Institute and Faculty of Actuaries

GIROC UK Reserving Survey 2014

Sarah MacDonnell and Romain Labaune

December 2014

Executive Summary

Aim

A series of interviews with UK GI reserving practitioners and stakeholders were conducted between August 2013 and September 2014.

The aim of this document is to summarise the findings of those interviews and to provide a record of current UK reserving practice and the views of those involved in it. The topics covered are wide ranging so this document is intended to be used as a reference document to dip in out of, rather than something to be read from cover to cover.

Main findings

In terms of actuarial reserving methods, triangles and chain ladder and Bornhuetter Ferguson type techniques are still the methods of choice and there is very little appetite for new methodologies to be found.

On the whole there was a positive feeling about how reserving was being conducted in the UK. From what we found from speaking to executive board members, reserving actuaries were doing better than they themselves realised. In particular, the work reserving actuaries do is being fed back by senior management into strategic thinking, and communication between reserving actuaries and most areas of the business is very good on the whole. Success in improving communication is often driven by changes from senior management rather than just from the actuaries themselves.

However, there was one significant area where improvement is still needed. That is uncertainty - both in measurement and communication. Reserving actuaries are all doing this in different ways which can be confusing for stakeholders. In addition the use of percentiles, whilst popular, can have the potential to be (at worst) misleading for stakeholders where there is a mismatch between expectations and what information they provide.

There appear to have been a number of significant developments since GRIT (the General Insurance Reserving Issues Taskforce) reported back in 2006:

- Improved communication:
    - Greater engagement from senior management
    - Actuaries are embedded well within companies and management is more engaged – not least due to the rise of reserve committees within companies where representatives from all areas of the business sit down together regularly to discuss the reserves
    - More detailed and explanatory reporting
- Increased understanding at board level of actuarial techniques and models, particularly in personal lines
- The rise of diagnostics and increased management information, primarily within personal lines.

The survey has also led to discussions emerging on topics that were not at all envisaged at the start of the process:

- What is the best approach to the booking of reserves?
  Prudent versus best estimate? A particularly pertinent question when we are coming into a new Solvency II world where technical provisions require the best estimate to be stated alongside an explicit risk margin. However, this is not necessarily aligned with current and future accounting requirements.

- Should actuaries be more forward looking?
  As reserving actuaries are arguably the first to spot emerging trends or features in the data, should this knowledge be more routinely fed back into the forward looking elements of the business such as business planning and strategy, or are reserving actuaries being too backwards looking and only using this information to inform the reserve opinion on past business.

- What is the optimal structure of actuarial teams?
  Separate reserving, capital, and pricing actuarial teams versus actuaries specialising in a particular line of business covering all actuarial disciplines.

Not surprisingly there are significant differences between practice in London Market and personal lines companies. These have been highlighted in the relevant sections of this document.

Recommendations

There are two areas which stand out where actuarial reserving practice varies considerably from actuary to actuary and where we would suggest more focus should be made by the profession.

They are:

- Uncertainty – both measurement and communication
- Reporting.

In both cases we recommend the actuarial community to do more to share best practice.

The following working parties currently exist with specific remits around these areas:

Uncertainty

- GIROC Pragmatic approach to stochastic reserving
- GIROC Measuring Uncertainty Qualitatively
- Measuring Uncertainty with Professionalism.

Reporting

- GIROC The Good Actuarial Report.

Finally, and not least, we want to say a big thank you to all who took part. The engagement, especially from the actuarial community, was tremendous and the interviews overwhelmingly open and frank, leading to some very interesting discussions.

The remainder of this document is set out under the following headings:

Background

GRIT and ROC

This survey emerged as a workstream of the 2013 GIROC working party (it later became a working party in its own right in 2014). It was born out of discussions within the working party where we were deciding what areas to focus on and in the light of questions such as 'Have reserving methods developed much in recent years, and if not, why not?'. Whilst there were a number of reserving actuaries, comprising a wide representation of the industry, around the table, we quickly realised we could not definitively answer these questions. Hence we decided to go and find out.

To put the survey in context it is helpful to look back at a little history: Back in 2004 the General Insurance Reserving Issues Taskforce or "GRIT", was set up. Their remit was to consider how actuaries can improve the way in which they do reserving in general insurance and in 2006 they produced a paper setting out a number of recommendations for reserving actuaries.

Out of GRIT came ROC (aka GIROC), the Reserving Oversight Committee. GIROC's remit is to:

- be responsible to the GI Board for all matters relating to reserve estimation for general insurance business
- monitor and respond to on-going developments in the general insurance reserving area
- identify the need for, to promote and to co-ordinate research in reserving-related matters, and
- develop a communication programme with the wider general insurance industry.

In undertaking the survey our aim was to find out what had changed since GRIT reported in 2006, where we are in terms of reserving now, and where we want to get to.

How the surveys were conducted

Stakeholders

CEOs and CFOs

Short telephone interviews, typically lasting 15-30 minutes, were undertaken during August and September 2014.

There is likely to be a selective element with the views of those included here that actively chose to take part in the survey. As a result their responses as set out here may not reflect those of the market as a whole.

Regulatory bodies, ratings agencies and trade bodies

There were seven respondents representing diverse EU regulatory authorities or trade bodies[1]. All answers were provided on an anonymous basis. Only larger trade bodies were invited to take part. We were interested in finding an overarching but somewhat non-technical market view. Given the reduced numbers of participants, only the recurring answers were kept for this report (unless

[1] Regulators were a set of European and UK regulators, whereas the rest of the stakeholders in this grouping were international industry representatives only. The survey has not been exhaustive as some groups have not been represented as they didn't answer.

otherwise stated). It should be noted that most of the participants were not UK citizens and as such were not aware of the GRIT report of 2006.

The interviews covered very high level topics and as such did not go into detail on specific techniques. The interviews were conducted mostly by phone.

Investment Analysts

We also spoke to investment analysts but quickly realised that the analysts generally did not have direct access to the work of actuaries and typically relied on public information provided by companies, such as that available in their report and accounts. As a result we did not pursue this strand of the survey. However, a couple of points of interest made by the three analysts we did speak to are included in the Stakeholder Findings section.

It should be noted that the stakeholder responses could be considered as objectively imperfect as the interviews involved conversations. However, the conversations provide a distinct advantage to undertaking a survey such as this via a form filling route as it allows expansion into other relevant areas and context to be expressed. Indeed, the findings raised issues that were not envisaged at the start of the process.

A list of the questions posed to stakeholders can be found in the appendix.

Actuarial practitioners

There were 13 personal lines and 11 London Market respondents. Only larger companies were invited to take part. We were less interested in overall market practice but wanted to know what the most advanced methods and processes that were being adopted were. If smaller companies had also been invited to take part, they might have had a different perspective, particularly those in the London Market.

- Personal lines interviews were undertaken during August 2013 as telephone conversations lasting typically 1 hour.

- London Market interviews were undertaken during April 2014 as face to face meetings lasting typically 2 hours.

The interviews covered a very wide range of topics and as such did not go into detail on specific techniques.

As said with regard to the stakeholder interviews, it should be noted that the responses could be considered as objectively imperfect as the interviews involved conversations. For example, whereas one company may have mentioned, say, frequency severity modelling, we cannot always assume that another company did not use that method; they may just have not have thought to mention it at that point. However, the conversations provide a distinct advantage to undertaking the survey via a form filling route as for such a complex subject as actuarial reserving it allows expansion into other relevant areas and context to be expressed. In fact a number of issues were raised which were not foreseen at the start of this process.

A list of the questions posed to the respondents can be found in the appendix.

GRIT recommendations 2006

The following are the recommendations GRIT made as set out in their paper entitled "A change agenda for reserving" dated 27 March 2006.

1. Providing more **transparency** to our reserving methods and helping our stakeholders have more insight **into the key reserving assumptions and decisions**.

2. Providing more information on **uncertainty** in our reserve estimates. In particular, we recommend that actuaries **provide a quantitative indication** of the range of outcomes for future claim payments, and that our profession defines a common vocabulary for communicating uncertainty.

3. **Understanding better the business** we are reserving. We suggest a range of analyses and activities for doing this.

