

Risk Classification in Insurance

Esteban Flores, PhD.

Departamento de Actuaría y Seguros
Instituto Tecnológico Autónomo de México

Abstract

Risk classification is an important part of the actuarial process in Insurance companies. It allows for the underwriting of the best risks, through an appropriate choice of classification variables, and helps set fair premiums in rate-making.

Logistic regression is one of the sophisticated statistical methods used by the banking industry to select credit rating variables. Extending the method to insurance risk classification seems natural. But unlike credit risks, Insurance risks are usually classified in a larger number of classes than just “good” and “bad”.

Here we consider a model generalization to extend the use of logistic regression to insurance risk classification. Since insurance data presents catastrophic losses and heavy tail claim distributions, robust estimation will be important. A new robust regression estimator for the logistic model, both in the binary and multinomial response cases, is proposed.