FACILITY Association

777 Bay Street, Suite 2400
P.O. Box 121
Toronto, Ontario
M5G 2C8

T: 416 863 1750
F: 416 868 0894
E: mail@facilityassociation.com

March 1, 2018

Alberta Automobile Insurance Rate Board
2440 Canadian Western Bank Place
10303 Jasper Avenue
Edmonton, AB T5J 3N6

Attention: Mr. Allan Cleiren, CA, ICD.D, Chair

RE: FA Written Submission in regard to the AIRB Draft Review of 2017-H1 Industry PPV Experience

Dear Mr. Cleiren,

Facility Association has reviewed the draft Oliver Wyman ("OW") report entitled "*Annual Review of Industry Experience – Preliminary Report as of June 30, 2017 Private Passenger Vehicles*" dated February 8, 2018. (While the report's title is "Annual Review", we believe that the report is the "Semi-Annual" review report. We also note that page numbering seems to be missing, making referencing difficult.)

We are pleased to provide our attached written submission. Due to time constraints, we were not able to provide a review at the level we would like to have, but are able to provide some high level feedback for your consideration.

In particular, the challenges OW (like many in the industry) has had in estimating ultimates for bodily injury is a good reminder that the industry deals with estimates of costs in their pricing, and there is uncertainty (and at times significant uncertainty) in the estimation process. There are many different methodologies and ways of striking assumptions, resulting in a large range of "reasonable" estimates. We believe it is important for the AIRB to keep this in mind as they review rate applications.

Similarly, trend analyses are subject to various approaches and interpretation of results, resulting in a large range of "reasonable" models of historical results and forecasts of future results. We believe it is important for the AIRB to keep this in mind as well.

Any questions related to this submission may be directed to me either by phone (416-644-4968) or email at sdoherty@facilityassociation.com.

Best regards

Shawn Doherty, FCIA, FCAS
SVP Actuarial & CFO

General Comments

This document represents the Facility Association (FA) written submission to the Alberta Automobile Insurance Rate Board (AIRB) with respect the Oliver Wyman (OW) report entitled "*Annual Review of Industry Experience – Preliminary Report as of June 30, 2017 Private Passenger Vehicles*" dated February 8, 2018 (the "PPV Report"). We appreciate the opportunity to provide feedback.

Similar to our prior submissions related to OW reviews of Alberta industry experience, our primary focus is on the trend analysis section of the PPV Report (although we do offer some comments related to other sections). We believe it is in the AIRB's best interest to select benchmark trends that the industry can support and rely on (and, in providing the trends, we hope that the AIRB views the trends with a mind to a "range" around them, rather than treating them as a single value for all to converge around, or, worse, a cap on trends that insurers can use in their own rate filings). Our general concern is the risk that this may have on availability of automobile insurance in the province, to the extent that capital providers take an adverse view on their ability to charge rates that they have assessed relative to the future costs and risk of providing insurance.

The PPV Report did not have page numbering, making referencing difficult in the discussion.

Section 5: Selection of Claim Count and Claim Amount Development Factors

Link Ratio Methodology Challenges

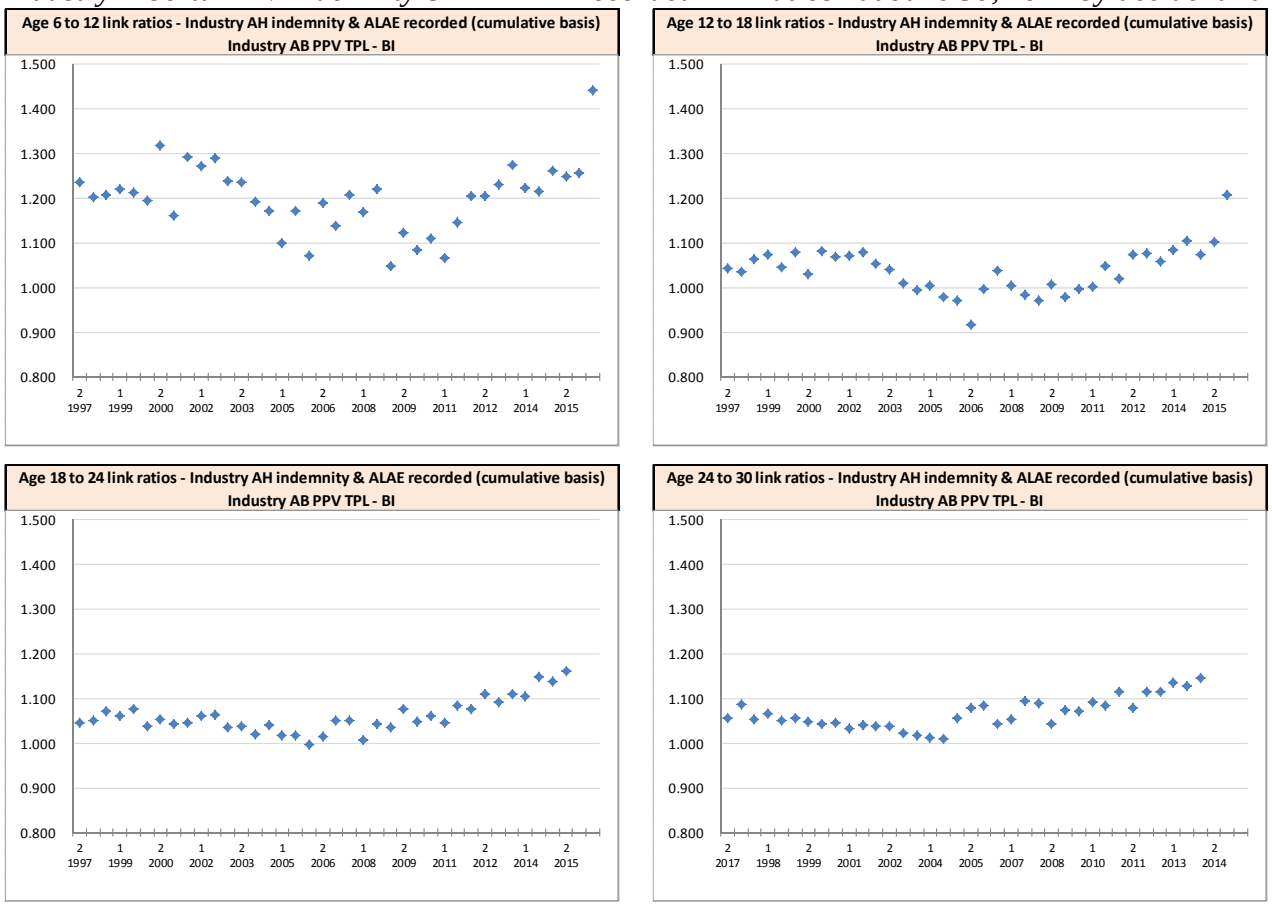
The link ratio methodology is commonly used in Canada for the valuation of claims liabilities (i.e. ultimate estimation). In fact, a 2016 international survey by ASTIN (for "Actuarial Studies in Non-Life Insurance", a section of the International Actuarial Association) found that the link ratio method is used by 79% of Canadian respondents as one of their "main" methods (Bornhuetter-Ferguson was used as a main method by 88% of Canadian respondents, and 58% of Canadian respondents indicated that they use a "loss ratio" method as one of their "main" methods).

