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Actuarial Evidence

To: Manitoba Public Utilities Board

Date: September 20, 2023

From: Rajesh Sahasrabuddhe, Chris Schneider, Paula Elliott
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Subject: **Manitoba Public Insurance 2024 GRA**

1. Background

In June 2023, Manitoba Public Insurance Corporation (MPI) submitted its general rate application (2024 GRA or Application) for base rates and premiums for compulsory driver and vehicle insurance, effective April 1, 2024.

The Public Utilities Board (PUB) in Manitoba regulates compulsory automobile insurance rates in the province. The PUB is an independent regulatory agency responsible for ensuring that automobile insurance rates are fair and reasonable for consumers. The Public Interest Law Centre (PILC) subsequently retained Oliver Wyman to assist its client, the Manitoba Branch of the Consumers' Association of Canada (CAC Manitoba), in its participation in the PUB review of the 2024 GRA.

Our duty in providing assistance and giving evidence is to help the Public Utilities Board. This duty overrides any obligation to CAC Manitoba.

We intend the information that we provide in this report:

- to be fair, objective and non-partisan;
- to be related only to matters that are within our area of expertise; and
- to provide such additional assistance as the Public Utilities Board may reasonably require to determine an issue.

2. Executive Summary

2.1. Scope of Oliver Wyman Review

In Order No. 64/23, the Public Utilities Board of Manitoba (PUB or Board) established the issues within the scope of the review of the 2024 GRA. We initially identified the issues listed in Table 1 as within the scope of our experience and expertise.

Table 1: MPI 2024 GRA Actuarial Issues

PUB Issue	Description
Rate Level Change	
1	Projected claims, expenses, and vehicle counts based on accepted actuarial practice in Canada
2	Large loss loading based on Order 4/23, Directive 2
11	Claims forecasting, including but not limited to PIPP and changes or enhancements to claims forecasting design
Merit Rating	
15	Driver Safety Rating (DSR), including but not limited to MPI's progress towards a plan for changes to the DSR model, moving vehicle discounts, and driver premiums by one-fourth of the way to the actuarially indicated percentage, and implementation of Order 4/23, Directives 15 and 16
Prior Period Run-off	
5	Financial forecast: • Financial forecast accuracy (2022/23 forecast versus actual results) • Changes in projected financial results
16	Run-off of prior year claims during 2022/23

Issue 2 relates to class rates, rather than the overall rate level. As such, we concluded that other intervenors, were better positioned to review this issue.

This Briefing Note summarizes our review of the issues identified.

- We present our analysis of Issues 1, and 11 in Section 4.
- We present our analysis of Issue 15 in Section 5
- We present our analysis of Issue 5 and 16 in Section 6

MPI has requested a rate change of 0.0%. We estimate[1] the indicated loss cost change to be -4.26% and the indicated premium change to be -3.63%.

2.2. Findings and Conclusions

Based on our review of the GRA, we concluded alternative assumptions related to the following would be more reasonable than MPI's assumptions. We summarize those alternative assumptions in Table 2.

[1] Subject to immaterial rounding differences in our replication of MPI's rate change model.

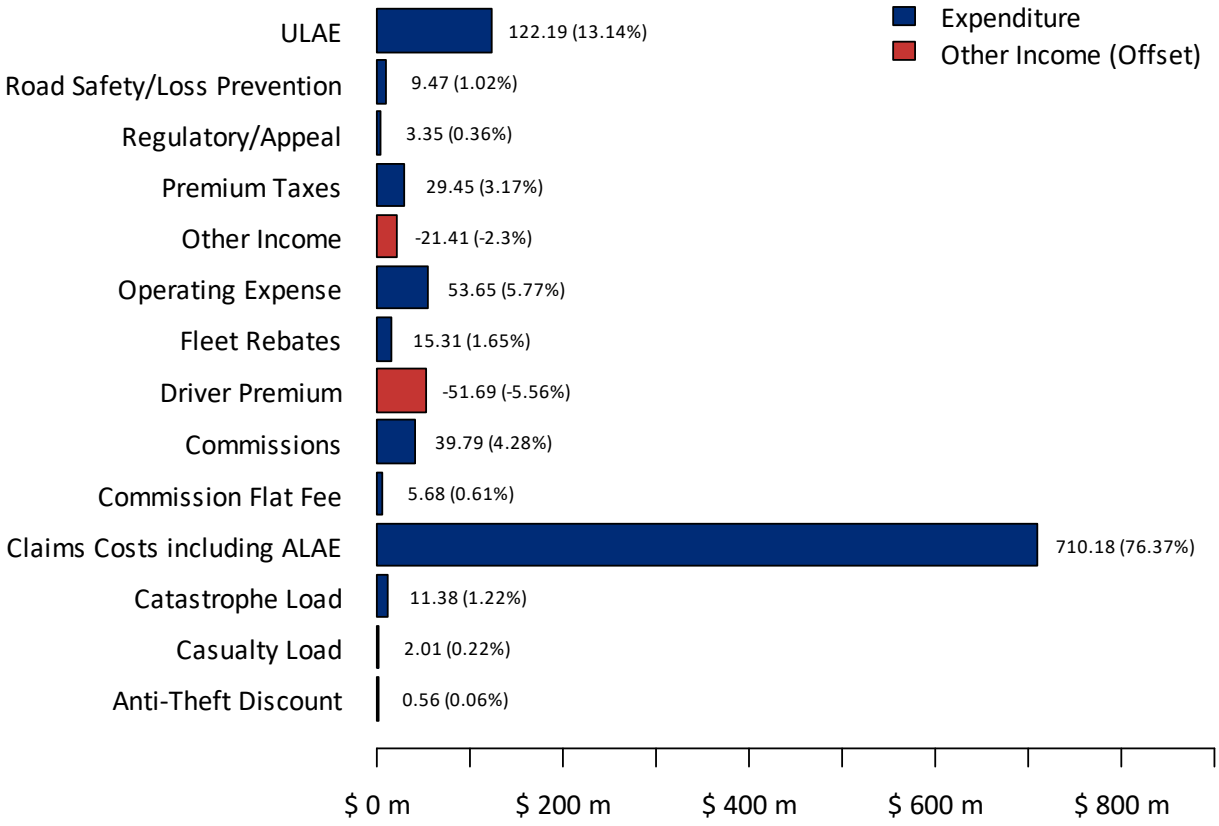
Table 2: Summary of Oliver Wyman Proposed Alternative Assumptions

Assumption	Coverage Affected	Section
Accident Year Weights	AB-WI, AB-O (I), BI, CL, and PD	Section 4.1
Past Trends	AB-WI, AB-O (I), CL, CM, and PD	Sections 4.3, 4.4, 4.7, 4.8, 4.9, 4.10, and 4.11
Future Trends	AB-O (NI)	Section 4.5

3. Premium Components

MPI projects the overall required premium for the 2024/25 rating year as the sum of projected discounted claims and expenses, offset for other income received (driver premium, and service fees, and other revenues). We present the distribution of required premium by component in Figure 1.

Figure 1: Components of Required Premium

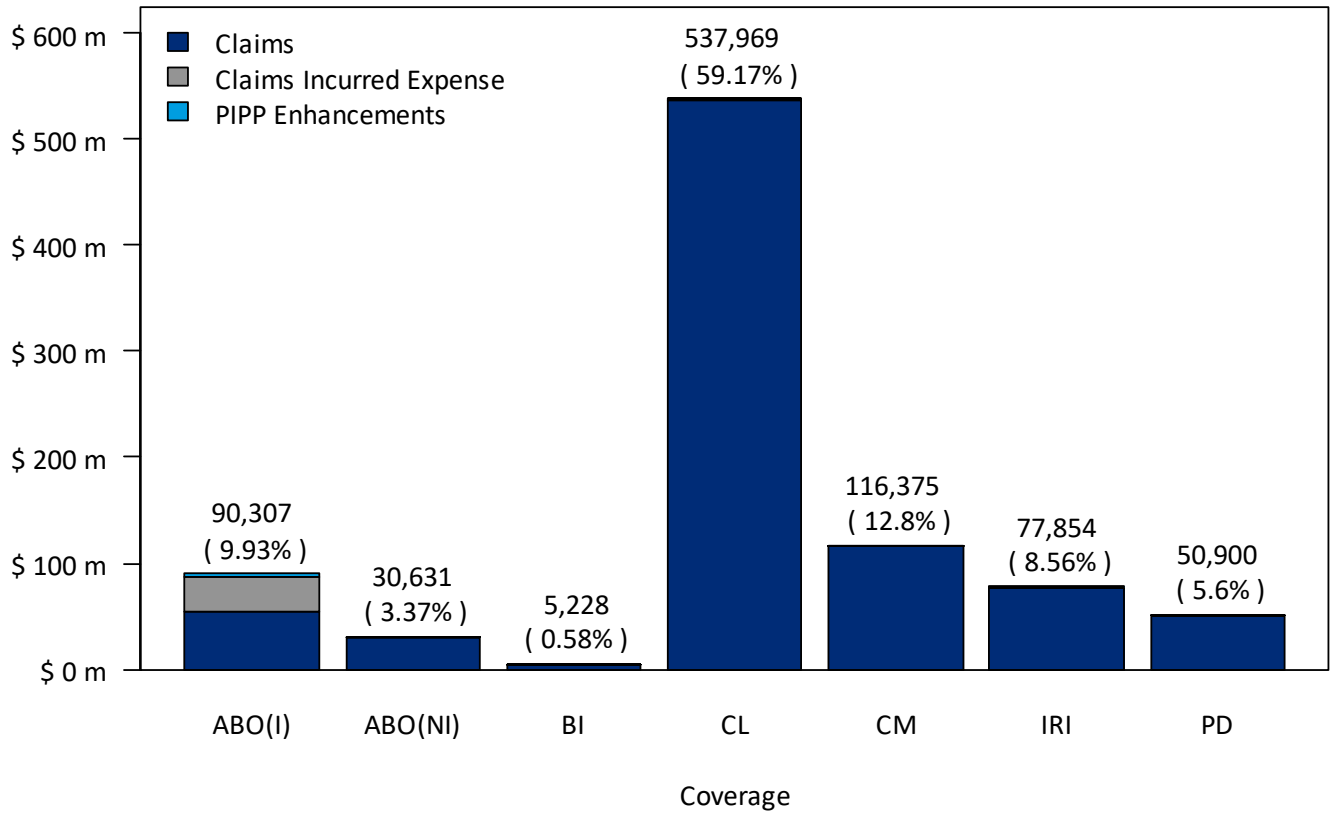


As presented in Figure 1, approximately 89.5%[2] of the total premium relates to claim costs and claims handling expenses.

- The claims experience reviewed by MPI includes allocated loss adjustment expenses (ALAE) associated with individual claims (such as the legal expenses associated with claim settlement). MPI's forecasted claim amounts (also referred to as loss costs) represent the majority of the premium and are the focus of our review.
- Unallocated loss adjustment expenses (ULAE) cannot be attributed to a specific claim and are estimated separately. We review MPI's ULAE provisions, and other expense provisions in Section 4.13 of this report.

Throughout this report, references to "claims costs" or "loss costs" include ALAE but exclude ULAE. We present the distribution of MPI's estimated claim costs by coverage in Figure 2.

Figure 2: Distribution of Claim Costs



[2] 89.52% = 76.37% + 13.14%

4. Rate Level Changes

MPI estimates average claim cost for the 2024/25 rating year based on its projections for accident years incepting April 1, 2024, 2025, and 2026.

MPI develops future accident year claim projections using the following procedure:

- MPI develops trend and mobility factors based on the results of a regression analysis of adjusted historical loss costs for each coverage. In addition to the trend parameters that measure changes over time, the regression models include a "mobility" parameter, if significant, to consider the effect of reduced traffic volumes during the COVID-19 pandemic. MPI fits regression models to the estimated frequency and severity to measure the change in cost level over time.
- MPI applies trend to the adjusted ultimate loss costs to calculate estimated ultimate claim costs at a common accident year 2022 cost and mobility level. We refer to these adjusted loss costs as "on-level" loss costs.
- MPI selects a loss cost at an accident year 2022 cost and mobility level based on a weighted average of the recent on-level loss cost experience. We discuss the accident year weights in Section 4.1.
- MPI applies a +5.56% future work-form home (WFH) adjustment. MPI developed the WFH adjustment based on survey data related to changing commuting patterns (relative to 2022). We discuss MPI's WFH adjustment in Section 4.2.
- MPI applies its previously determined trend parameters to its final projected accident year 2022 loss costs to project loss costs for accident years 2024 through 2026. We review MPI's projections for each coverage in Section 4.3 through Section 4.11 of this report.

4.1. Accident Year Weights

For coverages where the impact of the change in mobility during the COVID-19 pandemic is significant, MPI's weighted average 2022 loss cost level is based on an average of the 2017, 2018, 2019, 2021, and 2022 data observations with 20% weight assigned to each year. With respect to the exclusion of the 2020 claims experience, MPI states:

> " For coverages where COVID-19 impacted frequency, accident year 2020 was excluded from the experience period in estimating future loss costs. MPI's WFH adjustment is intended to adjust for mobility changes related to commuting to workplaces and it doesn't account for reductions in the other mobility categories (e.g., groceries and pleasure)."

We interpret MPI's rationale for excluding 2020 experience to be a concern of the accuracy of the WFH adjustment for 2020; not a position that the WFH adjustment for other years is without concern.

We summarize MPI's selected accident year weights by coverage in Table 3.

Table 3: MPI Accident Year Weights

Insurance Year	AB-WI	AB-O (I)	AB-O (NI)	BI	CL	CM	PD
2017	20%	20%	0%	20%	20%	0%	20%
2018	20%	20%	20%	20%	20%	20%	20%
2019	20%	20%	20%	20%	20%	20%	20%
2020	0%	0%	20%	0%	0%	20%	0%
2021	20%	20%	20%	20%	20%	20%	20%
2022	20%	20%	20%	20%	20%	20%	20%

Findings and Conclusion

We describe MPI frequency and severity regression modeling in Section 4.3 to Section 4.11. We generally observe that MPI's frequency regression models overpredict (i.e., the fitted model values exceed the actual data values) the 2020 observation and underpredict (the fitted model values are less than the actual data values) the 2021 observation. An overprediction results in a *lower* past WFH adjustment; an underprediction results in a *higher* past WFH adjustment. MPI states that most of this unexplained variance may be explained by snowfall levels, as 2020 experienced significantly less snowfall than 2021.

Our findings related to accident year weights are as follows:

- Although we find the snowfall explanation reasonable, the longer-term claims experience does not indicate that 2021 represents a 1 in 5-year outcome, as implied by the MPI weights. We find including both 2020 and 2021 better reflects the average snowfall levels that would be expected in a "normal" year.
- Rate filings that we review, particularly those for insurers with higher premium volumes such as MPI,[3] consider the most recent three-to-five-year as the experience period to which weights are assigned. MPI has chosen to assign 20% weight to the 2017 experience (and 0% weight to 2020 experience) effectively using a 6-year experience period. We find the older 2017 experience may be less reflective of the more recent emerging data.
- The WFH adjustment notwithstanding, we recognize that the predictive value of experience for both 2020 and 2021 may be subject to additional uncertainty, not just the 2020 experience. We do not find MPI's rationale for excluding 2020 but including 2021 to be compelling. The rationale of uncertainty surrounding the WFH adjustment for mobility changes applies to both 2020 and 2021. Therefore, we find it more reasonable to consider appropriate weights for both the 2020 and 2021 accident years.

For comprehensive and accident benefits - other (NI), MPI assigns weights of 20% to each of 2018 to 2021, which we find to be reasonable. For the remaining coverages, where MPI gives 0% weight to 2020, and 20% weight to 2017, we suggest:

[3] We review commercial rate filings in Alberta, Ontario, New Brunswick, Newfoundland and Labrador, and Nova Scotia. In those provinces, we have reviewed rate applications filed by large commercial insurers including Intact, Aviva, Economical, Desjardin and Co-Operators, among others. In addition to our review of the MPI GRA, we review the rate filings of the crown corporations in British Columbia and Saskatchewan.

- 25% weight for each of 2018, 2019, and 2022.
- 25% weight for 2020 and 2021 combined, based on an allocation of that weight between 2020 and 2021 that considers the relative likelihood[4] of those observations, given the observations for all other years.

Our suggested approach (i) acknowledges the uncertainty of both the 2020 and 2021 experience, without excluding either year, with only 25% weight assigned on a combined basis (ii) uses the more recent data, rather than the older less relevant 2017 experience, and (iii) splits the combined 25% weight in a manner that considers whether 2020 or 2021 are possible outliers (i.e., if relatively too high or too low, we allocate proportionately less weight).

