LLOYD'S

SOLVENCY II INTERNAL MODEL SCR & TP WORKSHOP

4 & 6 April 2011

Agenda

- Introduction and overview of workstreams
- Technical provisions
- Internal Model SCR

  Table discussions and play back/Q&A
- Next Steps and feedback

Split tables to allow focused discussion

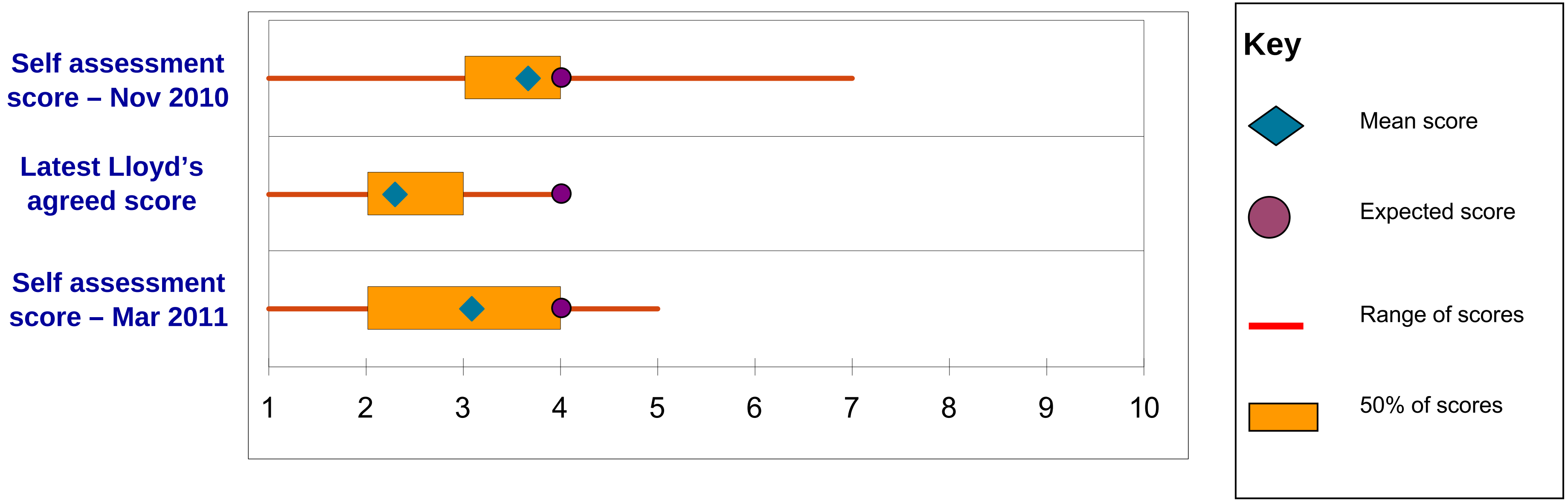
Which topic would you prefer to discuss today:

A. Technical Provisions

B. Model walkthroughs / SCR

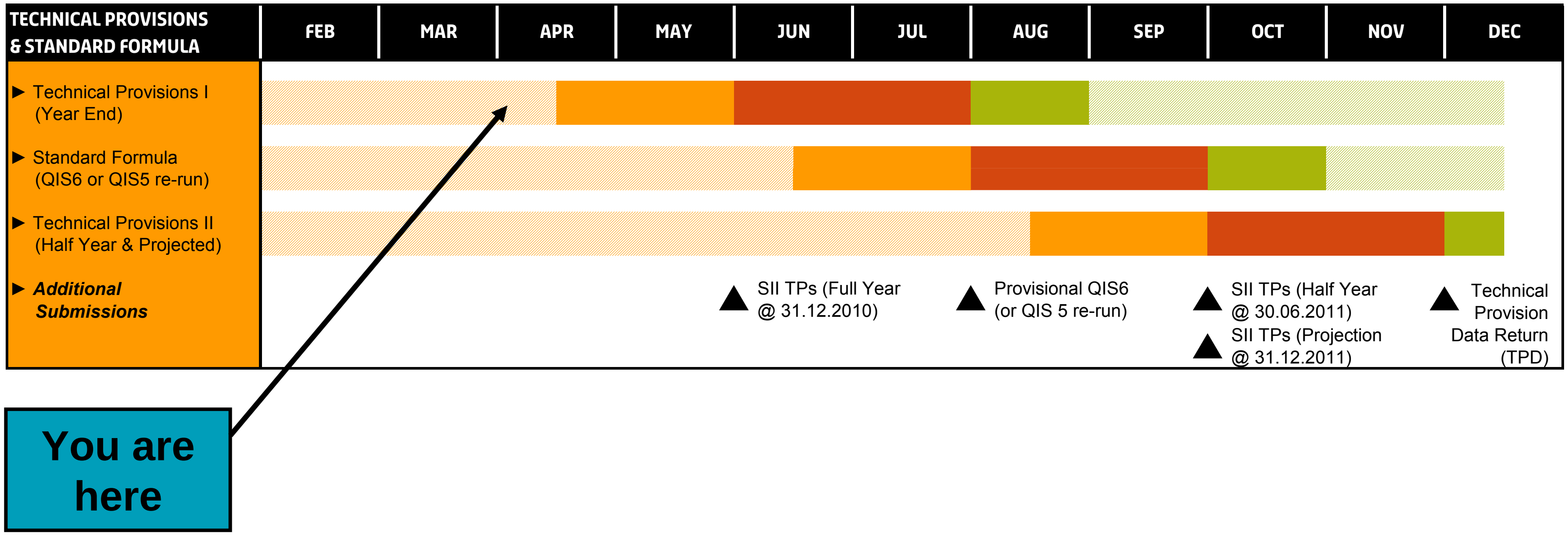
INTRODUCTION & OVERVIEW OF WORKSTREAMS

Where did we end 2010 on TP reviews ?



- Completing QIS5 alone did not justify high scores
- Evidence of processes applied needed
  - practical detail on how TPs were calculated

TP and Standard Formula SCR Workstream plan



What and when?

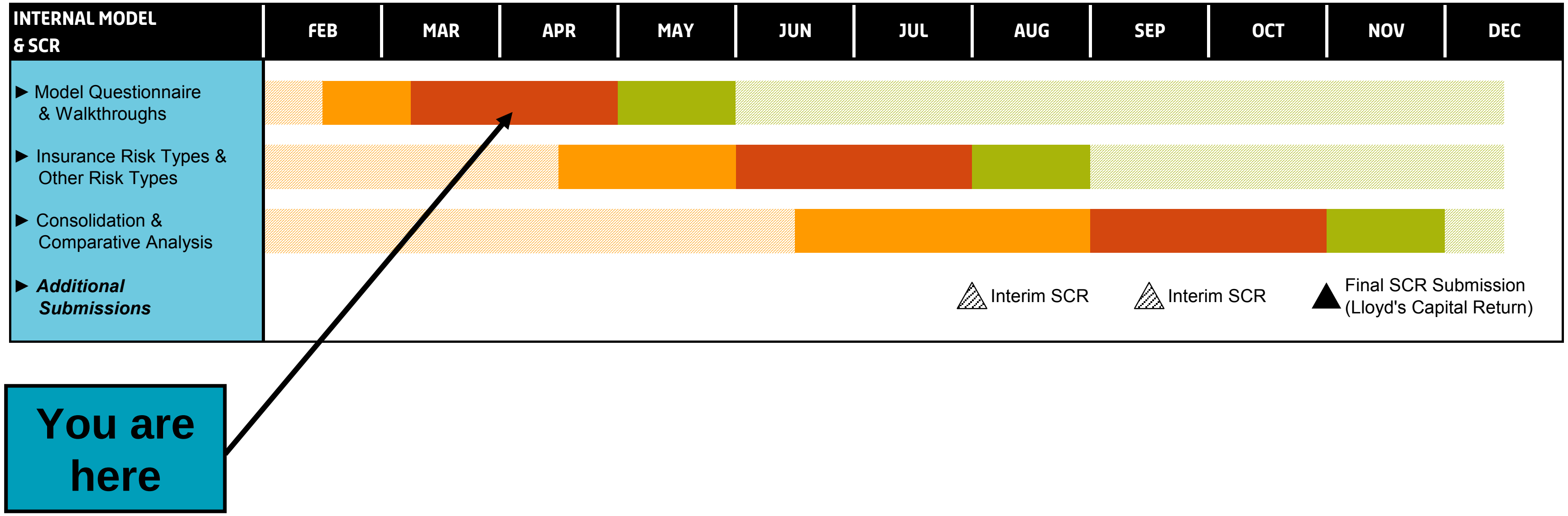
- Year end 2010 TPs by 27 May – focus for this exercise will be the results
- Full Standard formula recalculation by 29 July
- Half year 2011 and projected 2011 year end TPs by 30 September
- TPD and GQD data by 30 November

