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Update from the Third Party Working Party

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This handout supports the research effort of the Institute and Faculty of Actuaries Third Party Working Party and is not written advice directed at the particular facts and circumstances of any given situation and/or data.

The materials contained in this presentation pack and any oral representation of it by the working party are explicitly outside the scope of the TAS.

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Third Party Working Party

- Ninth iteration of the Institute and Faculty of Actuaries Third Party Working Party (TPWP), which investigates motor claims (injury and property damage).
- Scope focussed on private car comprehensive (PCC) and includes accidental damage analysis for the first time this year.
- Data representing earned premium for accident year 2017 of £9.2 billion for private car comprehensive.
- Initial results from the TPWP were presented at the IFoA Reserving Seminar in June 2018.
- This pack contains this year's research to be presented at the GIRO conference in October 2018.

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Acknowledgements

Working Party:

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Tesco Underwriting

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Market statistics

Notes on data

- The collection of contributing insurers has changed materially over the years. Relative to last year's study this year's includes additional data from some contributors (generally relating to more accounts) and, in some cases, less data from other contributors.
- In addition, in each year it is common for a number of insurers to make relatively subtle changes to their definitions of claim statistics. In the aggregate, these lead to distortions when comparing the market studies between different years.
- Not all contributors are able to supply data to support every claim statistic in each study. There are generally (but not always) improvements in the availability of data from year to year, and as such, the results of the most recent study will be based upon data from an increased proportion of the contributor companies (and not just new contributors). Again, this introduces a material distortion into any analysis which attempts to compare the results across different studies.
- It is reasonably common for insurers to restate the claims statistics of prior accident years (and prior periods of development), particularly in the case where portfolios (including movements on prior year liabilities) have been acquired or disposed of by the contributor(s) in question. Other reasons for such changes can be changes in the availability of granular data pertaining to (potentially large) segments of portfolios (such as in the case where data is provided by bordereaux rather than being integrated in insurer administration systems) or in some cases changes in the mapping of data to classes.
- **For this reason, we would recommend that if the user of the research wishes to understand how trends have evolved over time, then they should focus on looking at trends by accident year within the latest study, rather than attempting to compare the results across studies. This is particularly true this year where there has been more movement in the data between studies than in previous years.**
- Likewise we do not consider statistically valid any back engineering of individual contributors' contributions.

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3. Market Statistics: TPD
4. Market Statistics: Capped TPI
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6. Conclusions
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Market Environment

Commentary

2017

"2017 Net Combined ratio performance was 96.8%, **the best market experience since 1994**". Around 1.6% was due to the partial reversal of the 2016 Ogden impact.
Source: EY Motor Seminar 26th June 2018

2017 SFCR **Net combined ratio of 97.1%**. Future net combined ratios expected to be above 100%
Source: Deloitte Motor Seminar July 2018

H1 2018

"..**market continues to be very soft** with average premiums reducing and, to a certain extent, disrupted by the continued uncertainty around the timing and quantum of any future change to the Ogden discount rate"
Source: Ageas H1 2018 results

"we have seen **market prices come down** from the highs of 2017, driven by lower claims frequencies, the prospect of regulatory reform, and competition"
Source: Hastings CEO comment on interim H1 2018 results

"Motor insurance market has been **competitive but rational**"
Source: Direct Line interim H1 2018 results

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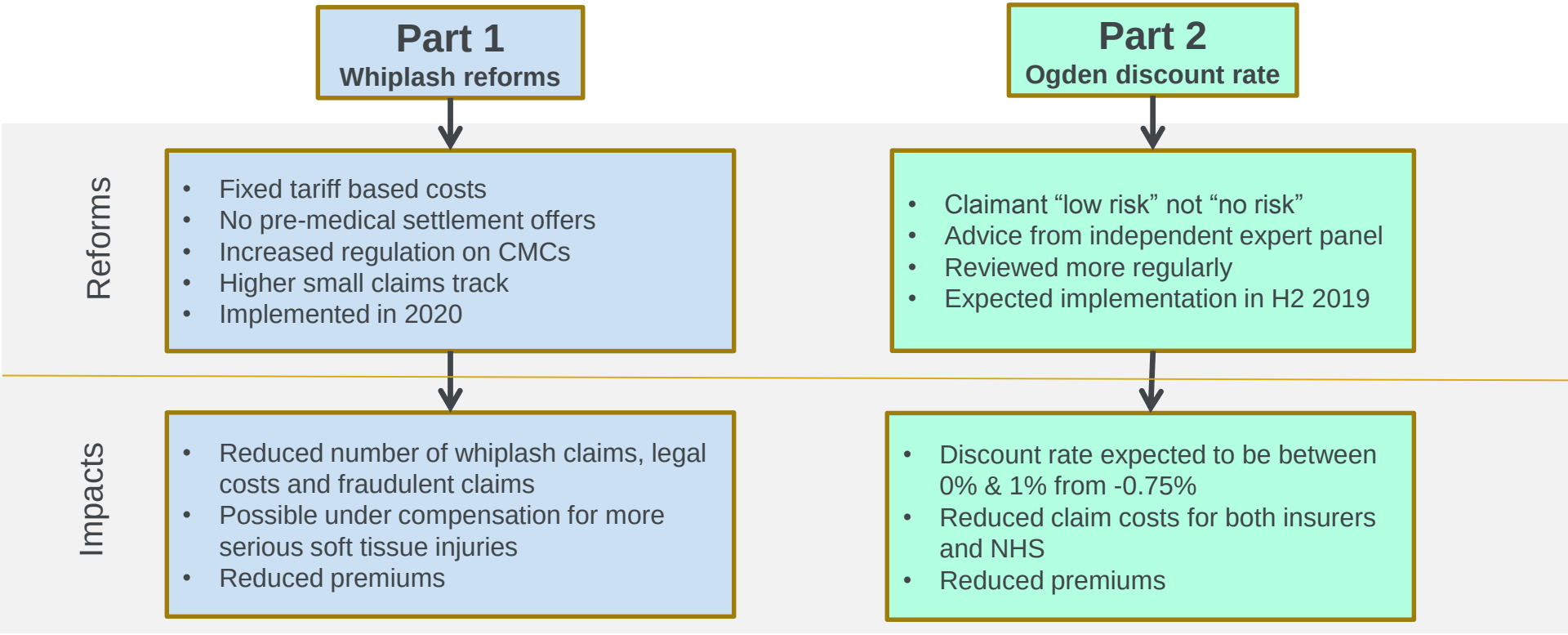
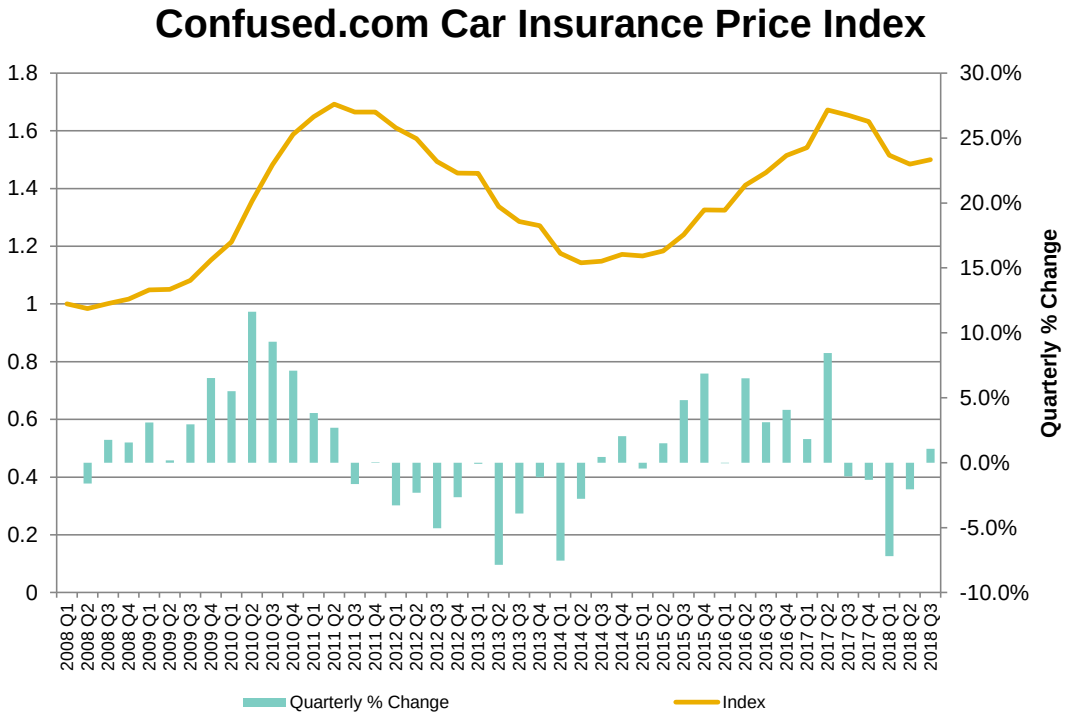
Market Environment

Civil Liability Bill



Market Environment

Premium Rates



- Confused.com Car Insurance Price Index increased by 13% p.a. from 2014Q2 to 2017 Q2.
- Premiums have fallen from this point with 2018 Q1 seeing a large reduction.
- Currently premiums are 9% lower than a year ago.

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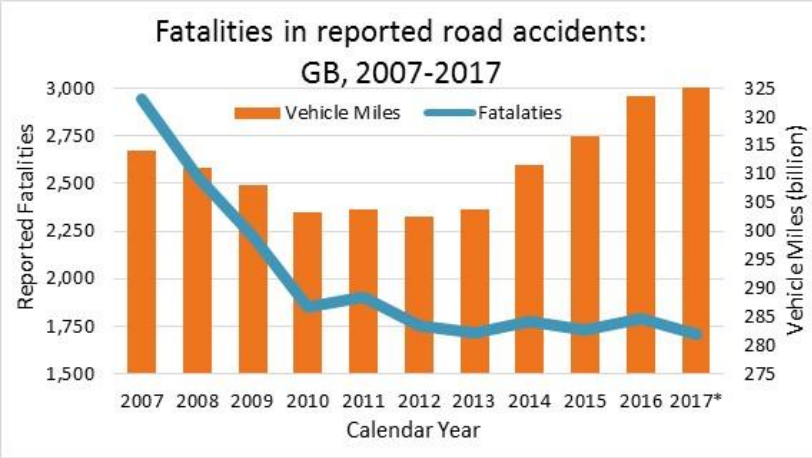
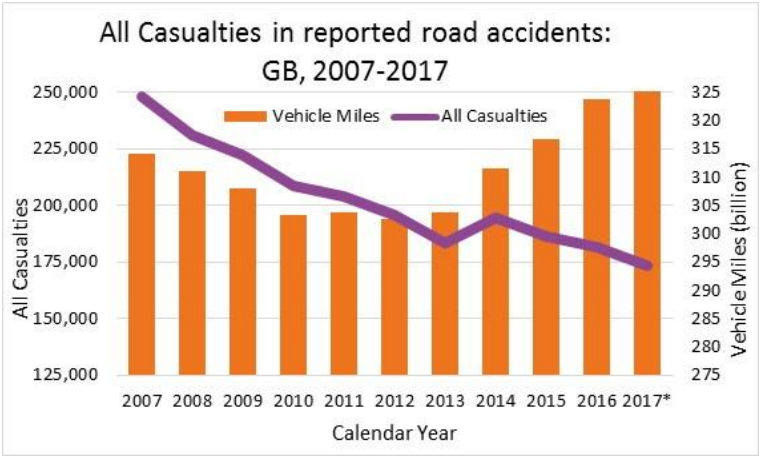
Market Environment

Casualty and Mileage Statistics





* 2017 data was only available to September and has been projected to give the full-year figures.

- Road deaths decreased by 4.5% in 2017 to lowest level since records began (1926).
- The number of fatalities per billion Vehicle Miles has fallen from 9.4 in 2007 to 5.8 in 2012 and 5.3 in 2017.
- Total casualties in 2017 were 4% lower than in 2016 and the lowest level on record.
- The number of casualties per billion Vehicle Miles has fallen by 33% from 2017 to 2017.