4. Applying our standard actuarial reserving methods more **consistently**. We identify a list of specific areas where we believe that there is scope for improvement. Also, we believe that the actuarial training syllabus should be extended, and this leads to consideration of whether a more specialised general insurance actuarial qualification is needed.

5. Understanding the implications of the **underwriting cycle**, which, we believe, influences the behaviour of claims development in a way that our reserving models do not currently capture. We suggest what we believe may be the foundations of a potentially more cycle proof methodology, but this is an area which we believe will require much more research.

6. Helping actuaries understand how **behaviour** can affect the reserve estimation process, particularly in the face of uncertainty. We make various suggestions in this area, including helping actuaries manage pressure from third parties.

Stakeholder Findings

CEOs and CFOs

A similar survey to this was undertaken with board members in 2006. There was a strong message coming out of it at that time that actuaries were very poor at communicating; both with reserve uncertainty and with key assumptions. There was also a view from senior management that actuarial models were poorly understood.

As a result we were expecting to hear something similar in this survey. In particular CEOs/CFOs clearly told us that they do not like surprises when it comes to reserve estimates. As such on-going communication is important and did arise as a theme again. However, the message was very different this time. It appears that communication is not the issue in the same way it used to be - in fact actuarial communication now appears to be very good on the whole.

The change seems to arise from the way actuaries are now being used by senior management. Actuarial advice appears to be highly valued and actuarial opinions sought. To illustrate, one CEO said that “actuaries are absolutely fundamental to understanding” and another commented that “there are different areas where actuaries can add value.”.

This raises the question of whose responsibility is the communication of actuarial advice. As a profession we have historically seen it as our failure. It appears that where companies are getting the most out of actuaries this is due to the actions of senior management rather than the actuaries themselves.

So what has changed since 2006? From this and the other parts of the survey we know there are a number of things:

- Actuaries are now embedded in the business. This was demonstrated by the findings in Section 3 on Communicating of the Actuarial Practitioner Findings. The rise of reserving committees has also certainly helped with this, whereby representatives of senior management and other areas of the business (such as claims and underwriting) regularly meet with actuaries to discuss the reserves. This facilitates on-going communication. One company said they pro-actively encourage links with business and have a menu of actuarial services that they give out.

- Actuaries have a higher profile at board level. There also appears to be a better understanding at board level of actuarial work, which may be a consequence of the increased actuarial profile. In addition, from the other parts of the survey, we found that board training in actuarial techniques is relatively commonly now.

- Regulatory influence and changes in the structure of boards are also likely to have had a positive influence on boards’ increased understanding of actuarial advice.

Maybe we actuaries have got better at communicating too? Changes cited by the CEOs and CFOs in the reporting of reserve estimates that might support this assertion include:

- An increased level of detail being provided. However, this is not always seen as a good thing - one commented that it could be difficult to see the wood for the trees and another said that the skill is in getting the right information to the right people.

- More narrative is now included, for example descriptions of what is driving the results, or explanations of causes of changes in reserve estimates.

Another theme coming out, and raised by the majority of these stakeholders, was that they find it useful to consider the actuarial advice coming from pricing and reserving at the same time, and to identify and understand any differences. This also involves using reserving advice as a check on the pricing assumptions - a form of peer review and challenge. I.e. using reserving advice in a forward looking way.

It quickly became apparent from the interviews that actuarial advice is naturally fed back into planning and strategy. This finding was even more noticeable given the fact that no question on strategy was asked. To illustrate, in the course of the short conversations that were held, the following specific examples of how reserving actuaries and their advice are fed back into other areas of the business were cited:

- Alert to issues when things go wrong
- Key decisions in pricing – trends/uncertainties/risks
- Engage in debates with business – eg LASPO
- Regulatory reforms
- Segmentation
- Understanding historic reserve releases - where from, what has driven them?
- Helping understand and use outputs more effectively
- Alert to issues in operational processes.

This was particularly interesting as this is the complete opposite of what actuaries themselves were telling us. Actuaries felt that strategy was one of the two areas they were least involved in.

It was not all good news, however. Communication of reserve uncertainty is an issue. Actuaries are not only presenting, but are also measuring uncertainty in inconsistent ways. This is discussed in more detail in Section 6 under the Actuarial Practitioner findings.

Regulatory bodies, ratings agencies and trade bodies

*Differen*t perspectives

The questionnaire used for stakeholders was purposely different from the more technical one used for practitioners. It had more focus on actuarial practice than on methods in order to provide a view "from the outside". Interestingly, most of the participants received an actuarial education and as such were answering the questions using at least two perspectives; the one of their current job, the one of their actuarial education and for those who worked for an insurance company at some point, the one of a professional actuary.

As such, when asked about their use of actuarial estimates, participants gave multiple answers that related to their different perspectives and could be allocated to “direct users” and “indirect users”:

- Direct users find actuarial estimates useful to manage the business
  - Pricing;
  - Capital management;
  - Strategy.

- Indirect users find them useful for:
  - Establishing statutory accounts;
  - Portfolio management;
  - Profitability/sustainability study and business analysis.

The emergence of the link between actuarial work and business analysis is a theme that ran through all the responses (with one exception).

Room for improvement

When asked for their views and expectations on actuaries, the outcome was quite similar. Actuaries were primarily perceived as core to the insurance business. Nevertheless, participants underlined that they also performed a number of other core functions. Respondents then articulated this view by characterising actuaries as independent, transparent and highly technically skilled professionals. A minority of participants described actuaries as whistle-blowers.

However, a number of areas were consistently identified as being in need of development. Apparent contradictions between some of those areas were reconciled after further discussion.

- A first area of development relates to the role of the actuary within the reserving process. Most participants said that actuaries should challenge the reserving process more and stand by their results, but be open to challenge at the same time. When drilled into a bit more, this particular point revealed an appetite for actuaries to be clearer and more flexible in areas which revolve around expert judgement. Nevertheless, when asked further, it emerged that participants working within regulatory authorities and the ones working within trade bodies had a fundamental difference of point of view in regard to the degree of independence actuaries should have within the vertical structure of the organisation. In particular, the views about who from the actuaries or their direct management should have the last word on the results were significantly polarised.

- A second area of development identified was linked to communication. In line with the GRIT recommendation of 2006, the participants were adamant that even if some progress has been made in terms of communication around uncertainty, significantly more progress was needed.

- Finally, the idea that actuaries should be more forward looking came up consistently. Whether relating to analysis of trends or the development of business model analysis skills in order to assess sustainability of the business, participants were surprised that the knowledge gained through the analysis of reserves and the natural set of skills owned by the actuaries were not used more in those areas.

Actual versus Expected and beyond…

The last part of the survey was exploring the evolution of actuarial activities over the last seven years and the appetite for academic research. It should be noted that most of the participants were non-UK citizens and so weren't aware of the 2006 GRIT report.

Nevertheless, there was a strong consensus that actuarial practices have improved. According to the participants, this has been driven by improvements in data quality and quantity, in modelling techniques (in some sectors), in actuarial training and, significantly, in communication. But the drivers of those improvements were not always very clear. Some reasons cited were the introduction of Solvency II, TAS, the aftermath of the economic crisis, or a combination of these. However, no consensus was found.

Finally, whilst most participants considered that those improvements should continue, none of them thought research was the answer. Furthermore, the concept of spending more time on research underlined a more fundamental divergence in their view of the role of actuaries. The participants were polarised as to whether academic actuarial research was useful to develop, or not at this point in time as it would be more a matter of applying the rich academic library that already exists rather than developing any more new theoretical work.

Investment Analysts

We quickly realised that the analysts generally did not have direct access to the work of actuaries and typically relied on public information provided by companies, such as that available in their report and accounts. As a result we did not pursue this strand of the survey and only spoke to three investment analysts. From the few conversations we had the following points of interest arose.

The analysts have access to limited information, mainly what is provided by companies in their report and accounts. Occasionally some analysts may look at PRA returns or if they own the stock, or are looking to buy the stock they, may directly engage with the company actuaries.

They commented that more information is now being provided in the report and accounts such as:

- a management estimate of margin for prudence – though this varies from company to company
- better explanations for reserves
- more triangles by segment.

When examining the reserves the analysts said they were particularly looking for:

- material deteriorations in reserves
- any need to strengthen reserves
- any changes in the strength of reserving
- ideally they like to see a conservative reserve that delivers small releases.