We are expecting high standards

- Already completed QIS5 to “better than best efforts” basis
- In many cases exercises will be based on actual year-end results
- TPD will require formal sign off – similar to SRD
- Overall level of expected sign off is:

Return	Level of sign off	Provided by
May TPs	Positive Assurance	Actuarial Function
July SF	Negative Assurance	Finance Director
Sept TPs (incl projected)	Positive Assurance	Actuarial Function
TPD	Negative Assurance	FD + other officer

Internal Model & SCR Workstream plan



What and when?

- Model questionnaires followed by walkthroughs
- Strong links with Model Validation
- Syndicates must provide sufficient evidence of robust process to allow LIM to place reliance on syndicate SCRs
- Interim submissions end July and mid September to provide partial / real data to test the LIM and full SCR return required by 31 October

Level of SCR sign off required

- Agents must provide sufficient evidence of a robust process to allow LIM to place reliance on syndicate SCRs
- Interim submissions to provide partial / real data to test the LIM
- Full SCR return required by 31 October to calibrate the LIM

Return	Level of sign off	Provided by
July SCR	Best efforts	Capital/Risk committee
September SCR	Negative Assurance	Capital/Risk committee
Final SCR (October)	Positive Assurance	Board

TECHNICAL PROVISIONS

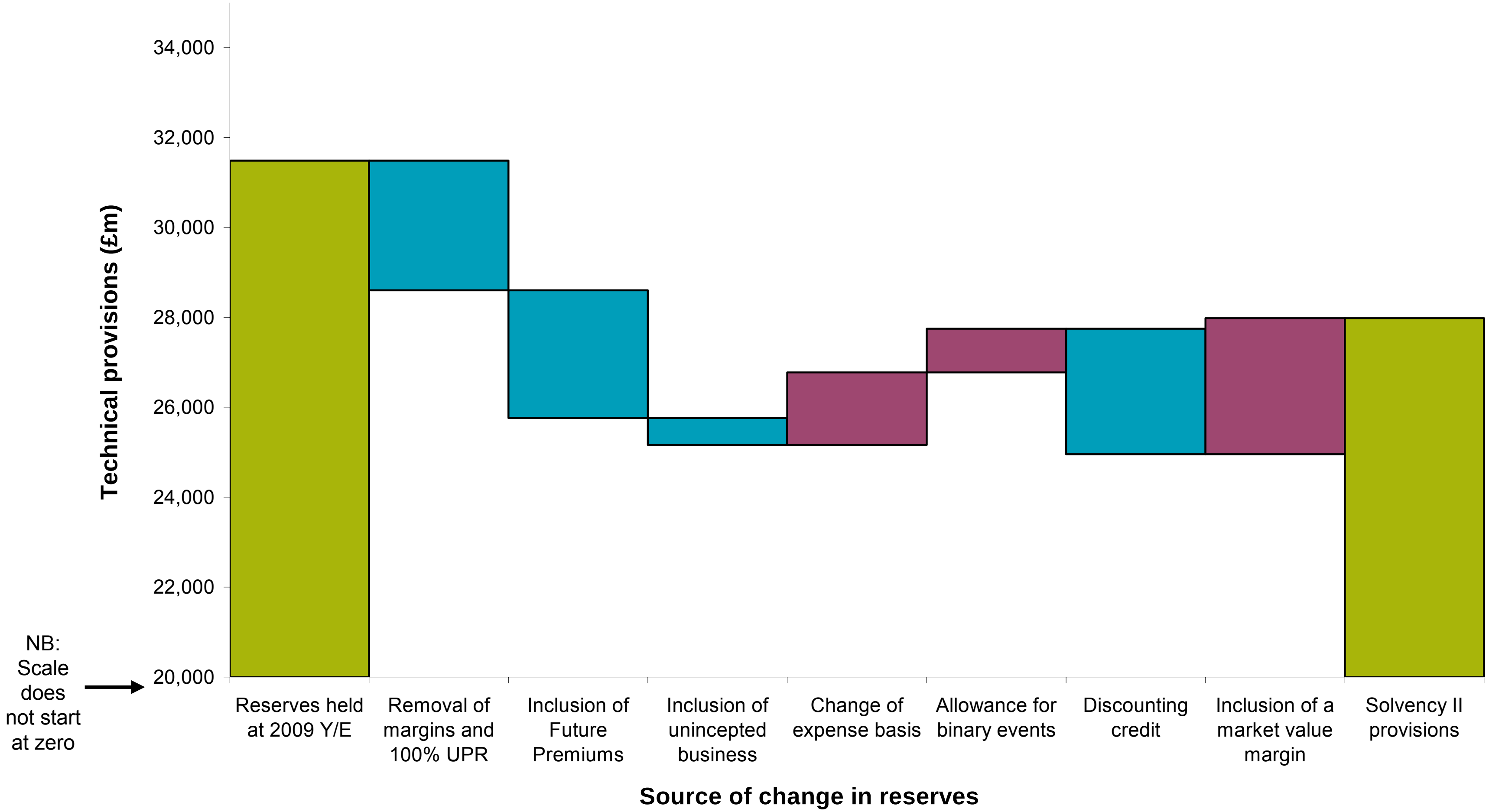
Agenda (TP Section)

- Main focus for today is the May Technical Provisions submission
  - other items including Standard Formula covered in more detail in June workshops
- QIS5 / Standard Formula
- Guidance and templates available
- Key issues
- Binary Events – a worked example

Agenda (TP Section)

- **QIS5 / Standard Formula**
- Guidance and templates available
- Key issues
- Binary Events – a worked example

The movement in Technical Provisions is significant….



…but care needs to be taken – reductions can hide the real impact

- Have seen a reduction in technical provisions
  - This is "as expected" but is this the full story?

Figures in £bn	Current Basis	QIS5 basis	Change to QIS5
Net technical provisions	**33.6**	**28.0**	**(5.6)**
Net premium debtors	(5.2)	(2.3)	2.8
DAC	(2.2)	0.0	2.2
Net technical provisions less premium debtors and DAC	**26.2**	**25.6**	**(0.6)**

* rounding means figures may not reconcile exactly

- "Real" impact is much lower allowing for asset movements…
  - …and not every agent reduced the assets in QIS5

The specification for the Standard Formula remains uncertain

- Update of QIS5 – if no QIS6 or changes to SF
  - Expect Lloyd's to issue spreadsheets (based on QIS5)
    - Mid-may if no QIS6
  - Only quantitative elements
- Risk Margin will be Standard Formula for this exercise
- Only one return
  - WILL include geographical diversification
- NOT including FAL in market risk
  - This will be valued centrally / aligned with Internal Models
- NOT expecting to mandate USPs

Agenda (TP Section)

- QIS5 / Standard Formula
- **Guidance and templates available**
- Key issues
- Binary Events – a worked example

What are the major developments for Technical Provisions?