One of the primary assumptions to support the use of the link ratio methodology is that the historical experience is predictive of future experience, and therefore "link ratios" derived from the historical experience can be used to estimate future experience.

For Alberta Private Passenger experience, historical link ratios have not been particularly stable, making it a challenge to estimate ultimates successfully using this methodology, as is discussed in the PPV Report. To provide some context, we've included charts at the top of the next page related to industry PPV BI link ratios for the 1st 4 development periods (for these charts, we've fixed the horizontal axis range at 0.800 to 1.500 to allow easier comparisons) – the link ratio methodology relies on these ratios being randomly spread around an average level, whereas the history shows ratios that seem to exhibit non-random patterns. As pointed out in the PPV Report, (second page of the Bodily Injury part of Section 5), the link ratios for the 2017-H1 calendar period were the highest factors for the first 4 development ages (6-12, 12-18, 18-24, 24-30) over the last 15 years (in fact, they are the highest of any in the last 20 accident years or 40 accident halves provided in the data set). Both the 6-12 link ratio (1.442) and the 12-18 link ratio (1.208) are more than 3 standard deviations from their respective mean

ratios (1.201 and 1.039 respectively) which would be considered "unusually" distant from their averages. This would suggest that consideration should be given to excluding these link ratios, or at least testing and reporting the impact of their inclusion.

Industry Alberta PPV indemnity & ALAE BI recorded link ratios at June 30, 2017 by accident half*



**link ratios are on a "recorded" or "incurred" basis – i.e. life-to-date paid plus current case*

In addition to the above, the PPV Report indicates that OW has gained additional insight into some changes at individual insurers that would impact development patterns (it is difficult for us to quantify this without specific details):

> *"As part of the analysis we perform we examine the Bodily Injury claim count and claim amount development triangles for each of the top eleven private passenger automobile insurers in Alberta. During the course of this current review we identified three insurers that reported Bodily Injury claim count or claim amount development during the first half of 2017 that appeared to be inconsistent (much higher) than development over prior accident half-years. We learned that one of the three insurers made a one-time strengthening of its case reserves; one made a change to its claim reporting practices; the third insurer was not able to point to a reason for the change, but suggested that it was due to randomness."*

Given the above, while the PPV Report does indicate that adjustments have been made in the link ratio selection process to account for the apparent changes, it is likely worthwhile to consider alternative methodologies. In fact, the Bornhuetter-Ferguson methodology was considered for bodily injury claims amounts in the Preliminary 2106 Annual Review Report, but it was apparently dropped from consideration in the Final 2016 Annual Review Report, although it is not clear why. There is no discussion in this PPV Report specifically related to the shortcomings of reliance on the link ratio methodology when the underlying link ratios themselves are suggesting the fundamental principle upon which it is based is being violated (i.e. that historical development can be used to estimate future development). Rather, more judgment is being applied in selecting link ratios (for example, in Section 5 under Bodily Injury, the PPV Report states that the selected factor for age 6-12 months is the actual factor for accident half 2016-2. We believe it would be beneficial to at least formally acknowledge this in the report and discuss in more detail why other alternative valuation methodologies were not considered (or if they were considered, why they were not used), particularly in light of the results of OW's own investigation into reserving and reporting changes. **We also believe the AIRB would be well served to be provided with a range of ultimate estimates for BI by accident half based on a range of valuation methodologies, particularly those that are specifically geared to situations where historical development patterns are unstable**.

We believe that there is evidence of calendar period (or "settlement period") trends imposing themselves on the results (that is, think in terms of "inflation" on a settlement year basis, so that all claims settled this year are inflated relative to similar claims settled last year). The standard link ratio methodology cannot handle this situation, and its "predictive power" suffers as a result. Generalized Linear Modeling (GLM) methodologies can test for calendar period trends and incorporate them where appropriate. In its 2015 AR PPV Report, OW discussion of the estimate of ultimate for bodily injury included consideration of a GLM valuation methodology and we believe there is merit in looking at this family of alternate valuation methodologies (we suggested this in our last response as well). The OW March 31 2017 PPV Report in relation to June 30, 2016 Private Passenger experience stated, in response to our suggestion, "*We considered such an approach in our 2015 AR study, but for practical and other reasons, have not since done so. We may consider doing so again for the 2017 AR.*" We would have been very interested in the result, had OW been able to provide an update.