There was also a comment that "the reserves are always wrong", and that it is complicated and that different actuaries will give different results. Motor was specifically mentioned as a particular area of interest by two of the analysts.

Actuarial Practitioner Findings

1. **Process**
    1.1. **Fast close**
    1.2. **Where is the actuarial effort spent?**
    1.3. **Key constraints**

2. **Data**
    2.1. **Quantitative**
    2.2. **Qualitative**

3. **Communicating**
    3.1. **Pricing**
    3.2. **Capital**
    3.3. **Claims**
    3.4. **Finance**
    3.5. **Strategy**
    3.6. **Risk Management**
    3.7. **Senior management**

4. **Reporting Results and Setting Reserves**
    4.1. **Setting Reserves**
    4.2. **Board understanding**
    4.3. **Reporting**

5. **Methods**
    5.1. **Current practice**
    5.2. **Appetite for new methods**

6. **Uncertainty**
    6.1. **Measuring**
    6.2. **Communicating**

1. Process

The vast majority (82%) of respondents undertake quarterly reserve reviews. Just over a third of these will also monitor claims performance monthly. Of those who don't undertake quarterly reviews, two were annual, one twice a year and one three times a year.

1.1. Fast close

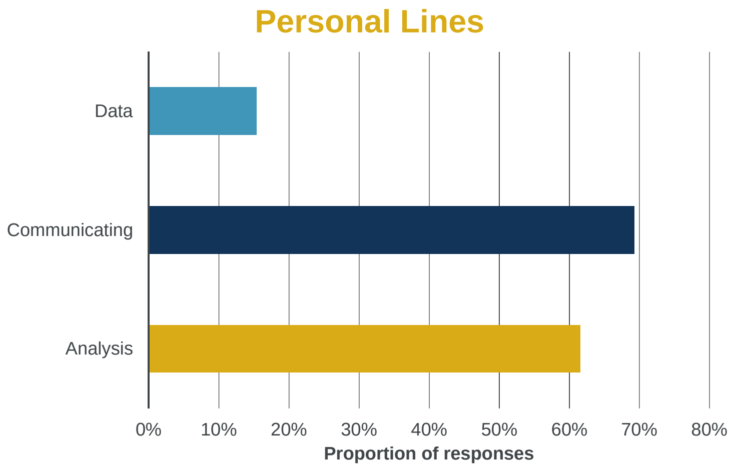
The term fast close refers to projections where turnaround to producing final results from the as at date is quick (for some companies less than one week).

London Market companies were more than twice as likely to say that they operate some sort of early close or fast close process (23% of personal lines companies as opposed to 55% of London Market companies).

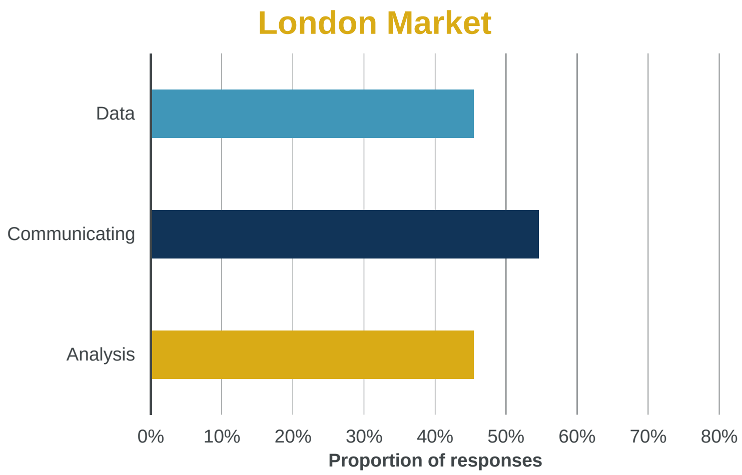
A move to some sort of fast close process is likely to become more common with the implementation of Solvency II and the eventual requirement (4 years after SII implementation at the beginning of 2016) to report the quarterly Technical Provision (TP) - E1Q Non-Life Technical Provisions (which includes premium and claims provisions and risk margin) within 5 weeks (reducing from 8 weeks in the first year of implementation).

1.2. Where is the actuarial effort spent?

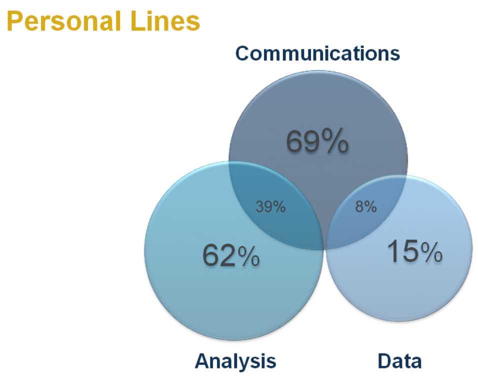
Communicating and analysis take up most of the actuarial time for most companies.

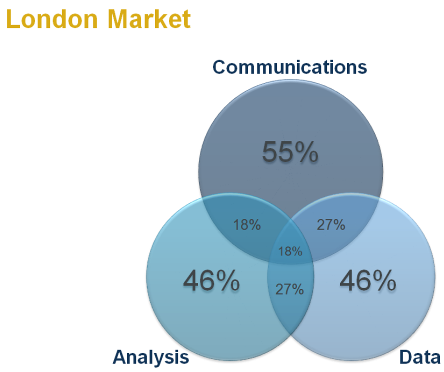


Percentages shown are the number of responses by category divided by number of respondents who answered this question.



More than one response was often given by a single company. The following diagrams give more information about the combination of responses. For example, 39% of personal lines actuaries cited both analysis and communication as taking up most of their time and 62% included analysis in their response, whereas the picture was more mixed for London Market companies





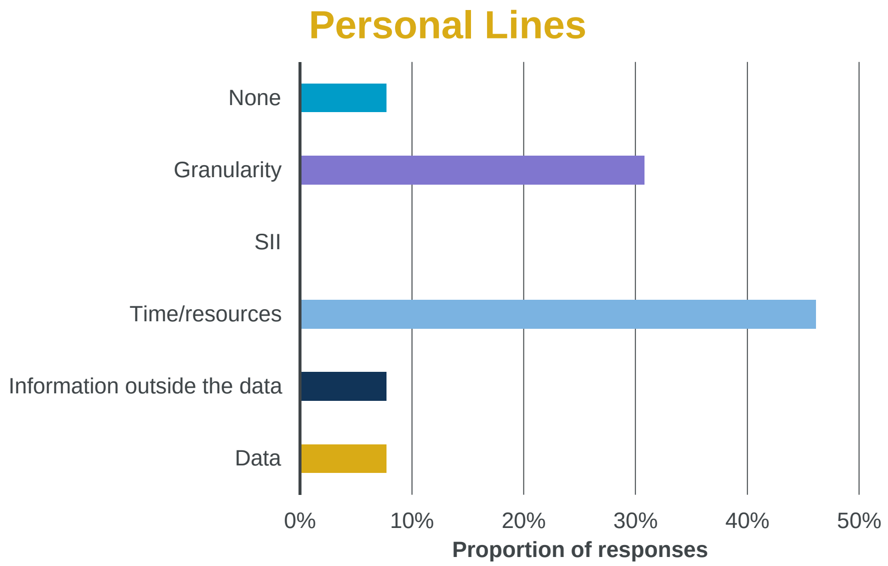
Not surprisingly, actuaries are happy when their reserving time is taken on analysis. However, when it comes to communicating the reaction is more mixed. Whilst many actuaries welcome more time to spend getting the reserving message across, for a significant number (both in personal lines and London Market) a lot of the time spent communicating means something else; dealing with a wide array of stakeholders, having to provide results split in a multitude of ways, or reporting in a particular format to meet parent requirements, are not such welcome uses of time.

