Robust bootstrap procedures for claims reserving using Generalized Linear Models

K. Peremans\textsuperscript{1*,} P. Segaert\textsuperscript{1*}, S. Van Aelst\textsuperscript{1} and T. Verdonck\textsuperscript{1}

\textsuperscript{1}KU Leuven, Belgium;
kris.peremans@wis.kuleuven.be, pieter.segaert@wis.kuleuven.be,
stefan.vanaelst@wis.kuleuven.be, tim.verdonck@wis.kuleuven.be
*Presenting author

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Insurers are faced with the challenge of estimating the future reserves needed to handle historic and current claims that are not fully settled. Settlement delays may occur to long legal trials or medical complications. The future reserves may be estimated using generalized linear models using so called run-off triangles. However due to the specific nature of these run-off triangles it is typically difficult to derive analytic expressions for the standard deviation of the resulting reserve estimates. A popular alternative for obtaining standard deviations is then to use the bootstrap technique.

Traditional bootstrap procedures are however very sensitive to the possible presence of outliers. Even when bootstrapping a robust estimator, breakdown may occur as a bootstrap sample may contain a higher percentage of outliers than the original sample. Therefore we discuss and implement several robust bootstrap procedures in the claims reserving framework and we investigate and compare their performance on both simulated and real data.

References