FA has been investigating the use of a valuation methodology that incorporates calendar period trends (akin to, but not formally a "GLM" methodology), and, while we have not yet used it for ultimate selection, our review of the industry data for Alberta suggests a relatively large calendar period trend, for at least some coverages, that is statistically significant. For example, our BI analysis resulted in two final models we considered. In our selected bodily injury model, the calendar year trend was +6.2% +/-0.4%, whereas an alternative model (which we felt was also a strong fit) had a calendar year trend of +8.0% +/- 0.9%. These are very significant calendar year trends, and the standard link ratio methodology does NOT pick up or account for such trends.

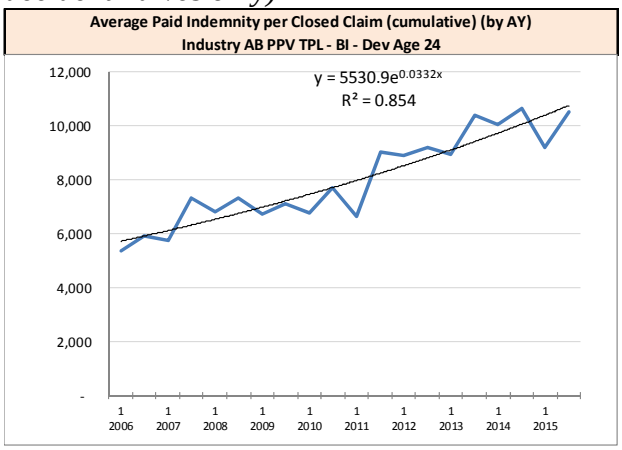
If this methodology does turn out to have a stronger predictive capability than the link ratio methodology generally employed now (by both FA and OW as the primary methodology), the implication seems to be for a continuation of adverse development for the near future at least. If OW's

GLM analysis is identifying a similar trend (assuming OW is continuing to pursue this alternative approach), it may be worthwhile to investigate these results in more detail.

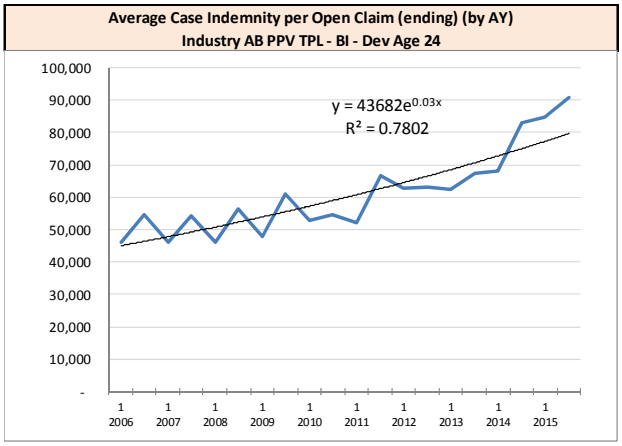
Another general concern we have is that bodily injury relative case reserve adequacy might increase as claims settlements show case inadequacy and with general industry concern with bodily injury trends. To consider this, we took several different approaches, including performing regression analysis on accident period age average paid indemnity over time, and accident period age average case indemnity over time (below) and consideration of indexation (top of the next page).

The regressions generally showed average paid indemnity increasing faster than average case reserves, but more recently, case reserves are being "under-fit" by the regression line, which may indicate more recent case reserve strengthening. The charts below provide an example (using development age 24 months, and indemnity only), where the annualized trend for average paid is 6.9% vs 6.2%[1] for average case reserves, but each of last 3 accident halves have average case reserves higher than the regression line.

Industry Alberta Private Passenger indemnity only BI Average Paid Indemnity and Average Case Reserve (as at Jun 30, 2017 by accident half), at development Age 24 months (latest 20 accident halves only)



latest 20 accident halves



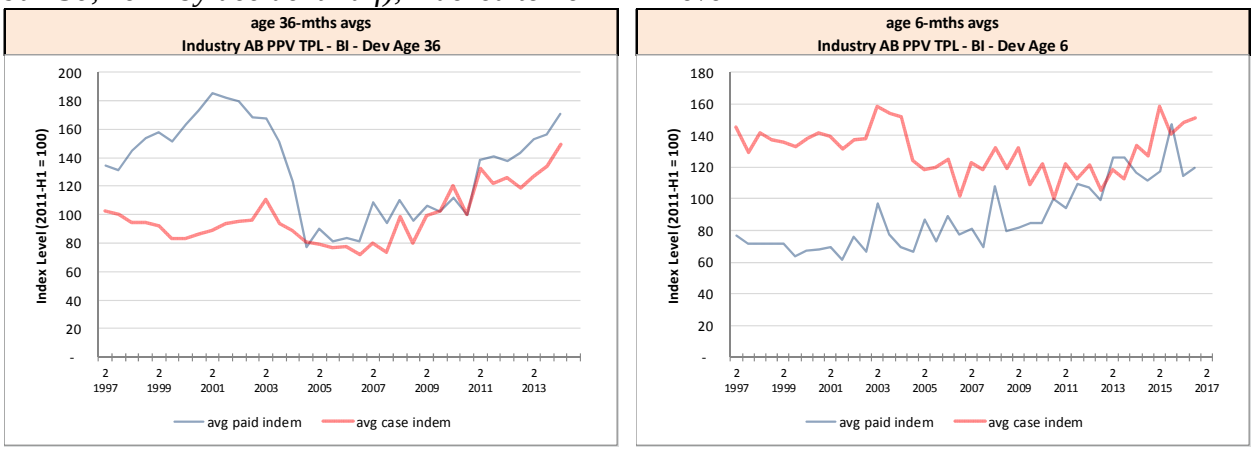
latest 20 accident halves

The charts at the top of the next page tell a similar story. The chart on the left is average paid and average case (indemnity only) as at development age 36 months, **indexed** to their levels at 2011-H1, which indicate that post 2011-H1, average paid has increased faster than average case reserves. However, at age 6 months (chart on the right), case reserve growth post 2011-H1 has outpaced that of average paids. Again, this may be signaling case reserve strengthening over-and-above the growth in

