Entropy under partial insurance coverage

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Abstract

Often insurers construct insurance policies where the claim paid by the insurer is part of the loss that occurs. This is the effect of the use of deductibles and policy limits. In this paper we explore the uncertainty on the losses for partial insurance coverage. The measure of uncertainty we use is Shannon's entropy (Shannon, 1948), which is defined as $H(X) = -\sum_i p_i \ln p_i$ or $H(X) = -\int f(x) \ln f(x)\, dx$, in the case of discrete or continuous distributions, respectively. It is useful notion in Statistics, as it is a measure of the uncertainty related to a random variable X. It is a descriptive measure of distributions belonging to the class of dispersion measures, such as the variance and the standard deviation. Analytic expressions for the entropy of the most known loss models for several kinds of partial insurance coverage are presented.

Keywords. entropy, loss distributions, policy limits, deductibles

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