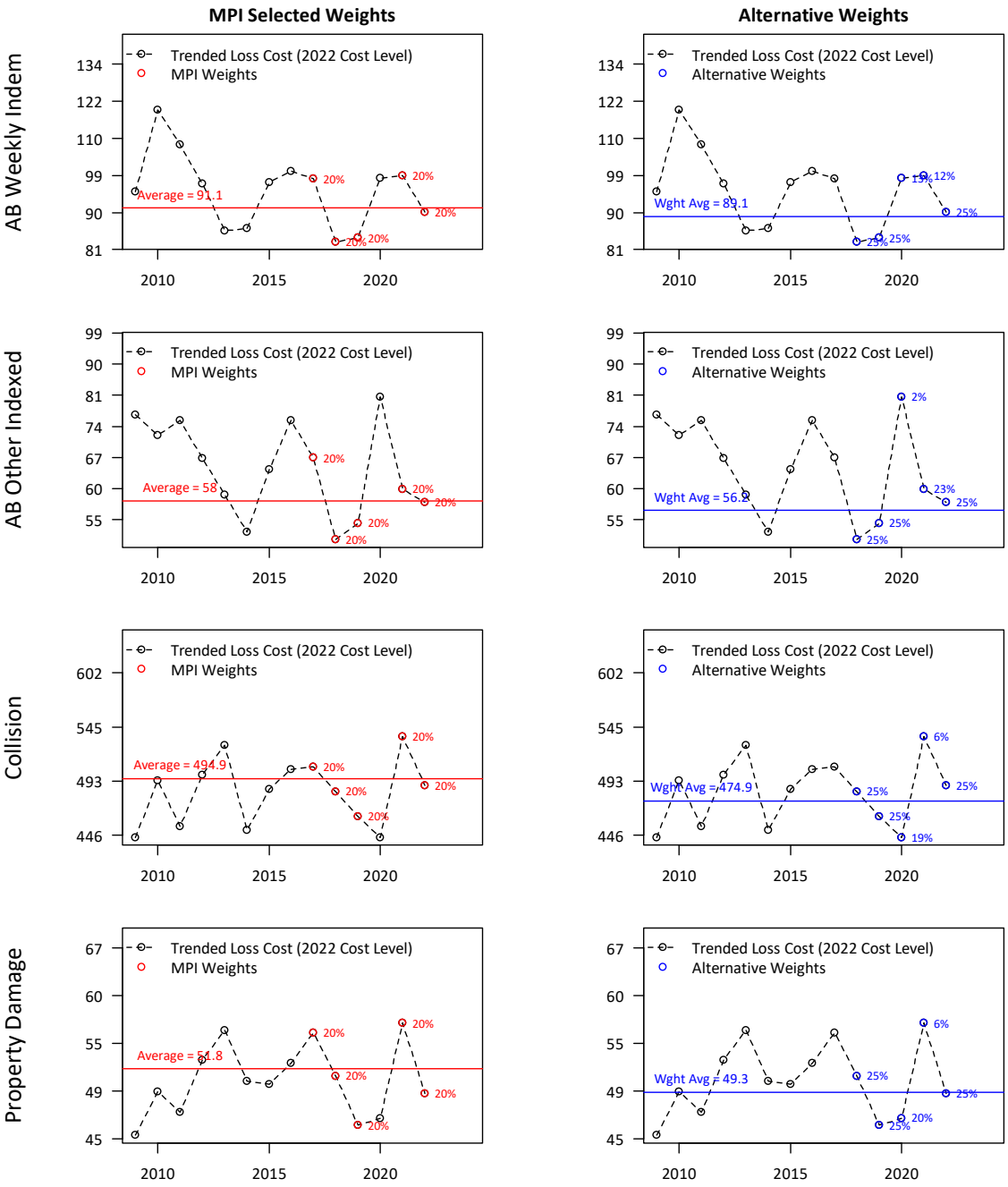
Table 4: Oliver Wyman Accident Year Weights[5]

Insurance Year	AB-WI	AB-O (I)	AB-O (NI)	BI	CL	CM	PD
2017	0%	0%	0%	0%	0%	0%	0%
2018	25%	25%	20%	25%	25%	20%	25%
2019	25%	25%	20%	25%	25%	20%	25%
2020	13%	2%	20%	9%	19%	20%	20%
2021	12%	23%	20%	16%	6%	20%	6%
2022	25%	25%	20%	25%	25%	20%	25%

[4] The absolute likelihood based on the mean and standard deviation of the observations from 2009-2019 and 2022. We calculate the difference between the 2020 and 2021 application and the mean of unaffected years and normalize by dividing by standard deviation. We calculate the z-score of for the deviation and use a two-tailed distribution to determine the probability of observing a value as or more extreme than observation for 2020 and 2021. We normalize the absolute likelihoods to determine the relative likelihoods.

[5] Displayed weights may not sum to 100% due to rounding. The Oliver Wyman replicated rate change model considers unrounded values.

Figure 3: Comparison of Alternative Weights[6]



[6] Excludes bodily injury for materiality.

4.2. Work From Home Adjustment

Past Work From Home Adjustment

MPI applies a *past* work from home adjustment to pre-pandemic periods to adjust those observations to an accident year 2022 mobility level. MPI calculates this adjustment using the mobility parameter and the fitted mobility coefficient from the regression models described above. As Manitobans drive less in 2022 than prior to the pandemic (i.e., 2019 and prior), the past work from home adjustment results in a reduction to pre-pandemic loss costs to adjust to 2022 mobility levels. As Manitobans drove *more* in 2022 than at the outset of the pandemic (i.e., 2020 and 2021), the past work from home adjustment results in an increase to in-pandemic loss costs to adjust to 2022 mobility levels.

Future Work From Home Adjustment

MPI estimates a *future* work from home adjustment based on its *Driving Behaviour Survey 2023* (included as Part VI – CF Attachment A to the GRA). MPI applies this adjustment to all coverages where its past trend models include a mobility parameter. The survey collected data on estimated and expected (future) commuting patterns and average annual kilometres driven in 2019, 2022, and 2023. Survey responses indicated an expected increase in number of days per week travelling to work or school from 3.6 to 3.8 between 2022 and 2023. MPI uses this metric as the basis for its 1.0556 future work from home adjustment. Consistent with this adjustment, the survey also estimates that the annual total kilometres driven will increase by approximately 5% between 2022 and 2023.

Findings and Conclusion

As discussed in the following sections, to develop *past WFH* adjustments, MPI includes an additional mobility parameter in its frequency model for all coverages except comprehensive and accident benefits other (non-indexed). We find this to be reasonable.

There is limited available data and significant uncertainty regarding post-pandemic (i.e., future) driving behaviour. We find that an assumption of increased driving activity following the end of the public health emergency created by the pandemic to be reasonable. We also consider the magnitude of the change to be reasonable. As a result, we find the proposed work from home adjustment factor to be reasonable given the circumstance.

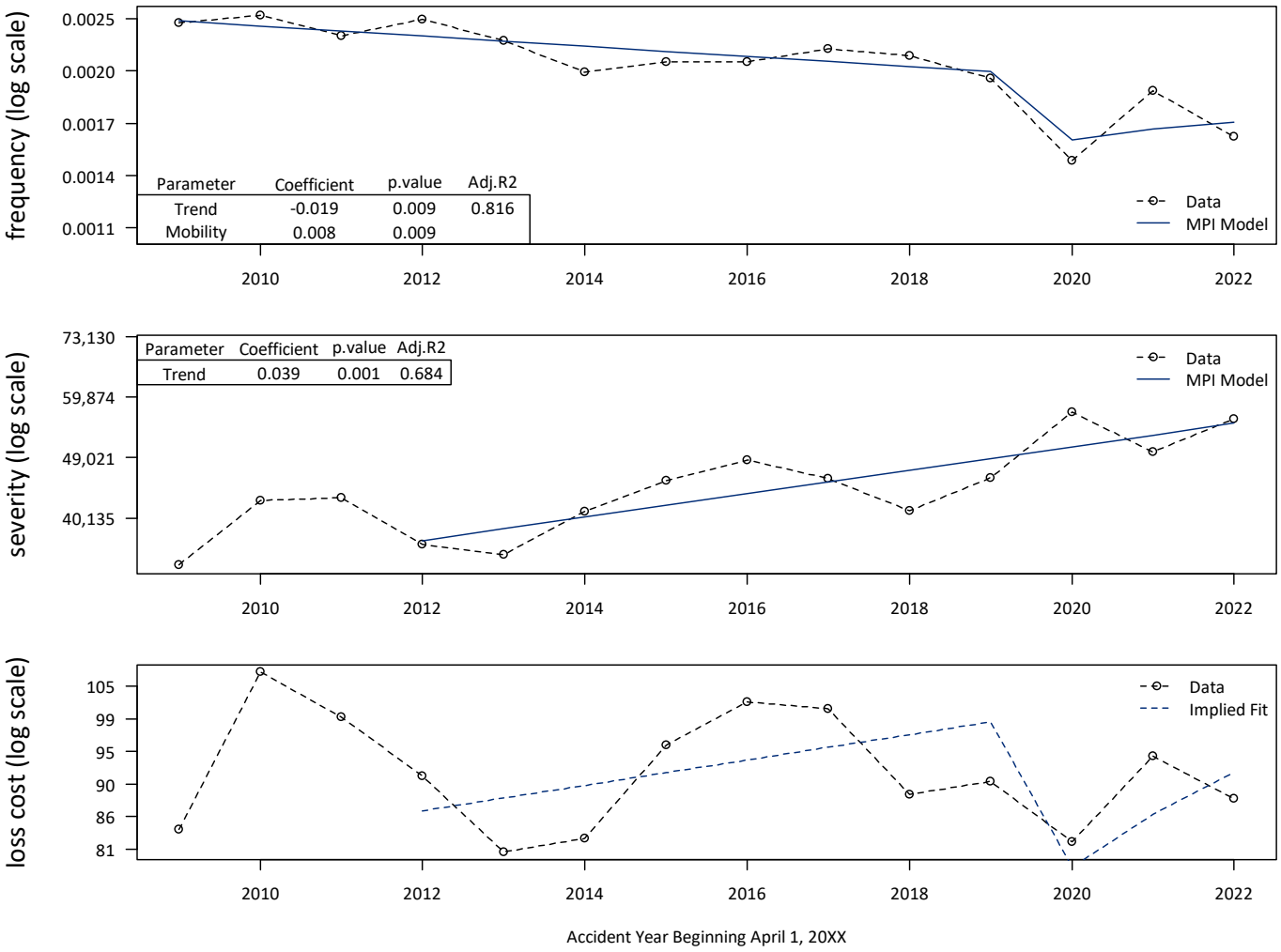
4.3. Accident Benefits – Weekly Indemnity Claims

Past Trend

Figure 4 presents the trend models used by MPI in forecasting accident benefits – weekly indemnity claims.

- The upper panel presents the historical frequency data, and the MPI model fit to the observations from accident years 2009 through 2022.
- The middle panel presents severity data, and the MPI model fit to the observations from accident years 2012 through 2022.
- The lower panel presents loss cost data, and the loss costs implied by MPI's frequency and severity models.

Figure 4: Accident Benefits - Weekly Indemnity MPI Trend Model



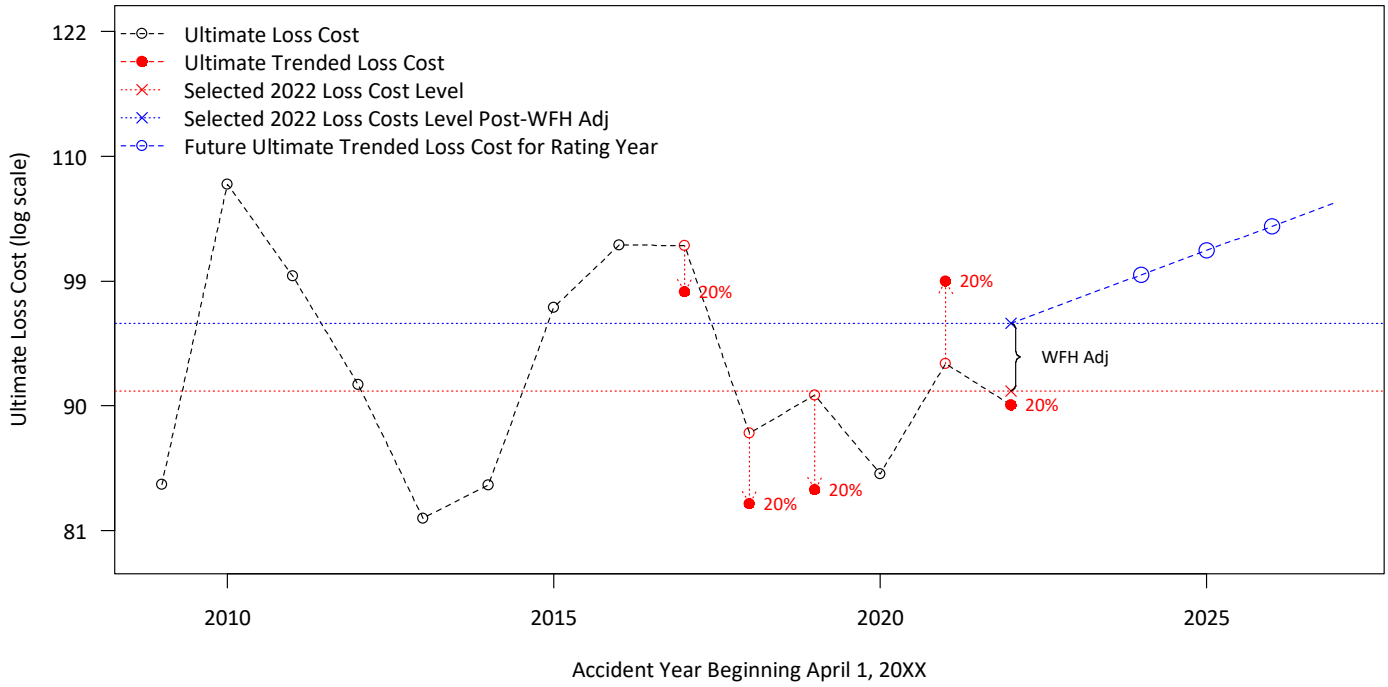
Future Trend

MPI selects future frequency and severity trends that are equivalent to its selected past trend rates (as implied by the above models).

Rating Year 2024/25 Loss Cost Projection

Figure 5 presents MPI's historical and future projected ultimate adjusted loss cost for Accident Benefits – Weekly Indemnity.

Figure 5: Accident Benefits - Weekly Indemnity MPI Rating Year 2024/25 Loss Cost Projection

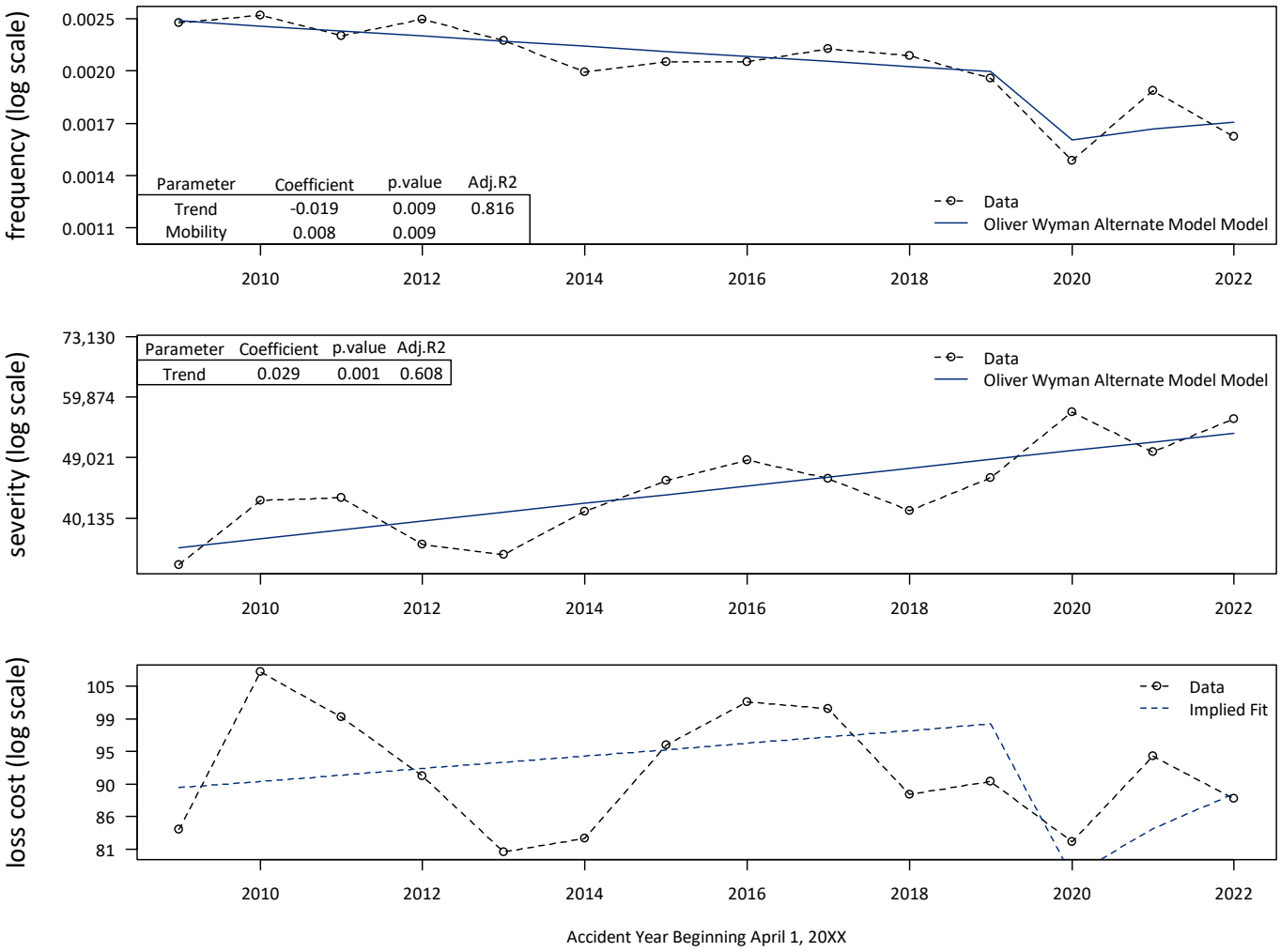


Findings and Conclusion

We discuss our findings related to MPI's accident year weights in Section 4.1. It is our view that, absent compelling reasons, frequency and severity models should consider the same time period. We note that MPI's frequency model consider observations from 2009 through 2022; whereas the severity model considers 2012 through 2022. This difference is more concerning as 2012 is a "low point" in the severity data and a "high point" in the frequency data. We appreciate the additional volatility (and resulting lower R^2) introduced by the additional data points. However, we don't consider this a compelling rationale for exclusion of those data points.

As indicated in Part VI - CF Appendix 3a, Table 1, this results in a severity trend reduction of one percentage point, from 3.96% to 2.96%. We suggest this alternative, which we present in Figure 6, to be more reasonable.

