

**Manitoba Public Insurance (MPI)
2023 GRA Intervener Evidence**

**Consumers' Association of Canada (Manitoba) (CAC)
Responses to
MPI Information Requests**

October 14, 2022

MPI (CAC) 1

Part and Chapter:	Oliver Wyman Report - Generally	Page No.:	7, 10, 16 and 23
PUB Approved Issue No:			
Topic:			
Sub Topic:			

Preamble to IR:

Oliver Wyman recommends the use of a log-linear form model over a linear form model for the determination of frequencies for Weekly Indemnity, Collision Total Loss and Comprehensive Hail Total Loss.

Oliver Wyman states that a liner model could potentially produce a negative frequency in a limiting case.

Question:

- a) Please confirm that using a linear form model to determine the frequencies of the above-captioned claims incurred is accepted actuarial practice.
- b) In using a linear model, does MPI ever produce a negative frequency? If so, please confirm when this occurs.
- c) Please confirm that in the case of its Collision Repair frequency and severity models, Oliver Wyman takes no issue with the use by MPI of a linear form model.
- d) Did Oliver Wyman use a log-linear model to establish alternate Collision Repair frequency and severity results? If so, what were the results of its modelling?

Rationale for Question:

To better understand the significance and reasonableness of the recommendations made by Oliver Wyman.

RESPONSE:

- a) Accepted Actuarial Practice is defined by the Standards of Practice of the Canadian Institute of Actuaries. The Standards do not specify a methodology for trend analyses. In our review of rate filings, we rarely observe the use of linear models for loss extrapolation. As stated by Barclay: "Since the inflationary spiral of the 1970s, the exponential curve has replaced the straight line as the regression model of choice. The exponential model is now commonly accepted even by regulators. By fitting an exponential curve, we actuaries can avoid the underestimation of losses that often results from the decreasing rate of change that is characteristic of the linear regression model." (D. Lee Barclay, "A Statistical Note on Trend Factors: The Meaning of R-Squared").
- b) MPI's models do not produce negative frequencies over the projected time horizon.
- c) We do not propose alternative frequency or severity models for collision repair. However, this does not imply we fully agree with MPI's models, but that our visual inspection (see answer to d) did not raise a concern.
- d) We performed a visual inspection of data and projections and only fit models for coverages where that inspection yielded a concern to the claims incurred projection. We did not fit models for the other coverages.

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION:

MPI (CAC) 2

Part and Chapter:	Oliver Wyman Weekly Indemnity Frequency Model	Page No.:	Pg. 8 - Figure 2
PUB Approved Issue No:			
Topic:			
Sub Topic:			

Preamble to IR:

At Figure 2 of its report, Oliver Wyman provides its recommended alternative frequency model for Weekly Indemnity Claims Incurred.

Question:

- a) Please confirm whether Oliver Wyman is recommending that MPI use a frequency per 1,000 HTA units for its Weekly Indemnity Claims incurred of 1.78 for the 2023/24 and 1.74 for the 2024/25 accident years.
 - i. If not confirmed, please confirm which frequencies Oliver Wyman recommends MPI use for its Weekly Indemnity Claims Incurred for these accident years.
 - ii. If confirmed, please provide the total claims incurred that Oliver Wyman recommends MPI use for its Weekly Indemnity Claims Incurred for these accident years.
- b) What is the rationale of Oliver Wyman of including data from 2012-2014 in its Figure 2?
- c) Please confirm that there exists a correlation between Collision and Weekly Indemnity claims.

- d) Why should MPI not use a model for Weekly Indemnity claims that is similar to the model it uses for Collision claims?

Rationale for Question:

To obtain a better understanding of the recommendation of Oliver Wyman in Section 3 of its report.

RESPONSE:

- a) Confirmed. Oliver Wyman recommends MPI use \$93,098,398 and \$96,000,956 for the Weekly Indemnity total claims incurred in 2023/24 and 2024/25 accident years, respectively.
- b) We included these observations in Figure 2 as it is a data input to our model.
- c) We did not test for a correlation between collision and weekly indemnity.
- d) MPI should use a model for each coverage it finds reasonable based on the statistical fit. It is not our opinion that there a requirement for the same model to be used for each coverage.

