

A Longitudinal Data Analysis Interpretation of Credibility Models

**Edward W. Frees
Virginia R. Young
Yu (Jack) Luo**

In this paper, we develop links between credibility theory in actuarial science and longitudinal data models in statistics. Our primary contribution to actuarial science is to demonstrate that many additive credibility models can be expressed as special cases of the longitudinal data model. We, thereby, unify the many existing credibility models with this framework. In addition, a longitudinal data interpretation suggests additional models and techniques that actuaries can use in credibility ratemaking. We also apply standard statistical software, which has been developed to analyze longitudinal data models, to the private passenger automobile data of Hachemeister (1975).

