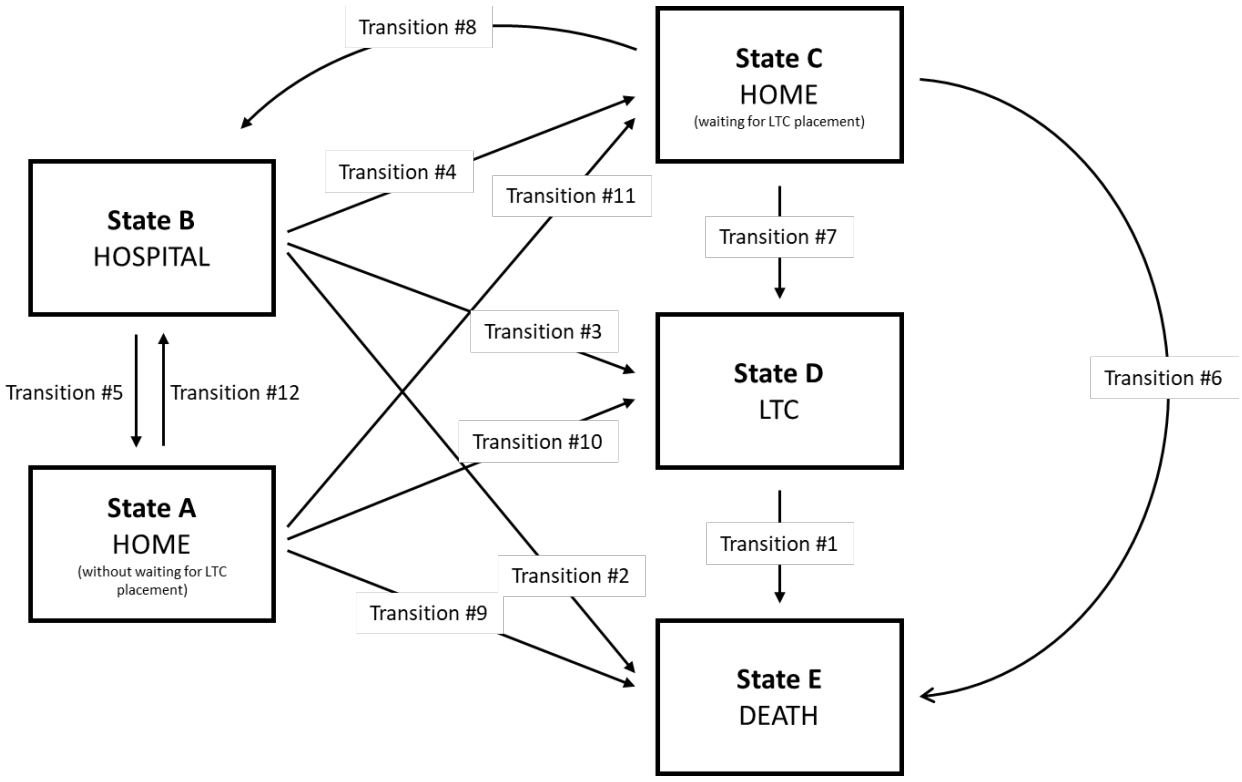
Supplementary details on the TorSaDE cohort

The *Régie de l'assurance maladie du Québec* (RAMQ) provides universal health insurance coverage to all Quebec residents and grants access to several registries: (1) the patient demographic information file (e.g., date of birth, sex, place of residence, and, if applicable, date of death); (2) the hospital discharge register (e.g., hospitalization dates, length of stay, and diagnoses, classified according to the International Classification of Diseases (ICD-10); (3) the medical services database (which records physicians' claims for services provided in outpatient clinics, emergency departments, and primary care clinics, along with diagnoses coded in ICD-9); and (4) the I-CLSC database (available since April 2012), which includes primary and HCS delivered at local community service centres (French acronym CLSC) by various professionals (e.g., nurses, social workers) or non-professional providers (e.g., orderlies).

