PERIODIC PAYMENT ORDERS REVISITED

GIRO Working Party 2011

Contents

1.0 Executive Summary

Periodic Payment Orders (PPOs) are now increasingly being used to settle catastrophic injury claims in the UK. Compensation is paid to claimants at regular intervals, rather than in a single lump sum award. This transfers mortality and investment risk from the claimant to general insurers although claimants then take on the credit risk of the insurer defaulting at some time in the future when a payment is due.

This paper follows up on the previous year's paper and aims to update the analysis and address some of the outstanding issues. So this paper should not be read in isolation but in conjunction with last year's paper if possible.

First, we provide an update on industry experience. This shows a continuing trend towards settling more injury claims through PPOs. It highlights some of the general characteristics of PPOs, for example the nature of the injury and the effect on life expectancy. And for the first time we have some data from the Motor Insurance Bureau (MIB) and compare the MIB experience to the general insurance industry.

Several reserving methods are discussed for PPOs, including some lessons from life insurance. Solvency capital requirements are then looked at, with a focus on the stresses required in QIS5 as a proxy for the standard formula.

The section on stop loss discusses various mitigation options available to insurers, and the issues with each of these options.

Finally, there are very high hurdles to setting up a standalone, mutualised industry pool on PPO claims. Whilst there is demand from insurers and reinsurers for a market-level solution to enable them achieve early settlement, but without sponsorship by a major market entity or some level of regulatory compulsion, a pool looks unlikely to happen in practice. The potential benefits and drawbacks for all the key stakeholders of an insurance pooling arrangement are examined.

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- Avni Gohil
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2.0 Industry Survey

2.1 Contributors

We have received data from 12 insurers, comprising 166 motor PPOs and 21 liability PPOs. These insurers include 9 out of the top 10 insurance groups as ranked by 2010 Motor GPW in the FSA returns and represent 87% of the FSA regulated market (based on 2010 gross premium volumes).

The MIB has also contributed to this year's study. We have presented the results of the survey separately for the MIB and the motor insurers as the two subsets have different characteristics. The main part of the report relates to motor insurer data. Section 6 entitled 'MIB PPOs' shows the results for the MIB data.

A similar study was carried out by the PPO Working Party in 2010; 8 of the insurers contributed to last year's survey. We have collected additional data to that recorded last year, most notably nature and severity of injury, age and sex of driver and number of large claims (i.e. those greater than £1 million) which has allowed us investigate the propensity of PPOs.

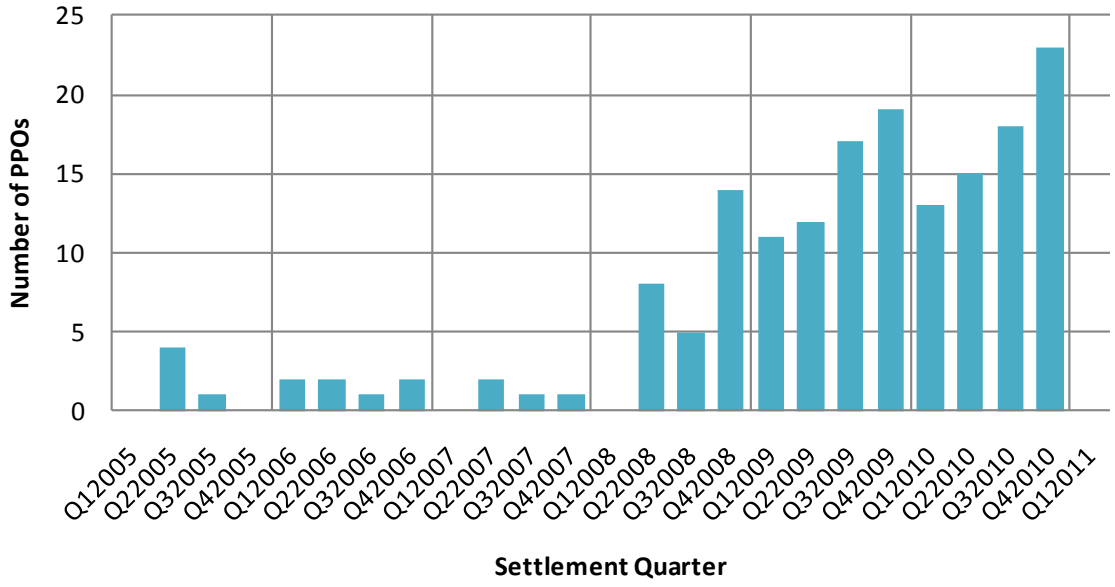
We are very grateful to all the contributors without which this survey would simply not be possible.

- Allianz Insurance
- Aviva
- AXA
- esure
- Groupama
- HSBC
- Liverpool Victoria
- NFU Mutual
- Provident
- RBSI
- RSA
- Zurich Insurance

2.2 Number of PPOs

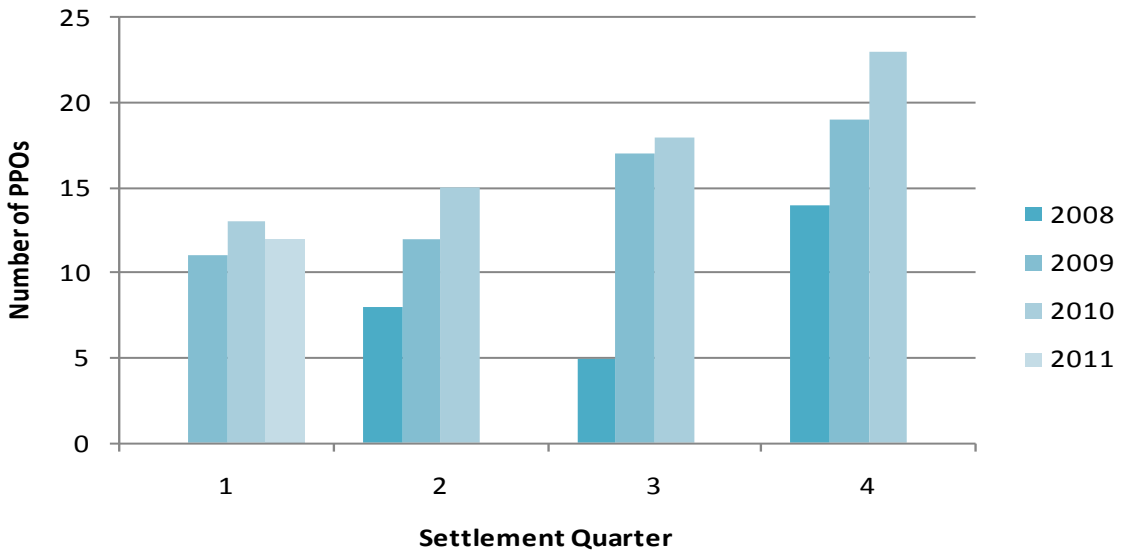
Number of PPOs by settlement quarter

The graph below shows the number of PPOs settled in each quarter from 2005. It shows data up to the end of the first quarter 2011. However it should be noted that the number of PPOs settled in 2011 Q1 may be understated as some insurers may have used a cut-off date earlier than 31 March 2011 when providing data for this survey.



The data suggests that there has been a 19% increase in the number of PPOs settled between 2009 and 2010.

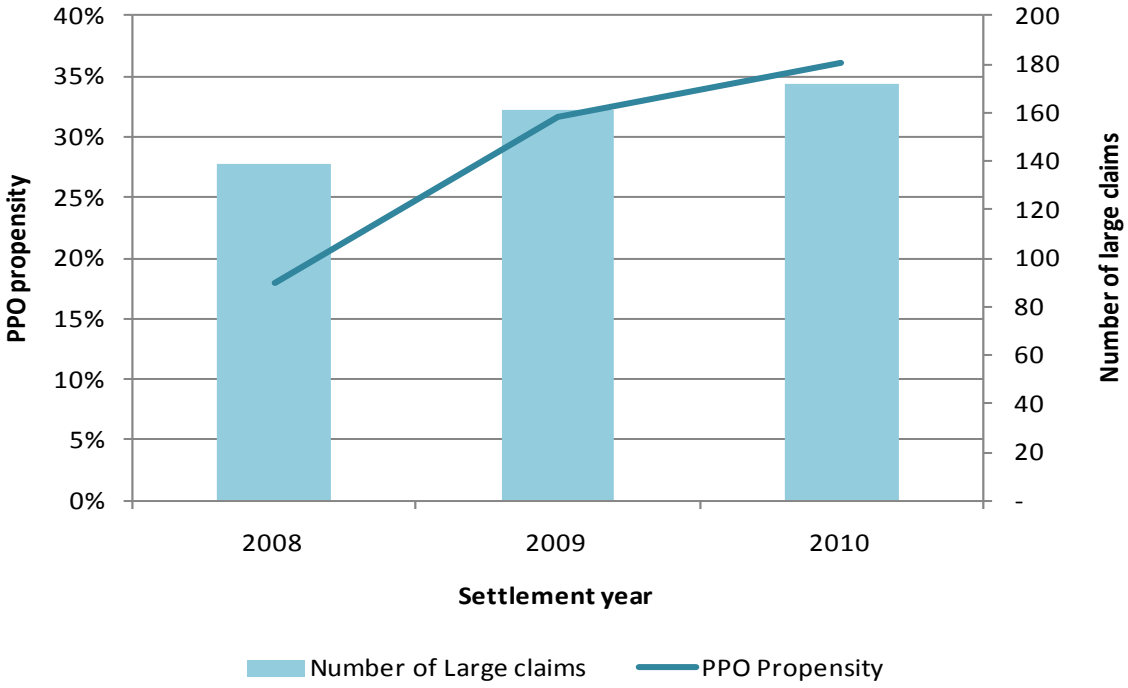
The following graph shows the same data but grouped by settlement quarter. It demonstrates the growth in PPOs between 2009 and 2010 taking into account quarterly differences.



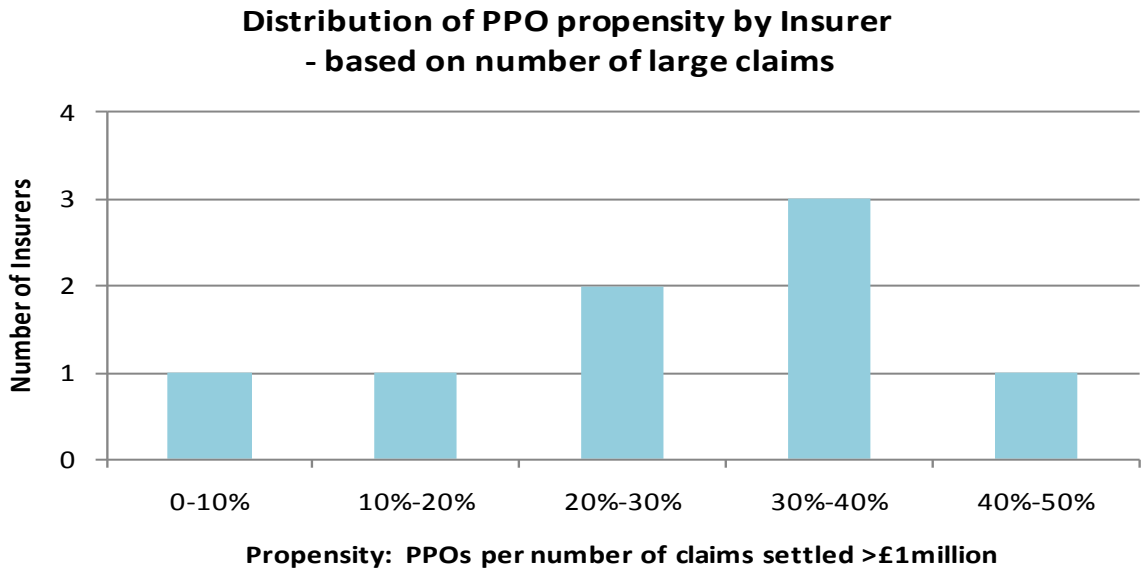
It appears the number of PPOs settled in the first quarter of 2011 is at a comparable level to the number settled in the first quarters of 2009 and 2010. This is against the background of the Lord Chancellor announcing a review of the discount rate used in the Ogden tables in November 2010. It is possible that this announcement may have lead to deferment of settlement for some large claims whilst the outcome of the Lord Chancellor's decision was awaited.

PPO Propensity

We received data for large claims (defined as claims greater than £1 million) settled in each of 2008, 2009 and 2010, which has enabled us to investigate the propensity of PPOs. It should be noted that the definition of large claims as well as the definition of which claims are settled may not always be consistent between all contributors. We believe these figures give a broad indication of PPO propensity but are unlikely to give a precise definition of the market rate.

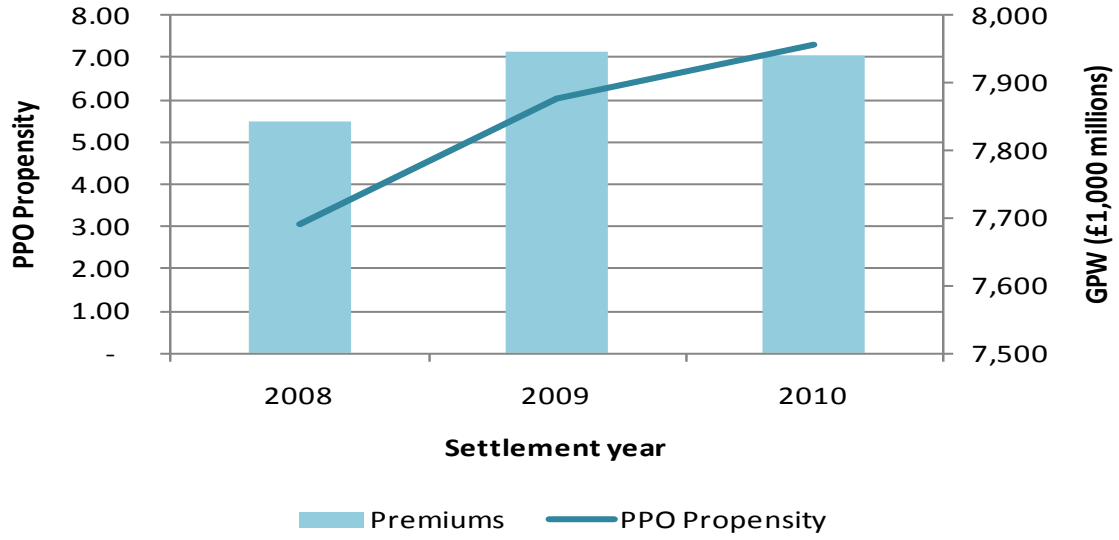


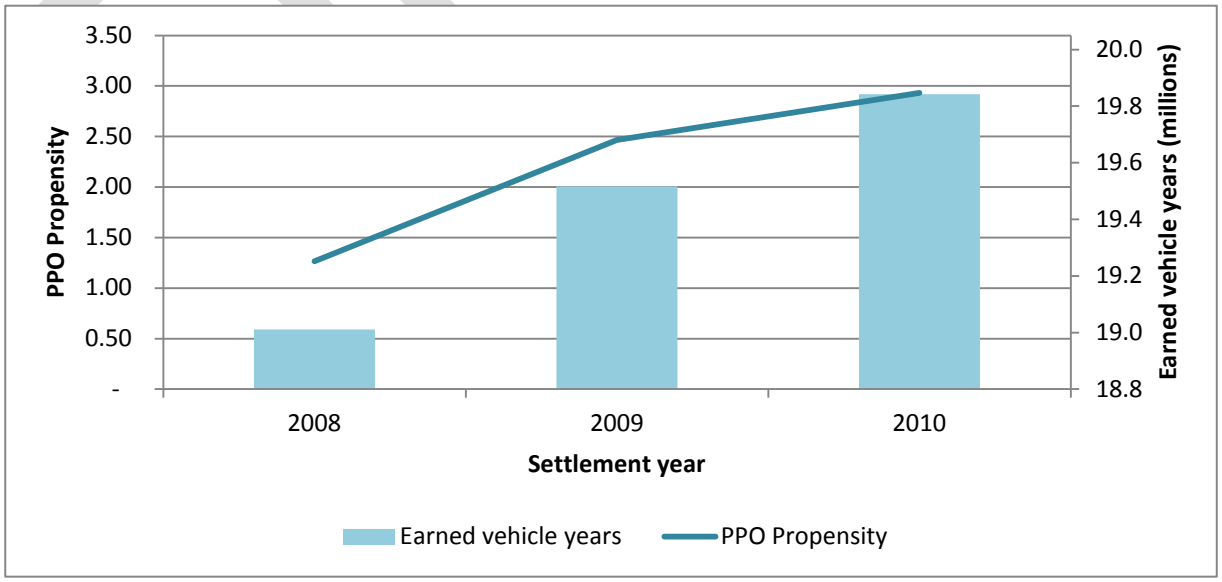
There is variation in the propensity of PPOs by insurer. The following graph indicates the distribution of PPO propensity across insurers in the survey. It excludes insurers which have settled fewer than 20 large claims over the last three years.



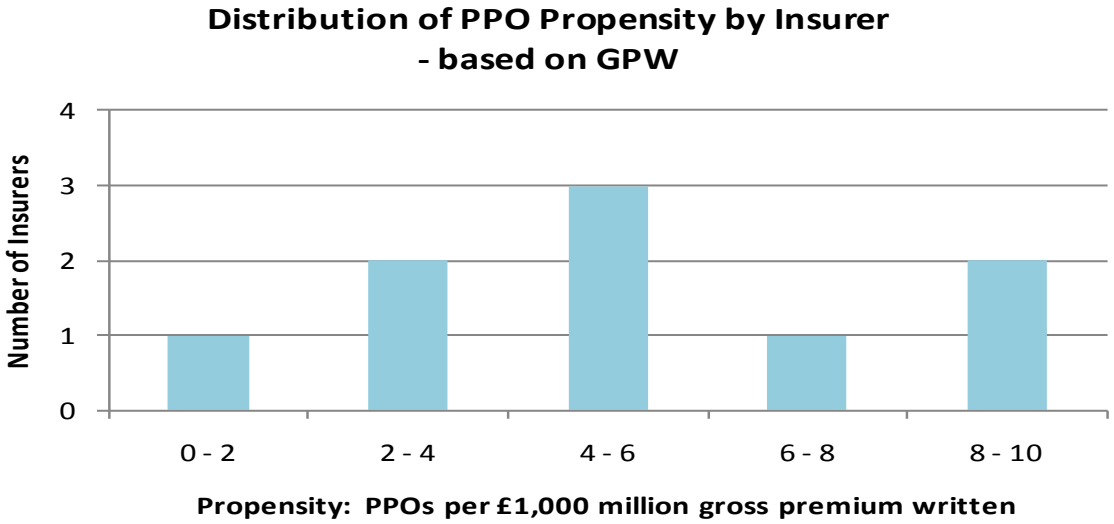
As stated earlier, the variability in the propensity rate may be at least partially due to the definition of large claim used by each provider. However we are not surprised to see a variation in propensity between insurers, one reason being as a result of differences in the policyholder profile across different insurers.

