

In the Matter of
Manitoba Public Insurance
2021 General Rate Application

Pre-Filed Testimony of
Jeff Crozier and
Patrick Bowman



Submitted to Manitoba Public Utilities Board on behalf of Duffy's Taxi Ltd., and Unicity
Taxi Ltd. (the "Taxi Coalition")

September 21, 2020

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1.0 INTRODUCTION

This testimony has been prepared for Unicity Taxi Ltd and Duffy's Taxi Ltd ("the Taxi Coalition") by or under the direction of Jeff Crozier of InterGroup Consultants, and Patrick Bowman of Bowman Economic Consulting Ltd., subcontracted through InterGroup Consultants Ltd. This report reviews the Manitoba Public Insurance ("MPI") 2021 General Rate Application ("GRA" or "Application") submitted to the Manitoba Public Utilities Board ("PUB" or "Board").

The following are noted:

- Mr. Crozier and Mr. Bowman are independent witness and their CVs are provided in Appendix 3.
- Mr. Bowman's evidence is provided in Appendix 1.
- Mr. Crozier's evidence is provided in Sections 2 and 3.
- Mr. Crozier's scope of work and instructions were to review, summarize and draw insight from the information contained within the application. The scope of review focuses particularly on matters of interest to the Taxi Coalition.
- Mr. Crozier acknowledges his role is to provide evidence to the Board that is fair, objective and non-partisan.
- Mr. Crozier has endeavoured to ensure all factual assumptions and specific information relied upon are expressly cited in the testimony that follows.

1.1 SOURCES OF INFORMATION

Information within this evidence has been sourced from the current and past general rate applications of MPI, as well the broad spectrum of regulatory principles applied by regulators of monopoly utility providers. Some evidence has been sourced from the Taxi Coalition directly.

1.2 OUTLINE OF EVIDENCE

Section 2 focuses on the issues surrounding Taxi VFH Rates. The facts of the application are summarized and organized as they relate to Taxi VFH risk:

- as measured by combined relativities;
- with respect to the issue of principle driver risk;
- with respect to the observable effects of the DSR on Taxi VFH; and
- with respect to the characteristics of the Fleet program.

Section 3 focuses on the issues surrounding Passenger VFH rates. The facts of the application are summarized and organized as they relate to Passenger VFH rates:

- being based on initial assumptions that have not been born out by the experience to date;
- not reflecting actuarial indicated break-even rates; and
- eventually reflecting indicated break even rates, under the existing methodology.

Section 3 also presents a sensitivity test of credibility weightings on Passenger VFH rates. The sensitivity test reflects one element of the overall ratemaking methodology, and is therefore not reflective of, or a substitute suitable for, MPI's comprehensive ratemaking methodology.

Appendix 1 presents the key regulatory principles as they relate to rate setting for Passenger VFH, given what is currently known (and unknown) about this new insurance use.

Appendix 2 presents schedules pertaining to the sensitivity test conducted in Section 3.

Appendix 3 includes resumes of Patrick Bowman and Jeff Crozier.

2.0 TAXI VFH RISK AND INCENTIVES

2.1 SUMMARY

Taxicab VFH represent an unusually high risk, relative to both the Public Major Class and the broader fleet of vehicles insured by MPI. Data that may assist in understanding the exact nature of the risk are not presently available.

Taxi VFH are subject to the same general issues with respect to principle driver risk, as households, and the recent introduction of DSR incentives does not appear to have impacted Taxi VFH risk, at least in a way that is easily distinguishable from pre-existing trends.

MPI’s fleet program offers prompt and effective incentives to reduce at fault collisions, and may provide incentives that ameliorate the principle driver risk issue faced by Taxi VFH.

Finally, MPI’s incentive programs have a gap, insofar as corporate customers with small fleets (less than 10) have no option to earn vehicle premium discounts, either through the DSR Program, or the Fleet Program.

The analysis presented in Section 2 will draw on current and historical data from RM Appendix 9, Tables 15 and 16.

2.2 PREVALENCE OF INSURED TAXI VFH UNITS IN TERRITORY 1

For context, Taxi VFH are predominantly insured to operate within the city of Winnipeg (Territory 1), with 76% of the of the 617 Taxi VFH vehicles insured there. Table 1 presents a summary of units by territory.

Table 1: Taxi VFH Units by Territory

Major Class	Insurance Use	Territory	Units	Percent
3	Taxicab Vehicle-for-Hire	1	467	76%
3	Taxicab Vehicle-for-Hire	2	97	16%
3	Taxicab Vehicle-for-Hire	3	44	7%
3	Taxicab Vehicle-for-Hire	4	9	1%
Total			617	100%

Source: Rm Appendix 9, Table 16

The analysis below will focus substantially on the Territory 1 Taxi VFH, which have the most units, and where the issue of risk is most acute. However, the same issues apply generally to the Taxi VFH in other territories, and will also be presented.

2.3 TAXI VFH RELATIVITIES INDICATES UNUSUALLY HIGH RISK

MPI employs the relativity approach to determine required rates for vehicle groups. The characterization of Taxi VFH risk is presented in terms of relativities, sourced from current and past Applications.

In the *Part VI – RM Ratemaking*, MPI describes the relativity approach as:

Briefly, the relativity approach compares the risk of each vehicle group to all other vehicle groups within the major classification. This relative risk is then used to determine the required rate for the vehicle group.¹

And further as:

The concept of relativities is commonly used in the insurance industry. Simply put, if MPI chose a distinct group from an entire population, the relativity of the group is a measure of the risk of the group compared to the population. For example, a group, which on average costs twice as much to insure when compared to the population, will have a relativity of 2. The use of relativities promotes equitable rates since riskier groups can expect to pay more than groups with lower risk.²

Relativities are used here as a convenient means to compare the risk of the Taxi VFH against other insurance uses in the Public Major class (which is the baseline population against which the Taxi VFH relativities are established), and against the broader fleet of vehicles insured by MPI.

2.3.1 Taxi VFH Combined Relativities Compared to Public Major Class

Examining the combined relativities of the Taxi VFH by Territory, against all other insurance uses in the Public Major class shows that Taxi VFH, and in particular those in Territory 1, present a significantly higher risk than any other insurance use within the Public Major class.

Figure 1 plots the combined relativities of Public Major Class insurance uses, as reported in RM Appendix 9 Table 16. Table 2 presents the specific data for the twenty riskiest insurance uses in the Public Major class.

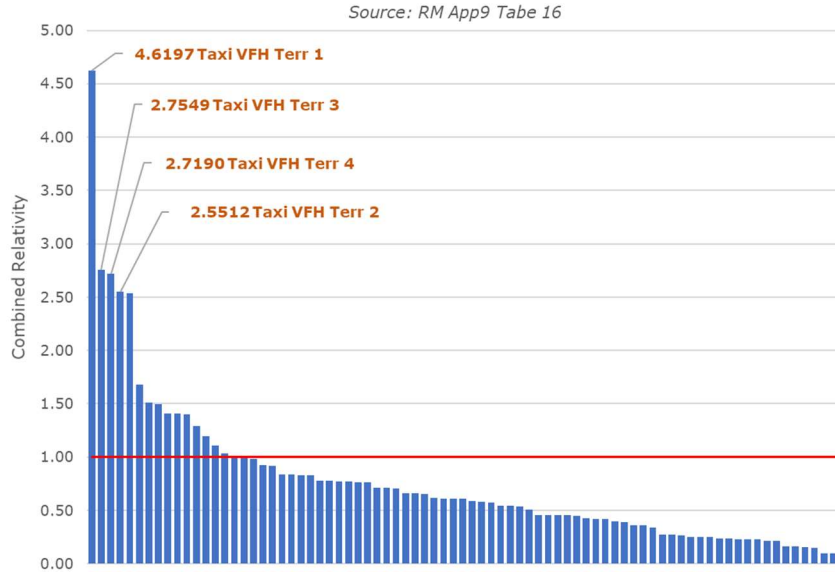
Figure 1 and Table 2 illustrate that Taxi VFH across all territories, are the four riskiest insurance uses in the Public Major Class. Taxi VFH in Territory 1 have a combined relativity of 4.62 and are almost 2.75 times as risky as the next most risky non-taxi insurance use³ Police/Emergency Passenger Vehicle, which have a relativity of 1.68.

¹ RM page 19, lines 7-9

² RM Page 46, lines 13-18

³ Note that UDrive Moped Territory 1 has a relativity of 2.5376, which is comparable to Taxi VFH in Territory 2, however there are no units for this use in the rate model. Accordingly, the comparison to Police/Emergency Passenger Vehicles was used.

Figure 1: Combined Relativities - Public Major Class



Taxi VFH in Territories 2, 3, and 4 present comparable risk to each other, between 2.75 and 2.55, and again are materially above the next most risky non-VFH insurance use.

