OliverWyman

MPI 2024 GRA ACTUARIAL EVIDENCE

25 October 2023

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A business of Marsh McLennan

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AGENDA

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Summary
Background, Scope and Findings

1

Accident Year Weights
MPI Selections and Oliver Wyman Alternatives

2

Trend Models
Loss Cost Trends, Exposure Trends, and Expenses

3

Merit Rating (DSR)
Progress Towards Actuarial Indication, and Compliance with Order 4/23, Directives 15 and 16

4

Prior Period Runoff
Comparison of Loss Cost Estimates in 2023 and 2024 GRA

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SUMMARY

BACKGROUND

Manitoba Public Insurance Corporation

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.

Public Utilities Board

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

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.

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OLIVER WYMAN REVIEW

Our Goals

- To provide information and views to support the PUB assessment of the GRA
  - **Forecasts are reasonably reliable**
  - Actual and projected costs incurred are necessary and prudent
  - Reasonable revenue needs of the corporation in the context of its overall general health
  - Appropriate allocation of costs between classes
  - **Just and reasonable rates in accordance with statutory objectives**

Components of the Rate Indication

- Our Focus
  - Overall claims forecast
  - Merit rating / DSR
- Other factors influencing policyholder premiums
  - Class ratemaking, including the large loss provision
  - Appropriateness of expenses, including unallocated claims adjustment expense
  - Investment policy

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SCOPE OF OLIVER WYMAN REVIEW

In Order No. 64/23, the Public Utilities Board of Manitoba established the issues within the scope of the review of the 2024 GRA. We initially identified the following issues listed as within the scope of our experience and expertise.

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[1]	Large loss loading based on Order 4/23, Directive 2
11	Claims forecasting, including but not limited to Personal Injury Protection Plan (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

[1] 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

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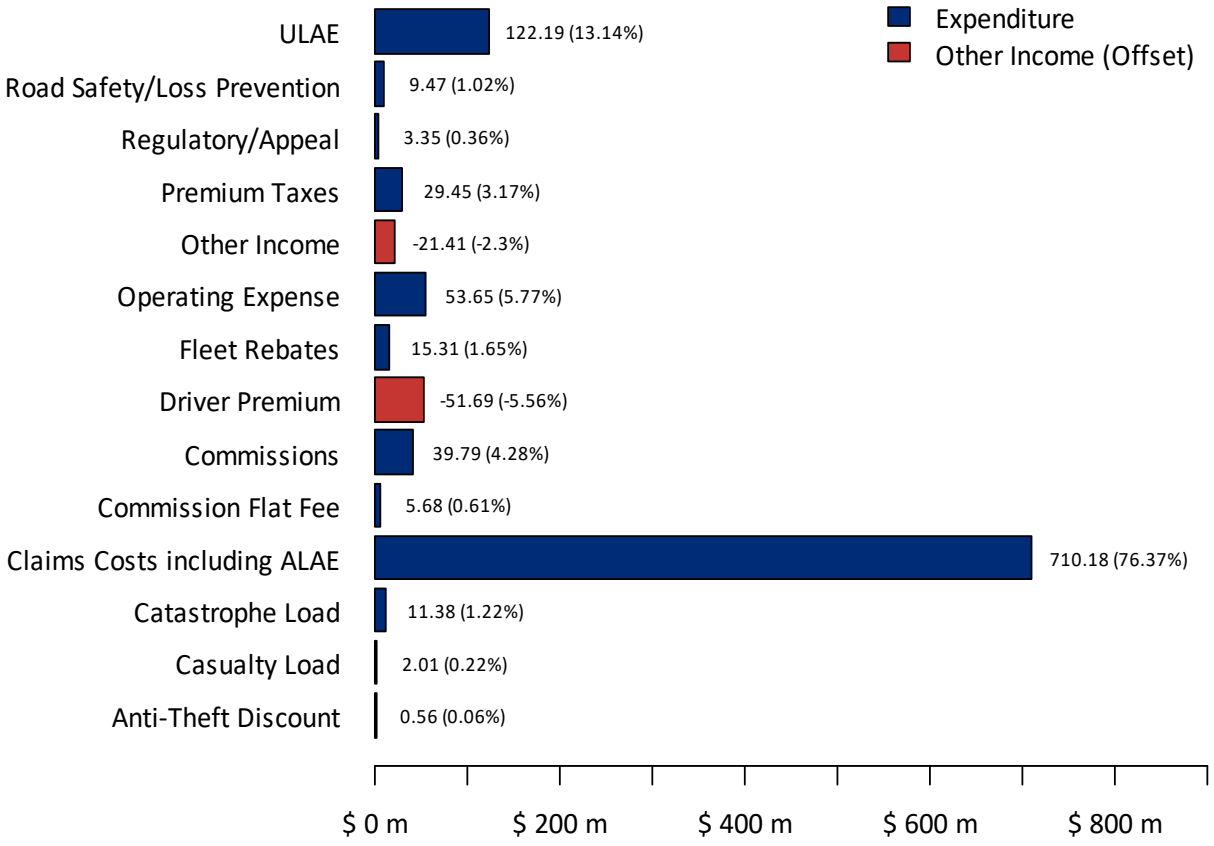
COMPONENTS OF MPI ESTIMATE OF REQUIRED PREMIUM

Components of Required Premium



1

Overall Required Premium for 2024/25 Rating Year

Sum of projected discounted claims and expenses, offset for other income received (driver premium, and service fees, and other revenues)

2

Majority of Premium Relates to Claim Costs & Handling

Approximately 89.5% of the total premium relates to claim costs

- Claims costs including ALAE = 76.37%
- Unallocated loss adjustment expenses = 13.14%

3

Claims Experience

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).

4

Unallocated Loss Adjustment Expenses

Unallocated loss adjustment expenses (ULAE) cannot be attributed to a specific claim and are estimated separately.

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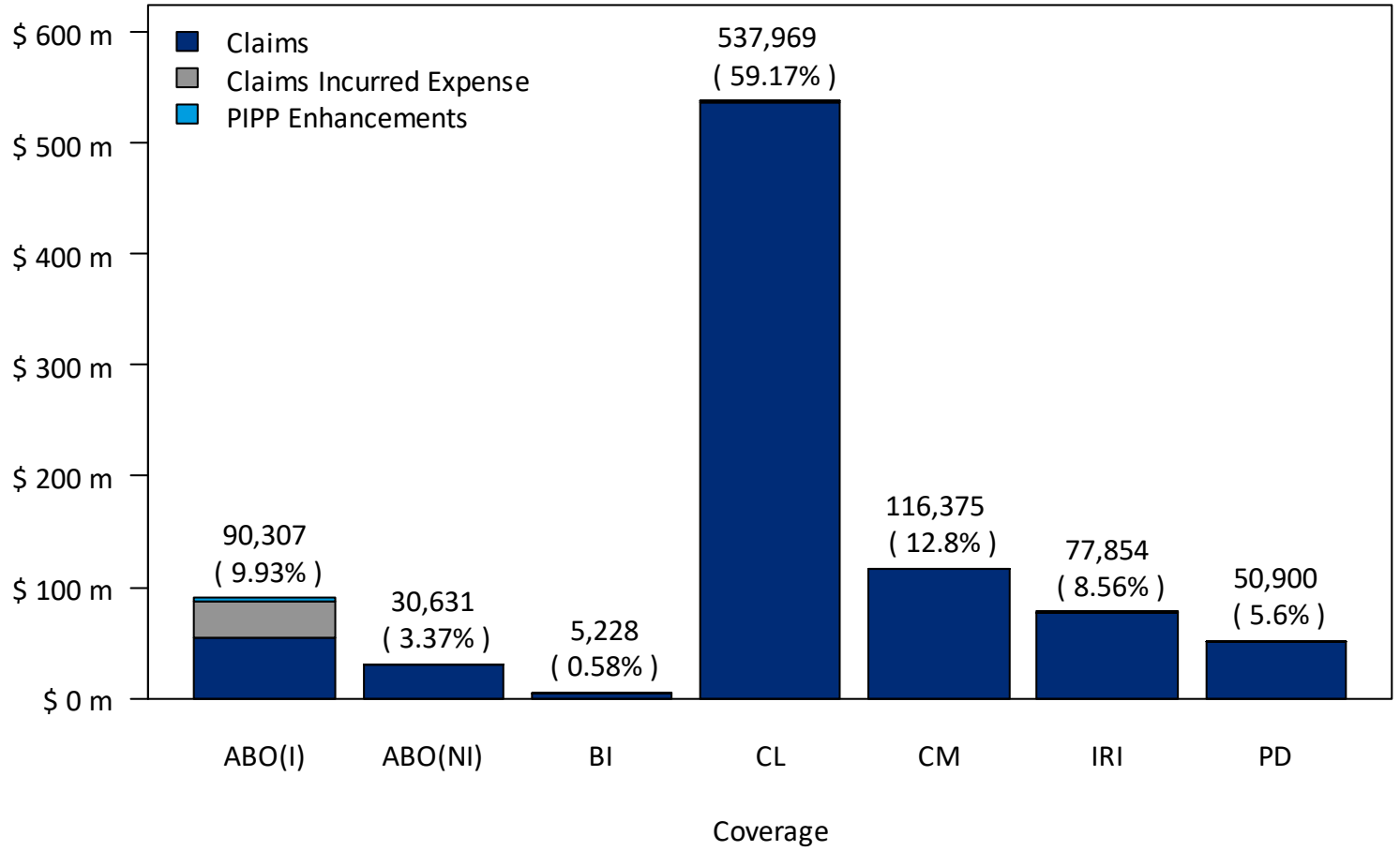
DISTRIBUTION OF CLAIM COSTS

Claim Costs by Coverage



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MPI METHODOLOGY: CHANGES FROM 2023 GRA

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

- Increased use of statistical analyses – Improves separation of signal and noise from the data
- Revised coverage groupings – Providing more credibility to the data
- Use of accident year weighting in estimating loss costs – Increased robustness in the “starting point”
- Application of a COVID-19 work from home adjustment – Transparent consideration of assumed driving behaviour underlying 2024/25 loss cost estimate
- Use of the 2022 appointed actuary report for frequency and severity estimates
- Hail Loading – Improved modelling of random weather events.
- PIPP Indexation – Wage inflation implicit in claims severity

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MPI METHODOLOGY

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

MPI develops future accident year claim projections using the following procedure

Development of Trend and Mobility Factors

- MPI develops trend and mobility factors based on the results of regression models fit to the estimated frequency and severity based on ultimate claims from the October 2022 AAR and MPI Analysis of ultimate claim counts.
- The regression models include a "mobility" parameter, if statistically significant, to consider the effect of reduced traffic volumes during the COVID-19 pandemic

Application of Past Trend

- 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

Selection of Loss Cost

- MPI selects a loss cost at an accident year 2022 cost and mobility level based on a **weighted average** of the indicated loss costs from the March 2023 AAR, adjusted for trend, WFH, CERP, etc.
- Appendix 4, Table 3 presents estimates for 2009/2022. MPI's selections consider estimates for the **six** years from 2017/18 through 2022/23.

Work-From-Home Adjustment

- 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).

Projection to Accident Years 2024 through 2026

- MPI applies **future trend** to its final projected accident year 2022 loss costs to project loss costs for accident years 2024 through 2026

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MPI METHODOLOGY AT A GLANCE

Data

- MPI calculates historical frequency and severity based on ultimate claims estimates from the October 2022 AAR and MPI Analysis of Ultimate Claim Counts

Model Fitting

- MPI fits regression models to the estimated frequency and severity to model "past trend"
- MPI develops estimates of future trend.
- The regression models include a "mobility" parameter, if statistically significant, to consider the effect of reduced traffic volumes during the COVID-19 pandemic

Selection of Loss Costs

- MPI adjusts indicated loss costs from the March 2023 AAR, for past trend, WFH, CERP, etc.
- MPI calculates a loss costs at 2022/23 cost level as a weighted average.
- Appendix 4, Table 3 presents estimates for 2009/2022. MPI's selections consider estimates for the **six** years from 2017/18 through 2022/23.

Forward Projection

- MPI applies a +5.56% future work-form home (WFH) adjustment and its selected future trend to project loss costs for accident years 2024/25 and 2025/26.

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FINDINGS AND CONCLUSIONS

Proposed Alternative Assumptions

1 *Accident Year Weights*

- Accident Benefits – Weekly Indemnity
- Accident Benefits – Other (Indexed)
- Bodily Injury
- Collision
- Property Damage

2 *Past Trends*

- Accident Benefits – Weekly Indemnity
- Accident Benefits – Other (Indexed)
- Collison
- Comprehensive
- Property Damage

3 *Future Trends*

- Accident Benefits – Other (Non-Indexed)

Result

MPI has requested a rate change of 0.0%. We estimate[1] the indicated loss cost change to be -4.19% and the indicated premium change to be -3.58%, *prior to MPI's October Revision*

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

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1

ACCIDENT YEAR WEIGHTS

MPI SELECTED 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.

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%

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FINDINGS RELATED TO ACCIDENT YEAR WEIGHTS

1

Snowfall

- We generally observe MPI's frequency regression models overpredict the 2020 observation and underpredict the 2021 observation
- MPI states that most of this unexplained variance may be explained by snowfall levels, as 2020 experienced significantly less snowfall than 2021

Conclusion:
We find 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.

2

Experience Period

- Rate filings that we review, particularly those for insurers with higher premium volumes such as MPI, 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

Conclusion:
We find the older 2017 experience may be less reflective of the more recent emerging data

3

COVID-19 Pandemic

- MPI indicates that it excluded 2020 for coverages "where COVID-19 impacted frequency."

Conclusion:
We recognize that the predictive value of experience for both 2020 and 2021 may be subject to additional uncertainty, not only the 2020 experience. We do not find MPI's rationale for excluding 2020 but including 2021 to be compelling.

We find it more reasonable to consider appropriate weights for both the 2020 and 2021 accident years

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OLIVER WYMAN ALTERNATIVE ACCIDENT YEAR WEIGHTS

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:

- 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[1] of those observations, given the observations for all other years

Oliver Wyman Alternative Accident Year Weights[2]

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%

[1]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.

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

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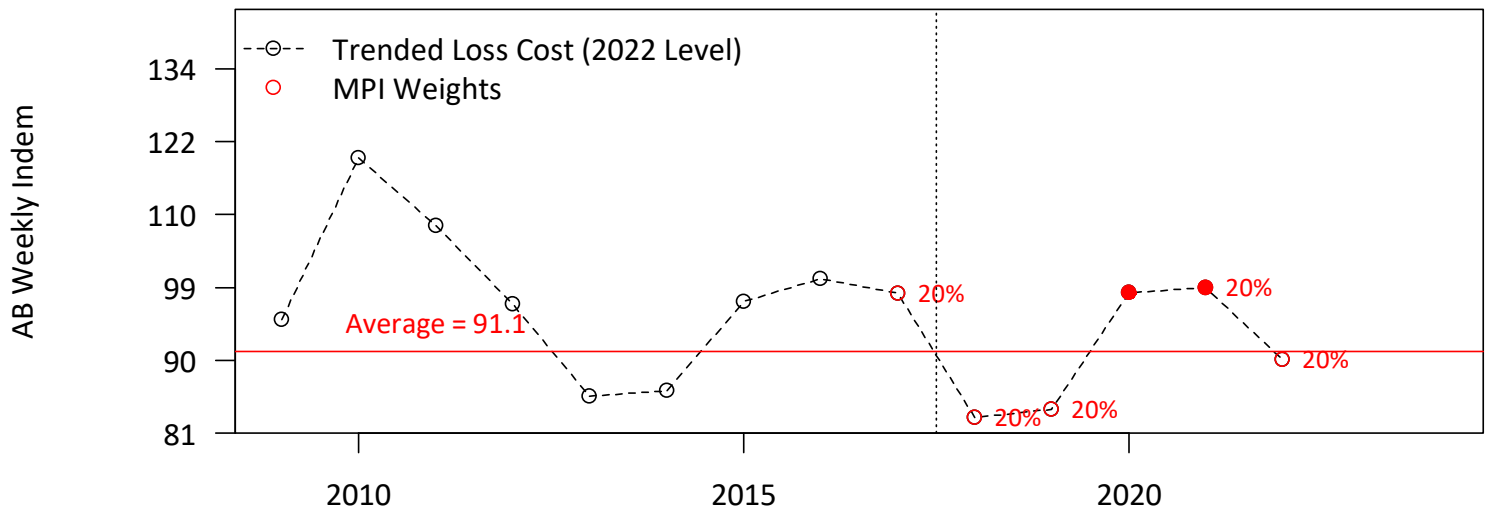
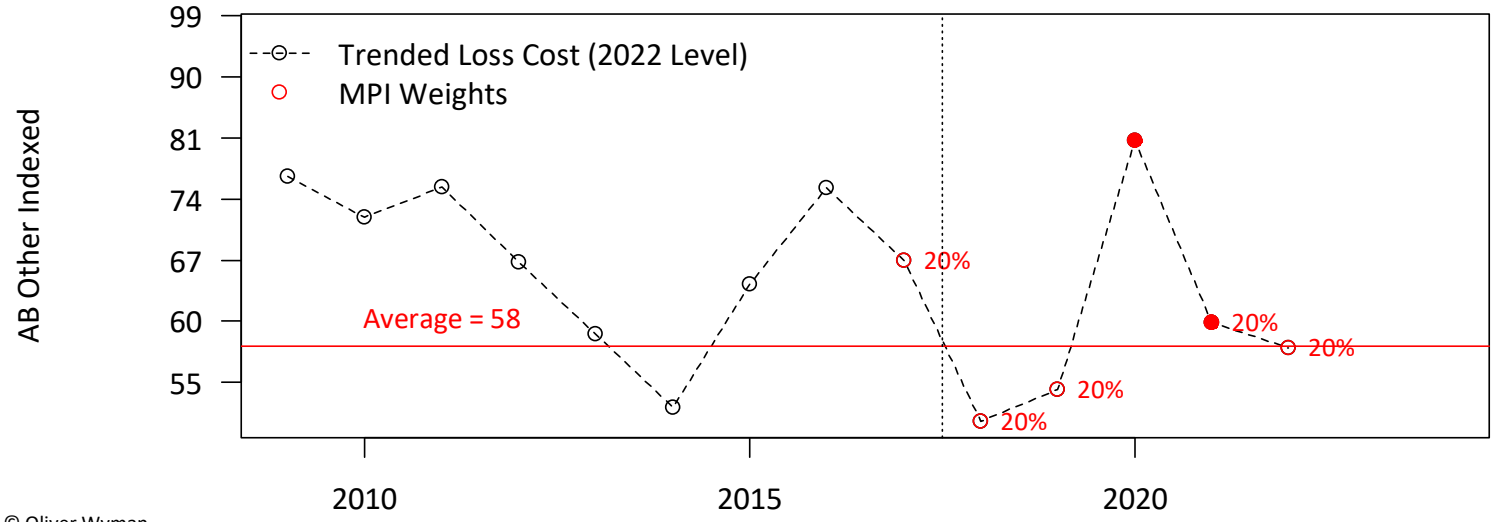
MPI SELECTED ACCIDENT YEAR WEIGHTS – ACCIDENT BENEFITS WEEKLY INDEMNITY & ACCIDENT BENEFITS OTHER (INDEXED)