Figure 6: Accident Benefits - Weekly Indemnity Alternative Trend Model



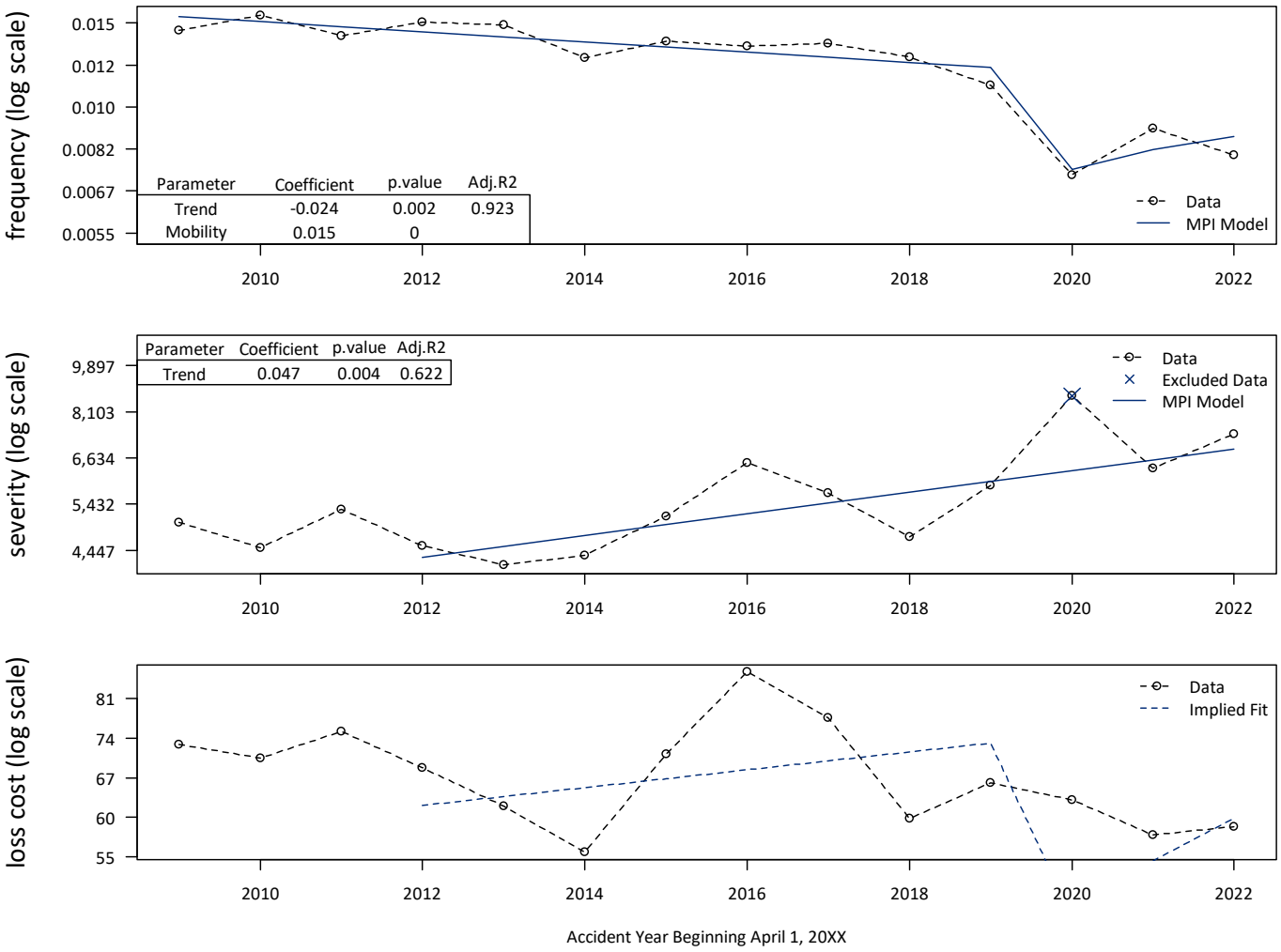
4.4. Accident Benefits – Other (Indexed) Claims

Past Trend

Figure 7 presents the trend models used by MPI in forecasting accident benefits – other (indexed) claims.

- The upper panel presents the historical frequency data, and the MPI model fit to the observations from accident years 2009 through 2022.
- The middle panel presents severity data, and the MPI model fit to the observations from accident years 2012 through 2022, excluding 2020.
- The lower panel presents loss cost data, and the loss costs implied by MPI's frequency and severity models.

Figure 7: Accident Benefits - Other (Indexed) MPI Trend Model



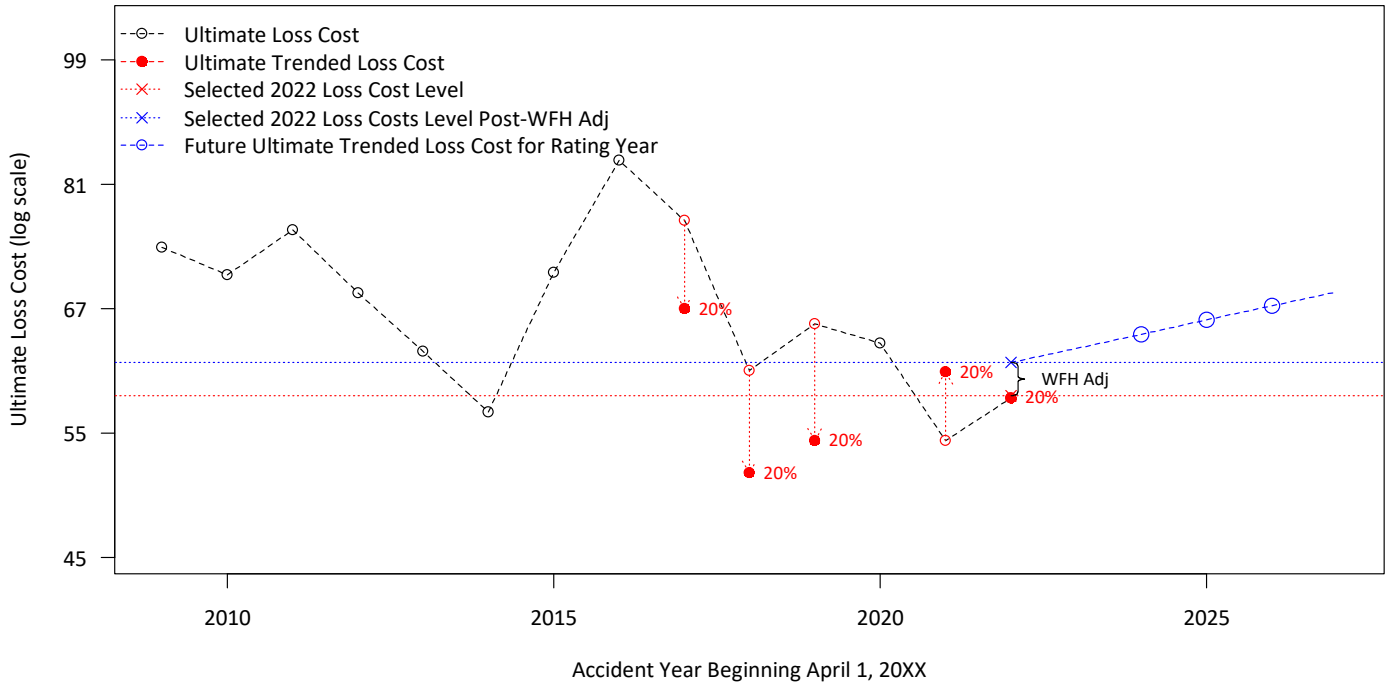
Future Trend

MPI selects future frequency and severity trends that are equivalent to its selected past trend rates (as implied by the above models).

Rating Year 2024/25 Loss Cost Projection

Figure 8 presents MPI's historical and future projected ultimate adjusted loss costs for accident benefits – other (indexed).

Figure 8: Accident Benefits - Other (Indexed) Ultimate Adjusted Loss Cost

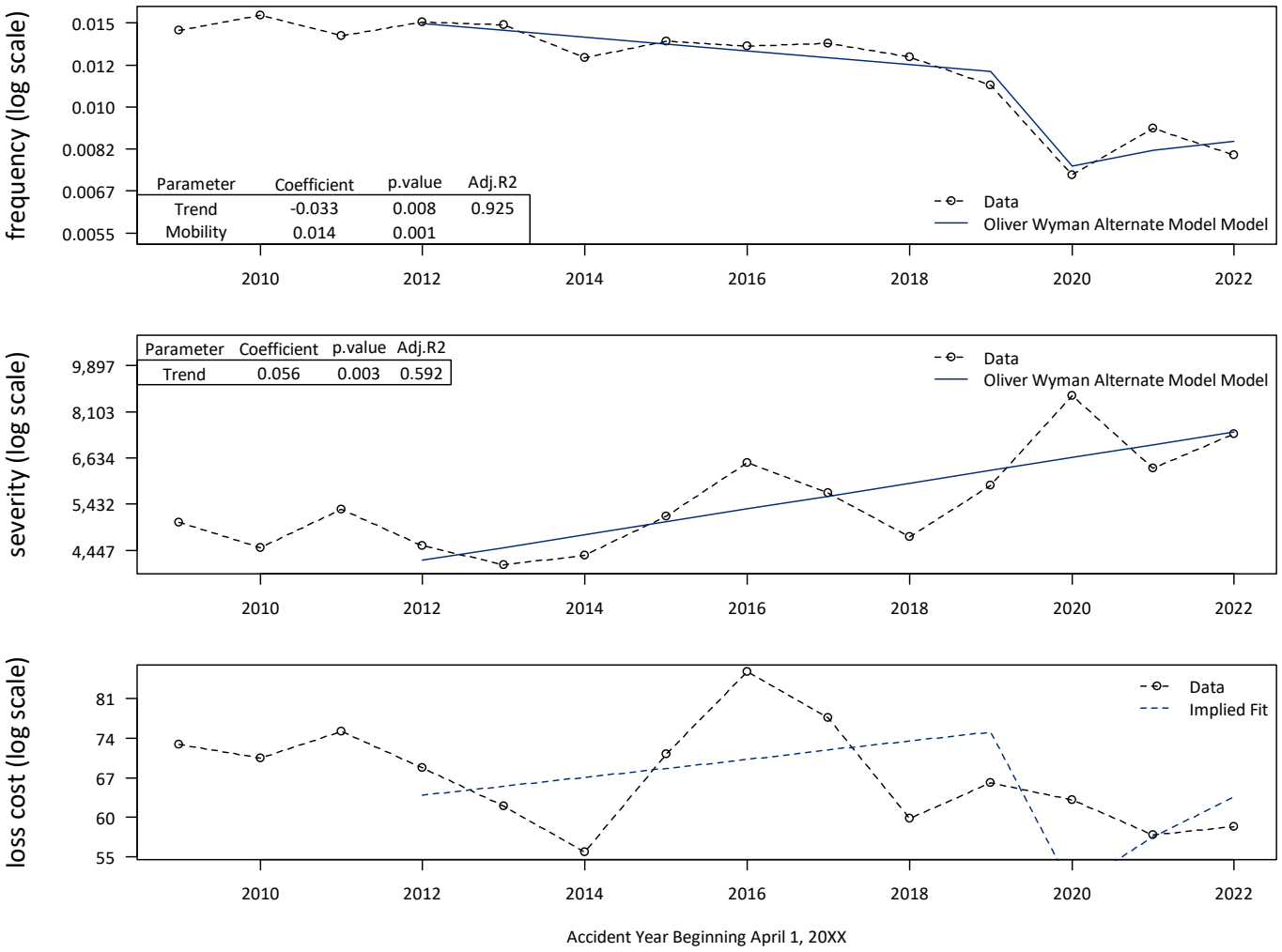


Findings and Conclusion

We discuss our findings related to MPI's accident year weights in Section 4.1. It is our view that, absent compelling reasons, frequency and severity models should consider the same time period. We note that MPI's frequency model consider observations from 2009 through 2022; whereas the severity model considers 2012 through 2022. We recognize the changing pattern in the severity data before and after 2012. Therefore, we find it more reasonable that both models consider data between 2012 and 2022.

As indicated in Part VI - CF Appendix 3b, Table 1, this results in frequency trend reduction of 0.83 percentage points, from -2.39% to -3.22%. We suggest this alternative, which we present in Figure 9, to be more reasonable.

Figure 9: Accident Benefits - Other (Indexed) Alternative Trend Model



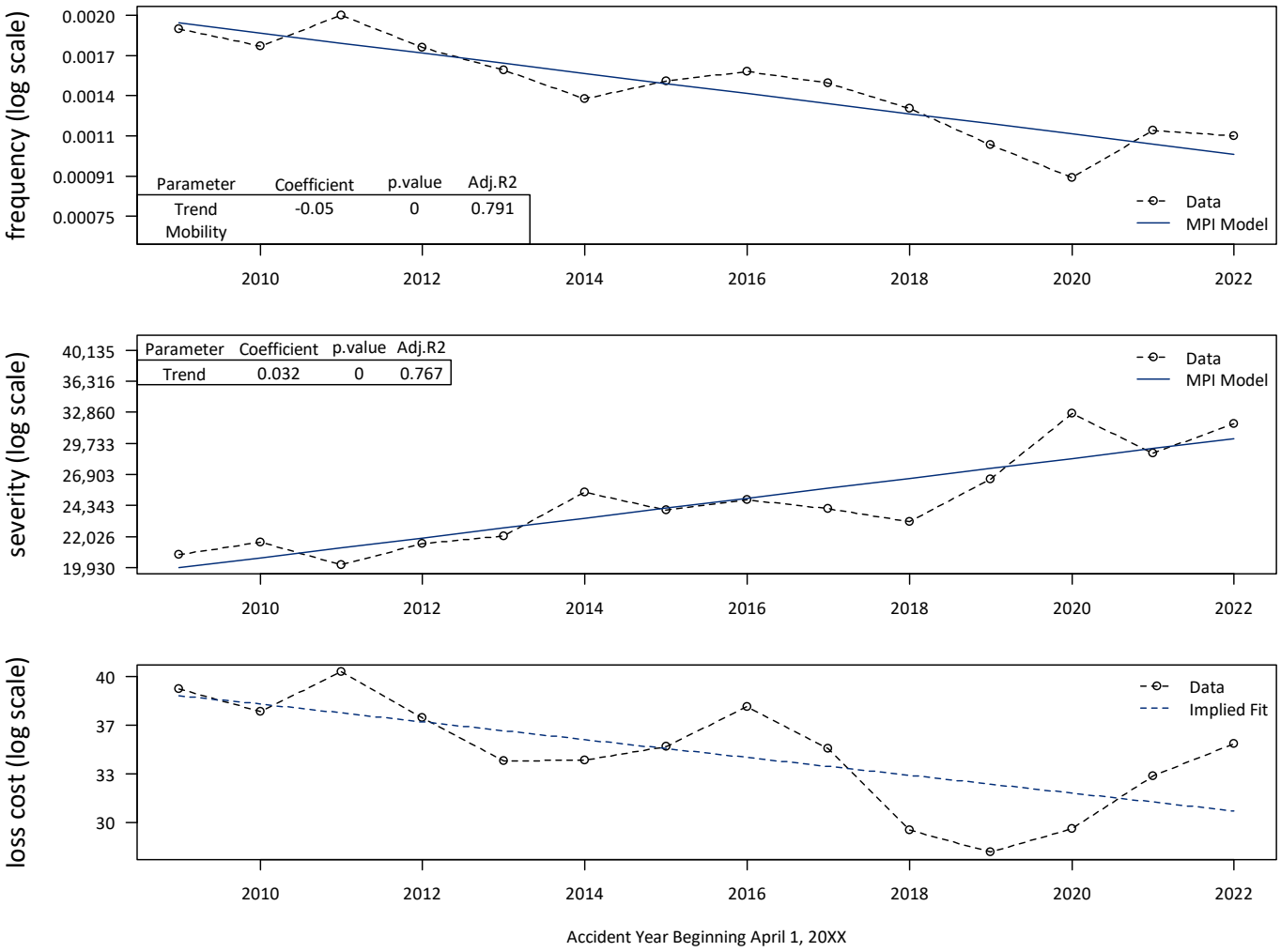
4.5. Accident Benefits – Other (Non-Indexed) Claims

Past Trend

Figure 10 presents the trend models used by MPI in forecasting accident benefits – other (non-indexed) ("ABI-O (NI)") claims.

- The upper panel presents the historical frequency data, and the MPI model fit to the observations from accident years 2009 through 2022.
- The middle panel presents severity data, and the MPI model fit to the observations from accident years 2009 through 2022.
- The lower panel presents loss cost data, and the loss costs implied by MPI's frequency and severity models.

Figure 10: Accident Benefits - Other (Non-Indexed) MPI Trend Model



Future Trend

MPI selects different past and future frequency and severity trend rates for accident benefits -other (non-indexed). MPI selected the following frequency and severity trends for the future period, rather than the trends implied by the models presented above.