[1]These are crude measures of accident period trends, and compare with the FA indemnity BI trend selected model loss cost trend of +7.7% +/-1.5% standard error, and the OW trend selection of +7.5%; as per OW's practice, a standard error for their trend is not provided. Note that the regression trend estimates based on average paid indemnity and average case reserve at 12 months are within a standard error of the FA loss cost model selection, indicating trends that are not statistically different from the FA selections

payments. Without adjustment, this may lead to an overstatement of ultimate estimate based on the link ratio methodology.

Industry Alberta PPV indemnity only BI Average Paid Indemnity vs Average Case Reserve (as at Jun 30, 2017 by accident half), indexed to 2011-H1 level



As presented in our last submission, we note that there may be some evidence that the "calendar period" inflation of average paid indemnity may be changing (see table below). In particular, as indicated, the first half of 2016 witnessed the lowest level of increase in payments (across all accident periods), since the 2011 decline, and the second half of 2016 shows the lowest level of increase in payments since the decline in the second half of 2010. On a full accident year basis, calendar year 2016 had the smallest growth in paids (3.6%) since 2011 (0.2%).

Industry Alberta PPV indemnity & ALAE BI Calendar Year Paid at Dec 31, 2016

All-Industry experience: AB: TPL - BI as at 201612

	1st half of cal year			2nd half of cal year			cal year		
Cal Yr	paid indem & ALAE ($000s)	chg in paid ($000s)	% change	paid indem & ALAE ($000s)	chg in paid ($000s)	% change	paid indem & ALAE ($000s)	chg in paid ($000s)	% change
2016	295,893	9,434	3.3%	321,567	11,878	3.8%	617,460	21,312	3.6%
2015	286,459	16,885	6.3%	309,689	17,156	5.9%	596,148	34,040	6.1%
2014	269,575	31,262	13.1%	292,533	21,374	7.9%	562,108	52,636	10.3%
2013	238,313	13,253	5.9%	271,159	14,646	5.7%	509,472	27,899	5.8%
2012	225,060	23,756	11.8%	256,513	36,918	16.8%	481,573	60,675	14.4%
2011	201,304	(9,127)	-4.3%	219,595	9,925	4.7%	420,898	799	0.2%
2010	210,430	18,901	9.9%	209,669	(832)	-0.4%	420,099	18,069	4.5%
2009	191,529	15,222	8.6%	210,501	7,600	3.7%	402,030	22,822	6.0%
2008	176,307			202,901			379,208		
	annualized to 2016:		6.7%			5.9%			6.3%
	annualized to 2015:		7.2%			6.2%			6.7%

All of the above suggests that the traditional link ratio methodology may not capture the underlying claims recording processes that are occurring for bodily injury, and a GLM methodology (or other methodologies that attempt to directly account for changes in calendar period trends) may be able to at least provide some additional insight.

In applying the link ratio methodology for claim counts for Bodily Injury, the selected factors for 6-12, 12-18, 18-24 and 24-30 were not based on the OW defaults, but rather:

6-12 selected = actual 2016-H1 factor (0.988)

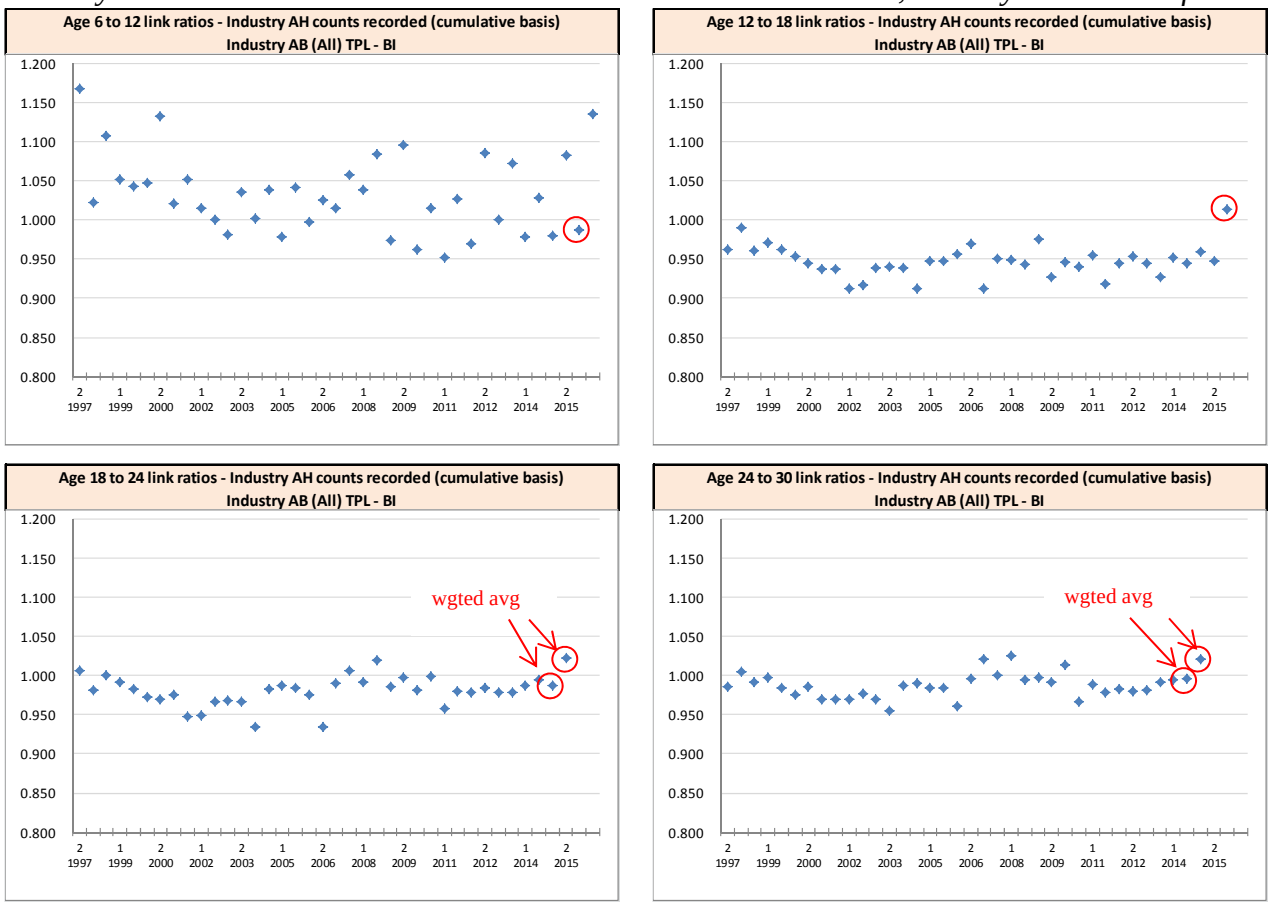
12-18 selected = actual 2016-H1 factor (1.014)