8.56 %



9.93 %

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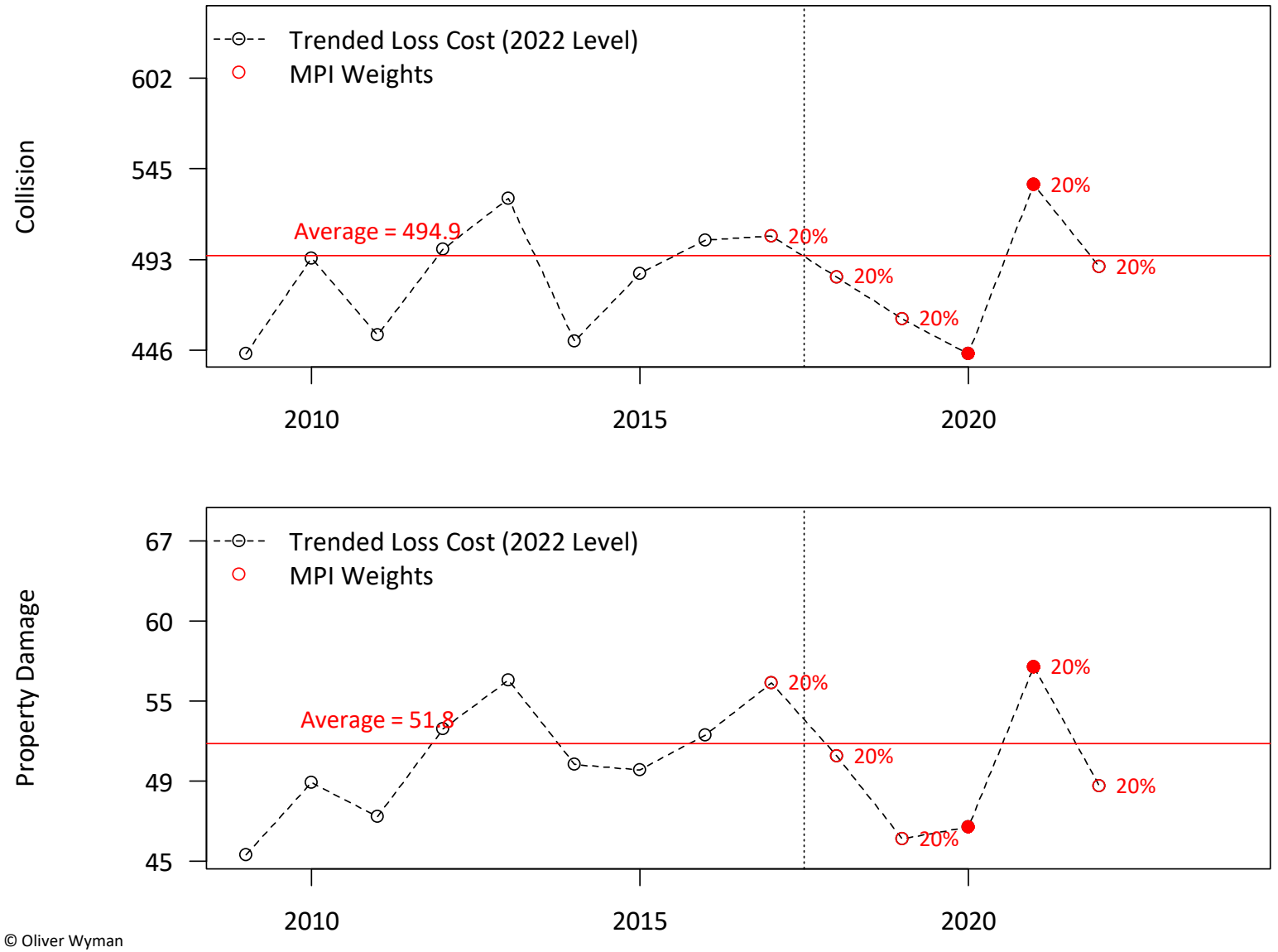
MPI SELECTED ACCIDENT YEAR WEIGHTS – COLLISION AND PROPERTY DAMAGE



59.17 %

5.60 %

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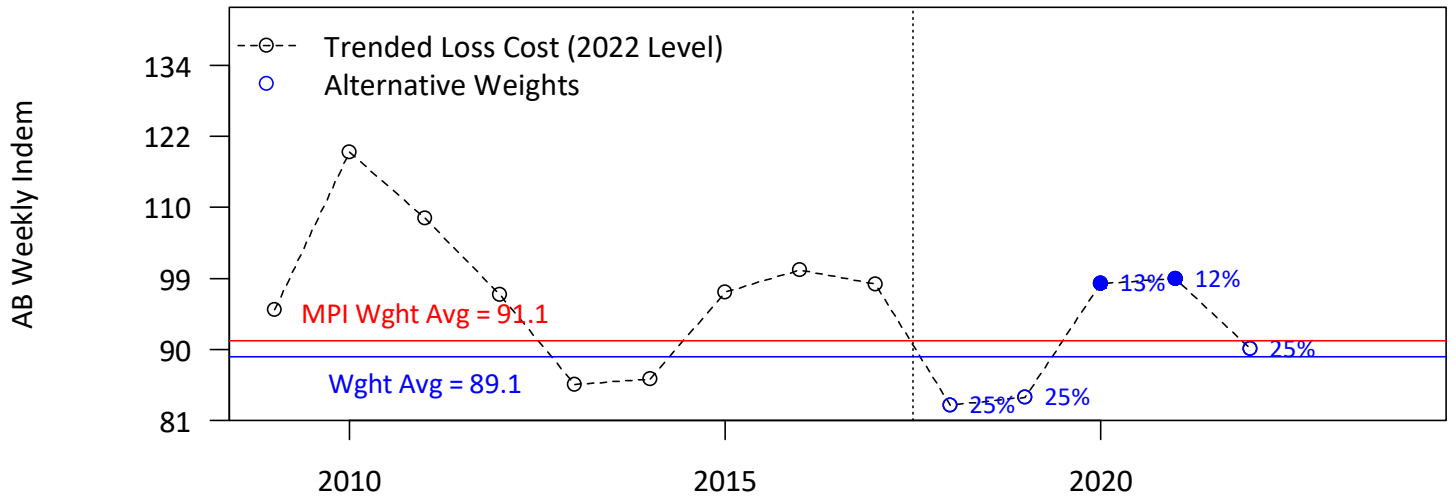
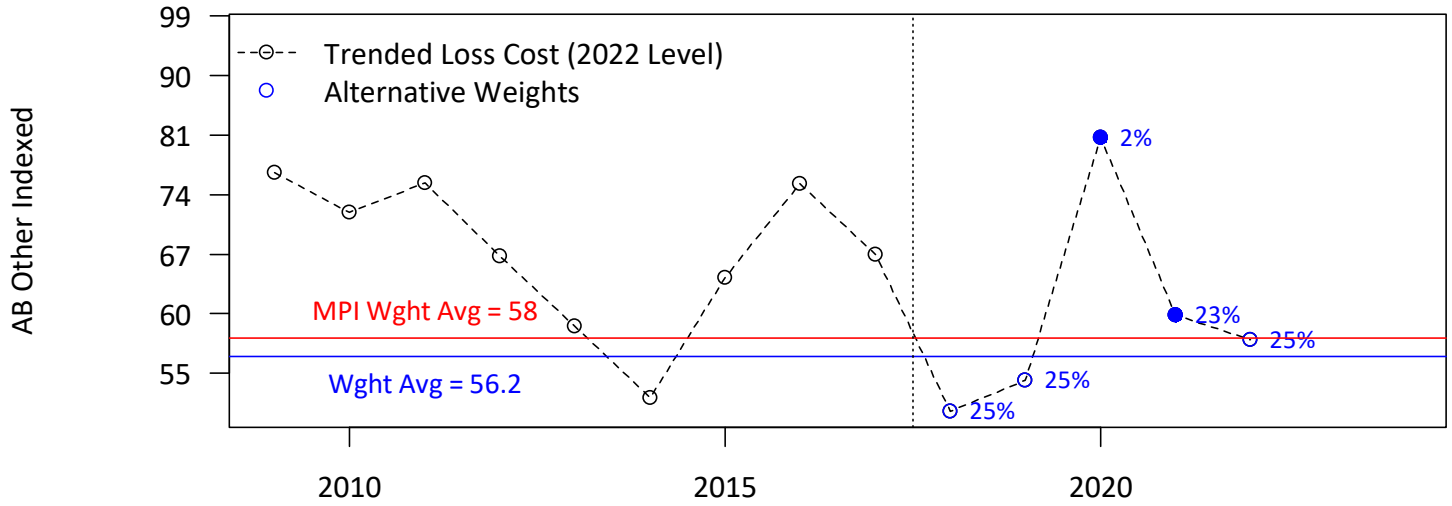
OLIVER WYMAN ALTERNATIVE WEIGHTS – ACCIDENT BENEFITS WEEKLY INDEMNITY AND ACCIDENT BENEFITS OTHER INDEXED



8.56 %



9.93 %

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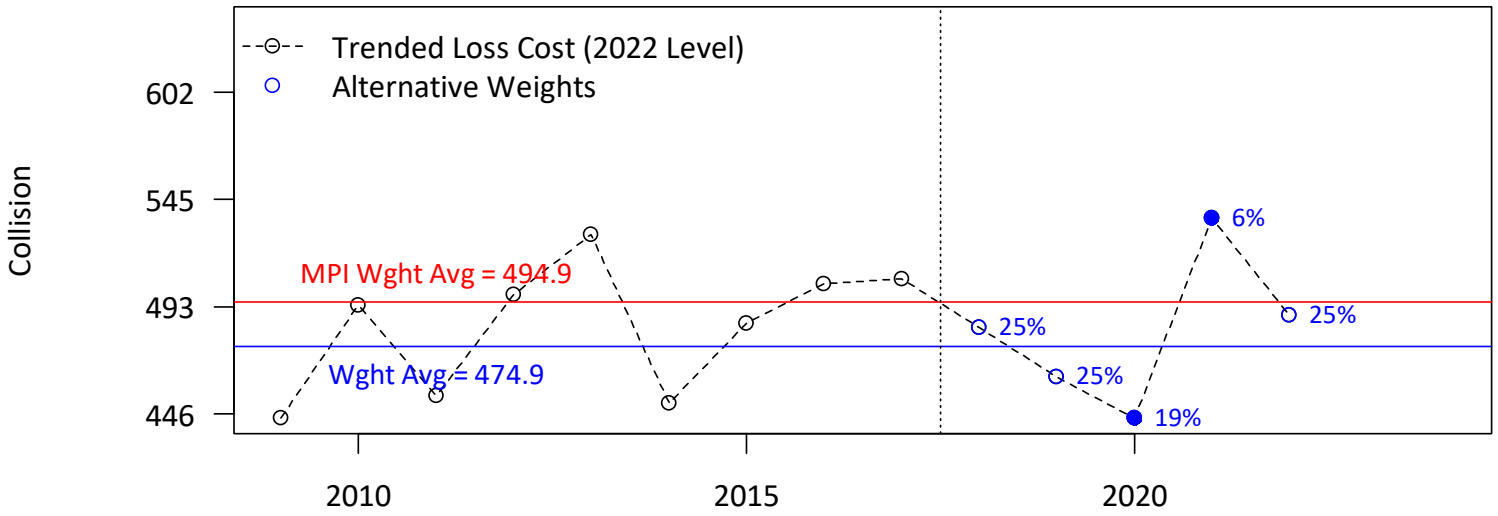
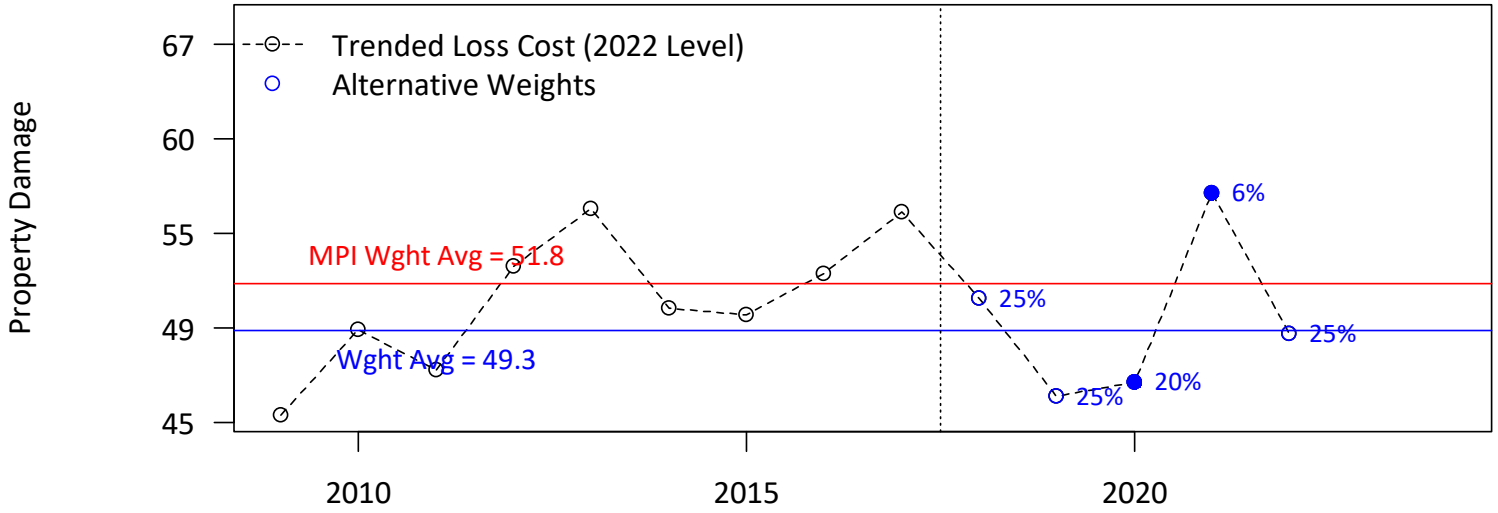
OLIVER WYMAN ALTERNATIVE WEIGHTS – COLLISION AND PROPERTY DAMAGE



59.17 %



5.60 %

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2

ADJUSTMENTS TO HISTORICAL CLAIMS EXPERIENCE

MPI TREND METHODOLOGY

- MPI has changed its loss trend methodology since the 2023 GRA.
  - MPI has adopted a methodology very similar to the approach we use in other Provinces.
  - MPI's prior trend analysis relied more heavily on judgment.
  - We view the 2024 approach as an improvement as it is more robust and leverages a statistical model.
  - This change makes comparison to prior more difficult.

- MPI applies a two-step tending process
  - Experience period data is adjusted to reflect observed changes in cost conditions ("past trend"). MPI estimates past trend rates based on regression models fit to frequency, severity, and loss cost data over varying time periods.
  - Data is further adjusted to reflect expected future changes in cost conditions between the end of the experience period and the period in which premiums will be written ("future trend"). MPI's selected future trend is based on the selected past trend and the likelihood that those patterns may change.

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2.1

WORK FROM HOME ADJUSTMENT

WORK FROM HOME ADJUSTMENT

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).

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 drove *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: <u>Reasonable</u>

- 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.

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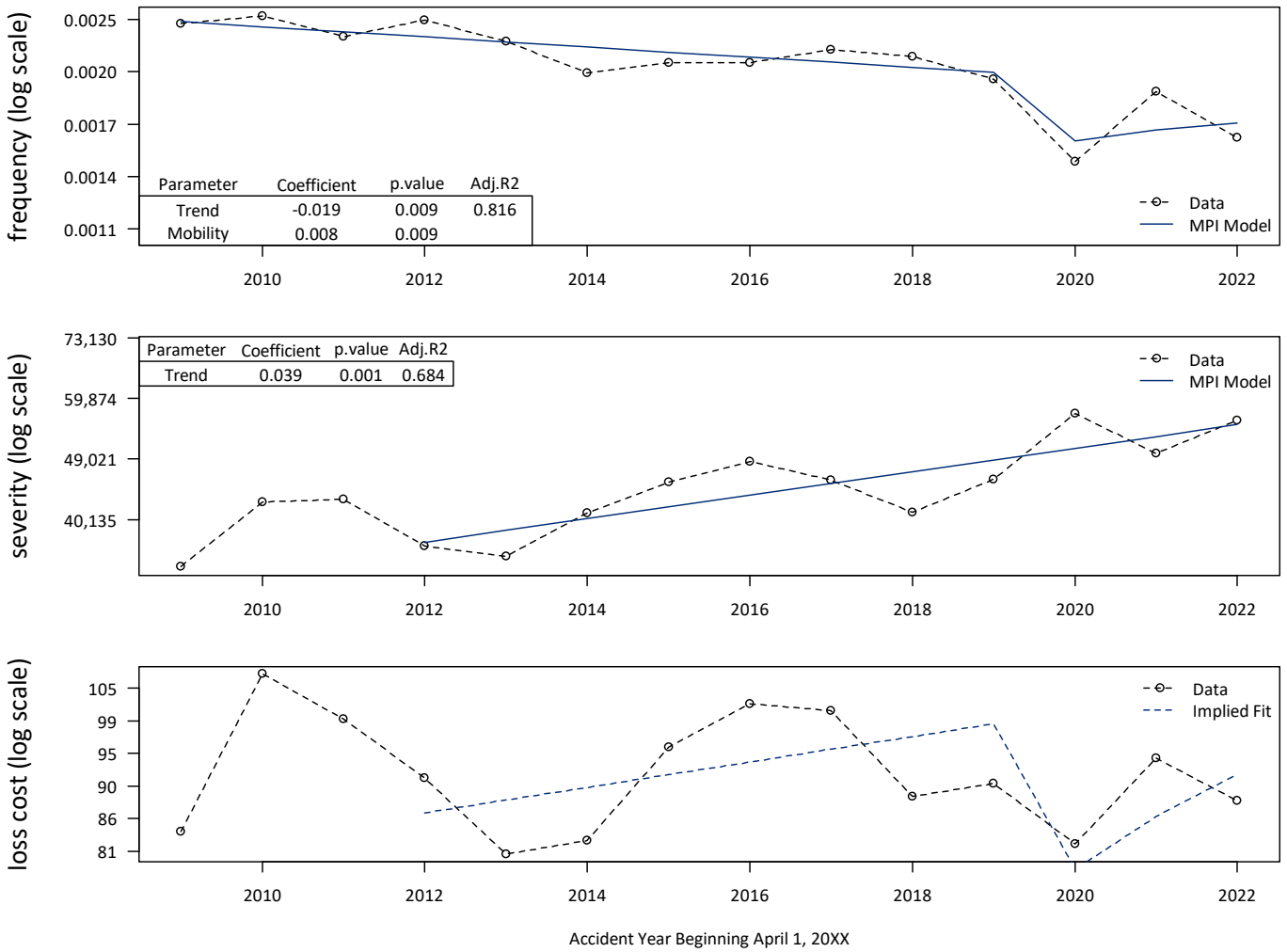
2.2

TREND MODELS: ACCIDENT BENEFITS – WEEKLY INDEMNITY

ACCIDENT BENEFITS – WEEKLY INDEMNITY LOSS TREND

Figure 4: Accident Benefits – Weekly Indemnity MPI Trend Model



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.

Future Trend

- MPI selects future frequency and severity trends that are equivalent to its selected past trend rates.