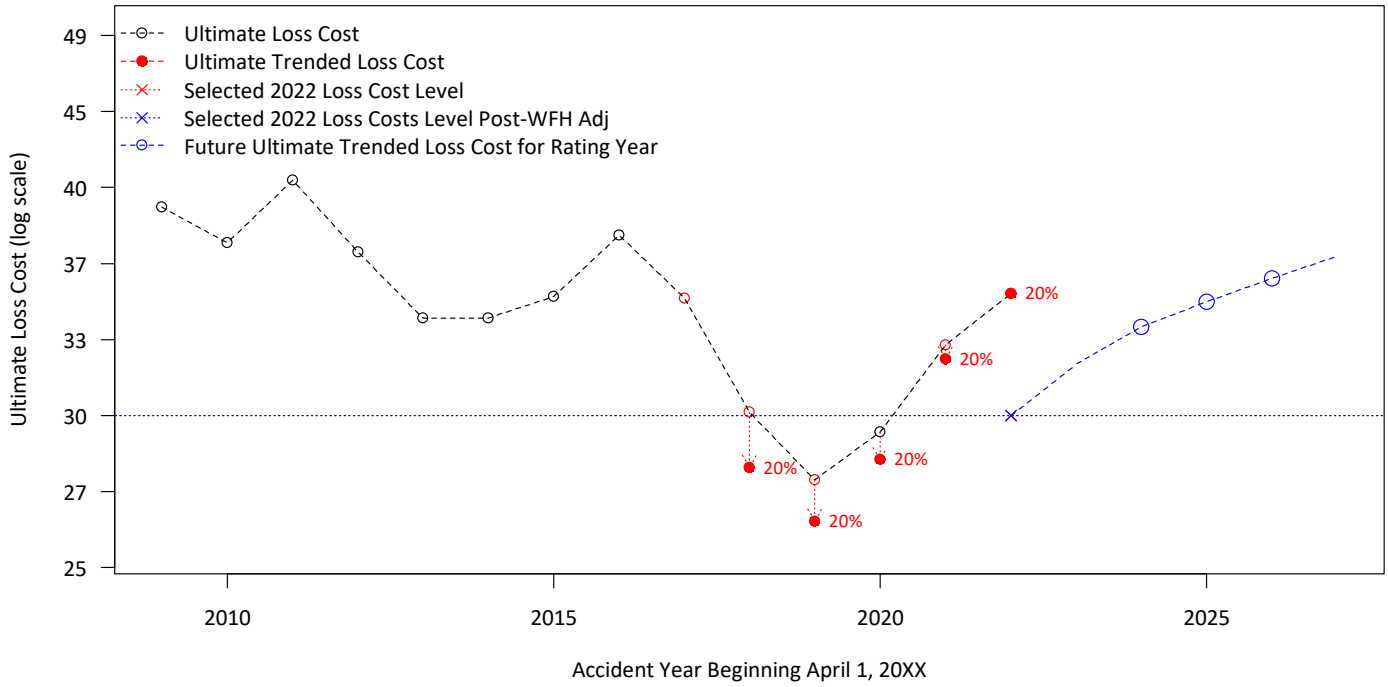
- MPI **judgmentally** selects a 0% frequency trend for the prospective period based on the most recent experience.

- MPI estimates future severity at one percentage point *above* expectation of its expectation of general inflation for 2023 to 2027 lagged by one year based on the correlation observed between these variables.[7] As a result, MPI projects year-over-year increases of 7.0%, 5.0%, 3.4%, 3.1%, and 3.0% for 2023 through 2027, respectively.

Rating Year 2024/25 Loss Cost Projection

Figure 11 presents MPI's historical and future projected ultimate adjusted loss costs for ABI-O(NI). MPI does not apply a WFH adjustment as it finds COVID-19 has not had a significant impact on this coverage. MPI notes that ABI O(NI) coverage provides lump sum payments in the most severe automobile accidents and that these claims are relatively rare. As noted in other jurisdictions, the number of fatal accidents has been less impacted by the pandemic.

Figure 11: Accident Benefits – Other (Non-Indexed) Rating Year 2024/25 Loss Cost Projection



Findings and Conclusion

We discuss our findings related to MPI's accident year weights in Section 4.1. We have no issues with MPI's ABI-O(NI) frequency and severity models. For future trend, we appreciate MPI's view of flatter recent frequency experience. However, the severity experience in that same period is also somewhat flatter. We find that the increase in frequency trend for the future relative to the past from -4.90% to 0.0% to be too significant. We accept that some tempering may be appropriate and suggest a 50% tempering from -4.90% to -2.45%.

[7] The maximum amounts payable for ABO Non-Indexed benefits increase annually at the Manitoba CPI lagged by one year.

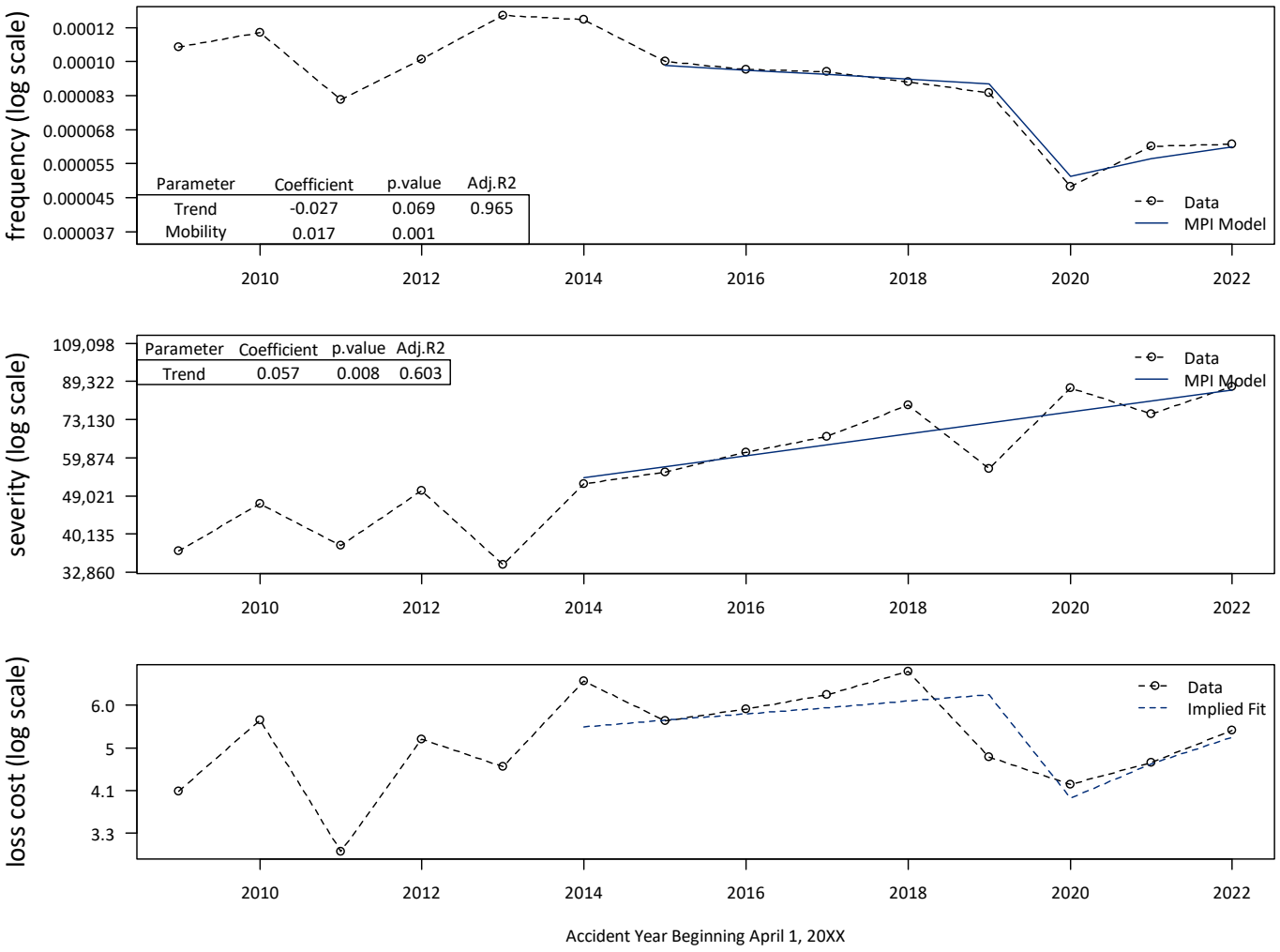
4.6. Bodily Injury Claims

Past Trend

Figure 12 presents the trend models used by MPI in forecasting bodily injury claims.

- The upper panel presents the historical frequency data, and the MPI model fit to the observations from accident years 2015 through 2022.
- The middle panel presents severity data, and the MPI model fit to the observations from accident years 2014 through 2022.
- The lower panel presents loss cost data, and the loss costs implied by MPI's frequency and severity models.

Figure 12: Bodily Injury MPI Trend Model



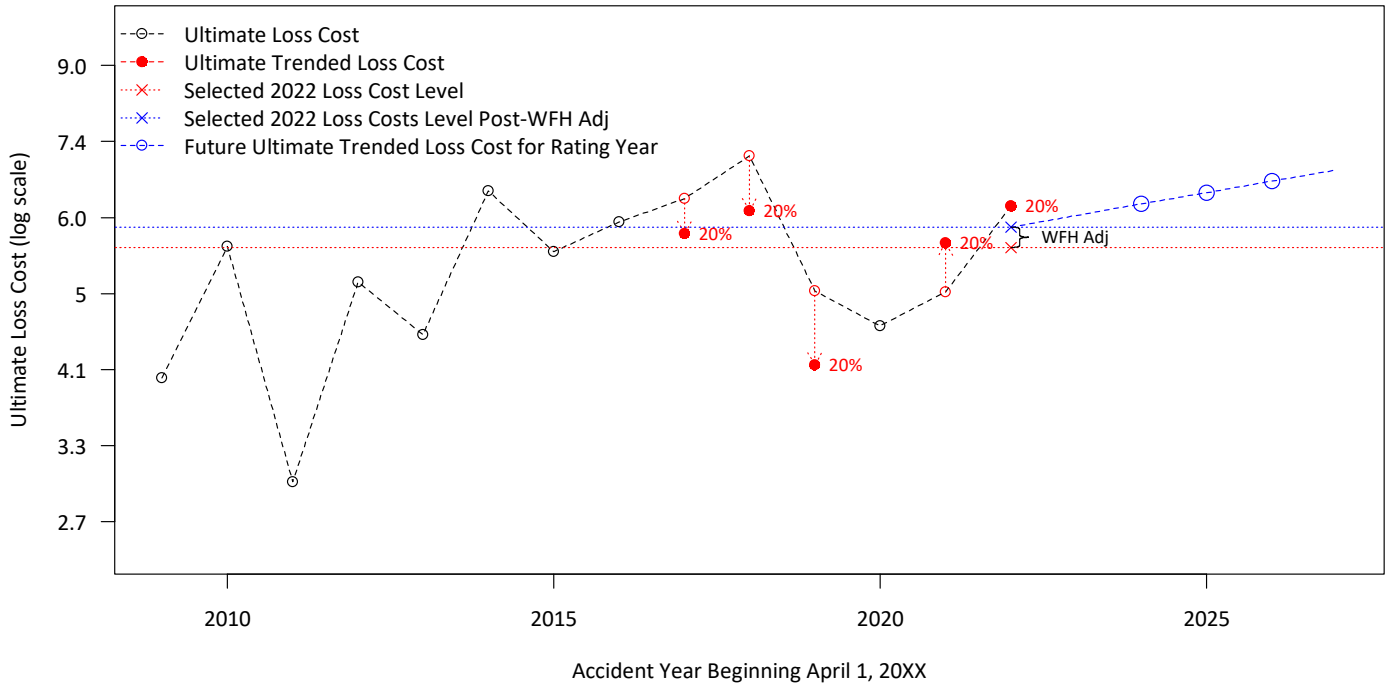
Future Trend

MPI selects future frequency and severity trends that are equivalent to its selected past trend rates (as implied by the above models).

Rating Year 2024/25 Loss Cost Projection

Figure 13 presents MPI's historical and future rating year 2024/25 loss cost projection for bodily injury.

Figure 13: Bodily Injury Rating Year 2024/25 Loss Cost Projection



Findings and Conclusion

We discuss our findings related to MPI's accident year weights in Section 4.1. We have no material issues with MPI's frequency and severity models.

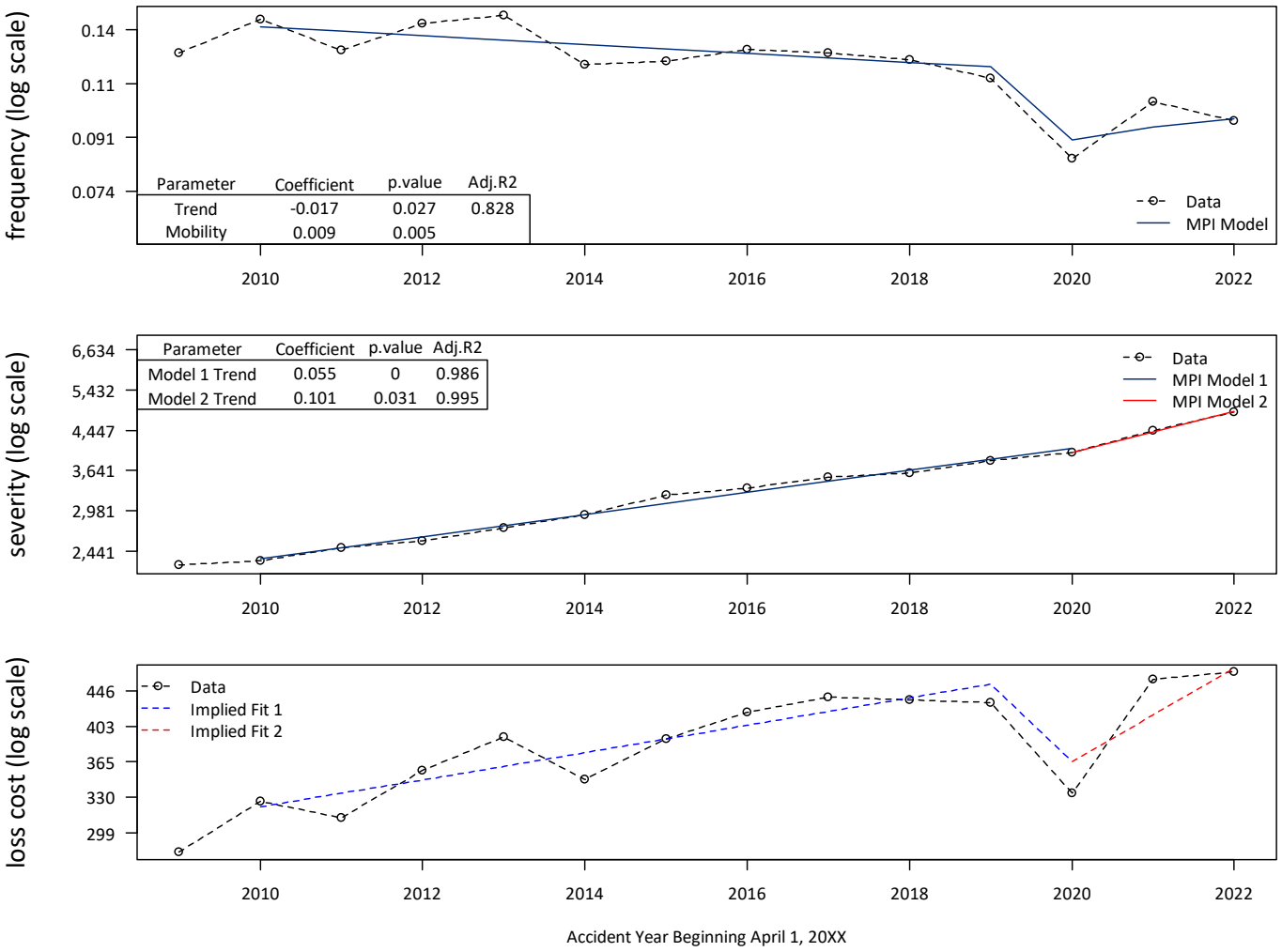
4.7. Collision Claims

Past Trend

Figure 14 presents the trend models used by MPI in forecasting collision claims.

- The upper panel presents the historical frequency data, and the MPI model fit to the observations from accident years 2010 through 2022.
- The middle panel presents severity data, and the MPI (piecewise) model fit to the observations from accident years 2010 through 2022.
- The lower panel presents loss cost data, and the model implied by MPI's frequency and severity models.

Figure 14: Collision MPI Trend Model



Future Trend

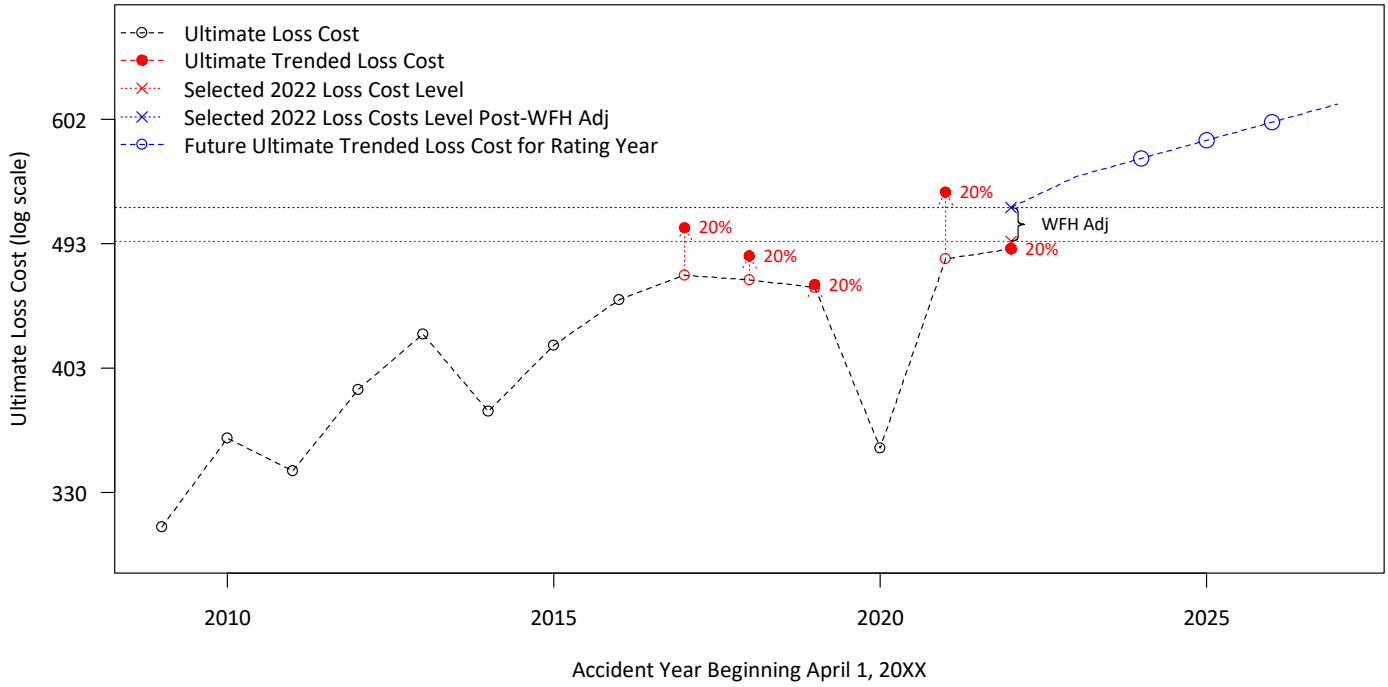
MPI selects a future frequency trend that is equivalent to its selected past trend rate (implied by the above model).

