

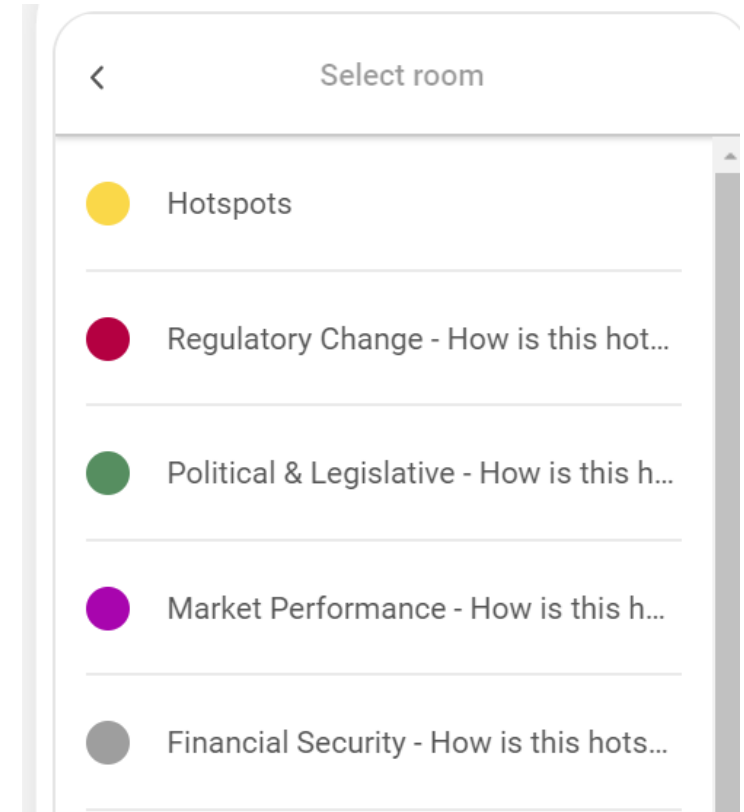
JFAR and the Hotspots

JOINT FORUM ON ACTUARIAL REGULATION

Agenda and Slido

- ▶ Introduction to the JFAR
 - ▶ members
 - ▶ aim
- ▶ Risk Perspective and hotspots
- ▶ Your choice of hotspot
- ▶ Regulatory Change hotspot
- ▶ Panel Discussion

▶ Pose your question, or answer the polls as the options come up



Joint Forum on Actuarial Regulation



The JFAR is a unique collaboration between regulators to co-ordinate, within the context of its members' objectives, the identification and analysis of public interest risks to which actuarial work is relevant.

The Pensions Regulator



Institute
and Faculty
of Actuaries



BANK OF ENGLAND
PRUDENTIAL REGULATION
AUTHORITY

Joint Forum on Actuarial Regulation

- ▶ JFAR is not another regulator.
- ▶ It is a forum for the five regulators to meet and collaborate:
 - ▶ Share expertise;
 - ▶ Identify current and emerging issues;
 - ▶ Reduce risk of duplicating or conflicting actions;
 - ▶ Reduce risk of regulatory gaps or overlaps;
 - ▶ Increase knowledge through engagement with experts to brief it on topical matters;
 - ▶ Identify areas where JFAR can help actuaries and/or users.