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION:

CAC to insert rationale for refusal here.

MPI (CAC) 3

Part and Chapter:	Oliver Wyman Collision Total Loss Frequency Model	Page No.:	Pg. 14 - Figure 4
PUB Approved Issue No:			
Topic:			
Sub Topic:			

Preamble to IR:

At Figure 4 of its report, Oliver Wyman provides its recommended alternative frequency model for Collision Total Loss.

Question:

- a) Please confirm whether Oliver Wyman is recommending that MPI use a frequency per 1,000 HTA units for its Collision Total Loss Claims Incurred of 24.67 for the 2023/24 and 24.50 for the 2024/25 accident years.
 - i. If not confirmed, please confirm which frequencies Oliver Wyman recommends MPI use for its Collision Total Loss Claims Incurred for these accident years.
 - ii. If confirmed, please provide the total claims incurred that Oliver Wyman recommends MPI use for its Collision Total Loss Claims Incurred for these accident years.
- b) Please advise as to why Oliver Wyman excluded the 2021/22 accident year from its calculation of Collision Total Loss Claims Incurred frequencies.
- c) What would the frequencies for the 2023/24 and 2024/25 accident years be if one were to include the 2021/22 accident year in the Oliver Wyman Frequency Model?

- d) Please confirm that the frequencies recommended by Oliver Wyman could be too low if Manitoba experienced a particularly harsh winter season in either or both of these accident years, similar to the winter it experienced in 2021/2022.
- e) Upon what basis does Oliver Wyman conclude that a larger WFH adjustment may be appropriate in the case of the Collision Total Loss Frequency model?
- f) Does Oliver Wyman believe that post-pandemic challenges such as labour shortages and supply chain issues will make it less or more likely that total loss claims will increase in the next 2-3 years?
- g) If the p-value of 0.447 as seen in Figure 4 is significantly higher than the 0.05 limit and is not a statistically significant trend, why did Oliver Wyman not assume that the trend was flat?
- h) Please provide an alternative version of Figure 4 that models regression statistics using frequency per unit instead of frequency per 1000 units and include a narrative of the results.

Rationale for Question:

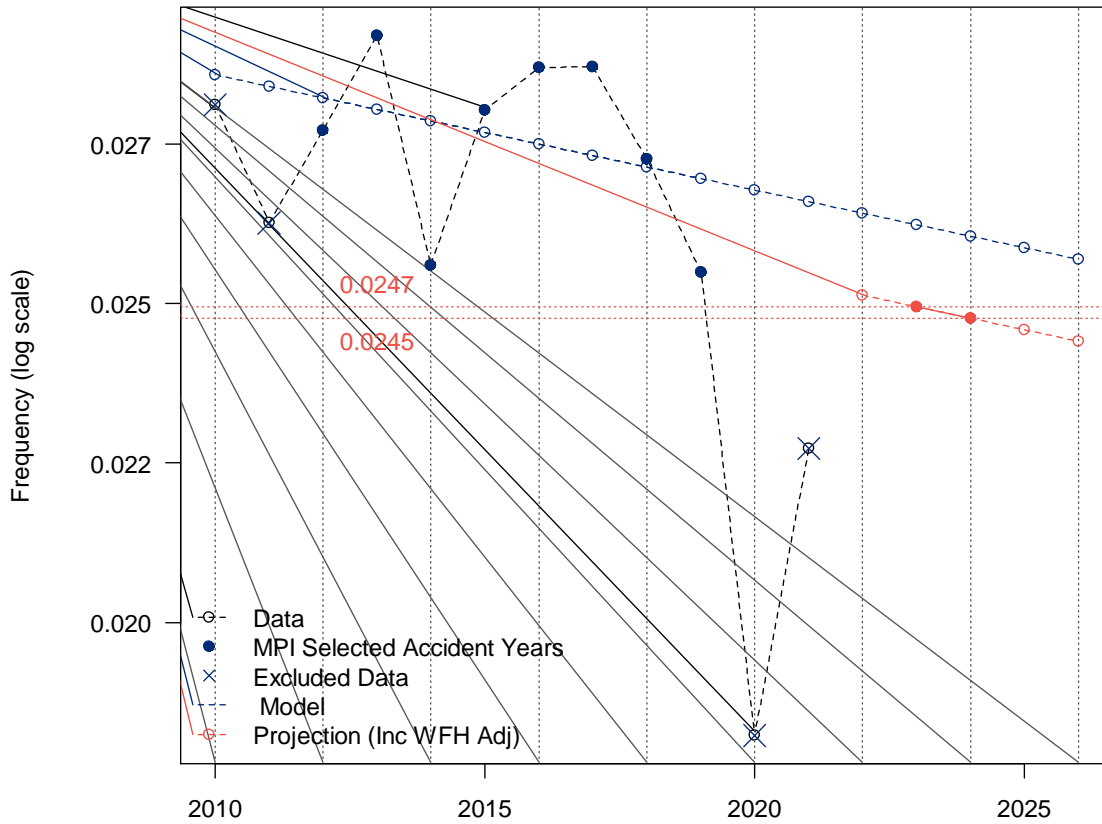
To obtain a better understanding of the recommendation of Oliver Wyman in Section 4 of its report.

