Title

Dynamically Updating Motor Insurance Prices with Telematics Collected Driving Behavior Data

Speaker/Company

Professor Dr Katrien Antonio, KU Leuven & University of Amsterdam

Abstract

We analyze a novel dataset collecting the driving behavior of young policyholders in a motor third party liability (MTPL) portfolio, followed over a period of three years. Driving habits are measured by the total mileage and the distance driven on di_erent road types and during distinct time slots. Driving style is characterized by the number of harsh acceleration, braking, cornering and lateral movement events. First, we develop a baseline pricing model for the complete portfolio with claim history and self-reported risk characteristics of approximately 400,000 policyholders each year. Next, we propose a methodology to update the baseline price via the telematics information of young drivers. Our approach results in a usage-based insurance (UBI) product, making the premium dependent on a policyholder's driving habits and style. We highlight the added value of telematics via improvements in risk classification and we put focus on managerial insights by analyzing expected profits and retention rates under our new UBI pricing structure. Throughout the talk we demonstrate the use of analytics for claim frequency, severity and churn modelling. We demonstrate the use of GBMs, GLMs and feature selection with lasso penalties. The talk is based on joint work with Dr Roel Henckaerts.

Biography

Katrien Antonio is professor in insurance data science and actuarial science at KU Leuven and University of Amsterdam (part time). Her research interests cover claims reserving, pricing and mortality forecasting. Katrien teaches courses on data science for insurance, life and non-life insurance mathematics and loss models. More details via https://katrienantonio.github.io.