Table 2: Top 20 Combined Relativity - Public Major Class

Rank	Major Class	Description	Territory	Combined Relativity
1	3	Taxicab Vehicle-for-Hire	1	4.6197
2	3	Taxicab Vehicle-for-Hire	3	2.7549
3	3	Taxicab Vehicle-for-Hire	4	2.7190
4	3	Taxicab Vehicle-for-Hire	2	2.5512
5	3	U Drive Moped	1	2.5376
6	3	Police/Emergency Passenger Vehicle	1	1.6770
7	3	U Drive Moped	3	1.5132
8	3	U Drive Moped	4	1.4935
9	3	Limousine Vehicle-for-Hire	1	1.4085
10	3	Transit Bus	1	1.4067
11	3	U Drive Moped	2	1.4014
12	3	U Drive Truck	1	1.2928
13	3	Accessible Vehicle-for-Hire	1	1.1968
14	3	U Drive Passenger Vehicle	1	1.1074
15	3	U Drive Bus	1	1.0330
16	3	Police/Emergency Passenger Vehicle	3	1.0000
17	3	Common Carrier Bus Within MB	1	0.9906
18	3	Police/Emergency Passenger Vehicle	4	0.9870
19	3	Police/Emergency Passenger Vehicle	2	0.9261
20	3	U Drive Motorhome	1	0.9156

Source: MPI 2021 GRA, Part VI - RM Appendix 9, Table 16

2.3.2 Taxi VFH Combined Relativities Compared to All Major Classes

Taxi VFH in Territory 1 also have the highest combined relativity when compared across all major classes. Figure 2 plots the combined relativities of all insurance uses, across all major classes.

Note that the relativities across major classes aren't directly comparable, given that each relativity is measuring the risk of an insurance use against the major class to which it belongs. It is therefore not meaningful to compare the values of the relativities.

However, it is still instructive to observe the rank order of the insurance uses, and note that across all other major classes, Taxi VFH in Territory 1 has the highest relativity across all insurance uses.

Figure 2: Combined Relativities - All Major Classes

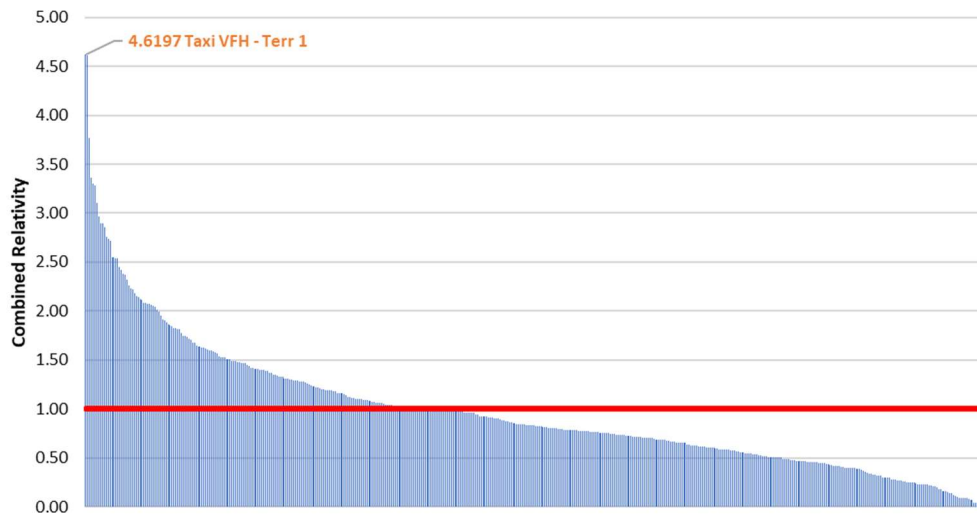


Table 3 provides details on the top twenty insurance uses appearing in Figure 2. Note that Taxi VFH in Territories 2, 3, and 4 are found in the top 15 relativities across all major classes, meaning all territories in the VFH insurance use are found in the top 3 percent of relativities.⁴

Only one other insurance use has a comparable relativity to Taxi VFH Territory 1, that being Common Carrier Passenger Vehicle Over 161K in MB, with a combined relativity of 4.61.⁵

Across all major classes, there are other (non-Taxi VFH) insurance uses that present significant risk, as measured by combined relativities. These insurance uses tend to be in the Commercial Major Class, which has a Major class average rate of \$827.38, as against the Public Major Class average of \$2038.52.

⁴ There are 482 insurance uses, meaning the top 15 ranked account for 3.1%=15/483.

⁵ This particular insurance use has only 4 vehicles in the rate model, per Appendix 9, Table 16.

To illustrate why care must be taken when comparing relativities across major classes, Table 3 also shows the combined relativity multiplied by the major class average to illustrate the risk on a dollar basis. While there are a number of high relativity insurance uses in the Commercial Major Class, when viewed on dollar basis, the spread between those commercial insurance uses and Taxi VFH in the Public Major Class remains significant.

Table 3: Top 20 Combined Relativities - All Major Classes

Source: RM App9, Table 16

Major Rank	Major Class	Description	Territory	Combined Relativity	Major Class Average Rate	Relativity x Major Class Average
1	3	Taxicab Vehicle-for-Hire	1	4.6197	\$2,038.52	\$9,417.38
2	2	Common Carrier Passenger Vehicle Over 161K in MB	1	4.6059	\$ 827.38	\$ 3,810.80
3	2	Common Carrier Truck Over 161K in MB	1	3.7668	\$ 827.38	\$ 3,116.61
4	4	All Purpose Motorcycle (Sport Body Style)	1	3.3662	\$ 867.46	\$ 2,920.04
5	2	Common Carrier Truck Over 161K in MB	1	3.3062	\$ 827.38	\$ 2,735.48
6	2	Common Carrier Truck Over 161K in MB with GVW > 16330kg	1	3.2866	\$ 827.38	\$ 2,719.29
7	2	Common Carrier Passenger Vehicle Over 161K in MB	2	3.1082	\$ 827.38	\$ 2,571.70
8	2	Common Carrier Passenger Vehicle Over 161K in MB	3	2.9615	\$ 827.38	\$ 2,450.27
9	2	Common Carrier Local Passenger Vehicle	1	2.8976	\$ 827.38	\$ 2,397.45
10	2	Common Carrier Passenger Vehicle Over 161K in MB	4	2.8930	\$ 827.38	\$ 2,393.65
11	4	All Purpose Motorcycle (Sport Body Style)	2	2.8609	\$ 867.46	\$ 2,481.71
12	3	Taxicab Vehicle-for-Hire	3	2.7549	\$2,038.52	\$5,615.83
13	4	All Purpose Motorcycle (Sport Body Style)	1	2.7356	\$ 867.46	\$ 2,373.06
14	3	Taxicab Vehicle-for-Hire	4	2.7190	\$2,038.52	\$5,542.72
15	3	Taxicab Vehicle-for-Hire	2	2.5512	\$2,038.52	\$5,200.72
16	2	Common Carrier Passenger Vehicle Within 161K in MB	1	2.5444	\$ 827.38	\$ 2,105.19
17	2	Common Carrier Truck Over 161K in MB	2	2.5420	\$ 827.38	\$ 2,103.23
18	3	U Drive Moped	1	2.5376	\$ 2,038.52	\$ 5,172.87
19	4	All Purpose Motorcycle (Sport Body Style)	5	2.4521	\$ 867.46	\$ 2,127.07
20	2	Common Carrier Truck Over 161K in MB	3	2.4220	\$ 827.38	\$ 2,003.92

By the measure of combined relativities, the Taxi VFH in Territory 1 represent an unusually high risk, as against the Public Major class, and that observation extends to Taxi VFH in the remaining territories, but not to such an acute degree.

2.3.3 Relevant Data to Assess Taxi VFH Risk

The analysis so far has been presented in the context of loss exposure, through combined relativities that are based on a combination of pure premiums, earned units, credibility weightings and average rates.

The riskiness of Taxi VFH have not been assessed in the context of time on road, or distance travelled, two factors which MPI acknowledges could be relevant in assessing risk.⁶

Taxi VFH are generally understood to operate in some cases on a near 24x7 basis,⁷ and in some cases may drive significantly more kilometers than other insurance uses. It may be the case that the Taxi VFH have comparable rates of collision per kilometer driven or time on road as the rest

⁶ See TC(MPI)1-8 c) and d)
⁷ See TC(MPI)1-4(b), TC(MP) 1-5(d)

of the population, but a high distance driven or time on road produce aggregate losses significantly higher than the rest of the population.

A gap in understanding the cause of Taxi VFH's significant loss exposure is the absence of any Manitoba-specific data related to the distance driven, or time on road. MPI does not have this data, and has not explored options to acquire this data to date.⁸

MPI has indicated that data regarding distance driven and time on road⁹ would allow it to better differentiate risk within the insurance use (e.g. if some taxis are on the road longer than other). MPI's current understanding¹⁰ that there are significant differences in exposure (kilometers driven) that are not properly captured under the current system, is based on MPI's understanding of VFH frameworks in other jurisdictions that employ kilometer-based rating.

2.3.4 Observations and Recommended Findings

Observation 1: Taxi VFH represent an unusually high risk relative to the public major class, and this high risk is most severe with Territory 1 Taxi VFH.

Observation 2: Data required to more fully understand the nature of the unusually high risk presented by Taxi VFH are not currently available.

Recommended Finding 1: The PUB should find that MPI must collect data relevant to better assessing and understanding the risk presented by Taxi VFH and VFH generally. This should include distance driven and time on road, and any other variables identified by MPI that would contribute to understanding the risks presented by Taxi VFH and VFH generally.