- Not many changes over last 12 months
- Some key items to note:
  - Segmentation and classes of business
    - Clearer requirement in most areas
  - Future Premiums
    - Claims provisions now include future premiums relating to earned business
    - Reflected in the May TP submission but not in the TPD yet
  - Risk Margin
    - Now allows for diversification (as per QIS5)

2011 Technical Provision submissions

- These will not be regular returns…
  - …could require a re-run in 2012….
  - …but the TPD / GQD will be the main BAU submissions
- Simplified approach in places for May return
  - With more detail included for September return

Goal of both the May / Sept submissions:

Demonstrate & test both results and capabilities

Summary of key submission requirements

Element	May submission	September submission
Segmentation	By Solvency II class (28 non-life)	Solvency II class (28 non-life)
Currencies	USD / Non-USD	"Six plus one"
Expense provisions	Whole account, by expense category*	Class plus YOA, not category
Discounting	By class	Class plus YOA
RI Bad Debt	By class	Class plus YOA
Risk Margin	Not collected	Whole account, allocated to class*

* All items split between claims and premium provisions except expenses in May and Risk Margin in September

Guidance & templates on Lloyds.com

- Updated Technical Provisions detailed guidance (March 2011)
- May Technical Provisions spreadsheet template and instructions
  - EIOPA term structure as at 31 December 2010
    - Use pre-stress values
  - Riskcode to Solvency II class mapping (suggested as a starting point)
- GQD and TPD data specifications and instructions
  - Note GQD instructions will change slightly
- Evidence Templates and scoring sheets
- FAQs ….or direct queries to solvency2@lloyds.com or via your Account Manager

Agenda (TP Section)

- What QIS5 showed us
- Guidance and templates available
- **Key issues**
- Binary Events – a worked example

Segmentation

- In general calculate by **homogenous risk group** then allocate
- QIS5 and latest level 2 gives clearer definition
  - Especially surrounding proportional reinsurance
  - Some changes to classes from original
- You will need more than just riskcodes
  - Some are not granular enough - e.g. motor and life
    - Potential for new riskcodes to address
  - Underlying direct / proportional / non-proportional
- Note unbundling / requirements for reporting annuities separately

Currencies

- Level 2 advice still requires TPs calculated in “all currencies”
- Lloyd’s will be asking for “six plus one” (not for May return)
  - USD/GBP/CAD/EUR/JPY/AUD + OTHER
- As per TPD instructions based on materiality
  - Agents should decide their own modelling materiality
  - Actuarial function responsible
  - Need to explain with reasoning (incl. analysis)

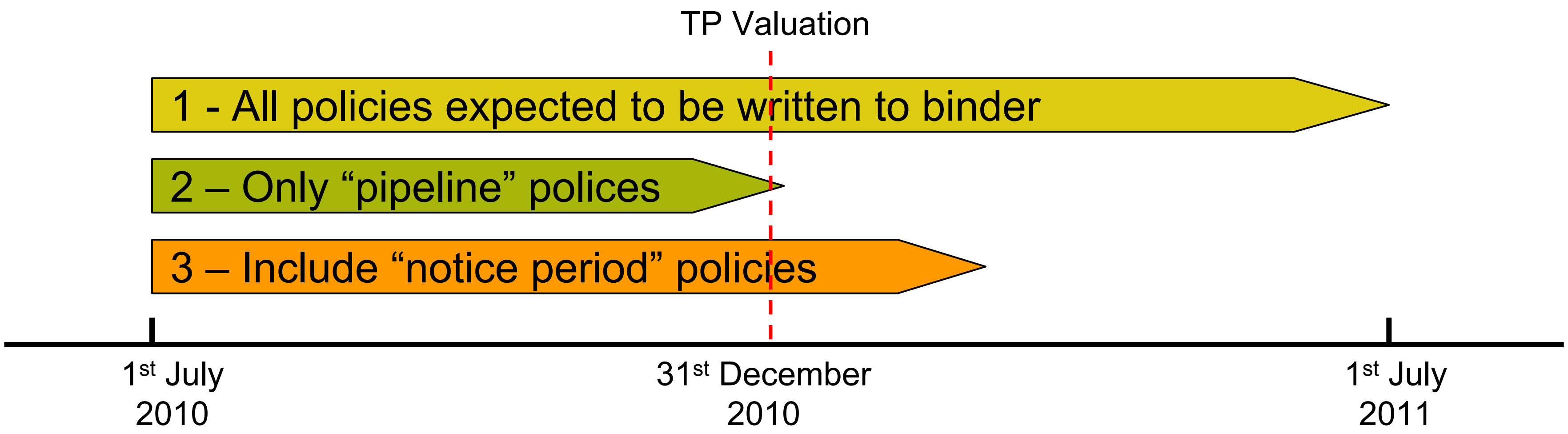
- As with segmentations, generally calculate cashflows by **homogenous risk group** then allocate

Contract Boundaries

- No real change under latest draft of level 2 and no definitive answer from supervisors
- Focus remains on legal obligations of underlying **insurance contracts**
- Debate remains around binders
  - Lloyd's still interprets this a "look through" to focus on underlying insurance contracts
  - Others (including FSA) have spoken about other treatments
  - Need to keep flexible approach
    - Will accept any chosen approach for 2011….
    - …but may mandate approach going forward
- Important to ensure consistency in definition with capital model
  - And make sure there is no double counting or missed exposures

Contract Boundaries (cont.)

- Consider an example showing the three main options for inclusion in Solvency II Technical Provisions :
  - Method 1 – “old” underwriting year basis
  - Method 2 – close to current basis
  - Method 3 – somewhere in the middle!



Expenses

- May submission has more detailed split
  - TPD does not
  - May submission to test what people are doing
- Requirements include items not included in TPs before
  - Need to ensure all the required elements are captured
- Lloyd's figures for information

Components of future additional expenses		Expected cashflows £m
Gross expenses on claims provisions	1,381	
ULAE*		-
Investment management		80
Admin/overheads		1,191
Allowance for inflation		110
Gross expenses on premium provisions	2,127	
ULAE		56
Investment management		16
Admin/overheads		307
Acquisition costs		1,725
Allowance for inflation		25
Reinsurance acquisition costs	(65)	
2009 year-end future expenses	3,443	

*gross ULAE held within gross reserves

Binary Events

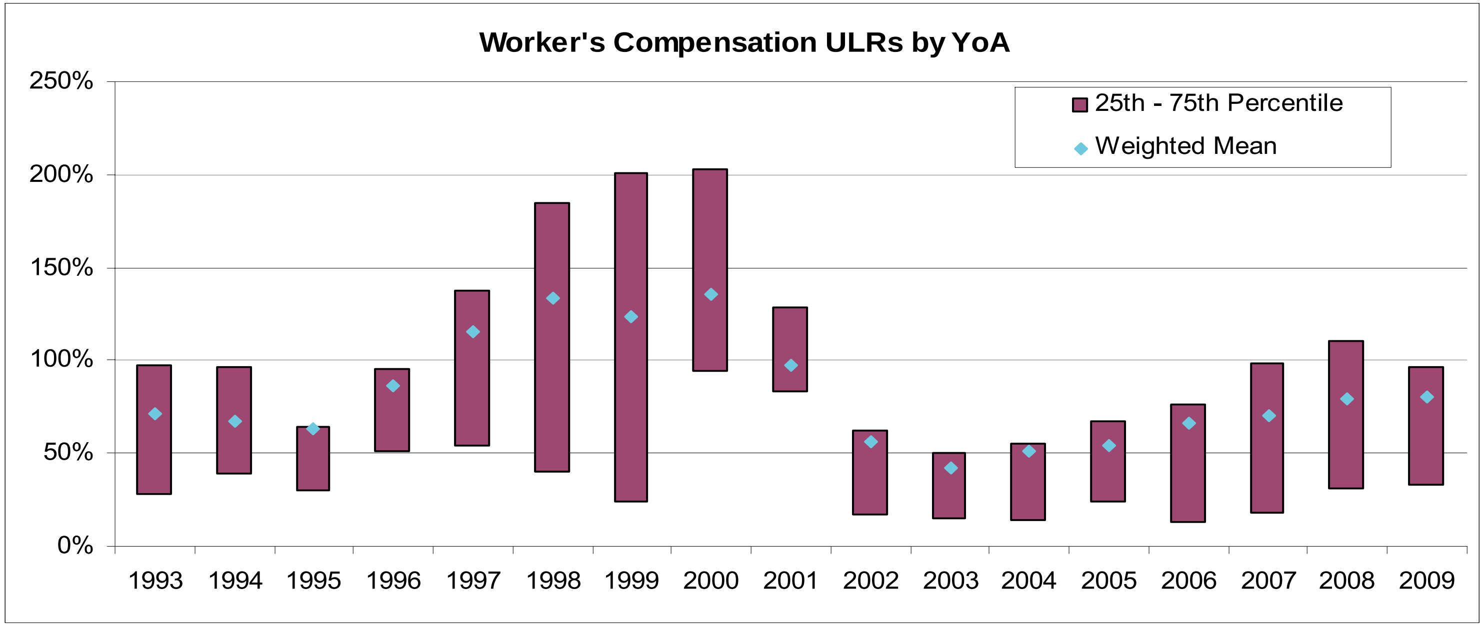
- Binary Events are required - not just a Lloyd's requirement
  - Although not much airtime outside Lloyd's
- Methods difficult by definition
  - Will always be subjective / based on expert judgement
    - But do try to be explicit
- Possible approaches
    - Uplifts based on effect of truncating distributions
    - Scenario-type approaches
- Lloyd's worked example follows – not mandatory

