

Claim incidence models with varying exposure in automobile insurance

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We study claim incidence in a unique Swiss motor third-party liability insurance data set. We apply extended generalized linear models (GLM) with noncanonical link functions to account for insurance-specific features such as varying exposure times and changes in the contracts over the observation period resulting in multiple observations per contract. An exposure-adjusted logit link function is used to model the relationship between the probability of reporting a claim and several covariates. We employ cluster-robust standard errors as the number of observations per contract can vary greatly. Among other findings, our results demonstrate that leasing a car strongly influences the probability of reporting a claim, whereas the gender of the most frequent driver does not seem to be relevant. We show that including contracts with varying exposure times changes the results substantially, whereas tracking changes in a contract seems less important. We provide evidence that these results are robust to different choices of the link function.

Key Words: Generalized linear models, noncanonical link functions, pseudo maximum likelihood, cluster-robust standard errors.