



Insurance

Use data to identify ideal premiums and non-renewable policies

The Big Picture

A major home insurer sought to grow its policy book by selectively targeting potentially profitable business. The company wanted to predict non-catastrophic losses per household per year using home attributes. The company sought to determine profitability by estimating unrestricted and ideal premiums. In addition, it wanted to identify policies to be non-renewed based on profitability and catastrophic exposure.

Transformative Solution

To determine the profitability of policies the approach combined data across claims, policy, and premium to create the modeling data for in-force policies. Then, it identified key drivers of non-catastrophic losses for homeowner's insurance. Advanced machine-learning techniques were then applied to predict expected losses using publicly available home attribute data. The approach created ensemble models to reduce variations from individual techniques, and compared results from machine learning to the existing techniques.

Building models by peril captured different relationships between rating variables and losses for different perils. Different machine-learning techniques generated different insights, enhancing the predictive power.

The recommended model helped the client answer 'who', 'how', and 'when' to target. It helped identify renewable and non-renewable policies and predicted losses to understand significant drivers for lowest losses vs highest losses.

The Change

The resulting unrestricted premium model was significantly better than the client's previous model and one of the top insurer's models. The model enabled a reduction in loss ratio by 19% on non-renewal of the worst 10% of the policies. The unrestricted pure premium model picked roughly 50% of the premium, and the loss ratio for the policies picked by the unrestricted pure premium model was only 34% vs 57% with the company's previous model.

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