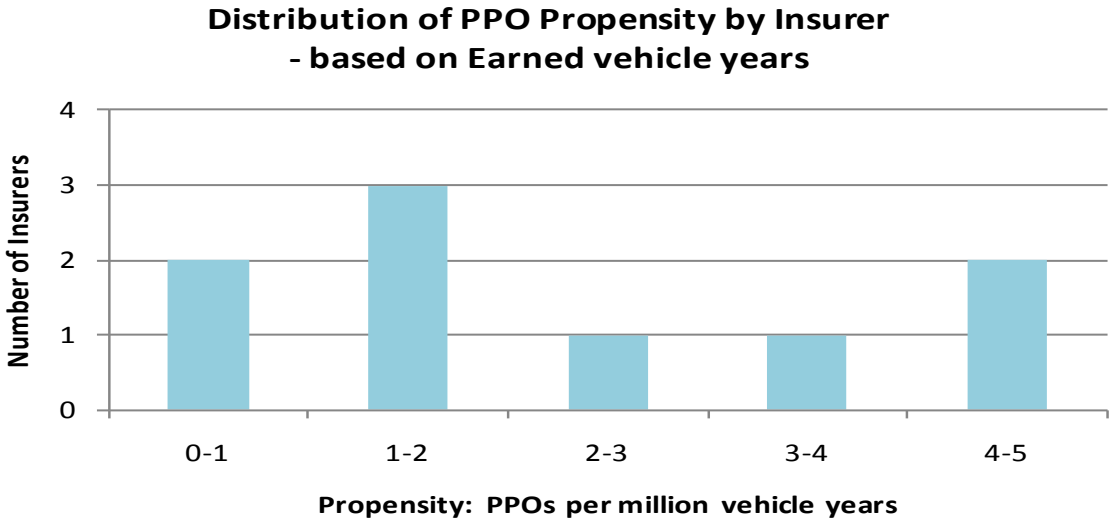
Another way of measuring the propensity is to look at the number of PPOs by premium written or exposure. For the following measures we have taken the number of PPOs settled in a given year divided by the average premium (or exposure) based on the premium written over a 6 year period starting 7 years earlier (i.e. the number of PPOs settled in 2010 is divided by the average annual amount of gross premium written during the period 2003 to 2008).





The trends in propensity over settlement period can be seen to be similar across each of the three measures. However the distribution across insurers is different depending on which measure is used, supporting the view that the definition of number of large claims settled may not be consistent across insurers (or that the propensity of large claims differs across insurers).

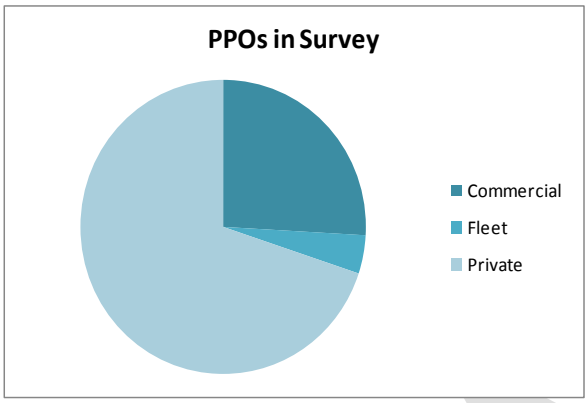


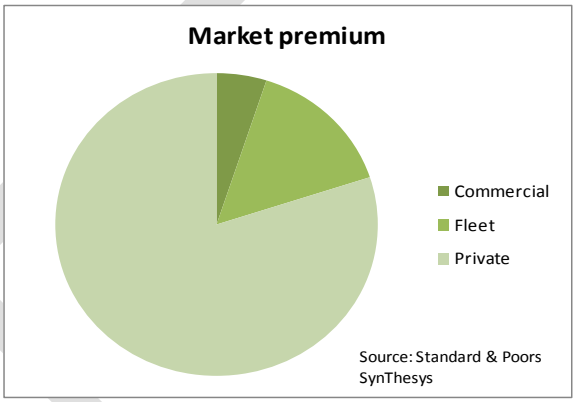


2.3 Motor PPOs – General characteristics

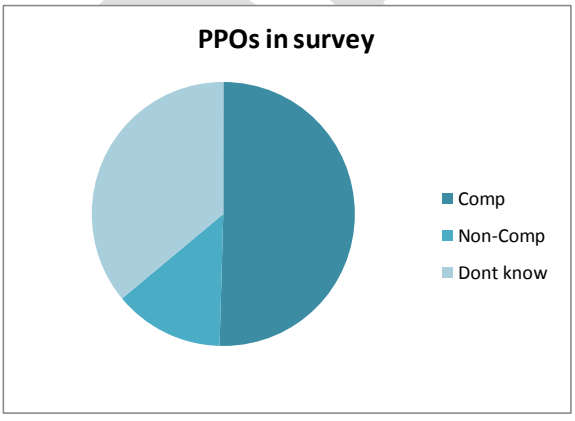
Cover type

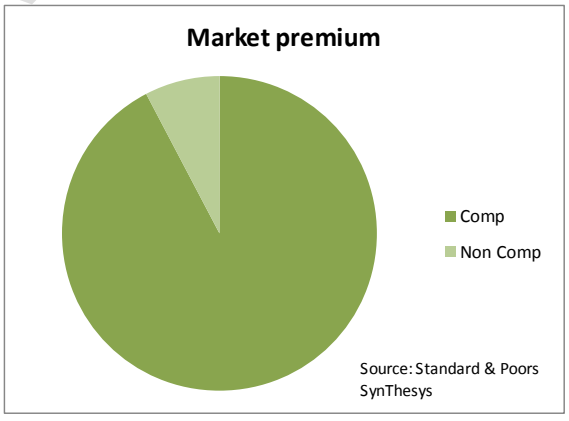
The pie chart on the left shows the proportion of motor PPOs split by cover type, and the one on the right the split of cover type by market motor premium based on data from FSA returns. These figures suggest that there may be a disproportionately large number of PPOs arising from commercial vehicle/fleet policies. (It is possible that there are inconsistencies in the way commercial vehicle and fleet categories are defined which is causing the apparent differences which are highlighted in the graphs below.)





Similarly the following two charts compare the proportion of PPOs from comprehensive and non-comprehensive private motor policies against the proportion of premium written in the market. They suggest that non-comprehensive policies generate a disproportionately large number of PPOs; there are over 20% of PPOs emerging from non-comprehensive policies excluding unknown policy type where these policies only represent 7% of premiums.

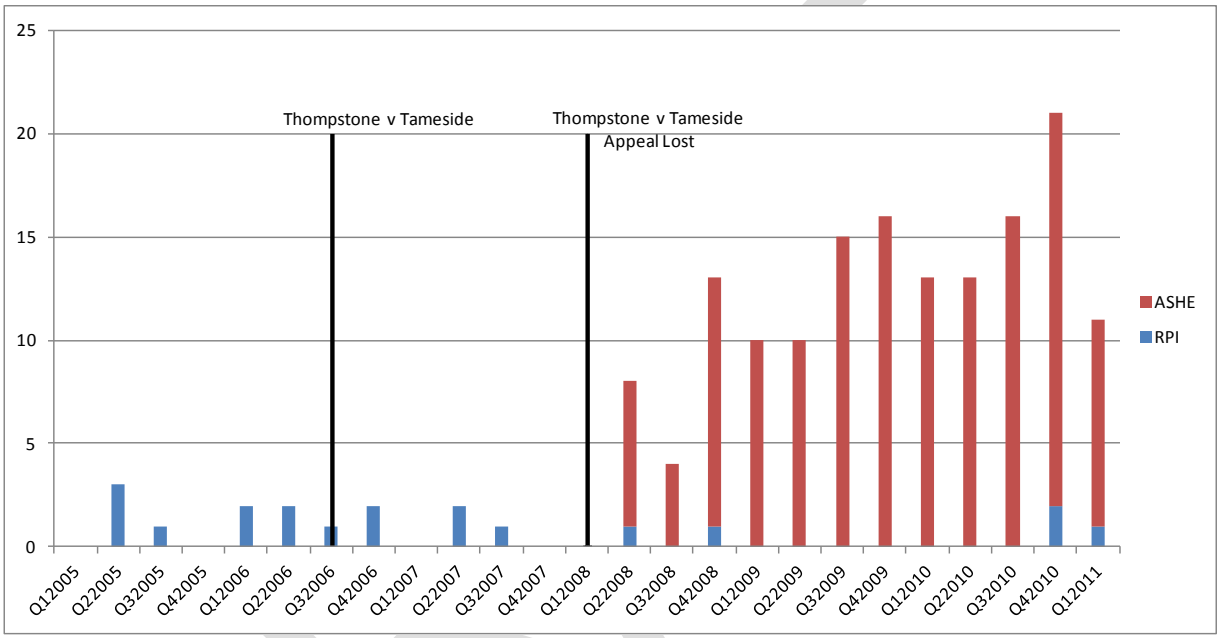




Indexation measures

The index used to inflate annual payments was originally automatically linked to the Retail Prices Index (RPI). However, in 2006, a court case was brought in the form of Thompstone versus Tameside and Glossop Acute Services NHS Trust which questioned this assumption and suggested that the payments for future cost of care would be better linked to wage inflation. The court agreed and the annual inflation increase was linked to ASHE. The case was appealed and a number of other cases were put on hold pending the outcome. In 2008 the Court of Appeal upheld the ruling and since then the majority of PPOs have had inflation linked to ASHE as is shown in the graph below.

Number of PPOs by settlement quarter, split by RPI and ASHE indexation

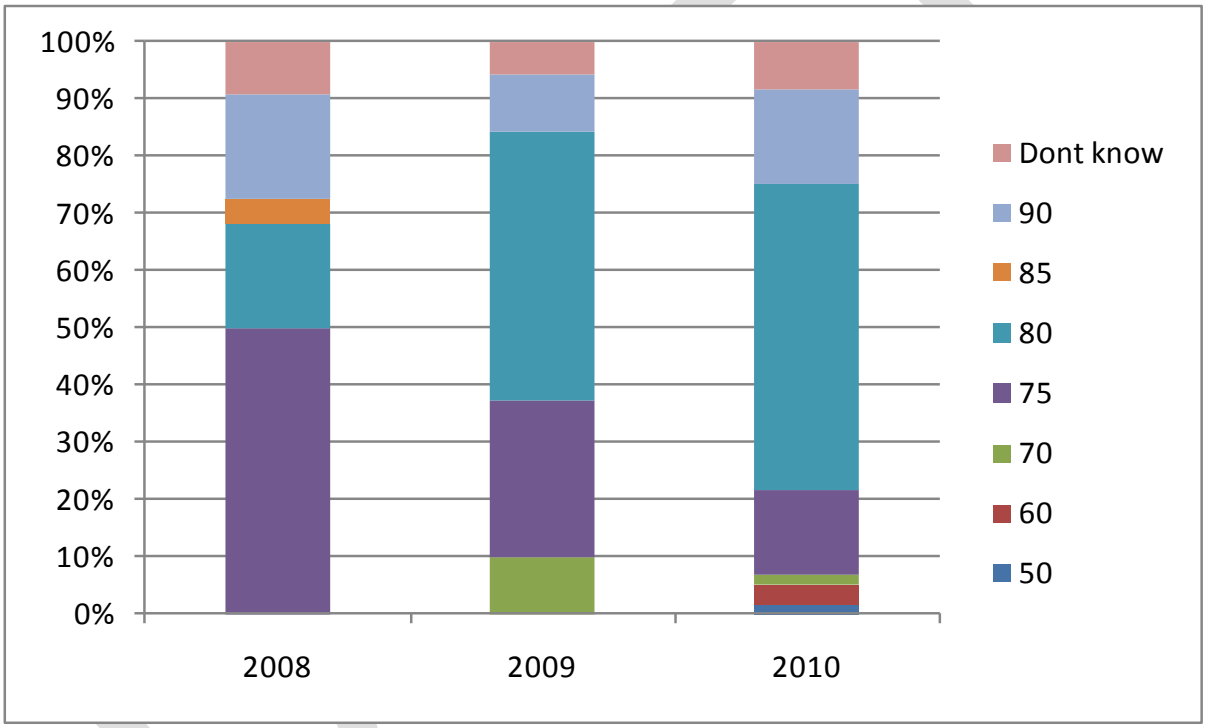


ASHE stands for the Annual Survey of Hours and Earnings. It is produced by the Office of National Statistics (ONS) every November, based on data as at April. It covers a wide range of occupations, though the vast majority of PPOs so far have been linked to sub category 6115 relating to care assistants and home carers.

Within a particular job category the ASHE earnings inflation measures are further split into percentiles, i.e. a PPO will have the annual inflation linked to a specific percentile, e.g. to those whose earnings are in the top 10% of earners in the category, or the 60th percentile of earners, say.

As can be seen from the graph above, only a small number of PPOs have been settled with just an RPI element in the last 3 years, the rest have all been ASHE. Of those settled using ASHE as the index, 98% have been settled using ASHE 6115.

Distribution of ASHE percentiles by settlement year



There has been an increase in the use of the 80th percentile, which in 2010 accounted over half of motor PPOs in this survey from less than 20% in 2008. This appears to be primarily at the expense of the 75th percentile which was the most popular in 2008, but reduced to the same level of usage as the 90th percentile in 2010. The 50th and 60th percentiles appeared for the first time in 2010.

Multiple PPO payments

There are a small number of instances of PPOs with multiple heads of damage. Details of heads of damage were not recorded by all insurers, but where this information was provided, there did seem to be a tendency for PPOs with more than one head of damage to comprise a care element and a loss of earnings element (though not in every case). The loss of earnings element appeared to be based on RPI indexation for some PPOs and ASHE for others – however it should be noted that this observation is based on data from only 13 PPOs.

Stepped PPOs

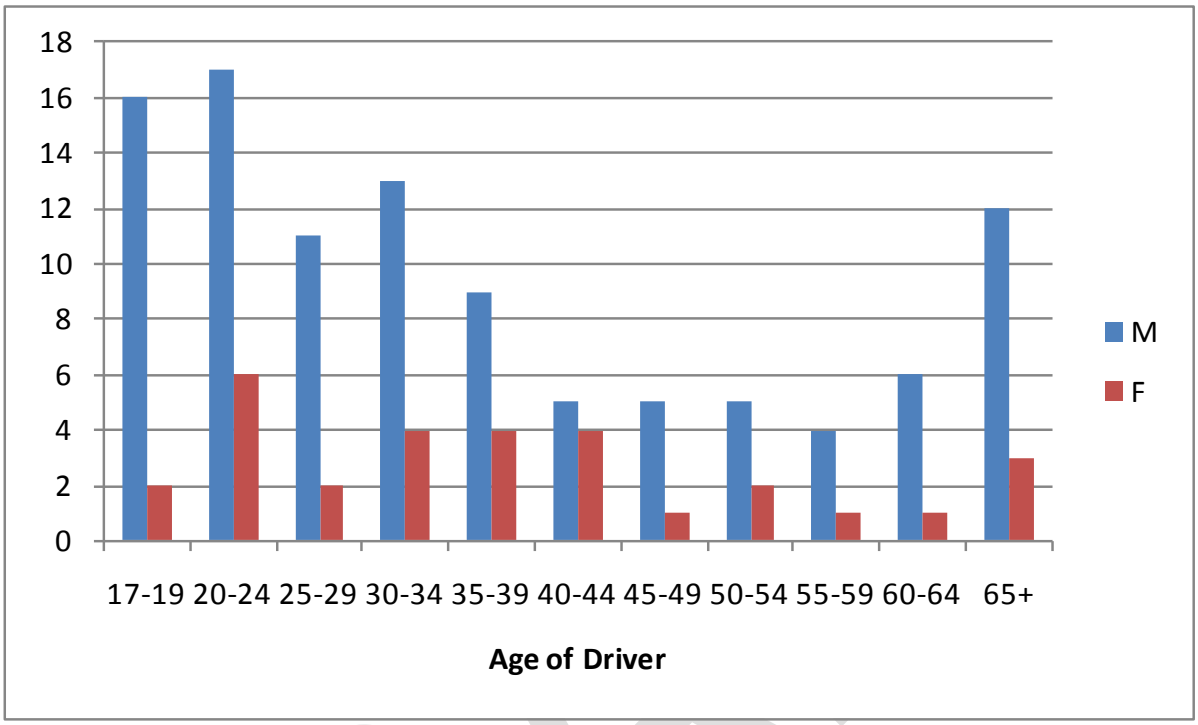
A significant proportion (26% of motor PPOs and 33% of liability PPOs) had stepped payments. A stepped PPO is a PPO where there is a provision for step changes in the regular payment amount to be made. These stepped changes will apply at fixed points in time to situations where a specific change in circumstance has already been foreseen at the time of settlement. For example, there could be a provision for a one-off increase in payments to be made in the case of a claimant whose parents are the primary carers. This would allow for the time when the parents cannot deliver the same standard of care and additional care costs will need to be incurred.

Many insurers provided details of PPOs with step changes. However, in the most part this took the form of a free text field which leaves this information more open to inaccuracies and inconsistencies.

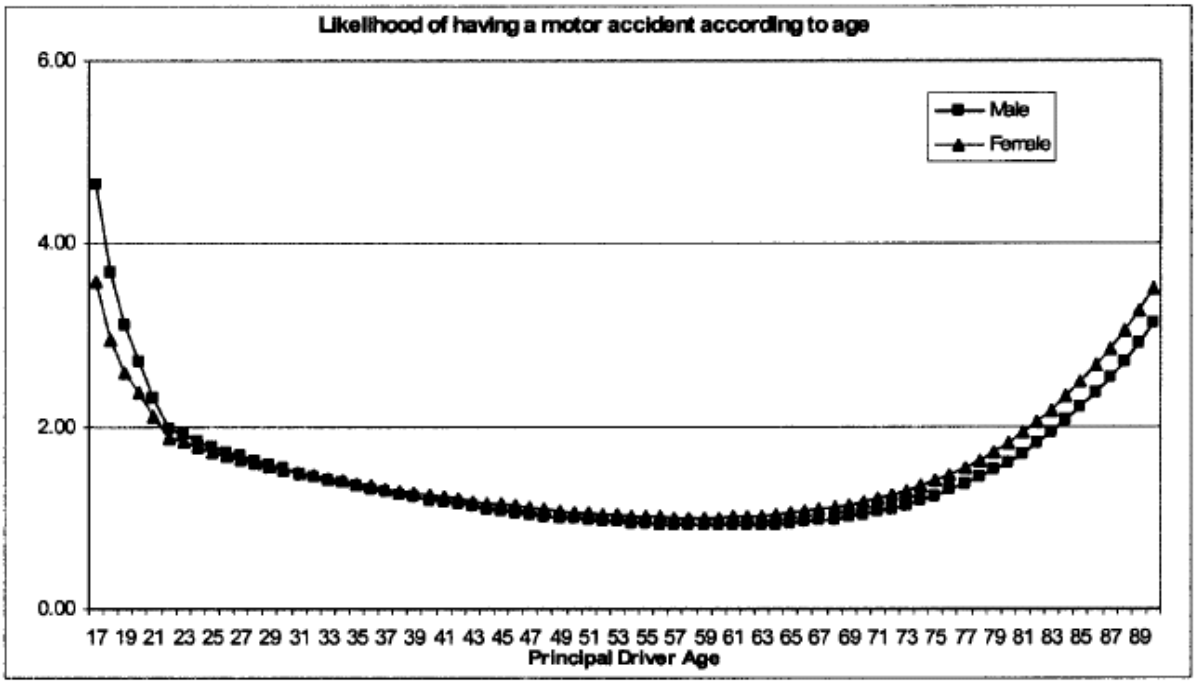
From the information provided it appears that the step changes tend to be increases, but it should be noted that the step change can be both upward or downward. There is also some suggestion from looking at the data that PPOs with stepped payments may be more likely in the case of spinal injuries (nature of injury is discussed in more detail in section 4) than brain injuries. However, there is a great deal of variation in the size of the steps and it is difficult to discern any particular patterns from the data.