2.4 TAXI VFH FACE THE PRINCIPAL DRIVER RISK PROBLEM

In Order 130/17, the PUB addressed the issue of principal driver risk, and found that it should be reflected in vehicle premium discounts. Specifically, the PUB found:

*The evidence in this Application indicated that generally, vehicles are being registered within families by the individual with higher DSR merit ratings due to increasing vehicle premium discounts, such that the vehicle premium may not reflect the principal driver risk. At this time, MPI's rating structure does not allow it to address this issue. Accordingly, the Board has ordered that the issue of vehicle premium discounts based on principal driver rating rather than simply registered driver rating also be addressed at the DSR Technical Conference. **The Board has also ordered that by the 2021 GRA, the Corporation file proposed vehicle premium discounts that are actuarially indicated based on principal driver performance evaluation.**¹¹ [emphasis added]*

Taxi VFH operators in Winnipeg are generally independently owned, often with two or more taxicabs, and the multiple drivers to operate the taxicabs on a shiftwork basis.

⁸ TC(MPI)1-8 c) and d)

⁹ TC(MPI) 2-9(c)

¹⁰ TC(MPI)2-7(g),

¹¹ Order 130/17P.6

In this regard, Taxi VFH may face a similar problem as households with respect to principal driver risk – that the principal driver(s) of the vehicle may not reflect the risk priced into the insurance policy, based on the registered owner. In the household example, the registered owner is typically chosen by the household as the member with the best driving record, to maximize vehicle premium discount.

This not strictly the case with taxi operators, who would be unlikely to register their taxis with an employee, regardless of driving record. Further, Duffy’s and Unicity have internal policies where any driver with less than a -7 DSR rating is not permitted to drive, which unlikely to be the case with typical households. Nevertheless, the basic point holds, that those individuals driving the taxi may not present the same risk as the registered owner.

MPI indicates¹² that the driver of a taxi may be relevant data for assessing Taxi VFH risk, which is consistent with the PUB’s earlier findings that principle driver risk should be reflected in vehicle premium discounts.

With the inception of the VFH framework, DSR discounts became available to Taxi VFH, and taxi operators have benefitted from those discounts, enjoying a gross annual discount of just slightly more than 20%.

Table 4 reproduces TC(MPI)1-11 Figure 2, which provides the details.

Table 4: TC(MPI)1-11 Figure 2: Discount by VFH Subcategory

Line No.	VFH Group	As of Nov 1, 2019				As of Nov 1, 2018			
		Undisc Premium	Disc Premium	Discount	Percent Discount	Undisc Premium	Disc Premium	Discount	Percent Discount
1	Passenger VFH	1,855,250	1,582,399	272,851	14.71%	1,296,008	1,108,158	187,850	14.49%
2	Taxicab VFH	6,105,985	4,822,480	1,283,505	21.02%	6,449,849	5,114,961	1,334,888	20.70%
3	Accessible VFH	486,553	437,803	48,750	10.02%	349,075	321,753	27,322	7.83%
4	Limousine VFH	203,587	190,078	13,509	6.64%	255,642	238,911	16,731	6.54%
5	Total	8,651,375	7,032,760	1,618,615	18.71%	8,350,574	6,783,783	1,566,791	18.76%

2.4.1 The History of Taxi VFH Raw Relativities from Prior GRAs

While Taxi VFH have benefitted from the DSR based vehicle premium discounts, it is relevant to examine if the overall riskiness of Taxi VFH has responded to the incentives of the DSR system.

The following examination of balanced raw relativities reveals no detectable impact from Taxi VFH becoming eligible for DSR based vehicle premium discount.

¹² TC(MPI)1-8 c) and d).

Balanced raw relativities¹³, reflect claims experience, and are not influenced by the credibility weighting of the 'current' relativity (based on the current average rates¹⁴). MPI notes, these raw relativities reflect the actual experience, but may be more variable from year to year, and may not be statistically reliable for ratemaking purposes¹⁵. Hence, MPI credibility weights the balanced raw relativities for use in rate setting.

For the purposes of examining the impact of vehicle premium discount incentives, balanced raw relativities are unobstructed by credibility weighting procedures.

Table 5 presents the Balanced Raw relativities, sourced from RM Appendix 9, Table 15, in each of the prior 6 GRAs. Table 5 also presents the most recent loss year on which the Balanced Raw Relativity is based (sourced from the corresponding Tables 12-14 in RM Appendix 9).

The balanced raw relativities present a decreasing trend through time, that is almost strictly decreasing over the past 6 years. The only exception to the decreasing trend is in the 2020 GRA, the first year that includes Taxi VFH experience under the VFH framework, which has a slight increase in relativity.

Table 5: Taxi VFH Balanced Raw Relativities

GRA	Insurance Use	Most Recent Loss Year	Balanced Raw Relativity	Y-o-Y change
2021	Taxicab Vehicle-for-Hire*	2019	4.2280	-0.2139
2020	Taxicab Vehicle-for-Hire	2018	4.4419	0.0244
2019	Taxi/Livery Passenger Vehicle	2017	4.4175	-0.2634
2018	Taxi/Livery Passenger Vehicle	2016	4.6809	-0.0795
2017	Taxi/Livery Passenger Vehicle	2015	4.7604	-0.2057
2016	Taxi/Livery Passenger Vehicle	2014	4.9661	

*Before Product Changes

As DSR incentives became available to Taxi VFH in calendar Q1 of 2018, it might be expected that relativities would decline after the introduction of the DSR incentive, if the DSR incentive is effective. There was no reduction in raw relativity in the 2020 GRA. The reduction in raw relativity in the 2021 GRA may be attributable to the DSR incentives, however, decreases of similar magnitude are present in the 2017 and 2019 GRA's raw relativities. Thus there is no obvious pattern or break-point in the data to suggest that Taxi VFH have responded to the DSR incentives.

¹³ Found in RM Appendix 9, Table 15, which are based on pure premiums and earned units from Appendix 9, Tables 13 and 14, respectively.

¹⁴ See RM page 47 lines 21-23 and page 48 lines 1-20.

¹⁵ RM page 48, lines 8-10

It is also possible that whatever factors have caused the modest declines in raw relativity prior to introducing the DSR incentive, have continued after. The data available in the application is inconclusive, and any effect of the DSR incentives cannot be distinguished from the trend in raw relativities.

2.4.2 Observations

Observation 3: There has been no response by Taxi VFH to DSR incentives (through vehicle premium discounts) that can be distinguished from the general trend in Taxi VFH raw relativities.

2.5 MPI'S FLEET PROGRAM OFFERS PROMPT AND EFFECTIVE INCENTIVES TO AVOID AT FAULT COLLISIONS

MPI's Fleet Program is mandatory for all fleets of 10 vehicles or more, and establishes rebates and surcharges based on retrospective loss ratios from the most recent insurance year. The Fleet program provides immediate incentives for owners of fleet vehicles to manage the risk of at fault collisions.¹⁶

Rebates and surcharges are calculated annually, and are unaffected by experience from years prior to the most recent year, meaning that a fleet owner could in theory receive a 50% surcharge in year 1, and a 33% discount the following year, depending on the performance (loss ratio) of the fleet.

MPI confirms¹⁷ that the fleet program provides more immediate incentives than the DSR, and that incentives, such as those offered under the fleet program may address the risk associated with multiple drivers.

MPI also confirms that the history of the Fleet Program's "off-balance", that pays out significantly more rebates than it brings in on surcharges, is evidence of the Fleet Program's effectiveness.¹⁸

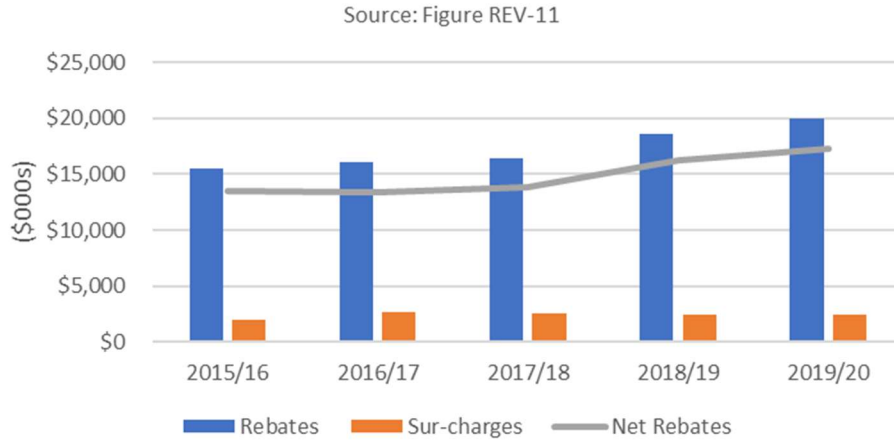
For illustrative purposes, data from *Figure REV-11, Net Fleet Rebates Attributed to Basic Only* has been plotted in Figure 3 below.

¹⁶ TC(MPI)1-15(b) and TC(MPI)2-9(a)

¹⁷ TC(MPI) 2-9 (a)

¹⁸ TC(MPI)1-15(b)

Figure 3: History of Fleet Rebates and Surcharges



The Fleet program provides the same overall ‘upside’ incentive as the DSR program (33%), but as noted above, the incentive is more immediate.

In terms of ‘downside’ incentive, the fleet program may provide a stronger incentive than the DSR, as the number of vehicles in a customer’s fleet increases.

2.5.1 Fleet Program is not Available to Corporate Customers Under 10 Vehicles

One notable gap in the incentive structure provided by MPI, is that corporately owned VFH, and corporate customers with small fleets (less than 10 vehicles) generally, are not eligible for any form of vehicle premium discount, either through the Fleet Program, or the DSR Program.¹⁹ MPI notes that under specific circumstances, single owner corporate customers may enter into a right of possession agreement to access DSR incentives. A right of possession agreement represents a hurdle not faced by larger corporate customers, and is not universal in its application.