Agenda (TP Section)

- What QIS5 showed us
- Guidance and templates available
- Key issues and developments
- **Binary Events – a worked example**

Data and Approach

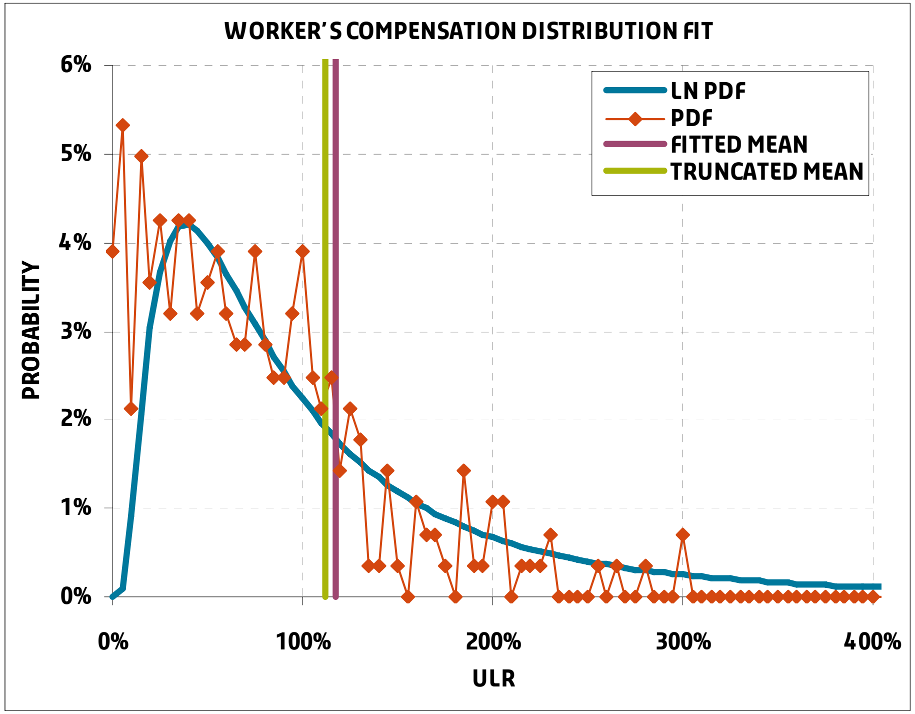
- Data Available
  - Gross ULRs by Syndicate and YoA for Worker's Compensation Solvency II class



- Method 3 in published TP Guidance - Uplift the reserves held to account for the limited amount of observed values in the data

Fit a distribution to the claims and then assume truncated

- Use expert judgement and data available to fit an assumed “true underlying” claims distribution
- Calculate the impact on the mean of truncating the “true underlying” distribution to an assumed level
  - Eg 99.5% level
- Derive the uplift to the ultimate losses based on the two mean ULRs



- Fitted “true underlying”:
  - LogNormal (-0.23, 0.89);
  - Mean – 117.8%; SD – 129.8%
- Truncated
  - Mean – 112.4%
- **Uplift Percentage = 4.83%**

Apply the uplift to the reserves

- Assumption
  - Decay uplift on ultimate claims by 15% for each year of account prior to the latest modelling year (decay varies by class)
- Derive reserve loading required to uplift ultimates to level required for each year of account
  - Apply these uplifts to the future claims
- Can conduct a similar exercise for reinsurance or net losses

DIRECT WORKER'S COMPENSATION (USD)		
RESERVES	UNADJUSTED	ADJUSTED
1993	190.0%	105.7%
1994	139.1%	102.9%
1995	145.0%	103.9%
1996	134.4%	103.5%
1997	155.3%	106.7%
1998	145.2%	106.4%
1999	137.9%	106.3%
2000	111.9%	102.3%
2001	108.5%	102.0%
2002	107.3%	102.0%
2003	108.3%	102.7%
2004	106.3%	102.4%
2005	106.1%	102.7%
2006	105.6%	102.9%
2007	105.0%	103.0%
2008	104.9%	103.5%
2009	104.8%	104.1%
2010 (unincepted)	104.8%	104.8%

This is only one approach!

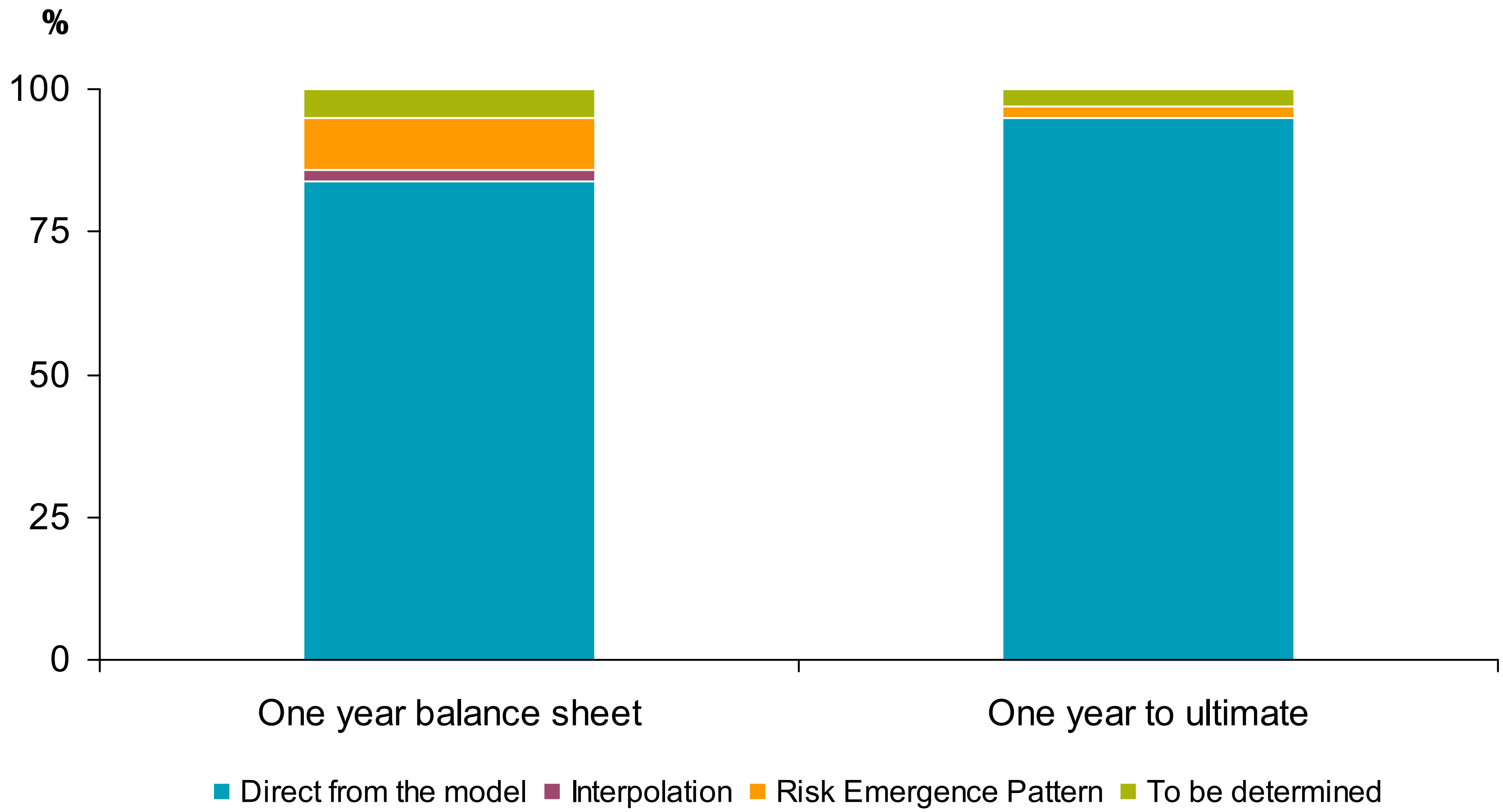
- This is an example of one possible approach
  - Based on several subjective assumptions
- Results are very sensitive to:
  - amount and credibility of data
  - choice of distribution
  - assumed amount of observable data
  - uplift decay over time
- Expect Agents to derive their own methodology which is appropriate for their business
  - Needs to be validated and documented

