

Assurance dépendance : premiers retours d'expérience sur le risque de maintien

First feedback on survival risk in state of dependency

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Caveat

« The study and the views expressed here are solely those of the author"»

Problematic and context

- Political context :development of long term care insurance offer
- Regulatory context : Solvency 2 and ORSA
- The three main risks of long term care products :
 - Modeling mortality of valid insured
 - Modeling entrance into dependency
 - Modeling survival in state of dependency
- Conventional assumptions of pricing and reserving

Limitations of conventional assumptions

Four main limitations :

- Evolution of the risk over time is ignored in model
- Dependent's longevity is not differentiated by dependency level
- The transition from a state of dependency to another state is neglected
- The lack of distinction between women and men about laws of entry into dependency and law of survival

Study on two portfolios

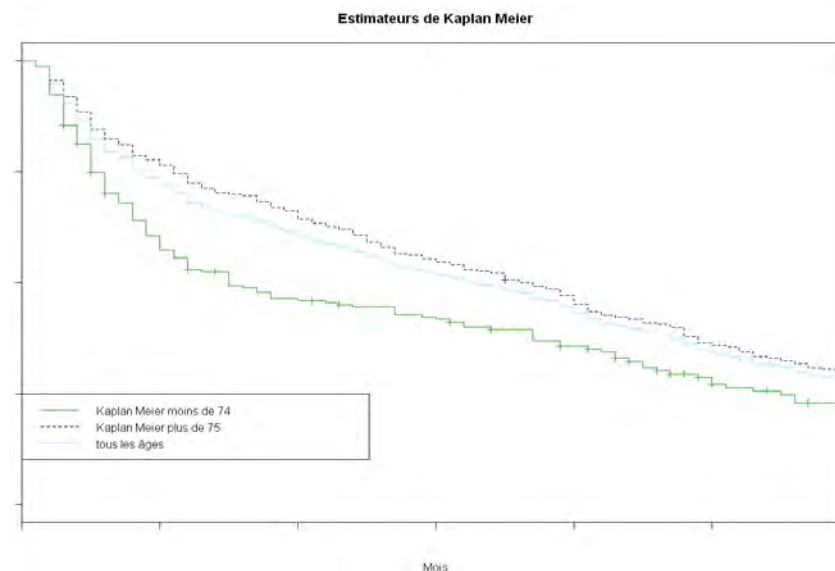
- Studies are based on two collective portfolios with voluntary membership
- Focus on the survival law
- Our results show that explicative variables should be integrated in risk assessment, such as :
 - Age of entry into dependency
 - Dependency level
 - Gender

Impact of age of entry into dependency

- In the first portfolio, an increasing trend in the average survival period of dependents has been observed
- Ages with similar behavior regarding the survival in state of dependency are gathered with an ACP (principal component analysis)
- Models used to evaluate the survival function are based on three different non-parametric methods :
 - A company's internal model
 - The Harrington-Fleming estimator
 - The Kaplan-Meier estimator

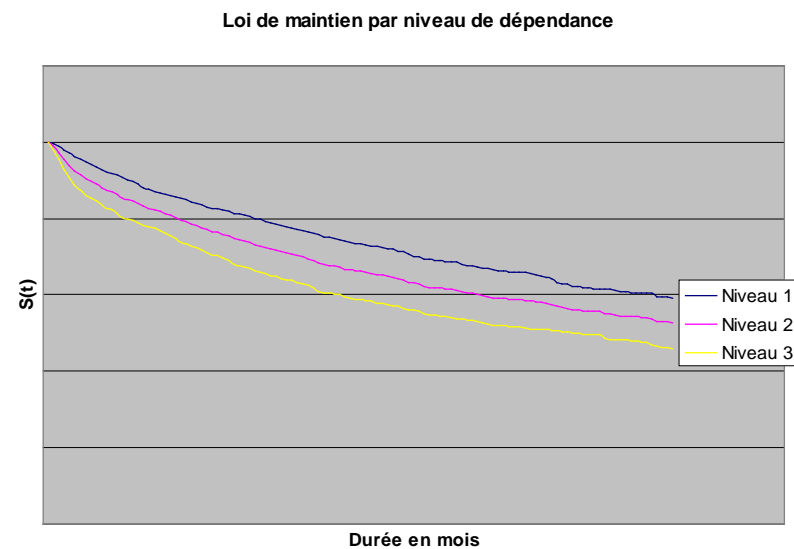
Impact of age of entry into dependency

- Mortality for entries into dependency before 74 years old is much higher than for entries into dependency after 75 years old
- Different mortality laws suggest that the origins of dependency are different according to ages
- Analysis of second portfolio confirm these conclusions



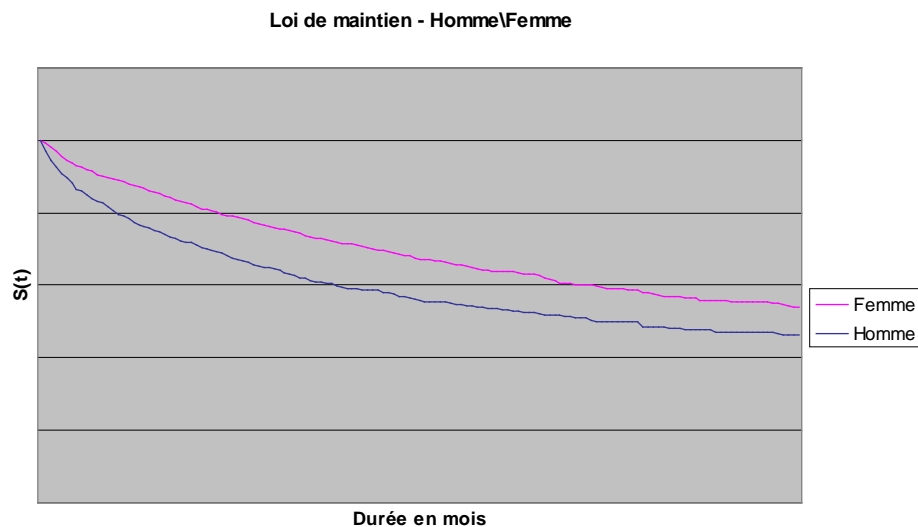
Impact dependency level

- The second portfolio gives the opportunity to analyze the survival on a finer level of granularity
- Mortality is much stronger when dependency is heavy
- Dependency level impacts the survival in this state



Impact of gender

- Women show a longer survival period than men
- The difference between mortality laws for men and women confirms that it is necessary to perform segmentation



Conclusion and opening

- The use of aggravated mortality tables to translate mortality for dependent is not relevant
- In the absence of survival laws defined by age, survival curves defined by group of age have to be used
- A young person entering into dependency dies faster than a person entering into dependency at an older age
- The assumption of an equal longevity for the different states of dependency can introduce a significant bias in the valuation of dependency risk
- Finally, women show a longer survival period than men

Conclusion and opening

- Improve modeling of transition between dependency level: work in progress
- Works on incidence and life expectancy without dependency could be deepened
- Pathology causing dependency appears to be an important axis of analysis



L'assureur de toute une vie