Taxi VFH and any small corporate fleets²⁰ are unduly discriminated against based on legal status of ownership (whether sole proprietorship, single owner corporation, or multi-owner corporation).

2.5.2 Observations and Recommended Findings

Observation 4: The Fleet Program provides immediate ‘upside’ incentives for reducing at fault claims, and has been an effective incentive for reducing at-fault collisions for fleets overall.

Observation 5: Small corporate customers (less than 10 vehicles) are unduly discriminated against, as incentives through either the DSR Program or Fleet Program are unavailable to them.

¹⁹ TC(MPI) 2-13(b)

²⁰ Per TC(MPI) 1-11 Figure 1, 211 VFH are registered as Corporate, including 29 Taxi VFH.

Recommended Finding 2: The PUB should find that based on the unusually high risk presented by Taxi VFH, the uncertain response to DSR incentives, and having regard for Order 130/17, MPI must develop a framework for Taxi VFH rates, and VFH rates generally, that provides effective incentives, and addresses the principle driver risk issue facing Taxi VFH.

The PUB should also find that MPI's proposed solution must address the gap in incentives available to small corporate customers (with fewer than 10 vehicles).

3.0 APPROPRIATENESS OF PASSENGER VFH RATES

3.1 SUMMARY

The operating characteristics of Passenger VFH have not materialized as MPI expected at the time of establishing the VFH Framework. The initial pricing of Passenger VFH rates has resulted in rates that do not cover the costs of coverage.

MPI's ratemaking methodology strongly favours the initial assumptions over observed experience. A sensitivity test of credibility weighting shows that modest increases in credibility weighting above the minimum can move Passenger VFH rates toward actuarially indicated break-even rates in three to four years without exceeding existing experience adjustment rules.

Increasing the credibility weighting for Passenger VFH would not negatively impact the other insurance uses in the Private Passenger Major Class.

3.2 PASSENGER VFH OPERATIONS DO NOT CONFORM WITH INITIAL ASSUMPTIONS

Several aspects of the initial VFH framework, with respect to Passenger VFH operation and risk, have not materialized as expected.

3.2.1 Operating Characteristics of Passenger VFH are not as Expected

At the time of VFH inception, MPI expected Passenger VFH to operate in a manner quite distinct from Taxi VFH. In response to TC(MPI)1-2, MPI states:

When it created the insurance use, MPI understood that individuals would drive for a ridesharing company on a casual basis, and pick up passengers as part of their regular day-to-day driving from one place to another. The starting rates for this insurance use reflected this understanding (i.e. MPI assumed a moderately higher rate for Passenger VFH as compared to All Purpose to reflect the increased risk exposure).

MPI elaborated on its understanding of how Passenger and Taxi VFH operate in response to TC(MPI) 2-11(a):

MPI does not believe that Passenger VFH operates in the same capacity as Taxicab VFH. MPI appreciates that there are differences between Passenger VFH operators in terms of how long they drive in their capacity as a Passenger VFH. However, on average, Passenger VFH operators are on the road significantly less than Taxicab VFH operators.

It is not clear how MPI arrives at this conclusion, noting they do not collect Manitoba based data on these variables (time on road, or distance driven).²¹ MPI has indicated that it is aware of

²¹ TC(MPI) 1-8(a) and (b)

significant differences in exposure (kilometers driven), based on a review of VFH frameworks in other jurisdictions.²²

3.2.2 Initial Pricing of Passenger VFH may not Fully Reflect the Potential Loss Costs

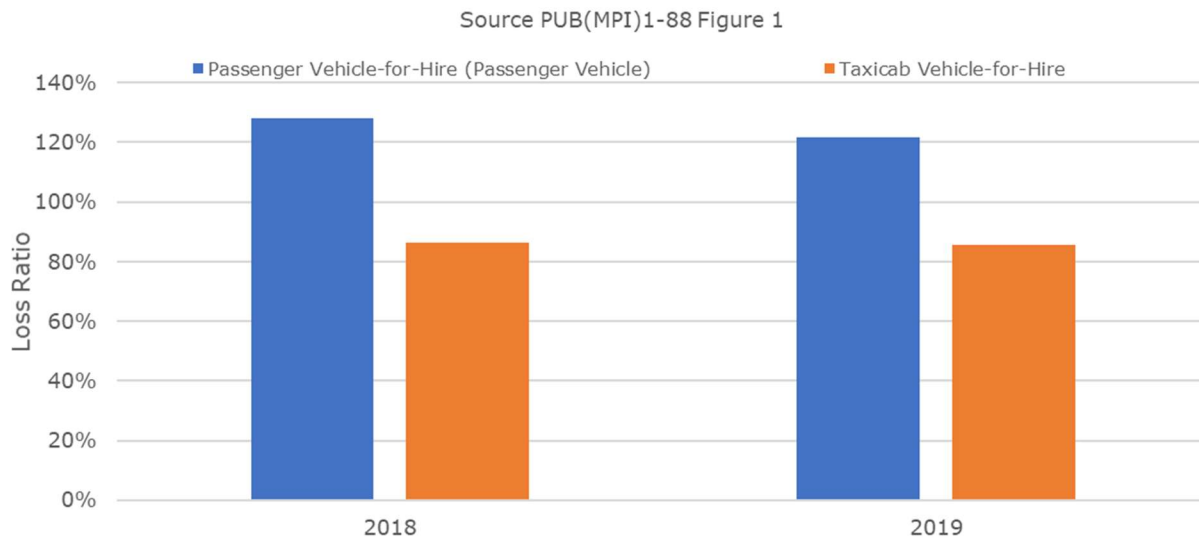
MPI has advised that initial Passenger VFH rates were not appropriate:

Based on the actual claims experience as of February 29, 2020 (per PUB (MPI) 1-88), Passenger VFH did not have an appropriate starting rate. However, this experience has very low credibility given the size of the Passenger VFH pool.²³

The actual claims experience referenced above is well summarized by the Loss Ratios for Passenger VFH reported in PUB(MPI)1-88. Passenger VFH (passenger vehicle) loss ratios have ranged between 128% and 122% in 2018 and 2019 respectively, whereas Taxi VFH loss ratios have been significantly lower at 85.5% and 86% in those same years.

The relevant loss ratios are presented in Figure 4 below:

Figure 4: Passenger VFH and Taxi VFH Loss Ratios



Evidence that Passenger VFH rates are not consistent with the indicated break-even actuarially required rate is also found in the comparison of raw and current relativities.

²² TC(MPI) 2-7 (g)

²³ TC(MPI) 2-2 (a)

Based on the comparison of Passenger VFH Raw Relativities to Current Relativities, Passenger VFH rates must increase by 56% to achieve the breakeven actuarial-required rate,²⁴ or by an amount equal to \$1,117.²⁵

By contrast, the applied for experience adjustment for Passenger VFH (Passenger Vehicles), is estimated at 0.67%.²⁶

3.2.3 Passenger VFH Rates will Eventually Reflect the Required Rate

MPI identified that while Passenger VFH rates “are not fully reflective of the potential loss costs”,²⁷ these rates will “eventually move toward the indicated break-even actuarial-required rate, as a result of the ratemaking methodology”.²⁸

MPI describes the ratemaking methodology processes in at pages 47-50 of the Ratemaking Chapter, and response to TC(MPI) 2-3. These processes are summarized as follows:

- Actual raw relativities may be highly variable from year to year, and may be drawn from too small a population to be statistically reliable, or represent something other than the ‘true’ break-even required rate.
- To account for this, MPI assigns a credibility weighting to the raw relativities, and the inverse of the credibility weighting to the ‘current’ relativities. Current relativities which are calculated based on the current rates in the rate model, and should generally be reflective of cumulative historical experience.
- The credibility weighting is based on the number of units in the rate model, relative to a judgementally selected constant (60,000). Insurance uses with a small number of units, and very small credibility weightings (less than 0.1) are assigned a weighting of 0.1.
- The effect of this credibility weighting is that, for insurance uses with a small number of units, the actual recent experience is given a 10% weighting, and the ‘current relativities’ (generally reflecting cumulative historical experience) are given a 90% weighting.
- Applied-for rates will therefor move towards the most recently observed experience at a pace dictated by the credibility weighting.
- A constraining factor on the credibility based adjustments are the experience adjustment rules, which have the effect of limiting experience adjustments to a maximum of 15%, regardless of the credibility weighting²⁹.

²⁴ TC(MPI) 2-3 (a)

²⁵ TC(MPI) 2-3 (e)

²⁶ Based on a unit weighted average experience adjustment excluding capital release per TC(MPI)2-5(a). The unit average applied for adjustment per RM Appendix 4 is -4.41%, which includes a capital release. Both figures are for Passenger VFH (Passenger Vehicle) only.

²⁷ TC(MPI) 2-2(b)

²⁸ PUB(MPI) 1-88

²⁹ TC(MPI) 2-3 (a) and RM page 50.

Given the low count of Passenger VFH units, relative to the judgementally selected constant, recent actual Passenger VFH experience is unlikely to ever be weighted by more than 10% in under the existing ratemaking methodology.

3.2.4 Sensitivity Test on Passenger VFH Credibility

A sensitivity test is performed below, to:

1. illustrate MPI’s approach to credibility weighting raw and current relativities; and
2. investigate the impact of on Passenger VFH rates of accelerating the adjustment toward indicated break-even rates, without violating the experience adjustment rules.