18-24 selected = weighted average of last 2 "H1" factors (1.006)

24-30 selected = weighted average of last 2 "H1" factors (1.008)

We discuss these selections after the charts below which show the BI recorded claim count link ratios for industry Alberta Private Passenger. We've fixed the link ratio axis scale to 0.800 to 1.200 for consistency across the different ages. We've also added markers to indicate the OW selections.

Industry Alberta PPV claim count BI recorded link ratios at June 30, 2017 by accident half*



**link ratios are on a "recorded" or "incurred" basis – i.e. life-to-date closed count plus current open count*

While we think we understand the rationale for the selections, we would offer the following comments:

- for the 6-12 selection, we believe there is some (weak) evidence that link ratios are "semester" specific, but it is not definitive over the entire data set:
  - the overall average 1.033, standard deviation 0.051
  - H1 average 0.999 (less than 1 standard deviation from overall), standard deviation 0.029

  - H2 average (1.066) (less than 1 standard deviation from overall), standard deviation 0.045

- for the 12-18, there is even less evidence to support a statistical difference between H1 and H2 link ratios as being different; it is not clear in the discussion if the selection of 2016-H1 actual for the link ratio was because it is an "H1", but if it was, it is applied to an "H2" period (i.e. it gets applied to both 2016-H2 which is currently aged 12 months, and 2017-H1, which is currently aged six months); furthermore, the selected factor (1.014) is the highest factor in the data set for age 12-18 (and, in fact, is the only link ratio for this age that is over 1.000) and at 3 standard deviations from the average, we would suggest it may be an "outlier" and likely not warranted the extreme weight given by OW, unless OW has a specific rationale for doing so
- for the 18-24 and 24-30 factors, we believe that taking a longer period average rather than a weighted average for the most recent 2 data points may be a better approach from a stability stand point.

We understand that there may be a claim-count reporting change by an insurer, and there is evidence of reported claim counts at age 6 for 2016-H1, 2016-H2, and 2017-H1 being 7% lower than would be suggested if one compares the counts with the average from the preceding accident halves (although it is hard to imagine that a change in a single insurer's reporting could have such a dramatic effect). The evidence at age 12 is less clear (2016-H1 and 2016-H2 don't really look that different than what would be projected from the preceding accident halves at age 12). Based on this, while there may be some support for making an "informed" adjustment for age 6-12 link ratio selection, we would suggest there is less support for doing so for ages 12-18, 18-24, and 24-30 without more explicit support and rationale provided.

Closing remarks with respect to Section 5

We believe the uncertainty in estimating ultimates for Alberta Private Passenger experience (industry and individual filing insurer experience) should be formally acknowledged by the AIRB and taken into consideration in judging the "reasonableness" of insurer's filing support. Specifically, **we believe the AIRB should recognize that a significantly a "range of reasonable estimates" is wide**, given the volatility of reporting patterns, the increases in average paid amounts, the increased catastrophic event activity, and the increase in apparent theft frequency, to name but a few indicators.

Section 6 : Selection of Loss Trend Rates

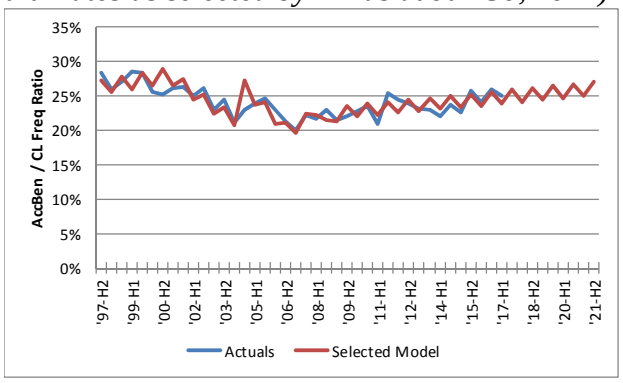
Generally, the PPV Report trends are not statistically different from the loss cost trends estimated for indemnity as per FA's own modeling of the Alberta industry private passenger experience as at June 30, 2017. That is, the OW trend rates as selected are generally within 1 standard error of the trend estimates from the FA selected loss cost models.