MPI estimates future severity trend by considering individual cost component of repairs and total loss claims using MPI's closed claims data from April 2016 to March 2022. The resulting future severity trend is +4.46% from 2022 to 2023 and +2.97% thereafter.

Rating Year 2024/25 Loss Cost Projection

Figure 15 presents MPI's historical and future rating year 2024/25 loss cost projection for collision.

Figure 15: Collision Ultimate MPI Adjusted Loss Cost



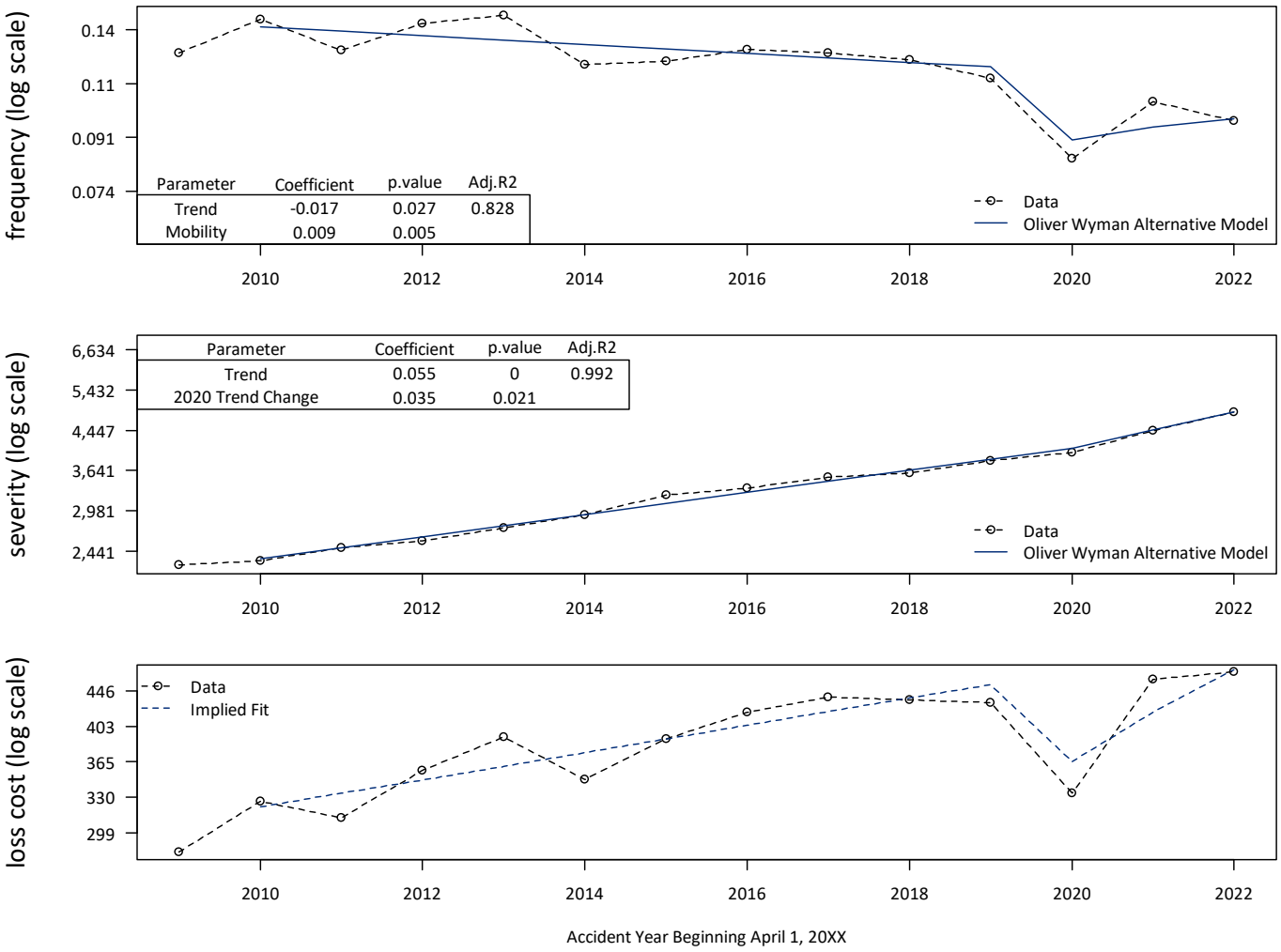
Findings and Conclusion

We have no issues with MPI's collision frequency model and do not discuss this model further.

As presented in Figure 11, MPI selects a different severity trend between 2020 to 2022 based on a two-parameter model fit to three data points (one degree of freedom). This is unusual and severely limits the predictive power of the regression. MPI recognizes the limitations associated with this model, however, finds this approach reasonable given the recent macroeconomic environment (i.e., high inflation). We find a single model that considers *additional* parameters to isolate the impact of inflation to be a more reasonable approach. MPI estimates a model with a separate trend parameter would result in a slightly lower loss trend rate of +9.59% rather than the +10.68% trend selected. We suggest this alternative, which we present in Figure 16, to be more reasonable.

MPI recognizes the future severity trend is highly dependent upon the future macro-economic environment and therefore does not project the recent (inflated) trend rate forward into the future. We find this to be reasonable given the government's efforts to curb inflation and the most recent CPI data available.

Figure 16: Collision Alternative Trend Model



4.8. Comprehensive Claims

Hail Claims

MPI removes historical hail claims form its comprehensive loss trend data and applies a separate loading factor to the loss cost forecast to account for expected future hail events. MPI's selected hail adjustment factor is based on the average experience between 2017 and 2022, as implied by its historical data.

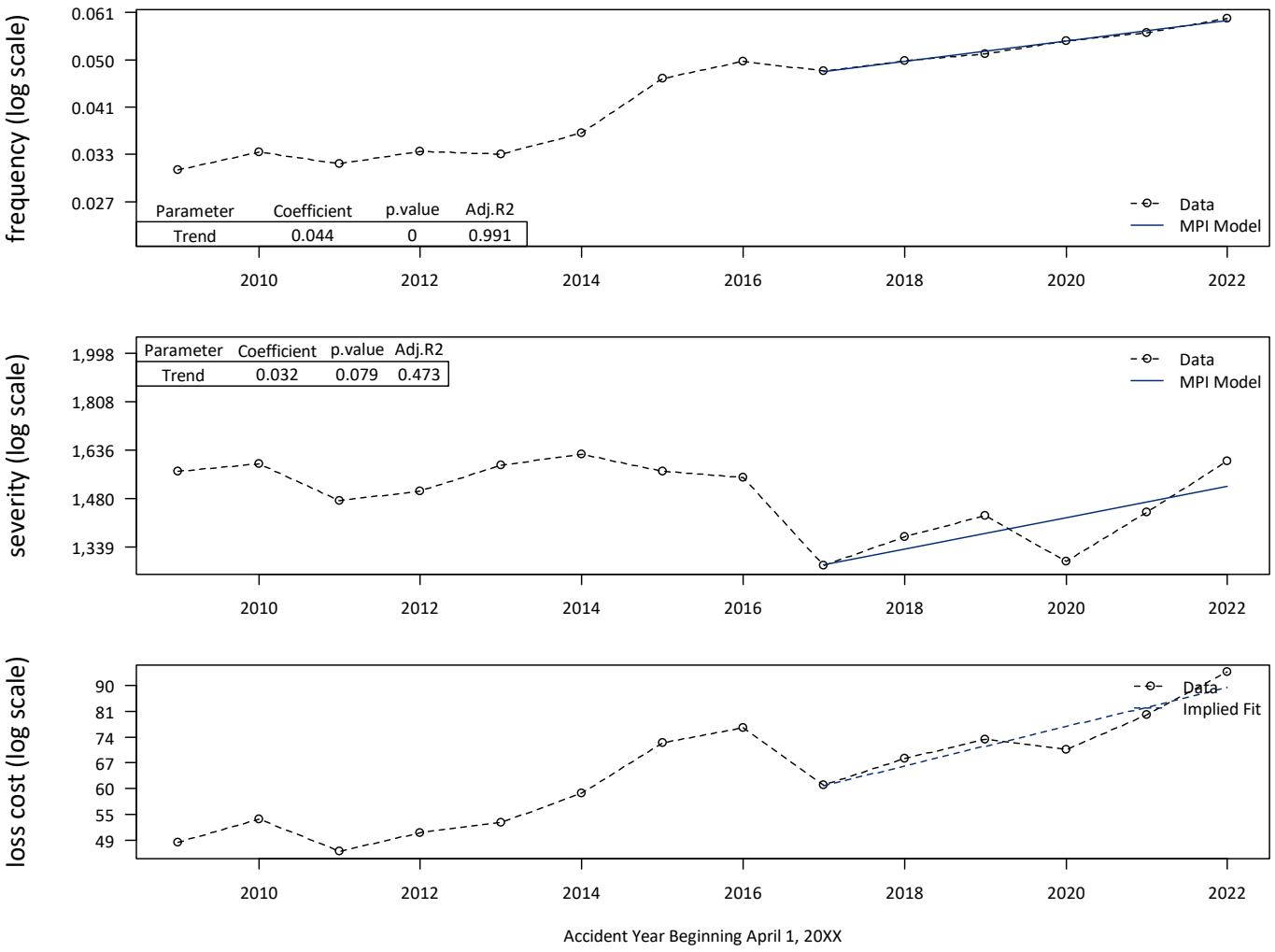
Past Trend

Figure 17 presents the trend models used by MPI in forecasting comprehensive claims.

- The upper panel presents the historical frequency data, and the MPI model fit to the observations from accident years 2017 through 2022.

- The middle panel presents severity data, and the MPI model fit to the observations from accident years 2017 through 2022. MPI indicates that the "trend change for comprehensive severity observed from 2017 is a result of MPI management actions aimed to reduce rodent and glass-only claims."
- The lower panel presents loss cost data, and the model implied by MPI's frequency and severity models.

Figure 17: Comprehensive (excluding Hail) MPI Trend Model



Future Trend

MPI selects future frequency and severity trends as follows:

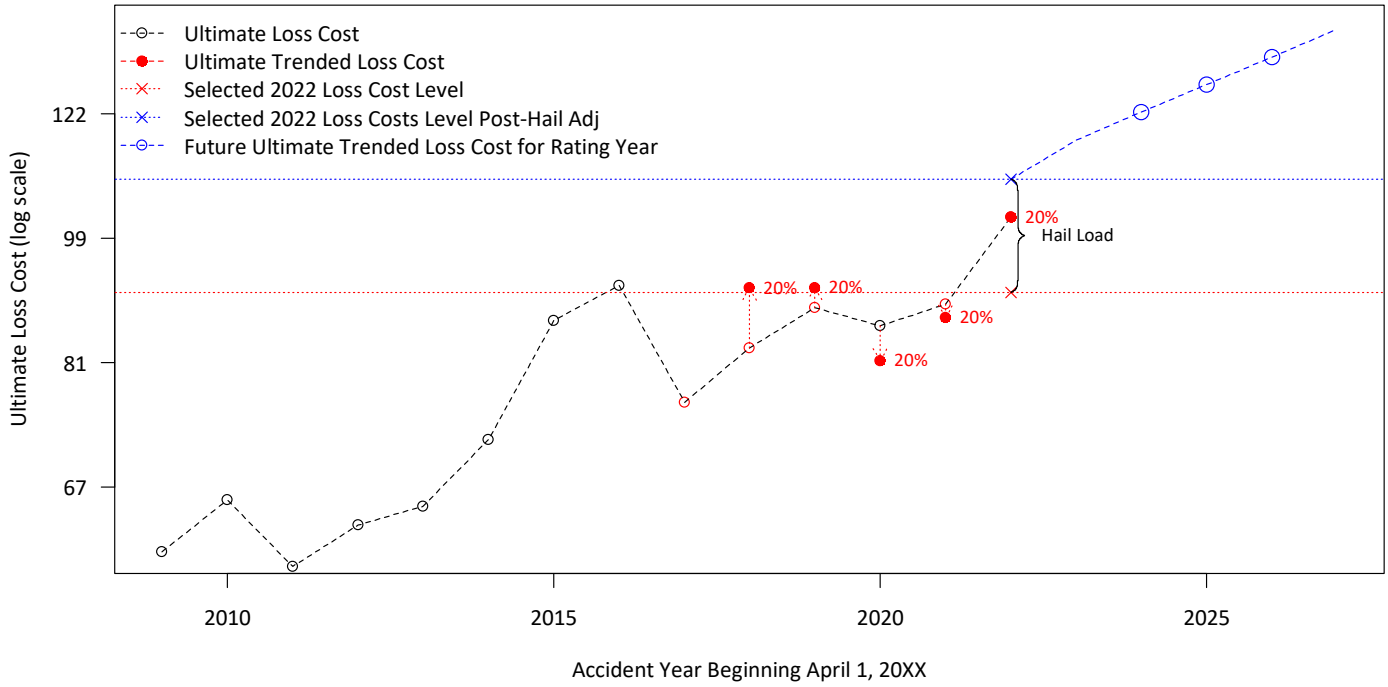
- MPI judgmentally selects a +2.0% frequency trend for the prospective period. MPI tempers the future frequency trend rate as it believes the recent CERP change increasing the deductible will temper the prospective trend rate. MPI notes there is insufficient post-CERP experience available to measure the impact on the higher deductible on the frequency trend rate.

- MPI judgmentally selects a future severity trend of +4.0% for 2023, slightly higher than the past trend (+3.3%) in recognition of the recent inflationary environment. MPI assumes the future trend will decrease to +2.5% for 2024 through 2027 as inflation returns to historical levels.

Rating Year 2024/25 Loss Cost Projection

Figure 18 presents MPI's historical and future rating year 2024/25 loss cost projection for comprehensive.

Figure 18: Comprehensive Ultimate MPI Adjusted Loss Cost



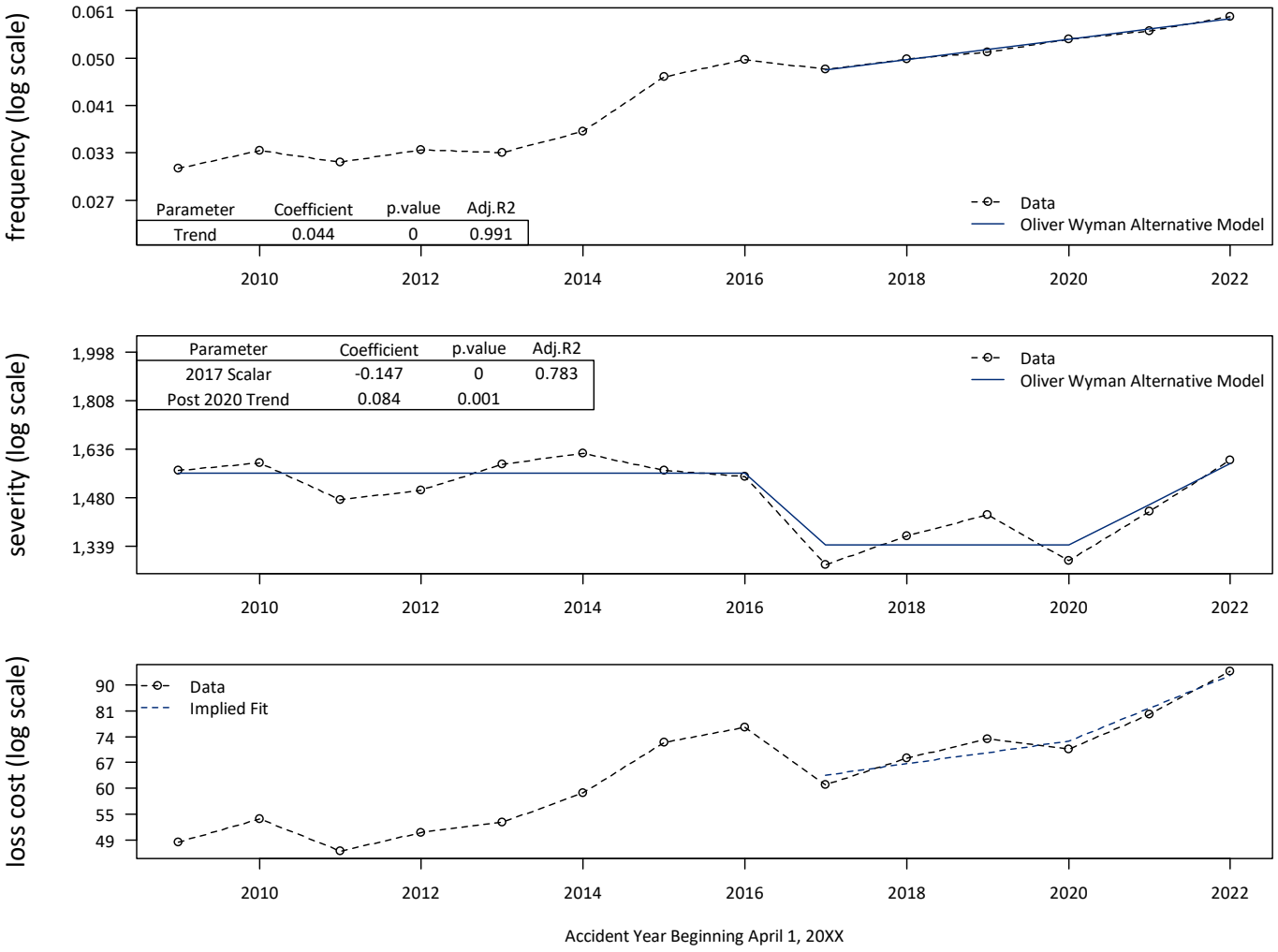
Findings and Conclusion

MPI's severity model has an insignificant *p*-value for time despite the low 2017 observation and high 2022 observation, which may result in an overstated trend rate. The historical comprehensive severity appears flat, excluding a large decrease in 2017 due to noted management actions, and recent increases which are likely associated with the rise of inflation. We suggest that accounting for the 2017 decrease through an additional scalar parameter in the model is more reasonable as it utilizes more data and includes a parameter to for the management actions. Similar to the approach we suggest for collision, we suggest a separate "time" variable[8] to model the recent rise in severity for the 2020 through 2022 period.