Claimant and driver details

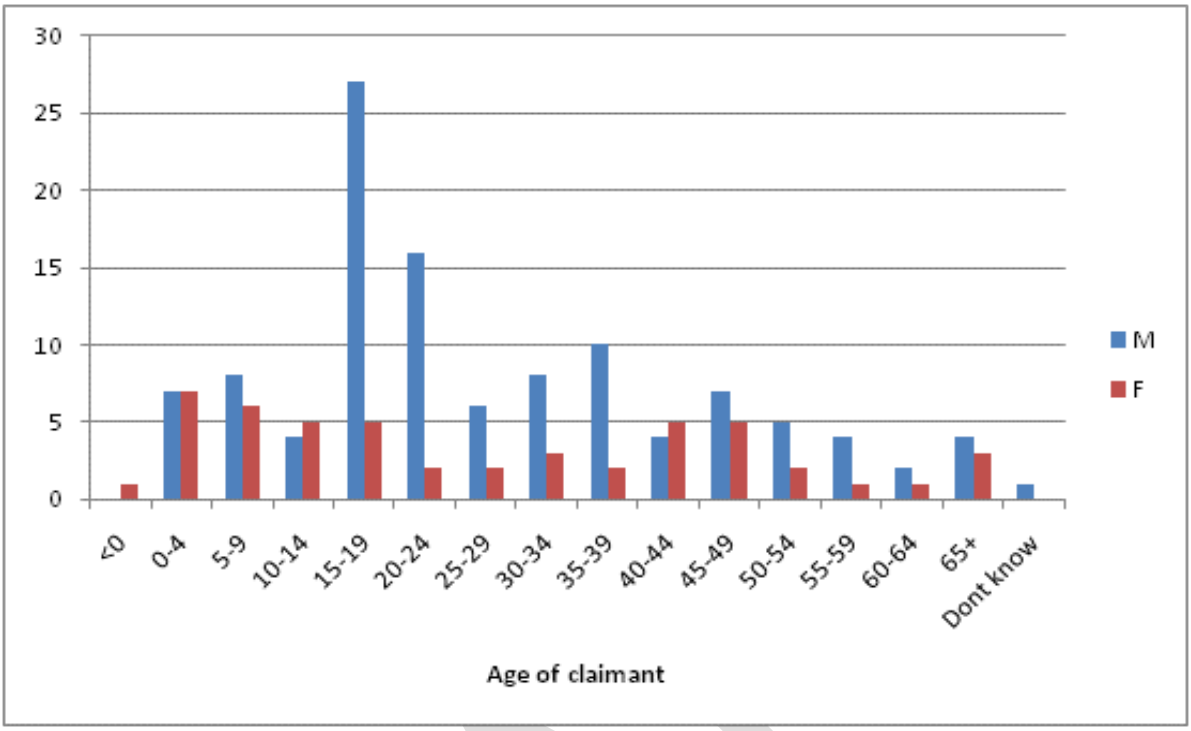
The following graph shows the number of PPOs by age of driver at the time of the accident. (Please note the large number of PPOs in the 65+ category will be driven, at least in part, by the wider age range in this grouping.)



The profile of driver age for males is similar to the claim frequency profile by driver age seen across the industry as highlighted in the graph below. This is less apparent for females, though this may just be due to the relatively small sample size for females. It should be noted that these graphs are not directly comparable, not least as the first shows number of PPOs in our survey and the second shows claim frequency so the pattern by age will be distorted by the exposure profile for our survey figures.

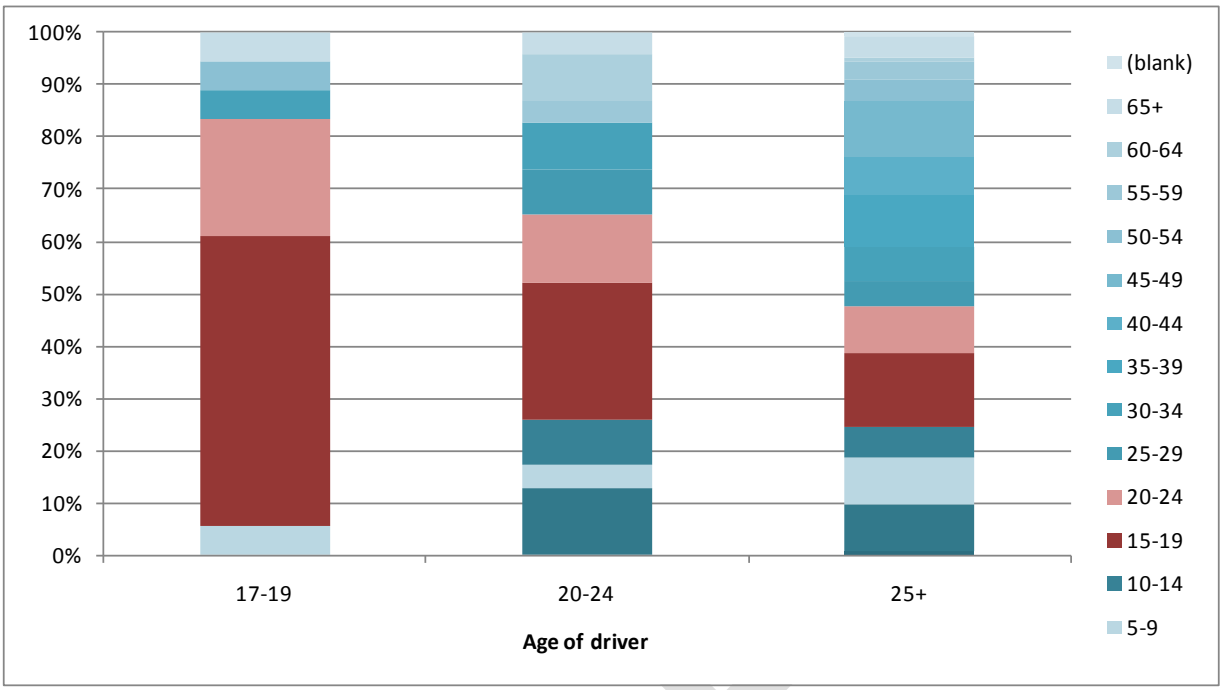


Age of claimant at the time of the accident



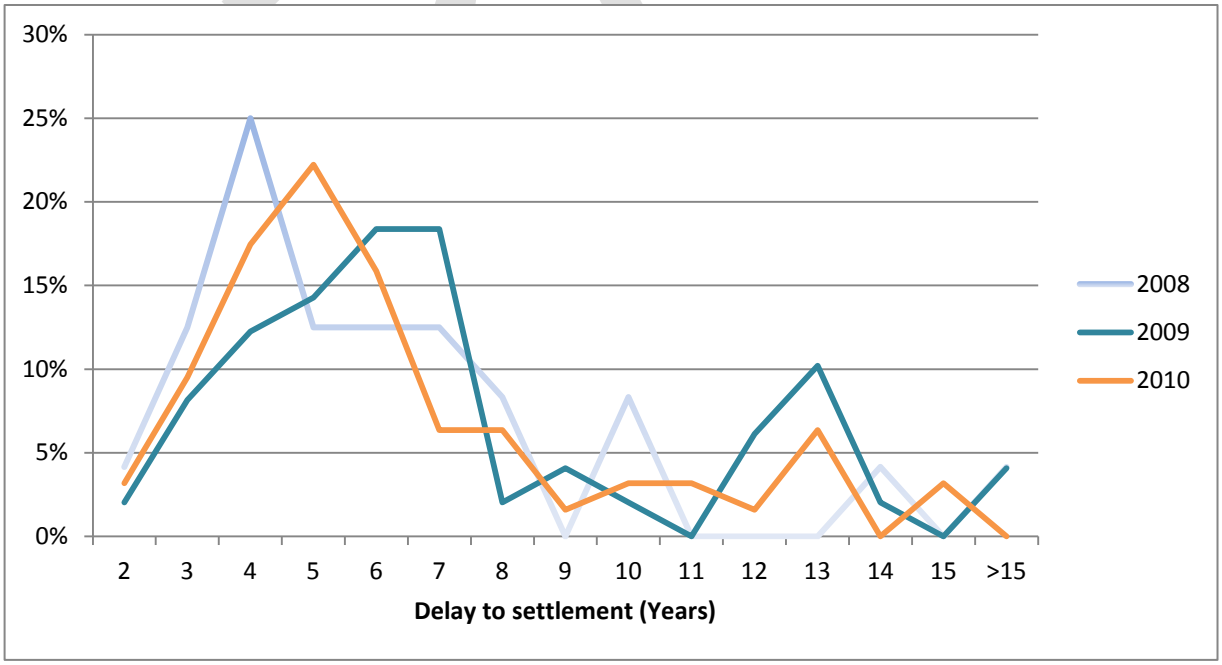
There is a spike in claimant age between the ages of 15 and 24 which is similar to the profile of UK road deaths.

Age of driver against age of claimant at the time of the accident

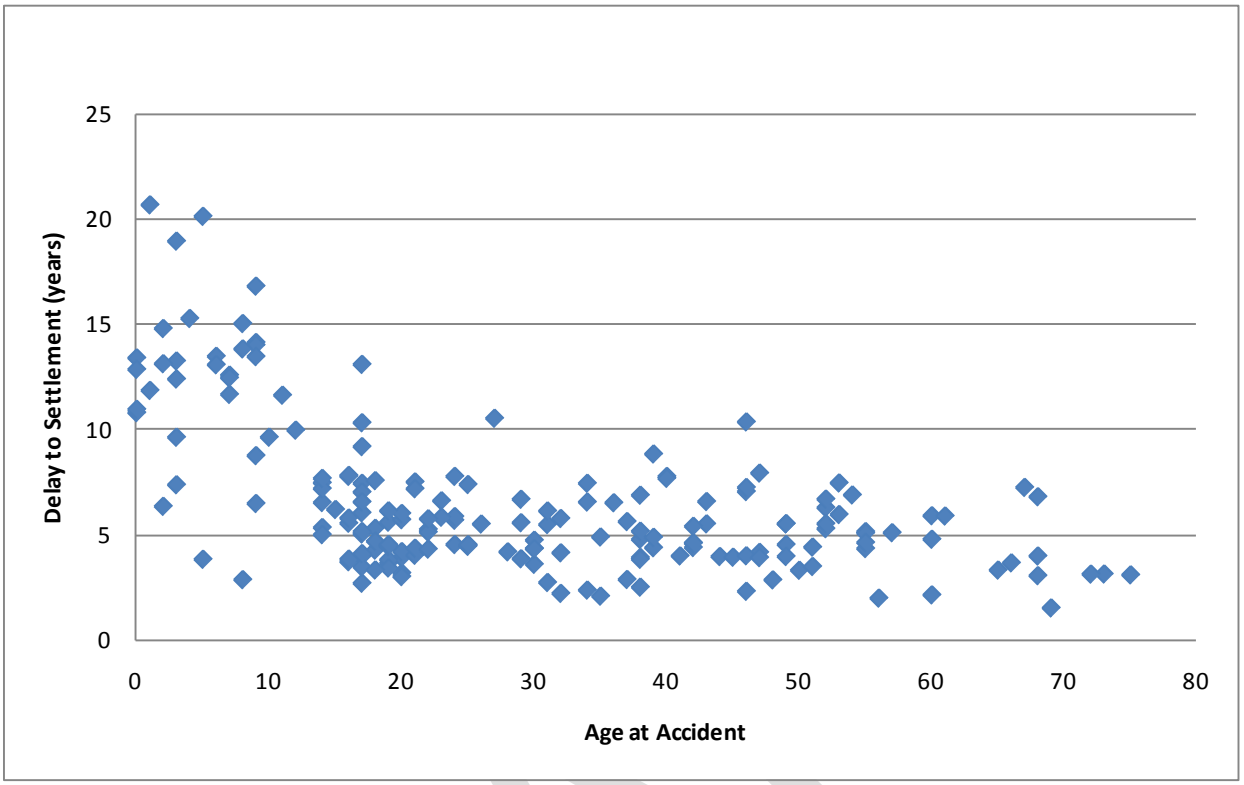


There is a correlation between young drivers and claimants particularly in the 17-19 age bracket, and also in the 20-24 age bracket. However it is worth noting that, in total, claimants between the ages of 17 and 24 where the drivers are also between these ages only represent 23 or 14% of motor PPO claims in this survey.

Distribution of delay to settlement

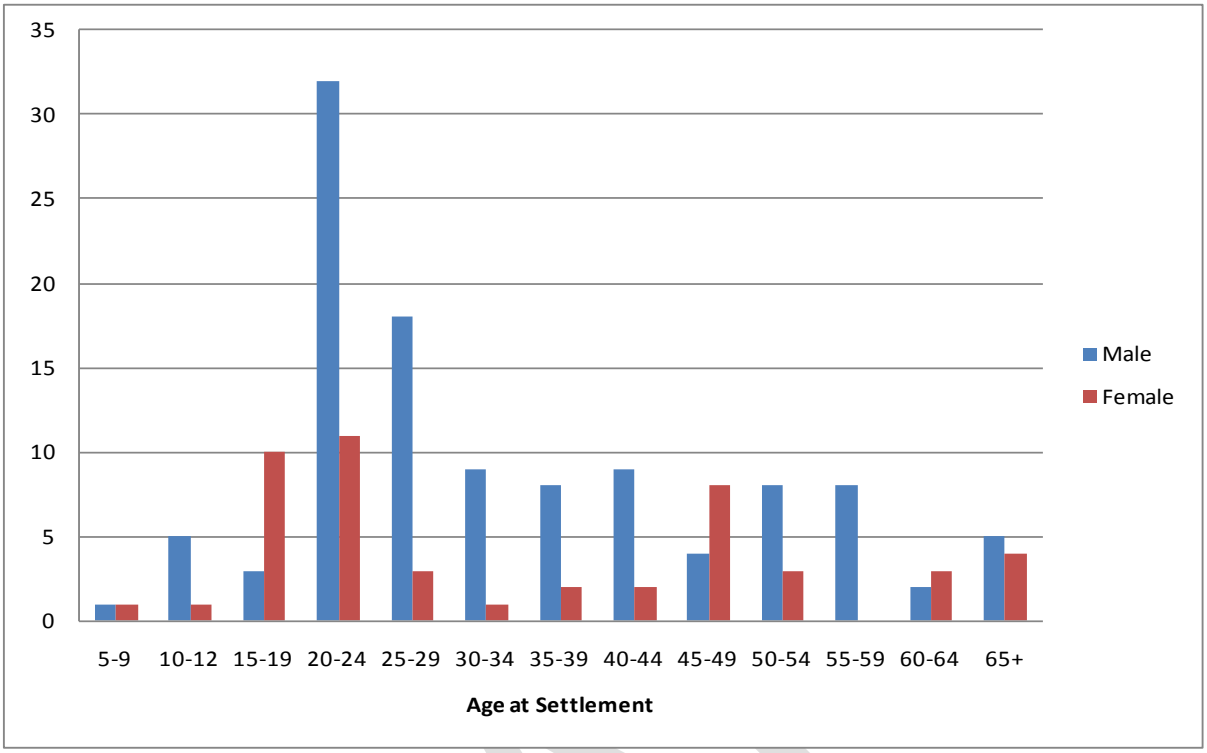


Age of claimant at the time of the accident against delay to settlement



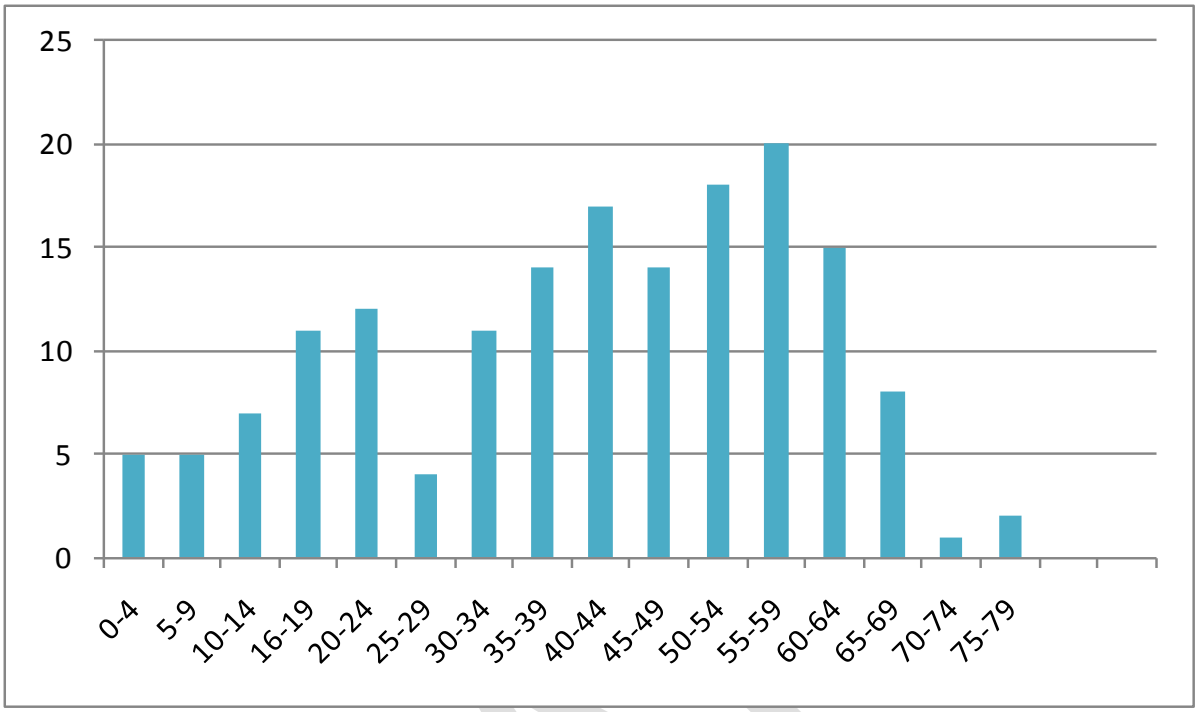
Claimants who are younger at the time of the accident tend to have longer settlement delays. It is interesting to note that conversely claimants in the 15-19 age bracket appear to have lower delays in general.

Age of claimant at the time of settlement



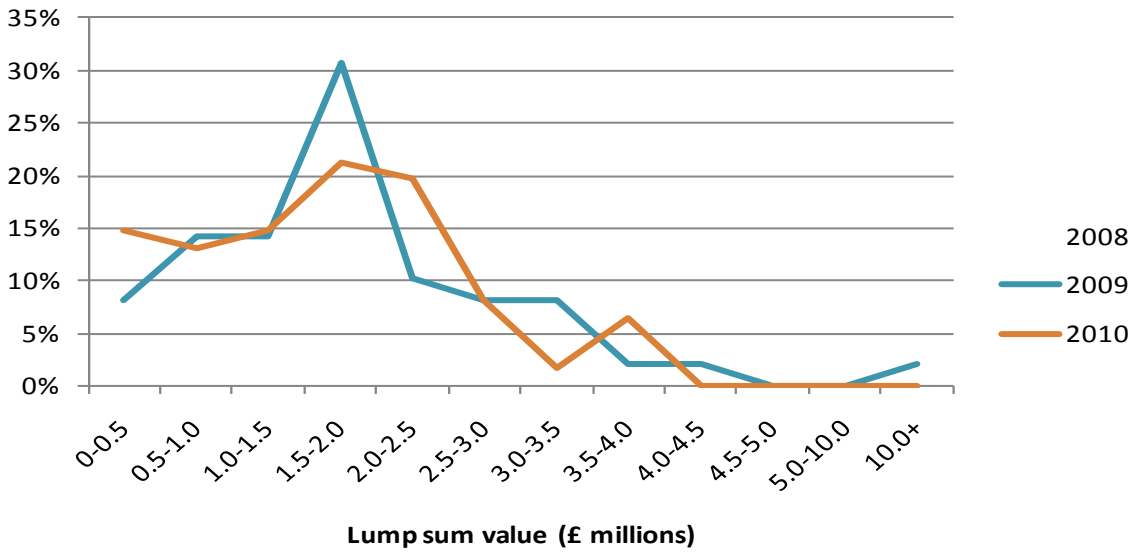
The spike in settlements in the 20-24 age range shown in the above graph is consistent with the observation that minors are advised to wait until they are at least 18 before seeking to settle their claim as only then can a fair medical prognosis of their condition be made.