INTERNAL MODEL
SCR

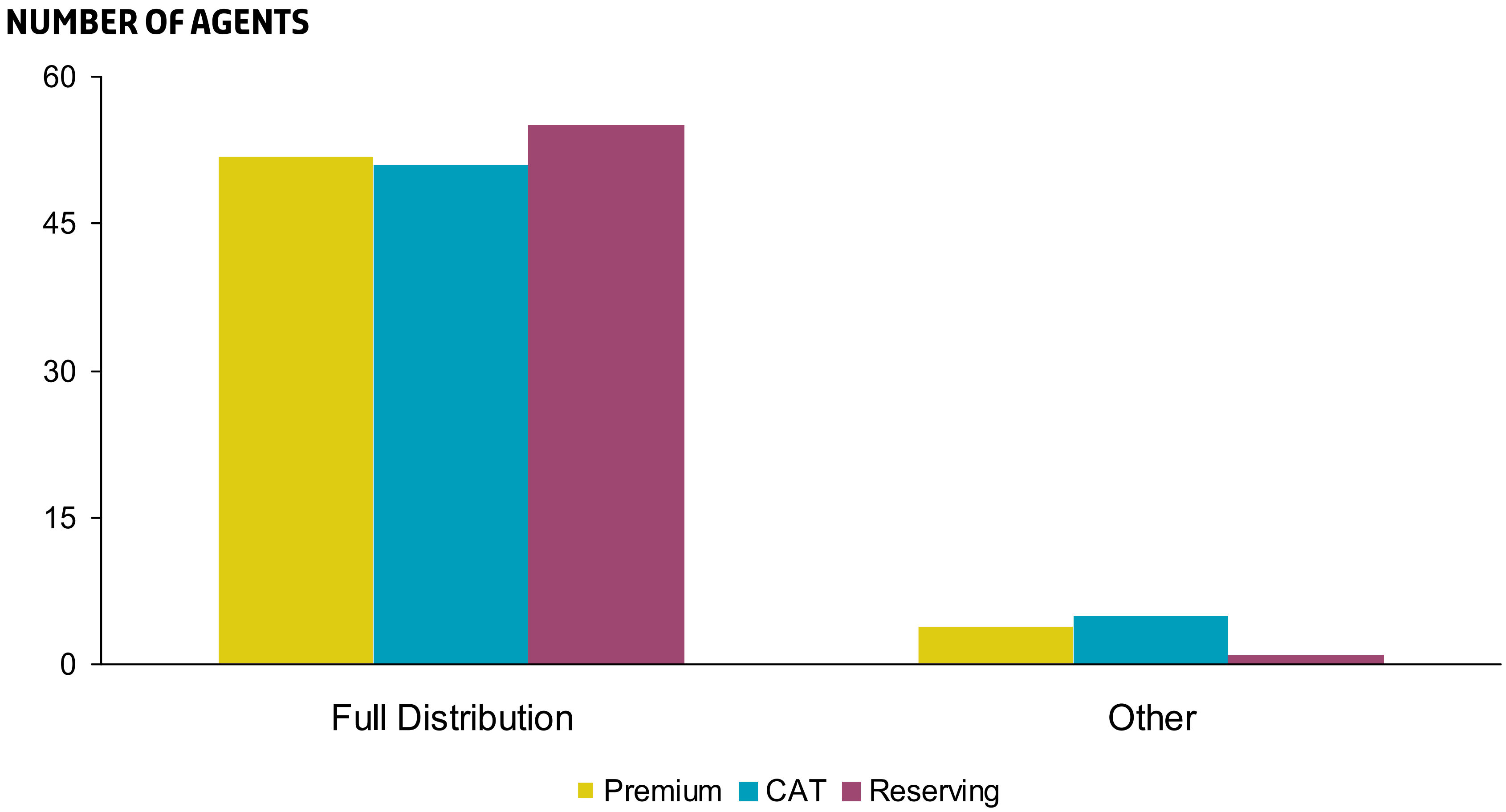
Agenda (IMSCR section)

- **Questionnaire feedback**
- Model walkthroughs
- SCR for member level capital setting
- Critical analysis for reviewers and lessons from ICAs