[8] The time parameter is found to be insignificant based on the commonly accepted *p*-value threshold of 5% that the trend is not discernably different from 0% (i.e., a 0% pre-2020 trend).

Recognizing the future severity trend is highly dependent upon the future macro-economic environment, we find MPI's future trend selections to be reasonable in the circumstance.

Figure 19: Comprehensive (excluding Hail) Alternative Trend Model



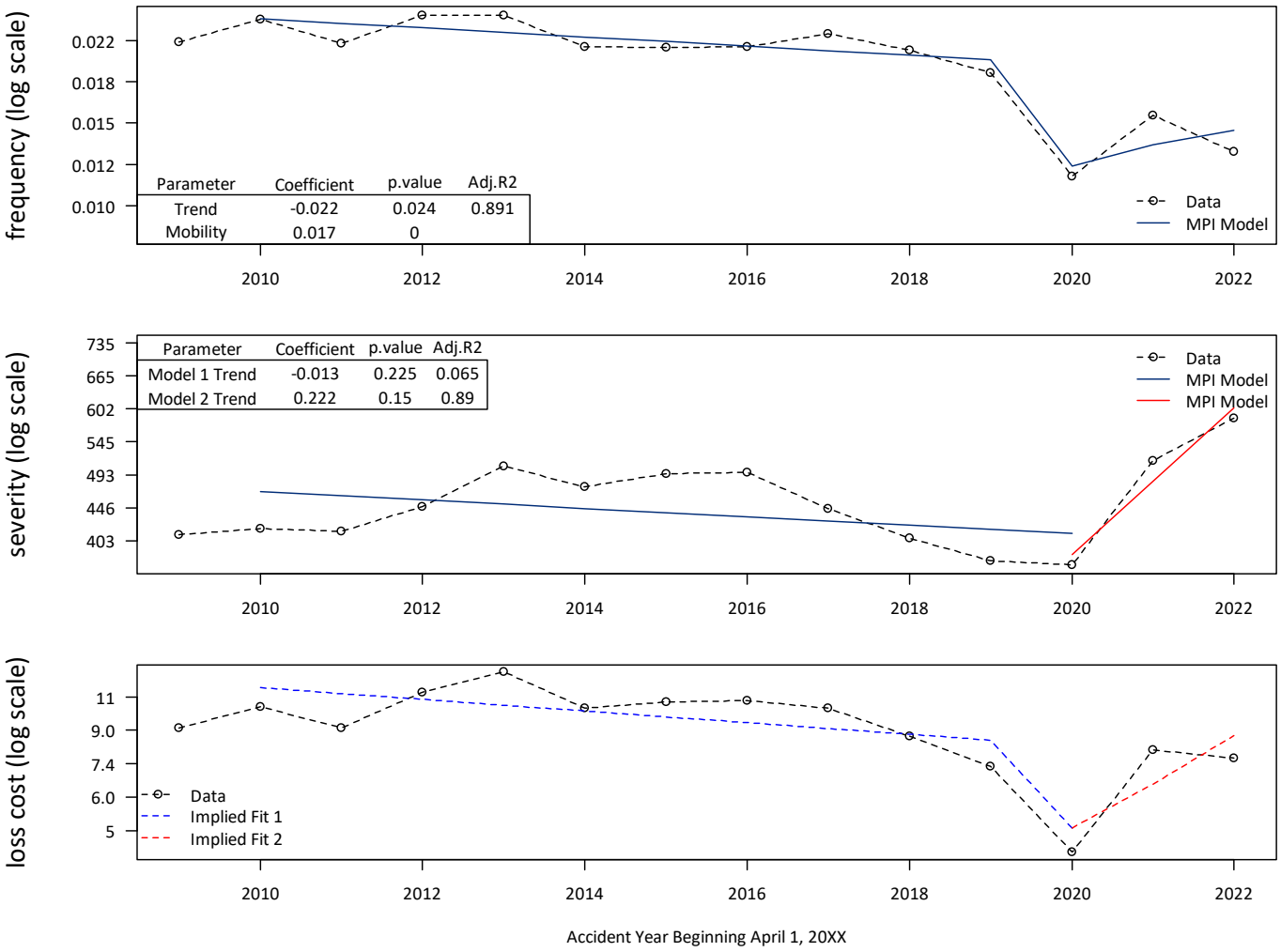
4.9. Property Damage (Third Party Loss of Use) Claims

Past Trend

Figure 20 presents the trend models used by MPI in forecasting property damage (third party loss of use) claims.

- The upper panel presents the historical frequency data, and the MPI model fit to the observations from accident years 2010 through 2022.
- The middle panel presents severity data, and the MPI model fit to the observations from accident years 2010 through 2022.
- The lower panel presents loss cost data, and the model implied by MPI's frequency and severity models.

Figure 20: Property Damage (Third Party Loss of Use) MPI Trend Model



Future Trend

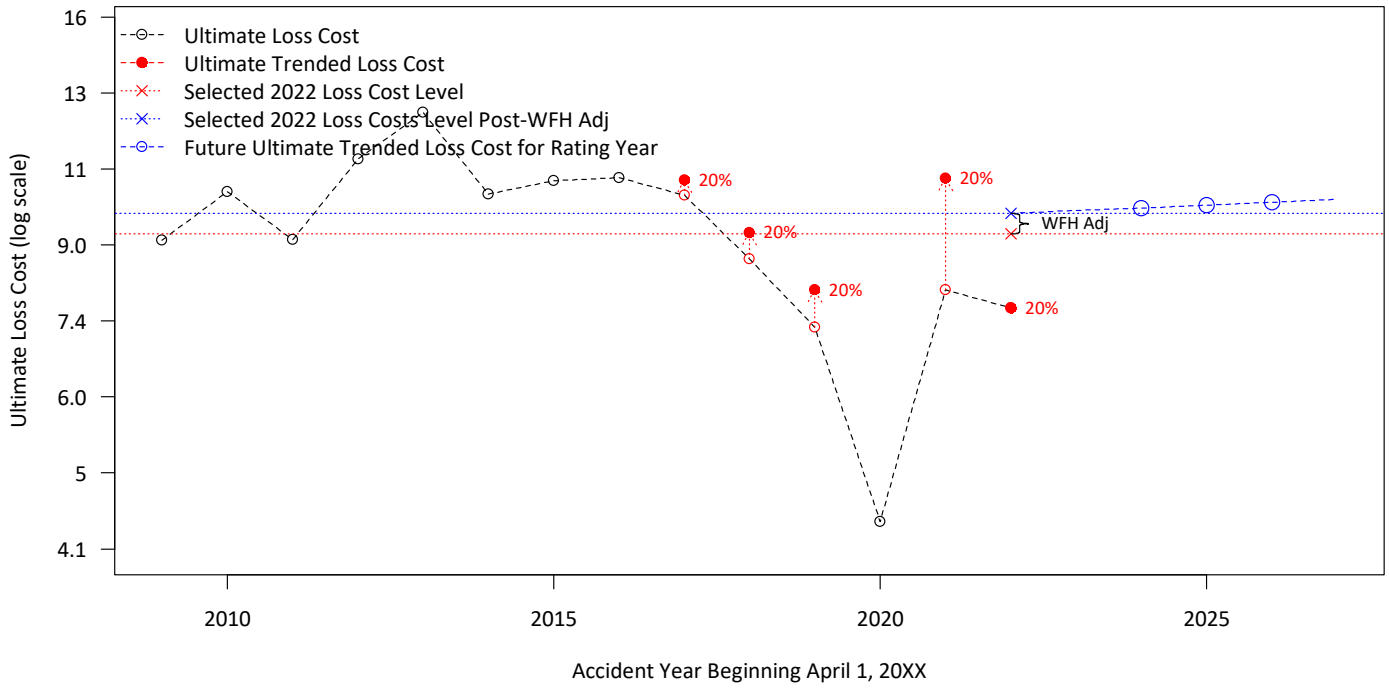
MPI selects a future frequency trend that is equivalent to its selected past trend rate (implied by the above model).

MPI judgmentally selects a future severity trend of +3.0%.

Rating Year 2024/25 Loss Cost Projection

Figure 21 presents MPI's historical and future projected rating year 2024/25 loss cost projection for property damage (third party loss of use).

Figure 21: Property Damage (Third Party Loss of Use) MPI Rating Year 2024/25 Loss Cost Projection Model

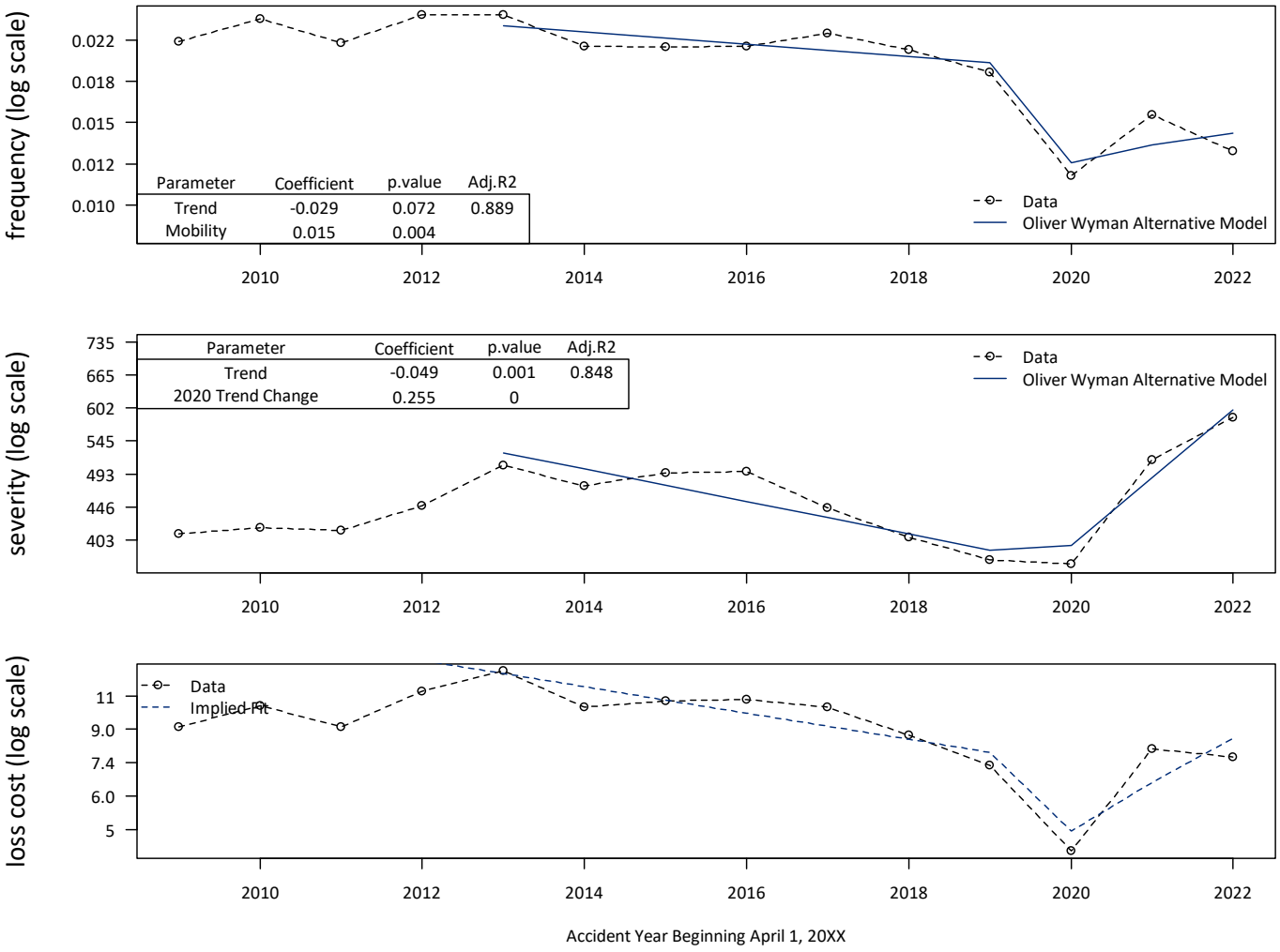


Findings and Conclusion

As presented in Figure 20, MPI selects a different severity trend between 2020 to 2022 based on a model fit to three data points; and this is different than the model fit between 2010 to 2020. Use of only three data points is unusual and severely limits the predictive power of the regression. MPI recognizes the limitations associated with this model, however, finds this approach reasonable given the recent macroeconomic environment (i.e., high inflation). We find a single model over 2010 to 2022 that considers *additional* parameters to isolate the impact of inflation to be a more reasonable approach. Furthermore, MPI's approach to its selected regression model time periods (2010 to 2020 and 2020 to 2022) does not recognize the change in trend beginning in 2013. We observe a more negative trend emerging between 2013 and 2020 for both frequency and severity that is not recognized by MPI. Our alternative model, presented in Figure 22, illustrates these changes. Our alternative model results in higher adjusted R-squared values for both frequency and severity models, and a more significant *p*-value for the severity time parameter. For these reasons, we find our model to be more reasonable.

We recommend a past loss cost trend of -7.5%[9] through 2020, and +19.36%[10] thereafter based on our separate frequency and severity models.

Figure 22: Property Damage (Third Party Loss of Use) Alternative Trend Model



[9] -7.5% = exp(-0.029 – 0.049) - 1

[10] +19.36% = exp(-0.029 – 0.049 + 0.255) – 1

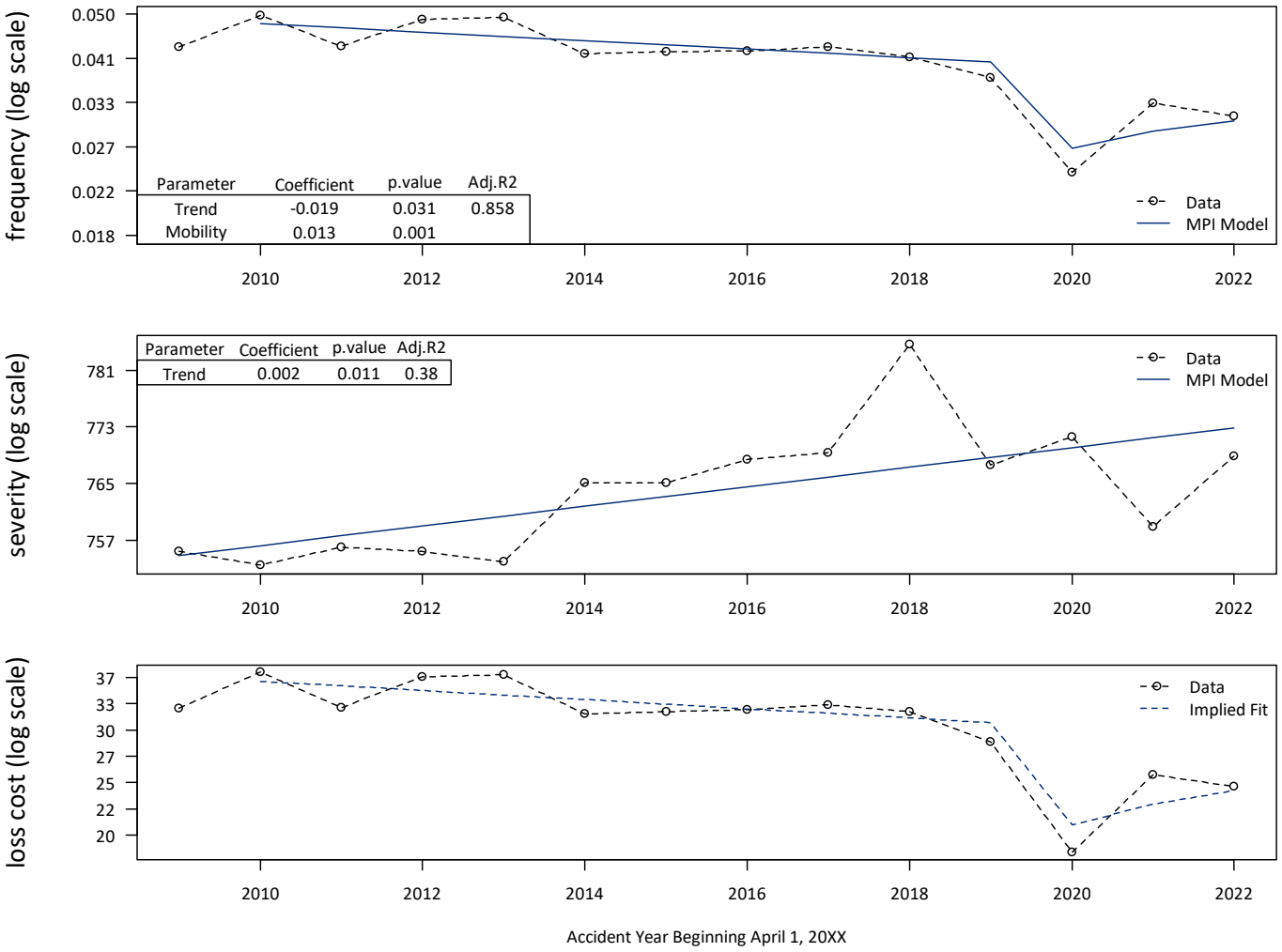
4.10. Property Damage (Third Party Deductible Transfer) Claims

Past Trend

Figure 23 presents the trend models used by MPI in forecasting property damage (third party deductible transfer) claims.