The sensitivity test is limited to Passenger VFH (Passenger Vehicles), which represent most rideshare vehicles in operation, to simplify the analysis. It is based on the procedures conducted in RM Appendix 9, Tables 15 and 16, and does not represent the entirety of processes or considerations in MPI’s ratemaking methodology. Accordingly, the analysis and figures presented below should be taken as illustrative, and any final determinations must be confirmed by MPI through the full rate model.

Table 6 presents raw, current, and credibility weighted relativities for Passenger VFH from the 2020 and 2021 GRAs (before product changes).

Table 6: Credibility Weighted Relativities

GRA	Insurance Use	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity
2021	Passenger Vehicle-for-Hire (Passenger Vehicle)	2.9930	1.8083	0.10	1.9267
2020	Passenger Vehicle-for-Hire (Passenger Vehicle)	3.1160	1.6593	0.10	1.8049

Source: RM Appendix 9, Table 15

There is a material difference between the raw relativities, and the credibility weighted raw relativities, owing to:

- i. the low credibility weighting assigned to Passenger VFH raw relativity; and
- ii. the low current relativity based on current rates from the rate model.

There are two processes occurring to establish the credibility weighted relativity: establishing the credibility weighting, and determining the credibility weighted average.

Turning first to the credibility weighting, the equation below shows the formula for the credibility weighting factor,³⁰ the judgementally selected constant, and the Passenger VFH Historical Earned Units from RM Appendix 9, Table 15:

³⁰ As described at RM page 48.

$$\frac{N}{N+K} = \frac{\text{Historical Earned Units}}{\text{Historical Earned Units}+60,000} = \frac{1,199}{1,199+60,000} = 0.0195$$

Given the low historical earned units for Passenger VFH, relative the constant, the actual credibility weighting is 0.0195. Per MPI's ratemaking process, the minimum credibility of 0.10 is assigned in the event actual credibility is less than 0.10.

Turning next to the credibility weighted relativities, the balanced raw relativity is weighted by the credibility factor, and the balanced current relativity is weighted by one minus the credibility factor as follows:

$$\begin{aligned} \text{Balanced Raw Relativity} * (0.1) + \text{Balanced Current Relativity} * (0.9) &= \text{Credibility Weighted Relativity} \\ 2.993*(0.1) + 1.8083*(0.9) &= 1.9267 \end{aligned}$$

The low credibility factor applied to the raw relativity, allows the current relativity to heavily influence the credibility weighting.³¹ As it relates to Passenger VFH specifically, the initial rating assumptions (substantially reflected in the current relativity) overwhelm the actual experience (substantially reflected in the raw relativity) and generate a weighted relativity for ratemaking purposes that is well below the raw relativity value.

As a sensitivity test of credibility weighting, Table 7 presents the credibility weighted relativities to 0.1 increments of the credibility factor. The right-most column presents the 'new relativity' which has applied the credibility weighted relativity to the balancing procedure described in TC(MPI) 2-5 (b). A sample of the balancing procedures is provided in Appendix 2.

³¹ As an aside, note also that MPI's credibility assignment approach has the property of assigning low credibility based on the number of units, even if those units produce a substantially similar Balanced Raw Relativity each year.

Table 7: Credibility Weighting Sensitivity Test

Balanced Raw Relativity*	Balanced Current Relativity	Adjusted Credibility	Credibility Weighted Relativity*	New Relativity**
3.0156	1.8083	0.1000	1.9290	1.9324
3.0156	1.8083	0.2000	2.0497	2.0531
3.0156	1.8083	0.3000	2.1705	2.1737
3.0156	1.8083	0.4000	2.2912	2.2944
3.0156	1.8083	0.5000	2.4119	2.4150
3.0156	1.8083	0.6000	2.5327	2.5356
3.0156	1.8083	0.7000	2.6534	2.6562
3.0156	1.8083	0.8000	2.7741	2.7767
3.0156	1.8083	0.9000	2.8949	2.8972
3.0156	1.8083	1.0000	3.0156	3.0177

*After Product Change

** After Balancing Procedure

Next, to test the effect of the various credibility weightings on indicated rates, the New Relativities were combined (multiplicatively, per the process outlined in TC(MPI) 2-5), and Modified Indicated Rates for each Territory, at each credibility weighting were calculated, per the procedures outlined at Ratemaking page 49. The complete sensitivity test is presented in Appendix 2.

In order to further test the effect of credibility weightings, a 'goal seek' procedure was performed, whereby the percent increase from prior indicated rates of 15% was targeted, by goal seeking the credibility weighting. This process was performed for each Territory, and carried through the balancing process as reflected in Table 7.

Then the minimum credibility weighting across the Territories was identified. Results are shown in Table 8.

Table 8: Goal Seek Credibility Weights

Major Class	Description	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
		Terr	Major Class Average	Major Class Op. Exp.	New Relativity	Goal Seek Credibility Weighting	Modified New Relativity	Territory Relativity	Modified Combined Relativity	Modified Indicated Rate	2020 GRA Indicated Rates	Modified Rate Present Increase from Prior Rates	Dollar Increase from Prior
		(1)	(1)	(1)	(2)	(3)	(2)	=[F]*[G]	=(B)-[C])*[H]+[C]	(3)	=(I)-[J])/[J]	=[I]-[J]	
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	1	1,118.48	102.92	1.9316	0.4052	2.3007	1.0563	2.4301	\$ 2,570.89	\$ 2,235.60	15.00%	\$ 335.29
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	2	1,118.48	102.92	1.9316	0.4494	2.3540	0.9186	2.1624	\$ 2,298.99	\$ 1,999.12	15.00%	\$ 299.87
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	3	1,118.48	102.92	1.9316	0.4416	2.3446	0.9744	2.2845	\$ 2,422.97	\$ 2,106.93	15.00%	\$ 316.04
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	4	1,118.48	102.92	1.9316	0.4669	2.3751	0.9428	2.2392	\$ 2,376.97	\$ 2,066.93	15.00%	\$ 310.04
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	5	1,118.48	102.92	1.9316	0.4402	2.3429	1.0767	2.5226	\$ 2,664.81	\$ 2,317.23	15.00%	\$ 347.58
(1)	RM App 9 Table 16				Minimum	0.4052							
(2)	RM App 9 Table 15												
(3)	After Balancing Procedure												
(4)	2020 GRA RM App 9 Table 16												

Next the minimum credibility weighting was reapplied to all Territories, again including the balancing procedure, to ensure that the single 'New Relativity' formed the basis for modified relativities used to calculate indicated rates by Territory. These results are presented in Table 9.

Table 9: Minimum Credibility Weight applied across all Territories

Major Class	Description	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
		Terr	Major Class Average	Major Class Op. Exp.	New Relativity	Min Goal Seek Credibility Weighting	Minimum Modified New Relativity	Territory Relativity	Modified Combined Relativity	Modified Indicated Rate	2020 GRA Indicated Rates	Modified Rate Present Increase from Prior Rates	Dollar Increase from Prior
		(1)	(1)	(1)	(2)	(3)	(3)	(2)	=[F]*[G]	=(B)-[C])*[H]+[C]	(3)	=(I)-[J])/[J]	=[I]-[J]
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	1	1,118.48	102.92	1.9316	0.4052	2.3007	1.0563	2.4301	\$ 2,570.89	\$ 2,235.60	15.00%	\$ 335.29
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	2	1,118.48	102.92	1.9316	0.4052	2.3007	0.9186	2.1134	\$ 2,249.22	\$ 1,999.12	12.51%	\$ 250.10
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	3	1,118.48	102.92	1.9316	0.4052	2.3007	0.9744	2.2417	\$ 2,379.53	\$ 2,106.93	12.94%	\$ 272.60
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	4	1,118.48	102.92	1.9316	0.4052	2.3007	0.9428	2.1690	\$ 2,305.67	\$ 2,066.93	11.55%	\$ 238.74
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	5	1,118.48	102.92	1.9316	0.4052	2.3007	1.0767	2.4772	\$ 2,618.67	\$ 2,317.23	13.01%	\$ 301.44
(1)	RM App 9 Table 16				Minimum	0.4052							
(2)	RM App 9 Table 15												
(3)	TC Evidence Table 8												
(4)	2020 GRA RM App 9 Table 16												

The result is a credibility weighting of 0.4052 applied to Passenger VFH, resulting in a 15% increase in Territory 1 indicated rates, with slightly smaller increases applied across all other Territories. On dollar basis, the Passenger VFH in Territory 1 would see an increase of \$335.29 at the 15% adjustment limit.

Note that the increase of \$335.29 is just under one third of the total \$1,117 required to bring Passenger VFH rates to indicated break even.

Note also, that through the balancing procedure, as the credibility weighting for Passenger VFH is increased, the relativities of all other insurance uses in the Private Passenger Major class decrease, by a very small amount. The implication is that no other insurance use pays more as a result of modifying Passenger VFH credibility weightings.

Table 10 presents the balanced new relativities for Private Passenger Major Class, at each of credibility weighting increments tested.