Distribution of future life expectancy at the time of settlement



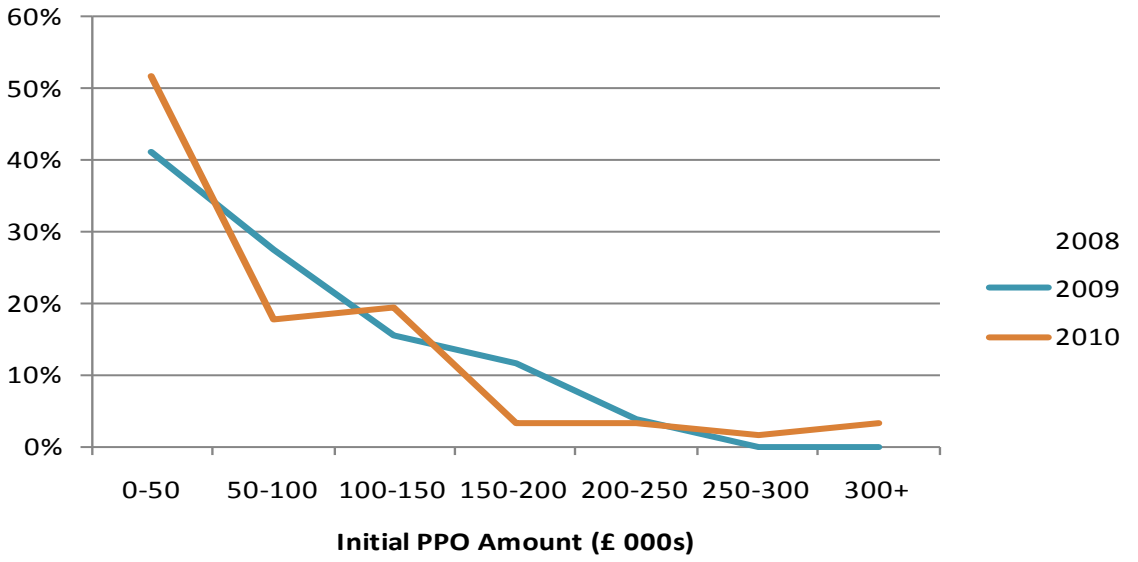
The term 'life expectancy' in this document is defined as the future life expectancy ("FLE") at the time of settlement as per the survey responses. There is likely to be a wide variation in the practice of determining FLE in the market.

Distribution of lump sums



The distribution of PPO payments (both the actual PPO payments and the lump sums associated with them) appear to have followed reasonably consistent distributions over the last 3 years.

Distribution of initial PPO payments



In this document the term initial PPO amounts refers to the regular payment associated with a PPO at the time of settlement of the PPO.

Variation orders

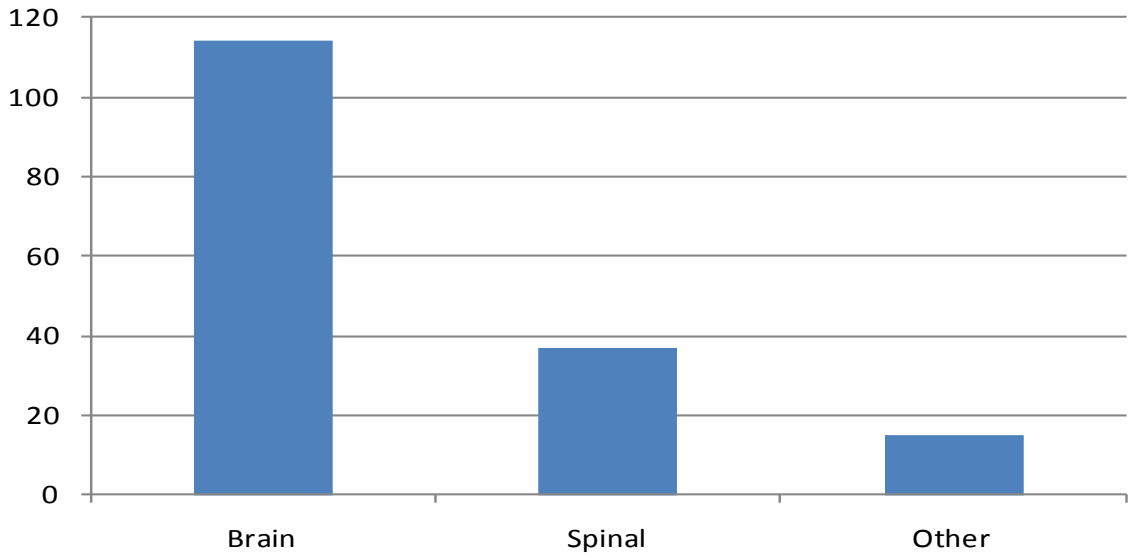
Very few PPOs had variation orders on them; only 6 out of our sample of 187.

Multiple claimants

Similarly there were very few PPOs that had more than one claimant linked to the order. Again, there were just 6 out of our sample of 187.

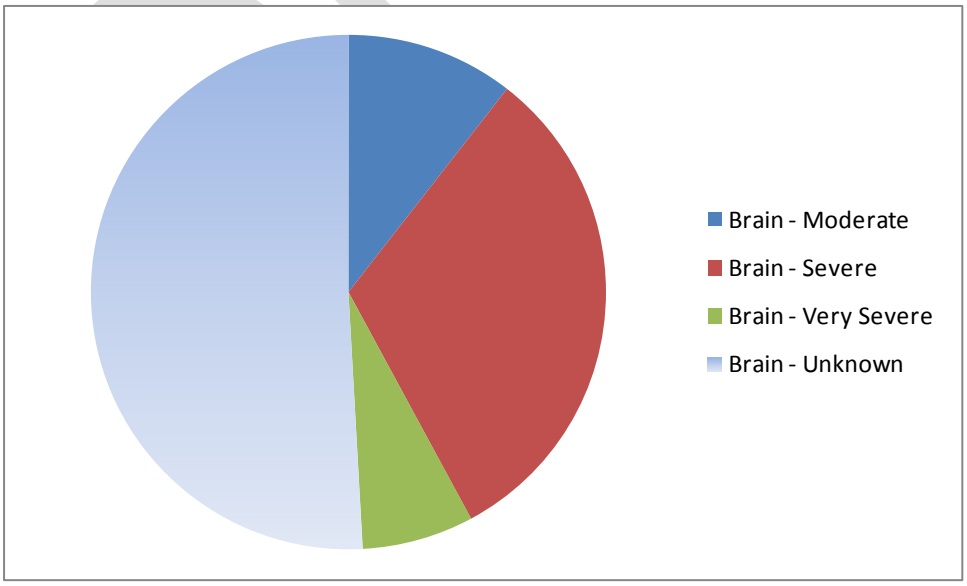
2.4 Motor PPOs - Nature of Injury

The vast majority, almost 70%, of the PPOs related to brain injuries and 90% related to either brain or spinal injuries.

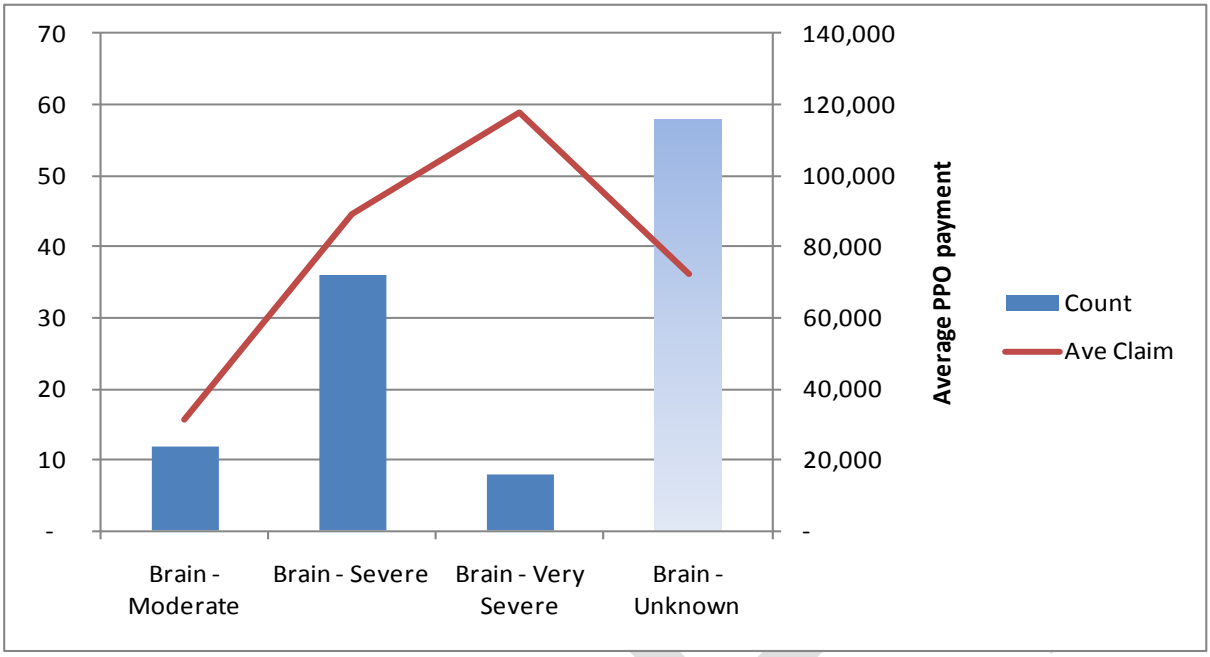


Brain Injuries

The degree of brain injury has an impact on the size and duration of the claim. For half of the PPOs this categorisation by severity was not available, which implies some insurers are not recording this information, even though it appears to have such a significant impact.



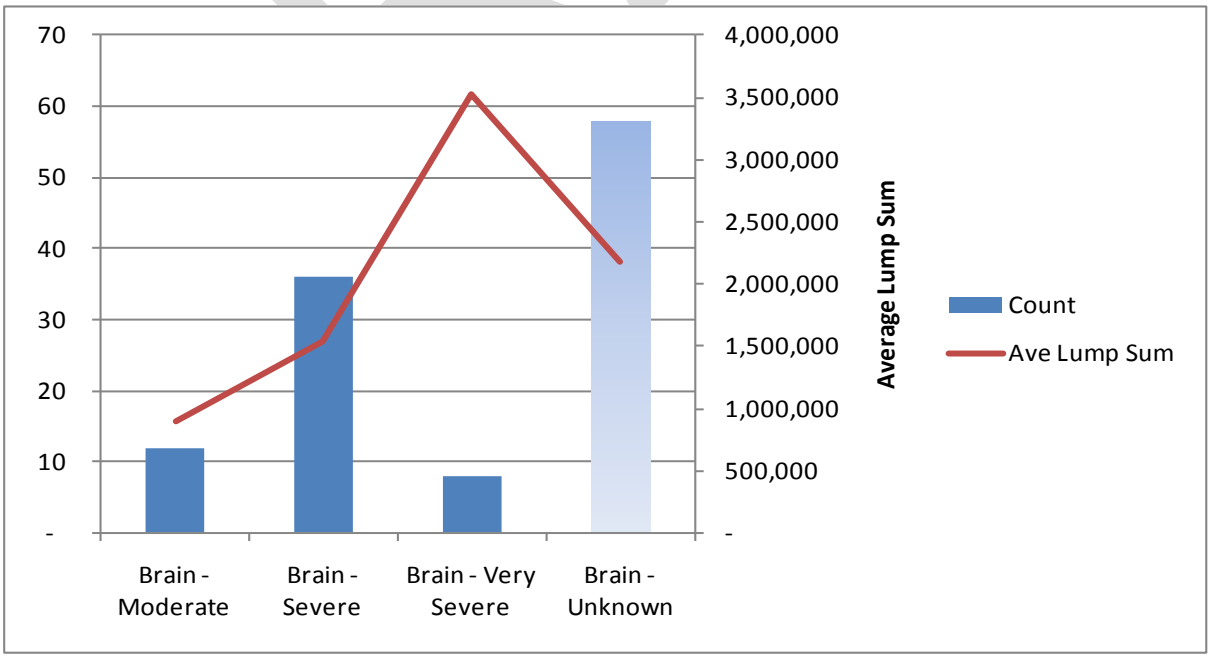
Initial PPO annual amount



The average PPO cost of brain injuries categorised as “Very Severe” is more than 4 times that of brain injuries classed as “Moderate”.

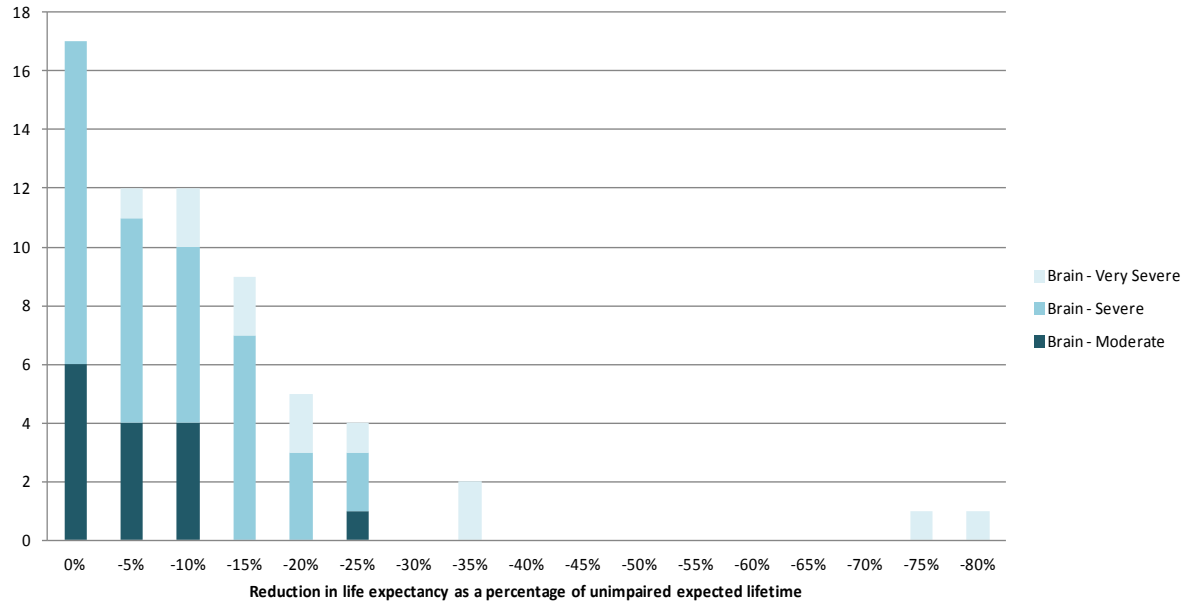
A similar pattern is also evident in the lump sums awarded with PPOs, with “Very Severe” brain injuries resulting in lump sum payouts over 3 times larger than “Moderate” brain injuries.

Lump sum



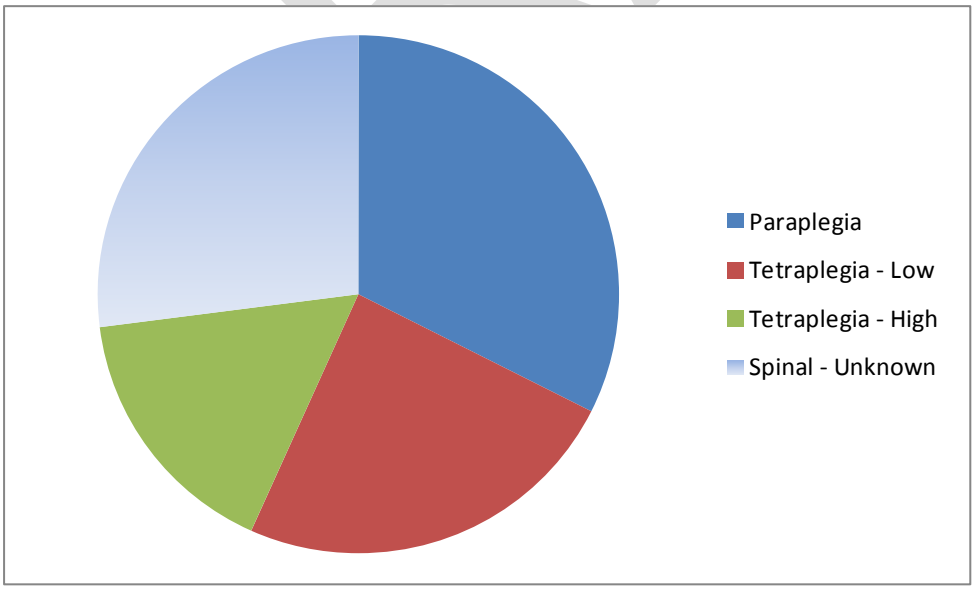
Life Expectancy

The following graph suggests that the impact on life expectancy is greater the more severe the brain injury is.

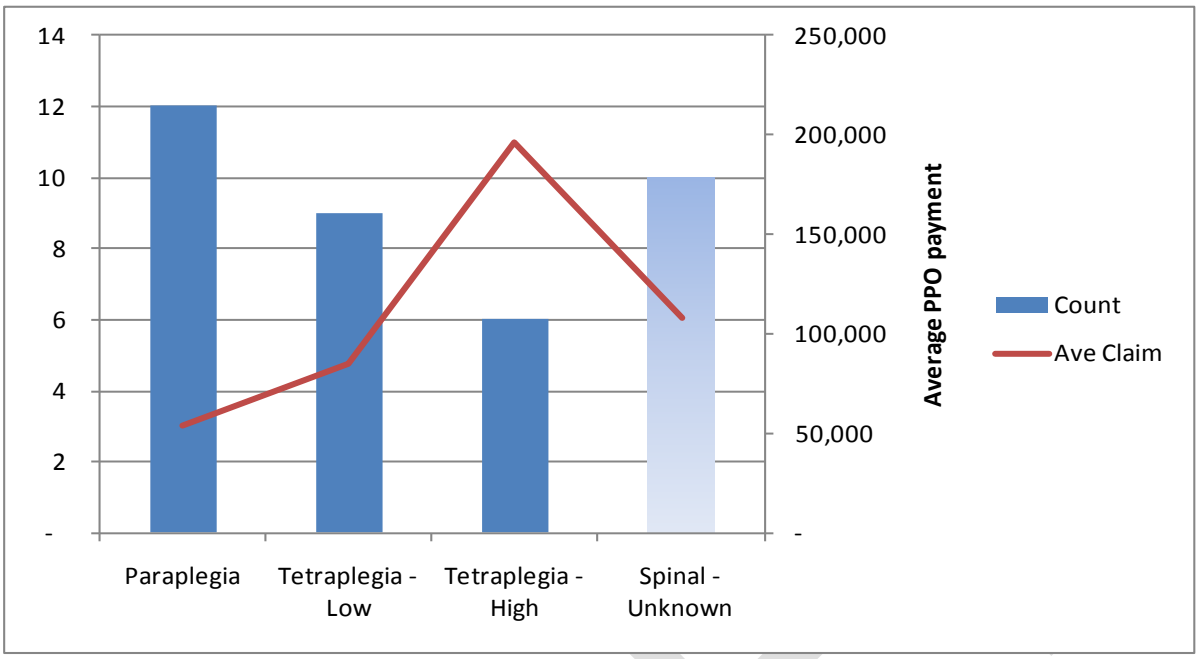


Spinal Injuries

The numbers of PPOs relating to spinal injuries from the survey is relatively low at only 37 claims, and of these just over a quarter had no categorisation of degree of injury. The results are not as clear cut as for spinal as they were for brain injury, perhaps at least partly due to the low sample size.