RESPONSE:

- a) Confirmed. Oliver Wyman recommends MPI use \$179,509,330 and \$187,167,361 for the total claims incurred for Collision Total Loss in 2023/24 and 2024/25 accident years, respectively.
- b) The 2021/22 observation is influenced by a reduction of traffic volume observed during the pandemic. MPI also excludes this observation from their model.

- c) If the Oliver Wyman model included the 2021/22 accident year, the frequency per 1,000 HTA units for Collision Total Loss would be 22.49 for the 2023/24 and 22.08 for the 2024/25 accident years.
- d) Confirmed. Our alternative model projects the average frequency outcome. A harsh winter is likely to produce an observed frequency in the tail of the distribution, which does not imply the projected frequency was too low.
- e) In our experience reviewing industry frequency data for other Provinces, we have observed a larger impact on collision than other coverages as a result of the pandemic. It is reasonable to assume this disproportionate impact by coverage may continue into the future.
- f) We expect these challenges will have no impact on collision total loss frequency but will put upward pressure on collision total loss severity.
- g) We observe a negative trend via visual inspection and believe the small negative trend is justified.
- h) We note the scaling has no impact on the model fit or conclusions. Please refer to our report for the discussion. We present the analogous graph and supporting statistics below.

Figure 1: Collision Total Loss Frequency Model



```
summary(ow_model$model)

##
## Call:
## lm(formula = as.formula(model_string), data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.090617 -0.029939  0.009568  0.046936  0.055759
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  10.959583  17.894484   0.612   0.563
## accident_year -0.007222   0.008878  -0.813   0.447
##
## Residual standard error: 0.05754 on 6 degrees of freedom
## Multiple R-squared:  0.09933,    Adjusted R-squared:  -0.05078
## F-statistic: 0.6617 on 1 and 6 DF,  p-value: 0.447
```

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION:

CAC to insert rationale for refusal here.

MPI (CAC) 4

Part and Chapter:	Oliver Wyman Collision Total Loss Severity Model	Page No.:	Pg. 16 - Figure 6
PUB Approved Issue No:			
Topic:			
Sub Topic:			

Preamble to IR:

At Figure 6 of its report, Oliver Wyman provides its recommended alternative severity model for Collision Total Loss.

Question:

- a) Please confirm whether Oliver Wyman is recommending that MPI use a severity for its Collision Total Loss Claims Incurred of \$7,717 for the 2023/24 and \$8,016 for the 2024/25 accident years.
 - i. If not confirmed, please confirm which severities Oliver Wyman recommends MPI use for its Collision Total Loss Claims Incurred for these accident years.
 - ii. If confirmed, please provide the total claims incurred that Oliver Wyman recommends MPI use for its Collision Total Loss Claims Incurred for these accident years.