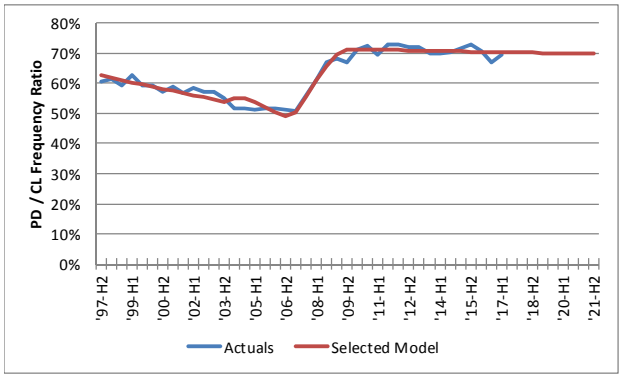
However, the approaches taken to arrive at the respective estimates differ. In particular, FA models the full 40 accident halves (20 accident years) of data available, whereas OW varies the data used by coverage and by metric, and in ways that may not necessarily ensure consistency. FA also considers correlation between and among coverages when selecting period structures, whereas there is little

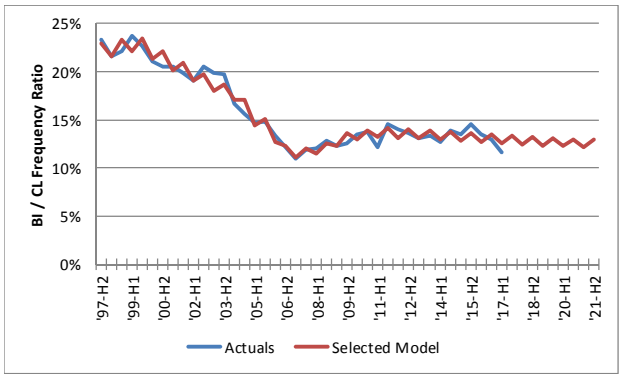
discussion of this in the PPV Report. For example, CL, PD, BI, ME, DI, DB, and FE coverages are all generally triggered by automobile collisions, and the primary vehicles on Alberta roads exposed to collisions are private passenger vehicles insured within Alberta (i.e. vehicles considered in the "Alberta Private Passenger" cohort). As such, we expect to see correlation between and among these coverages for claims frequency, and we take this into account in our modeling and in our final model selections. This ensures consistency between and among the coverages, reducing the likelihood of inconsistencies in modeled frequencies.

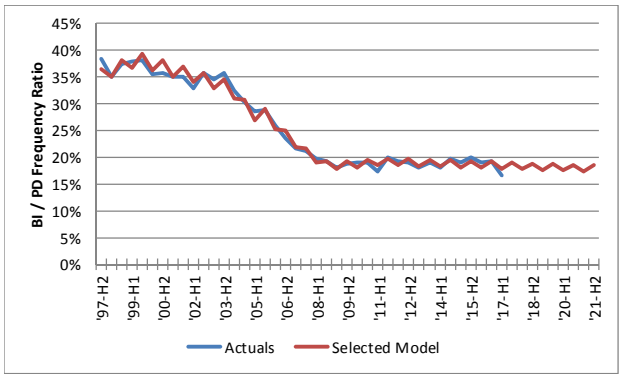
That is not to say that the relationships cannot or do not change over time (it is clear that they do) – we are simply stating that taking this into consideration will likely result in more consistent models. This is shown in the charts immediately below and at the top of the next page, where we show relative frequencies for various coverages, with the blue lines as actuals, and the red lines based on the FA selected models for each coverage being compared. We also show a severity comparison on the next page between collision and comprehensive (as both coverages relate to the cost of vehicles).

Industry Alberta PPV – ratios of select coverage frequencies (both "actual" and "modeled"; ultimates as selected by FA as at Jun 30, 2017)

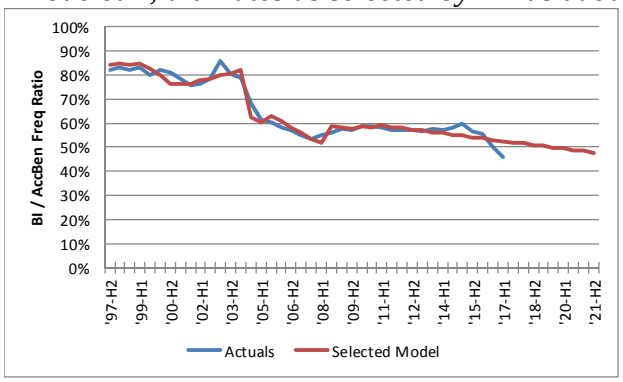


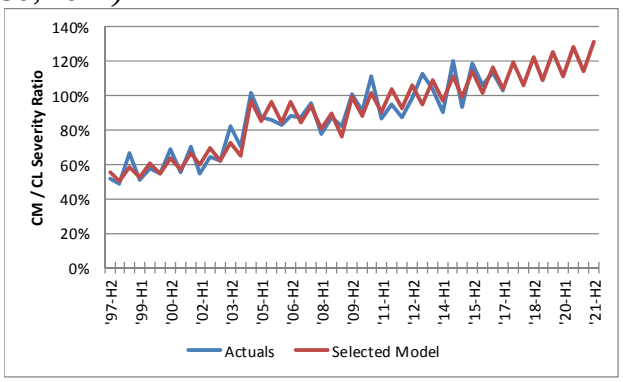






Industry Alberta PPV – ratios of coverage frequencies (left) and severities (right) (both "actual" and "modeled"; ultimates as selected by FA as at Jun 30, 2017)





Further, larger bodies of claims increase the precision of the models as the "samples" being used are larger. As such, the coverage that has the most claims annually (collision) will result in generally more precise model coefficient estimates than the other coverages – this can help in determining period structures for other coverages where there is more uncertainly due to randomness / process variance related to lower claims volumes.