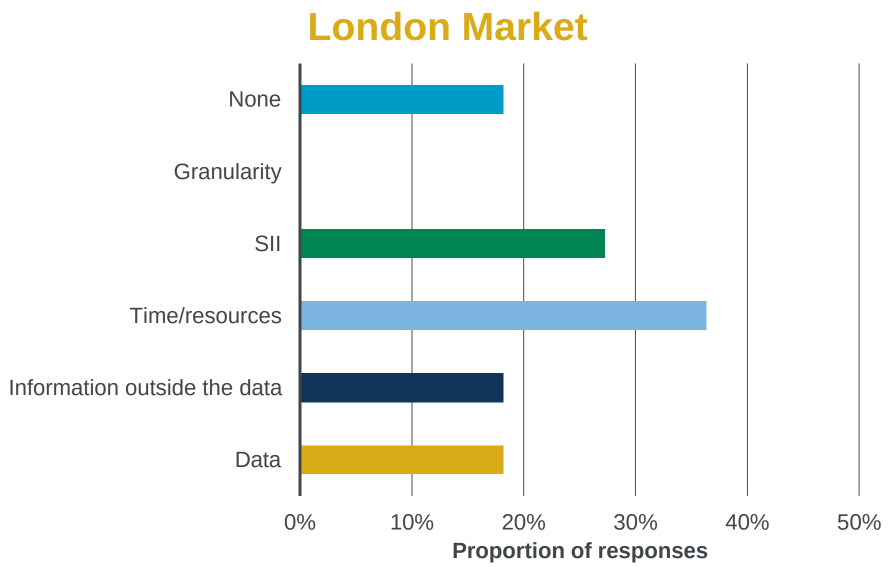
For many London Market companies, data is still taking up too much time. Data is discussed in more detail in Section 2.

1.3. Key constraints in producing the best possible estimate of reserves

Time and resource were mentioned by 45% of personal lines actuaries and 35% of London Market actuaries. However, this statistic probably overstates the overall mood in the market. In the context of the conversations, time and resources limitations did not actually feature very strongly.

The following graphs show the constraints cited by the respondents.





NB: The percentages for the London Market pie chart add up to more than 100% as three respondents listed more than one item as a key constraints.

The percentages shown are the number of respondents who cited that particular constraint divided by the number of respondents.

Some observations:

- Granularity of data was cited by a third of personal lines respondents as a key constraint. (See Section 2 on data for more discussion around this).

- Solvency II (SII) was mentioned by a quarter of London Market respondents but was not cited by any personal lines companies. This may be a reflection of the situation in August 2013 when it is possible that reserving actuaries in personal lines companies would have been less likely to have spent time on SII issues. Lloyds' influence has meant that most of the London Market respondents would have been reporting SII technical provisions for three years already.

- Data and qualitative information were also mentioned by a minority of respondents.

Understanding the tail was cited by two London Market companies (which are not shown on the above graphs).

2. Data

The data requirements and availability are very different between personal lines and London Market companies and so they are each reported separately here.

London Market data is typically characterised by a large number of classes (100 plus is not uncommon) and within those classes there is often sparse (or “lumpy”) data. Personal lines data on the other hand has much fewer classes (often less than 10) with greater volumes of much more homogeneous data, allowing for more detailed and statistical data analyses.

2.1. Quantitative Data

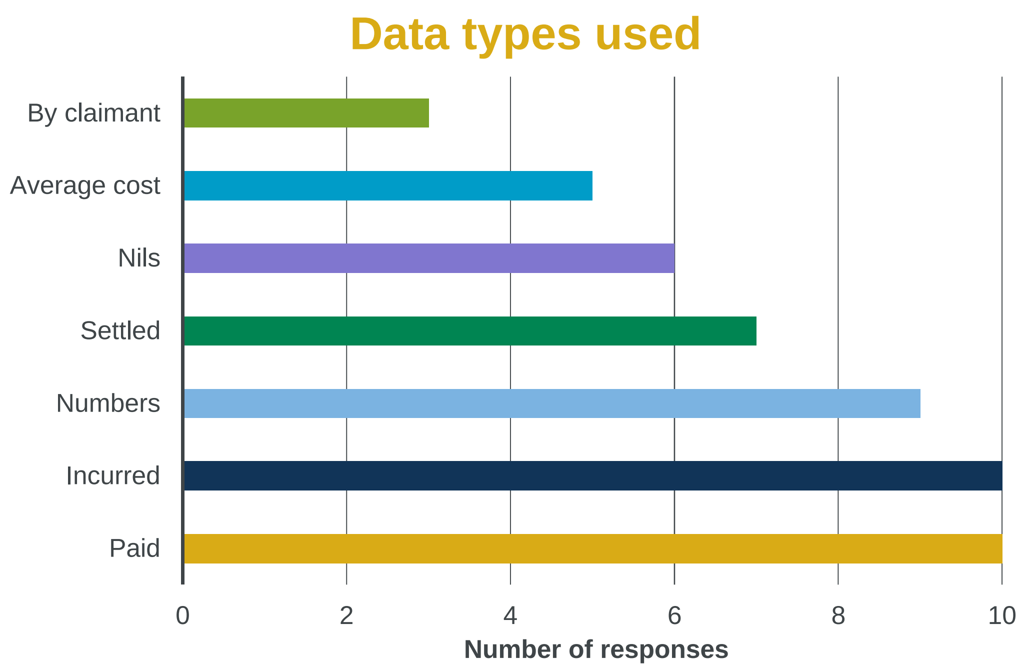
Personal lines

Personal lines actuaries were overall very positive about the data they have access to.

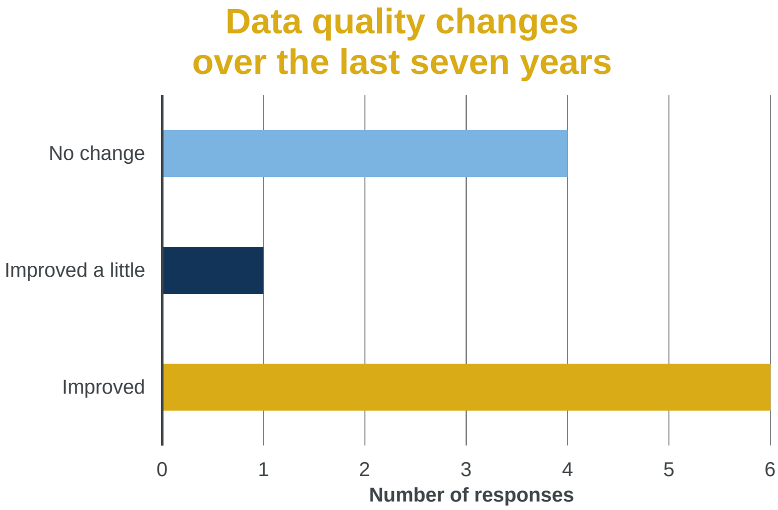
In fact six said that no future data improvement was needed and only one personal lines company was not happy with the accessibility and quality of the data they currently had. Types of data that were cited as ones that are not currently available, and that respondents would like to see, were; per claimant data, splits by costs and head of damage and MoJ flag. Exposure measures and better bordereau detail were also mentioned.

Many reserving actuaries have their own transactional data or data warehouse which enables them to derive whatever data measures they require.

The following graph shows which types of data were cited by respondents as ones they used.



When asked how data quality and accessibility had changed over the last seven years, six respondents specifically said data quality had improved over the last seven years - better interaction with claims departments was often mentioned.



Three of the four who said no change were already happy with the data they had previously.

One of the biggest changes over recent years is the rise in diagnostics, with data looked at in many different ways such as settled claims, nil claims, TPI:TPD ratios and numbers and averages.

Examples of additional types of data that were specifically cited as now available that were not before are: peril splits, legal costs, per claimant data, MoJ flag, fraud, average costs and settled claims. (NB: Some companies will have had some of these measures previously too.)

London market

All said they used paid and incurred data. Three mentioned using number of claims on some classes. Two of the three said they were just starting to use number of claims.

Overall there was a feeling that data processing had improved significantly over the last seven years. Five respondents said they had access to a data warehouse or transactional data. Two specifically said that the data processing did not come under the actuary's remit (which was viewed as positive) and one said they had dedicated IT people within the team to help with data processing.

A couple said that they had good management information (MI) tools that enabled them to drill down into the current month end positions or actual versus expected results, for example.

However, for many, cleaning and aggregating data was one of the areas that most actuarial time was spent on, and on which they did not want to spend time.