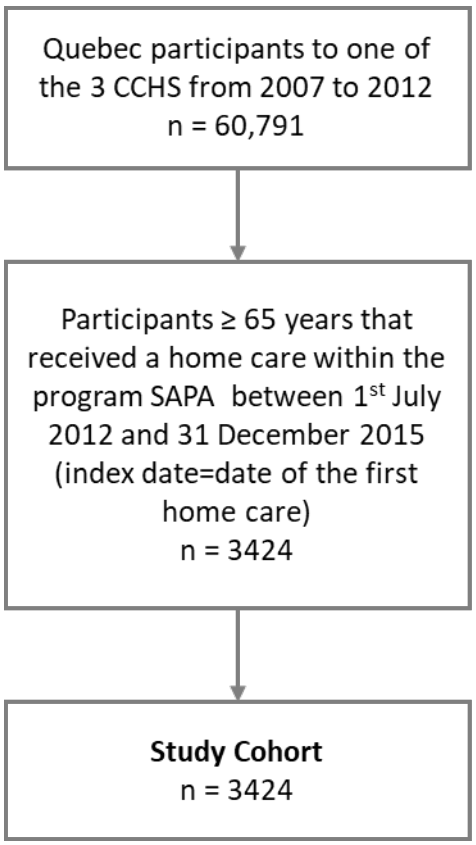
Supplementary details on the multi-state Markov approach

First, we described the observed transitions over time to characterize the care pathways experienced by individuals during follow-up. To identify factors associated with each transition, we fitted a transition-specific Cox proportional hazards model incorporating covariates such as age, sex, and chronic conditions, which means that the covariable effects could differ between transitions. The resulting model enables to calculate person-specific transition hazards and associated standard errors at all event times (`msfit` function of the `mstate` package), yielding transition probabilities (`probtrans` function) from different starting states (e.g. state A) and time points, thus enabling dynamic prediction for various patient profiles to be used as the basis for graphical illustrations (e.g., females vs males, age category, presence of dementia). Our approach enabled a comprehensive assessment of care transitions and the influence of patient characteristics on the evolution of care needs.

Supplementary Fig. 1. Multi-state model



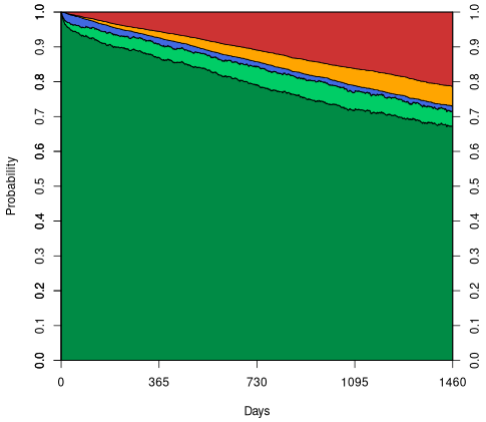
Supplementary Fig. 2. Study cohort.



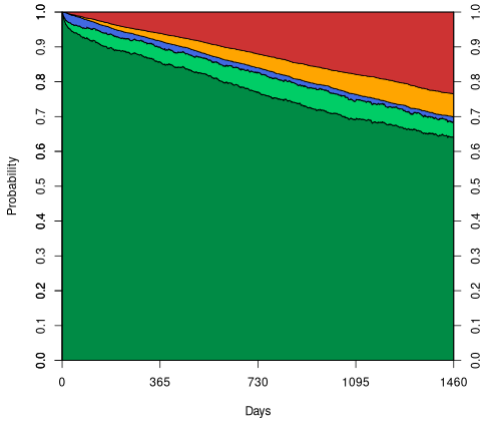
SAPA: Support program for the autonomy of seniors

Supplementary Fig. 3. Stacked transition probabilities starting at state A (home) at index date (time=0) for individuals living in private seniors' residence (PSR) without comorbidities (Stratified Cox). Red: death; orange: LTC; blue: hospital; light green: at home waiting for LTC placement; green: at home not waiting for LTC placement.