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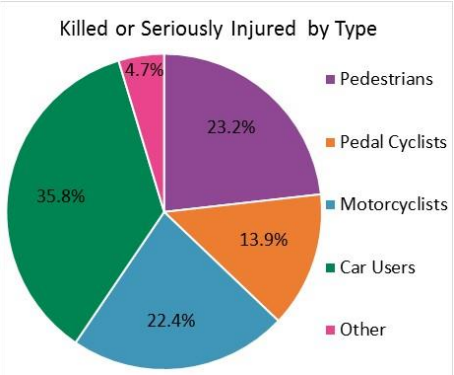
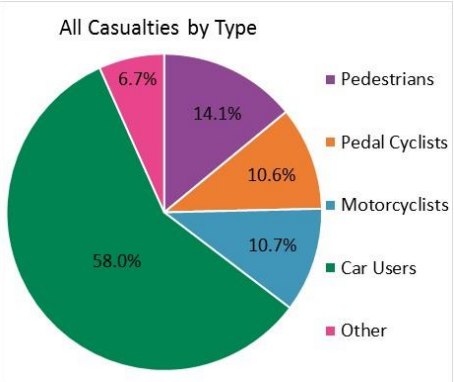
Source: Casualties: Stats19 Table RAS45003; https://www.gov.uk/government/statistical-data-sets/ras45-quarterly-statistics
Vehicle Miles: Table TRA0101; https://www.gov.uk/government/statistical-data-sets/road-traffic-statistics-tra

Market Statistics
Fatality Statistics





- Car users made up 58% of casualties in the last year but only 36% of those killed or seriously injured (KSI).
- Motorcyclists are most prone for their accidents to lead to death or serious injury, with motorcyclists making up 22% of all those KSI whilst only comprising 11% of all casualties.
- The proportion of those KSI by type has remained fairly stable since 2010. However, as a proportion of all casualties, car users have fallen from 64% to 58% with all other classes increasing.
- The greatest increase in proportion was for cyclists, from 8% to 11%, which is consistent with the greater distance people are cycling on the roads.
- The proportion of KSI of total casualties increased from 13.5% before 2016 to 16% in 2017.

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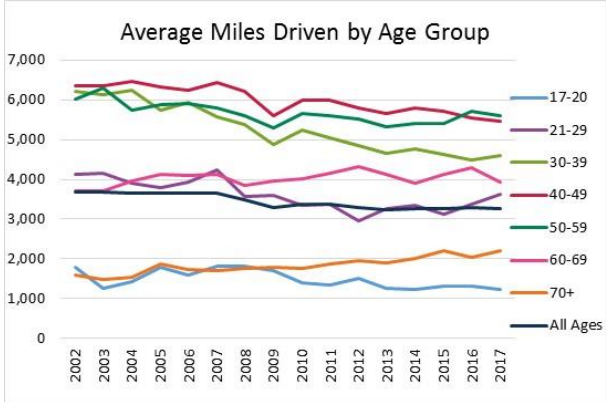
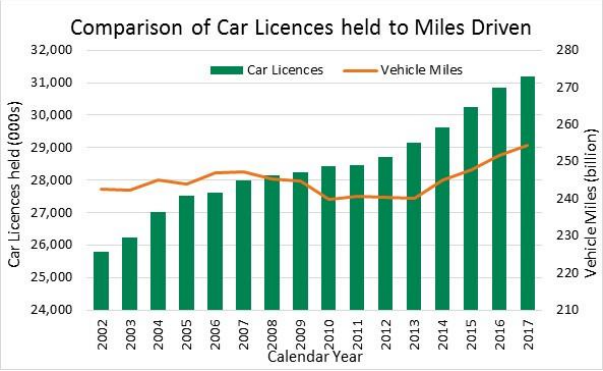
Source https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/668504/reported-road-casualties-great-britain-2016-complete-report.pdf

Market Environment

Changing Driving Habits





- The National Travel Survey estimates that miles driven has reduced by 11% from 2002 to 2017 across all ages.
- Ages 30-49 saw the largest falls in mileage, coinciding with increases of 20% or more in cycling and public transport for ages 30-69.
- Drivers over 70 have steadily been driving more, perhaps due to better health at older ages.
- Average miles driven by those age 21-29 has increased by 16% over the past 2 years, perhaps due to the greater availability of insurance due to telematics.
- The average distance travelled by public transport has increased by 12% over this period.
- The distance travelled by cycling has increased by 54%.
- In total, the number of car licences held in Great Britain has increased by over 20% since 2002 whilst the total number of miles driven by car has only increased by 4.8%. Following a dip coinciding with the 2008 recession, however, this has increased by 6% since 2013.

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Sources: 1. https://www.gov.uk/government/statistics/national-travel-survey-2017; 2. https://www.gov.uk/government/statistical-data-sets/road-traffic-statistics-tra ; 3. https://www.gov.uk/government/statistics/vehicle-licensing-statistics-2017

Market Environment

Driver assistance technology

SEMI-AUTONOMOUS SAFETY TECH ON UK NEW CAR REGISTRATIONS

	Fitted as Standard	Optional fitment	Total
Collision Warning System	1,071,728 (39.8%)	727,052 (27.0%)	**1,798,780 (66.8%)**
Parking Assistance	589,720 (21.9%)	993,638 (36.9%)	**1,583,358 (58.8%)**
Automatic Emergency Braking	764,751 (28.4%)	665,118 (24.7%)	**1,429,869 (53.1%)**
Overtaking Sensor	140,024 (5.2%)	993,638 (36.9%)	**1,113,662 (42.1%)**
Adaptive Cruise Control	185,802 (6.9%)	788,986 (29.3%)	**974,788 (36.2%)**
Blind Junction View	8,078 (0.3%)	253,121 (9.4%)	**261,199 (9.7%)**

- According to SMMT, nearly **70%** of new cars in the UK in 2017 had some form of driver assistance technology.
- Euro NCAP's 5 year road map shows a number of more advanced driver assistance technologies will be required for a 5 star rating in the coming years.
- As the UK Car Park is renewed these technologies will become increasingly common.

- The increase is technology in cars is leading to higher repair costs as shown by some quotes obtained by What Car? (2016-7)
  - Forward collision warning for Jeep Renegade – minor bumper collision with pheasant (no visible damage) - **£900**
  - Autonomous emergency breaking (AEB) – Volvo S90 rear bumper dent - **£1,442**
  - Windscreen replacement with sensor calibration – Ford Fiesta - **£770** (the same replacement for a 2008 model would be £156).
- Repairs are not just about fixing the hardware anymore – they are also increasingly about the software – calibration of various sensors and systems within the vehicle.
- The impact on claim frequency is less clear but is likely to reduce the number of accidents.

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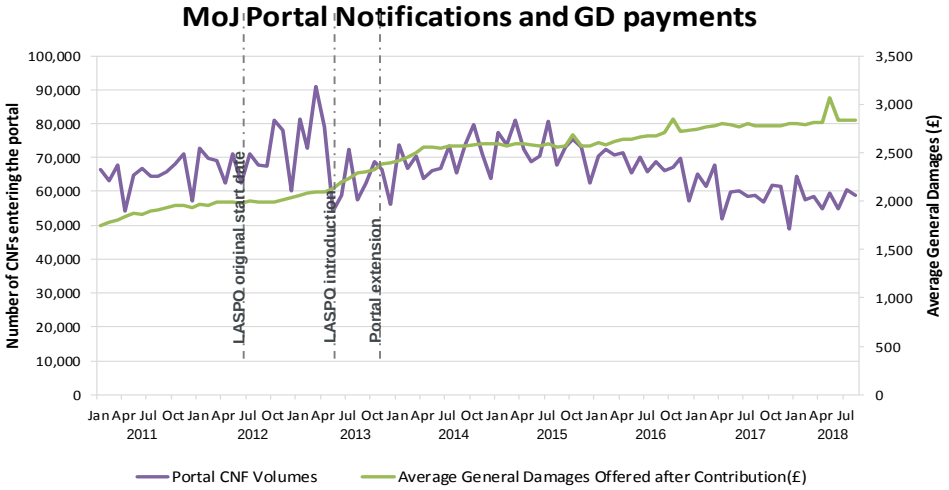
Market Environment

MoJ Portal Notifications and GD payments

- The number of claims reported through the portal has been reducing since mid-2015, possibly due to past and proposed reforms.
- The level of notifications in 2016 was 7% lower than in 2015.
- The pace of the reduction increased in 2017, but in recent months the level of notifications appears to be stabilising.
- Post-LASPO General Damages payments have tended to increase in line with changes in the JC guidelines (see table).



JCB Edition	Month Published	Average Uplift
8th	Sep 2006	5.2%
9th	Sep 2008	9.6%
10th	Sep 2010	2.8%
11th	Sep 2012	9.0%
LASPO	Apr 2013	10.0%
12th	Sep 2013	2.3%
13th	Sep 2015	4.7%
14th	Sep 2017	4.8%

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Source: https://www.claimsportal.org.uk/about/executive-dashboard/

Market Environment

Summary

- 2017 was a good year for the UK Motor Market with the best net combined ratio since 1994.
- The Civil Liabilities Bill is expected to pass this year with the aim of reducing whiplash claims and revising the basis for setting the Ogden discount rate. These changes will cause significant disruption to claims and premiums in 2019 and 2020.
- Following three years of strong premium increases the market begun to soften in the second half of 2017.
- Mileage, casualty and MoJ Portal trends all point towards a reducing claim frequency.
- However, increased technology in cars is increasing repair costs.

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Source: https://www.claimsportal.org.uk/about/executive-dashboard/

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Market statistics - AD

Projected Results

Projected Ultimate AD Results for Private Car Comprehensive

Accident Period	Earned Exposure (millions of vehicle years)	Ultimate AD Claim Frequency (Non-nil claims per million vehicle years)	Ultimate AD Gross Claim Severity (£)	Ultimate AD Recovery Rate %	Ultimate AD Net Claim Severity (£)	Ultimate AD Net Burning Cost (£)	Year-on-Year Change in Frequency (% pa)	Year-on-Year Change in AD Gross Severity (% pa)	Year-on-Year Change in AD Recovery Rate (% pa)	Year-on-Year Change in AD Net Severity (% pa)	Year-on-Year Change in AD Net Burning Cost (% pa)
2008	17.5	67,459	1,552	37.2%	975	65.8	-14.8%	3.9%	-1.7%	5.0%	-10.5%
2009	17.6	65,273	1,594	38.5%	981	64.0	-3.2%	2.7%	3.5%	0.6%	-2.7%
2010	17.5	60,846	1,681	39.6%	1,015	61.8	-6.8%	5.4%	2.9%	3.5%	-3.5%
2011	17.9	49,299	1,698	41.2%	998	49.2	-19.0%	1.0%	4.2%	-1.7%	-20.4%
2012	18.6	47,395	1,796	41.8%	1,046	49.6	-3.9%	5.7%	1.3%	4.8%	0.8%
2013	18.8	46,373	1,815	42.3%	1,046	48.5	-2.2%	1.0%	1.4%	0.0%	-2.1%
2014	19.1	47,189	1,901	42.9%	1,085	51.2	1.8%	4.8%	1.4%	3.7%	5.5%
2015	19.7	47,783	2,040	42.5%	1,173	56.0	1.3%	7.3%	-0.9%	8.1%	9.4%
2016	20.7	46,680	2,263	43.2%	1,286	60.0	-2.3%	10.9%	1.5%	9.7%	7.1%
2017	21.4	43,786	2,433	43.3%	1,380	60.4	-6.2%	7.5%	0.3%	7.3%	0.6%
Average (2010 to 2017)							-4.6%	5.4%	1.3%	4.5%	-0.3%
Average (2012 to 2017)							-1.6%	6.3%	0.7%	5.7%	4.0%
Average (2014 to 2017)							-2.5%	8.6%	0.3%	8.3%	5.7%

- AD frequency is estimated to have fallen in the last two accident years with a 6.2% reduction in 2017.
- AD net severity is very high averaging 8.3% p.a. over the last three years.

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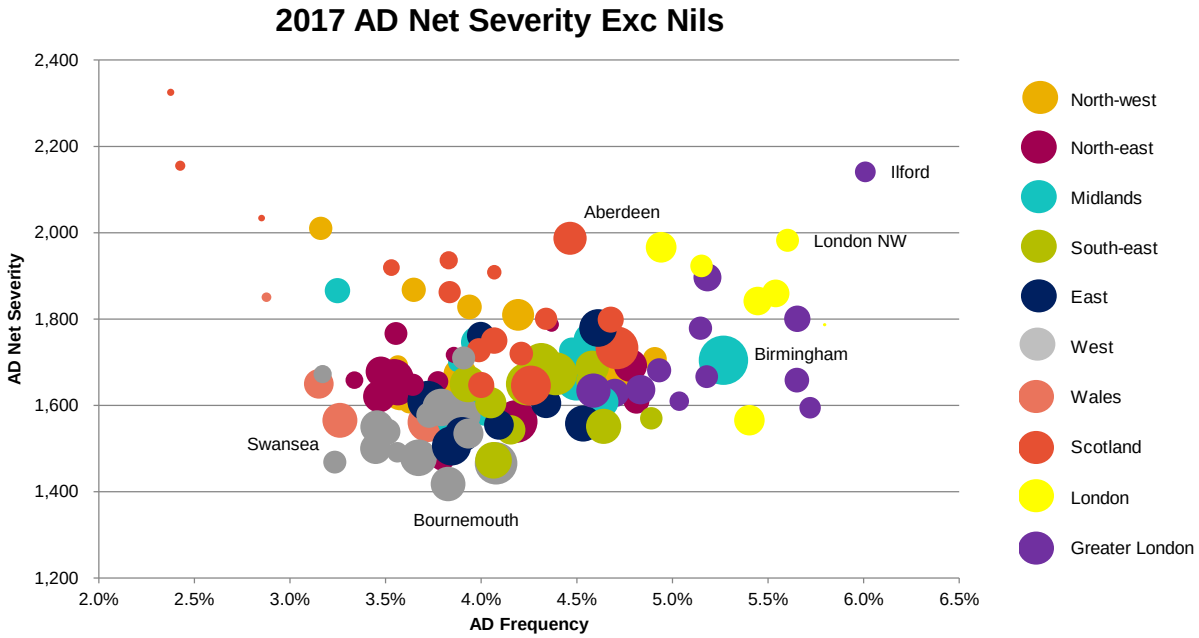
Market statistics - AD

Geographic Results



- London and Greater London have a higher AD frequency and severity than the overall average.
- The West is the region with the lowest AD frequency and severity.