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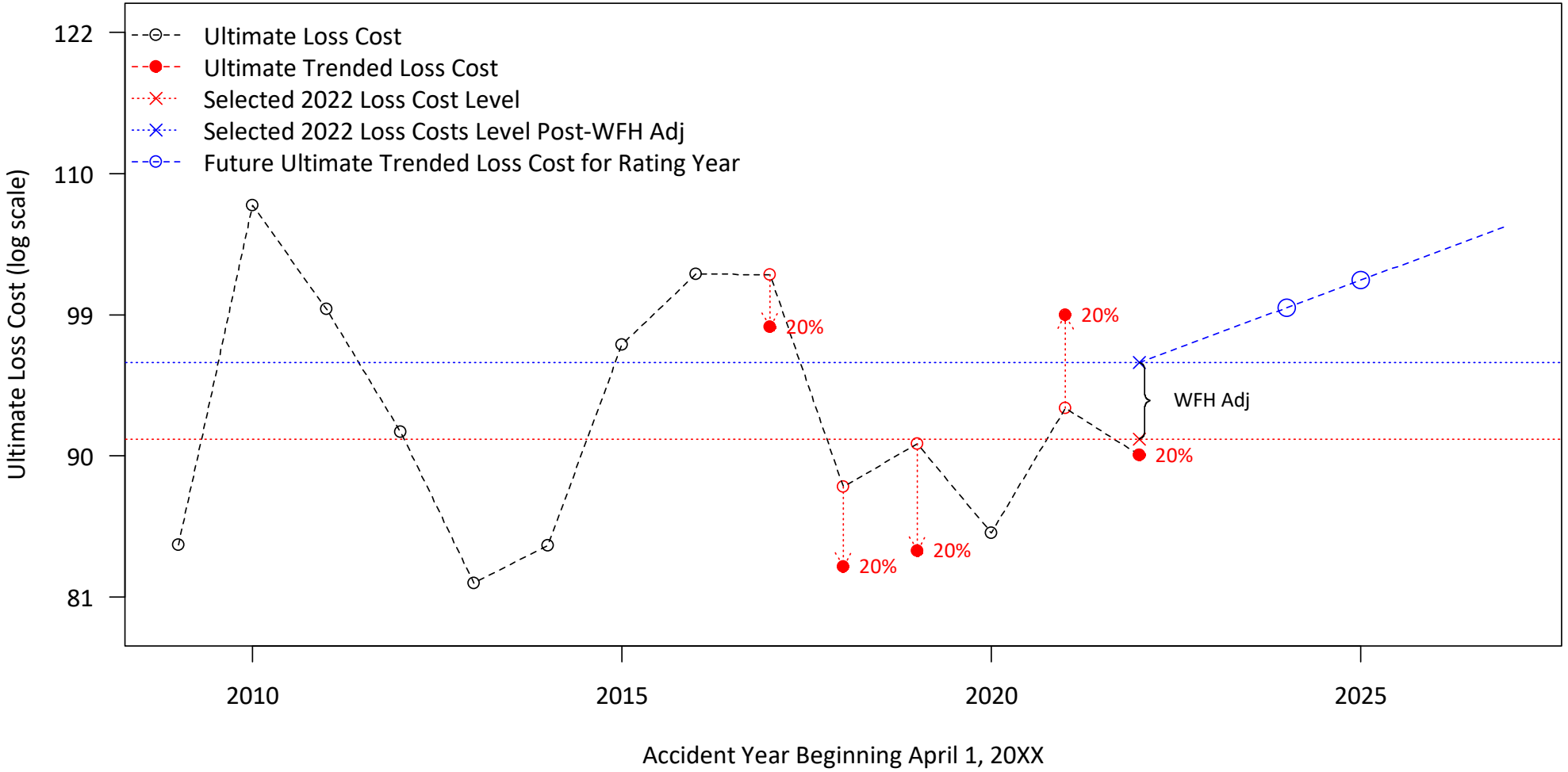
ACCIDENT BENEFITS – WEEKLY INDEMNITY 2024/25 LOSS COST PROJECTION

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



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ACCIDENT BENEFITS – WEEKLY INDEMNITY TREND FINDINGS AND CONCLUSIONS

Oliver Wyman Recommendation: The frequency and severity models should be fit to the same time periods

It is our view that, absent compelling reasons, frequency and severity models should be fit to 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

This results in a loss cost trend reduction of 0.98 percentage points, from +1.97% to +0.99%.

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ACCIDENT BENEFITS – WEEKLY INDEMNITY ALTERNATIVE LOSS TREND

Figure 6: Accident Benefits – Weekly Indemnity Alternative Trend Model

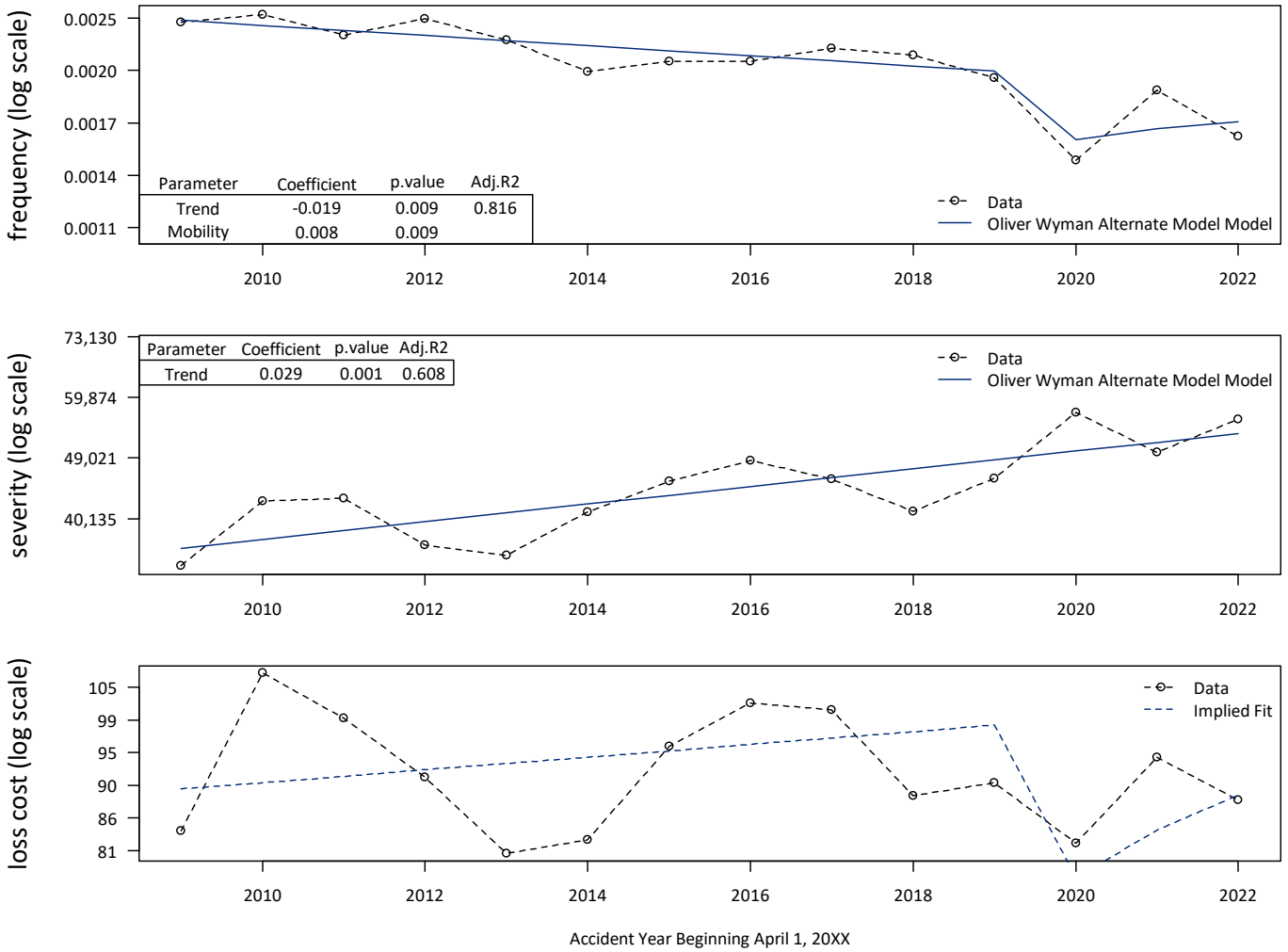

Figure 6 presents the trend models suggested by Oliver Wyman in forecasting Accident Benefits – Weekly Indemnity claims.

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

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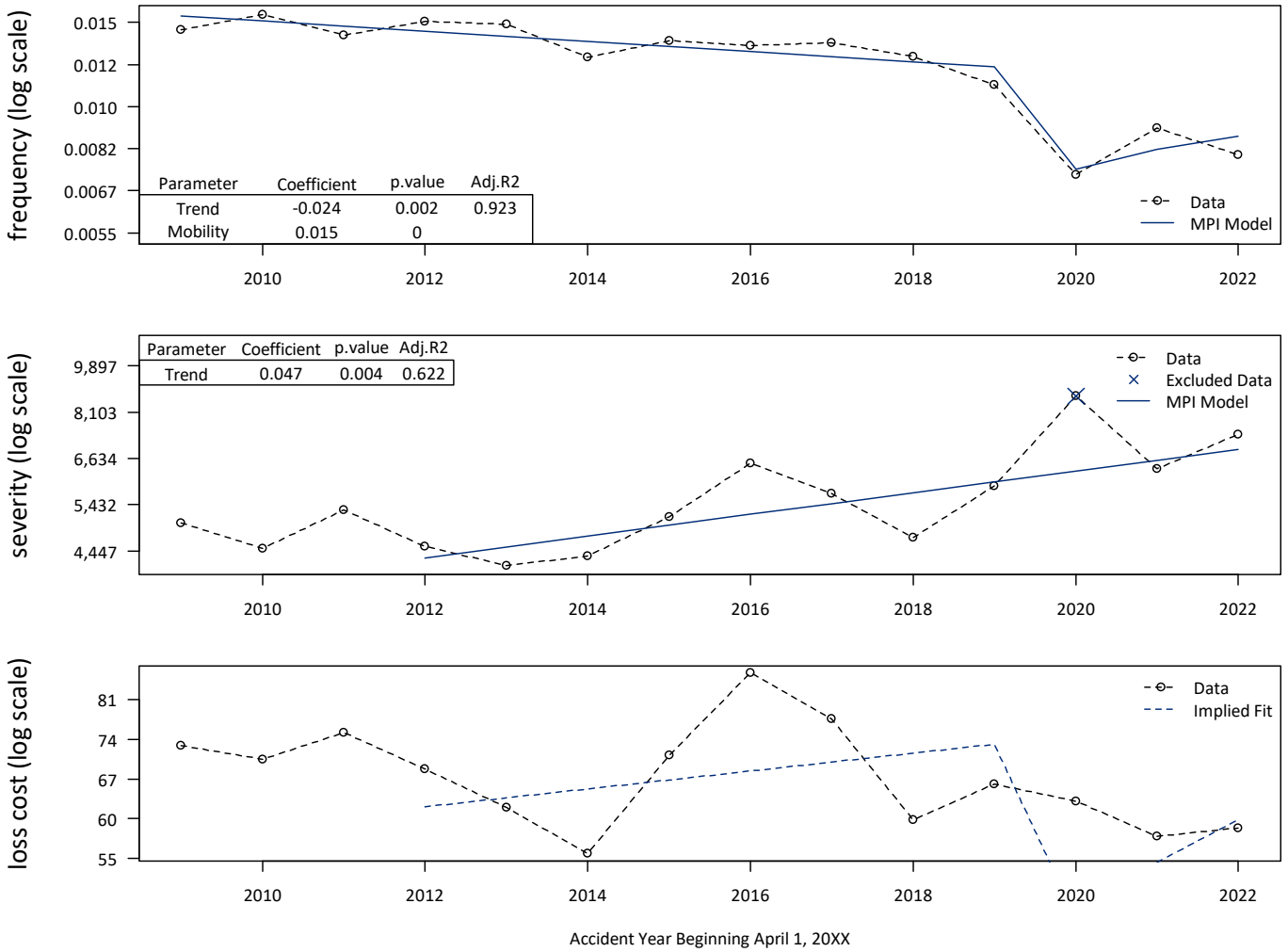
2.3

TREND MODELS: ACCIDENT BENEFITS – OTHER (INDEXED)

ACCIDENT BENEFITS – OTHER (INDEXED) LOSS TREND

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



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.
- The lower panel presents loss cost data, and the loss costs implied by MPI's frequency and severity models.

Future Trend

- MPI selects future frequency and severity trends that are equivalent to its selected past trend rates.

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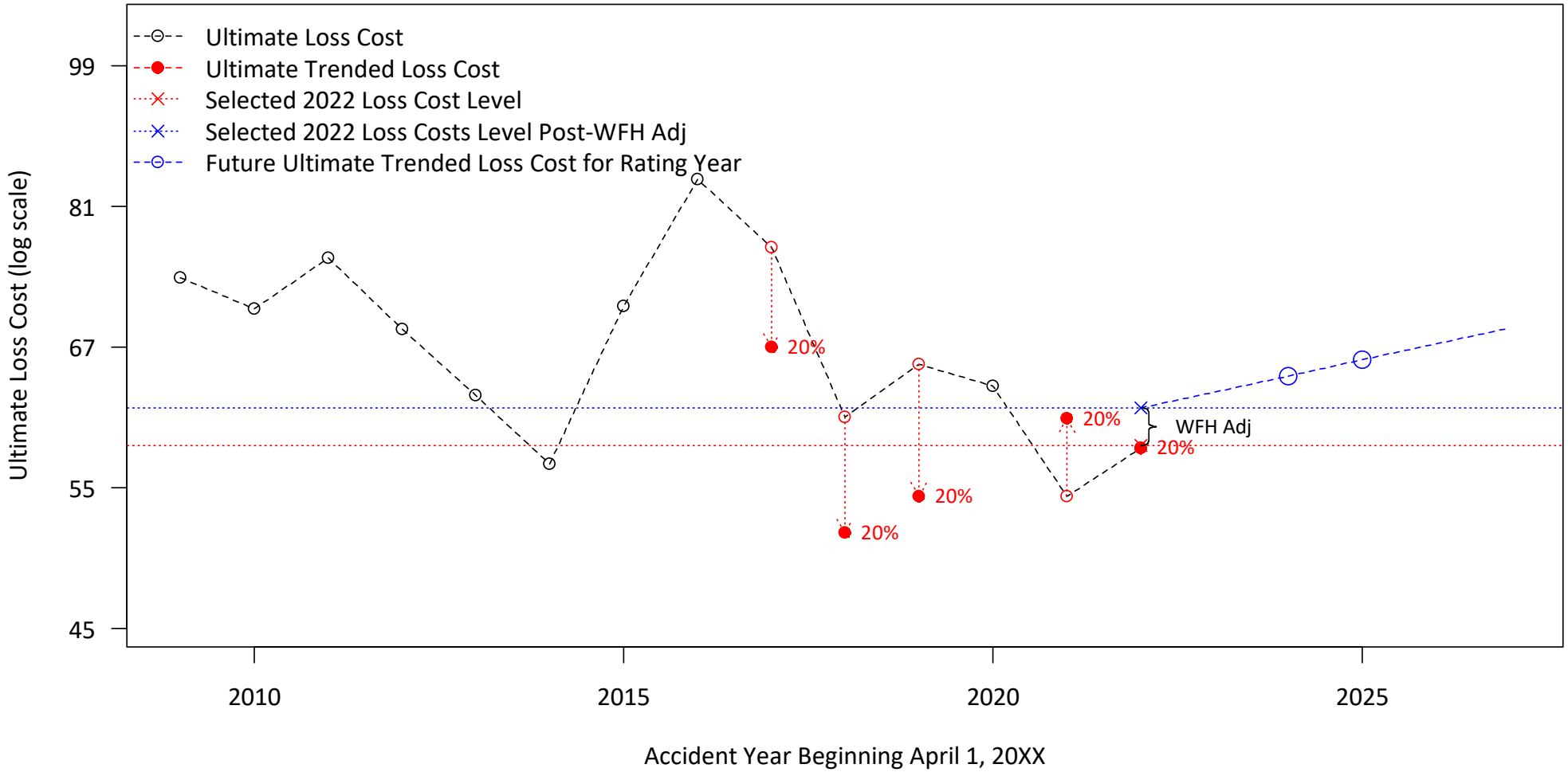
ACCIDENT BENEFITS – OTHER (INDEXED) 2024/25 LOSS COST PROJECTION

Figure 8: Accident Benefits – Weekly Indemnity MPI Rating Year 2024/25 Loss Cost Projection



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ACCIDENT BENEFITS – OTHER (INDEXED) TREND FINDINGS AND CONCLUSIONS

Oliver Wyman Recommendation: The frequency and severity models should be fit to the same time periods

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.

This results in a loss cost trend reduction of 0.87 percentage points, from +2.29% to +1.42%.

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ACCIDENT BENEFITS – OTHER (INDEXED) ALTERNATIVE LOSS TREND

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

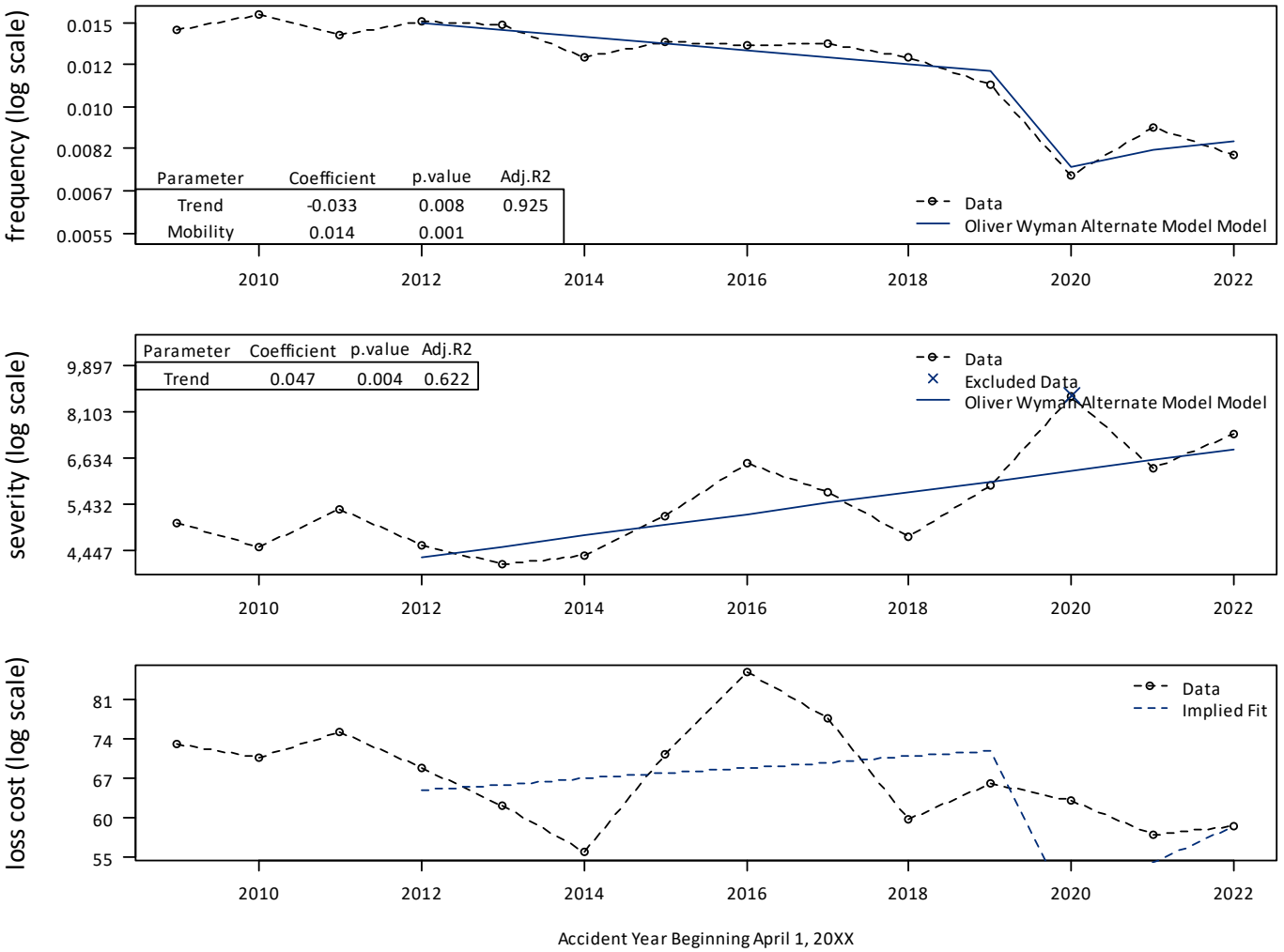

Figure 9 presents the trend models suggested by Oliver Wyman in forecasting Accident Benefits – Other (Indexed) claims.