- b) Did Oliver Wyman make any adjustments for:
 - i. the increase in Maximum Insured Value (MIV), from \$50,000 to \$70,000 that occurred in 2020/21?

- ii. the impact on salvage under the new salvage management solution?
 - iii. the transition to the use of Audatex to determine the actual cash value of vehicles?
 - iv. the recent and significant increase in the value of used vehicles in Manitoba?
- c) Does Oliver Wyman believe the economic period between 2015-2019 is reasonably reflective of the economic environment expected in the next 2-3 years? If so, why?
- d) Please provide an alternate version of Figure 6 that models regression statistics using data from 2012-2021 and provide a narrative of the results.
- e) Please confirm that the lack of use of a regression model is not inconsistent with accepted actuarial practice.
- f) Given that Collision Total Loss Severity is \$9,006 as of July 2022 (per the July Collision Severity Report), does Oliver Wyman believe that \$7,717 remains an appropriate figure?

Rationale for Question:

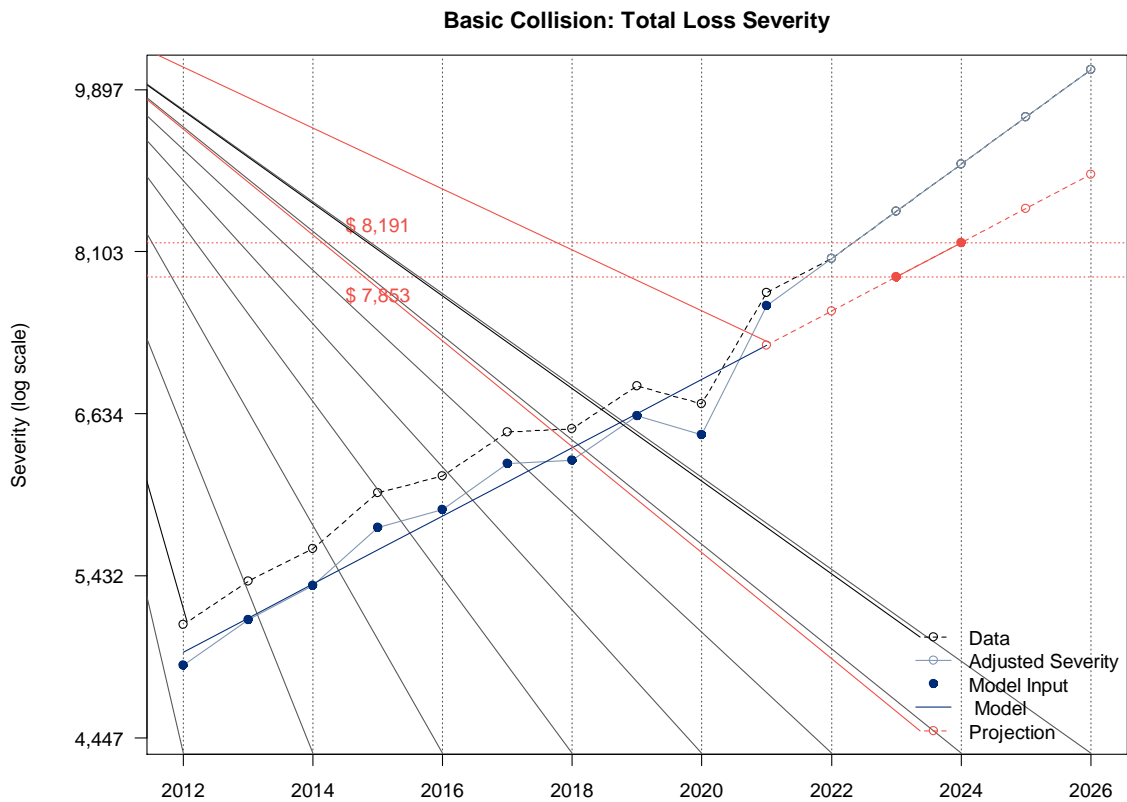
To obtain a better understanding of the recommendation of Oliver Wyman in Section 4 of its report.