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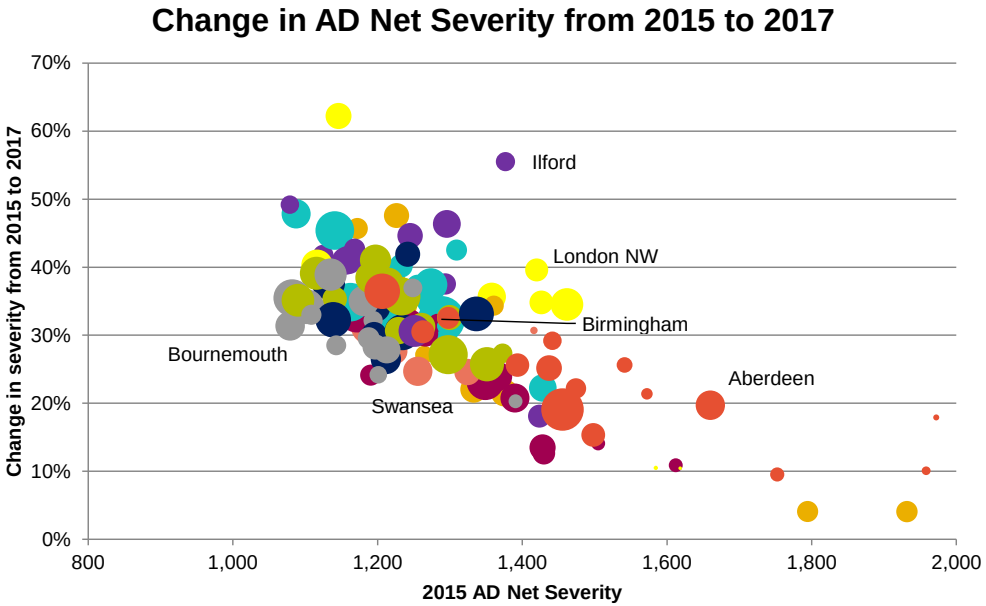
Market statistics - AD

Geographic Results



- Severity inflation over the period 2015 to 2017 does not show a clear geographic trend.
- Although inflation in Scotland appears lower (albeit from a higher base).
- Note that the change in severity compares the latest incurred severity for the accident years as at 31 Dec 2017.

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Market statistics - AD

By Region

2017 accident year

Region	AD Frequency exc nils	AD Severity exc nils
North-west	4.0%	1,704
North-east	3.9%	1,640
South-east	4.3%	1,636
Midlands	4.4%	1,682
Wales	3.5%	1,582
East	4.1%	1,611
West	3.7%	1,525
Scotland	4.3%	1,778
London	5.3%	1,837
Greater London	5.1%	1,723

Relative change from 2016 accident year

Region	AD Frequency exc nils	AD Severity exc nils
North-west	1.4%	1.2%
North-east	2.1%	-2.0%
South-east	-1.3%	1.1%
Midlands	1.8%	0.4%
Wales	0.4%	-2.0%
East	-0.5%	-1.9%
West	-1.2%	-2.2%
Scotland	0.2%	-2.7%
London	-2.1%	3.5%
Greater London	-0.4%	4.5%

- The 2017 results are latest position at 12 months developed
- The ‘Relative change from 2016 accident year’ results compare the change for each region to the change in total.

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Market statistics - AD

Summary

- AD frequency is estimated to have fallen by 6.2% in 2017.
- AD net severity is very high averaging 8.3% p.a. over the last three years.
- The increase is AD net severity is likely to be partly the result of an increase in technology in cars.
- The geographic trends for AD are not as strong as observed previously for other claim types, although it appears that severity inflation has been highest in London and Greater London in the last two years.

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Market statistics – TPPD

Projected Results

Projected Ultimate TPPD Results for Private Car Comprehensive

Accident Period	Earned Exposure (millions of vehicle years)	Ultimate TPPD Claim Frequency (Non-nil claims per million vehicle years)	Ultimate TPPD Claim Severity (£)	Ultimate TPPD Burning Cost (£)	Year-on-Year Change in Frequency (% pa)	Year-on-Year Change in Severity (% pa)	Year-on-Year Change in Burning Cost (% pa)
2008	18.3	40,754	1,784	72.7	-13.0%	11.6%	-2.9%
2009	18.4	40,612	1,838	74.6	-0.3%	3.0%	2.7%
2010	18.5	38,845	1,897	73.7	-4.4%	3.2%	-1.3%
2011	19.0	33,525	2,038	68.3	-13.7%	7.4%	-7.3%
2012	19.6	31,321	2,218	69.5	-6.6%	8.9%	1.7%
2013	19.7	29,539	2,267	67.0	-5.7%	2.2%	-3.6%
2014	20.0	29,756	2,375	70.7	0.7%	4.8%	5.5%
2015	20.7	29,596	2,493	73.8	-0.5%	4.9%	4.4%
2016	21.8	29,227	2,665	77.9	-1.2%	6.9%	5.6%
2017	22.4	27,624	2,799	77.3	-5.5%	5.1%	-0.7%
Average (2010 to 2017)					-4.8%	5.7%	0.7%
Average (2012 to 2017)					-2.5%	4.8%	2.2%
Average (2014 to 2017)					-2.4%	5.6%	3.0%

- TPPD frequency and severity trend is similar to AD for last few accident years.
- Severity has averaged 5.7% p.a. since 2010.
- Recent TPPD inflation is high but around 2% less than seen for AD.

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Capped TPI

Methodology and terminology

- When presenting results of a layered analysis, there is a choice in how to partition the claim amounts:
  - Type 1: In which claims that exhaust the width of a particular layer contribute an amount equal to the layer's width
  - Type 2: In which claims that exhaust the width of a particular layer are removed from that layer, and the full claim amounts "from ground up" ("FGU") are allocated to the next layer up

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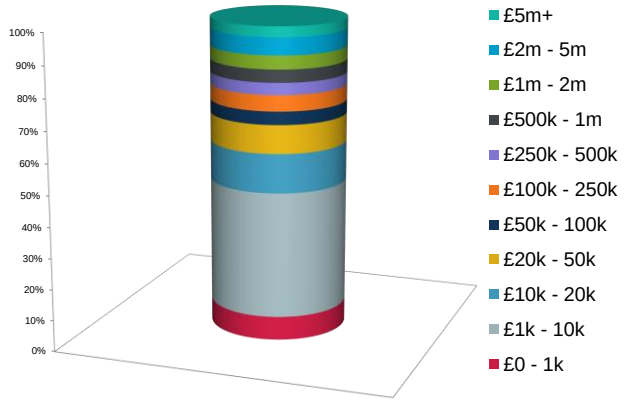
Capped TPI

Methodology and terminology

- Using the Type 1 definition, a claim of £15,000 from accident year 2010 contributes:
  - £1k to Layer 1 (0 – £1k)
  - £9k to Layer 2 (£1k – £10k)
  - £5k to Layer 3 (£10k – £20k)
  - £0 to all other layers
- The chart shows the projected total TPI burning cost split by layer using Type 1 definition.
- In this presentation, any charts which use this definition will be accompanied with a version of this graphic. Shading represents the portion(s) of the claim that is relevant to the given statistic.



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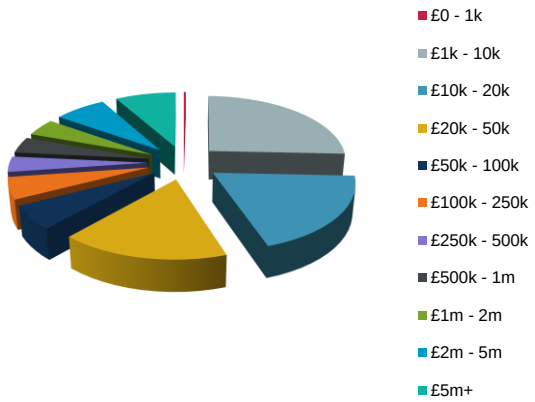
Capped TPI

Methodology and terminology

- Using the Type 2 definition, a claim of £15,000 from accident year 2010 contributes:
  - £15k to Layer 3 (£10k – £20k)
  - £0 to all other layers
- The chart shows the projected total TPI burning cost split by layer using Type 2 definition.
- In this presentation, any charts which use this definition will be accompanied with a version of this graphic. Shading represents the portion(s) of the claim that is relevant to the given statistic.



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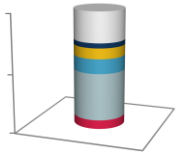
Market statistics – TPI Capped

Projected Results



Projected Ultimate Capped TPI Results for Private Car Comprehensive

Accident Period	Earned Exposure (millions of vehicle years)	Ultimate TPI Capped Claim Frequency (Non-nil claims per million vehicle years)	Ultimate TPI Capped Claim Severity (£)	Ultimate TPI Capped Burning Cost (£)	Year-on-Year Change in Frequency (% pa)	Year-on-Year Change in Severity (% pa)	Year-on-Year Change in Burning Cost (% pa)
2008	6.7	12,014	7,418	89.1			
2009	8.3	12,867	8,593	110.6	7.1%	15.8%	**24.1%**
2010	9.0	14,006	8,713	122.0	8.9%	1.4%	10.4%
2011	10.3	14,507	8,864	128.6	3.6%	1.7%	5.4%
2012	13.3	14,056	9,031	126.9	-3.1%	1.9%	-1.3%
2013	15.1	11,906	8,432	100.4	-15.3%	-6.6%	**-20.9%**
2014	15.2	11,547	8,351	96.4	-3.0%	-1.0%	-4.0%
2015	15.7	10,948	8,276	90.6	-5.2%	-0.9%	-6.0%
2016	16.7	10,303	8,485	87.4	-5.9%	2.5%	-3.5%
2017	17.2	9,132	8,552	78.1	-11.4%	0.8%	-10.7%
Average (2010 to 2017)					-5.9%	-0.3%	-6.2%
Average (2012 to 2017)					-8.3%	-1.1%	-9.3%
Average (2014 to 2017)					-7.5%	0.8%	-6.8%

- Substantial reduction in burning cost from 2012 to 2017 of £49.
- In 2017 frequency has fallen by 11.4% with severity close to zero for the last few accident years.

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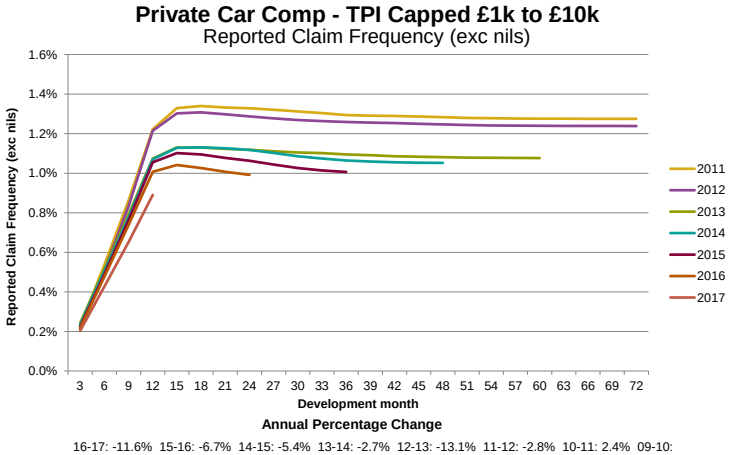
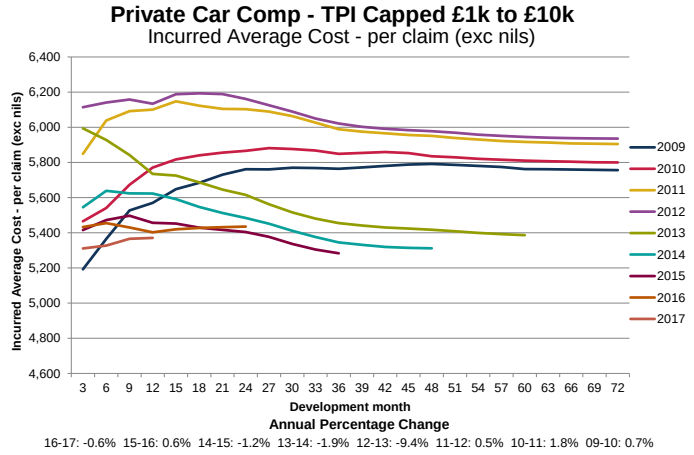
Market statistics – TPI Capped

Data Trends - Unindexed

- Post LASPO the TPI Capped severity has been relatively flat. Therefore, our projections carried out by band indexed at 7% p.a. are difficult to interpret as the bands are no longer a homogenous grouping of claims. We have therefore considered data trends for unindexed layers. The layer values are set to be consistent with the previous definition for the 2013 accident year.