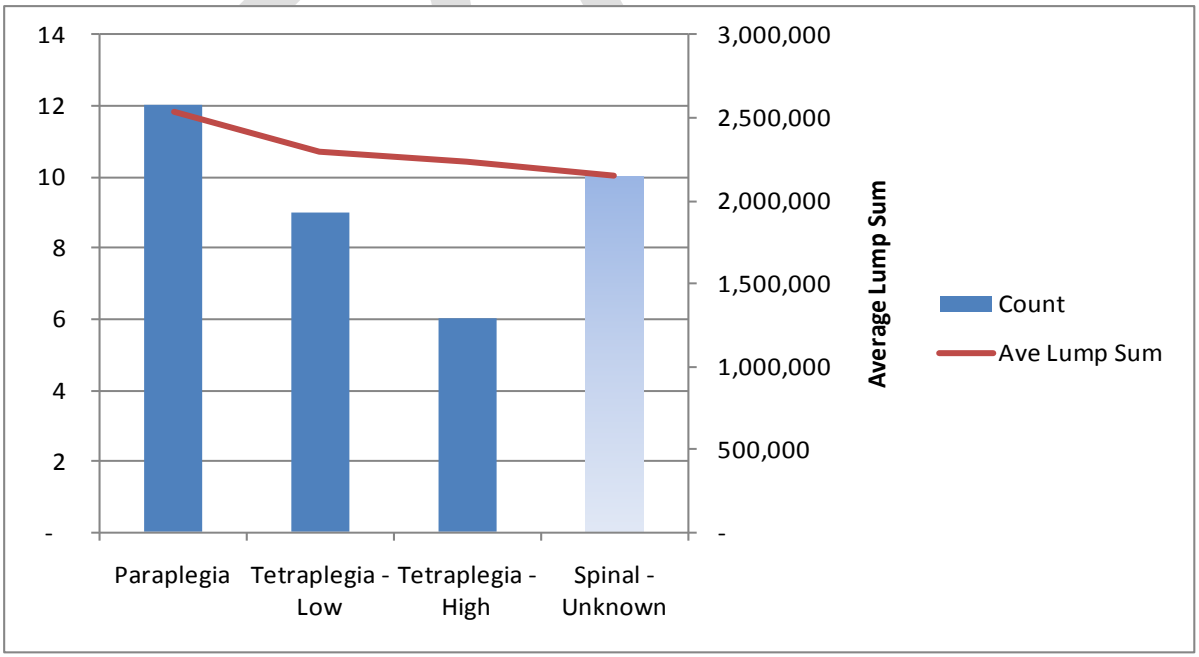


Initial PPO annual amount



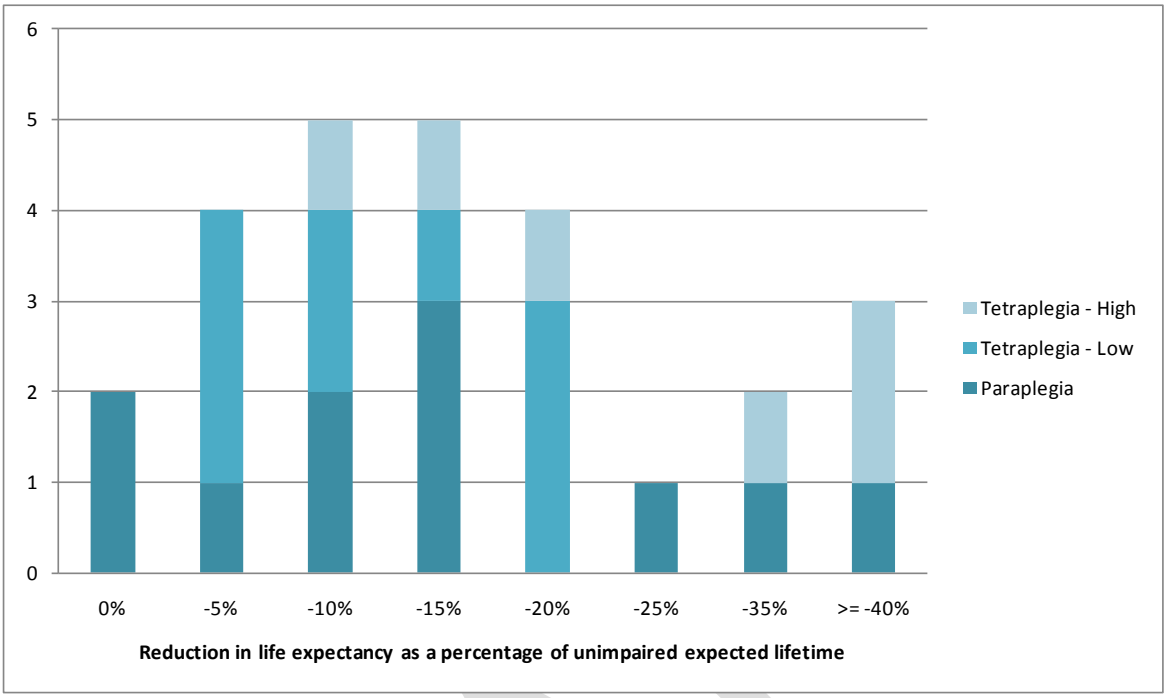
The data does suggest that a more severe spinal injury will receive a higher payout than a less serious one. However the same trend is not evident in the lump sum awards associated with the PPO.

Lump sum



Life Expectancy

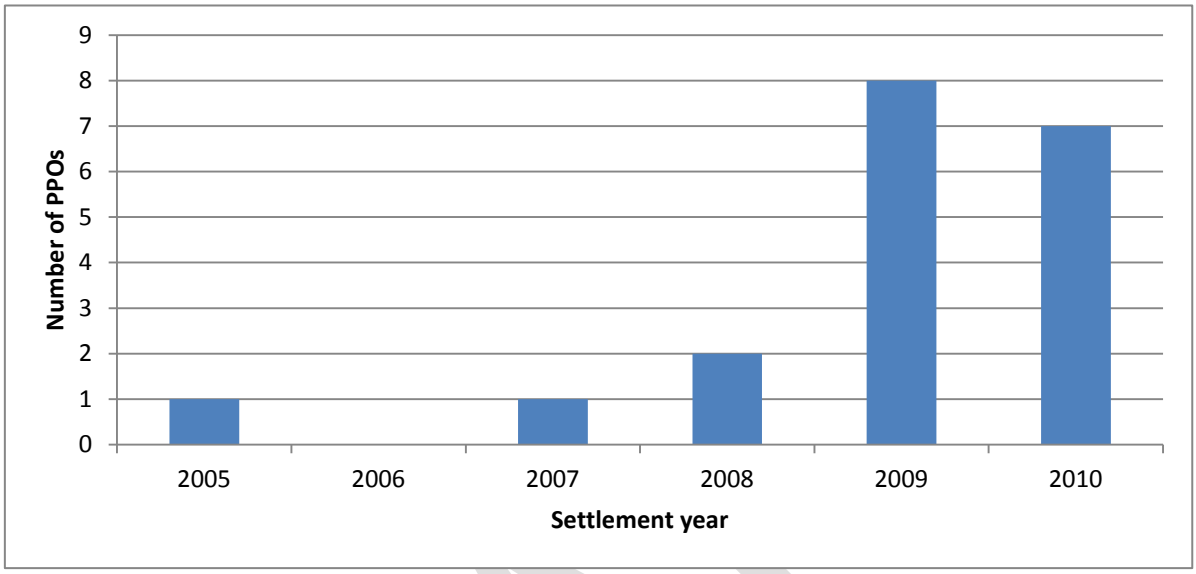
The results looking at life expectancy are not so clear cut, possibly as a result of the low sample size.



2.5 Liability PPOs

There were only 21 liability PPOs in the survey, from 7 insurers (as not all of the respondents offer liability insurance).

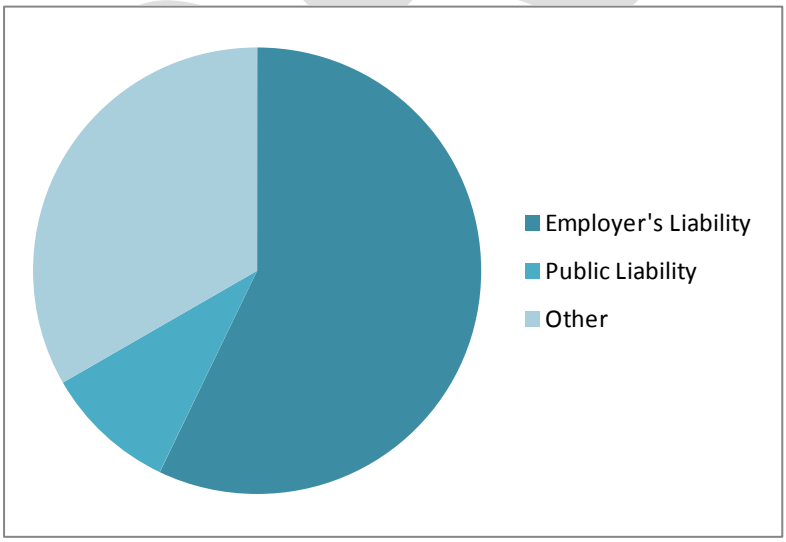
Number of Liability PPOs by settlement year



The pattern of settlement of PPOs is broadly similar to that of the motor PPOs. The smaller sample size may account for some random noise in the 2009 to 2010 trend.

Cover type

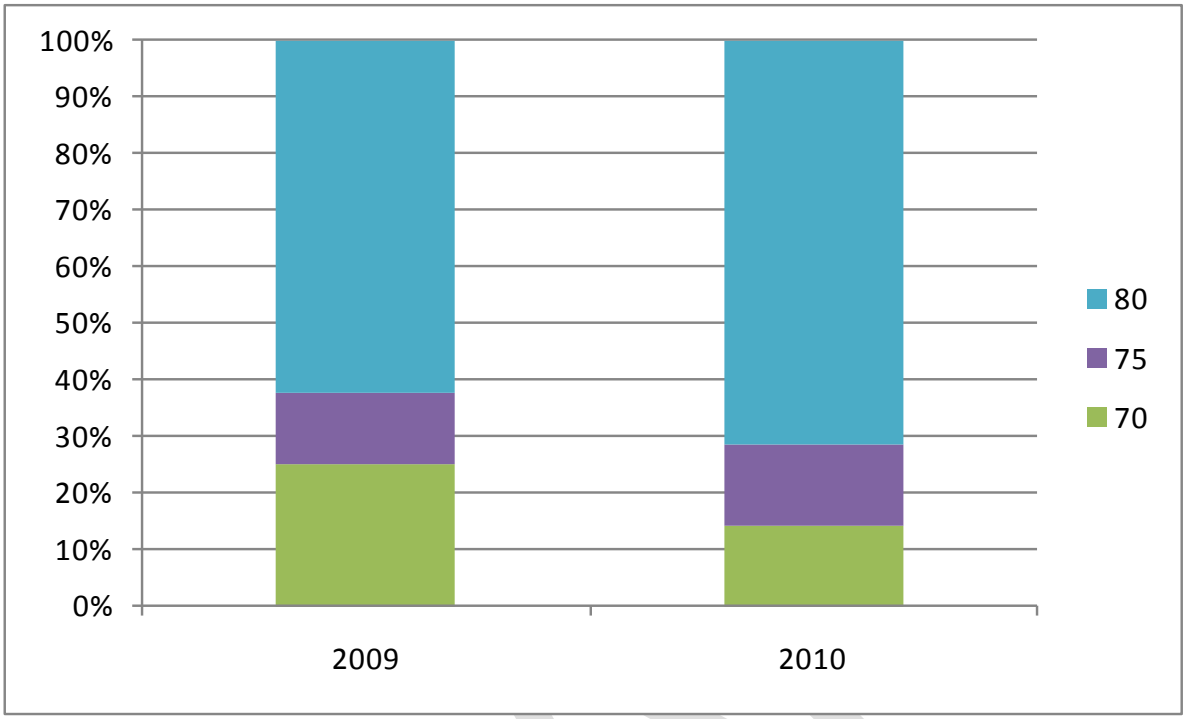
The majority of liability PPOs relate to Employer's Liability covers.



Indexation Measures

As for the motor PPOs, virtually all of the liability PPOs have ASHE 6115 indexation.

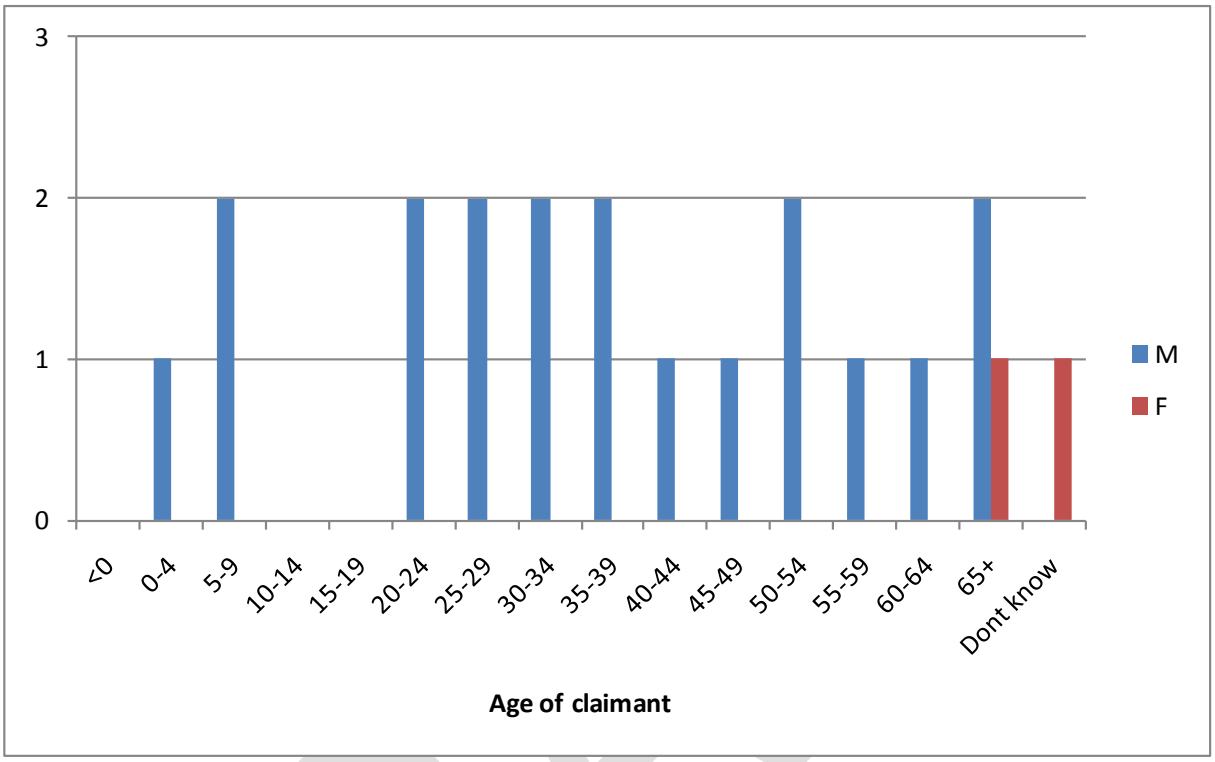
ASHE percentiles



Interestingly it seems that the 80th percentile has always been the most popular for PPOs arising under liability covers.

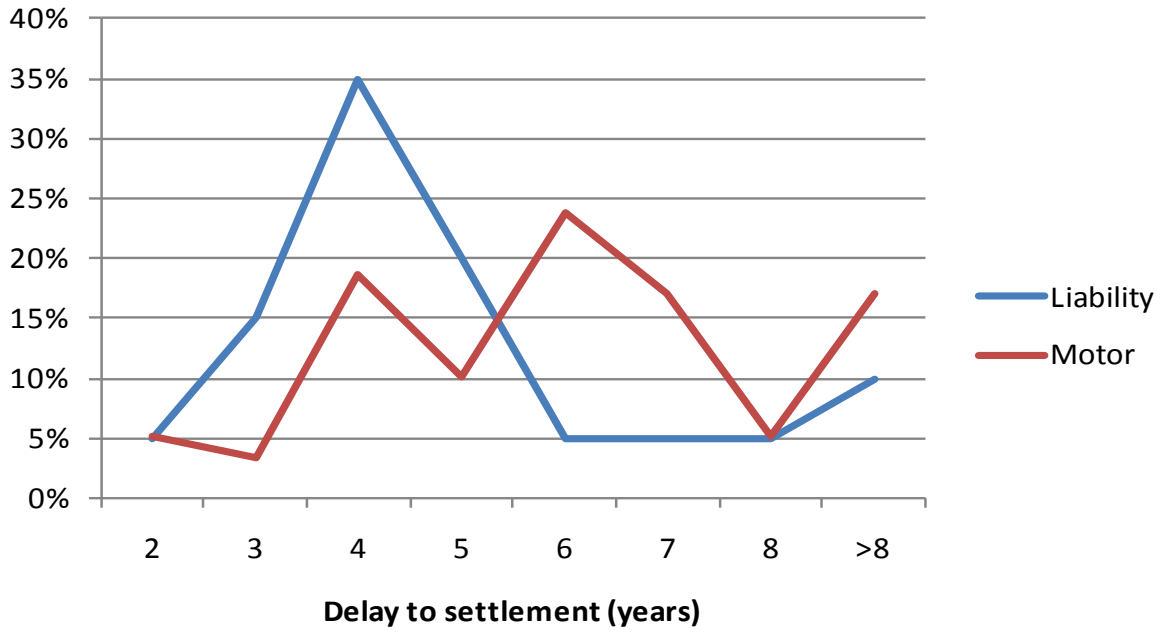
Claimant details

Nearly all claimants are male. There appears to be no particular trend in the age of claimant, though all claimants under Employer's Liability policies are of working age, as would be expected. The following graph shows the age of claimant for PPOs under all liability covers (EL, PL and Other).



Distribution of delay to settlement

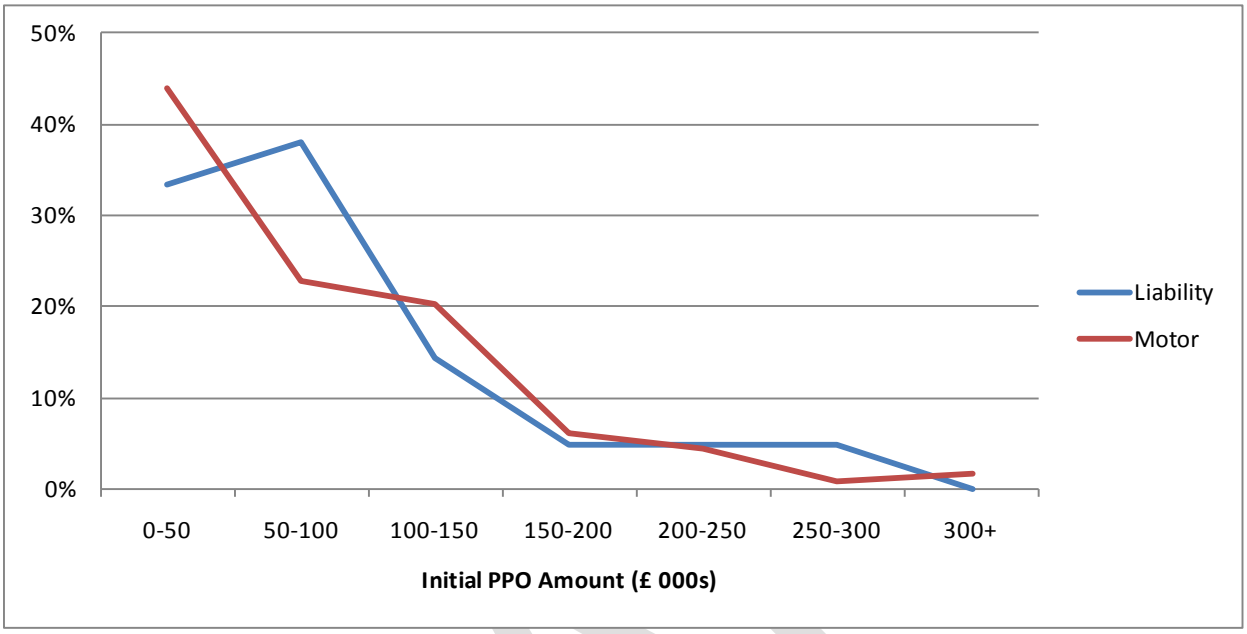
There is some suggestion that liability PPOs may settle quicker than motor PPOs, though due to the small sample size it is not possible to state this with confidence.



Motor PPOs have been limited to those for working ages of 18-65, for comparability with liability PPOs.

