

Thesis abstract (EN)

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July 2018

1 Title

Life and Health Actuarial Pricing: a Biostatistics Approach

2 Abstract

It is generally thought that patients having suffered from a cancer have a lower probability of survival compared to healthy people. Due to this aggravated risk and the relatively small number of patients wishing to take out insurance coverage in case of death, the insurance industry is reluctant to grant such a guarantee. However, survival and life expectancy of cancer patients have been increasing over the last decades and we can reasonably assume that they will keep increasing in the future thanks to medical and technological progress. In regard to this, France passed a law referred as "the right to forget", that is, the right for a person subscribing to a contract not to declare a previous cancer after a period of 10 years after the end of the therapeutic protocol (Sapin and Touraine, 2017). This period being reduced to 5 years if the person is a minor. But some questions remain: The thresholds of 10 and 5 years are arbitrary and does not reflect survival of the persons having suffered from a cancer. There remains some ambiguity about what is considered as treatment, so what marks the end of a therapeutic protocol and in the end when the patient will start to benefit from this right? Finally, this right is very binary and not flexible at all.

The aim of the project is twofold: (i) To develop a method to adequately estimate the threshold after which cancer patients can be considered as cured, and (ii) to find a proper way to adapt the actuarial pricing of life insurance products to each category of risk, disease, person, etc. The goal is also to demonstrate that for some types of cancer, the survivors actually have a chance of survival comparable to that of the general population, or pose a moderately increased risk and could therefore be covered in the event of death. This involves measuring and quantifying the potential excess mortality so that the premiums claimed reflect the risk in terms of financial services.