- In the £1k to £10k layer the frequency trend is consistent with the overall trend for TPI Capped.
- The severity in this layer continued to fall in the years immediately after LASPO and has been flat the last two accident years.

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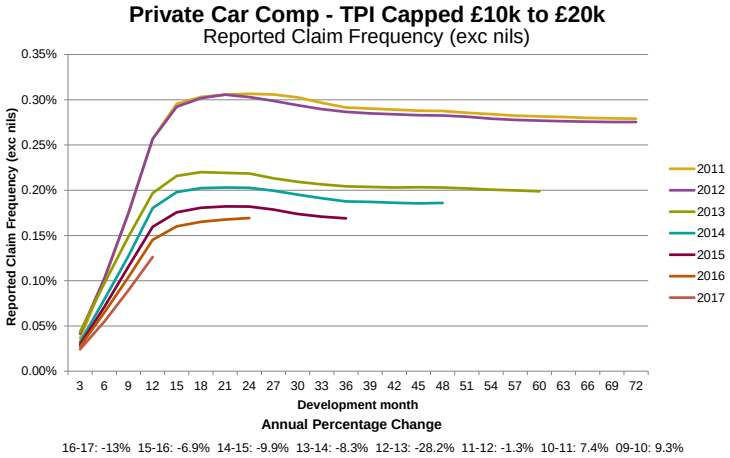
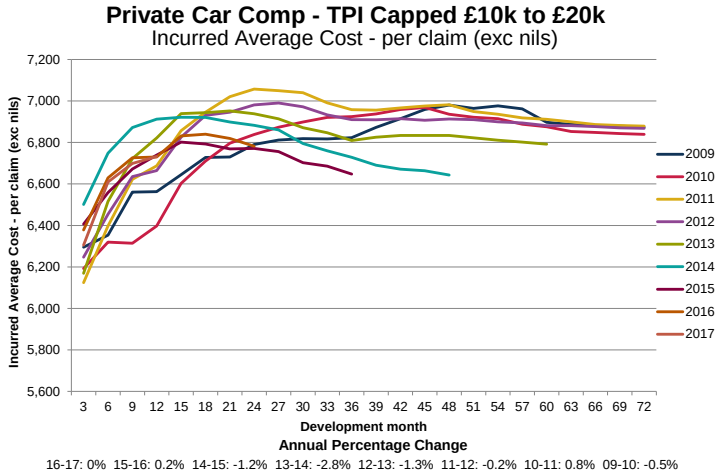
Market statistics – TPI Capped

Data Trends - Unindexed





- The frequency in the £10k to £20k band has shown greater reductions post LASPO than for the £1k to £10k band.
- Severity in this band has also been flat post LASPO.

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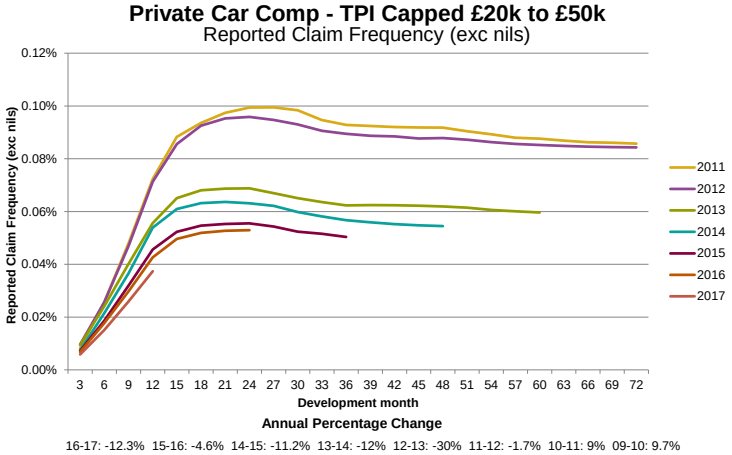
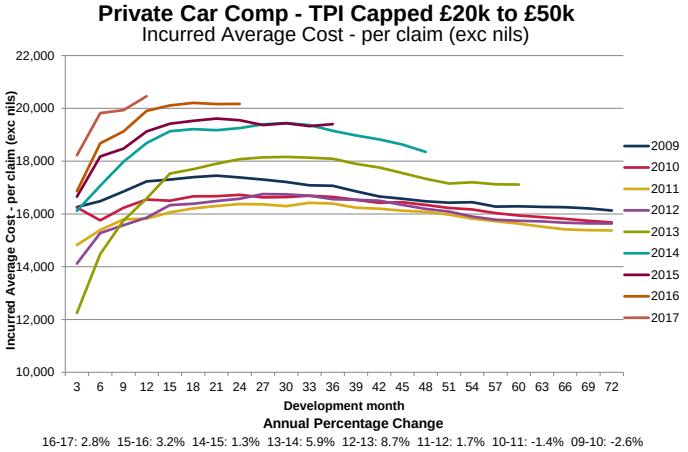
Market statistics – TPI Capped

Data Trends - Unindexed





- The frequency in the £20k to £50k band has shown similar reductions as that in the £10k to £20k band.
- Severity in this band did not appear to reduce as a result of LASPO, although this may reflect a change in claim size distribution.
- Post LASPO this band of claims has seen positive inflation. This may be from a greater proportion of claims exceeding the top of the band.

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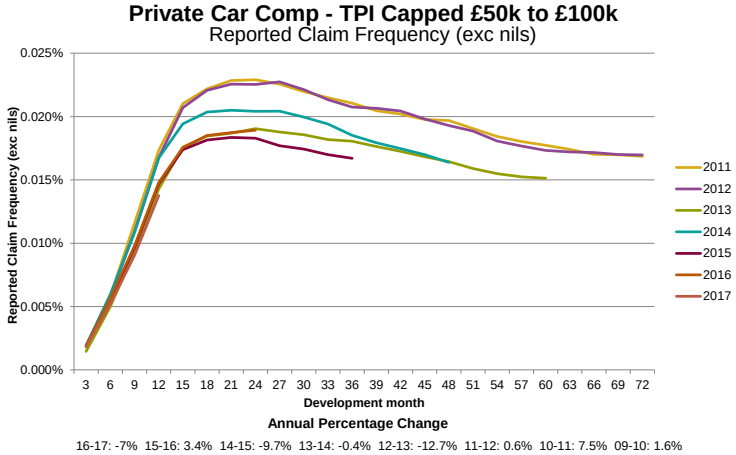
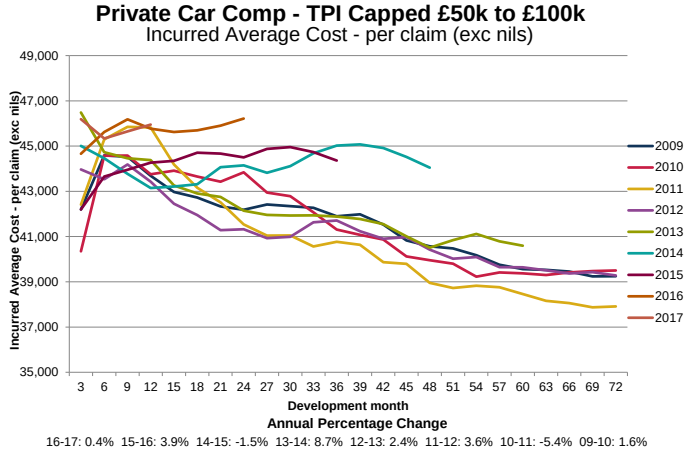
Market statistics – TPI Capped

Data Trends - Unindexed





- The frequency in the £50k to £100k band is more stable post LASPO and does not see the large reductions witnessed in the £10k to £20k and £20k to £50k band.
- Severity development profile in last three years is different from previous years with less downward drift.
- The experience in this band is quite different from smaller bands suggesting at this size that claims are not necessarily impacted by the same factors as for lower values.

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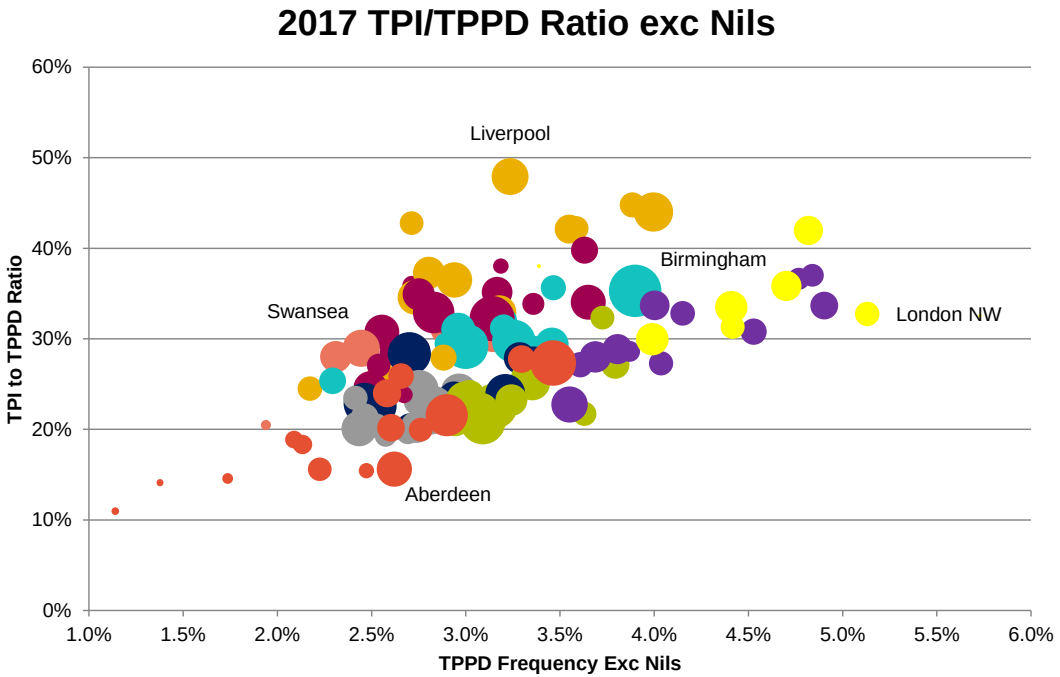
Market statistics – TPI Capped

Geographic Results



- Clearer geographic trend than for AD.
- The North-west still has the highest TPI to TPPD ratio with Scotland having the lowest.

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Market Statistics – TPI Capped

By Region

2017 accident year

Region	TPPD Frequency exc nils	TPI Frequency exc nils	TPI to TPPD Ratio exc nils
North-west	3.1%	1.2%	38.6%
North-east	3.0%	1.0%	32.3%
South-east	3.2%	0.7%	23.3%
Midlands	3.3%	1.0%	31.0%
Wales	2.7%	0.8%	29.9%
East	2.9%	0.7%	24.9%
West	2.7%	0.6%	22.1%
Scotland	2.8%	0.6%	22.5%
London	4.5%	1.6%	34.5%
Greater London	4.1%	1.2%	30.2%

Relative change from 2016 accident year

Region	TPPD Frequency exc nils	TPI Frequency exc nils	TPI to TPPD Ratio exc nils
North-west	1.1%	1.0%	0.1%
North-east	0.0%	0.4%	0.4%
South-east	-1.0%	0.9%	1.7%
Midlands	0.6%	0.7%	0.3%
Wales	5.5%	4.6%	0.1%
East	-1.4%	-2.1%	-0.9%
West	-1.3%	-0.1%	1.0%
Scotland	0.3%	-3.0%	-3.1%
London	0.9%	0.0%	-0.7%
Greater London	0.9%	1.1%	0.3%

- The 2017 results are latest position at 12 months developed
- The ‘Relative change from 2016 accident year’ results compare the change for each region to the change in total.

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Capped TPI
Summary

- Overall the Capped TPI claims environment has been benign following the introduction of the LASPO reforms in 2013.
- The overall burning cost has fallen by £49 from 2012 to 2017.
- In 2017 the frequency has fallen by 11% while severity has been low at 1%.
- Analysis by band suggests that the proportion of claims from £10k to £50k has been reducing in the last few years.
- The £50k to £100k claims exhibit different behaviours from the lower value claims.
- There remains a strong geographic trend to TPI to TPPD ratios with the North-west still seeing the highest levels.

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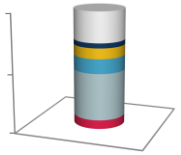
Market statistics – TPI Excess

Projection Methodology



- Projections undertaken by layer with companies grouped into three levels of case reserving strength.
- Claims data and projections at an Ogden -0.75% basis.
- The development profile is based on data up to Feb 2018. All data after this point is excluded from the assumed development (i.e. it is assumed that the development profile by layer pre Ogden still applies).
- For the > £5m layer there is a significant distortion from the change in Ogden rate and so chain-ladder models are no longer appropriate
- Therefore the total TPI Excess has been projected assuming the IBNR to outstanding ratio pre Ogden applies to the latest position.
- The >£5m layer is then calculated as the difference between the total and the sum of the other layers.