RESPONSE:

- a) Confirmed. Oliver Wyman recommends MPI use \$179,509,330 and \$187,167,361 for the total claims incurred for Collision Total Loss in 2023/24 and 2024/25 accident years, respectively.

- b) We have not made any specific adjustments to the data for the increase in MIV, new salvage management solution, transition to Audatex, or increase in value of used vehicles. We adjusted the data for CERP deductible change only.
- c) We are not economists and do not provide projections of the economy.
- d) Below we provide an alternative version of Figure 6 that includes accident years 2012 to 2021. We observe the indicated trend rate is approximately +4.3% (p-value =0.000), and the model has an adjusted R-squared value of 0.9355.

Figure 2: Collision Total Loss Severity Model



```
summary(ow_model$model)

##
## Call:
## lm(formula = as.formula(model_string), data = data)
```

```
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.068257 -0.012452 -0.001869  0.018557  0.048873
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -76.213890    7.403358  -10.29 6.83e-06 ***
## accident_year  0.042107    0.003671   11.47 3.02e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.03335 on 8 degrees of freedom
## Multiple R-squared:  0.9427, Adjusted R-squared:  0.9355
## F-statistic: 131.5 on 1 and 8 DF,  p-value: 3.025e-06
```

e) Accepted Actuarial Practice is defined by the Standards of Practice of the Canadian Institute of Actuaries. The Standards do not specify a methodology for trend analyses.

f) We are not familiar with the July Collision Severity Report and therefore cannot comment.

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION:

CAC to insert rationale for refusal here.

MPI (CAC) 5

Part and Chapter:	Oliver Wyman Comprehensive Hail Total Loss Frequency Model	Page No.:	Pg. 21 - Figure 8
PUB Approved Issue No:			
Topic:			
Sub Topic:			

Preamble to IR:

At Figure 8 of its report, Oliver Wyman provides its recommended alternative frequency model for Comprehensive Hail Total Loss.

Question:

- a) Please confirm whether Oliver Wyman is recommending that MPI use a frequency for its Comprehensive Hail Total Loss Claims Incurred of 1.38 for both the 2023/24 and 2024/25 accident years.
 - i. If not confirmed, please confirm which frequencies Oliver Wyman recommends MPI use for its Comprehensive Hail Total Loss Claims Incurred for these accident years.
 - ii. If confirmed, please provide the total claims incurred that Oliver Wyman recommends MPI use for its Comprehensive Hail Total Loss Claims Incurred for these accident years.

- b) Please confirm that the frequencies recommended by Oliver Wyman for Comprehensive Hail Total Loss Claims Incurred would be consistent with a prediction of:

- i. no significant hailstorms in Manitoba within the next two years (i.e., 2023-2024); and
 - ii. a period of approximately six years without a significant hailstorm in Manitoba (i.e., 2019-2024.)
- c) Please advise if Oliver Wyman is aware of another period of six or more years where MPI did not have a single accident year with a total loss severity in excess of 2.00? If so, please advise as to the period in question.

Rationale for Question:

To obtain a better understanding of the recommendation of Oliver Wyman in Section 5 of its report.

RESPONSE:

- a) Confirmed. Oliver Wyman recommends MPI use \$4,901,271 and \$5,127,268 for the total claims incurred for Comprehensive Hail Total Loss in 2023/24 and 2024/25 accident years, respectively.
- b) We are not meteorologists, but we observe that our projected frequencies are above the observed frequencies for 2019, 2020, and 2021 which would imply hail storm activity above those years.
- c) We are not climatologists and we do not have insight into long-term history of hailstorm activity in Manitoba. However, we would note that our estimate is based on ten years of data.

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION:

CAC to insert rationale for refusal here.

MPI (CAC) 6

Part and Chapter:	Oliver Wyman Comprehensive Theft Repair Severity Model	Page No.:	Pg. 22 - Figure 10
PUB Approved Issue No:			
Topic:			
Sub Topic:			

Preamble to IR:

At Figure 10 of its report, Oliver Wyman provides its recommended alternative severity model for Comprehensive Theft Repair.