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

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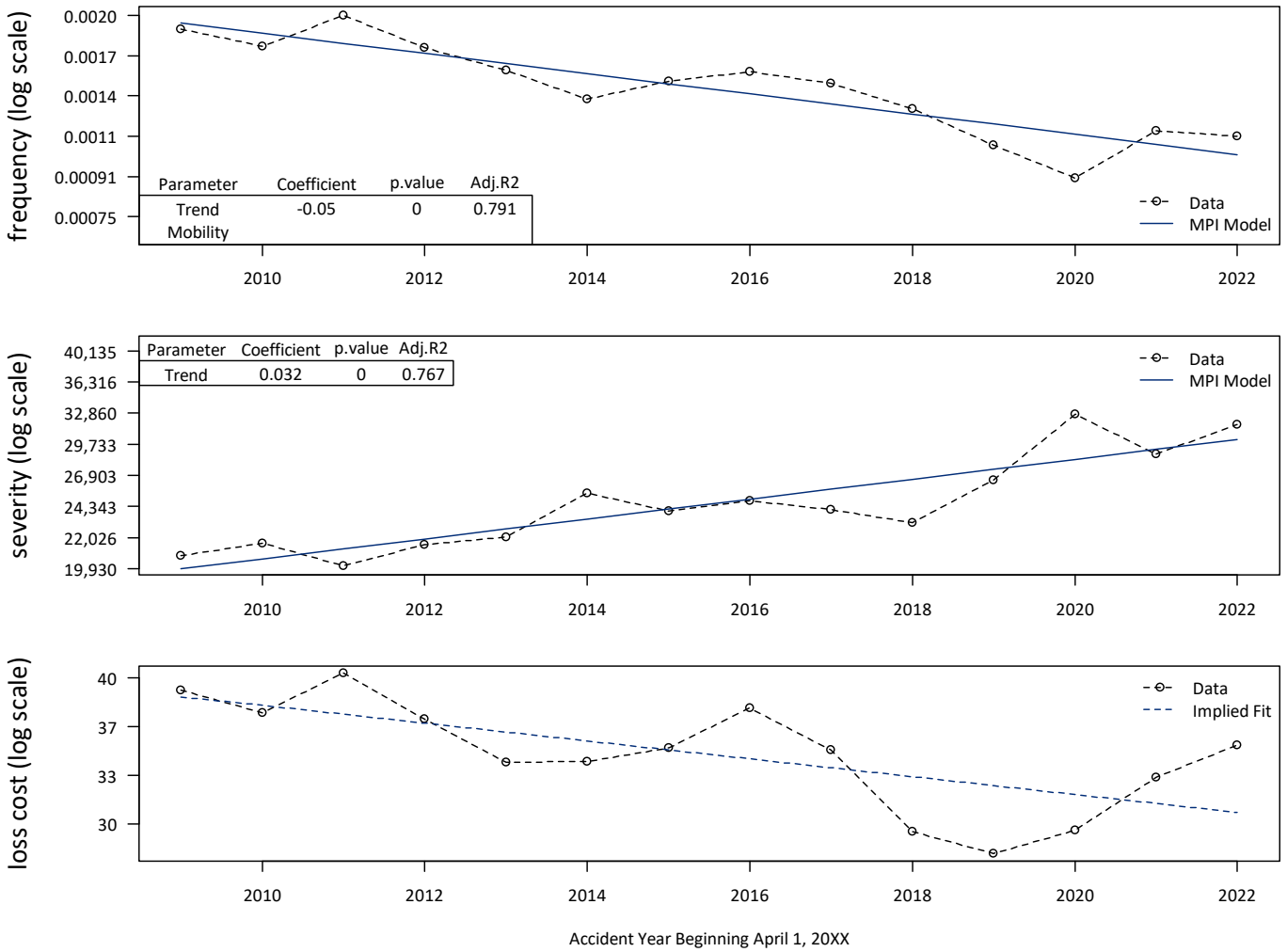
2.4

TREND MODELS: ACCIDENT BENEFITS – OTHER (NON-INDEXED)

ACCIDENT BENEFITS – OTHER (NON-INDEXED) LOSS TREND

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



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

Past Trend

Figure 10 presents the trend models used by MPI in forecasting Accident Benefits – Other (Non-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.
- The lower panel presents loss cost data, and the loss costs implied by MPI's frequency and severity models.

Future Trend

MPI selects different past and future frequency and severity trend rates for Accident Benefits - Other (Non-Indexed).

- 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[1]. 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.

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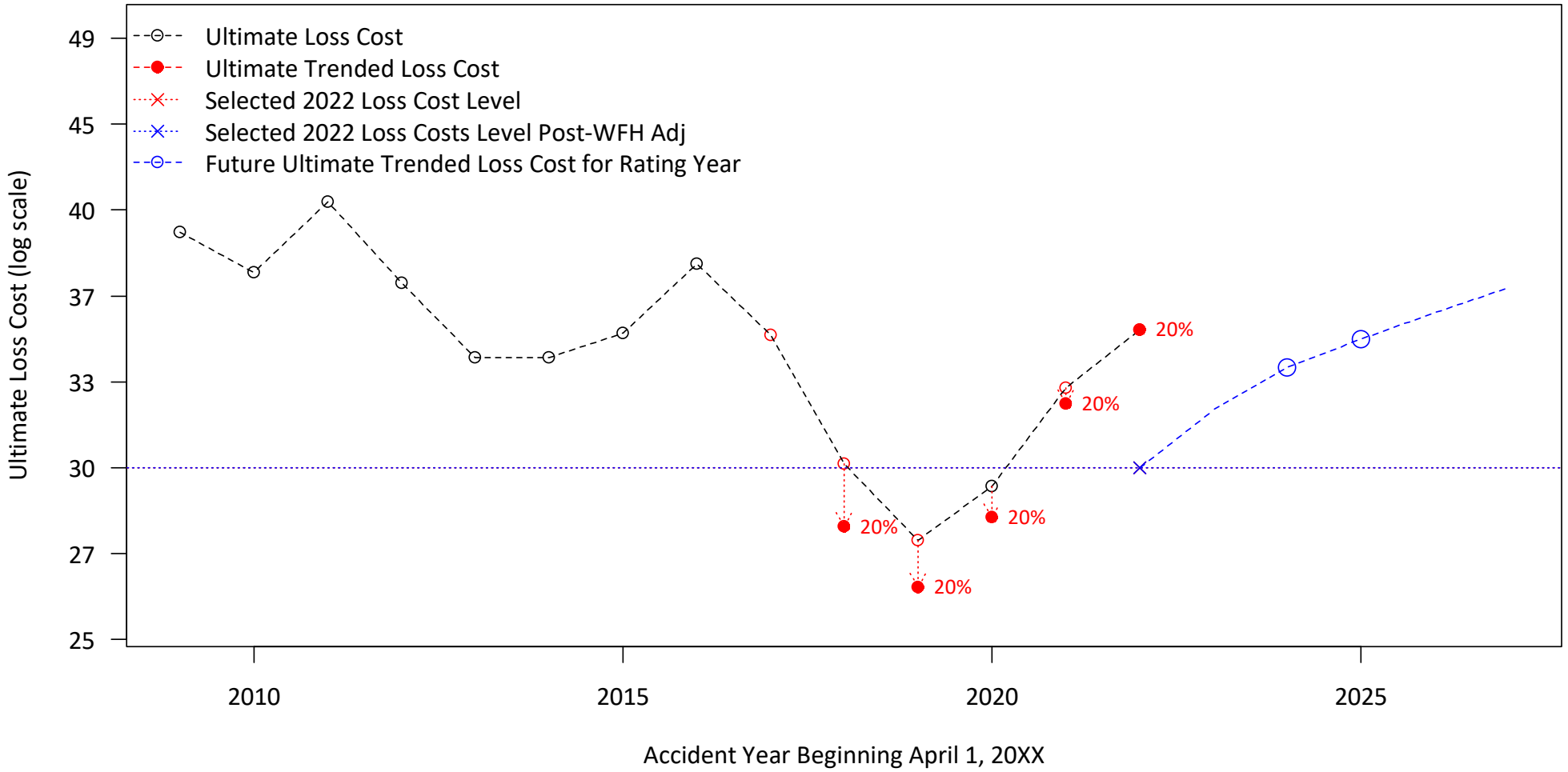
ACCIDENT BENEFITS – OTHER (NON-INDEXED) 2024/25 LOSS COST PROJECTION

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



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ACCIDENT BENEFITS – OTHER (NON-INDEXED) TREND FINDINGS AND CONCLUSIONS

Oliver Wyman Recommendation: Temper the change between past and future frequency trend

- We have no issues with MPI's ABI-O(NI) past frequency and severity trends
- 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%.

A 50% tempering trend reduces the future frequency trend from -4.90% to -2.45%, rather than from -4.90% to 0.00%.

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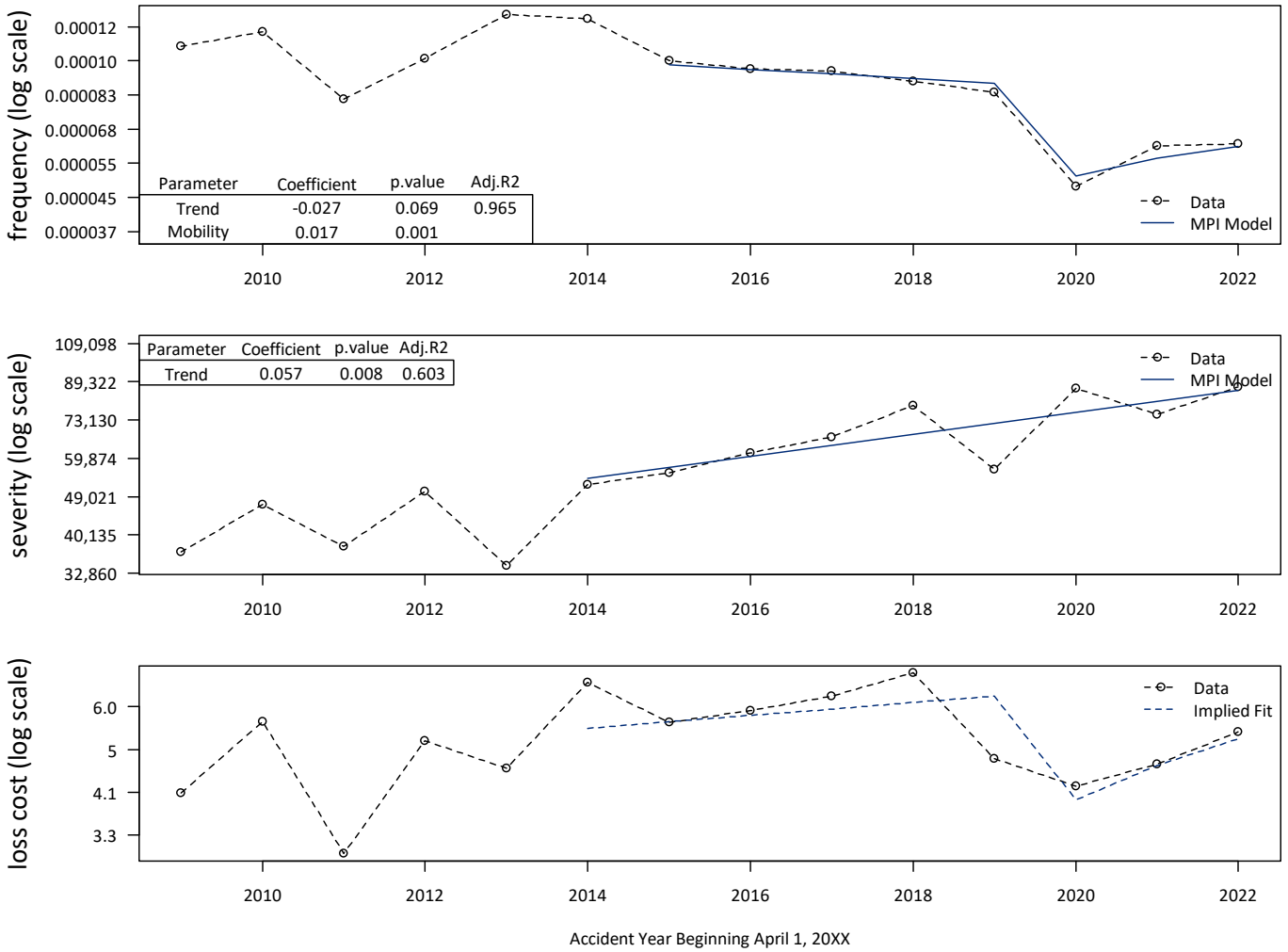
2.5

TREND MODELS: BODILY INJURY

BODILY INJURY LOSS TREND

Figure 12: Bodily Injury MPI Trend Model



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.

Future Trend

- MPI selects future frequency and severity trends that are equivalent to its selected past trend rates.

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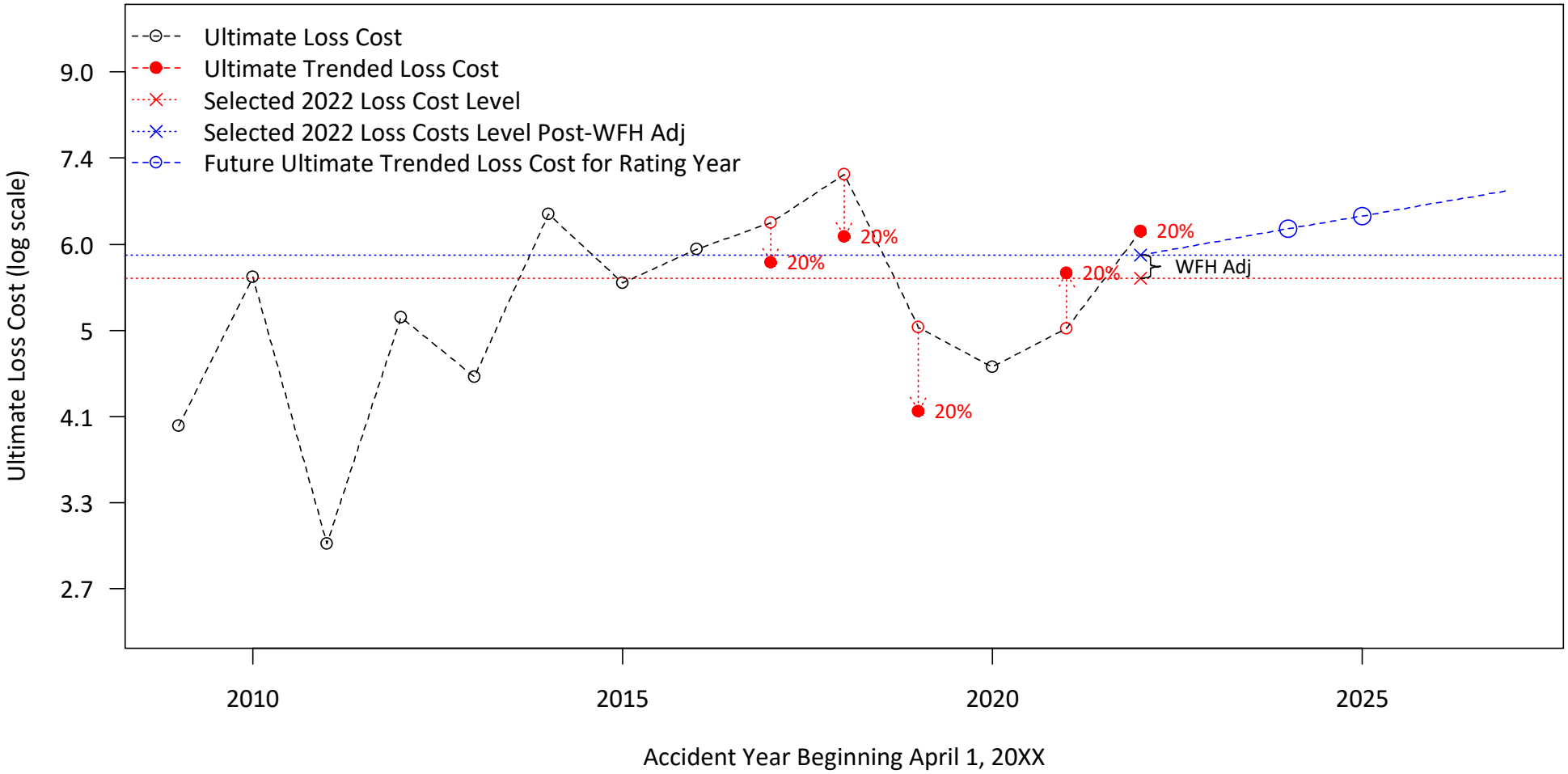
BODILY INJURY 2024/25 LOSS COST PROJECTION

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



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BODILY INJURY TREND FINDINGS AND CONCLUSIONS

No material issues

- We have no material issues with MPI’s frequency and severity models.

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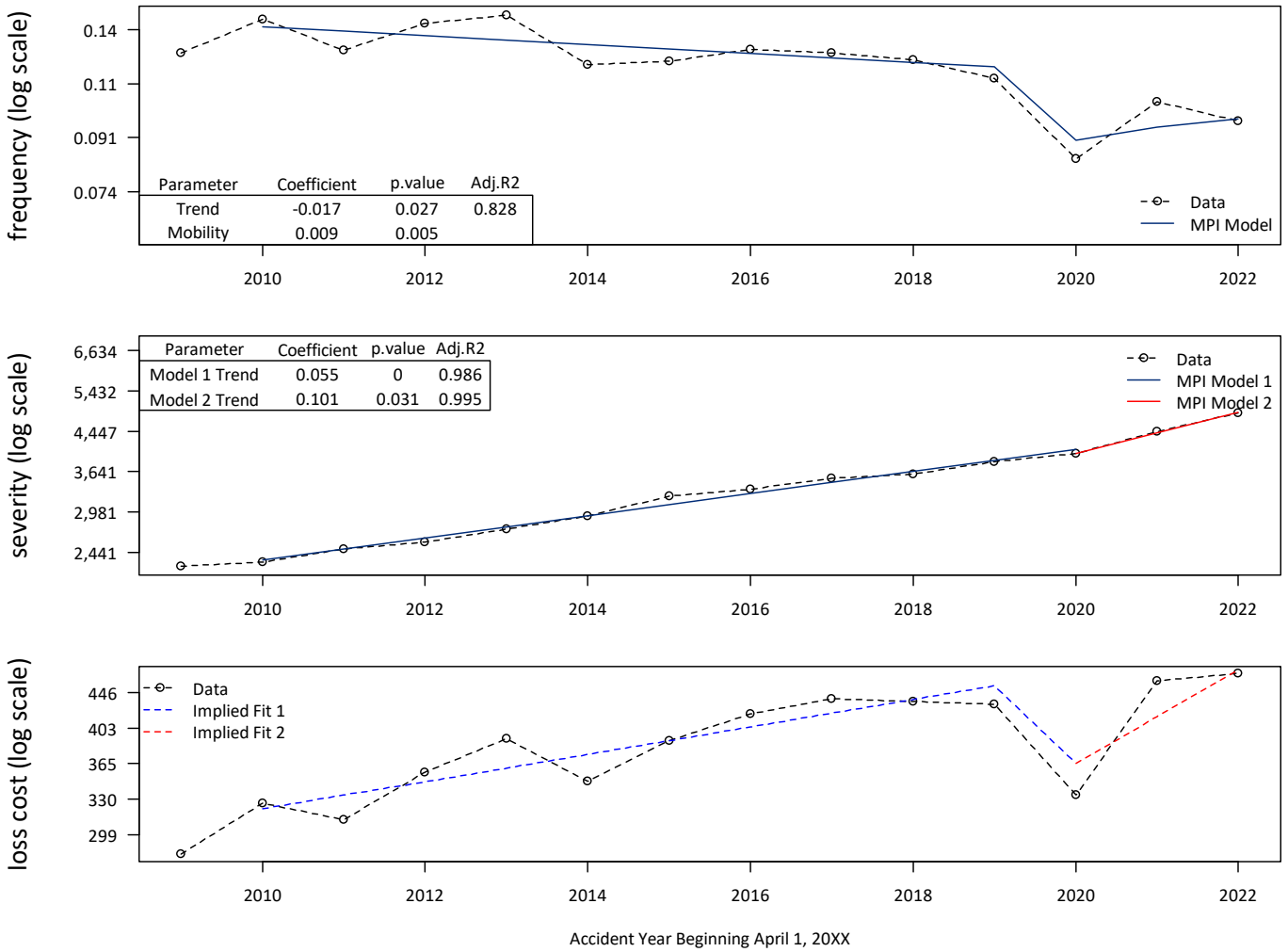
2.6

TREND MODELS: COLLISION

COLLISION LOSS TREND

Figure 14: Collision MPI Trend Model



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 loss costs implied by MPI's frequency and severity models.