Table 10: Private Passenger Major Class Balanced New Relativities

Use	Passenger VFH Credibility weighting									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
All Purpose Motorhome	0.749	0.749	0.748	0.748	0.748	0.748	0.748	0.748	0.748	0.748
All Purpose Passenger Vehicle	1.154	1.154	1.153	1.153	1.153	1.153	1.153	1.153	1.153	1.153
All Purpose Truck 4540 kg or less	1.027	1.027	1.027	1.026	1.026	1.026	1.026	1.026	1.026	1.026
Antique Vehicle	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
Collector Passenger Vehicle	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101
Collector Truck 4540 kg or less	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042
Disabled Persons/Private/Business Bus	0.801	0.801	0.801	0.801	0.801	0.800	0.800	0.800	0.800	0.800
Farm Passenger Vehicle	0.824	0.824	0.824	0.824	0.824	0.824	0.824	0.823	0.823	0.823
Farming All Purpose Truck 4540 kg or less	0.752	0.752	0.751	0.751	0.751	0.751	0.751	0.751	0.751	0.751
Fishing All Purpose Truck 4540 kg or less	0.936	0.936	0.936	0.936	0.936	0.936	0.936	0.935	0.935	0.935
Passenger Vehicle-for-Hire (Passenger Vehicle)	1.932	2.053	2.174	2.294	2.415	2.536	2.656	2.777	2.897	3.018
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	1.508	1.508	1.508	1.508	1.508	1.508	1.507	1.507	1.507	1.507
Pleasure Motorhome	0.650	0.650	0.650	0.650	0.650	0.650	0.650	0.649	0.649	0.649
Pleasure Passenger Vehicle	0.868	0.867	0.867	0.867	0.867	0.867	0.867	0.867	0.867	0.867
Pleasure Truck	0.716	0.716	0.716	0.716	0.715	0.715	0.715	0.715	0.715	0.715

The results of this sensitivity analysis show that a modest credibility weighting adjustment, from 0.1000 to 0.4052, can adjust Passenger VFH rates in a manner consistent with established experience adjustment rules.

More or less aggressive adjustments can be made to credibility weightings to expedite or delay the achievement of break-even indicated rates for Passenger VFH.

3.2.5 Observations

Observation 6: Actual Passenger VFH operation has not conformed with initial expectations, at the time of VFH Framework inception.

Observation 7: The pricing of Passenger VFH rates does not reflect the potential loss costs, and is not consistent with break-even actuarially indicated rates.

Observation 8: Credibility weighting assumptions for Passenger VFH can be modified to accelerate the attainment actuarially indicate break-even rates. Increasing the credibility weighting to approximately 40%, would achieve the effective maximum experience adjustment permitted under current ratemaking rules.

Appendix 1: Principles for Pricing Passenger VFH

This attachment has been prepared by Patrick Bowman, as a supplement to the evidence of Jeff Crozier on behalf of the Taxi Coalition. The following are noted:

- Mr. Bowman is an independent witness and his CV is provided in Appendix 3.
- Mr. Bowman's scope of work and instructions were to review evidence in respect of ratemaking principles applied to the determination of rates for the Passenger Vehicle for Hire class, in light of normal regulatory fairness considerations for customers served by a monopoly service provider.
- Mr. Bowman acknowledges his role is to provide opinion evidence to the Board that is fair, objective and non-partisan.
- Mr. Bowman has endeavoured to ensure all factual assumptions and specific information relied upon are expressly cited in the testimony that follows.

The current situation in respect of Passenger Vehicle for Hire (VFH) is a relatively unique condition in the realm of regulated ratemaking. Under normal conditions, regulation of rates for essential services or monopolies is based on considerations of balancing such criteria as fairness and long-term stability. A proper rate design is often understood to encompass multiple competing criteria. One well-known example is the rate structure criteria enumerated by James Bonbright, as follows:³²

1. The related, "practical" attributes of simplicity, understandability, public acceptability, and feasibility of application.
2. Freedom from controversies as to proper interpretation.
3. Effectiveness in yielding total revenue requirements under the fair-return standard.
4. Revenue stability from year to year.
5. Stability of the rates themselves, with a minimum of unexpected changes seriously adverse to existing customers. (Compare "The best tax is an old tax").
6. Fairness of the specific rates in the apportionment of total costs of service among the different consumers.
7. Avoidance of "undue discrimination" in rate relationships.
8. Efficiency of the rate classes and rate blocks in discouraging wasteful use of service while promoting all justified types and amounts of use:
 - (a) in the control of the total amounts of service supplied by the company:
 - (b) in the control of the relative uses of alternative types of service (on-peak versus off-peak electricity, Pullman travel versus coach travel, single-party telephone service versus service from a multi-party line, etc.).

³² Bonbright, James C., Principles of Public Utility Rates. Columbia University Press. 1960. page 291.

Unlike the conditions that normally underpin rate regulation, the facts surrounding Passenger VFH are different. In practical terms, there is no “old tax” (as per criteria 5 above) as the entire category has only existed a relatively few years. Further questions of discouraging “wasteful use” while promoting all justified uses is a matter of key concern (criteria 8), as is avoidance of undue discrimination (criteria 7).

This attachment addresses these matters.

Background

In preparing this Attachment, the following key facts have been relied upon:

1. Passenger VFH is the category of users who participate in sale of ride-sharing as part of engagement with Transportation Network Companies (TNCs).
2. The Passenger VFH insurance framework has existed in Manitoba only since 2018.
3. Passenger VFH rates were set based on a brief interim application which relied upon no factual information about the performance of actual TNC drivers in Manitoba (as they did not exist at that time), and extremely limited information about costs charged to TNC drivers for insurance in Ontario, Alberta and Quebec at that time.³³
4. MPI noted at the time that there was no industry standard for how to insure TNC drivers.³⁴ There was no information on any jurisdiction who had a public insurer. [Current information appears to indicate there remains no industry standard in Canada, and to the extent there are some similarities (e.g., umbrella TNC insurance), these similarities are not shared by MPI].
5. MPI presumed in 2018 that TNC drivers would “would drive for a ridesharing company on a casual basis and pick up passengers as part of their regular day-to-day driving from one place to another”.³⁵ It appears this has proven to be inaccurate.
6. MPI proposed and was approved to set Passenger VFH rates under the Private Passenger Major Class, based on a premium to private vehicles All Purpose rates (5-20%). This percentage was selected even though MPI at the time already recognized that other jurisdictions charged rates at that time up to 25% above private passenger all-purpose rates.³⁶
7. Although over 2 years has passed since the first interim Passenger VFH rates were implemented, the only jurisdictional update provided by MPI relates to Saskatchewan, and not to the original 3 comparator jurisdictions (Ontario, Alberta and Quebec).
8. In respect of Saskatchewan, the update indicates that a TNC driver will face costs approaching 30% higher than equivalent passenger vehicles if the TNC driver only participates in 3500 km of ridesharing per year.³⁷ The rate is charged “per km” so the premium would go up significantly

³³ VFH Application pages 14-15.

³⁴ VFH Application, page 6.

³⁵ TC(MPI)-1-2

³⁶ VFH Application, pages 14-15.

³⁷ TC(MPI)-1-16

if the TNC drivers participate in more kilometers per year. MPI does not indicate that there is any known relevance to the 3500 km level.

9. MPI has not collected data on the typical or maximum kilometers driven by TNC drivers in Manitoba.
10. On the basis of experience to date (since 2018), the Passenger VFH rate that was set is dramatically too low. The rate would need to increase by 56% to reach full cost recovery. However, despite this appearing to be a very large percentage, this cost increase is only \$1,117 per year – the dramatic looking percentage arises because the original Passenger VFH rate was set so low.
11. Despite the apparent dramatic disconnect between actual experience and original hypothesis, MPI has not investigated whether Passenger VFH should be included in the Public Class (where vehicles intended for public use reside) rather than the Private Passenger class. This change may lead to a more rapid reflection of the realized Passenger VFH experience in rates, but the impact is uncertain and has not been studied.
12. MPI has relied upon its traditional Ratemaking approaches to determine the proposed Passenger VFH rates in this application. Under this proposal, the rates would increase an average of only 0.67%.³⁸ MPI's basic contention is that the actual experience to date may not be indicative of actual underlying long-term performance, and as a result should be only lightly considered while past ratemaking results should be more heavily weighted. MPI does not address the unfortunate fact that past ratemaking was based on no experience whatsoever.
13. Passenger VFH activities would be understood to be directly competitive with Taxicab VFH activities. However, Passenger VFH drive incurred expenses at 124% of premiums paid averaged over the last 2 years (130% and 120% in 2018 and 2019 respectively) while Taxicab VFH drive only 86% of incurred expenses per premiums paid (86% and 86% for 2018 and 2019 respectively).³⁹

In the event there are material factual misunderstandings in the above statements, it is possible the conclusions of this Attachment could change.

Observations

MPI's proposals represent a gross misapplication of traditional regulatory rate design principles. MPI has mistakenly relied upon principles that, under normal circumstances, would be relevant, but applied these principles to a situation where they are causing material market distortions and unfairness.

First, MPI has relied upon the fact that the Passenger VFH data set has limited experience and credibility to suggest that rate movements should be limited. The unstated complement to MPI's recommendation is that the original rate setting inputs should be more heavily weighted. This is not appropriate. The original inputs were from 2018 and were of extremely limited value and based

³⁸ See Footnote 26.

³⁹ PUB(MPI)-1-88, Figure 1.

on no data whatsoever. The concept that the original inputs are of more importance than actual observed data is erroneous. Further, the observed data, despite its limited quantity, does exhibit a relatively tight range of outcomes (120% and 130% of premiums for the 2 years in question) which suggests MPI is being overly cautious in assigning this data such a low weighting.