Distribution of initial PPO payments

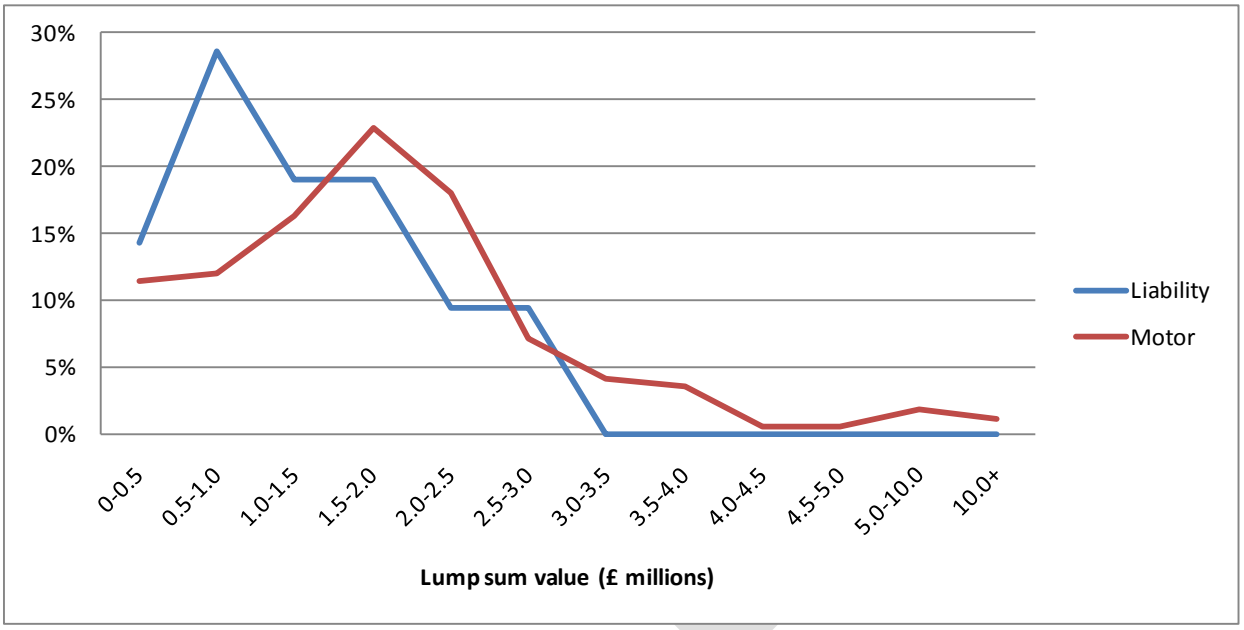
The distribution of PPO amounts appear to be similar between liability and motor PPOs, though there is a suggestion that Liability PPOs may have more in the £50,000 to £75,000 range than the <£50,000 range when compared to motor PPOs (though due to the small sample size this is not conclusive).



Motor PPOs have been limited to those for working ages of 18-65, for comparability with liability PPOs.

Distribution of lump sums

Liability PPOs appear to have a lower lump sum associated with them than motor PPOs do.



Motor PPOs have been limited to those for working ages of 18-65, for comparability with liability PPOs.

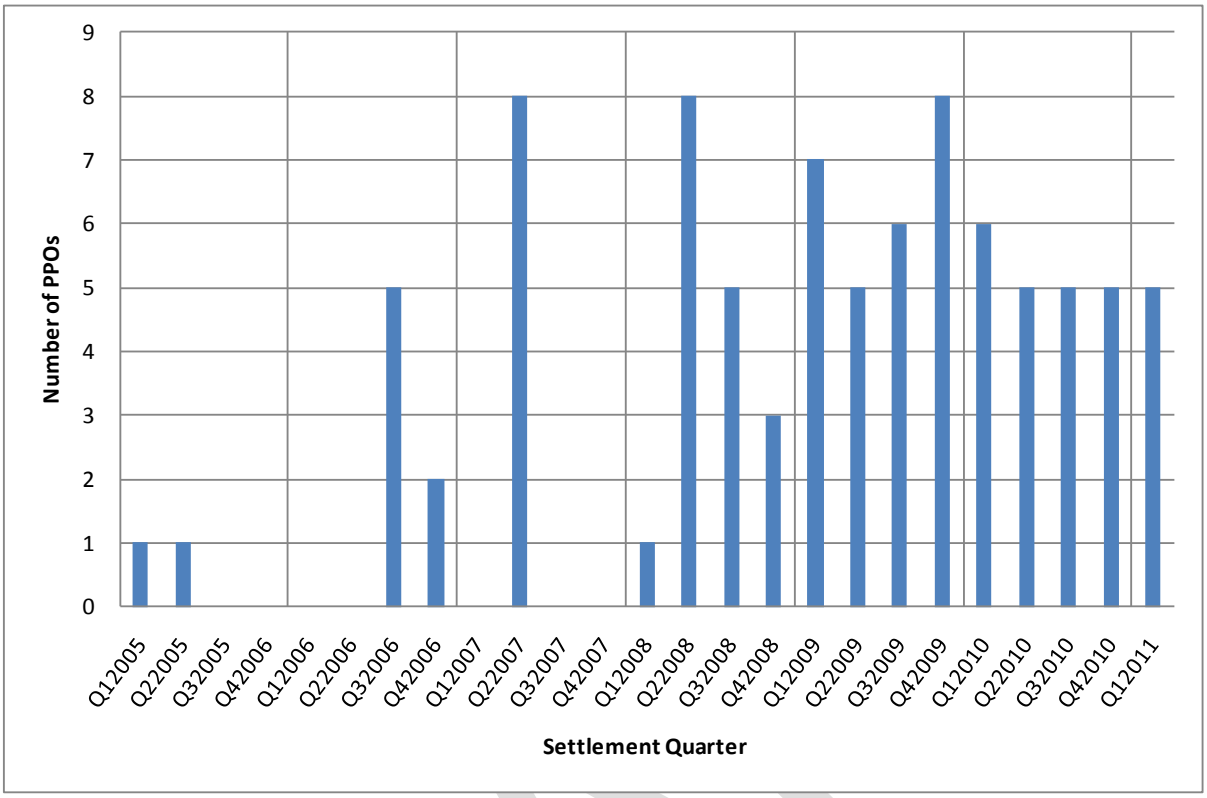
2.6 Motor Insurers' Bureau (MIB) experience

We have been very fortunate in that the MIB have agreed to provide us with data this year. The MIB was established in 1946 to compensate the victims of negligent uninsured and untraced motorists. Every Insurer which underwrites compulsory motor insurance is obliged to be a member of MIB and to contribute to its funding.

We have chosen to show the results of the MIB experience separately as, as the MIB covers uninsured or untraced motorists, we thought their profile of claims may be different to the rest of the motor insurance industry. Whilst there are some significant differences, most notably in the propensity rate and the size of lump sums, the following results show that in many cases the profile of PPOs for the MIB is actually quite similar to that of the rest of the industry.

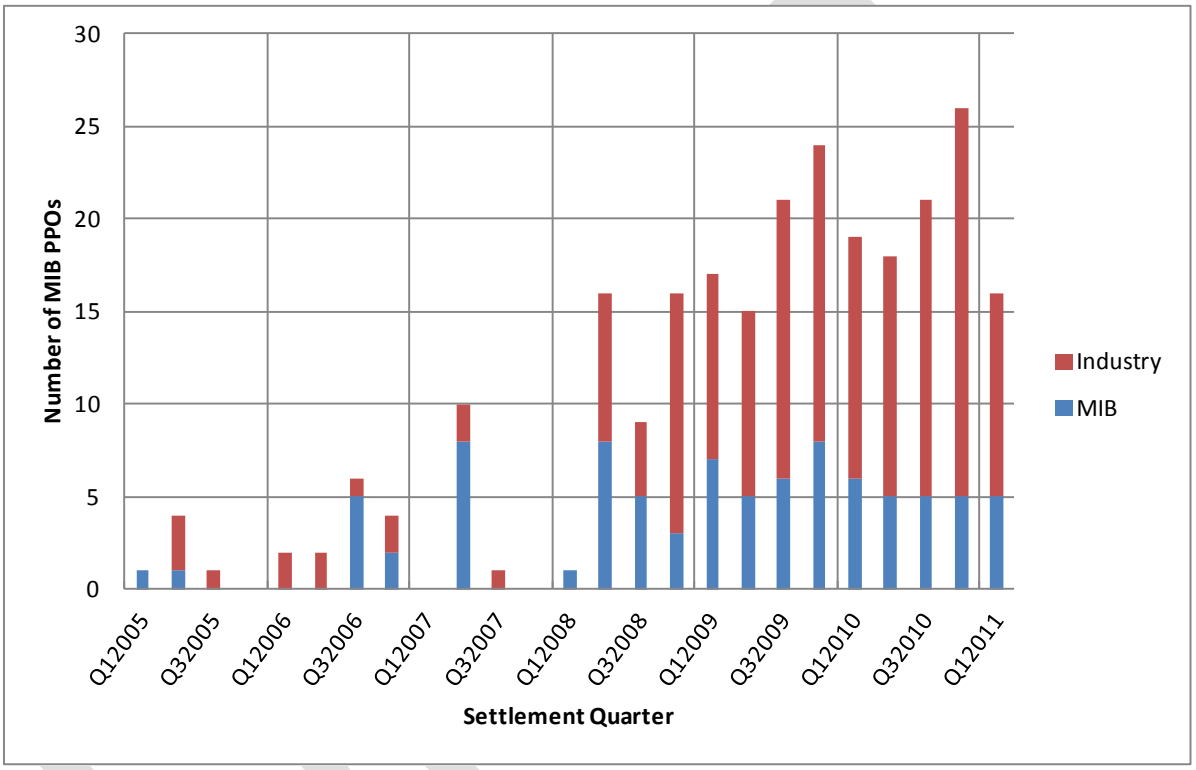
Some of the fields requested, such as nature of injury and driver details, were not readily available and so were not provided for this review.

Number of PPOs by settlement quarter



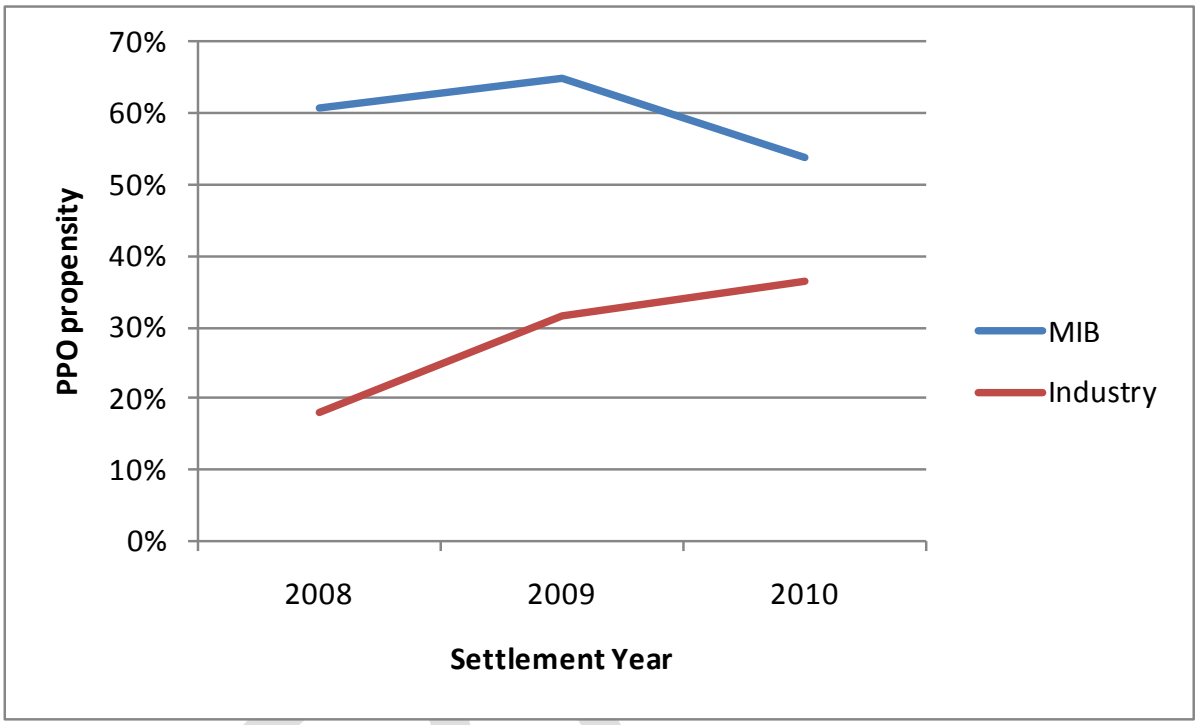
One of the fields that was not provided was settlement date. However we did have the date of the first PPO payment and we have used this as a proxy for settlement date, assuming the settlement would have been on average 3 months earlier than the first payment (based on analysis of the industry data). The following graph shows the number of PPOs by settlement quarter again but this time with the industry numbers overlaid.

It can be seen that the MIB started settling a reasonable number of claims as PPOs from 2006, two years before the motor insurance industry did. It is also interesting to note that the number of MIB PPOs settling has remained relatively constant since 2008, whereas there has been much more of a increase in the numbers settling in the industry. In addition there are possibly some seasonal effects apparent in the industry numbers which are not evident in the MIB figures.



Propensity

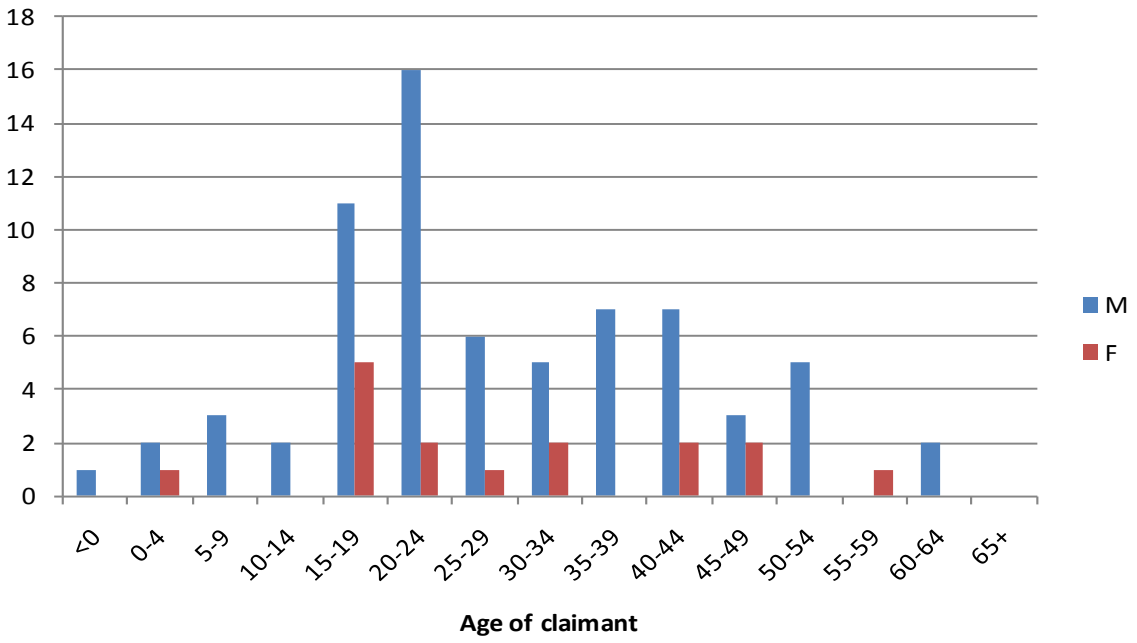
The following graph shows the propensity of PPOs as measured by the number of PPOs divided by the number of large claims (>£1 million) settled in a year. The propensity for PPOs is significantly higher for the MIB than for the motor insurance industry, however, with the increasing trend of the propensity of PPOs in the market set against a slight reduction in the number of PPOs settled by the MIB in 2010, this gap may be reducing.



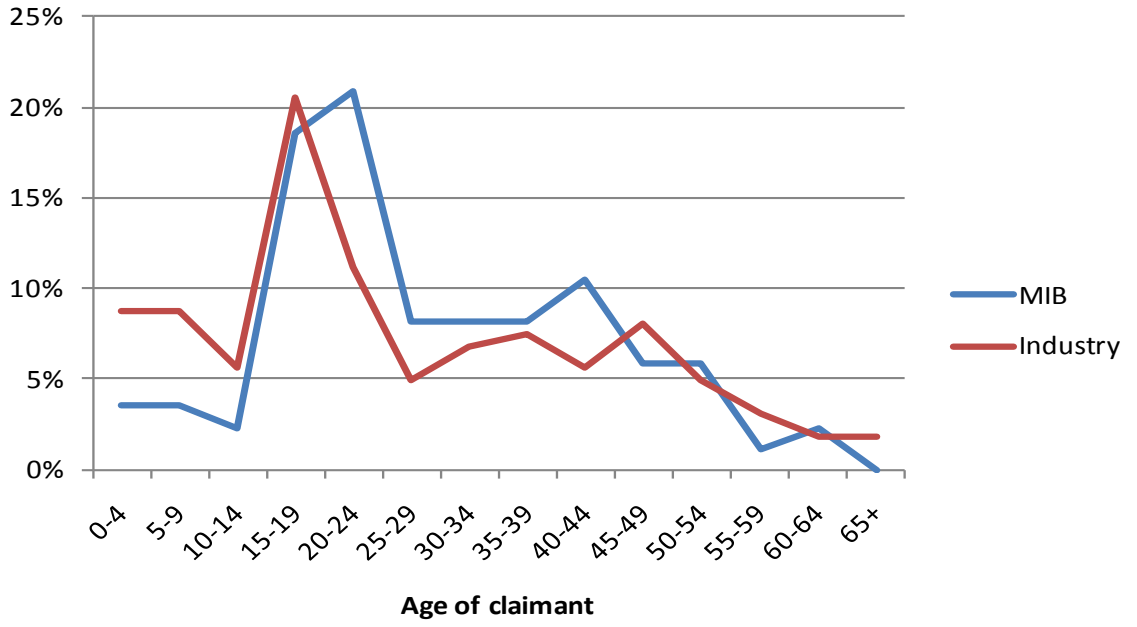
ASHE

Akin to the industry experience all PPOs prior to Thompstone v Tameside were settled using RPI as the index, whereas since then almost all have been settled using ASHE.

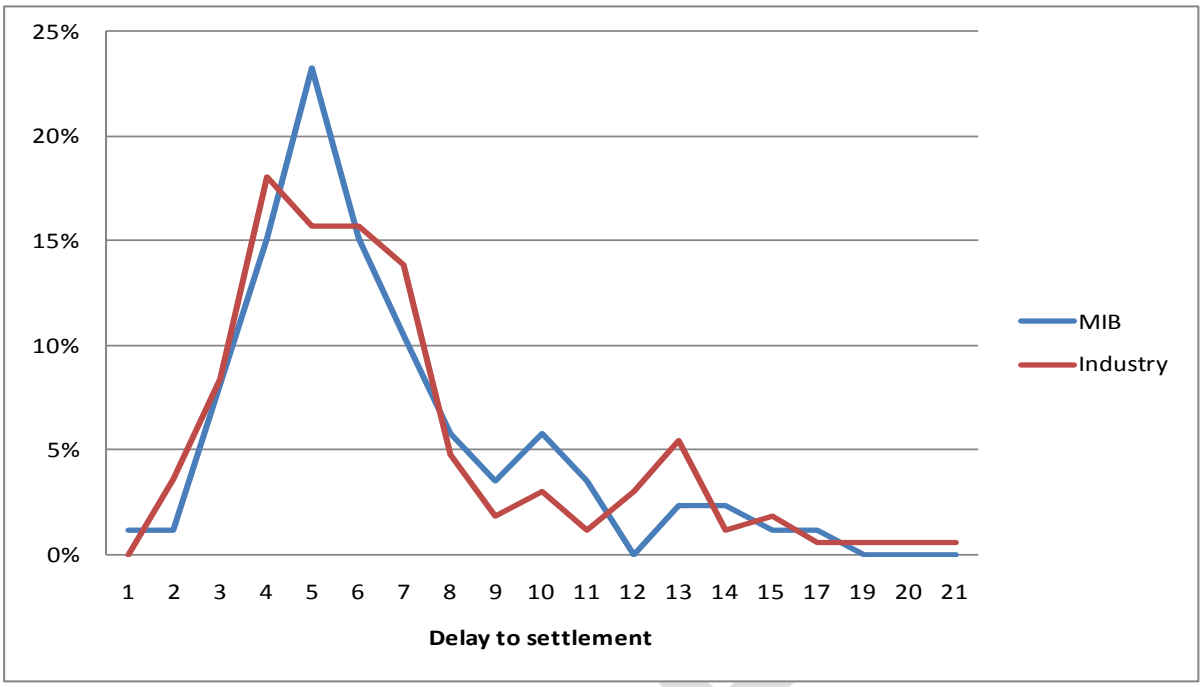
Age of claimant at the time of the accident



This is similar to the age profile of claimants seen in the market with a higher propensity of young drivers. However, there appear to be a lower proportion of claimants who are minors in the MIB figures.