OW selected "trend" coefficients are not necessarily BLUE

As per usual practice, the OW trend estimation process leverages regression, but in general, selected "trend" coefficients are <u>not</u> taken directly from a single selected regression model, but rather after consideration of coefficient estimates from a variety of models, where model design differences are largely based on reducing the period length (without then including the "dropped" periods explicitly as part of an implied "earlier" period). We continue to believe that this may not lead to "best" estimates. In particular, when certain specific assumptions are met, ordinary least squares regression (the type employed by OW) will produce "BLUE" coefficient estimates, that is:

- <u>B</u>est (in the sense that they result in the lowest average squared difference between the actual values and the associated fitted values)
- <u>L</u>inear
- <u>U</u>nbiased (in that the expected value of the coefficient estimate is equal to the underlying, unknown parameter it represents)
- <u>E</u>stimates

In particular, the OW selection process, while ***<u>based</u>*** on ordinary least squares, is ultimately ***<u>not strictly</u>*** ordinary least squares, and may not result in a "best" or "unbiased" estimator of the underlying (and unknown and unknowable) population "trend" rate.

We believe a better approach would be for OW to select a period structure that they believe best describes the historical results, then accept (i.e. "select") the coefficient estimates from that model. Further, while we have no issue with applying different model structures to the data, we believe it would

be better to model a consistent set of data, rather than modeling sub-sets of data and attempting to compare model results of the data sub-sets (in general, using regression, directly comparing fit measures of models of different subsets from a data set has to interpreted carefully, as the fits are in relation to different data sets – differing fits are not necessarily comparable under these circumstances).

As an example, while OW has access to 40 accident halves (1997-H2 through 2017-H1 inclusive), they choose to limit their focus to data included the most recent 30 accident halves (2002-H2 to 2017-H1 inclusive). We have no specific issue with this approach, but note that in the actual analysis, subsets of this 30 period are then considered, and not necessarily in a "consistent" fashion, as indicated in the table below (summarizing the various "starting periods" considered by OW by coverage and metric).

OW Industry Alberta PPV Report Period Starts

Coverage	Severity	Frequency	Loss Cost
BI	2011-2	2007-2	
PD	2008-1	2007-2	
ME	2008-1	2008-2	
DI	2010-1	2010-1	
DB			2005-1? (not clear)
FE			2005-1? (not clear)
UA			
UM			
CL	2007-1	2010-1	
CM			2002-1? (not clear)
SP			2002-1? (not clear)
AP			2005-1? (not clear)

Specifically, where both frequency and severity are modeled by OW, only one modeled coverage had a consistent data start point (DI). We believe a better approach would have been to always include the data 2002-H2 through 2017-H1, and create competing alternative models based on various period structures. Where differing period starts are used, we would expect there to be some sort of explanation on why (that is, what drives their decisions on period breaks?). Further, if the goal is to identify possible changes in trend rates over the 15-year period under consideration, a better approach, in our opinion, is

to always start at 2002-H2, then formally test different periods. An example is shown below where we model the OW selected ultimates for Industry Alberta PPV Disability Income (DI) at June 30, 2017 using a single period model (left) and a multiple period model (right), where the multiple periods were identified based on the residuals from the single period model. As both models use the entire 40 data points, all fit metrics are directly comparable. The R^2 fit measure suggests the multiple-period model accounts for significantly more loss cost variability than the single-period model (81% vs 42%), and the adjusted R^2 measure improvement confirms that the overall model improvement wasn't simply due to adding more variables that don't have "explanatory" power.

Competing DI Loss Cost Models using OW selections of Ultimate for Alberta PPV June 30, 2017

Single Period Model

FITTED TREND STRUCTURE REGRESSION STATISTICS

Multiple R	R^2	Adjusted R^2	S.E. of Estimate	# of Obs. n	# of Obs. Excluded	k
0.6517	0.4248	0.3937	0.1588	40	-	3

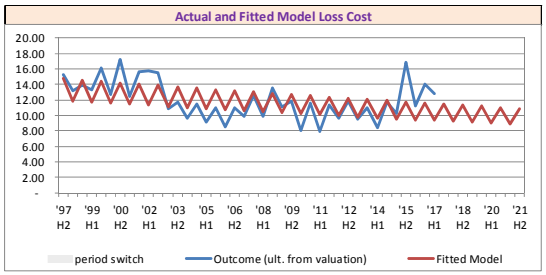
s.e.(est.) as % of modelled mean: 6.4%

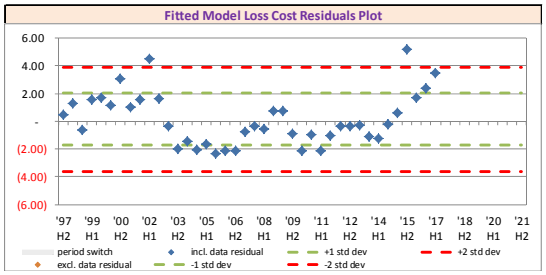
Runs-Test Result: 4.3950 RESIDUALS RUNS NOT RANDOM ; residuals normal

parameters with p-value >5%: 0 (intercept specifically not included)