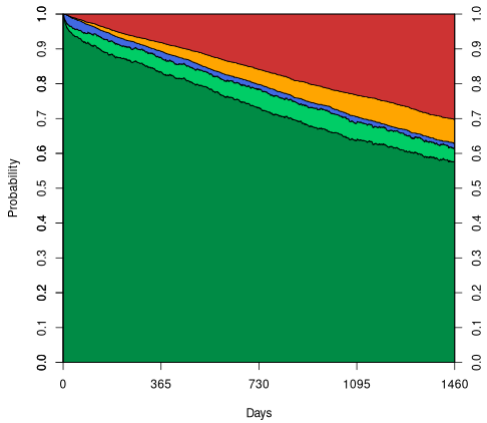
A. Female, 65-74, PSR, no comorbidities



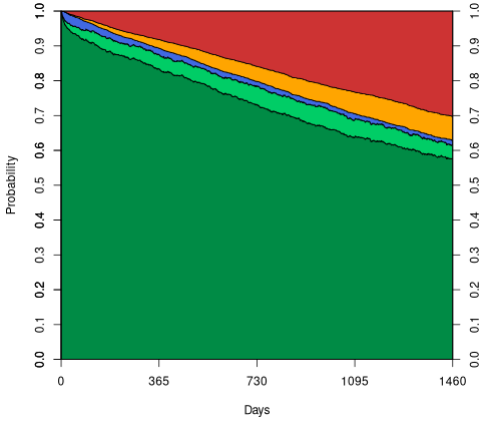
B. Female, 75-84, PSR, no comorbidities



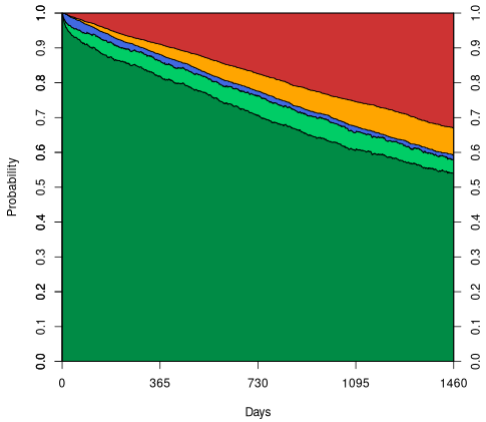
C. Female, ≥ 85, PSR, no comorbidities



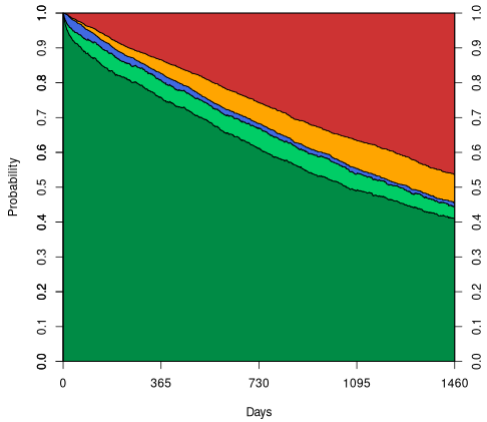
D. Male, 65-74, PSR, no comorbidities



E. Male, 75-84, PSR, no comorbidities

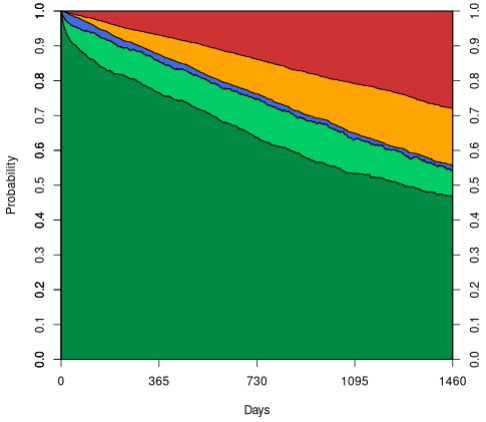


F. Male, ≥ 85, PSR, no comorbidities

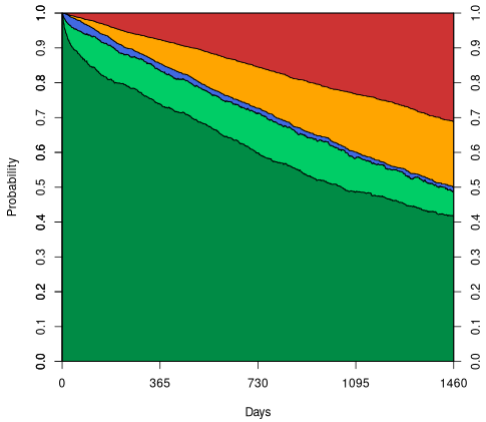


Supplementary Fig. 4. Stacked transition probabilities starting at state A (home) at index date (time=0) for individuals