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Consultants and Actuaries

Manitoba Public Insurance
2022 General Rate Application

Evidence of Dion Strategic Consulting Group
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On Behalf of the Taxi Coalition

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Strategy • Knowledge • Experience • Communication

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Serious Loss Loading

- ✓ Serious Losses are large losses that are volatile in nature. These occurrences are random, infrequent, and high severity.
  - Taxi VFH have 5 of the last 10 years with no serious losses
- ✓ MPI's methodology uses the 10 year average to determine and smooth out the serious losses by insurance use.
- ✓ Passenger VFH was only introduced in 2018.
- ✓ The absence of serious losses is not a good indicator of an insurance use being free of the risk of serious losses.

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Serious Loss Loading – Actuarial Standards

- ✓ CIA Standards of Practice, Insurance Part 2000, 2600 Ratemaking: Property & Casualty Insurance
  - 2620 Method: 2620.09 Unusual events
  - The actuary would consider that subject experience and related experience may or may not have been subject to catastrophes, large losses, or other unusual events.

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Serious Loss Loading – Actuarial Standards

- ✓ ASOP 39, Treatment of Catastrophe Losses in Property/Casualty Insurance Ratemaking
  - 3.3 The Use of Data in Determining a Provision for Catastrophe Losses
  - 3.3.1 Use of Historical Insurance Data
  - c. Adjustments to Historical Insurance Data to Reflect Future Conditions: The actuary should consider making adjustments to the historical insurance data to reflect conditions likely to prevail during the period in which the rate will be in effect. Such adjustments should take into account the impact of changes in the exposure to loss, including coverage differences, the underlying portfolio of insured risks, building codes and the enforcement of these codes, and building practices; population shifts; costs; and demand surge during both the historical period and the period for which the rate will be in effect. These considerations become more important when a longer experience period is used because they can have a greater effect over longer time periods.

Serious Loss Loading – Actuarial Standards

- ✓ ASOP 39, Treatment of Catastrophe Losses in Property/Casualty Insurance Ratemaking
  - 3.4 Using a Provision for Catastrophe Losses
  - In ratemaking, actuaries generally use historical data or modeled losses to form the basis for determining future cost estimates. The presence or absence of catastrophes in any historical data used to form future cost estimates can create biases that diminish the appropriateness of using that data as the basis for future cost estimates. The actuary should address such biases by adjusting the historical data used to form future cost estimates and determining a provision for catastrophe losses (after consideration of the issues and practices found in sections 3.1–3.3).

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Serious Loss Loading – MPI Ratemaking Presentation – Commentary

- ✓ "Determination of a Serious Loss loading for insurance uses with no Serious Losses would be very subjective."
  - Dion Strategic opinion – Subjective is not a reason to ignore a loading. Many aspects of MPI's Ratemaking Methodology is subjective. For example, the definition of Major Class is subjective, such as the placing of Passenger VFH into Private Passenger Major Class and the grouping of Taxis, Public Buses, School Buses, etc. into the Public Major Class. Similarly, credibility is a subjective topic.
- ✓ "Load would be very subjective, assumes similar operations to another group, and is not reflective of the actual Passenger VFH experience."
  - Dion Strategic opinion – Our recommended loading is a range between the VFH average to a high of Taxi VFH. Assuming similar operations to another subset is a common actuarial / ratemaking methodology – similar to how the different Major Classes are defined.

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Serious Loss Loading – MPI Ratemaking Presentation - Commentary

- ✓ "Use of longer term averages and credibility so that rates do not fluctuate from the occurrence/non-occurrence, especially for smaller groups like Passenger VFH."
  - Dion Strategic opinion – MPI acknowledges that longer term averages are important. Since Passenger VFH have only been in existence since 2018 (two "normal" years and one pandemic year), Passenger VFH having no Serious Losses since 2018 should not be used to justify no loading.
  - All Purpose Passenger Vehicle, which Passenger VFH is based off of, has Serious Losses and is assumed to be a better risk.

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Serious Loss Loading – Recommendation

- ✓ Passenger VFH should have a Serious Loss Loading applied to its historical experience when calculating the relativities.
  - All Purpose Passenger Vehicle which Passenger VFH is based off of, Public Major Class which Taxi VFH is based off of, and Taxi VFH all have Serious Losses
- ✓ Range of the loading:

1) Use historical Taxi VFH serious loss per unit ($428 per unit) – Passenger VFH can operate just like a taxi if desired
2) Use historical VFH serious loss per unit ($258 per unit) – groups VFH similarly in carrying passengers for a fee in similar vehicle types

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Order 1/21 Directive 10.3

- ✓ "There shall be consecutive rate increases of 20% for the Passenger VFH Major Class in the 2022/2023 and 2023/2024 General Rate Applications (GRAs), unless MPI can demonstrate that the Passenger VFH Major Class is no longer being subsidized."
- ✓ Dion Strategic understands MPI's position of a 13% to 15% adjustment. However, Dion Strategic's position is a range of indications needs to be considered.

1) Historical data
   - Historical data for 2018 and 2019 shows that two 20% rate increases brings the 18/19 loss ratios to 89.5% (not break-even). Three 20% rate increases would bring the 18/19 loss ratios to 74.6% (break-even). This assumes no serious losses.