	Coefficients	S.E.	t-Stat	p-value	C.I. 95% Lower	C.I. 95% Upper	Selected Coeff.
	1	2					
Intercept	27.829	8.744	3.183	0.3%	10.113	45.545	27.829
Season	0.212	0.050	4.210	0.0%	0.110	0.313	0.212
All Years	(0.013)	0.004	(2.914)	0.6%	(0.022)	(0.004)	(0.013)
Scalar 1	-	-	-	n/a	-	-	-
Trend 1	-	-	-	n/a	-	-	-
Scalar 2	-	-	-	n/a	-	-	-
Trend 2	-	-	-	n/a	-	-	-
Scalar 3	-	-	-	n/a	-	-	-
Trend 3	-	-	-	n/a	-	-	-
Scalar 4	-	-	-	n/a	-	-	-
Trend 4	-	-	-	n/a	-	-	-

Trends are Annual





Multiple Period Model

FITTED TREND STRUCTURE REGRESSION STATISTICS

Multiple R	R^2	Adjusted R^2	S.E. of Estimate	# of Obs. n	# of Obs. Excluded	k
0.9002	0.8104	0.7946	0.0924	40	-	4

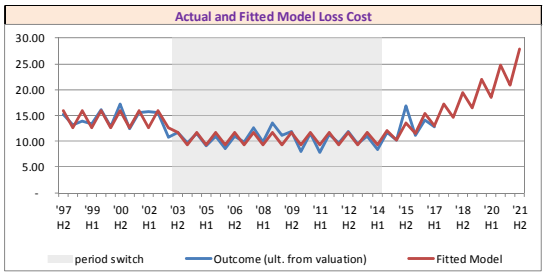
s.e.(est.) as % of modelled mean: 3.8%

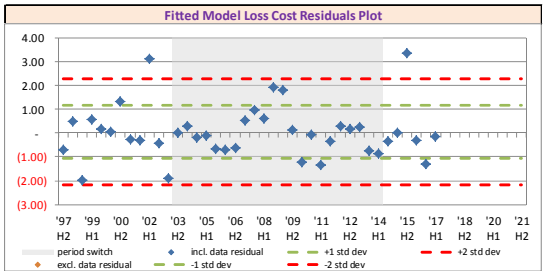
Runs-Test Result: 1.7967 RESIDUALS RUNS RANDOM ; residuals normal

parameters with p-value >5%: 0 (intercept specifically not included)

	Coefficients	S.E.	t-Stat	p-value	C.I. 95% Lower	C.I. 95% Upper	Selected Coeff.
	1	2					
Intercept	2.540	0.030	83.451	0.0%	2.478	2.602	2.540
Season	0.227	0.029	7.751	0.0%	0.168	0.286	0.227
All Years	-	-	-	n/a	-	-	-
Scalar 1	(0.311)	0.033	(9.482)	0.0%	(0.378)	(0.245)	(0.311)
Trend 1	-	-	-	n/a	-	-	-
Scalar 2	-	-	-	n/a	-	-	-
Trend 2	0.121	0.024	5.038	0.0%	0.072	0.169	0.121
Scalar 3	-	-	-	n/a	-	-	-
Trend 3	-	-	-	n/a	-	-	-
Scalar 4	-	-	-	n/a	-	-	-
Trend 4	-	-	-	n/a	-	-	-

Trends are Annual





Another benefit of this approach is that forecasts[2] can be directly provided as output from the model which we believe would be of direct benefit to the AIRB in its semi-annual and annual review processes, as frequency, severity, and resulting loss cost estimates by future accident halves would be directly provided (and prediction intervals could be provided as well). Further, these forecasts could then be used by OW as part of their next review, in developing "a priori" count and claim levels for inclusion in loss ratio and Bornhuetter-Ferguson valuation methodologies.

There are many possible models for frequency, severity, and loss costs for each coverage that are valid and reasonable, and the ultimate selection of models by insurers in developing their rates is a matter of judgment and interpretation that can differ among actuaries even when modeling the same data. We put forward that differences like this in general should be viewed as both "okay" and healthy in a competitive environment.

Specifically, we feel it is important for the Board to consider that valid differences in actuarial judgement and opinion can lead to differing selections of ultimates, and differing "trend" results, as differing models can fit actual results equally well even to the same data, and yet, due to their structure (i.e. the selected parameters included in each), result in divergent forecasts.

We believe the Board should allow the filing insurer to "bet their prices and market share" on their views of ultimates and their selections of models describing frequency/severity/loss costs over time and as projected into the future. The rate review process should focus on whether the filing insurer's process to arrive at their forecast was reasonable (and consistent with the insurer's previous views / process / approach unless an explanation is provided as to what has changed and why). If so satisfied, we believe the Board should accept the filing insurer's view, even if it differs from the view of the Board's actuary. Forcing all participants in the insurance market place to adopt a single view introduces systemic risk and potentially detracts from the competitive marketplace should certain participants reduce their risk appetite where they don't agree with the imposed view.

Section 7: Loss Adjustment Expenses

We note that the table provided indicates the ULAE factors for calendar years 2005 through 2016, but the trend analysis uses data from 2002 to 2017. The ULAE factors used for calendar years 2002 through 2004 should be explicitly provided to be consistent with the trend analysis.

Section 15: Appendix A

We believe each exhibit should "stand on its own", and one way to ensure that is to clearly describe the exhibit's contents. As an example, Exhibit 1 would benefit if it were clarified that "Losses" are "Indemnity & ALAE" and specifically do not include a ULAE loading (whereas the trend analysis leverages "Losses" that include indemnity, ALAE, and a ULAE loading).

[2]Where model results are determined using variable values that are "within" the scope of the model itself, they are generally referred to as "predicted" values. When variable values reflect "future" values (and necessarily outside of the scope of the model), they are generally referred to as "forecasted" values. These two terms could be used interchangeably.

In Exhibit 2, the coverage detail is only provided on the odd pages – even pages do not include have the coverage identified in the title. We believe this should be added for clarity and ease of use. It would also be helpful if there were some sort of indicator to support the selected ratios.