Property & Casualty

You are an actuarial analyst for Fort Baker Actuarial Consultants, based in San Francisco. AllProvince Fire and Casualty Insurance Company, a personal lines insurance company, has asked you to review their homeowners' insurance product in the state of Kansas. 3 years ago, your consulting firm helped them launch their product in Kansas effective January 1st, 2016.

Without any actuarial consultation or expertise, AllProvince implemented a +10% base rate-only rate change to their product, effective January 1st, 2017. Your company has been hired once again to propose rate action for the product effective January 1st, 2019. Note that all policies are 12-month term policies.

You have been provided policy-level characteristics for all policies written as of December 31st, 2017. You have also been provided loss data evaluated as of February 2018. Assume all losses occurring in 2017 have been reported.

AllProvince Management has the following concerns:

- Company management desires to increase their premium by another +10% effective January 1st, 2019.
- For credit score, the company expected a distribution of 50%-35%-15% for "High", "Medium", and "Low", but it was not realized in the data. The company asks you if this is a concern.
- For the proposed rate change, the company would like to minimize the maximum policyholder premium dislocation as much as possible, so as to avoid losing too many customers.

Analyze the data and present your recommended rate change plan. Policyholder impacts should be clearly stated and expected outcomes should be clearly communicated. Assumptions may be used as long as they are justified.

Task 1

Since data is limited, AllProvince would like to use data from both 2016 and 2017 for loss ratio analysis. How should the 2017/01/01 rate change be accounted for in your analysis?

Task 2

What is earned premium, and how is it different from written premium?

What are the different types of loss ratio? Considering the data available to you, what type of loss ratio will you use to analyze rate adequacy by segment? Support your proposal and prepare data for loss ratio analysis using the method of your choice.

Task 3
Using a loss ratio analysis, evaluate which rating variables, if any, need adjustment. Furthermore, evaluate if new variables should be added into the existing rating algorithm. Propose 2 to 3 revised and/or added rating factors, and their expected outcomes. Justify your selections from both an actuarial and business perspective.

Task 4
Given the proposed rating factors, calculate the base rate necessary to achieve +10% overall rate change. The revised base rate and the revised rating factors constitute the proposed rating algorithm.

With the proposed rating algorithm, calculate the policy-level premium dislocation relative to the current rating algorithm. Any assumptions should be stated clearly.

Task 5
Present your results and expected outcomes of the rate change, including any business concerns that the management may have.

Task 6
Explain and justify any non-rate recommendations for this product, and quantify their expected impacts if applicable.