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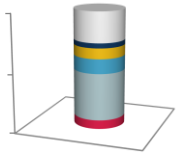
Market statistics – TPI Excess

Projected Results – Ogden -0.75%



Projected Ultimate Excess TPI Results for Private Car Comprehensive

Accident Period	Earned Exposure (millions of vehicle years)	Ultimate TPI Excess Claim Frequency (Non-nil claims per million vehicle years)	Ultimate TPI Excess Claim Severity (£)	Ultimate TPI Excess Burning Cost (£)	Year-on-Year Change in Frequency (% pa)	Year-on-Year Change in Severity (% pa)	Year-on-Year Change in Burning Cost (% pa)
2008	6.7	90	392,424	35.2			
2009	8.3	87	513,737	44.8	-2.7%	**30.9%**	**27.3%**
2010	9.0	84	567,040	47.6	-3.8%	10.4%	6.2%
2011	10.3	77	580,258	44.5	-8.6%	2.3%	-6.5%
2012	13.3	75	610,447	45.7	-2.4%	5.2%	2.6%
2013	15.1	63	740,363	46.9	-15.4%	**21.3%**	2.6%
2014	15.2	67	968,250	65.1	6.1%	**30.8%**	**38.8%**
2015	15.7	60	927,118	55.6	-10.7%	-4.2%	-14.5%
2016	16.7	65	1,043,222	68.1	8.8%	12.5%	**22.4%**
2017	17.2	58	1,112,220	64.8	-10.7%	6.6%	-4.8%
Average (2010 to 2017)					-5.1%	10.1%	4.5%
Average (2012 to 2017)					-4.9%	12.7%	7.3%
Average (2014 to 2017)					-4.6%	4.7%	-0.1%

- Large claims frequency has fallen in 2017 which is consistent with the casualty statistics discussed earlier.
- It is difficult to isolate a severity trend given the impact of the change in the Ogden discount rate with this impacting different accident years to different degrees.

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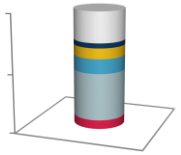
Market statistics – TPI Excess

Projected Results – Ogden Impact



Projected Ultimate Excess TPI Results for Private Car Comprehensive

Accident Period	Earned Exposure (millions of vehicle years)	Ultimate TPI Excess Burning Cost Ogden 2.5%* (£)	Ultimate TPI Excess Burning Cost Ogden -0.75% (£)	Ogden Impact
2008	6.7	34.9	35.2	0.9%
2009	8.3	43.9	44.8	2.0%
2010	9.0	42.0	47.6	13.2%
2011	10.3	37.5	44.5	18.6%
2012	13.3	37.7	45.7	**21.0%**
2013	15.1	36.3	46.9	**29.1%**
2014	15.2	45.5	65.1	**43.1%**
2015	15.7	39.3	55.6	**41.5%**
2016	16.7	44.9	68.1	**51.7%**

*projections at 2.5% is approximate only

- To estimate the impact of the Ogden rate change we have undertaken an approximate projection of data as at 28 February 2017, carried out at a total TPI Excess level, to estimate the Ogden 2.5% burning cost for the current TPWP dataset.
- The impact of moving to an Ogden rate of -0.75% is estimated to be over 50% for the 2016 accident year.

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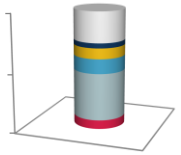
Market statistics – TPI Excess

Ogden



- We have looked at the change in outstanding claims from February 2017 to April 2017 by layer. We have assumed that the change over this period is entirely due to the change in Ogden discount rate.
- The impact on case reserves by band is summarised below on a type 1 basis only.

Band	Ogden impact Type 1
£100k to £250k	9.4%
£250k to £500k	19.1%
£500k to £1m	26.5%
£1m to £2m	38.6%
£2m to £5m	62.7%
£5m +	194.3%
Total	**50.2%**

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Market statistics – TPI Excess

Projected Results – Type 2

Private Car Comprehensive Capped TPI Type 2 Layered Results (all layers given in 2010 money, indexed at 7% pa)

Accident Year	£100k - 250k	£250k - 500k	£500k - 1m	£1m - 2m	£2m to 5m	> £5m
Frequency exc Nils (finishing in layer) (claims per million policy years)						
2009	49.5	19.6	8.1	3.9	3.4	2.7
2010	52.7	13.1	8.3	3.8	3.5	2.5
2011	47.3	14.0	7.0	4.1	2.3	2.0
2012	46.1	13.7	7.0	3.9	2.4	1.7
2013	35.5	14.3	5.4	3.7	2.0	2.3
2014	38.0	13.9	6.1	3.4	2.5	3.3
2015	35.8	11.4	4.8	2.9	2.5	2.6
2016	37.9	14.1	4.7	2.5	2.8	3.3
2017	33.6	12.6	4.9	2.0	2.4	2.8
Average Cost (£)						
2009	141,465	328,950	666,598	1,231,952	2,916,273	7,238,023
2010	153,464	340,546	674,838	1,317,279	2,871,587	9,014,070
2011	160,834	367,189	704,873	1,452,542	3,300,482	10,882,519
2012	171,259	391,339	795,252	1,580,955	3,215,722	12,609,206
2013	187,205	422,554	790,477	1,570,921	3,507,441	10,601,403
2014	205,003	467,815	840,954	1,741,391	4,025,760	11,640,197
2015	216,154	482,405	909,808	1,761,594	4,534,717	11,388,852
2016	231,852	521,236	954,815	1,760,410	5,137,301	11,550,328
2017	239,471	550,180	996,172	1,818,227	5,843,852	13,065,946
Burning Cost (£)						
2009	7.0	6.5	5.4	4.8	9.9	19.4
2010	8.1	4.5	5.6	5.0	9.9	22.9
2011	7.6	5.2	4.9	6.0	7.5	21.5
2012	7.9	5.4	5.6	6.2	7.7	21.5
2013	6.6	6.1	4.3	5.9	7.0	24.7
2014	7.8	6.5	5.1	6.0	10.2	38.2
2015	7.7	5.5	4.4	5.1	11.3	30.0
2016	8.8	7.3	4.5	4.3	14.4	38.6
2017	8.1	6.9	4.8	3.6	14.3	36.5

- The table shows that at Ogden -0.75% the claims >£5m make up the vast majority of the total TPI Excess cost.
- In 2017 almost 50% of the cost is from the largest claims.

Excess TPI

Summary

- The change in Ogden discount rate has introduced a significant distortion into Excess TPI claims triangles which has further increased the uncertainty in projections of these claims.
- The large claim frequency is estimated to have fallen in 2017, consistent with the observed reduction in casualties for the UK as a whole.
- The reduction in the Ogden discount rate is estimated to have increased the cost of the most recent accident years by around 50%.
- The >£5m claims make up a significant proportion of the overall Excess TPI cost at an Ogden discount rate of -0.75%.

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Accident Year	Burning Cost (£) – Ogden -0.75%				
	AD	TPD	Capped TPI	Excess TPI	Total AD + TP
2008	66	73	89	35	263
2009	64	75	111	45	294
2010	62	74	122	48	305
2011	49	68	129	44	291
2012	50	69	127	46	292
2013	49	67	100	47	263
2014	51	71	96	65	283
2015	56	74	91	56	276
2016	60	78	87	68	293
2017	60	77	78	65	281

- The Total AD + TP burning cost is estimated to be flat from 2014 to 2017. Average premium trends in this period showed significant increases.
- In 2017 reductions in frequency has offset high inflation rates on damage claims but led to reducing TPI Capped costs.
- Overall burning cost is estimated to be 4% lower in 2017 than 2016.

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Conclusions

- While the overall claims trends in 2017 appear relatively stable, these disguise a number of underlying trends influencing the claims cost.
- These include:
  - The increase in technology in cars impacting repair costs and accident frequencies;
  - Reductions in mileage per vehicle; and
  - Changes in the demographic and behaviour of drivers which differs by age.
- Plus significant legislative changes are on their way which will materially impact the market in the next few years.

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Projection methodology

- The bodily injury claims have been analysed in 11 layers , given in 2010 money, indexed at 7% p.a. for other accident years
  - 0 to £1k
  - £1k to £10k
  - £10k to £20k
  - £20k to 50k
  - £50k to £100k
  - £100k to £250k
  - £250k to £500k
  - £500k to £1m
  - £1m to £2m
  - £2m to £5m
  - £5m+
- Capped TPI is the sum of the first five layers (i.e. up to 0 to £100k) and Excess TPI the sum of layers six to eleven (i.e. £100k +)
- AD and TPD claims have been projected on a quarterly accident period basis and monthly development basis.
- For TPI, the contributors have been modelled split into three groups based on their case reserving philosophy.
- This allows for shifting proportions of business between companies with different case reserving philosophies.
- Claims in excess of £5m have been modelled aggregating all companies data together to reduce volatility as much as possible.
- For TPI layers up to an including £100k to £250k the data has been projected on a quarterly accident period basis and monthly development basis and for higher layers on an annual accident period basis and monthly development basis.
- No tail beyond 15 years has been projected as the earliest data is from 2000. An x% tail factor would increase ultimates for all accident years by x% but with the same trend across years.

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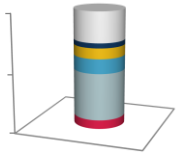
Appendix

TPI Capped Projected Results (Type 1)



Private Car ComprehensiveTPI Capped Results in Layer (all layers given in 2010 money, indexed at 7% pa)

Accident Year	£0 - 1k	£1k - 10k	£10k - 20k	£20k - 50k	£50k - £100k	<100k
Frequency exc Nils (in layer and above) (claims per million vehicle years)						
2009	12,867	11,522	3,475	1,194	227	12,867
2010	14,006	12,569	3,474	1,139	209	14,006
2011	14,507	12,853	3,388	1,100	203	14,507
2012	14,056	12,441	3,032	951	183	14,056
2013	11,906	10,757	1,975	587	142	11,906
2014	11,547	10,426	1,624	464	133	11,547
2015	10,948	9,830	1,309	380	117	10,948
2016	10,303	9,126	1,087	329	117	10,303
2017	9,132	8,040	849	263	106	9,132
Average Cost (£)						
2009	862	5,191	5,530	11,753	28,224	8,593
2010	925	5,420	5,802	12,614	30,812	8,713
2011	983	5,634	6,160	13,268	31,807	8,864
2012	1,055	5,799	6,501	14,412	35,820	9,031
2013	1,149	5,376	6,772	16,761	39,879	8,432
2014	1,229	5,353	7,016	19,333	45,808	8,351
2015	1,312	5,349	7,462	21,690	48,258	8,276
2016	1,394	5,445	8,017	25,024	54,775	8,485
2017	1,482	5,431	8,511	28,263	58,507	8,552
Burning Cost (£)						
2009	11.1	59.8	19.2	14.0	6.4	110.6
2010	13.0	68.1	20.2	14.4	6.4	122.0
2011	14.3	72.4	20.9	14.6	6.5	128.6
2012	14.8	72.1	19.7	13.7	6.5	126.9
2013	13.7	57.8	13.4	9.8	5.7	100.4
2014	14.2	55.8	11.4	9.0	6.1	96.4
2015	14.4	52.6	9.8	8.2	5.6	90.6
2016	14.4	49.7	8.7	8.2	6.4	87.4
2017	13.5	43.7	7.2	7.4	6.2	78.1

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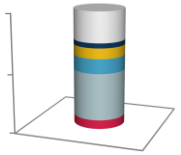
Appendix

TPI Capped Projected Results (Type 1)



Private Car ComprehensiveTPI Capped Results in Layer (all layers given in 2010 money, indexed at 7% pa)

Accident Year	£0 - 1k	£1k - 10k	£10k - 20k	£20k - 50k	£50k - £100k	<100k
Frequency exc Nils (in layer and above) (claims per million vehicle years)						
2009	7.1%	17.9%	19.8%	17.7%	5.6%	7.1%
2010	8.9%	9.1%	0.0%	-4.6%	-8.0%	8.9%
2011	3.6%	2.3%	-2.5%	-3.5%	-2.7%	3.6%
2012	-3.1%	-3.2%	-10.5%	-13.5%	-10.0%	-3.1%
2013	-15.3%	-13.5%	-34.9%	-38.3%	-22.2%	-15.3%
2014	-3.0%	-3.1%	-17.8%	-21.0%	-6.7%	-3.0%
2015	-5.2%	-5.7%	-19.4%	-18.0%	-11.8%	-5.2%
2016	-5.9%	-7.2%	-16.9%	-13.5%	0.1%	-5.9%
2017	-11.4%	-11.9%	-21.9%	-19.9%	-9.2%	-11.4%
Average Cost (£)						
2009	15.5%	6.8%	6.6%	1.7%	3.8%	15.8%
2010	7.4%	4.4%	4.9%	7.3%	9.2%	1.4%
2011	6.2%	4.0%	6.2%	5.2%	3.2%	1.7%
2012	7.3%	2.9%	5.5%	8.6%	12.6%	1.9%
2013	9.0%	-7.3%	4.2%	16.3%	11.3%	-6.6%
2014	6.9%	-0.4%	3.6%	15.3%	14.9%	-1.0%
2015	6.8%	-0.1%	6.4%	12.2%	5.3%	-0.9%
2016	6.3%	1.8%	7.4%	15.4%	13.5%	2.5%
2017	6.3%	-0.3%	6.2%	12.9%	6.8%	0.8%
Burning Cost (£)						
2009	23.7%	25.8%	27.6%	19.7%	9.6%	24.1%
2010	16.9%	13.9%	4.9%	2.4%	0.4%	10.4%
2011	10.0%	6.3%	3.6%	1.5%	0.4%	5.4%
2012	4.0%	-0.4%	-5.5%	-6.0%	1.4%	-1.3%
2013	-7.7%	-19.8%	-32.1%	-28.2%	-13.3%	-20.9%
2014	3.7%	-3.5%	-14.8%	-8.8%	7.1%	-4.0%
2015	1.2%	-5.8%	-14.3%	-8.0%	-7.1%	-6.0%
2016	0.0%	-5.5%	-10.7%	-0.2%	13.6%	-3.5%
2017	-5.8%	-12.1%	-17.1%	-9.6%	-3.0%	-10.7%

