

# Model risk in claims reserving within Tweedie's compound Poisson models

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## Abstract

In this paper we examine the claims reserving problem using Tweedie's compound Poisson model. We develop maximum likelihood and Bayesian Markov chain Monte Carlo simulation approaches to fit the model and then compare estimated models under different scenarios. The key point we demonstrate relates to comparison of reserving quantities with and without model uncertainty incorporated into the prediction. We consider both the model selection problem and the model averaging solutions for the predicted reserves. As a part of this process we also consider the sub problem of variable selection to obtain a parsimonious representation of the model being fitted.

**Keywords:** Claims reserving, model risk, Tweedie's compound Poisson model, Bayesian analysis, model selection, model averaging, Markov chain Monte Carlo.