Question:

- a) Please confirm whether Oliver Wyman is recommending that MPI use a severity for its Comprehensive Theft Repair Claims Incurred of \$2,776.86 for both the 2023/24 and 2024/25 accident years.
 - i. If not confirmed, please confirm which severities Oliver Wyman recommends MPI use for its Comprehensive Theft Repair Claims Incurred for these accident years.
 - ii. If confirmed, please provide the total claims incurred that Oliver Wyman recommends MPI use for its Comprehensive Theft Repair Claims Incurred for these accident years.

- b) Please explain why Oliver Wyman excluded the time/trend parameter in this case but did not exclude same for the Collision Total Loss Frequency model, when both values were similarly insignificant?

- c) Please confirm whether the modelling applied by Oliver Wyman considers recent phenomena such as increases in the 2021 Light Vehicle Accreditation Agreement repair costs in the determination that repair severities will remain at a figure consistent with the actual from the 2021/22 accident year.

Rationale for Question:

To obtain a better understanding of the recommendation of Oliver Wyman in Section 5 of its report.

RESPONSE:

- a) Confirmed. Oliver Wyman recommends MPI use \$7,156,080 and \$7,232,894 for the total claims incurred for Comprehensive Theft Repair in 2023/24 and 2024/25 accident years, respectively.
- b) Based on visual inspection we observe comprehensive theft severity is relatively flat since 2014/15, while collision total loss frequency exhibits a slightly decreasing pattern.
- c) We have not made any specific adjustments to the data for the 2021 Light Vehicle Accreditation Agreement. We adjusted the data for CERP deductible change only. We note our adjustment for the CERP deductible change is the same adjustment used by MPI.

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION:

CAC to insert rationale for refusal here.

MPI (CAC) 7

Part and Chapter:	Oliver Wyman Comprehensive Vandalism Total Loss Frequency Model	Page No.:	Pg. 27 - Figure 12
PUB Approved Issue No:			
Topic:			
Sub Topic:			

Preamble to IR:

At Figure 12 of its report, Oliver Wyman provides its recommended alternative frequency model for Comprehensive Vandalism Total Loss.

Question:

- a) Please confirm whether Oliver Wyman is recommending that MPI use a frequency for its Comprehensive Vandalism Total Loss Claims Incurred of 0.51 for the 2023/24 and 0.45 for the 2024/25 accident years.
 - i. If not confirmed, please confirm which frequencies Oliver Wyman recommends MPI use for its Comprehensive Vandalism Total Loss Claims Incurred for these accident years.
 - ii. If confirmed, please provide the total claims incurred that Oliver Wyman recommends MPI use for its Comprehensive Vandalism Total Loss Claims Incurred for these accident years.

- b) Please confirm whether the modelling applied by Oliver Wyman considers recent phenomena such as an economic downturn, increases in vandalism relating to catalytic converters in Manitoba and supply chain issues affecting the availability of replacement parts.

Rationale for Question:

To obtain a better understanding of the recommendation of Oliver Wyman in Section 5 of its report.

RESPONSE:

- a) Confirmed. Oliver Wyman recommends MPI use \$1,873,672 and \$1,725,294 for the total claims incurred for Comprehensive Vandalism Total Loss in 2023/24 and 2024/25 accident years, respectively.

- b) We have not made any adjustments to the vandalism total loss frequency data to specifically account for an economic downturn, increases in vandalism relating to catalytic converters in Manitoba or supply chain issues affecting the availability of replacement parts. We'd expect these phenomena to affect comprehensive vandalism repairs more than comprehensive vandalism total loss. We note our adjustment for the CERP deductible change is the same adjustment used by MPI.

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION:

CAC to insert rationale for refusal here.

MPI (CAC) 8

Part and Chapter:	Oliver Wyman Property Damage Third Party Deductible Transfer Severity Model	Page No.:	Pg. 34 - Figure 14
PUB Approved Issue No:			
Topic:			
Sub Topic:			

Preamble to IR:

At Figure 14 of its report, Oliver Wyman provides its recommended alternative severity model for Property Damage Third Party Deductible Transfer Severity.

