Long-Term Care Prevalence and Actuarial Tables: New Empirical Evidence from Switzerland

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Long-term care (LTC) delivered to elderly persons in need of assistance in activities of daily living is a topic of increasing importance. The financing of LTC, the needs for specialized infrastructure and the limited number of caregivers will pose a systemic threat in many developed countries in the future. In the first part of this presentation, we analyze the factors influencing the old-age care prevalence rates in Switzerland through a log-linear regression model. Based on a cross-sectional dataset covering the LTC needs from 1995 to 2014, we statistically support the effect of key drivers such as the age, the gender and the region of residence. We distinguish the prevalence by the mild, moderate and severe frailty levels and by care received either at home or in an institution. Our regression results evidence that prevalence rates exponentially increase with the age yielding significantly higher values for women. These effects are emphasized for moderate and severe dependence and for institutional care. Finally, we forecast the number of dependent persons until 2045. While we observe that the dependent population more than doubles over the considered 30-year horizon, we report significant cantonal differences. The second part of this presentation adresses LTC transition probabilities. In fact, the scarcity of knowledge about the probability of an elderly person needing help with activities of daily living has hindered the development of insurance solutions that complement existing social systems. We consider two models: a frailty level model that studies the evolution of a dependent person through mild, moderate and severe dependency states to death and a type of care model that distinguishes between care received at home and care received in an institution. We develop and interpret the expressions for the state- and time-dependent transition probabilities in a semi-Markov framework. Then, we empirically assess these probabilities using a novel longitudinal dataset covering all LTC needs in Switzerland over a 20-year period. As a key result, we are the first to derive dependence probability tables by acuity level, gender and age for the Swiss population. Our results are relevant to governments, practitioners and academics alike and help to better understand the factors affecting the demand of LTC, predicting future needs and developing adapted insurance solutions. In the conclusion, we discuss the pricing of LTC insurance products taking into account the predicted duration of LTC needs.