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Modelling Of Auto Insurance Claims Counts by a Class of Flexible Count Models

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Abstract

The modelling of claim counts in non-life insurance is an important part in premium pricing based on the policy holder's risk profile. The risk factors are identified through a regression analysis given information on the policy holders. Insurance claim counts are characterised by excess zero counts and over dispersion (variance greater than mean). The standard Poisson model for the analysis of insurance claim counts is restrictive because it is equi-dispersed (mean equals variance). In this paper we present some count models, generalised Poisson, Conway-Maxwell Poisson, generalised inverse trinomial and negative mixture distributions which can cater for under, equi- and over dispersion in count frequency data. The regression analysis, with and without zero-inflation, is illustrated with the data set of Singaporean auto insurance claims.