- The upper panel presents the historical frequency data, and the MPI model fit to the observations from accident years 2010 through 2022.
- The middle panel presents severity data, and the MPI model fit to the observations from accident years 2009 through 2022.
- The lower panel presents loss cost data, and the model implied by MPI's frequency and severity models.

Figure 23: Property Damage (Third Party Deductible Transfer) MPI Trend Model



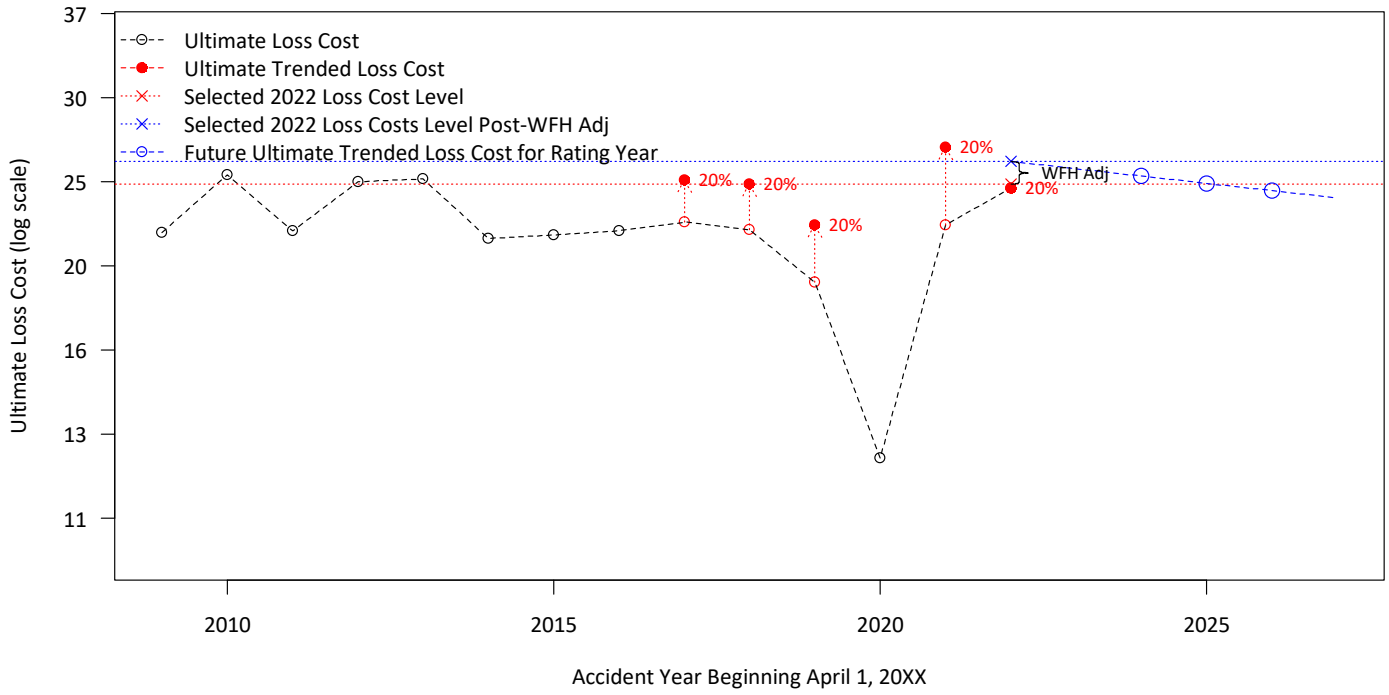
Future Trend

MPI selects the same future trends as past trends.

Rating Year 2024/25 Loss Cost Projection

Figure 24 presents MPI's historical and future rating year 2024/25 loss cost projection for property damage (third party deductible transfer).

Figure 24: Property Damage (Third Party Deductible Transfer) Ultimate MPI Adjusted Loss Cost

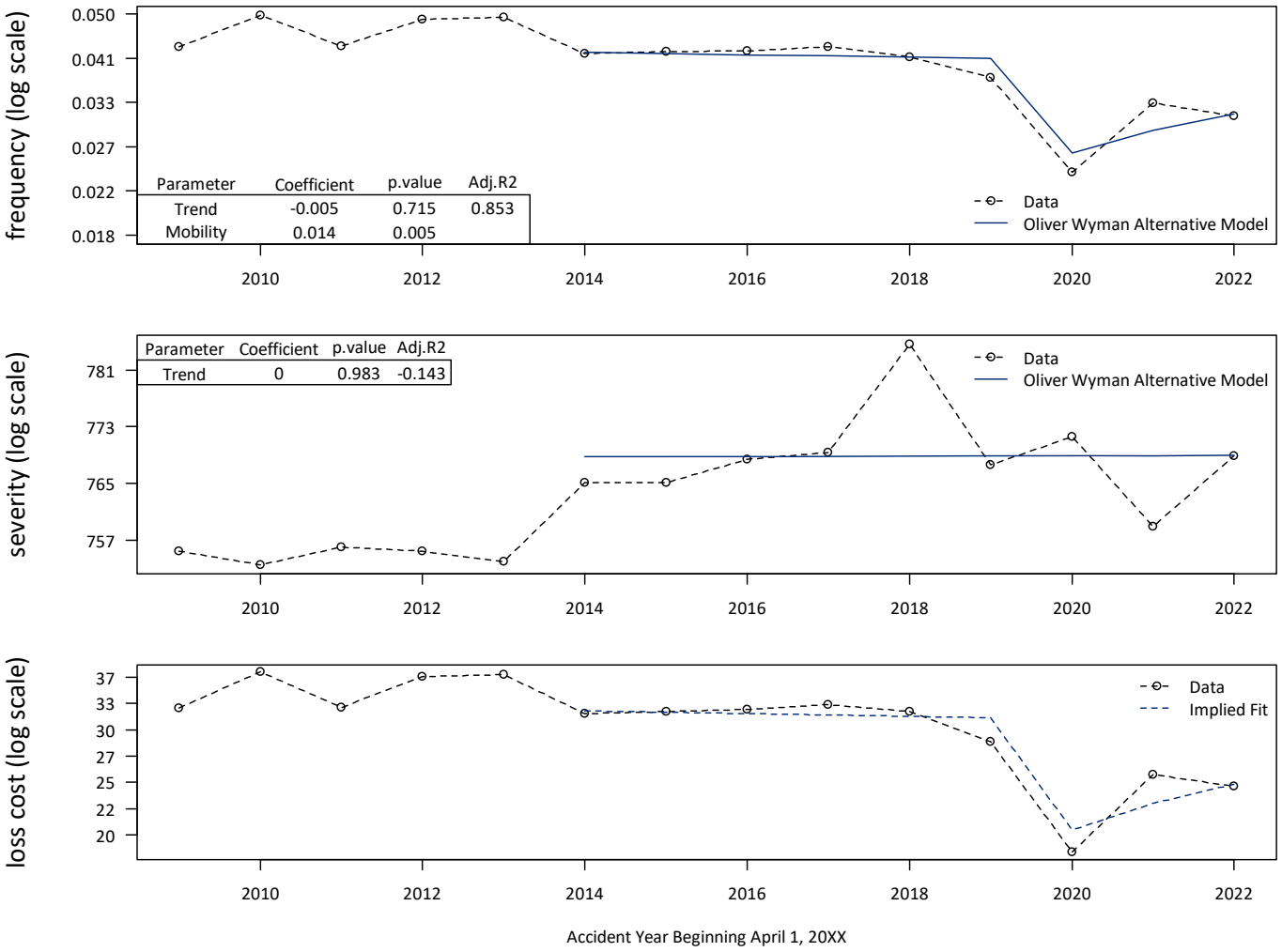


Findings and Conclusion

MPI's approach to its selected regression model time periods (2010 to 2022 for frequency and 2009 to 2022 for severity) does not recognize the change in trend beginning in 2014, as shown in Figure 23. We observe a flatter trend emerging between 2014 and 2020 for both frequency and severity. In Figure 25, we present our alternative frequency and severity trend models for property damage third party deductible transfer which excludes the 2009 through 2013 accident years to recognize the flatter trend beginning in 2014.

We recommend a past loss cost trend of 0% based on our separate frequency and severity models.

Figure 25: Property Damage (Third Party Deductible Transfer) Alternative Trend Model



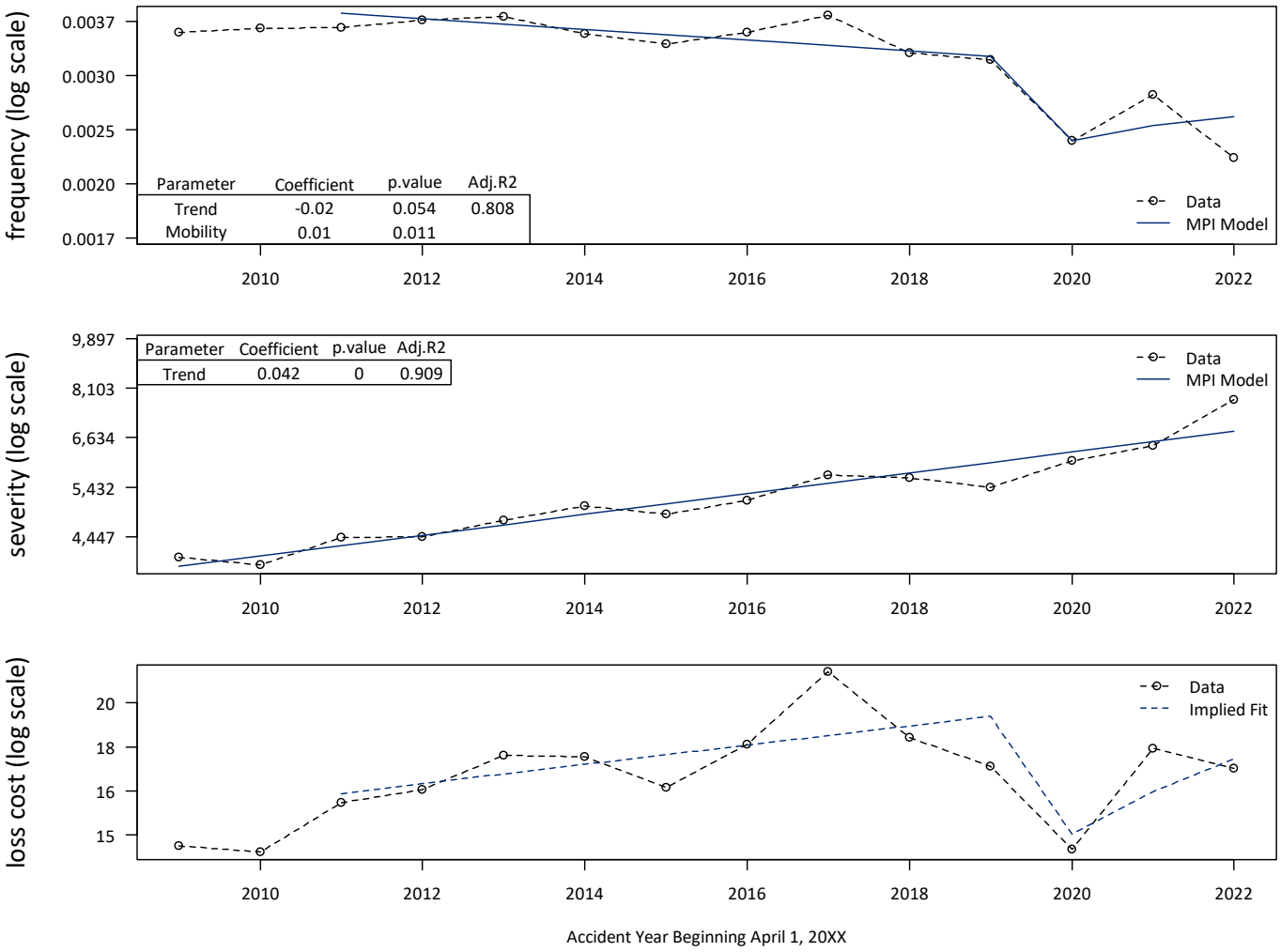
4.11. Property Damage (Other) Claims

Past Trend

Figure 26 presents the trend models used by MPI in forecasting property damage (other) claims.

- The upper panel presents the historical frequency data, and the MPI model fit to the observations from accident years 2011 through 2022.
- The middle panel presents severity data, and the MPI model fit to the observations from accident years 2009 through 2022.
- The lower panel presents loss cost data, and the loss costs implied by MPI's frequency and severity models.

Figure 26: Property Damage (Other) MPI Trend Model



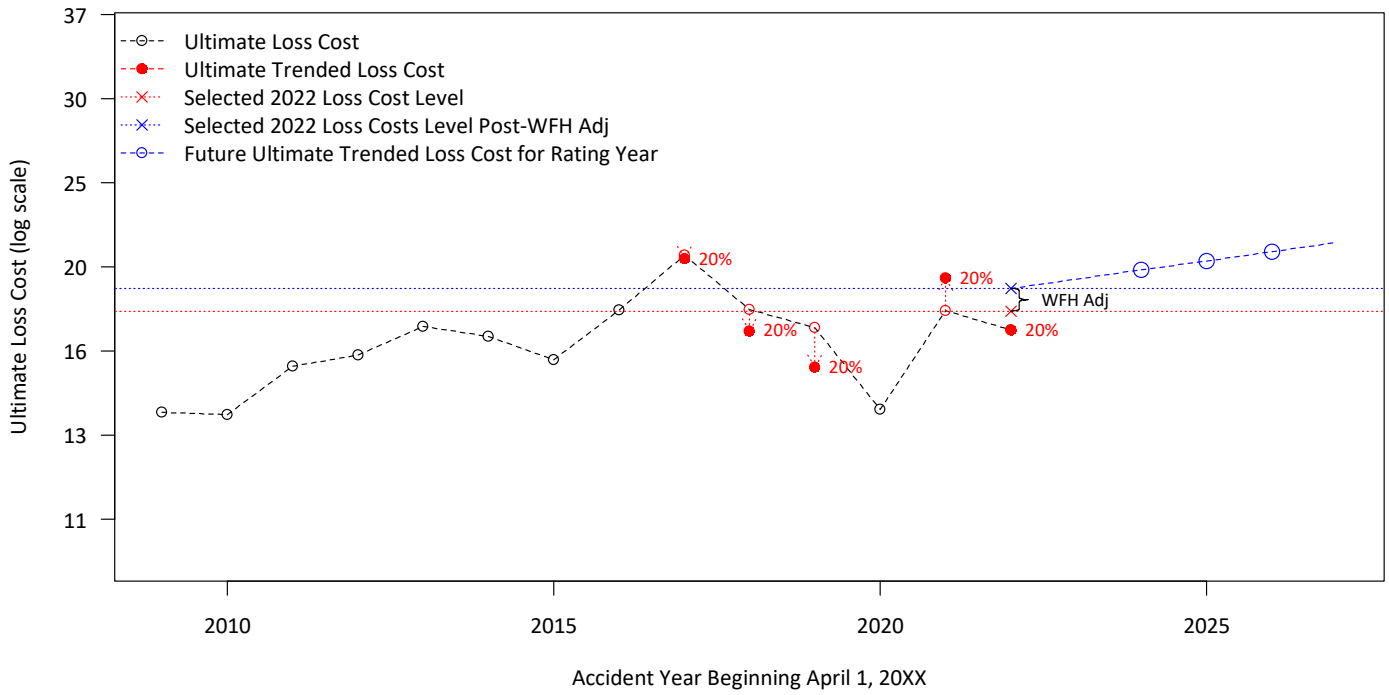
Future Trend

MPI selects the same future trends as past trends.

Rating Year 2024/25 Loss Cost Projection

Figure 27 presents MPI's historical and future rating year 2024/25 loss cost projection for property damage (other).

Figure 27: Property Damage (Other) Ultimate MPI Adjusted Loss Cost



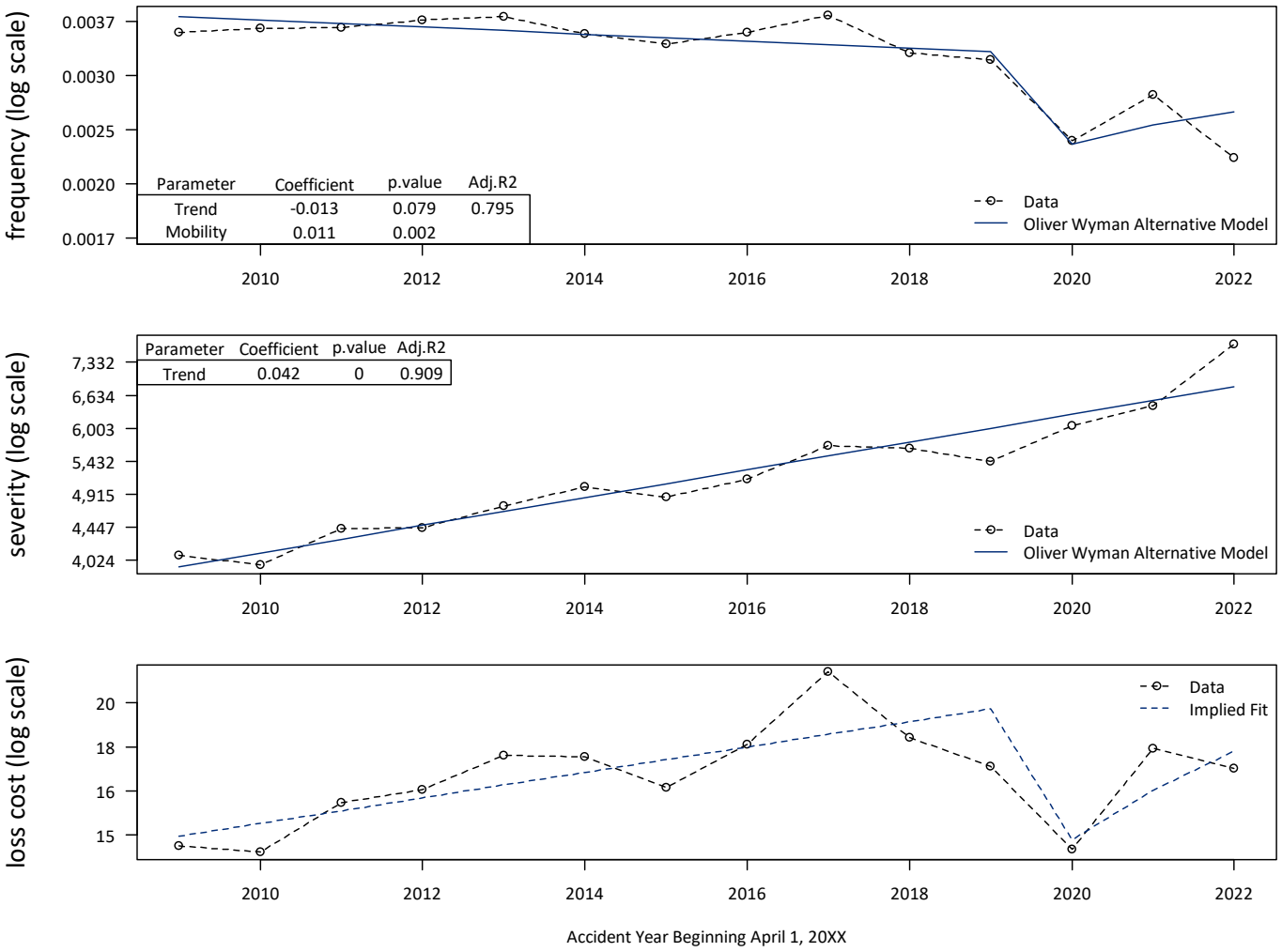
Findings and Conclusion

We have no issues with MPI's property damage other severity model and do not discuss this model further.