Future Trend

- MPI selects a future frequency trend that is equivalent to its selected past trend rate.
- MPI estimates a 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.

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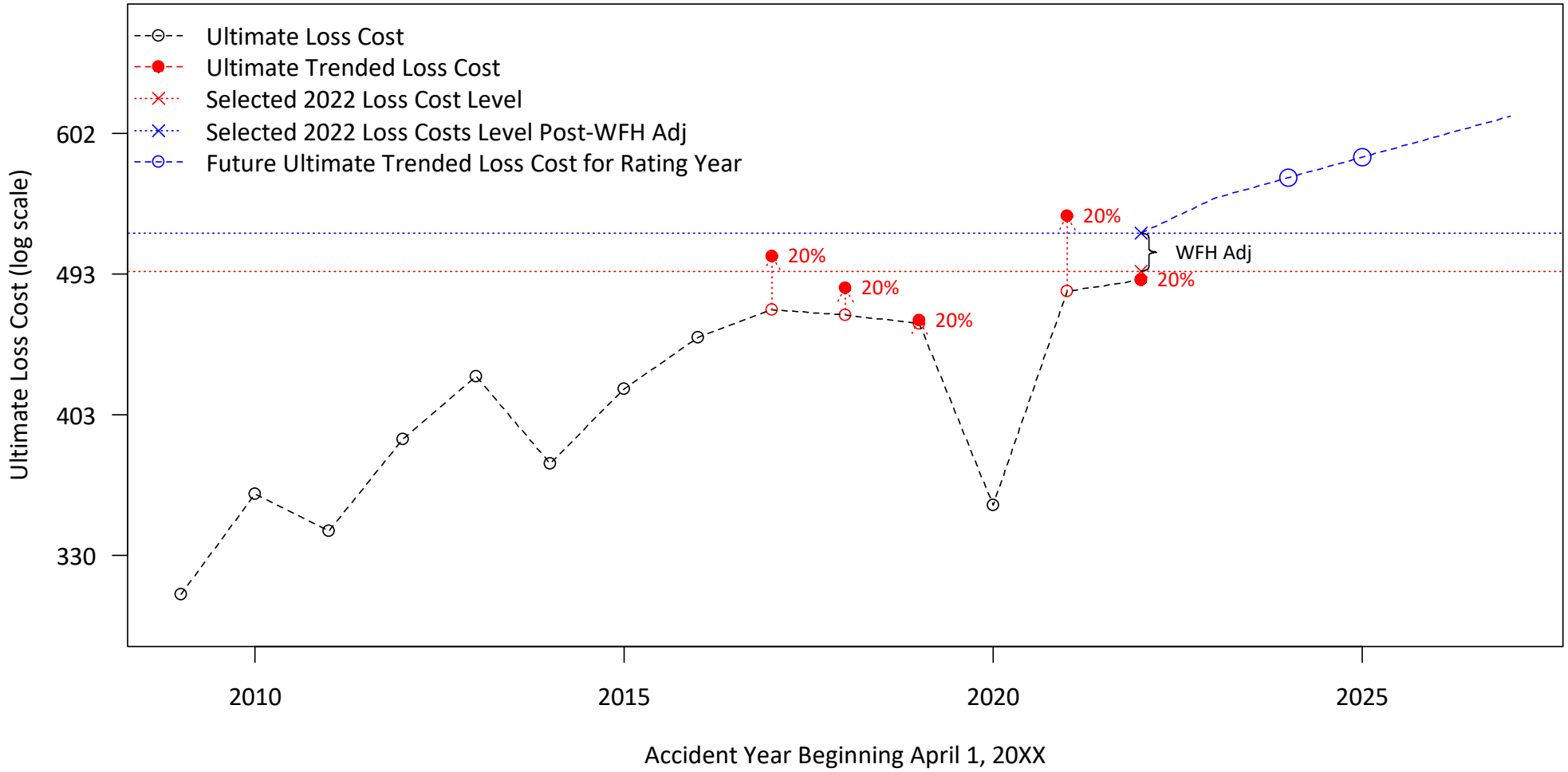
COLLISION 2024/25 LOSS COST PROJECTION

Figure 15: Collision MPI Rating Year 2024/25 Loss Cost Projection



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COLLISION TREND FINDINGS AND CONCLUSIONS

Oliver Wyman Recommendation: Use single model with an additional time parameter for severity trend

- We have no issues with MPI's collision frequency models.
- MPI selects a different severity trend between 2020 to 2022 based on a two-parameter model fit to three data points. 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 +9.38% (corrected) 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.

This results in a reduction in the pre-2020 loss cost trend from +3.92% to +3.91% and a reduction in the post-2020 loss cost trend from +8.85% to +7.57%.

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COLLISION ALTERNATIVE LOSS TREND

Figure 16: Collision Alternative Trend Model

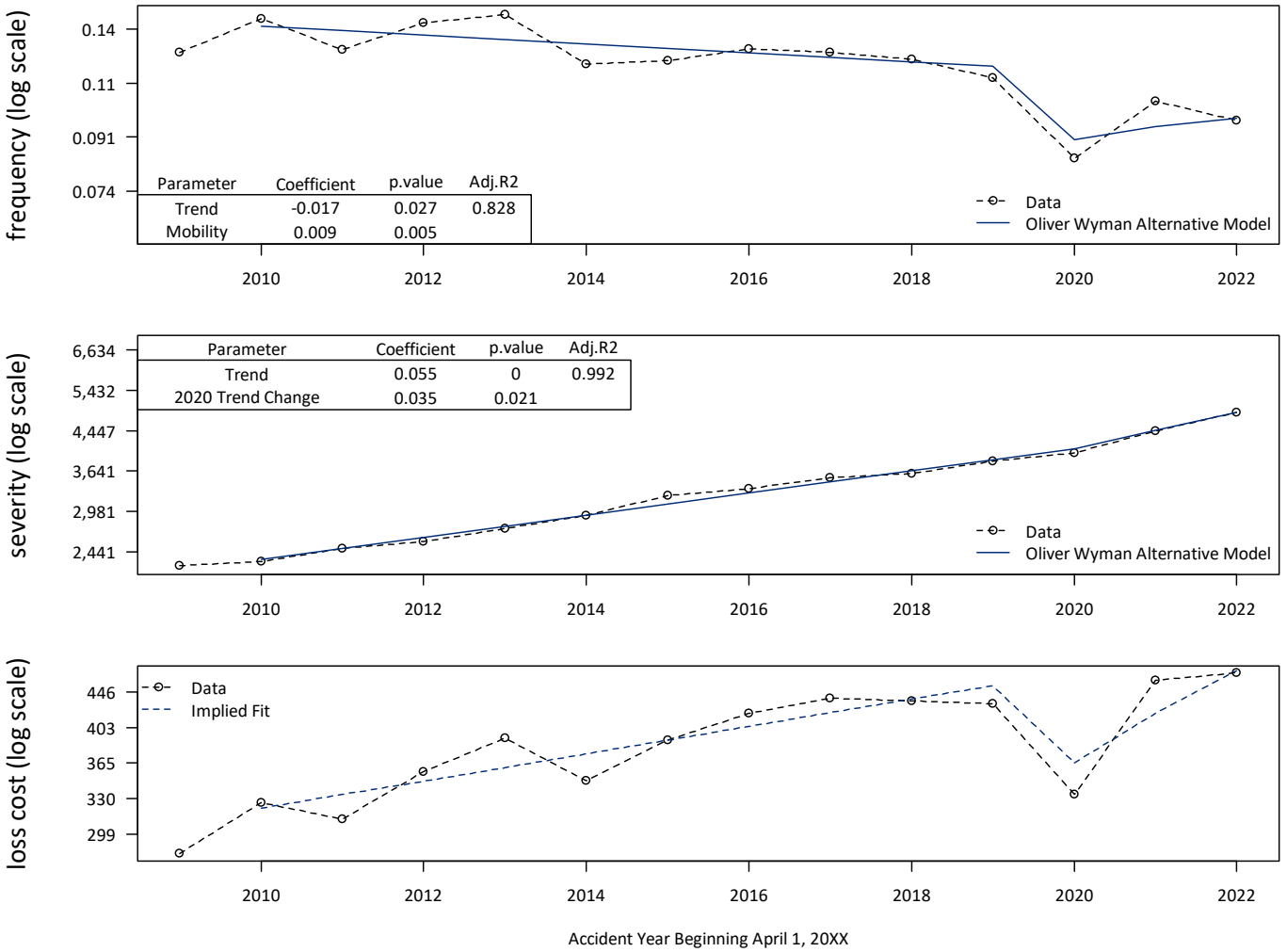

Figure 16 presents the trend models suggested by Oliver Wyman in forecasting Collision claims.

- The upper panel presents the historical frequency data, and the Oliver Wyman alternative model fit to the observations from accident years 2010 through 2022.
- The middle panel presents severity data, and the Oliver Wyman alternative model fit to the observations from accident years 2010 through 2022 using a separate trend parameter post-2020.
- The lower panel presents loss cost data, and the loss costs implied by Oliver Wyman's alternative frequency and severity models.

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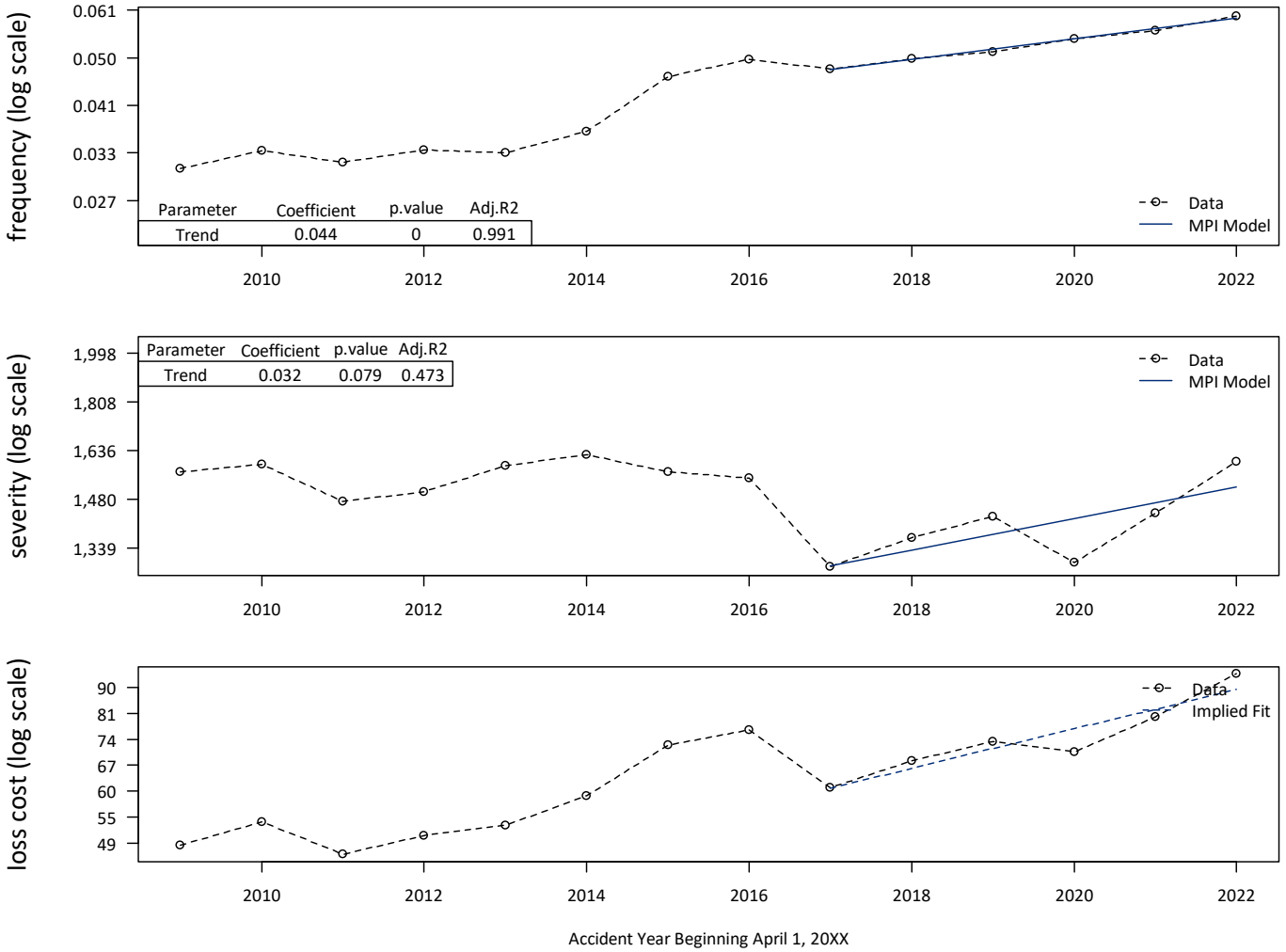
2.7

TREND MODELS: COMPREHENSIVE

COMPREHENSIVE LOSS TREND

Note that MPI removes historical hail claims from its comprehensive loss trend data and applies a separate loading factor to the loss cost forecast to account for expected future hail events.

Figure 17: Comprehensive (Excluding Hail) MPI Trend Model



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.
- The lower panel presents loss cost data, and the loss costs implied by MPI's frequency and severity models.

Future Trend

- 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.

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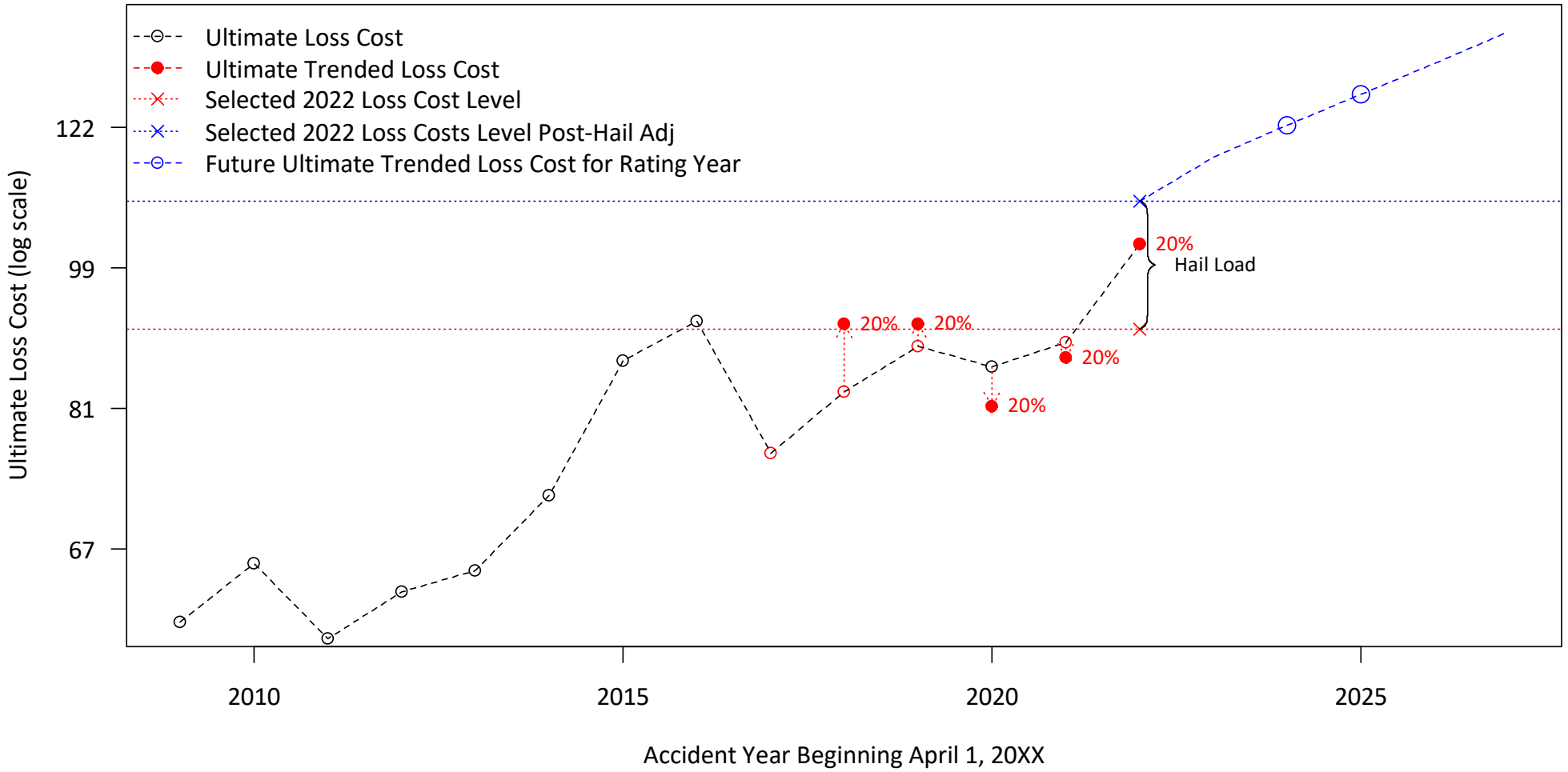
COMPREHENSIVE 2024/25 LOSS COST PROJECTION

Figure 18: Comprehensive MPI Rating Year 2024/25 Loss Cost Projection



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COMPREHENSIVE TREND FINDINGS AND CONCLUSIONS

Oliver Wyman Recommendation: Recognize longer-term severity trends using model a model with a 2017 scalar

- 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 to model the recent rise in severity for the 2020 through 2022 period.
- 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.

This results in a reduction in the pre-2020 loss cost trend from +7.90% to +4.46% and an increase in the post-2020 loss cost trend from +7.90% to +13.61%.