Second, and more importantly, MPI has relied, in effect, on the principle of rate stability. The concept of rate stability as a rate design criteria is ultimately rooted in a principle that the monopoly provider (or the regulator) has a duty owed to the customer being served, to provide them with a product at a stable long-term price. Such principle would not appear to be a high value in this case, for the following reasons:

1. The Passenger VFH operators have only made use of the service for 2-3 years. These TNC drivers have not yet established a long-term business based on any valid assumptions of input cost stability. This is not like the situation more typical to the Public Utilities Board of major power consumers, for example, who have committed millions in capital investment many years prior premised on stable cost power supplies – even the longest standing operators are still relatively new, and many are extremely new to the business.
2. Second, in the event the Passenger VFH data collected to date is robust and holds up, under MPI's proposal, the TNC operators will likely see material rate increases each and every year for many years. This could readily have the effect of luring MPI's customers (potential TNC drivers) into the TNC business, and making investments or choices, based on misleading cost data about what it will take to operate. Consider the case of the hypothetical 3500 km/year TNC driver cited by MPI at TC(MPI)-1-16. This driver would see a low insurance rate to start (2021), but large and compounding increases over the coming years that total over \$1100 – or over \$0.30/km driven. Such a large cost (equal to multiples of the cost of fuel) could be material to the decision to invest time and resources in ride sharing. Hiding this impending cost from drivers who are just starting out would not be transparent or fair. Fairness to MPI customers in this situation would be better served by rapidly providing them with a proper price signal about the insurance services they will need to acquire now and in the future.
3. MPI's actions also drive a material distortion in the market for transportation services, charging Taxicab VFH customers a rate that is representative of the costs to insure their service (incurred costs at 86% of premiums paid) while Passenger VFH is heavily subsidized from their Major Class of Private Passenger vehicles (while the operators incur costs at 124% of premiums paid).

Based on an appropriate application of the principles underlying monopoly service provision in a regulated environment, MPI should be directed to implement a far more notable price increase to Passenger VFH customers. A move to fully reflect the best available cost data (a 56% increase) should not be rejected. Alternatively, a minimum move on the order of 40% for 2021, which would permit MPI to then reach full cost recovery in one additional year with an increase on the order of approximately 15%, may also merit consideration, if some measure of gradualism is preferred.

Even in the case where future data suggests the current information was imperfect due to small population sizes, it needs to be recognized that such variability could just as easily indicate even larger increases are needed in future, as to indicate smaller increases are needed. To avoid the

unfair and improper price signal of temporarily subsidized services at the very time many individuals may be making decisions about participating in the TNC market, and to ensure MPI is not distorting a vibrant commercial market, the normal MPI rate design principles regarding stability should be suspended.

Appendix 2: Sensitivity Test Schedules

Table 1: Overall Sensitivity Test Results

Major Class	Description	[A] Terr	[B] Major Class Average	[C] Major Class Op. Exp.	[D] New Relativity	[E] Credibility Weighting	[G] Modified New Relativity	[H] Territory	[I] Modified Combined Relativity	[J] Modified Indicated Rate	[K] 2020 GRA Indicated Rates	[L] Modified Rate Percent Increase from Prior Rates	[M] Dollar Increase from Prior Applied
		(1)	(1)	(1)	(2)	(3)	(3)	(2)	=[G]*[I]	=[(B)-[C]]/[I]*[C]	(3)	=[(L)-[K]]/[K]	=[J]-[K]
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	1	1,118.48	102.92	1.932	0.1	1.932	1.056	2.041	\$ 2,175.81	\$ 2,235.60	-2.7%	\$ 59.79
					1.932	0.2	2.053	1.056	2.169	\$ 2,305.29	\$ 2,235.60	3.1%	\$ 69.69
					1.932	0.3	2.174	1.056	2.296	\$ 2,434.74	\$ 2,235.60	8.9%	\$ 199.14
					1.932	0.4	2.294	1.056	2.424	\$ 2,564.17	\$ 2,235.60	14.7%	\$ 328.57
					1.932	0.5	2.415	1.056	2.551	\$ 2,693.56	\$ 2,235.60	20.5%	\$ 457.96
					1.932	0.6	2.536	1.056	2.678	\$ 2,822.92	\$ 2,235.60	26.3%	\$ 587.32
					1.932	0.7	2.656	1.056	2.806	\$ 2,952.25	\$ 2,235.60	32.1%	\$ 716.65
					1.932	0.8	2.777	1.056	2.933	\$ 3,081.55	\$ 2,235.60	37.8%	\$ 845.95
					1.932	0.9	2.897	1.056	3.060	\$ 3,210.83	\$ 2,235.60	43.6%	\$ 975.23
					1.932	1.00	3.018	1.056	3.188	\$ 3,340.07	\$ 2,235.60	49.4%	\$ 1,104.47
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	2	1,118.48	102.92	1.932	0.1	1.932	0.919	1.775	\$ 1,905.64	\$ 1,999.12	-4.7%	\$ 93.48
					1.932	0.2	2.053	0.919	1.886	\$ 2,018.24	\$ 1,999.12	1.0%	\$ 19.12
					1.932	0.3	2.174	0.919	1.997	\$ 2,130.82	\$ 1,999.12	6.6%	\$ 131.70
					1.932	0.4	2.294	0.919	2.108	\$ 2,243.38	\$ 1,999.12	12.2%	\$ 244.26
					1.932	0.5	2.415	0.919	2.218	\$ 2,355.90	\$ 1,999.12	17.8%	\$ 356.78
					1.932	0.6	2.536	0.919	2.329	\$ 2,468.41	\$ 1,999.12	23.5%	\$ 469.29
					1.932	0.7	2.656	0.919	2.440	\$ 2,580.88	\$ 1,999.12	29.1%	\$ 581.76
					1.932	0.8	2.777	0.919	2.551	\$ 2,693.33	\$ 1,999.12	34.7%	\$ 694.21
					1.932	0.9	2.897	0.919	2.661	\$ 2,805.75	\$ 1,999.12	40.3%	\$ 806.63
					1.932	1.00	3.018	0.919	2.772	\$ 2,918.15	\$ 1,999.12	46.0%	\$ 919.03
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	3	1,118.48	102.92	1.932	0.1	1.932	0.974	1.883	\$ 2,015.08	\$ 2,106.93	-4.4%	\$ 91.85
					1.932	0.2	2.053	0.974	2.000	\$ 2,134.52	\$ 2,106.93	1.3%	\$ 27.59
					1.932	0.3	2.174	0.974	2.118	\$ 2,253.94	\$ 2,106.93	7.0%	\$ 147.01
					1.932	0.4	2.294	0.974	2.236	\$ 2,373.33	\$ 2,106.93	12.6%	\$ 266.40
					1.932	0.5	2.415	0.974	2.353	\$ 2,492.69	\$ 2,106.93	18.3%	\$ 385.76
					1.932	0.6	2.536	0.974	2.471	\$ 2,612.02	\$ 2,106.93	24.0%	\$ 505.09
					1.932	0.7	2.656	0.974	2.588	\$ 2,731.32	\$ 2,106.93	29.6%	\$ 624.39
					1.932	0.8	2.777	0.974	2.706	\$ 2,850.60	\$ 2,106.93	35.3%	\$ 743.67
					1.932	0.9	2.897	0.974	2.823	\$ 2,969.85	\$ 2,106.93	41.0%	\$ 862.92
					1.932	1.00	3.018	0.974	2.940	\$ 3,089.07	\$ 2,106.93	46.6%	\$ 982.14
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	4	1,118.48	102.92	1.932	0.1	1.932	0.943	1.822	\$ 1,953.05	\$ 2,066.93	-5.5%	\$ 113.88
					1.932	0.2	2.053	0.943	1.936	\$ 2,068.62	\$ 2,066.93	0.1%	\$ 1.69
					1.932	0.3	2.174	0.943	2.049	\$ 2,184.16	\$ 2,066.93	5.7%	\$ 117.23
					1.932	0.4	2.294	0.943	2.163	\$ 2,299.67	\$ 2,066.93	11.3%	\$ 232.74
					1.932	0.5	2.415	0.943	2.277	\$ 2,415.16	\$ 2,066.93	16.8%	\$ 348.23
					1.932	0.6	2.536	0.943	2.391	\$ 2,530.62	\$ 2,066.93	22.4%	\$ 463.69
					1.932	0.7	2.656	0.943	2.504	\$ 2,646.06	\$ 2,066.93	28.0%	\$ 579.13
					1.932	0.8	2.777	0.943	2.618	\$ 2,761.46	\$ 2,066.93	33.6%	\$ 694.53
					1.932	0.9	2.897	0.943	2.731	\$ 2,876.84	\$ 2,066.93	39.2%	\$ 809.91
					1.932	1.00	3.018	0.943	2.845	\$ 2,992.20	\$ 2,066.93	44.8%	\$ 925.27
1	Passenger Vehicle-for-Hire (Passenger Vehicle)	5	1,118.48	102.92	1.932	0.1	1.932	1.077	2.081	\$ 2,215.94	\$ 2,317.23	-4.4%	\$ 101.29
					1.932	0.2	2.053	1.077	2.211	\$ 2,347.93	\$ 2,317.23	1.3%	\$ 30.70
					1.932	0.3	2.174	1.077	2.341	\$ 2,479.89	\$ 2,317.23	7.0%	\$ 162.66
					1.932	0.4	2.294	1.077	2.470	\$ 2,611.82	\$ 2,317.23	12.7%	\$ 294.59
					1.932	0.5	2.415	1.077	2.600	\$ 2,743.72	\$ 2,317.23	18.4%	\$ 426.49
					1.932	0.6	2.536	1.077	2.730	\$ 2,875.58	\$ 2,317.23	24.1%	\$ 558.35
					1.932	0.7	2.656	1.077	2.860	\$ 3,007.42	\$ 2,317.23	29.8%	\$ 690.19
					1.932	0.8	2.777	1.077	2.990	\$ 3,139.23	\$ 2,317.23	35.5%	\$ 822.00
					1.932	0.9	2.897	1.077	3.120	\$ 3,271.00	\$ 2,317.23	41.2%	\$ 953.77
					1.932	1.00	3.018	1.077	3.249	\$ 3,402.75	\$ 2,317.23	46.8%	\$ 1,085.52