London Market responses were characterised by diversity, and it is difficult to draw overall conclusions. For example data from bordereaus were cited as an issue by some, in terms of being out of date or including insufficient detail; whereas others said they could get the detail if they wished, or that they got individual data for claims over (widely differing) thresholds, or that bordereaus were not a significant part of their business.

2.2. Qualitative data

London Market respondents rely heavily on qualitative data such as that listed below to supplement the information in paid and incurred data triangles:

- Rate changes
- Prior Loss ratios
- Exposure, deductible and terms and condition changes
- Mix of business
- Pricing decisions/models.

However, the quality of, or the way some of these measures are used, can vary significantly from company to company. Rate changes are a good example. Whilst all companies have access to this information the actuaries' view of how reliable the data is varies from company to company. Many say they supplement this information by anecdotal evidence, or by getting external views on rate adequacy. Some have detailed and reliable data on rate changes and use it to monitor discretionary discounts at policy level.

Similarly, the way prior loss ratios are set and used varies. Most companies' prior loss ratios involve interaction with the business plan, but in different ways. Some reserving priors come from the business plan, whereas others work the other way around and feed into the plan. Other companies may have knowingly different reserving and planning loss ratios. Other sources of priors can be from the capital model, speaking to underwriters or from pricing models.

Communication with other areas of the business was usually key to much of the qualitative data, often via regular or adhoc meetings with underwriters, claims, management and pricing teams. In addition, for some companies, actuaries are embedded in the business, often undertaking both reserving and pricing roles which means they tend to be constantly aware of much of the qualitative information. The way reserving actuaries interact with other areas of the business is covered in more detail in the next Section 'Communicating'.

Perhaps surprisingly, very few companies said they had good exposure-based analytics. Only one company said they had objective 'Portfolio analysis sheets' which contain metrics such as policy and risk counts, premium by class codes and details of how attachment profiles/policy limits, etc have changed over time. This company said that this was a good starting point for discussions with underwriters.

2.3. Additional data requirements

We asked companies what additional data they do not currently have that they would like. There was no overall theme emerging, the following lists the items that were mentioned, though many of the items would have been cited by just one company.

- Ground up data from cedants
- Wages
- More granular data
- Bordereau data to be more systematic
- Exposure and claims, especially coverholders and open market from outside US
- More qualitative info
- Claim counts
- Exception reports – e.g. to highlight if mix has changed and therefore know where to focus efforts
- Underwriting restructures
- Date of loss

Three said there was no additional data they would like.

One commented that a harder market implies better data and another commented that they were now seeing better data due to broker influence.

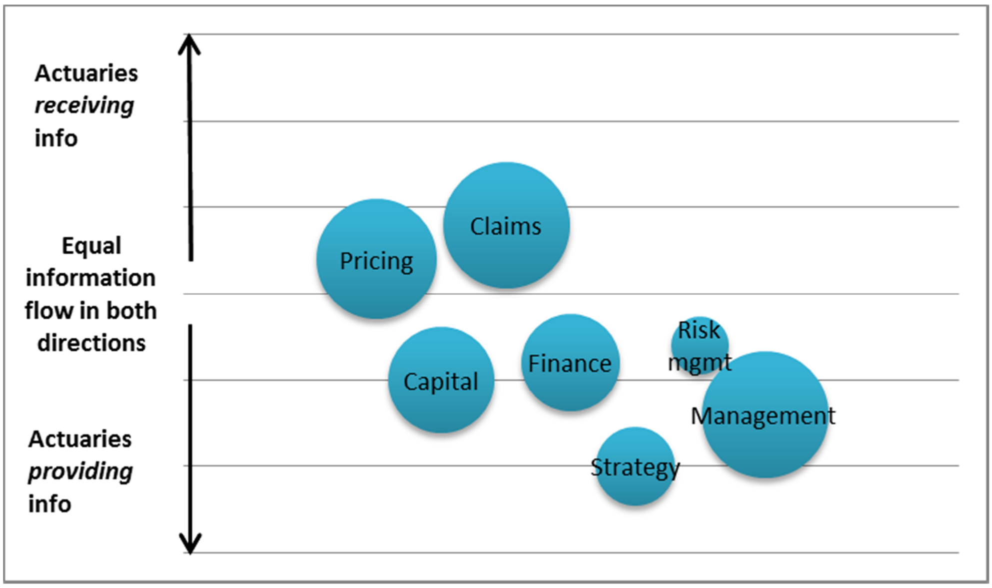
3. Communicating

We asked respondents how much interaction the reserving actuarial team have with other areas of the business.

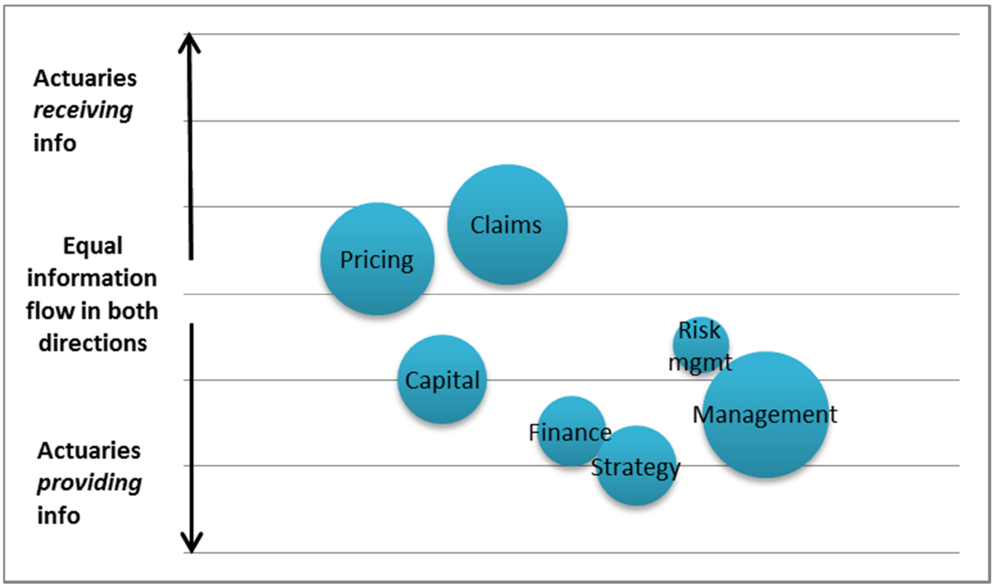
The graphs below show the relative levels of communication. The larger the degree of interaction the larger the size of the bubble.

The y axis indicates which direction most of the interaction is; for example a bubble nearer the top of the graph indicates that the information flow is all from the other department to the reserving actuaries, a bubble on the middle line indicates the information flow is relatively balanced, and a bubble towards the bottom of the graph indicates that the information flow is primarily from the reserving actuary to other department.

Personal lines



London Market



The graphs show that the greatest interactions are with senior management, closely followed by claims and then pricing. A two way interaction is more common with pricing and less so for claims, whereas interaction with senior management tends to be mostly one way with actuaries providing information to management. The least interaction is with risk management and strategy, with strategy the most oneway interaction with actuaries feeding information into strategy.

It should be noted, however, that specific interaction in a single company may vary significantly from that shown in the above diagrams, as individual practice from one company to another can be very different.

The size of company is a feature. In small companies all actuarial areas are much more likely to interact closely.

One of the biggest differences seen relates to the way actuarial departments are structured. Many London Market companies, and a smaller number of personal lines companies, have single actuaries that are responsible for the reserving, pricing and capital modelling of a particular line of business. By being embedded with the business units this means that communication with underwriting and claims as well as between the three actuarial functions is implicit. These respondents also commented that this ensures a best estimate by default when the same estimate is derived for both reserving and pricing. The counterargument to this is that this format could lead to a lack of independence in the reserve estimate.

These graphs are a subjective summary of answers given in the interviews and have been designed to give a quick overall view only. The particular interactions are discussed in detail below.

3.1. Pricing

Personal lines

For two respondents the reserving and pricing actuarial teams are combined. Of the rest the majority, 73%, said they sit together, share parameters and assumptions and/or have daily interactions.

London Market

A significant proportion of the London Market (40%) have actuaries that each do all of reserving, pricing and capital. Otherwise, in the remaining companies, there is much less interaction between reserving and pricing than in personal lines, though the degree of interaction does vary considerably between companies.