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COMPREHENSIVE ALTERNATIVE LOSS TREND

Figure 19: Comprehensive (Excluding Hail) Alternative Trend Model

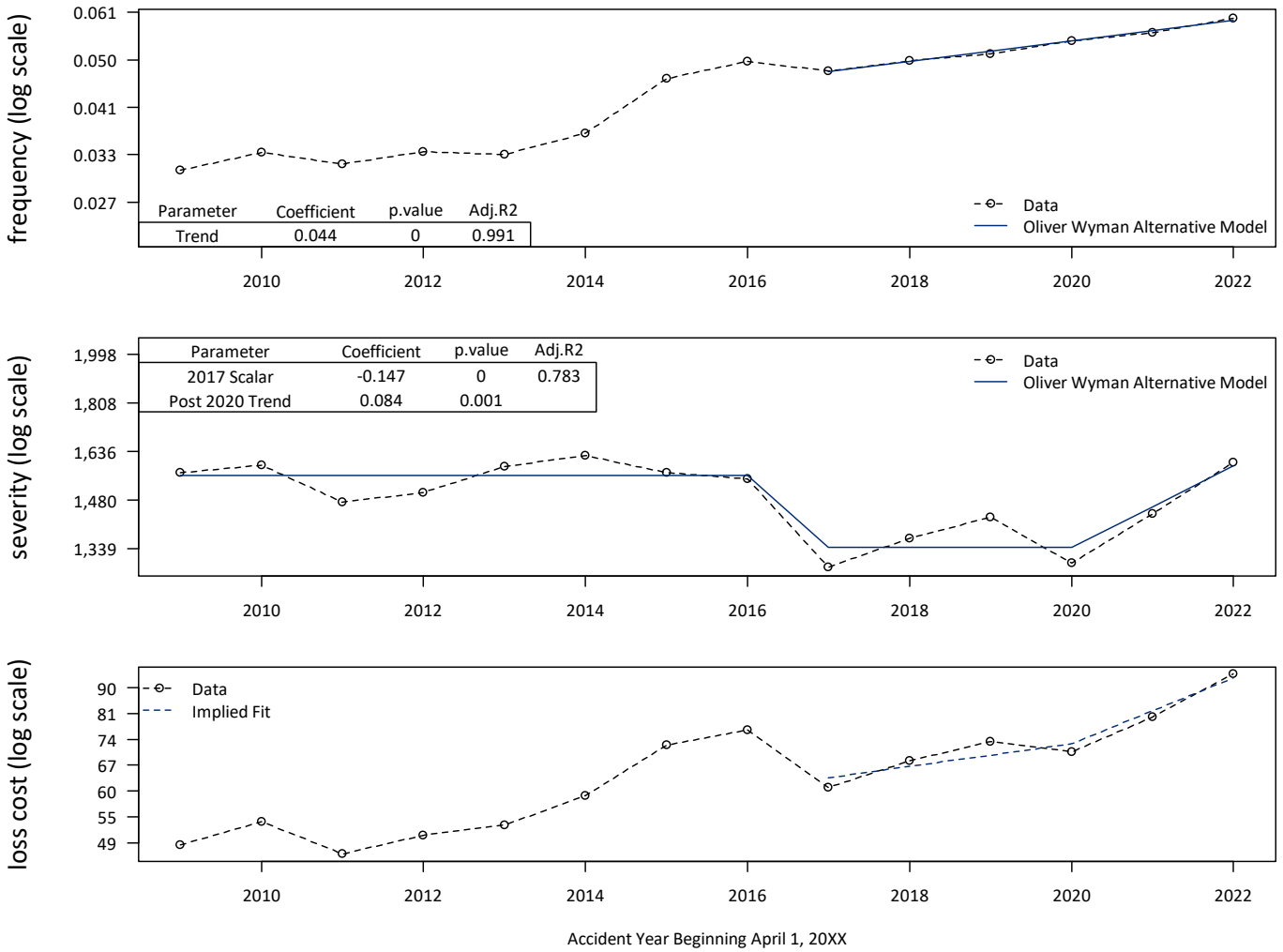

Figure 19 presents the trend models suggested by Oliver Wyman in forecasting Comprehensive claims.

- The upper panel presents the historical frequency data, and the Oliver Wyman alternative model fit to the observations from accident years 2017 through 2022.
- The middle panel presents severity data, and the Oliver Wyman alternative model fit to the observations from accident years 2009 through 2022 using a separate trend parameter post-2017.
- The lower panel presents loss cost data, and the loss costs implied by Oliver Wyman's alternative frequency and severity models.

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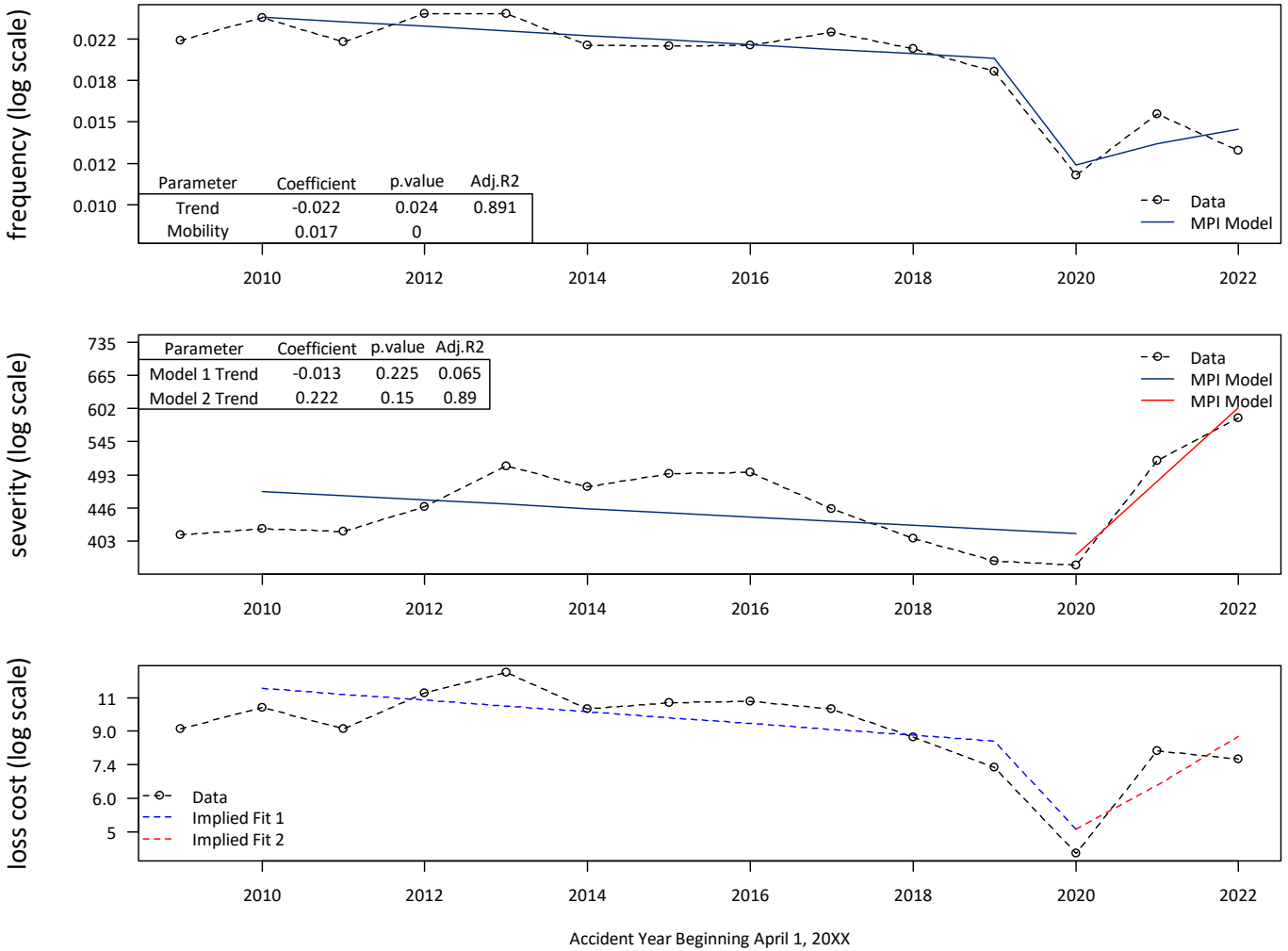
2.8

TREND MODELS: PROPERTY DAMAGE (THIRD PARTY LOSS OF USE)

PROPERTY DAMAGE (THIRD PARTY LOSS OF USE) LOSS TREND

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



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. MPI selects a different severity trend from 2020 to 2022.
- The lower panel presents loss cost data, and the loss costs implied by MPI's frequency and severity models.

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%.

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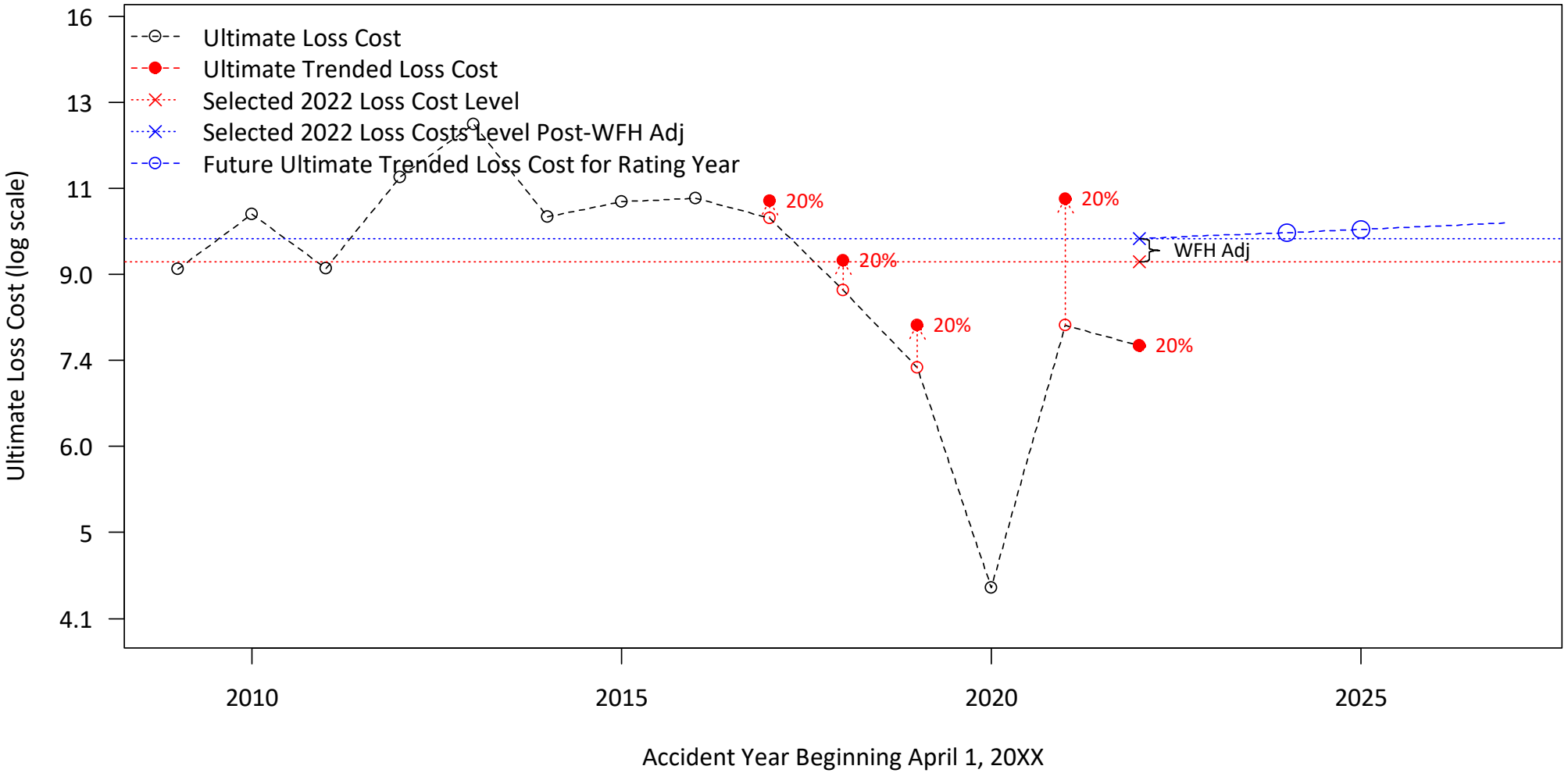
PROPERTY DAMAGE (THIRD PARTY LOSS OF USE) 2024/25 LOSS COST PROJECTION

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



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PROPERTY DAMAGE (THIRD PARTY LOSS OF USE) TREND FINDINGS AND CONCLUSIONS

Oliver Wyman Recommendation: Use single model with an additional time parameter for severity trend. Fit frequency and severity models to data from 2013 and subsequent.

- 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 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.

This results in a reduction in the pre-2020 past loss cost trend from -2.90% to -7.04%, a reduction in the post-2020 past loss cost trend from +22.12% to +22.02%, and a reduction in the future loss cost trend from +0.74% to +0.06%.

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PROPERTY DAMAGE (THIRD PARTY LOSS OF USE) ALTERNATIVE LOSS TREND

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

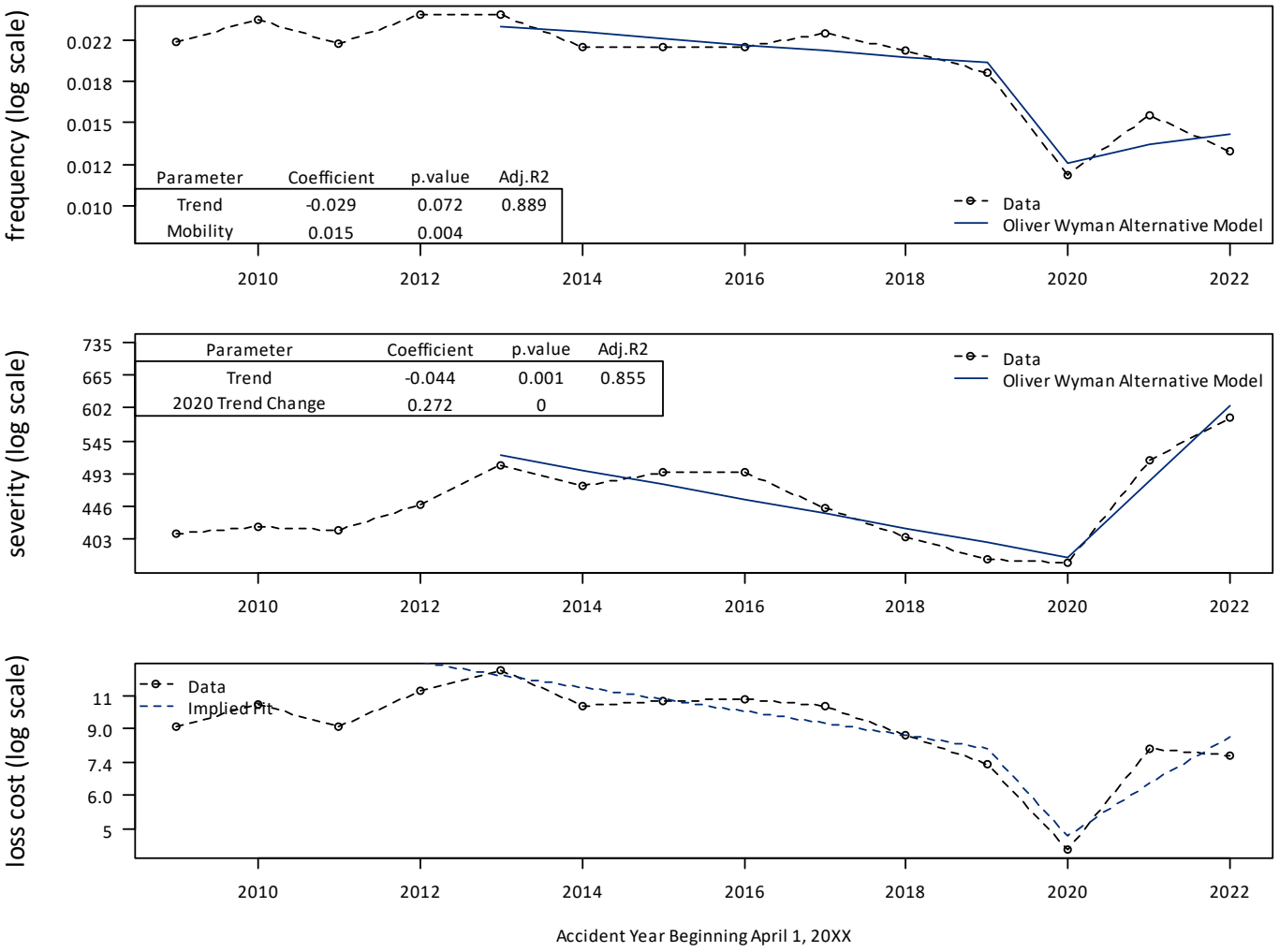

Figure 22 presents the trend models suggested by Oliver Wyman in forecasting Property Damage (Third Party Loss of Use) claims.

- The upper panel presents the historical frequency data, and the Oliver Wyman alternative model fit to the observations from accident years 2013 through 2022.
- The middle panel presents severity data, and the Oliver Wyman alternative model fit to the observations from accident years 2013 through 2022 using a separate trend parameter post-2020.
- The lower panel presents loss cost data, and the loss costs implied by Oliver Wyman's alternative frequency and severity models.

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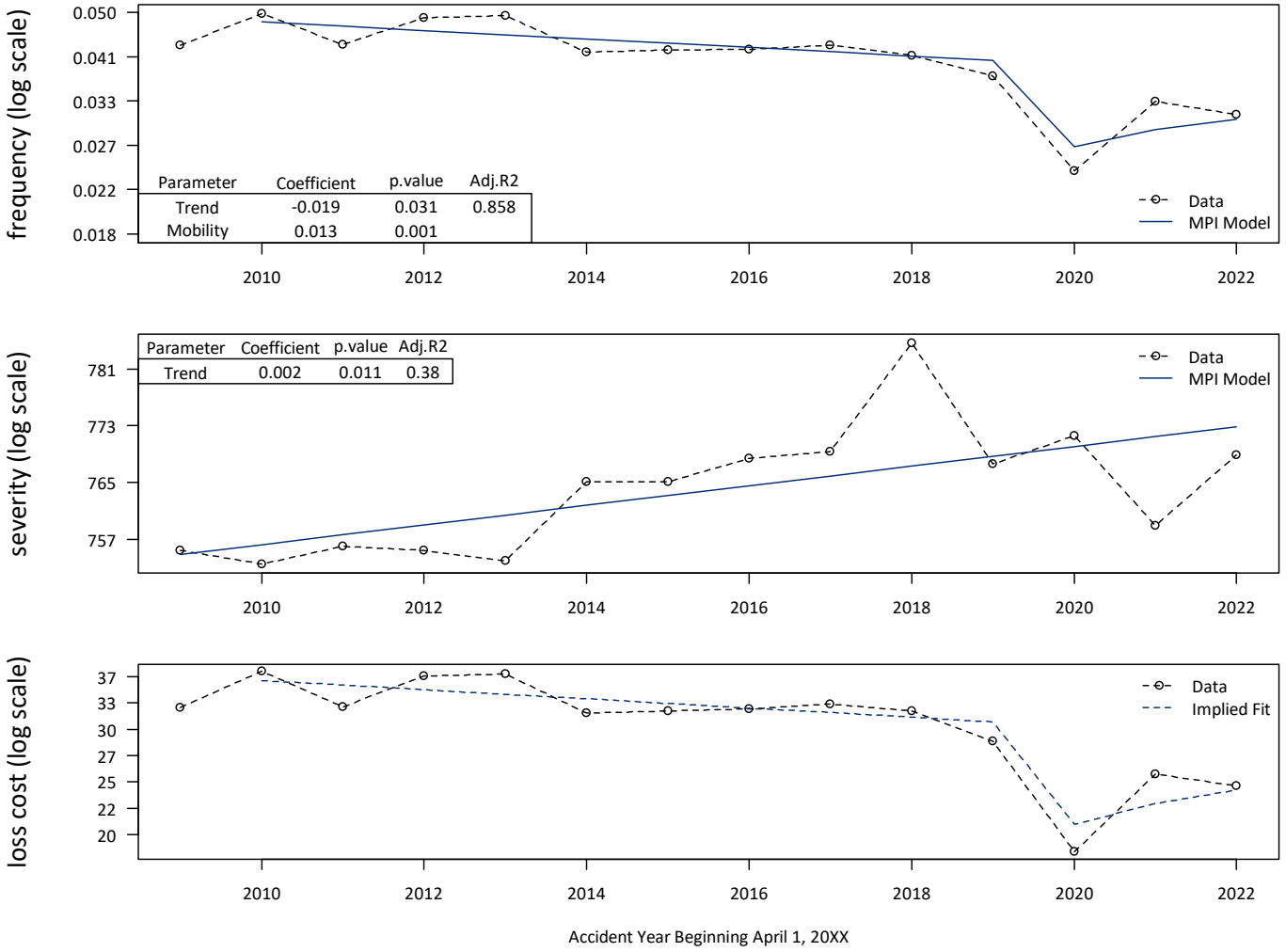
2.9

TREND MODELS: PROPERTY DAMAGE (THIRD PARTY DEDUCTIBLE TRANSFER)

PROPERTY DAMAGE (THIRD PARTY DEDUCTIBLE TRANSFER) LOSS TREND

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



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 loss costs implied by MPI's frequency and severity models.