MPI's selected regression models consider different time periods for frequency and severity. We recommend MPI use the same time period for both frequency and severity models to reduce bias and maintain consistency. In Figure 28, we present our alternative model for frequency which is fit to accident years 2009 to 2022, which results in a -1.29%[11] frequency trend.

[11] exp(-0.013)-1

Figure 28: Property Damage (Other) Alternative Trend Model



4.12. Vehicle Counts (HTA Units)

MPI forecasts total HTA units to grow by 0.86%, which reflects the aggregate of the forecasted unit growth by major class. For each major class, MPI based its selections on averages excluding the 2021/22 accident year, and in some cases the 2022/23 accident year, which were heavily impact by the COVID-19 pandemic.

In support of this decision, MPI states,

> " There was an increasing trend towards the later months of 2020 as Government gradually eased restrictions and allowed certain businesses to re-open, including access to educational facilities. A sharper growth in the earned units was observed during 2021. A probable reason for this is the resumption of the usual insurance coverage from layup, as explained above. For 2022, the increase in the earned units appear to be closer to pre-pandemic levels."

MPI provided HTA earned units on a monthly basis. We present the annualized year over year change implied by the monthly earned units below.

Table 5: HTA Units Percent Change

Year	Annualized Percent Change
2019	0.7%
2020	0.6%
2021	2.8%
2022	0.7%

On November 1, 2022, the Federal Government announced: "An immigration Plan to Grow the Economy." The Federal Government's news release states:

> " Last year Canada welcomed over 405,000 newcomers - the most we've ever welcomed in a single year. The Government is continuing that ambition by setting targets in the new levels plan of 465,000 permanent residents in 2023, 485,000 in 2024 and 500,000 in 2025. The plan also brings an increased focus on attracting newcomers to different regions of the country, including small towns and rural communities."

MPI states that they did not adjust the HTA unit growth forecast for any potential increase in immigration levels. In support of this decision MPI highlights the following reasons:

- Approximately 5% of immigrants settle in Manitoba.
- Not all immigrants will purchase a vehicle.
- The growth in number of units due to incoming immigrants may not be immediate.

Findings and Conclusion

Based on the data provided, we find the proposed HTA unit growth forecast to be reasonable. We recommend MPI continue to monitor the HTA unit growth forecast to account for updated information post COVID-19 pandemic and for changes in immigration in the future.

4.13. Expenses

MPI accounts for the following expenses in calculating the overall required rate: commissions, premium taxes, operating expenses, road safety/loss prevention, regulatory/appeal, reinsurance, fleet rebate, anti-theft discount, catastrophe load, casualty load, ULAE.

As presented in Figure 1, ULAE, operating expenses, premium taxes, and commissions are the only expense components that represent more than 2% of the estimated required premium.

ULAE

MPI selects an 18% ULAE provision, which is consistent with the assumption for the previous GRA. Methodologies used to estimate the ULAE provision consider the relationship of paid ULAE to paid loss. The COVID-19 pandemic affected these ratios. As noted in the GRA,

> " MPI observed an increase in the ULAE ratios during the financial years 2020/21 and 2021/22. This increase could be explained by a drop in the claims settlement during these two years on account of COVID-19."

MPI discounts the ULAE provision using the implied factor for loss and ALAE.

Operating Expenses

MPI projects operating expense for the 2024/25 rating year to be $67,736,000. MPI allocates 2/3 of operating costs to front-end costs for the initial cost of writing and issuing the insurance policy. This cost is allocated uniformly over the 2024/25 rating year. The remaining 1/3 of operating expenses is allocated to maintenance and servicing the policies. This cost is allocated based on the portion of premium earned in each development quarter as shown in the figure below.

Development Year	Q1	Q2	Q3	Q4
2024/25	1/32	3/32	5/32	7/32
2025/26	7/32	5/32	3/32	1/32

Commissions

Amended provincial regulation incorporate negotiated commissions rates (i.e., Agent Commissions Regulation, M.R. 93/2009 under The Manitoba Public Insurance Corporation Act). MPI pays both variable and flat fee commissions. MPI indicates that approximately 85% of commissions are variable and 15% are through flat fees.

MPI states that for the 2024/25 rating year, the variable commission rate for in-person transactions is 4.01% of written vehicle premiums. MPI also expects to implement online transactions in July 2024. Those transactions will have a commission rate of 2.4%.

MPI selects an effective commission rate of 4.14%, which is higher than the rate above to consider the policy cancellations. That is, this higher rate considers that MPI does not “claw back” paid commission on mid-term cancellations.

Premium Tax

MPI includes premium taxes at 3% of premium.

Conclusion

Based on the information provided, we find the proposed expense provisions to be reasonable.

4.14. Summary

As discussed, there are aspects of MPI’s analysis where we believe that alternate calculations and/or assumptions are more appropriate. More specifically, we suggest that the Board consider alternate assumptions for the following items:

- Accident year weights
- Accident benefits weekly indemnity trend
- Accident benefits other (indexed) trend
- Accident benefits other (non-indexed) trend
- Collision trend
- Comprehensive trend
- Property damage trend

Following MPI’s general methodology for determining the average rate level needs, but with alternative assumptions, judgements, and calculations that we believe more appropriate, we estimate a total 2024/25 rating year loss cost

provision of $679.95, 4.26% less than MPI's estimate of $710.18.[12] Based on this alternative loss cost estimate, we find MPI's overall rate level indication to be approximately -3.63%. There is a small reconciliation difference in our replication of MPI's model, which we attribute to rounding.

Table 6: Total Impact of Alternative Assumptions

A	MPI Overall Indicated Required Rate Change	-0.13%
B.	MPI Overall Filed Rate Change	0.00%
C.	Oliver Wyman Alternative Indication	**-3.63%**

In Table 7, we present the estimated impact of each alternative assumption on MPI's overall indicated rate change.[13]

Table 7: Individual Impact of Assumptions on Overall Rate Level Indication

Alternative Assumption	Estimated Impact on Overall Rate Level Indication
Accident Year Weights	-2.52%
AB Weekly Indemnity Trend	-0.33%
AB Other Indexed Trend	-0.20%
AB Other Non-Indexed Trend	-0.16%
Collision trend	-0.72%
Comprehensive Trend	+0.53%
Property Damage Trend	+0.16%

5. Merit Rating (DSR)

MPI's Driver Safety Rating (DSR) program provides incentives for better driving experience through reductions in premiums. The Board defined the scope of the review of the DSR program:

> " Driver Safety Rating (DSR), including but not limited to MPI's progress towards a plan for changes to the DSR model, moving vehicle discounts, and driver premiums by one-fourth of the way to the actuarially indicated percentage, and implementation of Order 4/23, Directives 15 and 16."

MPI DSR Model

MPI calculates indicated DSR loss cost relativities using a minimum bias procedure. MPI then fits a regression model to the indicated loss cost relativities. MPI calculates *premium* relativities that consider the non-loss components of

[12] Part VII – Ratemaking; Rate Indication (RI) Chapter, Page 16 of 28.
[13] The sum of the impacts does not equate to the total estimated impact (Item C in Table 6) as the overall indication is not additive.

premium. MPI calculated the final relativities as the sum of the current relativity and 25% (i.e., one-fourth) of the difference between the current and indicated relativities.

Findings and Conclusion

- The concerns described in GRA Section RC.10.1[14] notwithstanding, we recommend that MPI continue its transition from a minimum bias model to a GLM model under the schedule described in GRA Section RC.10.[15]
- We do not believe that it's appropriate to consider DSR level to be a continuous numeric variable as MPI does in calculating fitted relativities. Under MPI's approach, movement of a single DSR level results in the same absolute, but not relative, change in relativity (see 2024 GRA, Part VII – RC Appendix 6, p 6, Figure RC App 6-2). We view DSR level to be a ordered categorical variable[16] without the restrictions noted.
  - We appreciate that this view would require MPI to either use the indicated (rather) than the fitted relativities or apply manual smoothing. This would not be an issue when MPI transitions to the GLM model.
  - We note that the MPI approach overpredicts (fitted relativity greater than indicated) DSR levels below 11 and underpredicts DSR levels above 13 (see 2024 GRA, Part VII – RC Appendix 6, p 4, Figure RC App 6-1). Given the underprediction of the highest volume classes, MPI risks not collecting sufficient premiums.
- We confirmed that MPI followed the Board's direction in the movement between current and indicated relativities.

6. Prior Period Runoff

We present a comparison between the loss cost estimates included in the 2023 and 2024 GRAs for each coverage in Figure 29. Specifically, we present the loss cost estimates underlying MPI's 2023 GRA projections, the loss cost estimates used in its 2024 GRA trend analysis (data valued as of October 31, 2022), and the loss cost estimates underlying MPI's 2024 GRA projections (data valued as of March 31, 2023).

Findings and Conclusion

MPI's projections have remained relatively stable over time, with small deviations as accident years mature that remain within a reasonable range.

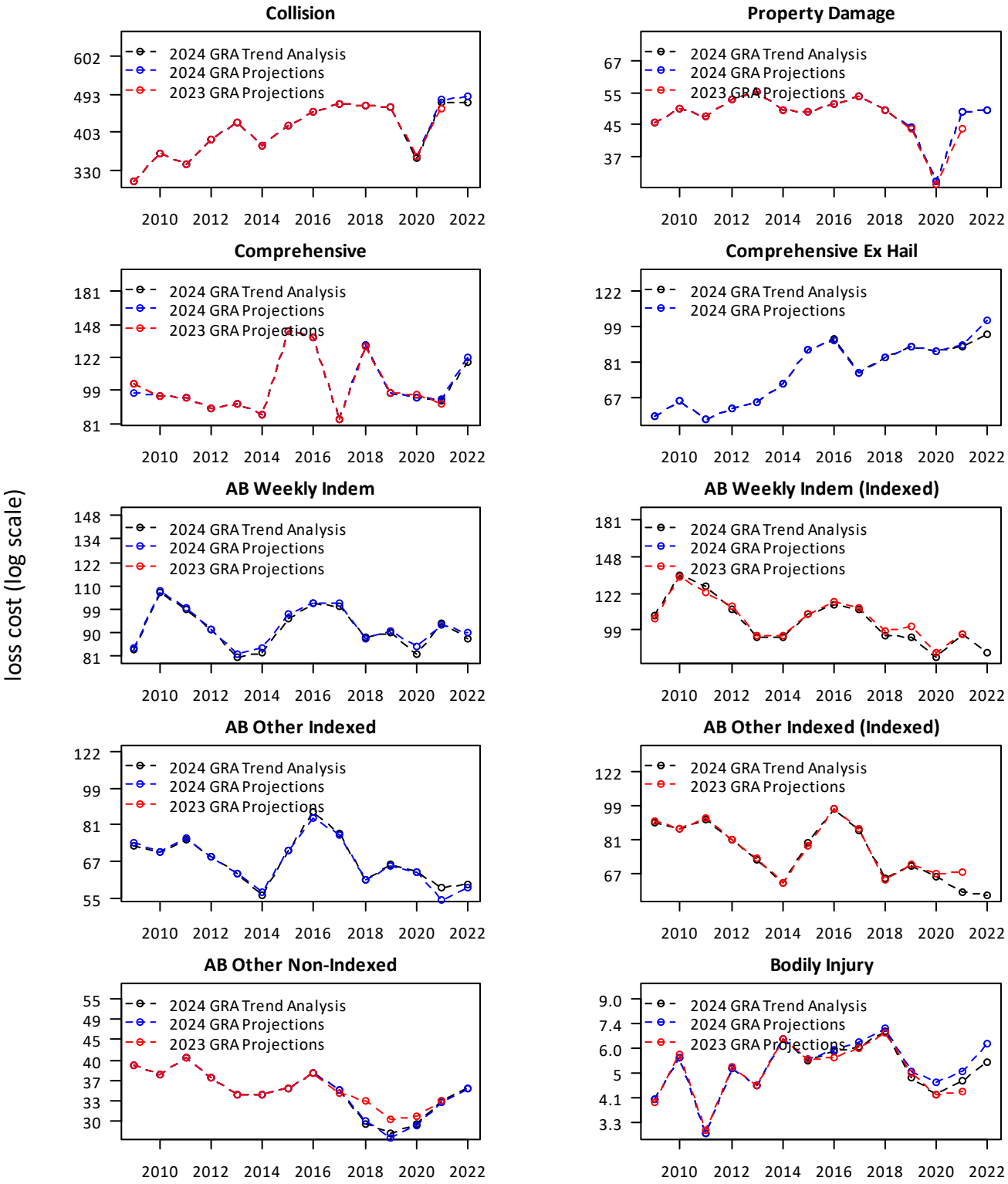
[14] Part VII – Risk Classification, Page 41 of 44 (pdf 2204/4085)

[15] Part VII – Risk Classification, Page 36 of 44 (pdf 2199/4085)

[16] A categorical variable is a label that denotes membership in a class. For example, education level can be categorized into different levels such as "less than high school", "high school graduate", "some college", "college graduate", "postgraduate degree", etc. These categories have a natural order, with "less than high school" being the lowest level of education and "postgraduate degree" being the highest level of education. However, we would expect a dependent variable (salary, for example), to change by the same amount for each change in education level.

In contrast, an example of continuous numeric variable would be kilometres driven. We expect that a dependent variable (gasoline consumed, for example) to change, *ceteris paribus*, by the same amount for each additional kilometer driven.

Figure 29: Change in MPI Loss Cost Estimates



Appendix A: Biographies

Paula Elliott, Chris Schneider, and Rajesh Sahasrabuddhe are the actuaries responsible for this report. Ms. Elliott, Mr. Schneider, and Mr. Sahasrabuddhe provide actuarial consulting services related to automobile insurance throughout Canada.[17] Those service include reviewing automobile insurance rate applications, providing expert witness testimony on rate applications, analyzing automobile insurance reform measures, development of model governance frameworks, conducting automobile insurance benchmark rate studies and performing special studies.

Paula Elliott

Paula holds a Bachelor of Mathematics, Actuarial Science (Hons) from the University of Waterloo. Paula is a Principal in the Toronto, Ontario office with the Actuarial Consulting practice of Oliver, Wyman Limited. She specializes in the automobile insurance practice area and in providing actuarial services to insurance regulatory authorities.

Her primary responsibilities include reviewing automobile insurance rate applications, providing expert witness testimony on rate applications, analyzing automobile insurance reform measures, conducting automobile insurance benchmark rate studies and performing special studies.

Prior to joining Oliver Wyman, Paula provided actuarial services to a large insurer as an employee for over 15 years with many areas of responsibility including rate making, loss reserving and financial planning.

Paula is a Fellow of the Canadian Institute of Actuaries and a Fellow of the Casualty Actuarial Society.

Rajesh Sahasrabuddhe

Rajesh ("Raj") holds a Bachelor of Science, majoring in Mathematics – Actuarial Science (*summa cum laude)* from the University of Connecticut. Raj is a Partner and Philadelphia Office Leader with Oliver Wyman Actuarial Consulting. His primary responsibilities are to provide actuarial consulting services to regulators and a variety of insurance, reinsurance and self-insured organizations.

Raj reviews automobile rate applications in on behalf of regulators and consumer stakeholders in several Canadian provinces. Within the scope of this work, he provides expert witness testimony in rate hearings.

Raj is a Fellow of the Casualty Actuarial Society, an Associate of the Canadian Institute of Actuaries, and a Member of the American Academy of Actuaries. He has been approved to provide captive loss reserve certifications by regulatory authorities in Vermont, South Carolina, Delaware, and Bermuda.

Prior to joining Oliver Wyman, Raj provided actuarial consulting services to self-insured clients at a national brokerage company and financial advisory and litigation support services at an independent consulting firm. With his prior experience at a Big Four audit firm, he is also familiar with insurance accounting issues.

[17] Including in New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Saskatchewan, Alberta, British Columbia and Manitoba.

Chris Schneider

Christopher (“Chris”) Schneider is a Senior Manager with Oliver Wyman Actuarial Consulting, Inc., located in the Philadelphia office. He holds a Bachelor of Science degree in Mathematics from Millersville University.

Since joining Oliver Wyman in 2016, Chris has provided actuarial consulting services to several self-insured corporations in the United States involving various types of property/casualty loss exposures. Additionally, Chris provides actuarial consulting services to several Canadian regulators and stakeholders involving automobile liability exposures.

Chris is a Fellow of the Casualty Actuarial Society, an Associate of the Canadian Institute of Actuaries, and a Member of the American Academy of Actuaries.