3.2. Capital

Capital teams often have separate reporting lines though it does vary considerably from company to company (sometimes it is pricing that has a separate reporting line to reserving and capital).

Personal lines
Practice varies considerably. For three respondents the reserving and capital teams are combined. At the other end of the spectrum two said there was not enough or limited involvement. The reserving actuary's role, as limited to providing input parameters for the capital model, was often cited.

London Market

If the company did not have an embedded actuary (doing reserving, pricing and capital, as 40% of London Market companies do), involvement of reserving actuaries was limited with interaction with capital teams often limited to feeding parameters into the capital model.

3.3. Claims

Interaction with claims teams is very strong, particularly in the London Market.

Personal lines

Just under half of personal lines respondents cited constant interaction with claims. Others tend to have regular meetings, typically monthly. A quarter of personal lines companies had claims teams in different locations to the actuarial team.

London market

The actuaries sit with the claims teams in three companies and others said they had constant and strong interactions. Only one company seemed to have more limited contact.

3.4. Finance

Personal lines companies seem to be more integrated with finance than those in the London Market. Three personal lines respondents said they were actually part of the finance department.

London Market companies are more likely to say they just feed results into finance. Just two said they closely interact.

Technical provisions were mentioned by some London Market companies when discussing communication with finance but not by any personal lines respondents.

3.5. Strategy

A third of both personal lines and London Market respondents said the reserving teams were involved in planning. Other than that (with one exception where the chief actuary had a significant amount of involvement) reserving actuaries had very little input into strategy and a number none at all.

3.6. Risk management

Many respondents had no involvement with risk management at all, though it was commented that this was a growing area.

At the other end of the scale a similar number (but slightly fewer) said they had a strong involvement. This manifested itself in different ways, from just feeding into the risk register to opining on what the risk management team are doing. One company said that the risk management team had oversight of reserving.

3.7. Senior management

There is generally very strong involvement across the market.

Personal lines

36% said they were close to senior management or had a flat management structure and 64% described their interaction as through committees. One comment was that the "reserve committee is very popular" and a theme came through that management "want to understand".

London Market

More London Market companies (56%) said they were close to senior management or had a flat management structure and 33% described their interaction as through committees. One said they spoke "when necessary".

4. Reporting results and setting reserves

4.1. Setting reserves

Nearly all personal lines companies' reserves have a subjective margin set by management. Only one company held an explicit margin

London Market companies are more likely to hold an explicit margin, with two already holding one and two more moving towards an explicit margin. One has dual estimates; a reserving estimate and a pricing best estimate, and one said that they see "little value in holding 'capital' in the reserves".

4.2. How well do the board understand and take into account actuarial results?

46% of personal lines respondents and almost all of London Market ones said the board had good or very good understanding of the actuarial results. The remainder said the results are generally ranked as pretty well understood or that the board's understanding had improved. Perhaps not surprisingly, if board members had an actuarial or accountancy background then the response for how well they understood was much more likely to be positive.

There appears to have been an increase in the board's understanding of the reserve results in the personal lines market over recent years. However a couple of respondents commented that they felt uncertainty was not always understood well.

Amongst London Market respondents a few commented that non-executive directors did not often ask questions or focussed more on process.

4.3. Reporting

Personal lines

Personal lines respondents were almost universally saying that there is more in the reports than seven years ago. This is mainly more explanation of the results which has been driven by demand from the business.

Elements specifically mentioned which are reported more are:

- Uncertainty
- Explanations and detail to respond to management questions/challenges
- Story telling
- Commentary
- Insight into key issues and material judgements
- Scenarios
- Trends
- MI, e.g. loss ratios, frequencies, large claim development
- Graphical representations.

However, the mode of reporting is undertaken in different ways, sometimes by a traditional written report, sometimes via presentations. One company said that the main communication is verbal and through committees.

A couple of respondents cited the difficulty of getting the balance right between the length of the report and the materiality. It also appears reporting is taking up more actuarial time which is not felt to be beneficial by all reserving actuaries.

London Market

There is a wide variety of practice and hence responses, which means it is difficult to summarise the findings. Instead, we have set out samples of the comments made below. The comments are often conflicting.

Method of reporting:

- Reserve committees – These committees will see management information on an on-going basis, in particular AvsE (actual versus expected) analyses and changes in quarterly results.
- Produce different reports for different audiences
- Audit and Executive committee now get high level report.
- By entity
- Parent
- Some use presentations.
- One said they do not produce formal reports (they have an independent reserve review for which there is a report).

The level of detail varies considerably:

- "Detailed quarterly report to reserving committee", or
- "1 page exec summary followed by metric for each class with RAG"
- "Key principles only 3 pages. Summary On A Page (SOAP) for board."

Most say they are producing more documentation:

- “Reports have become longer over time”
- “TAS R has made reports bigger; e.g. including uncertainty and comments on data quality.”

But some are documenting less:

- TAS R has helped – slimmed down reports (3 respondents said this)
- Use of component reports is helping.

A conflict between the TAS and SII reporting requirements was mentioned by a few respondents. Some produce more than one report to meet these differing requirements.

Recommendation: The profession would do well to share reporting experiences, best practice and report formats. Such broad inconsistencies in reporting practices has the potential to lead to unnecessary confusion for recipients, especially those who oversee a number of entities.