Order 1/21 Directive 10.3

2) 2020 data

- 2020 is generally accepted as an “exception” year.
- MPI excludes 2020 for various calculations but 2020 contributes to the Passenger VFH relativities. 2022 assumes a return to normal.
- Dion Strategic opinion – 2020 should not be used to reduce Passenger VFH differentials.
- Dion Strategic observation from TC (MPI) 1-18 – Loss Ratios for Passenger VFH have not improved relative to Taxi VFH between 2018 to 2020

Year	Taxi VFH Loss Ratio (1)	Passenger VFH Loss Ratio (2)	(2) / (1)
2018	84.23%	122.50%	1.45
2019	78.73%	132.60%	1.68
2020	44.56%	67.37%	1.51

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Order 1/21 Directive 10.3

3) Differentials with a loading
   - TC (MPI) 2-9 shows Balanced Indicated Adjustments of:
     - $3669.50 for Passenger VFH Territory 1 (using Serious Loss Loading of $258)
     - $3943.44 for Passenger VFH Territory 1 (using Serious Loss Loading of $428)

✓ Recommendation – Dion Strategic sees no reason to deviate from the three +20% rate increases ordered.
   - Historical data suggests three +20% increases are needed
   - Historical data from 2018 to 2020 shows that Passenger VFH loss ratios relative to Taxi VFH loss ratios have not improved
   - Indications with a Serious Loss loading for Passenger VFH suggest three +20% rate increases are needed to keep pace

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Rate Increases and Capping

- ✓ Initial VFH rate was judgmentally selected to be 20% higher than All Purpose Passenger Vehicle
- ✓ The Corporation acknowledged this amount was too low
- ✓ Order 146/20 mandated three (3) +20% consecutive rate increases for each GRA starting in 2021/22
- ✓ Order 148/04 subjects current rates to a ± 20% cap. Special adjustments are applied after applying the ± 20% cap.
- ✓ In that same Order, exceptions to the ± 20% cap were allowed.

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Rate Increases and Capping – Recommendation

- ✓ The rate increases applicable to Passenger VFH should not be capped at 20%. The rate increases should either be capped at a higher percentage or not capped at all. While the cap prevents rates from excessive fluctuation, when applied to Passenger VFH the drawbacks include:
  - Extending the underpricing of the class to more years down the road.
  - The low current rates could attract Taxi drivers with poor loss experience resulting in adverse selection and market distortion. This could already be happening with the growth of the Passenger VFH class.
  - Dion Strategic would apply a 20% + 20% increase to Passenger VFH for the 2022/23 year, however, we acknowledge this is a subjective matter.

Taxi VFH Pricing

Credibility

- ✓ MPI's methodology uses the following credibility formula
  - For each raw relativity, a credibility of N/(N+K) is assigned. Here, N is the 5-year earned units used to determine the raw relativity and K is a constant. **The constant, K, is equal to 60,000, and was judgmentally chosen in order that the largest insurance use** – All Purpose Passenger Vehicle – was at least 95% credible
- ✓ Other credibility approaches are available that are tied to statistical theory to determine the standard
  - The classical approach assumes a Normal distribution with a Poisson claims frequency. A commonly used number of claims needed for full credibility is 1,082.
  - This standard would give Taxi VFH 100% Credibility for Collision and Property Damage, which represents 76% of their incurred losses over the last 10 years
  - Using 1,082 and a Collision frequency of 12.5% for Private Passenger Major Class implies a K = 1,082 / 12.5% = 8,656

Credibility – Recommendation

- ✓ The current approach to credibility weighting on relativities requires fine tuning. Too little credibility is applied to smaller classes like Taxis, that would be more credible under alternative approaches. This means rates for smaller classes are extremely slow to react to deteriorating/improving loss experience, reducing incentive to improve driving behaviour.
  - By selecting K to be 95% credible for the largest insurance use (All Purpose Passenger Vehicle), automatically means all other insurance uses will not reach full credibility and that many smaller insurance uses, like Taxi VFH, will never reach more than the minimum (10%) credibility
- ✓ Option 1 – Switch to a Classical Credibility Approach using claim counts as the measure.
- ✓ Option 2 – Changing K = 60,000 to a lower number
- ✓ Option 3 – Changing the minimum credibility of 10% to a higher number.

Territory Differentials

- ✓ Observation 1 – The current methodology does not properly segment between smaller subsets of risks. Urban taxis in Manitoba are underpriced while rural taxis are overpriced. The relativities and loss ratios indicate this.
- ✓ Observation 2 – The rating methodology is simplistic in nature – there are few rating variables.
- ✓ Opinion – There is a trade-off between simplicity and complexity in a rating algorithm.

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Territory Differentials – Recommendation

- ✓ MPI should investigate improvements to the rating algorithm, increase the complexity, and minimize the cross subsidization amongst risks.
  - Historical experience and differentials suggest Territory 1 is underpriced and Territory 2 to 4 overpriced for Taxi VFH
  - However, volume of Taxi VFH data for Territories 2 to 4 is limited

Ratemaking

Minimum Bias Procedure

- ✓ The minimum bias procedure (MBP), while being an Accepted Actuarial Practice, **was developed in the 1960s**, where computational powers were much lower than today. Today Generalized Linear Models (GLM) are widely recognized as the industry standard method for pricing private passenger auto
- ✓ The MBP does not provide a "systematic way of testing whether a particular variable influences the result with statistical significance"
- ✓ MBP does not provide "a credible range for the parameter estimates"

Minimum Bias Procedure – Recommendation

- ✓ An immediate plan to be put in place for MPI to switch to Generalized Linear Models (GLM).
- ✓ GLMs are superior to the MBP and would provide a systematic method to determine rating variables, significance, and confidence measures. If modelled properly, it would reduce the cross subsidization amongst subsets of risk.