(1) RM App 9 Table 16
 (2) RM App 9 Table 15
 (3) From TC Evidence Table 7
 (4) 2020 GRA RM App 9 Table 21

Table 2: 0.1 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Balanced Raw Relativity		Balanced Current		Credibility Weighted Relativity		New Relativity	
	Current	After Prod	Relativity	Credibility	After Prod	Change	After Prod	Change
	Units	Change	Relativity	Credibility	Change	Change	Change	Change
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7486
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1537
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0268
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8009
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8241
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7516
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9362
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.1000	1.9282	1.9290	1.9316	1.9324
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5085
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6500
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8675
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7158
	812,577					0.9983		1.0000

Table 3: 0.2 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Balanced Raw Relativity		Balanced Current		Credibility Weighted Relativity		New Relativity
	Current	After Prod	Relativity	Credibility	After Prod	Change	
	Units	Change	Relativity	Credibility	Change	Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7485	
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1536	
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0267	
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178	
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1013	
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418	
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8008	
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8240	
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7515	
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9360	
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.2000	2.0497	2.0531	
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5083	
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6499	
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8674	
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7157	
	812,577				0.9984	1.0000	

Table 4: 0.3 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Balanced Raw Relativity		Balanced Current Relativity	Credibility	Credibility Weighted Relativity	
	Current Units	After Prod Change			After Prod Change	New Relativity
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7485
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1535
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0266
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8007
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8239
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7514
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9359
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.3000	2.1705	2.1737
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5081
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6499
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8673
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7156
	812,577				0.9985	1.0000

Table 5: 0.4 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Balanced Raw Relativity		Balanced Current Relativity	Credibility	Credibility Weighted Relativity	
	Current Units	After Prod Change			After Prod Change	New Relativity
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7484
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4000	2.2912	2.2944
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5080
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6498
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7156
	812,577				0.9986	1.0000

Table 6: 0.5 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity	New Relativity
		After Prod Change			After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7483
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1532
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0263
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8005
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8237
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9357
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.5000	2.4119	2.4150
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5078
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6497
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8671
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7155
	812,577				0.9987	1.0000

Table 7: 0.6 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity	New Relativity
		After Prod Change			After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7482
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1531
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0262
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1012
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8005
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8236
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7512
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9356
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.6000	2.5327	2.5356
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5076
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6496
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8670
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7154
	812,577				0.9988	1.0000

Table 8: 0.7 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity	New Relativity
		After Prod Change			After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7481
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1529
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0261
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1012
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8004
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8235
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7511
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9355
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.7000	2.6534	2.6562
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5074
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6496
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8669
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7153
	812,577				0.9990	1.0000

Table 9: 0.8 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Current Units	Balanced Raw Relativity	Balanced Current Relativity	Credibility	Credibility Weighted Relativity	New Relativity
		After Prod Change			After Prod Change	
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7480
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1528
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0260
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1012
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8003
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8234
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7510
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9354
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.8000	2.7741	2.7767
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5073
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6495
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8668
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7152
	812,577				0.9991	1.0000

Table 10: 0.9 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Balanced Raw Relativity		Balanced Current Relativity	Credibility	Credibility Weighted Relativity	
	Current Units	After Prod Change			After Prod Change	New Relativity
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7479
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1527
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0259
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1012
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8002
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8234
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7509
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9353
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.9000	2.8949	2.8972
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5071
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6494
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8667
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7151
	812,577				0.9992	1.0000

Table 11: 1.0 Credibility Weighting Major Class 1 Balancing (Supporting Table 7)

Use	Balanced Raw Relativity		Balanced Current Relativity	Credibility	Credibility Weighted Relativity	
	Current Units	After Prod Change			After Prod Change	New Relativity
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7473	0.7479
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1525
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0257
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0178	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1012
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0417	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.8001
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8233
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7508
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9352
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	1.0000	3.0156	3.0177
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5059	1.5069
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6489	0.6493
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8666
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7151
	812,577				0.9993	1.0000

Table 12: Terr 1 Balancing with Goal Seek (Supporting Table 8)

Use	Balanced Raw Relativity		Balanced Current Relativity		Credibility Weighted Relativity		New Relativity	
	Current Units	After Prod Change	Current Relativity	Credibility	After Prod Change	After Prod Change	After Prod Change	After Prod Change
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7484
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4052	1.9282	2.2975	1.9316	2.3007
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5079
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6498
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7156
	812,577					0.9986		1.0000

Table 13: Terr 2 Balancing with Goal Seek (Supporting Table 8)

Use	Balanced Raw Relativity		Balanced Current Relativity		Credibility Weighted Relativity		New Relativity	
	Current Units	After Prod Change	Current Relativity	Credibility	After Prod Change	After Prod Change	After Prod Change	After Prod Change
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7483
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4494	1.9282	2.3509	1.9316	2.3540
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5079
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6497
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7155
	812,577					0.9987		1.0000

Table 14: Terr 3 Balancing with Goal Seek (Supporting Table 8)

Use	Balanced Raw Relativity		Balanced Current Relativity		Credibility Weighted Relativity		New Relativity	
	Current Units	After Prod Change	Current Relativity	Credibility	After Prod Change	After Prod Change	After Prod Change	After Prod Change
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7483
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4416	1.9282	2.3414	1.9316	2.3446
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5079
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6498
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7155
	812,577					0.9987		1.0000

Table 15: Terr 4 Balancing with Goal Seek (Supporting Table 8)

Use	Balanced Raw Relativity		Balanced Current Relativity		Credibility Weighted Relativity		New Relativity	
	Current Units	After Prod Change	Current Relativity	Credibility	After Prod Change	After Prod Change	After Prod Change	After Prod Change
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7483
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4669	1.9282	2.3720	1.9316	2.3751
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5078
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6497
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7155
	812,577					0.9987		1.0000

Table 16: Terr 5 Balancing with Goal Seek (Supporting Table 8)

Use	Balanced Raw Relativity		Balanced Current Relativity		Credibility Weighted Relativity		New Relativity	
	Current Units	After Prod Change	Current Relativity	Credibility	After Prod Change	After Prod Change	After Prod Change	After Prod Change
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7483
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4402	1.9282	2.3397	1.9316	2.3429
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5079
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6498
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7155
	812,577					0.9987		1.0000

Table 17: Balancing with Goal Seek Minimum (Supporting Table 9)

Use	Balanced Raw Relativity		Balanced Current Relativity		Credibility Weighted Relativity		New Relativity	
	Current Units	After Prod Change	Current Relativity	Credibility	After Prod Change	After Prod Change	After Prod Change	After Prod Change
All Purpose Motorhome	138	0.9078	0.7295	0.1000	0.7465	0.7473	0.7478	0.7484
All Purpose Passenger Vehicle	368,542	1.1518	1.1494	0.9679	1.1517	1.1517	1.1537	1.1533
All Purpose Truck 4540 kg or less	120,961	1.0232	1.0434	0.9092	1.0250	1.0250	1.0268	1.0264
Antique Vehicle	193	0.0009	0.0197	0.1000	0.0179	0.0178	0.0179	0.0178
Collector Passenger Vehicle	4,015	0.1303	0.0939	0.1982	0.1011	0.1011	0.1012	0.1013
Collector Truck 4540 kg or less	746	0.0684	0.0388	0.1000	0.0418	0.0417	0.0419	0.0418
Disabled Persons/Private/Business Bus	1,141	0.8901	0.7895	0.1000	0.7995	0.7995	0.8008	0.8006
Farm Passenger Vehicle	5,778	0.8250	0.8214	0.3475	0.8227	0.8227	0.8242	0.8238
Farming All Purpose Truck 4540 kg or less	30,234	0.7524	0.7450	0.7148	0.7503	0.7503	0.7516	0.7513
Fishing All Purpose Truck 4540 kg or less	304	0.8505	0.9439	0.1000	0.9345	0.9345	0.9361	0.9358
Passenger Vehicle-for-Hire (Passenger Vehicle)	780	3.0156	1.8083	0.4052	1.9282	2.2975	1.9316	2.3007
Passenger Vehicle-for-Hire (Truck 4,499 kg or less GVW)	17	1.8400	1.4687	0.1000	1.5060	1.5059	1.5086	1.5079
Pleasure Motorhome	4,459	0.7496	0.6241	0.1975	0.6486	0.6489	0.6497	0.6498
Pleasure Passenger Vehicle	214,004	0.8659	0.8687	0.9460	0.8660	0.8660	0.8675	0.8672
Pleasure Truck	61,265	0.7149	0.7130	0.8309	0.7146	0.7146	0.7158	0.7156
	812,577					0.9986		1.0000

Goal Seek Minimum 0.405193

APPENDIX 3: Resumes



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