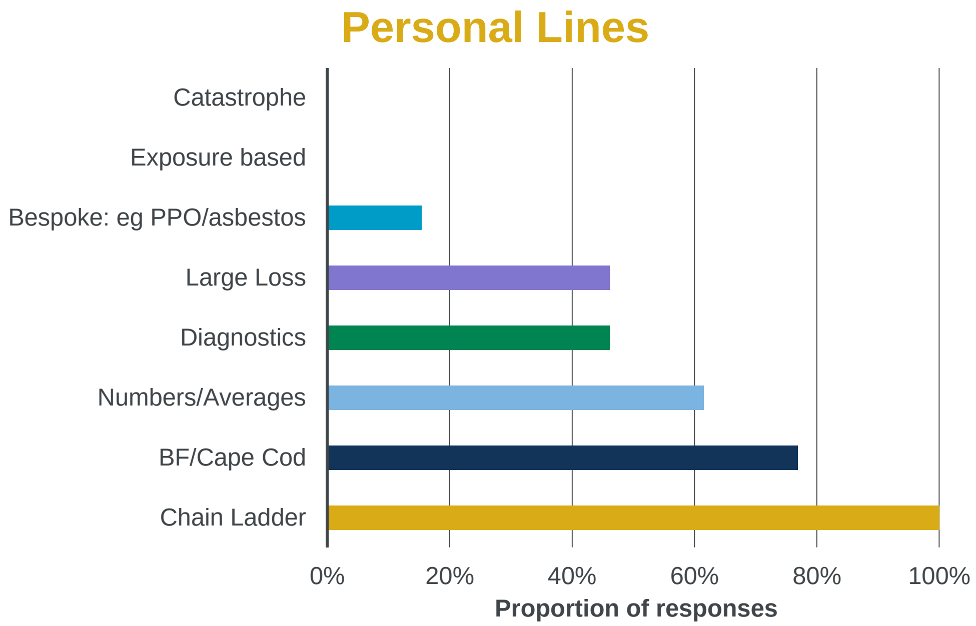
5. Methods

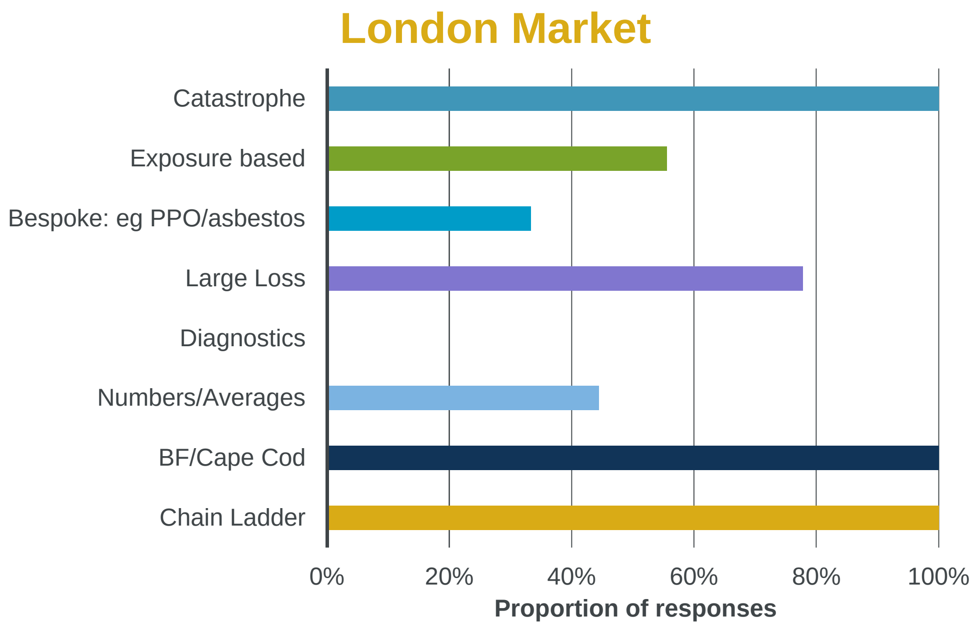
5.1. Current practice

Chain Ladder and Bornheutter Ferguson/Cape Cod methods still rule as virtually universal methodologies.

Average cost per claim or numbers and averages methods are the next most common though far more often used in personal lines than the London Market.

Large claims are often projected separately and bespoke methods e.g. for PPOs or asbestos were also cited.





London Market respondents almost universally analysed attritional, large and catastrophe claims separately.

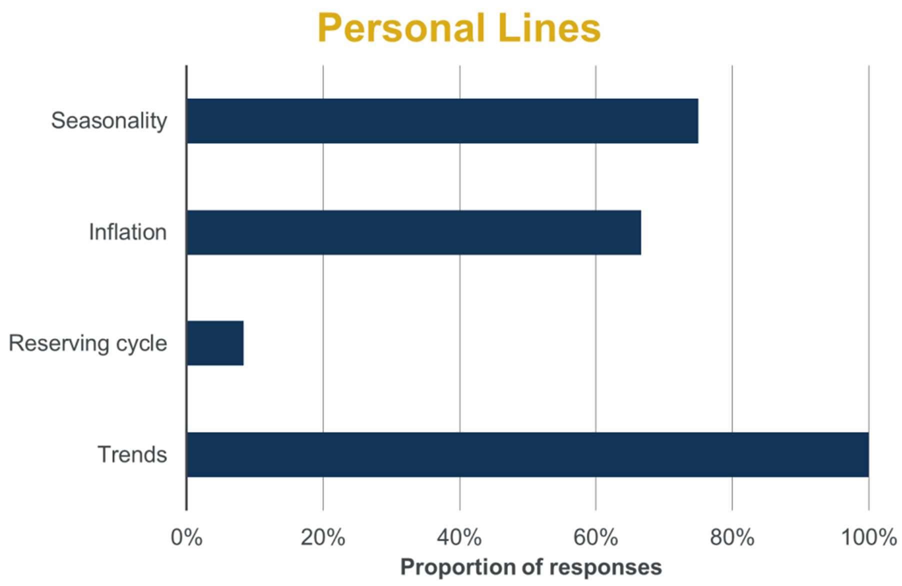
All London Market companies reserve on an underwriting year basis. The vast majority also convert to an accident year basis, often mechanistically, and often done by finance. A couple commented that conversion was difficult.

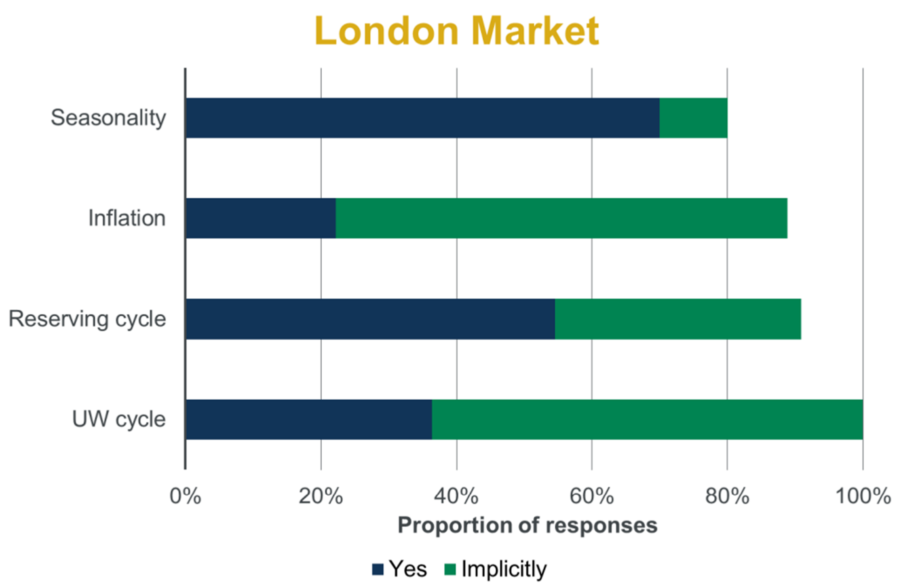
Exposure based methods are common in the London Market, and are often used for individual risks or claims.

Other methods that were specifically mentioned are:

- Settlement rate analysis
- Berquist Sherman
- Binary events.

We also asked how the following features were taken into account: seasonality, inflation, the reserving cycle and trends.





Seasonality

Most personal lines insurers adjust for seasonality but to different degrees, for different reasons and in different ways. To illustrate, examples of the reason and approach, where given, are shown below:

Reason:

- Risk mix
- Christmas processing delays
- Weather
- Quarter 4 exposure.

Adjustment types:

- Claims pattern
- First development of triangle
- Bornhuetter Ferguson
- PI/AD frequency/severity
- Freeze events stripped out
- Cape Cod.

London Market respondents on the other hand are less likely to make an adjustment and if they do it will only be for catastrophe events.

Inflation

Whilst respondents said they did adjust for inflation, this was not done in the triangles. Instead, London Market respondents made adjustments to loss ratios.

Personal lines respondents made adjustments in a variety of ways: via ultimates, Bornheutter Ferguson method, average costs, settlement analysis, or projection of claims in banded sizes. Two said they just made adjustment for unusual claims such as large Bodily Injury claims or Periodic Payment Orders ("PPOs").

Reserving cycle

For personal lines respondents this is not on their radar; virtually none said they take it into account. Only one said it definitely exists and the one that did adjust for it said they did so implicitly when talking to claims and underwriting and that it was reflected in their chain ladder development factor picks.

In contrast the London Market overwhelmingly recognises this as a feature. Just over half explicitly adjust for it and others say they are aware of it when reserving. One said they would like to see a new method developed for blending different chain ladder development picks for hard and soft markets.

Trends/Underwriting cycle

All respondents allowed for trends in some way.

London Market respondents cited the following ways of allowing for the underwriting cycle:

- choose a central estimate then gradually move expectation as experience emerges,
- take into account rate changes,
- allow for initial expected loss ratio selections.

Perhaps surprisingly only only one company said they use a set of graphs summarising changes in policy length/layers written/proportion direct business/territory coverage.

Personal lines respondents cited a larger number of factors that they look for and consider changes in:

- rate changes
- frequency/average costs
- exposure
- risk mix
- inflation
- claims process changes
- forecast trends.

5.2. Little appetite for new methods

There was no great demand from reserving actuaries for new methods. However, there has been progress over the last seven years in terms of the rise of diagnostics in personal lines and new techniques for PPOs, for example.

Research and development was not high on the priority list with only two companies having formal processes for it.

When we asked what new methods reserving actuaries had come across that they would **recommend to a fellow actuary**, the majority said none. Comments to explain this position were:

> "It's a question of allocating resources to try out - balance with how much value it is going to add", and
>
> "Want proven and pragmatic methods - no use if it is sitting in a theoretical box".

The few methods that actuaries did say were interesting (not always that they would recommend) were:

In personal lines:

- Diagnostics – settled analysis
- Large modelling
- Granular reserving

and in the London Market:

- Actual versus expected (AvsE) – don't need to run through methods each quarter
- Take covariance for underwriting risk from business plan, look at changes over time
- Underwriting philosophy
- Large loss
- Earnings basis
- Reserving on a contract by contract basis
- Binary events – why not take from capital model?