Results appear to show majority of models directly produce both numbers required

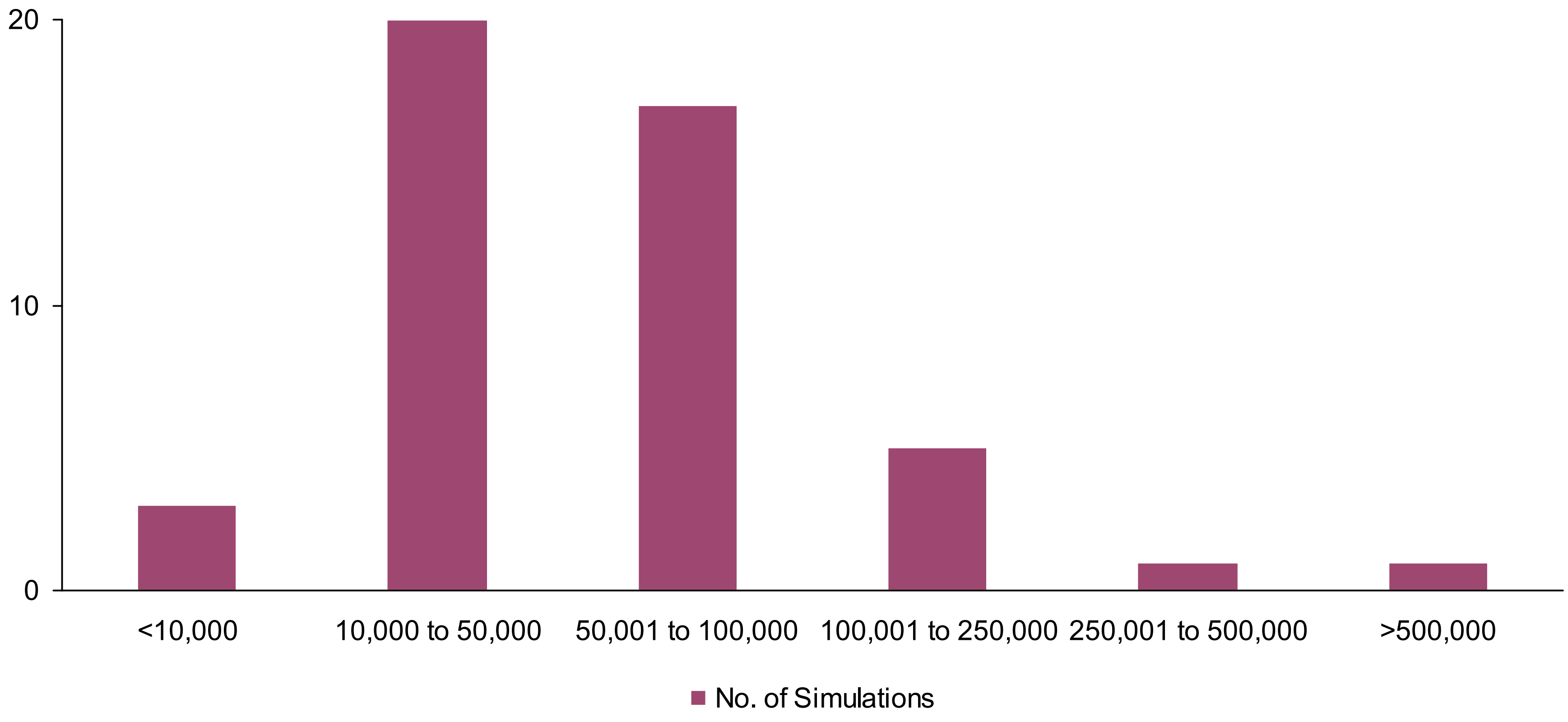


The majority of agents state that they are modelling a full distribution

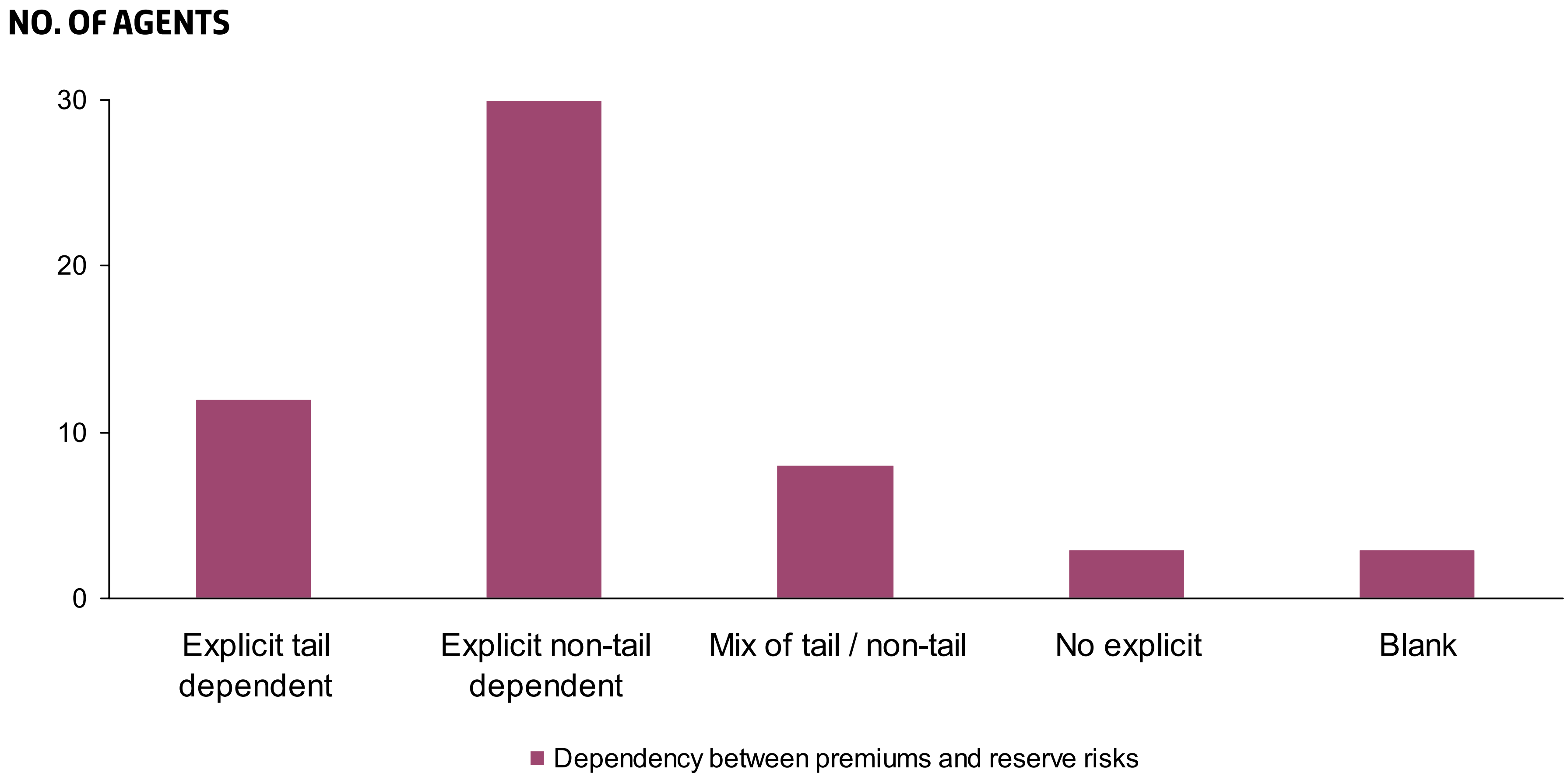


Number of simulations appears relatively low for some agents

NO. OF AGENTS: PREMIUM RISK



A mix of methods reported for tail dependencies



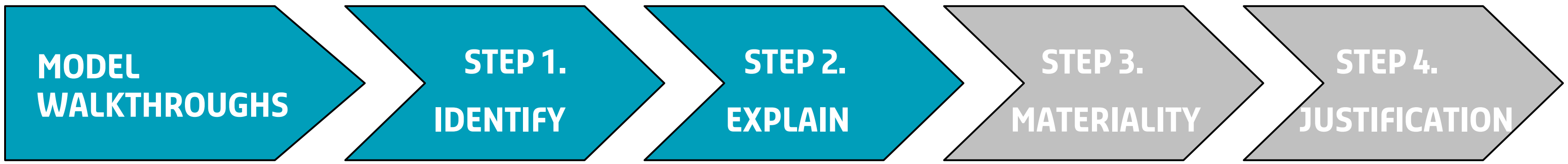
Most agents state that SCRs reconcile to business plans and booked reserves

Agenda (IMSCR section)

- Questionnaire feedback
- **Model walkthroughs**
- SCR for member level capital setting
- Critical analysis for reviewers and lessons from ICAs

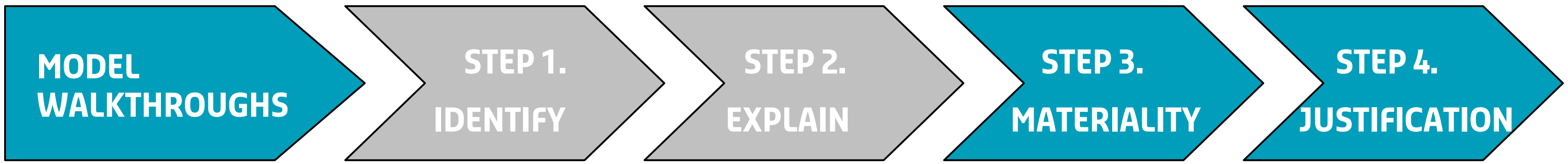
The goal is to capture the model structure, build status and key risk drivers…