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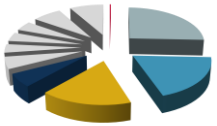
Appendix

TPI Capped Projected Results (Type 2)



Private Car Comprehensive Capped TPI Type 2 Layered Results (all layers given in 2010 money, indexed at 7% pa)

Accident Year	£0 - 1k	£1k - 10k	£10k - 20k	£20k - 50k	£50k to £100k
Frequency exc Nils (finishing in layer) (claims per million policy years)					
2009	1,344	8,048	2,281	967	140
2010	1,437	9,096	2,334	931	125
2011	1,654	9,465	2,288	897	126
2012	1,615	9,409	2,081	769	108
2013	1,149	8,782	1,388	445	79
2014	1,121	8,803	1,160	331	65
2015	1,119	8,521	928	263	57
2016	1,177	8,039	758	212	52
2017	1,092	7,191	586	157	48
Average Cost (£)					
2009	241	4,736	12,878	26,627	63,396
2010	273	5,053	13,752	28,719	67,897
2011	306	5,274	14,678	30,407	72,127
2012	361	5,491	15,689	32,571	78,205
2013	440	5,330	16,706	34,873	83,973
2014	464	5,475	17,687	37,548	91,086
2015	514	5,635	18,799	40,684	95,343
2016	568	5,855	19,991	43,991	104,270
2017	573	5,971	21,175	46,894	112,401
Burning Cost (£)					
2009	0.3	38.1	29.4	25.8	8.9
2010	0.4	46.0	32.1	26.7	8.5
2011	0.5	49.9	33.6	27.3	9.1
2012	0.6	51.7	32.7	25.0	8.4
2013	0.5	46.8	23.2	15.5	6.6
2014	0.5	48.2	20.5	12.4	6.0
2015	0.6	48.0	17.5	10.7	5.4
2016	0.7	47.1	15.2	9.3	5.4
2017	0.6	42.9	12.4	7.4	5.4

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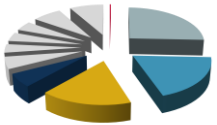
Appendix

TPI Capped Projected Results (Type 2)



Private Car Comprehensive Capped TPI Type 2 Layered Results (all layers given in 2010 money, indexed at 7% pa)

Accident Year	£0 - 1k	£1k - 10k	£10k - 20k	£20k - 50k	£50k to £100k
Change in Frequency exc Nils (finishing in layer)					
2009	-40.0%	17.1%	20.8%	21.0%	11.5%
2010	6.9%	13.0%	2.3%	-3.8%	-10.7%
2011	15.1%	4.1%	-2.0%	-3.7%	1.2%
2012	-2.4%	-0.6%	-9.1%	-14.3%	-14.5%
2013	-28.9%	-6.7%	-33.3%	-42.1%	-26.9%
2014	-2.4%	0.2%	-16.5%	-25.5%	-17.0%
2015	-0.2%	-3.2%	-19.9%	-20.5%	-12.9%
2016	5.3%	-5.7%	-18.3%	-19.5%	-9.1%
2017	-7.3%	-10.5%	-22.7%	-25.9%	-7.1%
Change in Average Cost					
2009	26.3%	5.9%	7.1%	6.1%	7.4%
2010	13.6%	6.7%	6.8%	7.9%	7.1%
2011	11.8%	4.4%	6.7%	5.9%	6.2%
2012	18.1%	4.1%	6.9%	7.1%	8.4%
2013	21.8%	-2.9%	6.5%	7.1%	7.4%
2014	5.6%	2.7%	5.9%	7.7%	8.5%
2015	10.6%	2.9%	6.3%	8.4%	4.7%
2016	10.6%	3.9%	6.3%	8.1%	9.4%
2017	0.9%	2.0%	5.9%	6.6%	7.8%
Change in Burning Cost					
2009	-24.2%	24.0%	29.5%	28.4%	19.7%
2010	21.5%	20.6%	9.3%	3.8%	-4.4%
2011	28.7%	8.6%	4.6%	2.0%	7.5%
2012	15.3%	3.5%	-2.8%	-8.2%	-7.3%
2013	-13.3%	-9.4%	-29.0%	-38.0%	-21.5%
2014	3.1%	3.0%	-11.6%	-19.8%	-10.0%
2015	10.4%	-0.4%	-14.9%	-13.9%	-8.9%
2016	16.4%	-2.0%	-13.2%	-13.0%	-0.5%
2017	-6.4%	-8.8%	-18.2%	-21.0%	0.1%

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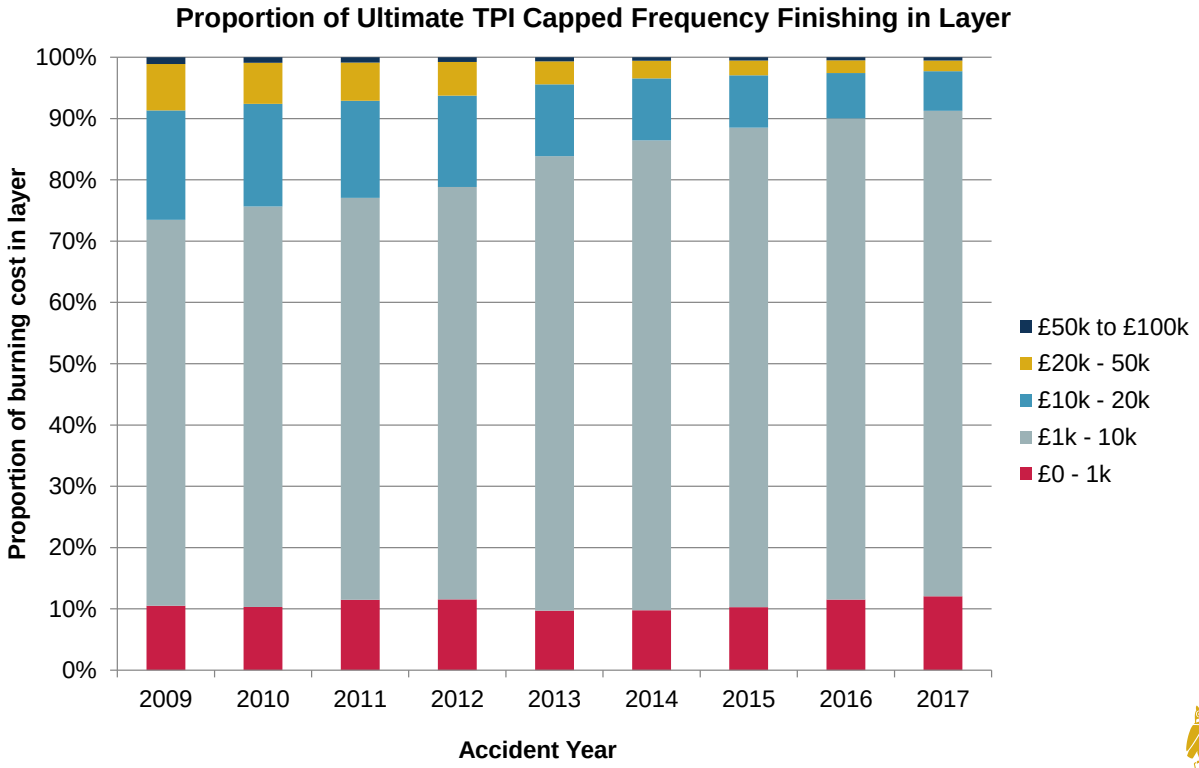
Appendix

TPI Capped Projected Results (Type 2)



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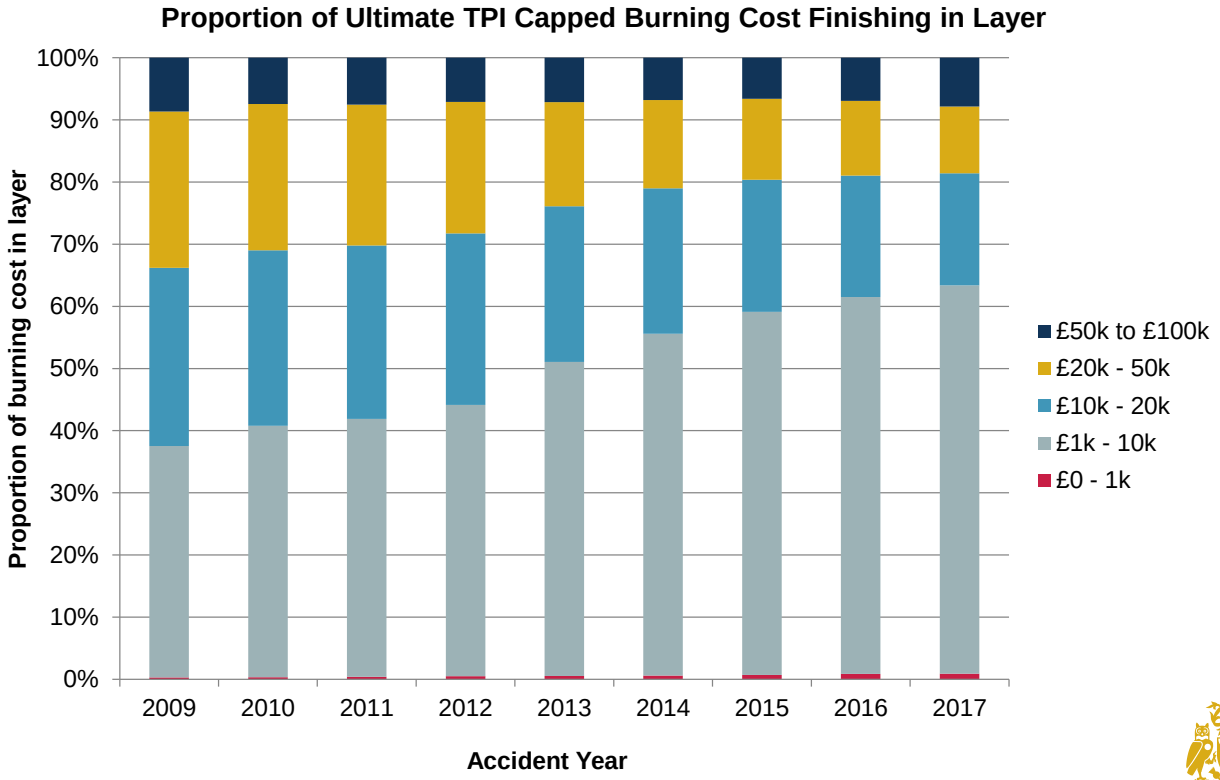
Appendix

TPI Capped Projected Results (Type 2)



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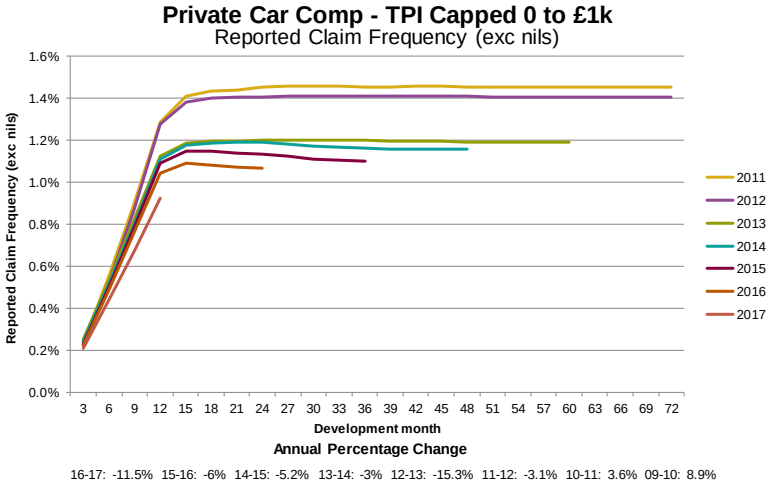
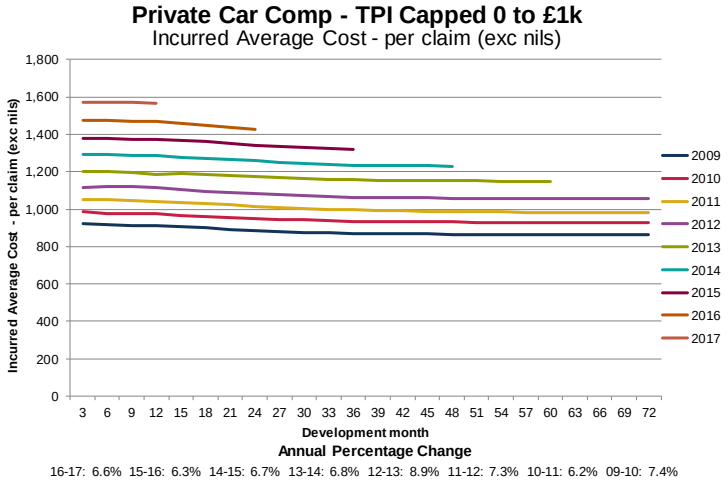
Appendix