Future Trend

- MPI selects the same future trends as past trends.

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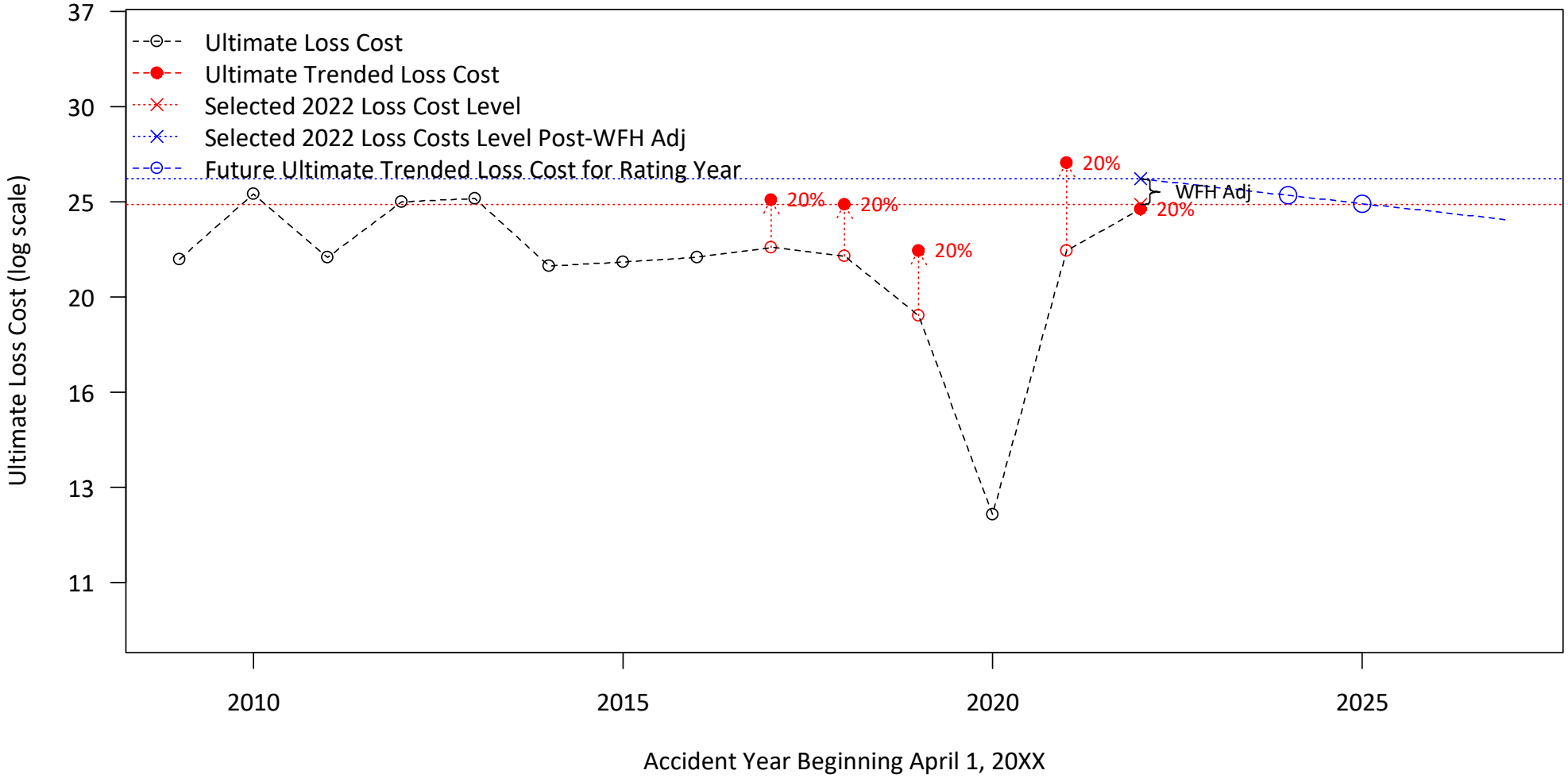
PROPERTY DAMAGE (THIRD PARTY DEDUCTIBLE TRANSFER) 2024/25 LOSS COST PROJECTION

Figure 24: Property Damage (Third Party Deductible Transfer) MPI Rating Year 2024/25 Loss Cost Projection



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PROPERTY DAMAGE (THIRD PARTY DEDUCTIBLE TRANSFER) TREND FINDINGS AND CONCLUSIONS

Oliver Wyman Recommendation: Fit frequency and severity models to 2014 and subsequent

- 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.

This results in a loss cost trend increase of 1.72 percentage points, from -1.72% to 0%.

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PROPERTY DAMAGE (THIRD PARTY DEDUCTIBLE TRANSFER) ALTERNATIVE LOSS TREND

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

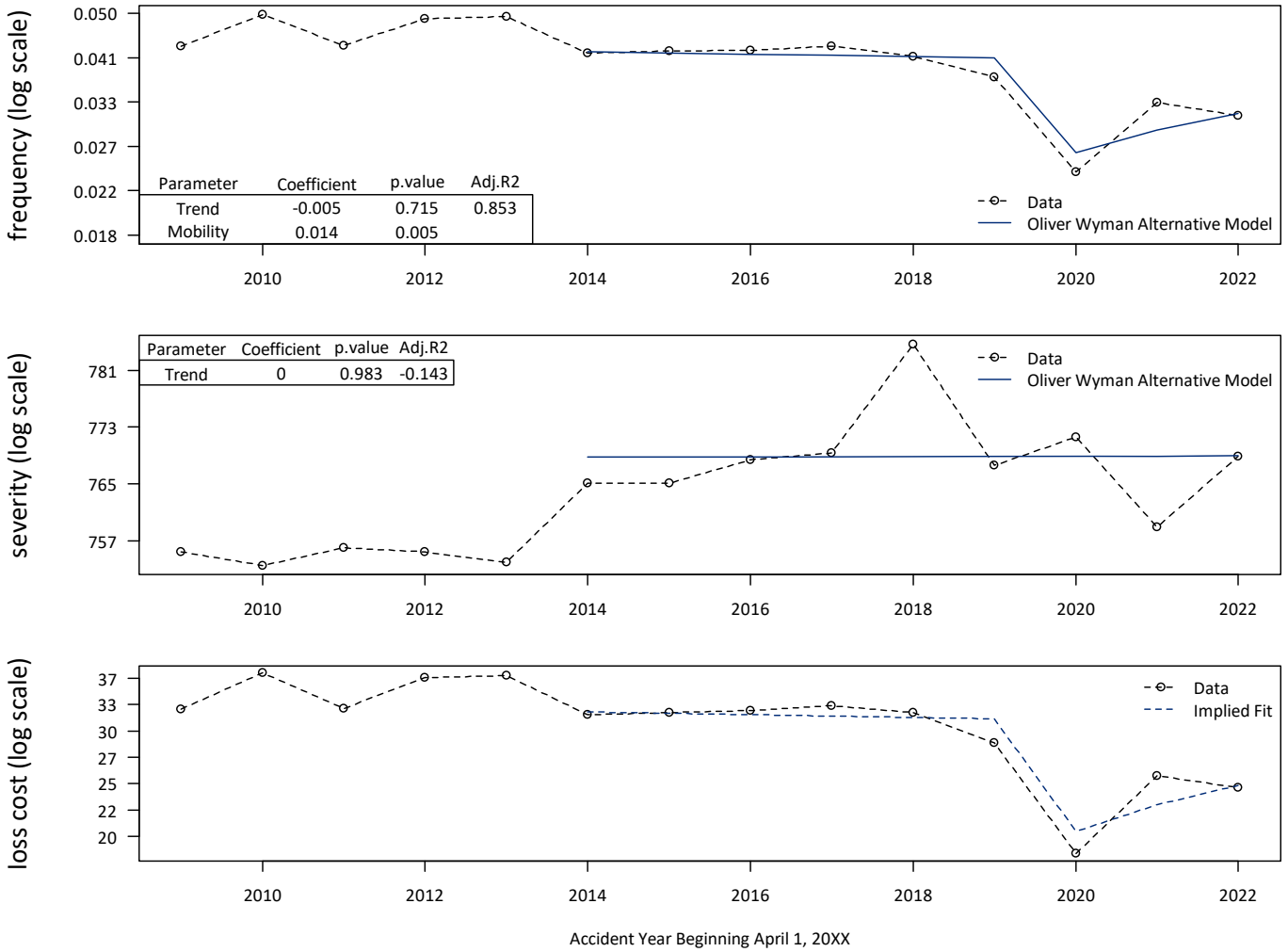

Figure 25 presents the trend models suggested by Oliver Wyman in forecasting Property Damage (Third Party Deductible Transfer) claims.

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

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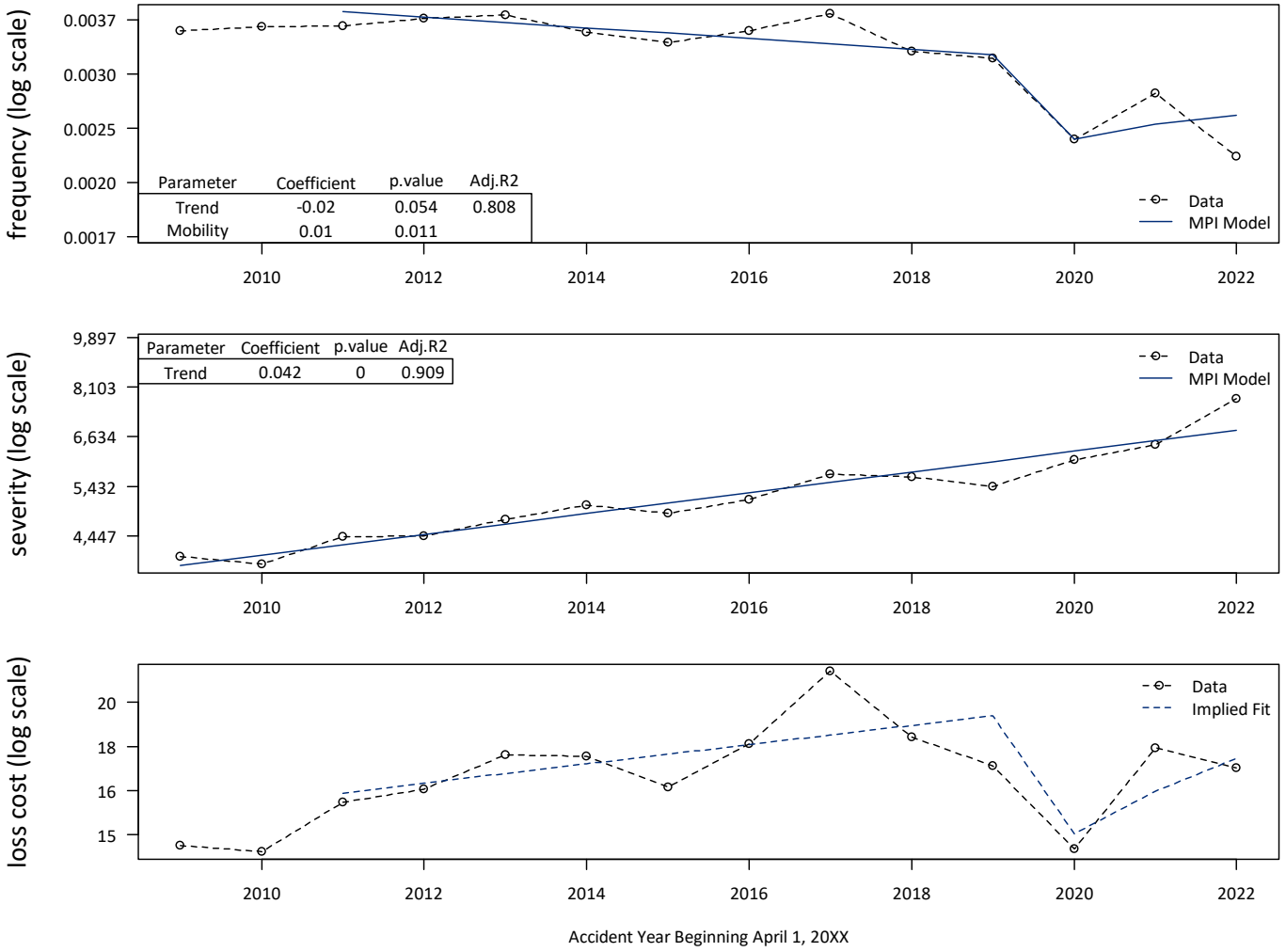
2.10

TREND MODELS: PROPERTY DAMAGE (OTHER)

PROPERTY DAMAGE (OTHER) LOSS TREND

Figure 26: Property Damage (Other) MPI Trend Model



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.

Future Trend

- MPI selects the same future trends as past trends.

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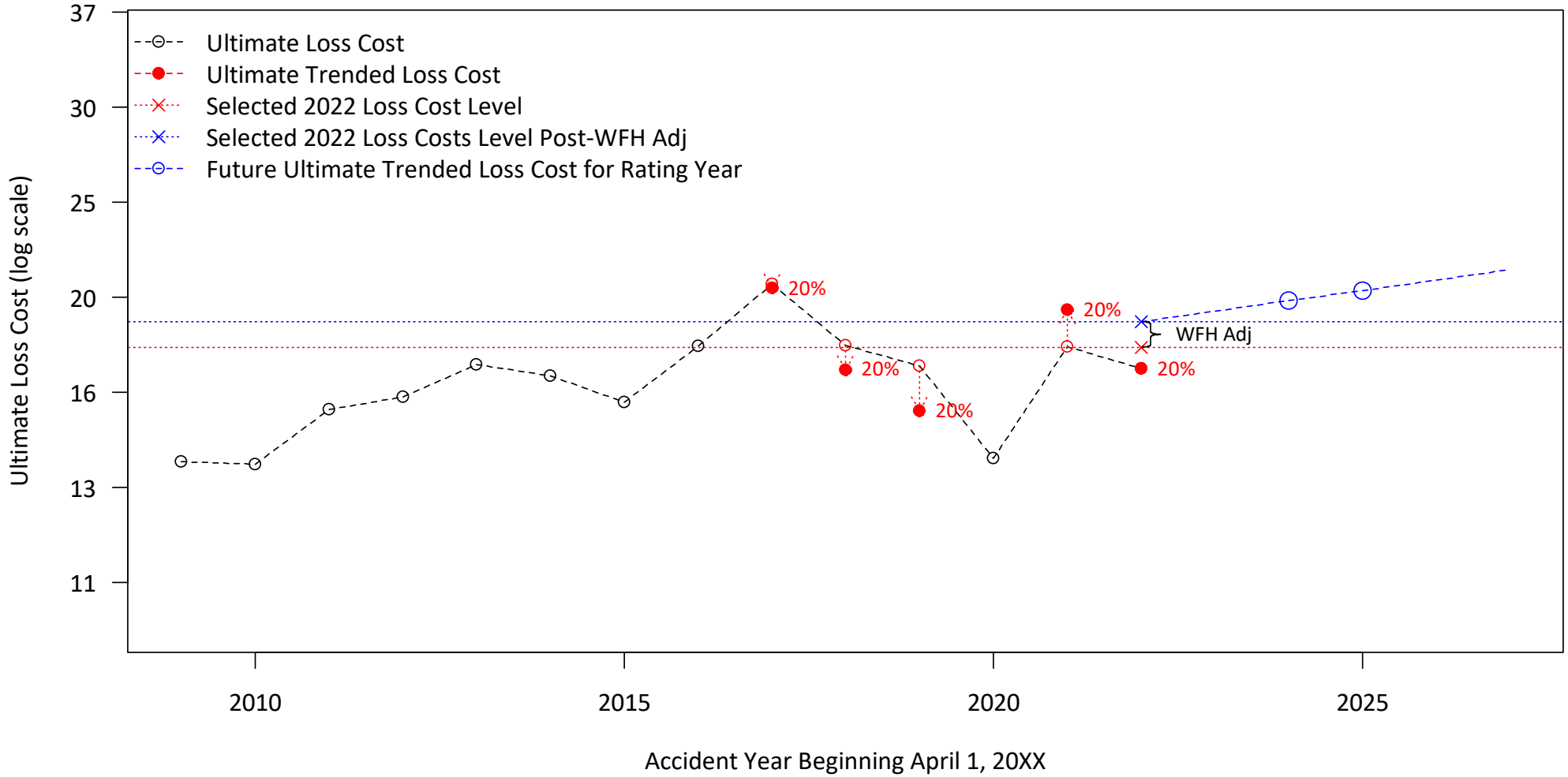
PROPERTY DAMAGE (OTHER) 2024/25 LOSS COST PROJECTION

Figure 27: Property Damage (Other) MPI Rating Year 2024/25 Loss Cost Projection



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PROPERTY DAMAGE (OTHER) TREND FINDINGS AND CONCLUSIONS

Oliver Wyman Recommendation: Fit frequency and severity models to 2009 through 2022

- 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% frequency trend

This results in a loss cost trend increase of 0.72 percentage points, from +2.22% to 2.94%.