- **Identify**
  - most material risks – will inform follow ups/focus for validation
  - key data sources, assumptions and judgements
- **Explain**
  - status of the model build
  - design and operation
  - aggregation
  - calibration
  - model stability



… focusing on material risks and justification of approach

- **Materiality -** agents to provide indication:
  - across risk groups (eg premium, reserving)
  - and within risk groups (eg by CoB within premium risk, interest rate risk vs fx for market risk)
  - focus on one – end to end
- **Justify** rationale
  - strong links with Model Validation workstream
  - depth of validation takes account of materiality
  - key testing and evidence



Advance preparation and structured sessions will ensure maximum benefit …

- Based on questionnaire to focus Lloyd's analysts on the material risks and support consistent approach
  - to be issued this week ahead of walkthroughs
  - planning agenda – not for completion in advance
- Model schematic will aid structure
- Timeframe – April/May
  - initial 2 hour sessions
  - follow up as appropriate

… as will ensuring appropriate attendees

- Demo from manager responsible for design of the model
  - should include person with detailed knowledge of the technical specification
  - ideally no more than 3 attendees from agent at this initial stage
- Agent ownership
  - outsourced build responsibility recognised as an issue
- Lloyd’s team of three
  - Senior actuary, plus actuarial analyst from MRC
  - Account manager for continuity on follow up
- FSA for agents in sample

Identify gaps and areas for follow up

- Will help plan deep-dive reviews
- Understand key risks and their relative materiality
- Support focus for validation - key components and controls
- Agent understanding
  - limited to the modellers…use and buy-in across management
- Reports and MI
- Links to underlying evidence
- Inconsistent views
  - what is material, sensitivity of key assumptions

Agenda (IMSCR section)

- Questionnaire feedback
- Model walkthroughs
- **SCR for member level capital setting**
- Critical analysis for reviewers and lessons from ICAs

SCRs at Lloyd's are PRE tax

- Members pay tax, not syndicates
- No tax liabilities are recognised against assets held in trust at Lloyd's
- Capital set for an underwriting year
  - Full distribution of profits
  - ECA for one year's underwriting
- Member level R/I and group arrangements ensure tax is member specific
  - Maybe use deferred tax in group strategies / ORSA

SCRs at Lloyd's *are* different…

- Excludes market risk on capital
  - Model risk on held assets and future premium receipts
  - FAL risk falls to CF
    - Protective provisions where inequitable to mutualise the risk
- All syndicate assets are Basic Own Funds
  - Tiering issues for Lloyd's centrally
    - Protective provisions for LOC limits
- Managing agents prepare a syndicate SCR
  - Lloyd's allocates to members
- Excludes member level reinsurances outside of FAL

…so why not go with one SCR on "Lloyd's basis"?

- Difficult to *prove* always higher
- Regulatory intervention
  - Lloyd's passing overall SCR test gives flexibility on a case by case basis
  - Will get limited credit for higher test
  - May not always have current capital strength

Lloyds is expecting to request an "ultimate SCR" for member capital setting (*)

A. I am aware of the requirement for "2" numbers and understand why

B. I am aware of this requirement but think Lloyd's could use the 1 year SCR

C. I am aware of this requirement but would suggest Lloyd's set member level capital another way

D. I am <u>not</u> aware of this requirement

** Note: Subject to market consultation and Franchise Board approval*

Member capital setting needs to be for next underwriting year in full (*)

Risk "for the 2011 year of account"	1 Year	**Lloyd's**
FAL	✗	✗
Written 2011 premium unearned at Dec 2011 (Time 1)	✗	✓
Binder premium incepting 2012 for 2011 YOA	✗	✓
Bound contracts in 2011 for 2012 yoa premium	TP's	✗
Loss emergence	1 year	Ultimate
Risk Margin	✓	N/A

** Note: Subject to market consultation and Franchise Board approval*

Member capital will stack on top of Solvency II balance sheet (*)

- Syndicate assets on Solvency II basis
  - Not as per accounts under GAAP or IFRS
- Syndicate liabilities also on Solvency II basis
  - Best estimate (including binary events)
  - Discounted
  - Risk margin
- Lloyd's requires year of account split, including u/w year +1
- Regulatory SCR for risk margin
  - not considered inequitable between members
  - use internal model

** Note: Subject to market consultation and Franchise Board approval*

Agenda (IMSCR section)

- Questionnaire feedback
- Model walkthroughs
- SCR for member level capital setting
- **Critical analysis for reviewers and lessons from ICAs**

“Sensible” allocation of SCR to risk category

- High level tests:
  - Pre diversification risk not less than post diversification
  - Underwriting risk in aggregate higher than individual components
- Clear where underwriting profit offset sits
- Clear where mean investment return is included
- Avoid “implicit” margins / deficits offsetting across risk categories
- Underwriting risk: derived 1:200 loss ratio
  - Comparison to sensitivity tests

Ability to explain "as if" losses

- Compare outputs to previous *actual* experience
- Can rerunning scenarios really adjust materially for re-underwriting the book
  - KRW
- "No longer write that class"
  - …but what has replaced it?
- Challenge management action
  - Cycle management
  - Speed of recognition of loss emergence

Consistency and sense checks (1)

- Consistent with SBF for underwriting profits and investment returns
- You *do lose money* at 1:200 for any risk group
- Diversification credit for adding new classes
- More exposure = more capital
- What *really* does change year on year?

Consistency and sense checks (2)

- Tail dependency is not just between risk categories
  - classes of business
  - reserves across years of account
- Insurance risk is dominant
- Reserves have as much exposure as premium at 1:200
  - Only have to see variance in syndicate reported results
- Having 5 or even 10 years of good performance / reserve development is data…but is it statistically significant at 1:200?

TABLE DISCUSSIONS

Suggested topics: TPs

- Methods for allocating from HRG to Solvency II class and currencies
- Alternative methods for Binary events
- Underlying methods to calculate the best estimate cashflows
- Are there any data issues arising from the new requirements
- Approaches to tackle contract boundaries
  - What are people doing for unincepted business?
- Have people started to think about half year/projecting TPs

Suggested topics: IM & SCR

- **Model walkthroughs**
  - Should Lloyd's be collecting key metrics for comparison across syndicate models?
    - Which key metrics should be captured and how could these be presented?

- **Deriving the two SCRs required**
  - Truly direct from the model?
    - How are agents tackling this?

ROUND UP AND QUESTIONS

NEXT STEPS

What happens next?

- Slides will be made available on lloyds.com after both workshops
- Evidence templates now available via website
  - both TPs & IMSCR due to be submitted by end May
- Model reviews and walkthroughs will begin in early April
  - expect a call soon to schedule!
- Next workshops on TPs & IMSCR – 13 & 17 June
- Other imminent sessions:
  - Model Validation (2) - 9 & 10 May
  - Governance, Risk Management & Use – 17 & 18 May
- Finally, before you go, a request for feedback ...

How useful have you found today's session?

A. Very useful and provided helpful practical guidance and clarification

B. More detailed guidance and worked examples would have been helpful

C. We have clear views on Lloyd's expectations for these workstreams

D. Greater detail needed on format and timing of Lloyd's reviews

E. I'm too polite to say!

How have you found format of today’s workshop?

A. It was a good balance between presentation and discussion

B. Would prefer less presentation and more discussion

C. Would prefer less discussion and more presentation

D. Other.

Do you think facilitated table discussions work as a way of sharing views and issues?