TPI Capped Data Trends - Indexed





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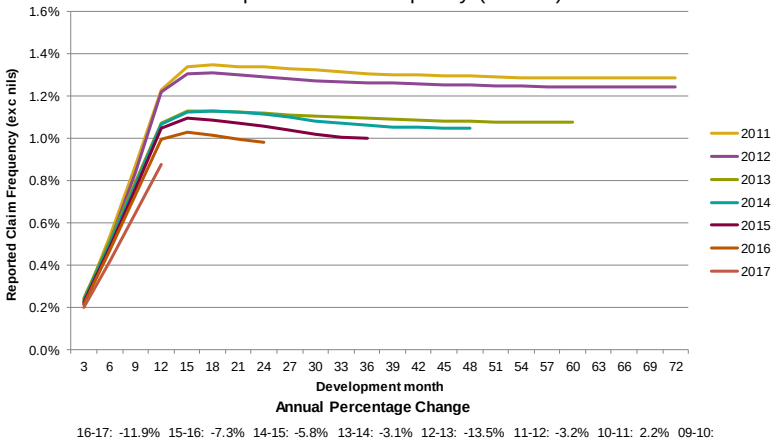
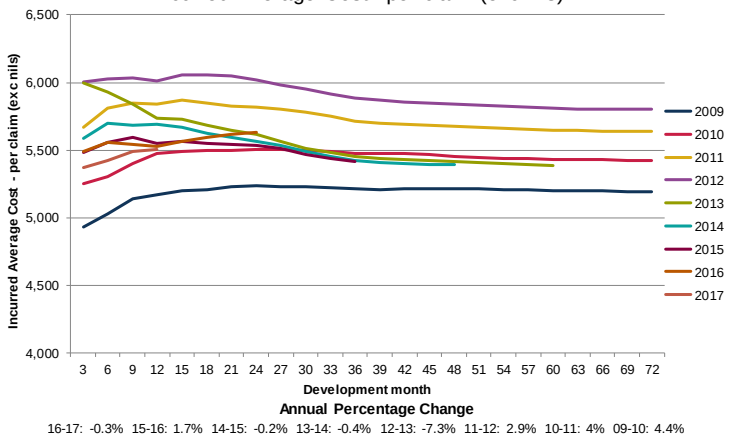
Appendix

TPI Capped Data Trends - Indexed





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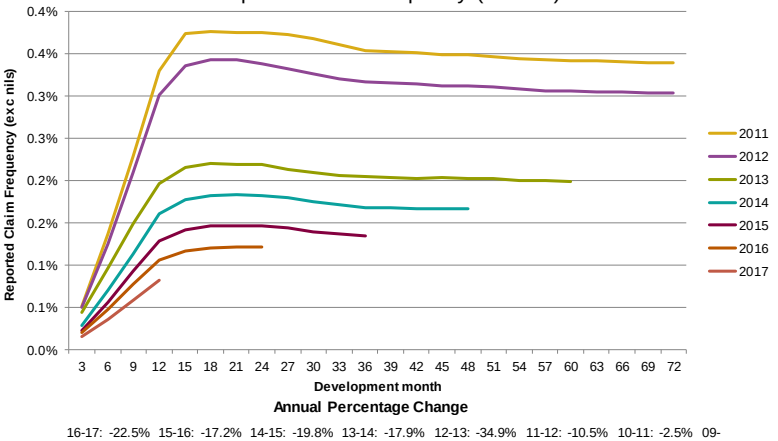
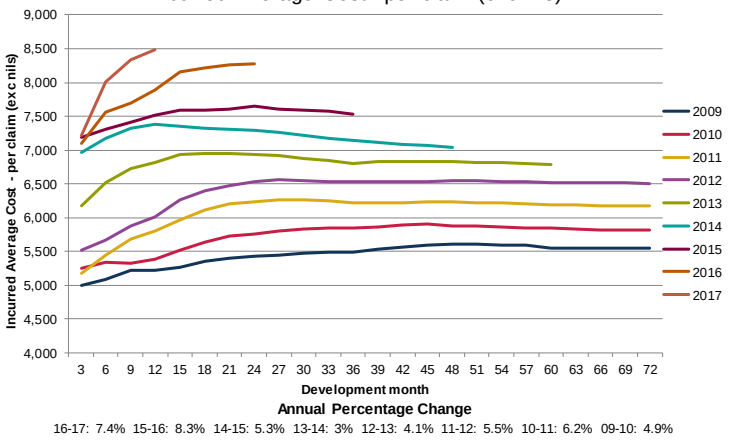
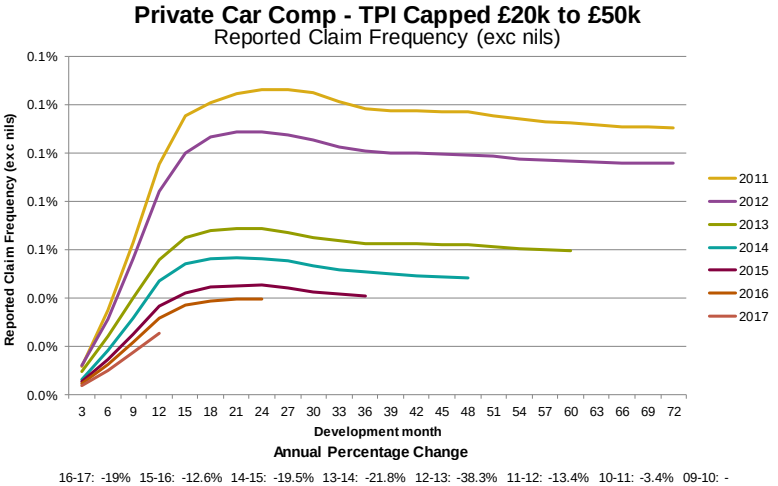
Appendix

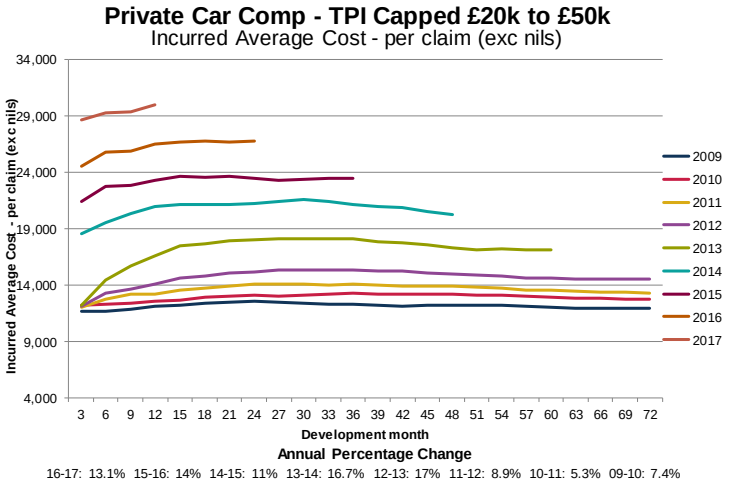
TPI Capped Data Trends - Indexed





Appendix
TPI Capped Data Trends - Indexed





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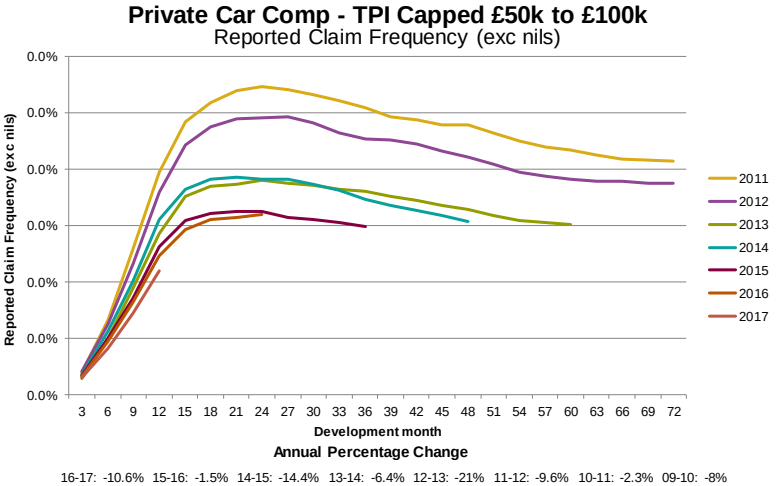
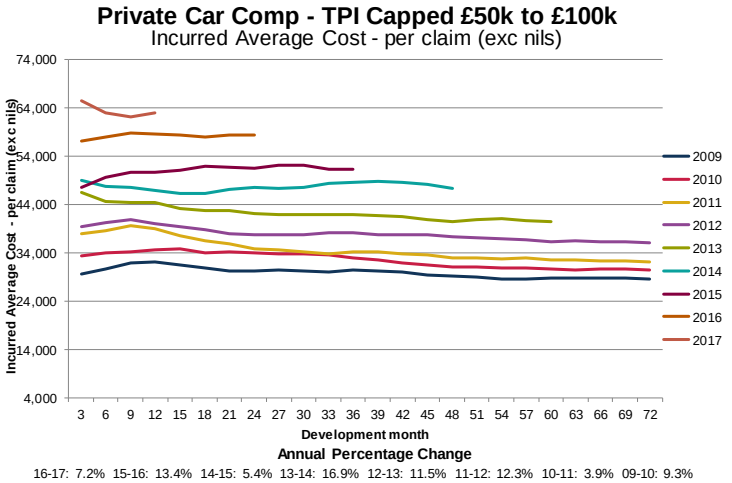
Appendix

TPI Capped Data Trends - Indexed





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Appendix

TPI Excess Projected Results – Type 1

Private Car ComprehensiveTPI Capped Results in Layer (all layers given in 2010 money, indexed at 7% pa)

Accident Year	£100k - 250k	£250k - 500k	£500k - 1m	£1m - 2m	£2m to 5m	> £5m	>100k
Frequency exc Nils (in layer and above) (claims per million vehicle years)							
2009	87.2	37.7	18.1	10.0	6.1	2.7	87.2
2010	83.9	31.2	18.1	9.8	6.0	2.5	83.9
2011	76.7	29.4	15.4	8.4	4.3	2.0	76.7
2012	74.8	28.8	15.0	8.1	4.1	1.7	74.8
2013	63.3	27.9	13.5	8.1	4.3	2.3	63.3
2014	67.2	29.2	15.4	9.3	5.8	3.3	67.2
2015	60.0	24.2	12.9	8.0	5.1	2.6	60.0
2016	65.3	27.4	13.3	8.6	6.1	3.3	65.3
2017	58.3	24.7	12.1	7.2	5.2	2.8	58.3
Average Cost (£)							
2009	87,850	161,602	347,591	684,388	1,821,901	2,565,125	513,737
2010	89,417	183,041	350,386	735,048	1,773,719	4,014,070	567,040
2011	94,747	187,348	368,559	733,056	2,110,498	5,532,519	580,258
2012	100,957	199,840	409,964	797,686	1,965,030	6,884,706	610,447
2013	117,096	208,436	437,525	817,829	2,467,115	4,476,188	740,363
2014	127,299	238,755	468,900	984,271	2,828,285	5,086,217	968,250
2015	130,153	247,960	516,938	1,024,898	3,001,431	4,376,094	927,118
2016	141,877	257,203	558,091	1,146,643	3,420,195	4,046,676	1,043,222
2017	147,422	272,612	557,721	1,221,520	3,798,076	5,037,038	1,112,220
Burning Cost (£)							
2009	7.7	6.1	6.3	6.8	11.1	6.9	44.8
2010	7.5	5.7	6.4	7.2	10.6	10.2	47.6
2011	7.3	5.5	5.7	6.1	9.0	10.9	44.5
2012	7.6	5.7	6.2	6.4	8.1	11.7	45.7
2013	7.4	5.8	5.9	6.6	10.7	10.4	46.9
2014	8.6	7.0	7.2	9.1	16.5	16.7	65.1
2015	7.8	6.0	6.6	8.2	15.4	11.5	55.6
2016	9.3	7.0	7.4	9.9	21.0	13.5	68.1
2017	8.6	6.7	6.7	8.8	19.9	14.1	64.8