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PROPERTY DAMAGE (OTHER) ALTERNATIVE LOSS TREND

Figure 28: Property Damage (Other) Alternative Trend Model

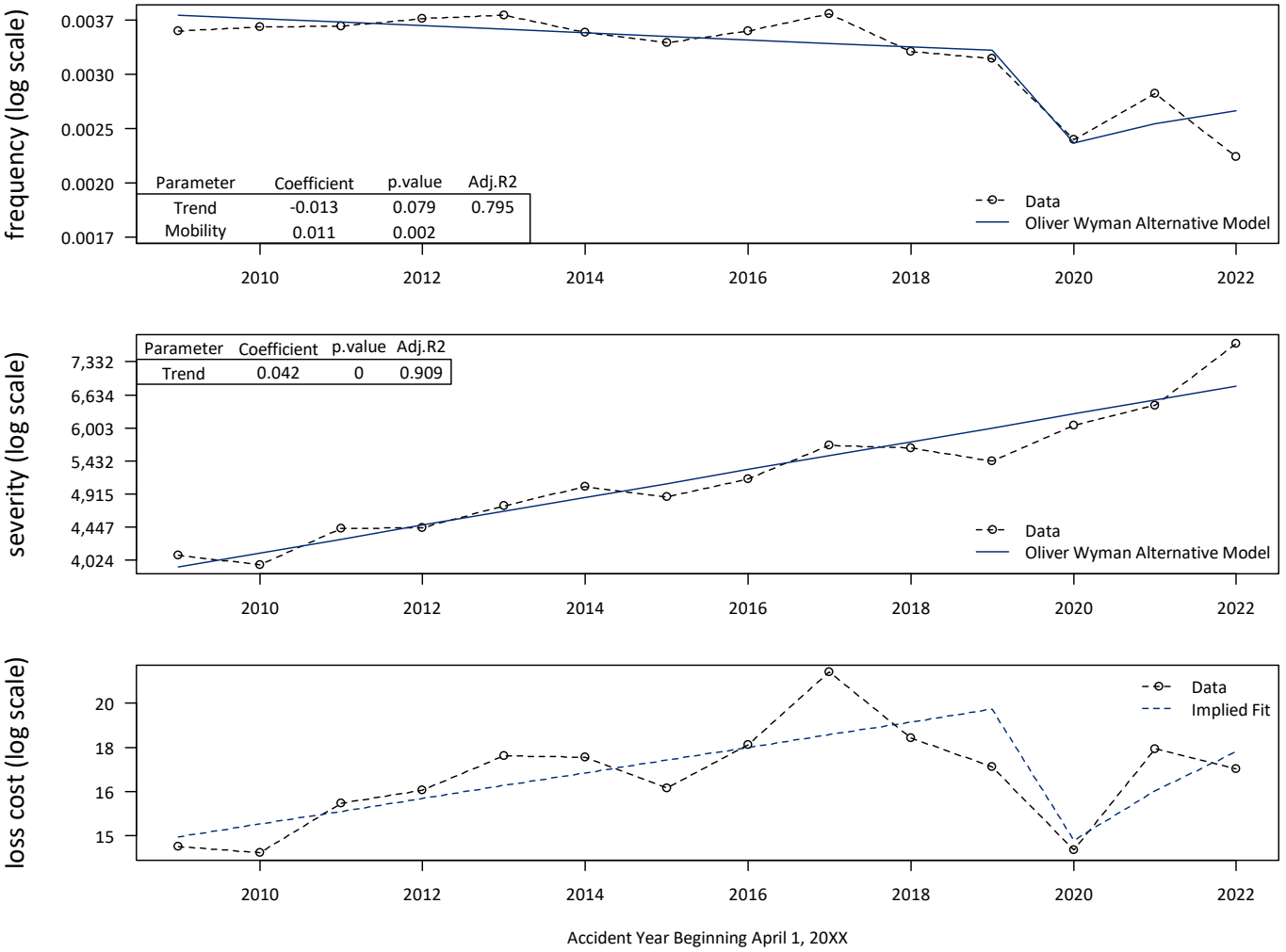

Figure 28 presents the trend models suggested by Oliver Wyman in forecasting Property Damage (Other) claims.

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

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2.11

VEHICLE COUNTS (HTA UNITS)

VEHICLE COUNTS (HTA UNITS)

MPI Forecasted Total HTA Unit Growth: 0.86%

- 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 impacted by the COVID-19 pandemic.

Table 4: HTA Units Percentage Change

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

> “
>
> 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

MPI does not adjust HTA unit growth forecast for any potential increase in immigration levels, stating:

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

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VEHICLE COUNTS (HTA UNITS) FINDINGS AND CONCLUSION

1

Findings

Based on the data provided, we find the proposed HTA unit growth forecast to be reasonable.

2

Conclusion

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.

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2.12

EXPENSES

EXPENSES

ULAE, operating expenses, premium taxes, and commissions are the only expense components that represent more than 2% of the estimated required premium

1

2

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. MPI notes an increase in the ULAE ratios during the financial years 2020/21 and 2021/22, possibly explained by a drop in the claims settlement during these two years due to the pandemic.

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

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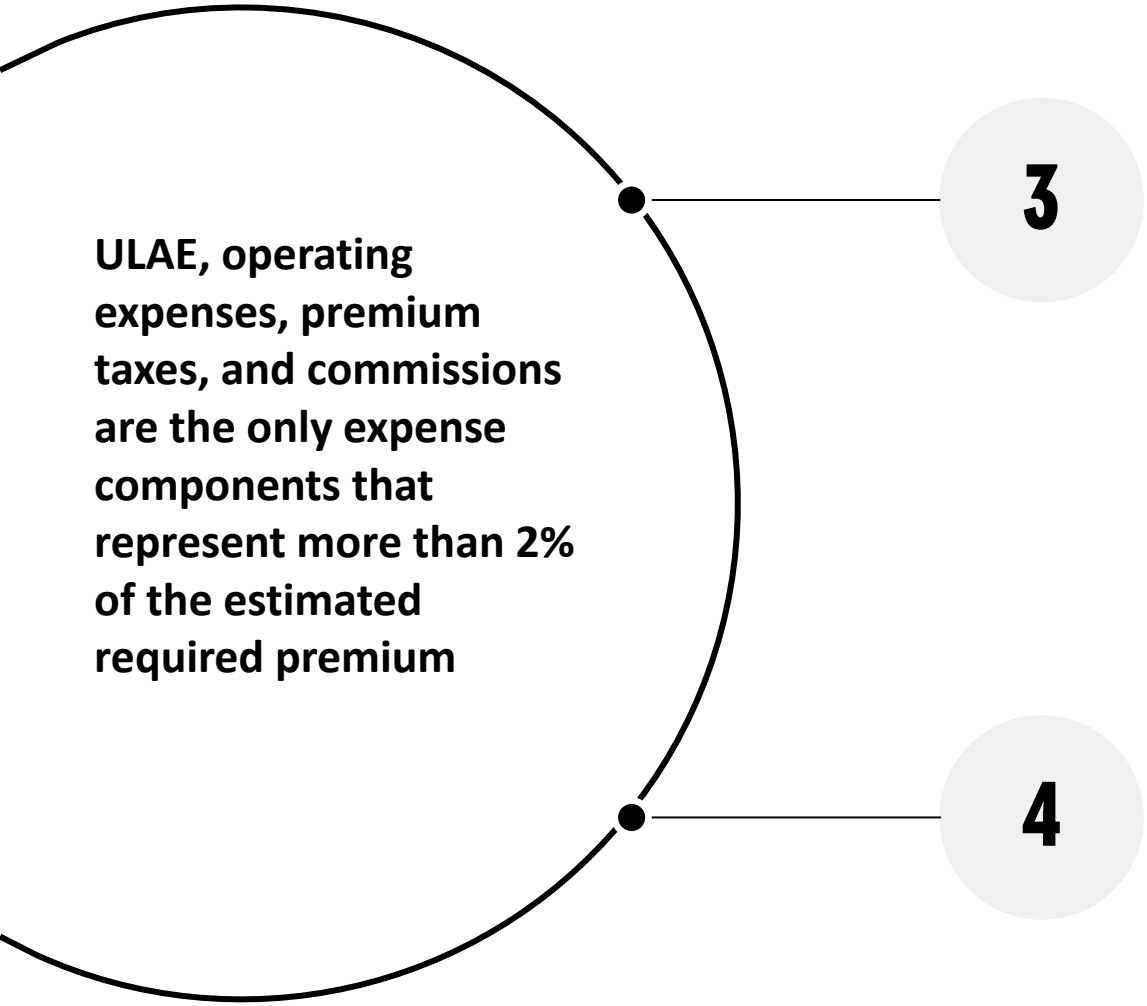
EXPENSES



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.

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EXPENSES FINDINGS AND CONCLUSIONS

No material issues

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

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2.13

SUMMARY OF ALTERNATIVE ASSUMPTIONS

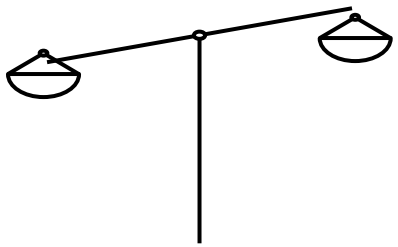
SUMMARY OF ALTERNATIVE ASSUMPTIONS

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

Overall rate level indication using alternative assumptions: -3.58%

MPI estimated required premium : $910.76



Alternative assumption estimated required premium: $879.34

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SUMMARY OF ALTERNATIVE ASSUMPTIONS

Table 5: 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	-3.58%
D.	MPI Rate Indication October Update	-1.48%

Table 6: 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	-0.79%
Comprehensive Trend	+0.55%
Property Damage Trend	+0.19%

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3

MERIT RATING (DSR)

MERIT RATING (DSR)

“

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.

DSR Program

- MPI’s Driver Safety Rating (DSR) program provides incentives for better driving experience through reductions in premiums.

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 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

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MERIT RATING (DSR) FINDINGS AND CONCLUSIONS

Continue transition from minimum bias model to a GLM model

- The concerns described in GRA Section RC.10.1 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.

Consider DSR level an ordered categorical variable rather than a continuous numeric variable

- We suggest that it's not 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 an ordered categorical variable without the restrictions noted.
  - 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.
  - 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 premium.

Confirmed Board's direction

- We confirmed that MPI followed the Board's direction in the movement between current and indicated relativities

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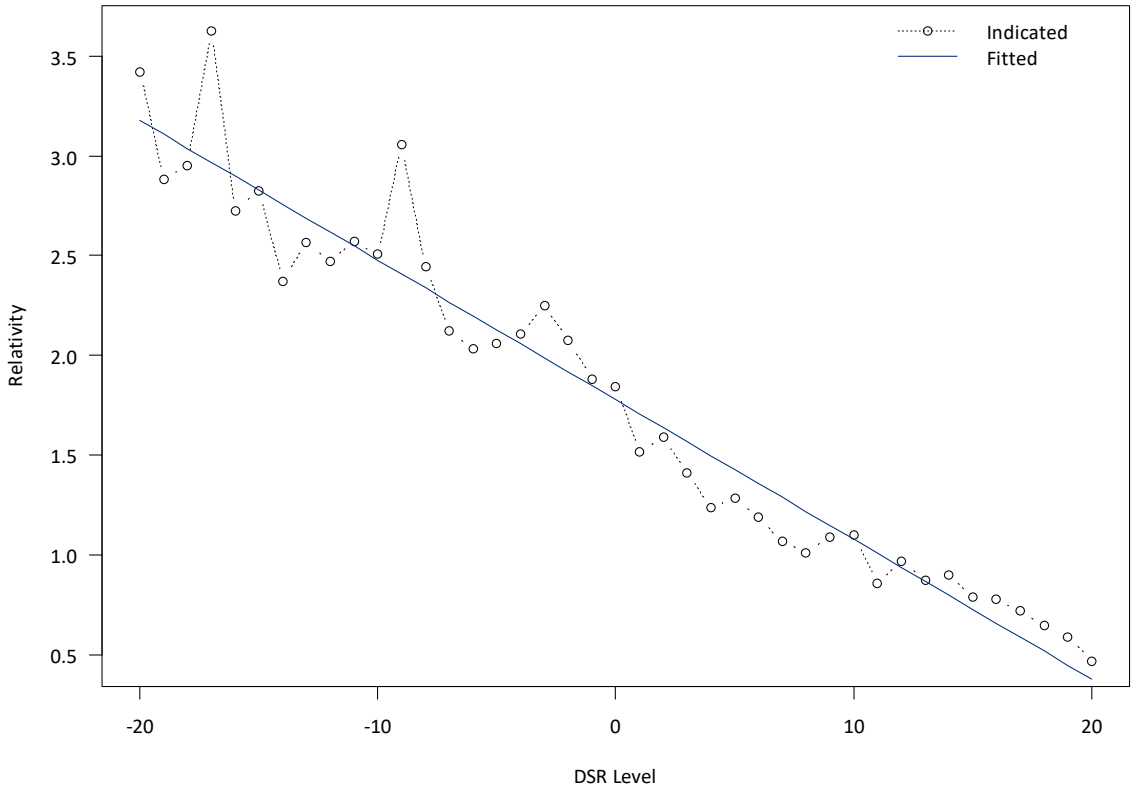
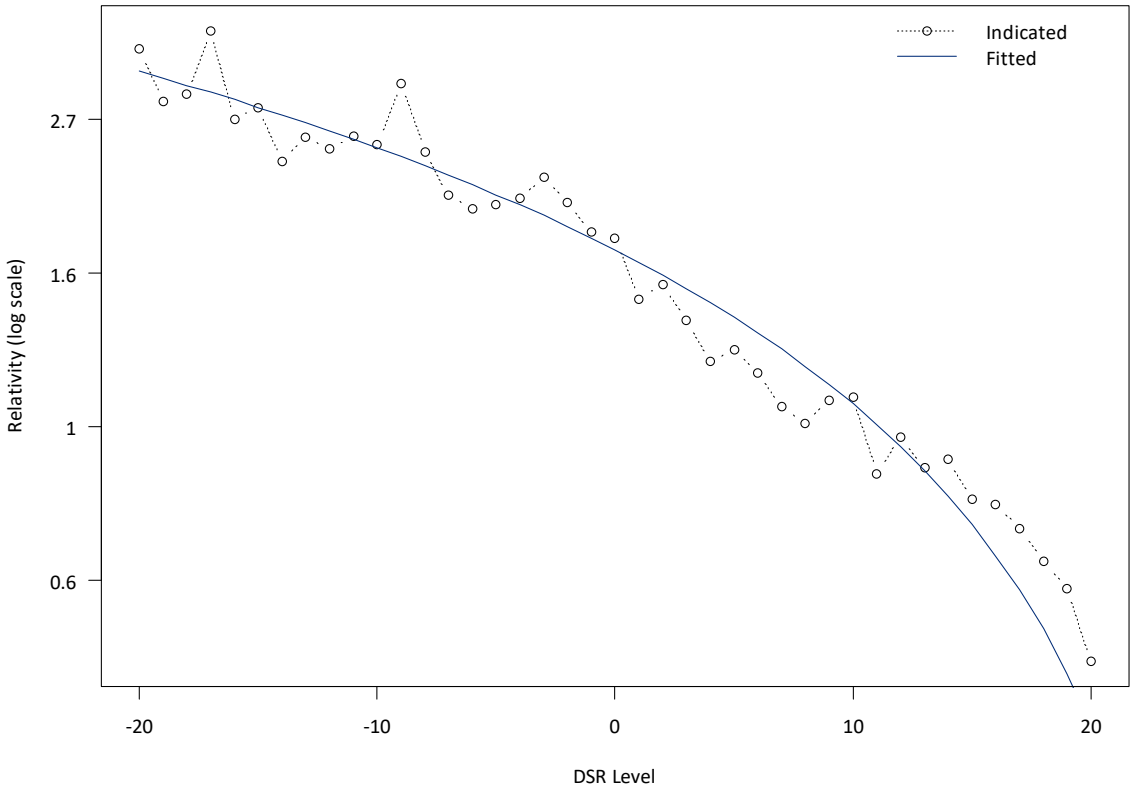
DSR RELATIVITIES

Indicated v. Fitted DSR Relativities





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PRIOR PERIOD RUNOFF

PRIOR PERIOD RUNOFF

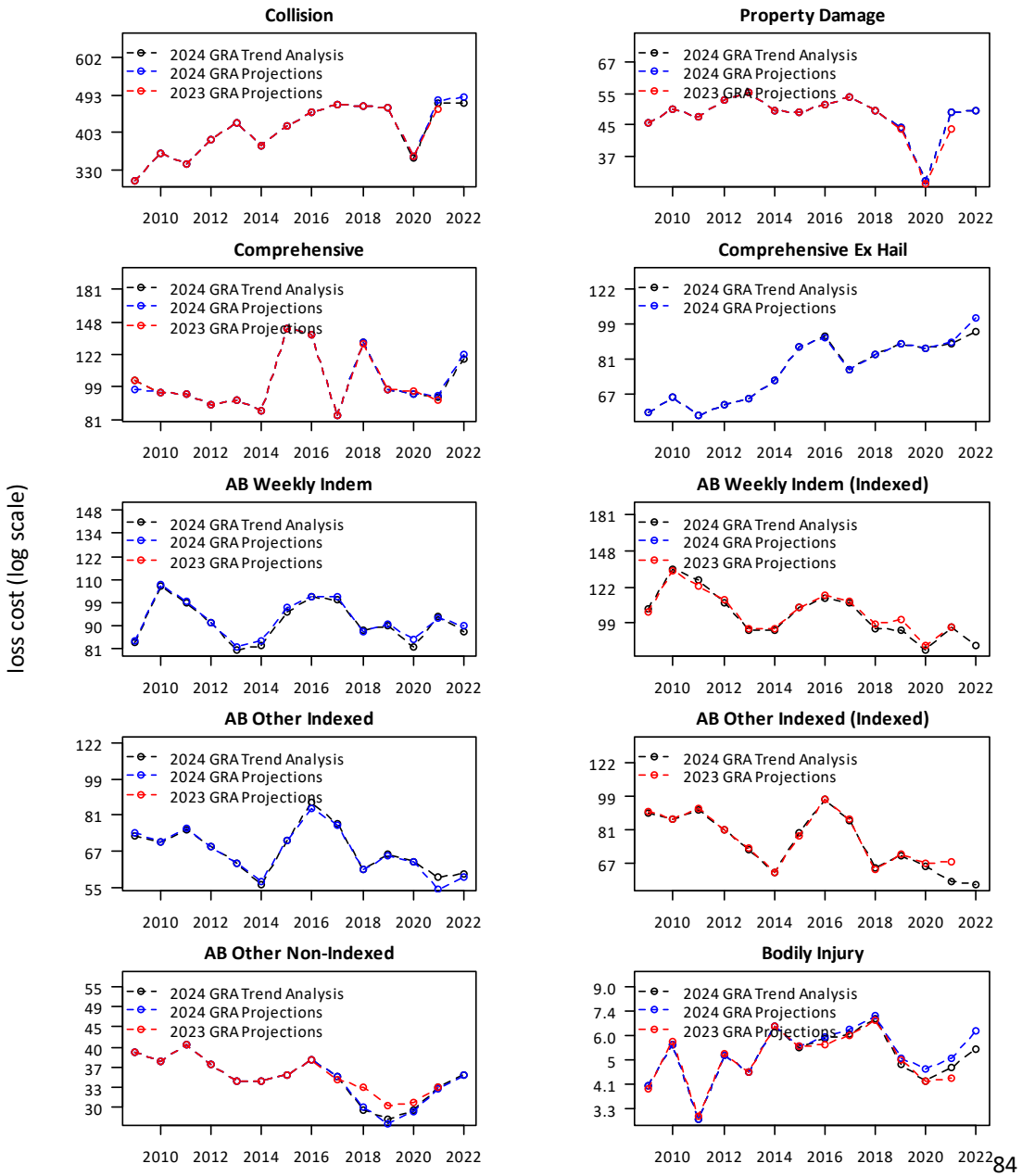
We present a comparison between the loss cost estimates included in the 2023 and 2024 GRAs for each coverage in Figure 29.

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.

Figure 29: Change in MPI Loss Cost Estimates



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APPENDIX A: BIOGRAPHIES

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. 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.

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BIOGRAPHIES: PAULA ELLIOT

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.

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BIOGRAPHIES: 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.

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BIOGRAPHIES: 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.

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