Question:

- a) Please confirm whether Oliver Wyman is recommending that MPI use a severity for its Property Damage Third Party Deductible Transfer Claims Incurred of 778.53 for the 2023/24 and 780.01 for the 2024/25 accident years.
 - i. If not confirmed, please confirm which severities Oliver Wyman recommends MPI use for its Property Damage Third Party Deductible Transfer Claims Incurred for these accident years.
 - ii. If confirmed, please provide the total claims incurred that Oliver Wyman recommends MPI use for its Property Damage Third Party Deductible Transfer Claims Incurred for these accident years.

- b) Please explain the Oliver Wyman understanding of the terms "signal" and "noise" and why Oliver Wyman believes that the 2021 data point may be unusually "noisy".

- c) Please explain why Oliver Wyman believes that the rate of change between 2012 to the present is “highly variable” when, from the period 2012 to 2020 (i.e., the period prior to the introduction of CERP), severity grew from an average of \$506 to \$522?
- d) Please explain why Oliver Wyman excludes data from the years 2012-2013 and 2021 from its modelling.

Rationale for Question:

To obtain a better understanding of the recommendation of Oliver Wyman in Section 6 of its report

RESPONSE:

- a) Confirmed. Oliver Wyman recommends MPI use \$24,287,777 and \$23,857,397 for the total claims incurred for Property Damage Third Party Deductible in 2023/24 and 2024/25 accident years, respectively.
- b) The signal is the meaningful information and is the product of a deterministic system. We try to capture and understand this signal through the use of a regression model. The noise is the random variation in the data which we cannot explain. The 2021/2022 observation is unusually noisy as it is subject to additional uncertainty associated with the change in deductible and potential influence of the COVID-19 pandemic.
- c) We recognize this phrasing is subjective. The year over year percentage changes in severity range from: -3% and +2%.
- d) We find these observations to be influential outliers. Additionally, the 2021/22 observation is immature.

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION:

CAC to insert rationale for refusal here.

MPI (CAC) 9

Part and Chapter:	Oliver Wyman Property Damage Third Party Loss of Use Severity Model	Page No.:	Pg. 37 - Figure 16
PUB Approved Issue No:			
Topic:			
Sub Topic:			

Preamble to IR:

At Figure 16 of its report, Oliver Wyman provides its recommended alternative severity model for Property Damage Third Party Loss of Use Severity.

Question:

- a) Please confirm whether Oliver Wyman is recommending that MPI use a severity for its Property Damage Third Party Loss of Use Claims Incurred of 444.64 for both the 2023/24 and 2024/25 accident years.
 - i. If not confirmed, please confirm which severities Oliver Wyman recommends MPI use for its Property Damage Third Party Loss of Use Claims for these accident years.
 - ii. If confirmed, please provide the total claims incurred that Oliver Wyman recommends MPI use for its Property Damage Third Party Loss of Use Claims for these accident years.
- b) Please explain why Oliver Wyman believes that the 2020/21 and 2021/22 data points may be unusually "noisy".
- c) Does Oliver Wyman know why Third Party Loss of Use Severity increased in 2021? If so, why?

- d) Please confirm that Oliver Wyman has no issues with the frequency data and projections for Property Damage Third Party Loss of Use (under Section 6.2, the report again refers to Third Party Deductible Transfer).

Rationale for Question:

To obtain a better understanding of the recommendation of Oliver Wyman in Section 6 of its report.

RESPONSE:

- a) Confirmed. Oliver Wyman recommends MPI use \$7,247,793 and \$7,110,557 for the total claims incurred for Property Damage Third Party Loss of Use in 2023/24 and 2024/25 accident years, respectively.
- b) We evaluate noisiness in the context of the model and MPI's model is extremely sensitive to the most recent two observations.
- c) We are not in a position to comment on causation.
- d) Confirmed. Thank you for pointing out this oversight.

RATIONALE FOR REFUSAL TO FULLY ANSWER THE QUESTION:

CAC to insert rationale for refusal here