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Appendix

TPI Excess Projected Results – Type 1

Private Car ComprehensiveTPI Capped Results in Layer (all layers given in 2010 money, indexed at 7% pa)

Accident Year	£100k - 250k	£250k - 500k	£500k - 1m	£1m - 2m	£2m to 5m	> £5m	>100k
Frequency exc Nils (in layer and above) (claims per million vehicle years)							
2009	-2.7%	11.2%	3.4%	-0.1%	18.2%	56.8%	-2.7%
2010	-3.8%	-17.1%	0.4%	-2.1%	-1.3%	-5.2%	-3.8%
2011	-8.6%	-5.9%	-15.2%	-14.6%	-28.8%	-22.2%	-8.6%
2012	-2.4%	-2.2%	-2.1%	-3.7%	-3.6%	-13.9%	-2.4%
2013	-15.4%	-3.1%	-10.1%	0.3%	5.5%	37.2%	-15.4%
2014	6.1%	4.9%	13.7%	14.8%	34.5%	40.7%	6.1%
2015	-10.7%	-17.1%	-16.4%	-13.2%	-11.9%	-19.8%	-10.7%
2016	8.8%	13.1%	3.3%	6.9%	19.8%	26.7%	8.8%
2017	-10.7%	-9.9%	-9.0%	-16.0%	-14.9%	-16.3%	-10.7%
Average Cost (£)							
2009	15.7%	7.0%	8.5%	14.5%	19.8%	13.1%	30.9%
2010	1.8%	13.3%	0.8%	7.4%	-2.6%	56.5%	10.4%
2011	6.0%	2.4%	5.2%	-0.3%	19.0%	37.8%	2.3%
2012	6.6%	6.7%	11.2%	8.8%	-6.9%	24.4%	5.2%
2013	16.0%	4.3%	6.7%	2.5%	25.6%	-35.0%	21.3%
2014	8.7%	14.5%	7.2%	20.4%	14.6%	13.6%	30.8%
2015	2.2%	3.9%	10.2%	4.1%	6.1%	-14.0%	-4.2%
2016	9.0%	3.7%	8.0%	11.9%	14.0%	-7.5%	12.5%
2017	3.9%	6.0%	-0.1%	6.5%	11.0%	24.5%	6.6%
Burning Cost (£)							
2009	12.5%	19.0%	12.2%	14.4%	41.6%	77.3%	27.3%
2010	-2.1%	-6.1%	1.2%	5.2%	-4.0%	48.4%	6.2%
2011	-3.2%	-3.7%	-10.8%	-14.8%	-15.3%	7.3%	-6.5%
2012	4.0%	4.3%	8.9%	4.8%	-10.3%	7.1%	2.6%
2013	-1.8%	1.1%	-4.1%	2.8%	32.5%	-10.8%	2.6%
2014	15.4%	20.1%	21.9%	38.2%	54.2%	59.9%	38.8%
2015	-8.7%	-14.0%	-7.8%	-9.6%	-6.5%	-31.0%	-14.5%
2016	18.6%	17.3%	11.6%	19.7%	36.5%	17.1%	22.4%
2017	-7.3%	-4.5%	-9.1%	-10.5%	-5.5%	4.1%	-4.8%

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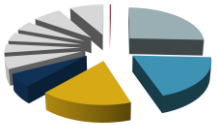
Appendix

TPI Excess Projected Results – Type 2



Private Car Comprehensive Capped TPI Type 2 Layered Results (all layers given in 2010 money, indexed at 7% pa)

Accident Year	£100k - 250k	£250k - 500k	£500k - 1m	£1m - 2m	£2m to 5m	> £5m
Frequency exc Nils (finishing in layer) (claims per million policy years)						
2009	-11.2%	19.5%	8.1%	-19.3%	-1.0%	56.8%
2010	6.4%	-33.1%	3.4%	-3.2%	1.7%	-5.2%
2011	-10.2%	7.1%	-16.0%	7.9%	-33.7%	-22.2%
2012	-2.6%	-2.4%	-0.2%	-3.8%	5.2%	-13.9%
2013	-23.0%	4.6%	-22.1%	-5.2%	-16.9%	37.2%
2014	7.1%	-3.4%	12.1%	-8.1%	27.3%	40.7%
2015	-5.7%	-18.0%	-21.2%	-15.3%	-1.8%	-19.8%
2016	5.9%	24.1%	-2.7%	-15.7%	12.5%	26.7%
2017	-11.3%	-10.8%	3.9%	-18.8%	-13.2%	-16.3%
Average (2010 to 2017)	-6.2%	-0.6%	-7.4%	-8.8%	-4.8%	1.4%
Average (2012 to 2017)	-6.1%	-1.7%	-7.0%	-12.8%	0.3%	10.4%
Average (2014 to 2017)	-4.0%	-3.2%	-7.3%	-16.6%	-1.4%	-5.3%
Average Cost (£)						
2009	9.0%	10.5%	10.9%	4.4%	7.2%	9.1%
2010	8.5%	3.5%	1.2%	6.9%	-1.5%	24.5%
2011	4.8%	7.8%	4.5%	10.3%	14.9%	20.7%
2012	6.5%	6.6%	12.8%	8.8%	-2.6%	15.9%
2013	9.3%	8.0%	-0.6%	-0.6%	9.1%	-15.9%
2014	9.5%	10.7%	6.4%	10.9%	14.8%	9.8%
2015	5.4%	3.1%	8.2%	1.2%	12.6%	-2.2%
2016	7.3%	8.0%	4.9%	-0.1%	13.3%	1.4%
2017	3.3%	5.6%	4.3%	3.3%	13.8%	13.1%
Average (2010 to 2017)	6.6%	7.1%	5.7%	4.7%	10.7%	5.4%
Average (2012 to 2017)	6.9%	7.1%	4.6%	2.8%	12.7%	0.7%
Average (2014 to 2017)	5.3%	5.6%	5.8%	1.4%	13.2%	3.9%
Burning Cost (£)						
2009	-3.3%	32.0%	19.8%	-15.8%	6.1%	71.1%
2010	15.4%	-30.8%	4.7%	3.5%	0.1%	18.1%
2011	-5.9%	15.4%	-12.3%	19.0%	-23.8%	-6.0%
2012	3.8%	4.1%	12.6%	4.7%	2.5%	-0.2%
2013	-15.9%	13.0%	-22.6%	-5.8%	-9.3%	15.3%
2014	17.2%	6.9%	19.2%	1.9%	46.1%	54.5%
2015	-0.5%	-15.5%	-14.7%	-14.3%	10.6%	-21.5%
2016	13.6%	34.1%	2.1%	-15.7%	27.5%	28.5%
2017	-8.4%	-5.9%	8.4%	-16.2%	-1.2%	-5.4%
Average (2010 to 2017)	0.0%	6.4%	-2.1%	-4.5%	5.3%	6.9%
Average (2012 to 2017)	0.4%	5.2%	-2.7%	-10.3%	13.0%	11.2%
Average (2014 to 2017)	1.1%	2.2%	-1.9%	-15.4%	11.7%	-1.5%

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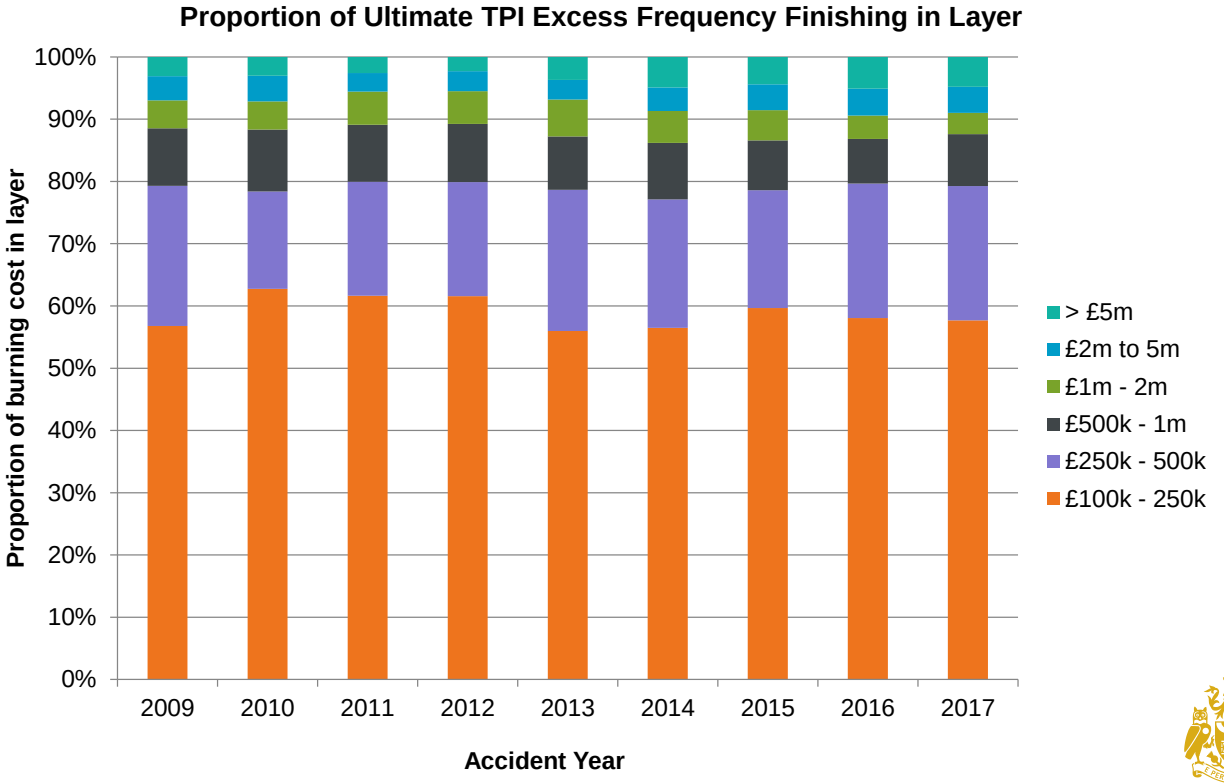
Appendix

TPI Excess Projected Results – Type 2



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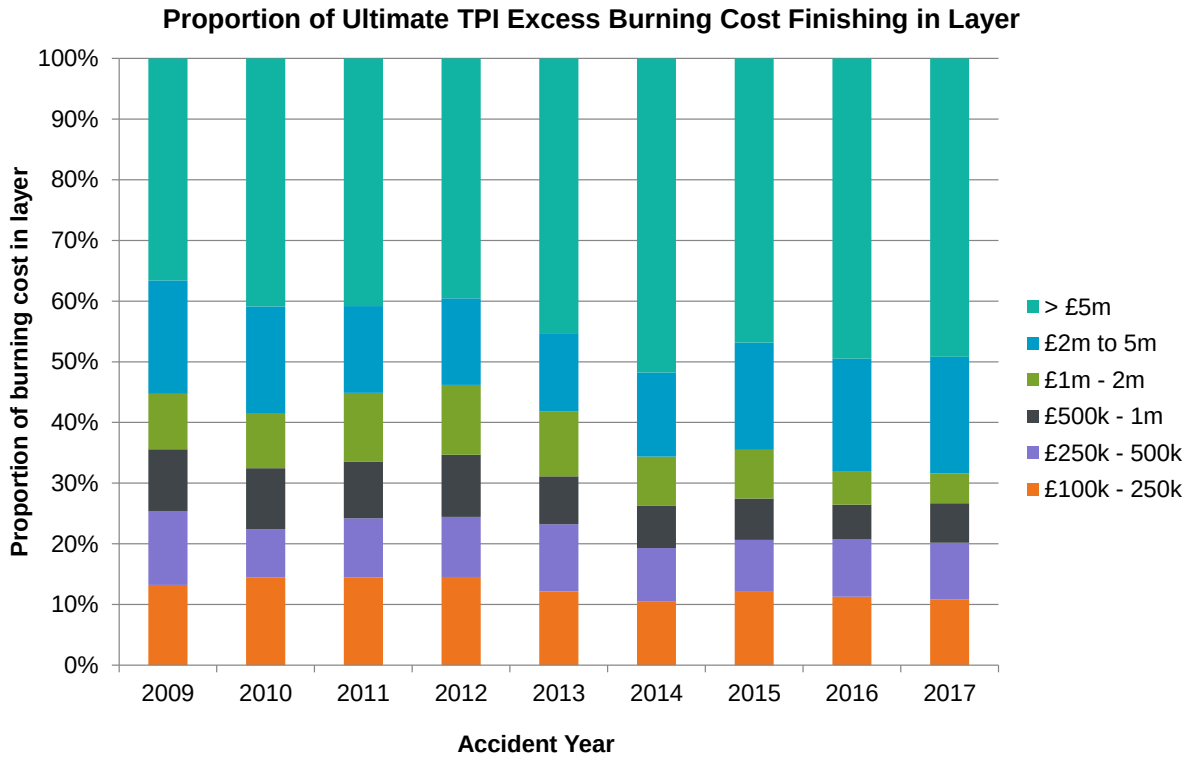
TPI Excess Projected Results – Type 2



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