Distribution of delay to settlement

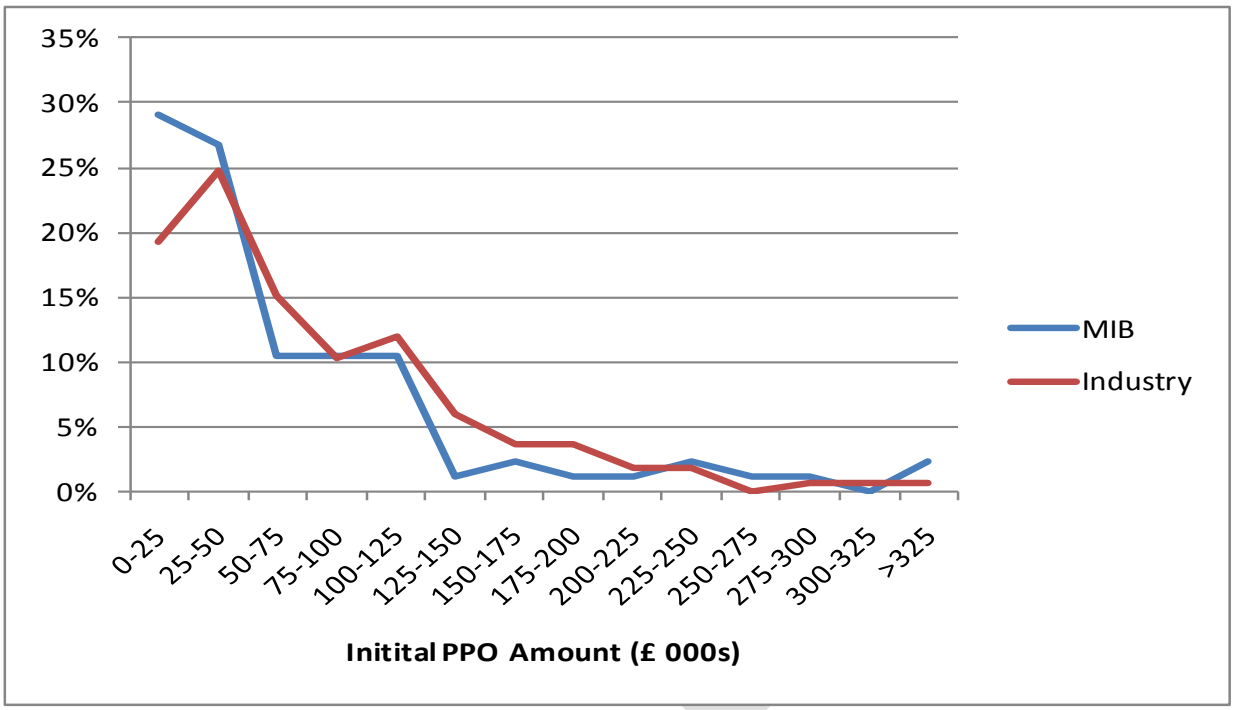


As discussed above the settlement date was not provided, we estimated its value based on the initial payment date.

Age of claimant at the time of settlement

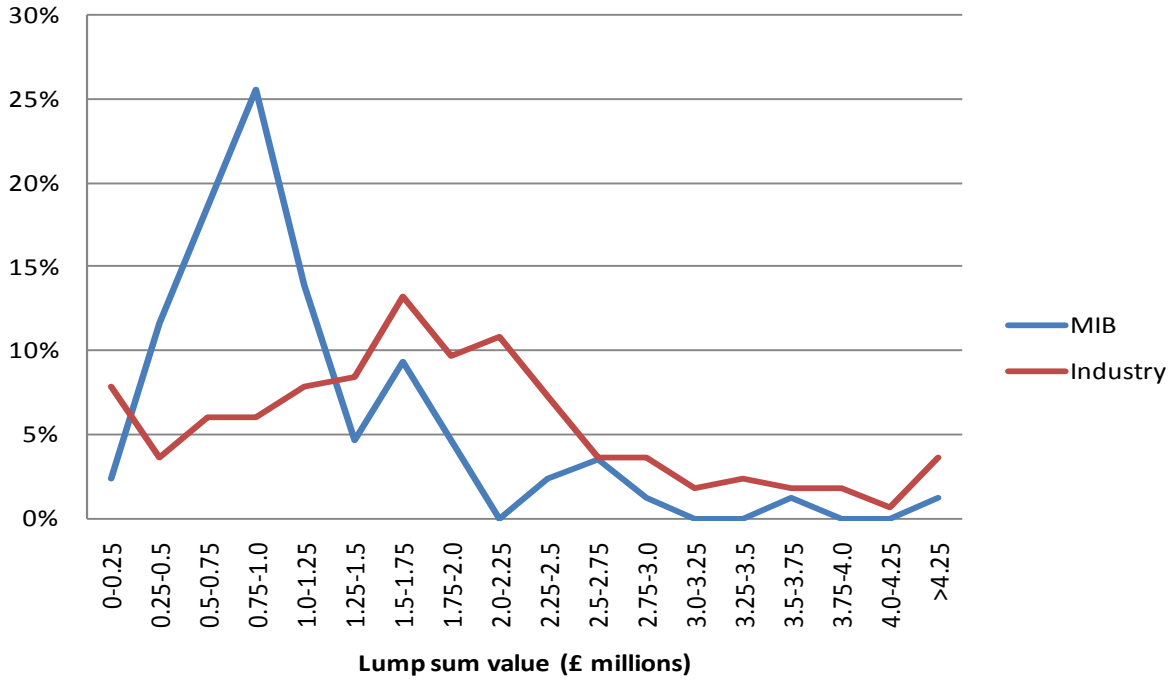
Whereas the industry has a spike of settlements in the 20-24 age band, this is not so apparent in the MIB data. This is possibly as a consequence of the lower proportion of claimants who are minors in the MIB data.

Distribution of initial PPO payments



The distribution of the PPO regular payment amount is broadly similar between the MIB and the motor insurance industry. However, it does appear that the MIB has a larger proportion of the smallest PPO payments less than £25,000.

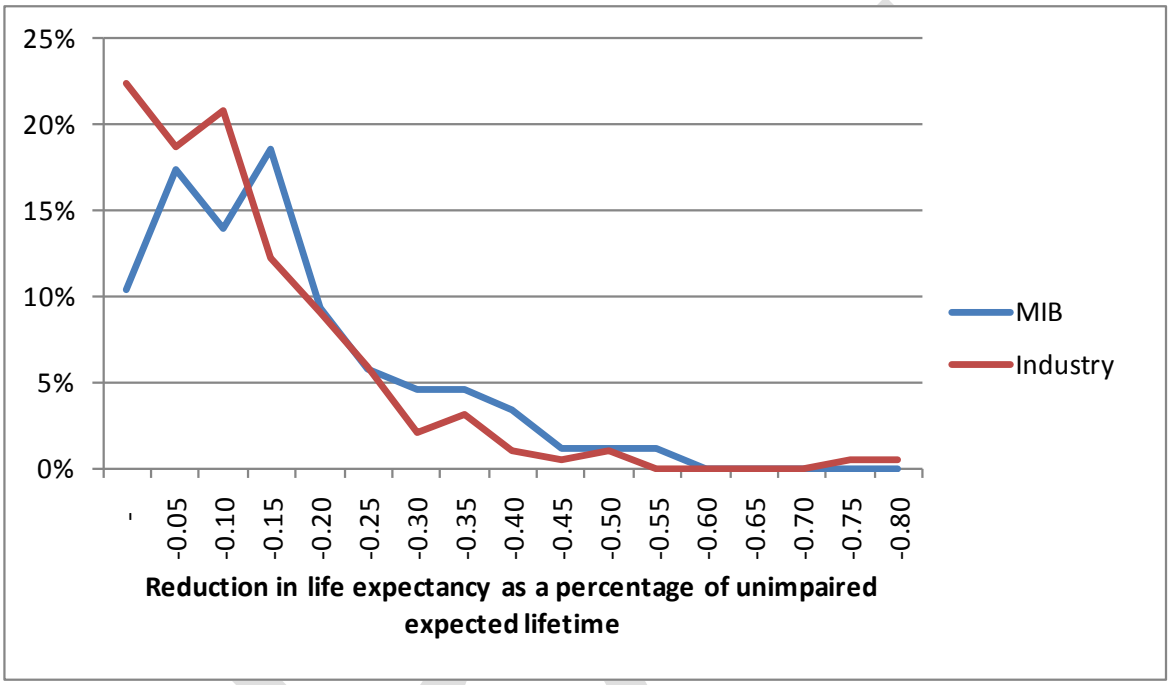
Distribution of lump sums



The MIB lump sums awarded with PPOs appear to be significantly smaller than those in the wider industry.

Life expectancy

Comparison of the distributions of the reduction in life expectancy in suggests that MIB life expectancies are slightly more impaired (or recorded as being more impaired) than life expectancies for the rest of the motor insurance industry.



2.7 Qualitative Survey

Are you more or less concerned with PPOs than you were this time last year?

Most insurers stated that there was no change in their level of concern from last year. Three were more concerned; two as they had started seeing more PPOs coming through and one due to the uncertainty of the discount rate.

Insurer's attitudes to PPOs vary significantly; at one extreme with at least one insurer actively trying to minimise the number they settle, to another who is already very comfortable with similar annuity like liabilities in other areas of its business.

Do you monitor open claims and assess the possibility/probability of them becoming PPOs?

All insurers said they did monitor open claims to assess the possibility of them becoming PPOs. There was just one exception to this who said they used to do this but have since analysed the experience and found the process not to be very predictive.

How is this done?

Most insurers use their claims team to assess whether a claim will become a PPO. This is done in a variety of ways:

- flag on the database to notify a potential PPO
- claims team notify the actuaries as soon as they identify a potential PPO claim
- the claims team undertakes periodical reviews.

Some insurers flag claims as likely PPOs, others put on a probability of it turning into a PPO.

One insurer said they look in great detail at individual claims to judge whether they may opt for a PPO structure, for example by looking at the family circumstances of the claimant.

Are reserves held for individual claims?

Universally yes, though one insurer did say that the reserves were set by the claims team rather than the actuaries on a basis more akin to an Ogden lump sum value.

The majority of respondents use a net present value of cashflows approach, though one insurer takes a more simplistic approach of multiplying life expectancy by the PPO amount, indexed for ASHE.

It was not completely clear from the responses this year as to whether most insurers are still using an annuity certain approach. There is an argument that a probability weighted approach to mortality should be applied, especially as these claims are now starting to age (if a claimant has already survived for one or more years, then their life expectancy will have increased). In addition, what happens once a claimant exceeds their original estimate of life expectancy? It is not clear that the industry has yet moved to this approach, though one insurer does employ a life actuarial consultant to advise on the mortality element of the reserve.

Are reserves held for future PPOs?

Most say yes. Only one insurer does not and another holds an aggregate reserve for PPOs which was set up at the time legislation for structured settlements first came in.

How are reserves determined for future PPOs?

As in the survey last year this is the area in which practice varied most widely between insurers. We have attempted to summarise the different approaches taken below:

- Uplift factor from Ogden to PPO used by many insurers for specific claims that have been flagged as potential PPOs or assigned a probability for becoming a PPO.
  - One used this approach but rather than applying a specific uplift used the Ogden value but with a lower discount rate to the standard 2.5% Ogden rate.
  - One insurer calculates different uplifts according to specific claim size bands.
- Using the analysis of potential PPO claims, a NPV of cashflows is then calculated for each potential claim using specific mortality, investment return and earnings inflation assumptions.

Most insurers did not specifically mention an allowance for IBNR PPOs. Those that did used the following approaches:

- An allowance in the projected claims ratio.
- One produces development triangles based on past notifications of potential PPOs to derive an ultimate number of PPOs for each accident year, which implicitly includes IBNR PPOs.

A couple of insurer's commented that not all the potential PPOs that have been recognised as such will end up as PPOs so they adjust their overall estimates to take account of this.

One insurer specifically pointed out the need for additional discounting to reflect that the future PPOs have not been settled and so have not commenced their regular payments yet.

One insurer (gratifyingly!) specifically mentioned that they use the industry benchmarks from this survey to inform their assumptions.

Most insurers did not disclose the assumptions they are currently using as part of this survey. However it appears that there is no consensus across the industry as to what these assumptions should be. In particular different insurers appear to be using different discount rates. This alone means that it is becoming increasingly difficult to compare overall motor reserves (and hence results) between insurers.

2.8 Summary Statistics

Motor PPOs

	Mean	Median	Standard Deviation	Sample Size
Age at settlement	34	29	17	166
Delay until settlement	7	6	4	166
Future life expectancy at settlement	41	44	18	166
Life expectancy reduction	(10)	(8)	9	166
Annual PPO payment	78,849	52,905	64,240	166
Lump sum	1,966,473	1,735,572	1,659,852	158

Liability PPOs

	Mean	Median	Standard Deviation	Sample Size
Age at settlement	44	44	19	21
Delay until settlement	10	4	23	21
Future life expectancy at settlement	26	25	15	21
Life expectancy reduction	(14)	(8)	18	21
Annual PPO payment	79,596	55,000	71,457	21
Lump sum	1,286,757	1,100,000	750,022	21

MIB PPOs

	Mean	Median	Standard Deviation	Sample Size
Age at Settlement	35	33	13	86
Delay Until Settlement	6	6	3	86
Life Expectancy	38	39	16	86
Life Expectancy Reduction	(12)	(11)	11	86
Annual PPO Payment	75,878	43,480	97,729	86
Lump Sum	1,118,384	887,500	890,805	86

3.0 Best Estimate Reserving

Under Solvency II, PPOs are to be valued and reported as "Annuities stemming from non-life contracts", so existing annuities are classed as a life insurance obligation whilst future annuities are valued using non-life techniques (as the main uncertainty is around the value of the annual payment)[1].

Clearly there needs to be an allowance for uncertainty in the type of settlement; at one extreme, a claim may be settled as a traditional lump sum; at the other, a claim may be settled as a PPO. Before settlement, most claims will be expected to fall somewhere on this spectrum, and the reserve set may simply be a weighted average of these two extremes. The remainder of this section considers the approaches non-life insurers can take when valuing settled annuities, which is one of these extremes.

One option for valuing PPOs is to include an explicit allowance for agreed annuities as a single lump sum in the run-off triangle, this "equivalent" lump sum payment will mean that the development paterns in the reserve triangle will remain appropriate. The approach risks underestimating the significance of PPO liabilities as there will be few of them in the historical run-off data. Also if the assumptions that underpin the estimate lump sum do not hold out then an accounting adjustment will need to be made to the P&L, clearly as well as recognising the profit or loss within the accounts, it will also need to be feed back into the pricing process.

Another option available to a non-life insurer are either to treat liabilities as a separate calculation or loading for the PPOs, we consider the explicit calculation of PPO liabilities below. Essentially this requires them to be valued as life annuity contracts.

Non-life insurers have three general options:

– Use a standard life insurance valuation platform to model the PPOs – e.g. if they already have a life insurance business, which writes annuities.

– Use a spreadsheet model with or without proprietary functionality to model the PPOs.

– Use the Ogden tables in conjunction with appropriate assumptions.

1 http://ec.europa.eu/internal_market/insurance/docs/solvency/qis5/201007/technical_specifications_en.pdf **TP 1.24**

3.1 Valuing annuities using life techniques

For statutory reporting, life insurance is based on a three pillar approach:

- Pillar 1 is used for statutory reserving. UK insurance firms calculate either regulatory reserves (Peak 1) only, or both regulatory and realistic reserves (Peak 2) (dependent on the type of business sold (non-profit/with-profit) and the value of the with-profit liabilities.
- Pillar 2 includes the Individual Capital Assessment (ICA). The ICA is a company specific risk based capital analysis, which usually included correspondence between FSA and company as to how much capital the company as a minimum need to hold. It is not publicly disclosed.
- Pillar 3 covers disclosures.

We note that the QIS5 requirements for annuities arising from non-life contracts will be the same as for annuity business. Life insurers would probably use their existing internal models to value PPO annuities, and also to obtain the capital requirements, which is done by changing the stresses per their existing annuity business. Therefore we provide details of the various valuation bases below.

We do not expect the Realistic basis to be relevant for PPOs. This is the Realistic basis is applied on with-profits policies. We would not expect PPOs to arise from with-profit contracts, as PPOs would arise from non-life contracts, which would not be with-profits themselves.

	QIS5	**Regulatory (Pillar 1 Peak 1)**	**Realistic (Pillar 1 Peak 2)**	**ICA (Pillar 2)**
Liabilities – basis	Best estimate	Prudent basis (which will include margins)	Best Estimate	Best Estimate
Discount rate used for calculating liabilities	Risk-free rate plus illiquidity premium		Risk-free rate	Risk-free rate
Margins	Risk margin (6% cost of capital)	Maximum reinvestment rate[2] is 97.5% of the value as prescribed under INSPRU 3.1.45.	None	None

3.2 Valuing annuities for non-life insurers

Non-life insurers without a model for valuing annuities themselves would need to find a method of valuing these. It is likely that insurers would adopt a spreadsheet model (or use Ogden tables for simple [non-stepped] annuities) to value these, with the following factors varying for each PPO:

- Type of injury and hence mortality

[2] http://fsahandbook.info/FSA/html/handbook/INSPRU (INSPRU 3.1.28, INSPRU 3.1.45)

- Annuity amount
- Level of indexation

We would expect such a spreadsheet to value the annuity by projecting the cashflows forward using the indexation rate and then discounting it back to obtain the present value. This can be done either explicitly or with the assistance of additional functionality such as custom functions or add-ins. The low numbers of PPOs that currently exist make this method practical for many insurers.

The assumptions used to calculate such a value are covered in Section 6 of the previous working party paper, which can be found at: http://www.actuaries.org.uk/sites/all/files/documents/pdf/plenary-4-paper.pdf . The main difference between PPOs and life annuities is that there is the possibility of a step increase in the periodical payment such as in the case of a variation order for a worsening condition. This is also covered in the link above. The use of impaired mortality for this calculation is discussed in Section 7 of the same paper.

4.0 Solvency Capital Required

The value of the Solvency Capital Requirement is obtained by a series of sensitivities, assessing their relevant impact on the value of each PPO. This could be done using a spreadsheet or more complex life office packages.

For non-life insurers with small books of business and no associated life insurer, it is likely that utilising an internal model for their PPOs would not be worthwhile. Instead a standard formula approach may be justified. The QIS5 basis currently represents a view of the possible standard formula.