living in private seniors' residence (PSR) with dementia, but no other comorbidities (Stratified Cox). Red: death; orange: LTC; blue: hospital; light green: at home waiting for LTC placement; green: at home not waiting for LTC placement.

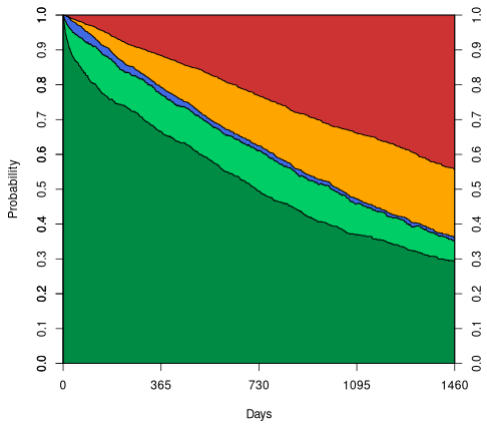
A. Female, 65-74, PSR, with dementia only



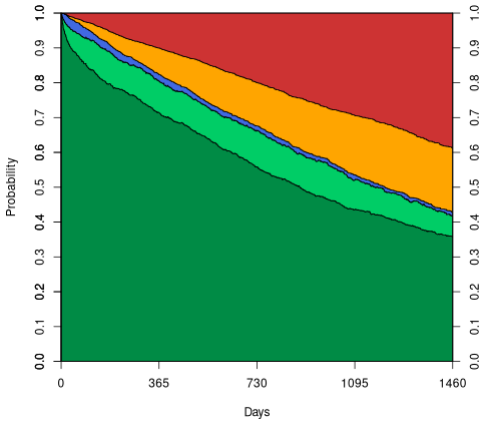
B. Female, 75-84, PSR, with dementia only



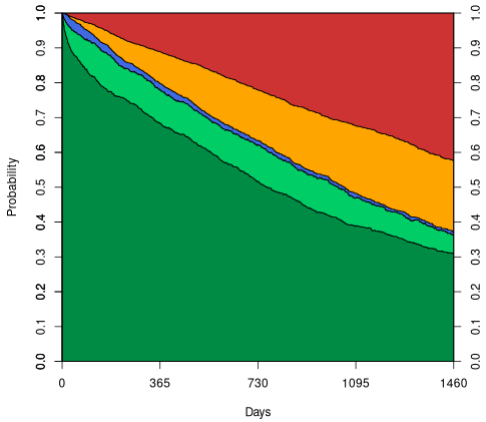
C. Female, ≥ 85, PSR, with dementia only



D. Male, 65-74, PSR, with dementia only



E. Male, 75-84, PSR, with dementia only



F. Male, ≥ 85, PSR, with dementia only