A. Yes

B. No

FIDENTIA

VOTING RESULTS
4 APRIL

Split tables to allow focused discussion

Which topic would you prefer to discuss today:

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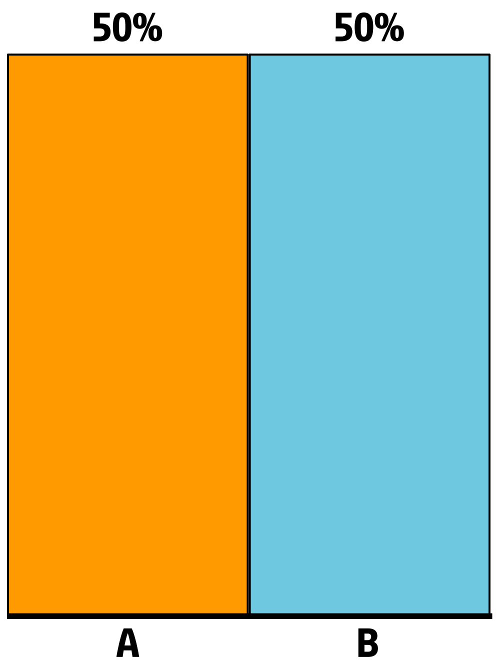

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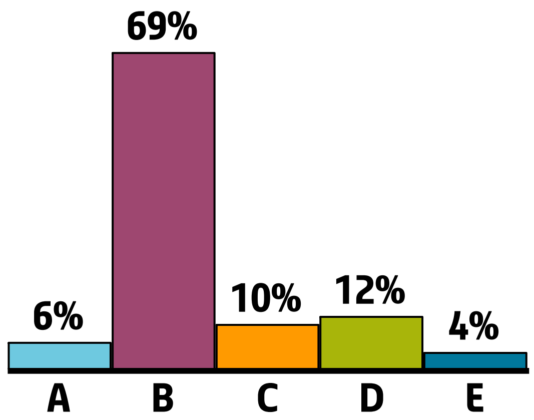

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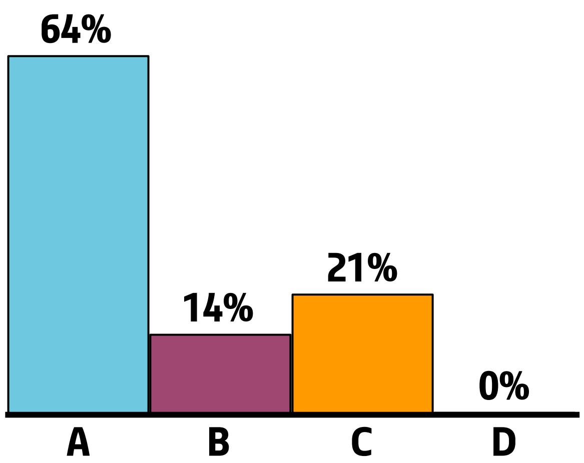

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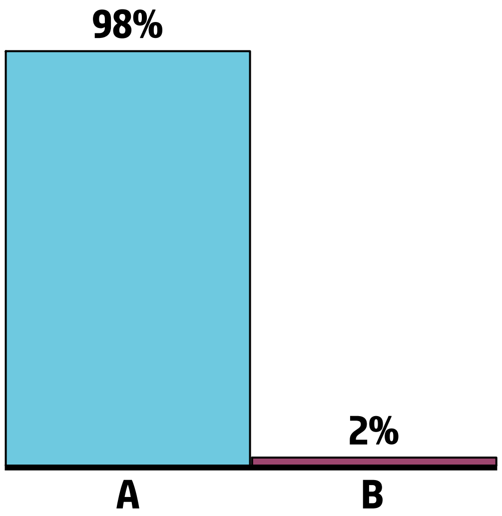

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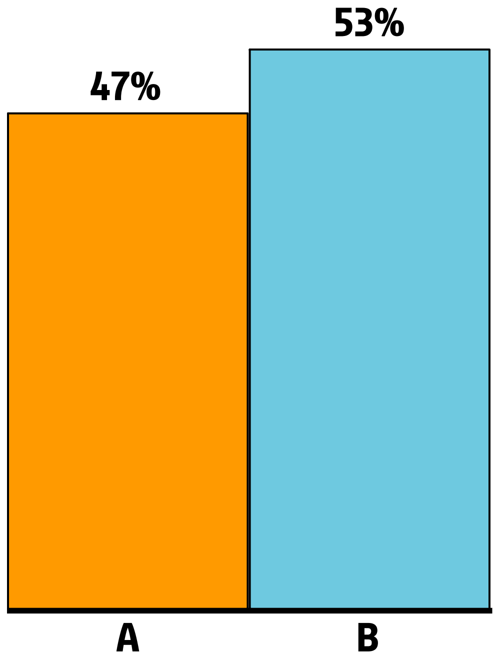

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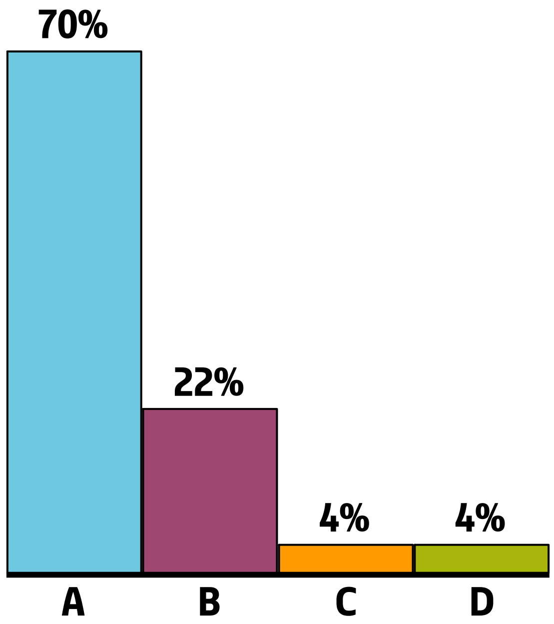

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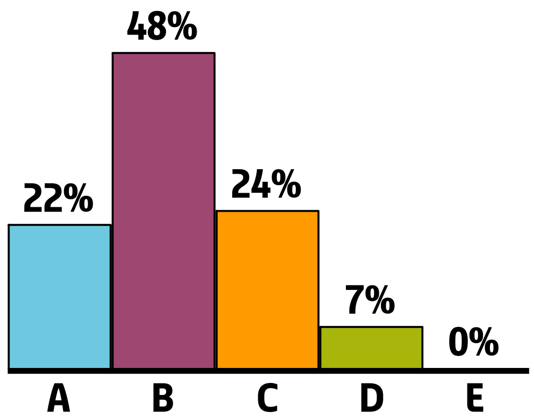

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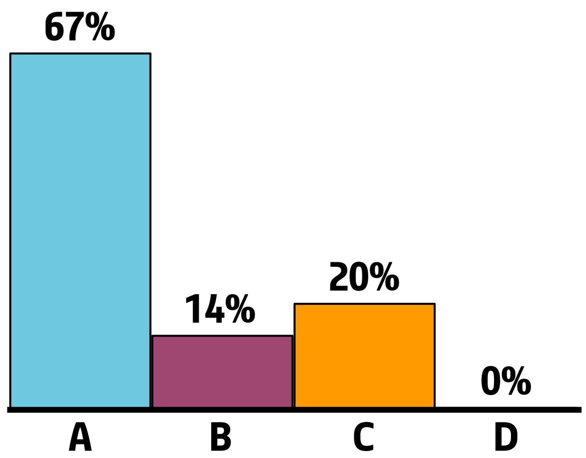

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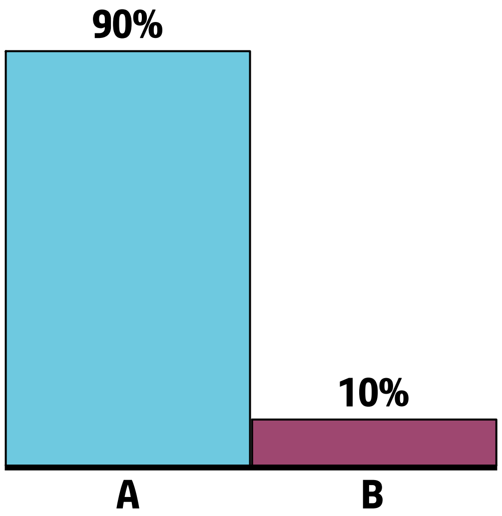
A. Yes

B. No



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