QIS5	**Regulatory (Pillar 1 Peak 1)**	**Realistic (Pillar 1 Peak 2)**	**ICA (Pillar 2)**
Solvency Capital Requirement Comprised of the Basic Solvency Capital Requirement, a capital requirement for Operational Risk and an adjustment for the risk-absorbing effect of technical	For Regulatory firms Minimum Capital Requirement(MCR) comprises of the LTICR (Long-Term Insurance Capital Requirement) and the RCR (Resilience Capital Requirement) LTICR[3]	For Realistic firms the Risk Capital Margin (RCM) represents the capital requirement. The stresses for calculating this are per INSPRU 1.3.43.	For the ICA, a firm would analyse and identify the risks most relevant to them e.g. Market risk Credit risk Insurance (i.e. mortality, persistency, expense)

[3] http://fsahandbook.info/FSA/html/handbook/INSPRU (INSPRU 1.1.80-1.1.91)

provisions and deferred taxes. The Basic Solvency Capital Requirement comprises of a number of stresses (e.g. Market risk and Life underwriting risk). The most important stress for annuities will be the spread risk.	Prescribed margin of solvency (approximately 4% of reserves + 0.3% of long-term business reserves) RCR[4] Cushion against set stresses on market risk (e.g. equity, property, bonds)		Operational risk Others The stresses used would be appropriate to the company, and also consider the relevant correlations between the risks. Capital resources should be consistent with a 99.5% confidence level over a one year timeframe that the value of assets exceeds the value of liabilities.

[4] http://fsahandbook.info/FSA/html/handbook/INSPRU (INSPRU 3.1.9-3.1.26)

The stresses required can be seen in the section below.

4.1 Stresses used – Pillar 1 Peak 1

RCR

Equity: 10-25% fall in assets (depending on current to 90-day average FTSE All Share level, and earnings yield of FTSE All Share after fall equal to $^{4}/_{3}$rds long-term gilt yield – assume Divided yield unchanged, and earnings yield falls by 10%)

Property: 10-20% fall (depending on current to 3 -year average property index level, running yield assumed to fall by 10%)

Fixed interest: 20% rise or fall in long-term gilt yield

LTICR

Market Risk: 3% mathematical reserves where firm bears some investment risk, reduced by up to 15% for reinsurance

Insurance risk (Expense): 1% of mathematical reserves where firm bears some investment risk, reduced by up to 15% for reinsurance. Or 25% previous year's net administration expenses where firm bears no investment risk

Insurance risk (Mortality): 0.3% aggregate capital at risk reduced by up to 50% for reinsurance

4.2 Stresses – Pillar 1 Peak 2

Equity: +/- 10-20% (depending on current to 90-day average FTSE level)

Property: +/- 12.5%

Fixed interest yields: +/- 17.5%

Credit stress

Surrender rates: +/- 32.5%

4.3 Stresses – QIS5

Market risk

Interest rate – alter term structure up and down. Relative change depends on maturity

Equity – effect of global equity shock of 39% and other equity shock of 49%, with correlation of 0.75 between global and other

Property – 25% decrease in property values

Spread – applying a spread risk factor to bonds and other securities

Currency– upwards and downwards movement of 25% of each currency against local currency (exclusions for currencies pegged against the euro)

Concentration – applying various concentration factors

Illiquidity – 65% fall in value of illiquidity premium observed in the financial markets

Life underwriting

Mortality – 15% increase in mortality for all ages on policies where payment is contingent on mortality risk

Longevity – 20% decrease in mortality for all ages on policies where payment is contingent on mortality risk

Disability/Morbidity – 35% increase in disability rates for the next year, plus 25% increase (over best estimate) in disability rates at each age in following years, plus, where applicable, 20% decrease in morbidity/disability recovery rates, on policies where payment is contingent on disability risk.

Lapse – 50% decrease in assumed option take-up rates for all policies without a positive surrender strain or otherwise adversely affected by such risk. The reduction is limited to 20% in absolute terms.

Expenses – 10% increase in expenses (compared to best estimate) and 1% p.a. increase in expense inflation (compared to expected)

Revision - 3% increase in the annual amount payable for annuities exposed to revision risk. The impact should be assessed considering the remaining run-off period of the annuities.

CAT - Absolute increase in the rate of policyholders dying over the following year of 1.5 per mille (only applicable to policies which are contingent on mortality)

Therefore, as mentioned above, we would expect life insurers to re-run their internal model, applying the QIS5 stresses, in order to obtain their Solvency Capital Requirement.

5.0 Mitigation Options for Underwriting Stop Losses and other aggregate reinsurance

5.1 Background

The 2010 paper dealt with the methodology to calculate a price for per event excess of loss in some detail. In this paper we discuss some separate issues that need to be considered for setting a price for aggregate non-proportional reinsurance such as stop loss or adverse development (ADC) contract, as well as how PPO experience should be reflected in determining the most appropriate Lloyd's reinsurance to close (RITC) level.

The critical difference these aggregate covers have from per event XL reinsurance as far as PPOs are concerned is that they are generally unindexed. So a portfolio behaving exactly as expected may trigger a recovery when none was previously expected as a result of the PPO being paid as an indexed notional regular payment rather than a discounted lump sum. It is obvious and has been shown elsewhere that the size of the nominal payment of an undiscounted PPO over that of a lump sum is considerable. Consequently a year that exhibits the exact distribution of claim types expected could trigger a recovery due to the unwind of the discount. It is worth reminding ourselves that as a PPO will only be paid over a long time period, the discounted value of the extra cost will be considerably smaller than the nominal value.

Pricing a stop loss or other aggregate cover involves assessing the cost of likely PPO awards on the subject portfolio (after any inuring reinsurance), either to include the cost of PPO or to assess the level of discount of any mitigation, including one or more of the measures discussed below. The paper last year discussed factors for pricing XL reinsurance: the same factors apply for pricing aggregate covers too. However, in addition consideration needs to be given to the effect of PPOs on attritional losses (i.e. those below some large loss threshold) including there being reduced attritional loss experience due to claim severity increasing due to PPO awards – claim that would have settled below the large loss threshold now settle above the threshold and are therefore no longer assessed as attritional.

5.2 How to mitigate the risk – reinsurer reduces exposure to risk

Apply indexation of the limits

How: Increase limits at which recoveries can be made in line with an appropriate index e.g. healthcare or earnings inflation

Pros: Intends to create a more equitable split of the inflation risk between the insurer and reinsurer. With un-indexed limits a greater proportion of the risk is passed to the reinsurer. If the limits are indexed then the sharing of the risk is more equally spread between the two parties. This would also have the benefit to the reinsurer of increasing the nominal losses that need to be paid before the experience triggers a recovery. Consequently the impact of PPOs to the policy is reduced.

Cons: The method of indexation becomes a consideration, particularly whether the indexation of the limits is a correct reflection of the inflation risk to the treaty, and in turn, whether the inflation applying to the treaty as a whole is similar to the inflation applying to PPOs. The calculations are computationally complex and require clarity of wording whether the indexation is applied to the net experience of the portfolio before or after any insuring XL reinsurance.

Include a commutation clause

How: Estimate the lump sum needed to fully settle liabilities arising from the contract, using a methodology specified by the contract. There would need to be agreement on the terms of the commutation clause, including discount rate and mortality etc.

Pros: As there are few PPOs in the history of many cedants, the historic loss ratios achieved would not reflect the expected result in the current environment. This is because all large losses would have been settled as a lump sum, in effect a discounted PPO. Hence by including a commutation clause (which is likely to be popular with reinsurers) that specifies the contribution of PPOs as some defined present value, then the historical experience of the portfolio to be covered would be more appropriate to price the cover with. This option would have the effect of smoothing the P&L, and reducing volatility in the balance sheet.

Cons: There would be a residual basis risk if the commutation clause does not use the same assumptions for calculating the present value than apply in the setting of the lump sum amount. They may not be appropriate if PPOs present a significant proportion of a companies risk, e.g. monoline motor insurers.

Require that the cedant buy a low level of excess of loss coverage

How: Specify a level of excess of loss to cushion against slightly worse than expected experience. The indexation of the deductible is reduced where the attachment point is below the level of the lump sum element of a claim, say. The XL reinsurance can be deemed in force, i.e. the lower retention is applied to the portfolio regardless of whether the cedant actually buys the lower layer. In addition, the cedant would carry any credit risk of the XL coverage if it is deemed in force. By deeming the XL coverage in force, the cedant is then free to take into account the availability and cost of the low level cover rather than be forced into a potentially uneconomic purchase.

Pros: Where the level of excess of loss coverage is low, then the net retained amount of the loss would be reduced. As the deductible increases over time with inflation there would be a minimal residual PPO risk.

Cons: Unlikely to offer the actual level of insurance risk protection that the insurer requires, as well as introducing additional credit risk. Cover may well be expensive.

5.3 How to mitigate the risk – cedant retains more risk

Exclude losses by Type

How: The contract could specify that no paraplegics, tetraplegic, severe back injuries leading to paralysis, head injuries or other types of loss that it is deemed could result in a PPO are covered in the treaty.

Pros: Attempts to remove all PPOs from the contract; effectiveness depends on whether the wording can completely exclude all types of losses that would be expected to cause PPOs from the treaty. Less admin as don't need to calculate and agree size of loss with insured. Less uncertainty in relation to severity of losses.

Cons: Residual risk that the wording is not watertight and does not do what it is intended, which could lead to lengthy and expensive legal processes to determine the correct application of the wording; also there may be a type of claim that is not expected to give rise to a PPO and which does so, causing a recovery on the treaty. Whether this approach could be adopted depends on the risk appetite of the cedant: although the aggregate cover would no longer cover the portfolio in its entirety, it would still substantially reduce the volatility of the cedant's retained portfolio. Whilst there would be less protection for the cedant, this could be mitigated by purchasing additional sideways reinsurance, for example.

Exclude losses by size of loss

How: This requires an assumption that no losses below a certain size would give rise to a PPO. This might be, say, £500k, £1m or £2m. A slightly alternative approach would be to only exclude the portion of the loss above the threshold.

Pros: Similar to previous option and less susceptible to loose contract wording.

Cons: This is similar to above but will not give protection against large property type claims (Selby, Channel Tunnel), and thus gives little "real" protection (or capital benefit) and hence is unlikely to be practical. Another practical difficulty with this method is that it would need a definition of how to calculate the loss, probably on a discounted basis, which would require assumptions such as discount rate, mortality, future inflation. The use of assumptions that turn out to be wrong or possibly inappropriate could lead to losses on claims that give rise to a PPO. Alternatively the use of an undiscounted threshold could result in a loss triggering a recovery which then is returned as the loss exceeds the threshold, however this would require the aggregation of other losses to be very near or over the excess of the cover.

Exclude PPOs altogether

How: Explicitly exclude recoveries on claims settled as PPOs in the contract.

Pros: Clearly this would eliminate all PPO risk from the treaty. Taken blindly this would mean that the price would be cheaper, as fewer claims would be ceded to the treaty.

Cons: The extent of reduction in the price would be determined by whether the reinsurer feels that the terms of the treaty affect the behaviour of the cedant. If the reinsurer feels that the cedant will not change the settlement behaviour then the reduction will be greatest. If the reinsurer is concerned that the cedant may settle fewer claims as a PPO than would normally be the case then the benefit would

be reduced, As the reinsurer is exposure to significantly potential selection, this option is unlikely to be practical.

6.0 Industry Pools: what one might look like and how might it work

6.1 Why an industry pool might be seen as a good idea

For most UK insurers (and by extension reinsurers), the prospect of a contingent liability creating an uncertain regular payment for decades in the future is outside their comfort zone. It is not the contingent liability as such that is at issue: facing the settlement of a large motor liability claim some years after the event is a part of normal business. The discomfort is because of the significant additional duration of claim payments and the funding and administering ongoing payments of uncertain duration and amount.

Transferring a PPO to a third party administrator (TPA) does not eliminate the costs and capital associated with a PPO; but it does enable savings due to benefits of scale to be realised on claims management, administration and capital. For example, the insurer and reinsurance broker are no longer dealing with the reinsurance panel for each PPO payment.

The prospect of an industry pool taking over the administration, funding and payment of a PPO would be attractive to create finality for insurers and reinsurers in the event of such an award. For smaller insurers, this would be especially attractive as the implications in terms of management time, expenses, capital and lack of expertise are relatively greater.

The requirement for finality means the industry pool is not a pure mutual between the market participants since such a mutual would just smooth the ongoing funding and payments by aggregating lots of similar claims rather than eliminate them from the balance sheets entirely. Although reducing uncertainty is a positive effect, this does not appear to be sufficient to create the momentum in the market for a mutual. Another downside to a mutual is that an insurers' underwriting strategy would be less workable (for example, insurers who avoid younger drivers would find the exposure coming at them via the back door).

An industry pool could operate on a before or after the event basis. After the event (ATE) would involve the insurer paying a lump sum to the pool who would then administer and pay the PPO to the claimant. The before the event (BTE) version would involve the insurer paying a levy, such as a set percentage of gross earned premium to the pool, who would be responsible for administering and settling PPO claims from the levy.

Under BTE, the pool would likely have to settle, administer and pay all large bodily injury claims that could be PPO as otherwise the insurer would be able to select against the pool by trying to settle all large bodily injury claims as PPOs. For example, the pool would be responsible for all claims arising from cost of care in case of permanent brain and spinal injuries. This would severely reduce the cost of reinsurance although not entirely negate the need for reinsurance for small and medium-sized insurers who would remain responsible for other heads of damage including loss of earnings, pain and suffering, and physical damage. It can be assumed that costs can be apportioned.

An industry pool would do more than provide just expertise and administration to insurers, instead the expertise would be in-house in the industry pool. In fact, the "industry pool" could be simply a dedicated offshoot of a life insurer or reinsurer.

An industry pool can be self-financing on cash flow as it will be entirely cash flow positive for several years at least (assuming the rate of PPO awards does not suddenly drop). In theory, the pool could seek

to invest for a greater return, accepting the increased asset risk, and to better match asset durations to liability durations given a large portfolio of PPO claims.

There are benefits for PPO claimants as the body will stand between them and the insurance entity – this may be a relief to claimants who would be unlikely to want to carry on dealing with the insurer if the claim process has been difficult. An independent body would be more likely to handle the PPO payments more efficiently than a small insurer who has little or no expertise in the matter.

An industry pool would also be suitable for dealing with PPOs arising from claims involving uninsured drivers as insurers already pay levies to the MIB for this purpose.

6.2 Why an industry pool might be seen as a bad idea

Any new body such as a PPO industry pool will need a lot of set-up: new systems, new people, authorisation, publicity, etc. This barrier is unlikely to be overcome without sponsorship (for example to provide expertise and to pay for pre-start-up costs) by a major insurer, reinsurer or trade body.

There needs to be a critical mass of PPO awards for the pool to be viable: too few and the benefits of scale will not be realised. Note that critical mass here refers to those claims offered to the pool: without compulsion for all market participants to use the industry pool it is likely that there will be many claims that will be retained by the larger market participants as they will be of sufficient size to realise the benefits of scale for themselves.

Equally, if PPOs become very widespread, perhaps even near-universal for large bodily injury claims, then the need for an industry pool will be less: each insurer will soon become an expert in PPOs and will be able to realise at least some of the economies of scale.

There are many as-yet-untested legal questions. For example, what would happen if the pool fails, or closes to new "business"? Would claims in payment be covered by the FSCS? Potentially not as the FSCS currently only covers claims where the original insurer is no longer trading. In order to achieve finality on a PPO claim for an insurer, the pool will have to be seen as legally binding with no possible recourse to the original insurer in the event of the industry pool failing. Without identifying and addressing the legal questions, it is unlikely that an industry pool would be seen as feasible.

If the pool were covered by the FSCS, there may be resistance from non-pool members. If the pool failed and the FSCS stepped in, non-pool members would be paying twice for claims: their own and the pool (via the FSCS levy). It may be that pool members would be required to pay an increased FSCS levy, or for the pool to have a higher capitalisation – or other protection such as high level aggregate cover – but this might make pool membership prohibitively expensive.

Alternatively, if the remit for FSCS was not going to change so as to include pooled claims, it is probable that any regulator would require a much higher level of capital to be essentially "fail-safe", thereby increasing the price to (re)insurers.

There are other industry pools in existence, of course, in diverse fields such as terrorism (Pool Re) and marine liability (International Group of P&I clubs) to name just two, which shows pooling can work in an insurance context with willing market participants and, in some cases, government backing. But these are insurance pooling schemes whereas under discussion here is pooling for "after-the-event" claims. It

can be assumed that the transfer of a claim to a pool falls into the same category as (say) purchasing a life annuity product to buy out a pension liability and therefore some degree of finality can be achieved.

Agreeing a price for all insurers and reinsurers involved in a PPO claim to pay to the pool is likely a matter for commercial agreement. Different parties will have a different opinion on the risks and their share of the loss amount (for example, how much to allow for the effect of indexation), which may create difficulties in agreeing a fair distribution of the cost of transferring a claim to a pool, or even in agreeing the total cost of such a claim.

The impact on each party will vary in terms of capital requirements too: a large, well-diversified reinsurer will have a very different perception of capital than a smaller, mono-line insurer and will therefore be prepared to pay less to transfer the risk away.

The concentration of market risk in one entity means that the pool capitalisation might be set higher leading to higher entry prices for members. This is in contrast to spreading the risk among several market participants, who would have a greater variety of claims and asset backing. The pool would still benefit from diversification among claims, but cannot escape undiversifiable (systematic) insurance risk such as claims inflation, improvements in mortality and uncertainty in impaired lives mortality.

6.3 How the stakeholders might view an industry pool

Claimant (and their dependents & case solicitors)

Pros: removes the insurer from the ongoing payment, so removes a potential source of conflict; potentially less credit risk (although FSCS is a likely back-stop either way); more likely to be dealing with an expert organisation and therefore better service; industry pool may raise awareness of PPOs, so making them more likely to be accepted and therefore better targeting of claim awards to claimants' needs

Cons: what if a PPO is subject to a variation order? Who pays if a PPO is increased and a pool fails? Could it mean a claimant is left in limbo?

Policyholder

Pros: depends on the extent to which premium rates are likely to reduce based on greater transparency and certainty in the market; maintains competition in the market as small, mono-line insurers will be on an even footing with larger groups

Cons: more complex marketplace to understand; cost of transferring a claim to the pool may be prohibitively high (although the transfer deal would presumably then not be agreed, so no change)

Insurer

Pros: finality; can focus on core business issues; reduced administration expenses; reduced capital requirement

Cons: potentially expensive given the cost will also have to provide cost of capital to pool too, although if the cost is too high then presumably the claim will not be transferred; major cash outlay when could invest the reserve to hopefully improve returns; may still be exposed to variation orders

Reinsurer

Pros: similar to insurer – finality, cost savings and capital savings

Cons: similar to insurer – possibly expensive major cash outlay; reinsurers will already benefit from diversification of claims as they are exposed to their own share of all cedants' claims and this is limited by indexation clauses where applicable; cost may be disproportionate because the increase in cost of claims will more likely fall to reinsurers. BTE version would reduce the size of the first-tier reinsurance market and therefore potential profit potential, although need for retrocession would diminish.

Courts

Pros: likely to be easier to make PPO awards in the knowledge that the industry has a stable solution to the credit risk that the claimant and their dependents would otherwise have to bear (although FSCS would step in), therefore better targeting of claim awards to claimants

Cons: what to do about variation orders?

Regulators (FSA/successor, Lloyd's, government) and rating agencies

Pros: insurers will have lower, more predictable capital requirements from lower operational and insurance reserve risk; more transparent, competitive market operating on level playing field

Cons: concentration of market failure risk; more complex market to supervise

7.0 Role of the Financial Services Compensation Scheme (FSCS)

The Financial Services Compensation scheme provides a fund to cover policy holders or claimants in the event of default by industry firms, subject to the scheme rules. With the additional longevity risk carried by PPO cases, the possibility of an insurance company defaulting within a PPO claim timeframe is greater and the potential reliance on the FSCS more important to ascertain.

PPO claims are covered if the company underwriting the policies against which a PPO was granted is covered by the FSCS, i.e. if the policy was bought through:

1. an FSA regulated company.
2. a Lloyds syndicate after the 1st of January 2004. Lloyds syndicate joined the FSCS on 1st of January 2004 and as such all PPO claims relating to policies arranged on or after that date would be covered.
3. Gibraltar and European Economic Area (EEA) based companies authorised to trade in the UK by the FSA.

Some PPO claims may therefore not be covered if they arise from policies sold by a Lloyds syndicate before the 1st of January 2004 or by a non FSA regulated or authorised company.