Other recommendations given were:

- “It is critical to understand the business”
- Linking reserving and future projections – consistency important.

When asked what **methods they would like to learn more about**, again most reserving actuaries said none. The few methods cited were:

For personal lines:

- Granular reserving
- Large claims
- Back testing
- Stochastic
- Cape cod.

and for London Market:

- Reserve risk – more assumptions needed than data available
- Reserving on a contract by contract basis
- PPOs – how do you reserve and how do you communicate
- Reserving cycle – how to blend hard/soft market picks.

6. Uncertainty

The most significant response coming out of the survey was on uncertainty. Actuaries are both measuring and communicating this in different ways.

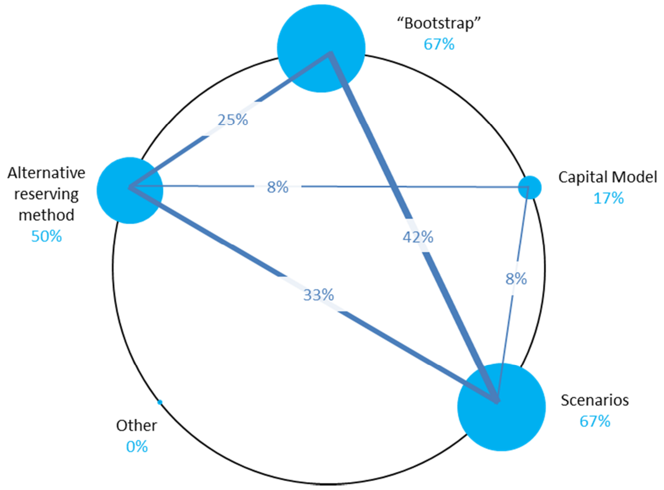
6.1. Measuring Uncertainty

The following diagram illustrates the different ways that uncertainty is being measured and compares and contrasts the differing practices in the personal lines and London Markets.

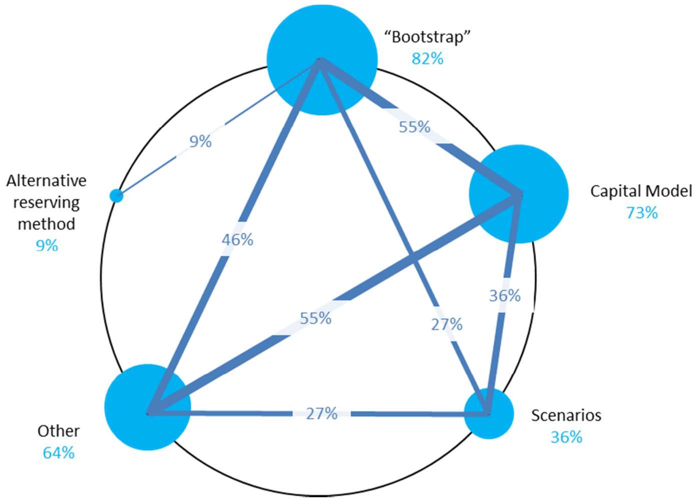
Each diagram consists of a pentagon with a different reserving method at each point. The larger the blue circle, the more companies use that method. Most companies use more than one measure for uncertainty, hence the lines between the circles represent this – the thicker the line the more companies use both the methods that the line is joining.

For example, for personal lines, 67% of respondents said they use scenarios to measure uncertainty and 42% of all respondents use both scenarios and "bootstrap".

Personal Lines



London Market



Key to methods

"Bootstrap" – a generic term to incorporate stochastic chain ladder methods such as ODP bootstrap, also includes Mack method.

Capital Model – output of capital models used (see text below)

Scenarios – Sensitivity and scenario tests

Alternative reserving methods –such as those used for PPOs or asbestos claims

Other – None of the above (see text below)

“Bootstrap” is the most common method used. It is almost never used alone but in conjunction with other methods. However, at the same time it is interesting to note that some companies actively choose not to use bootstrap approaches - 25% of personal lines and 20% of London Market respondents.

London Market respondents are much more likely to enhance their bootstrap result with judgement, for example using back testing, or a qualitative review of CoVs (coefficient of variances).

London Market companies often aggregate classes before bootstrapping – so the uncertainty estimates are less granular than the level at which reserving is done.

London Market companies are more likely to use a number of different methods, whereas personal lines will typically use just two:

- London Market companies are more likely to use the output of capital models. However, the input to these capital models is often by bootstrap methods and sometimes undertaken by the capital team rather than the reserving team.

- ‘Other’ methods are more common with London Market companies – there is a wide variety of such methods such as; ICRFS (GLM methods on aggregate triangles), frequency/severity, and qualitative (e.g. select CoVs, benchmark tails, uncertainty around development factors). NB: These methods were each only cited by a single respondent. So whilst ‘other’ methods are common in the London Market, there is no consensus as to what these methods look like.

However:

- Sensitivity and scenario tests are less likely in the London Market than in personal lines.

- Similarly, alternative methods (eg scenarios on specific features such as PPOs/asbestos/large losses) were also much less likely in the London Market. In addition one personal lines company uses a stochastic large loss model and another personal lines company has stochastic PPO and asbestos models.

Recommendation: The profession would do well to share best practice on measuring uncertainty.

6.2. Communicating uncertainty

It was interesting to note that whilst some actuaries measured percentiles they did not necessary communicate the uncertainty using them, but do use ranges or probability of adequacy.

A couple of actuaries cited demand from management for percentiles when this was not the method they were most comfortable with themselves.

London Market respondents are more likely to have said that they highlight specific issues relating to uncertainty than personal lines respondents, such as by using a RAG (Red, Amber, Green) system or by highlighting, say, the top five areas of risk.

Other ways cited were by

- expressing risk in terms of loss ratios not reserves, and
- illustrating the risk using specific scenarios that would get you to the percentiles quoted.

Recommendation: This is an area where the profession would benefit from sharing ideas.

Appendix

Survey questions

Practitioners

1. Process

i. What does your reserve review timetable look like?

ii. Where is the majority of the actuarial effort spent within the process, and where do you think it should be spent (if different)?

2. Data

i. What types of data have you used in the last year? How has this changed over the last seven years?

ii. How accessible is the data and any qualitative information that lies behind it? Has this improved over the last seven years?

iii. Is there any additional data that you would like to be made available?

3. Current practice

i. What methods have you used in the last year? How has your reserving methodology changed in the last seven years?

ii. Do you reserve on a year of account and an accident year basis?

iii. How do you allow for outwards reinsurance?

iv. How do you allow for the following in your reserve analyses?

- Underwriting cycle and changes in the business (exposure, rate changes, T&Cs, coverage etc.)
- Reserving cycle
- Seasonality
- Claims inflation.

v. What is the key constraint in producing the best possible estimate of reserves (e.g. time, resource, data granularity, process delays)?

vi. How do you measure uncertainty?

4. Research and Development

i. How often do you review your methods?

ii. What new methods have you come across that you would recommend to a fellow actuary?

iii. Does your organisation undertake R&D into new reserving methodologies?

iv. Are there any methods you have seen that you would like to learn more about/see adopted/developed by the industry?

5. Communication

i. How much interaction does the reserving actuarial team have with other areas of the business:

   – pricing/capital modelling

   – underwriters

   – claims handling teams

   – finance/risk management

   – senior management/strategy

ii. How are the following communicated?

   – uncertainty

   – limitations of the methods

   – Actual vs Expected and significant reserve changes

iii. How well do you feel the board and senior management a) understand and b) take into account actuarial results?

iv. How have reserve reports changed over the past seven years? What is better; what is worse; what still needs to change?

NB: These are the questions put to London Market actuaries, those to posed to personal Lines actuaries were, for just a couple of questions, slightly different.

Stakeholders

1. How do you use actuarial reserving estimates?

2. What do you look for from actuaries/how do you see the reserving role?

3. How well are actuaries delivering this?

4. Do you have any examples of good and/or bad practice you have encountered?

5. Have you seen any changes in reserve reporting in the last seven years or so?

6. How is reserve uncertainty communicated to you?