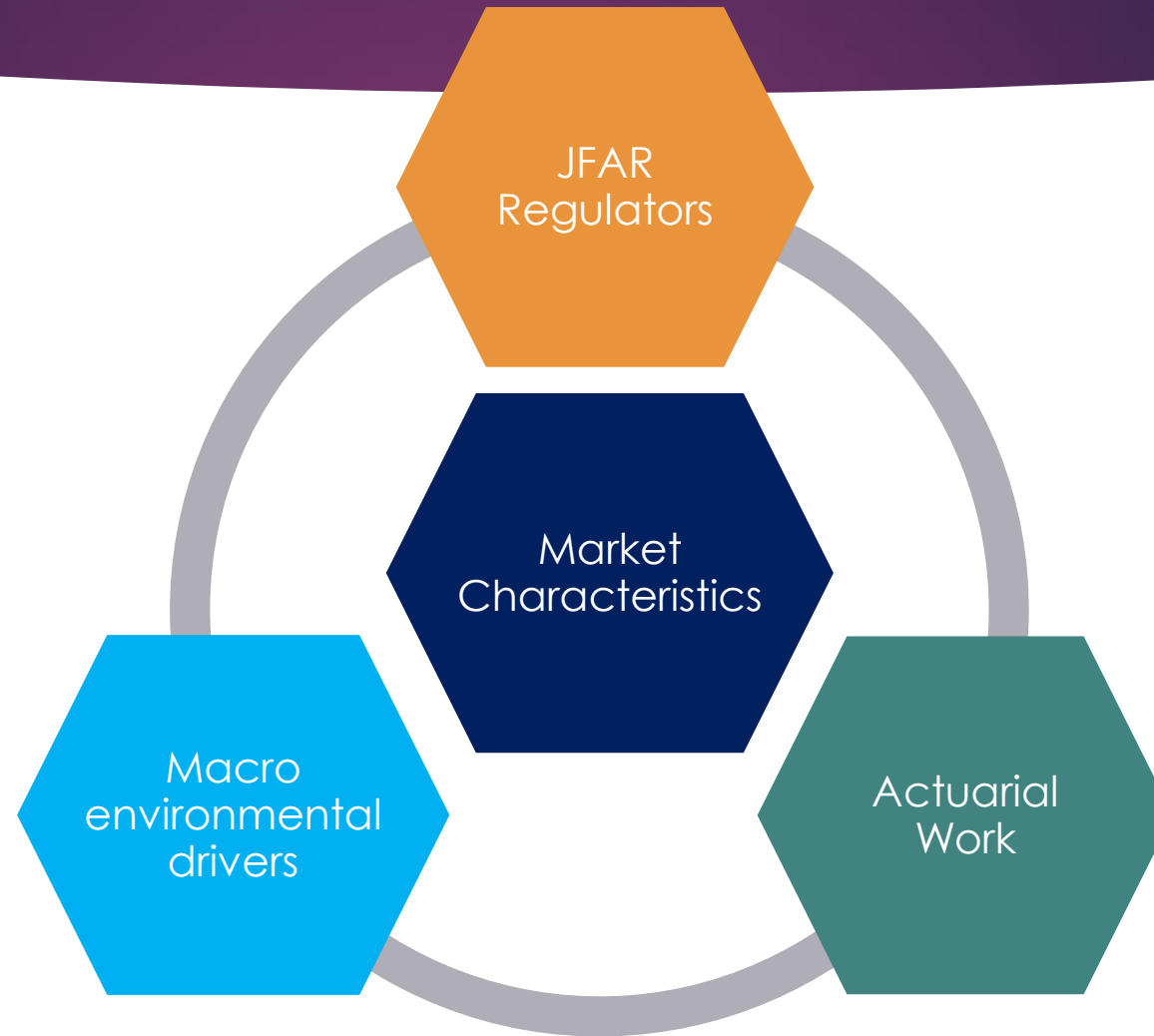
Joint Forum on Actuarial Regulation

- ▶ Produces an annual Risk Perspective report.
- ▶ JFAR Thematic Reviews:
 - ▶ DB to DC transfers;
 - ▶ Group think;
 - ▶ General Insurance Provisions;
 - ▶ “Impact of low interest rates on insurers and pension schemes” and “The role of the actuary in with-profits life assurance”;
 - ▶ Actuarial Function Reports Roundtables - June 2018;
 - ▶ Pension Working Group – August 2018.

Risk Perspective: 2017 Update



Actuarial Risk Identification Architecture



A R I A

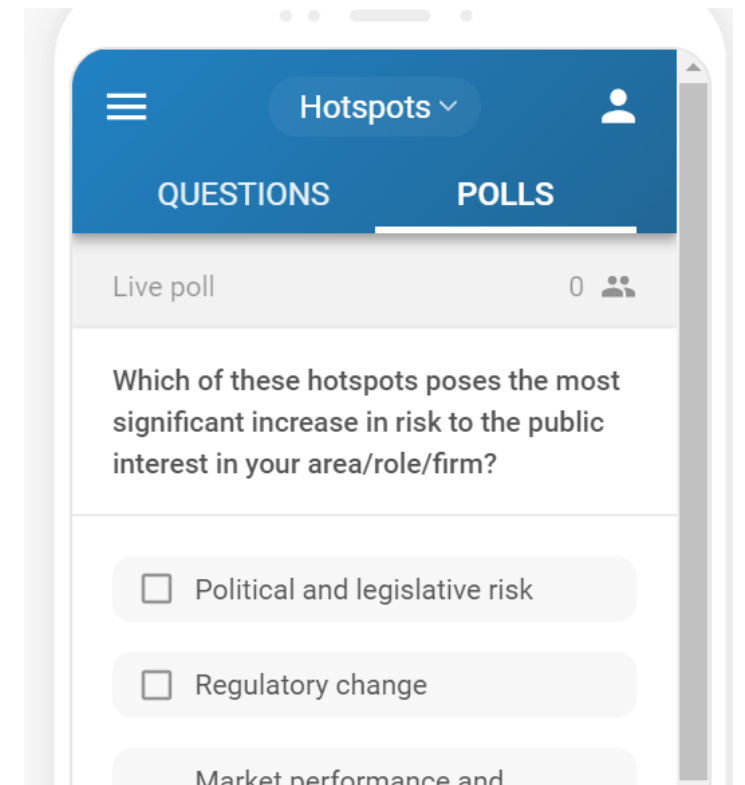


C H U r r e p r e s e n t s t o t s



Slido: Poll and Discussion

- ▶ Political and legislative risk
 - ▶ Regulatory change
 - ▶ Market performance and uncertainty
 - ▶ Climate-related risk
 - ▶ Financial security
 - ▶ DB pension scheme management
 - ▶ Technological change: Automation and digitisation, Big Data, AI and cyber risk
 - ▶ Terrorism and Cyber crime
 - ▶ Mortality
- ▶ Which of these hotspots poses the most significant increase in risk to the public interest in your area/role/firm?
 - ▶ Do you think that the JFAR has missed any other risks from the current hotspots?



Political and legislative risk



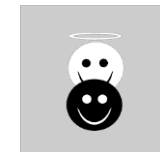
...actuaries do not sufficiently consider or plan for the potential for political or legislative change and as such over or under react to political uncertainty.

▶ Current Influences

- ▶ Brexit: direct and indirect e.g. economic impact, regulatory uncertainty, legal contract validity.
- ▶ UK domestic policy e.g. monetary policy, pension legislation, health spending, data privacy.
- ▶ International e.g. societal polarisation, income inequality, inward orientation of countries.

▶ Key drivers

- ▶ Primary: political
- ▶ Secondary: economic, environmental, legal and regulatory, ethical and international factors



Political and legislative risk and Actuaries



- ▶ Political decisions could change:
 - ▶ the roles and responsibilities of actuaries;
 - ▶ the data and methodologies used;
 - ▶ the models and assumptions.
- ▶ May be a lack of relevant history of similar situations and impacts can be binary.
- ▶ May have limited knowledge of government thinking or be unaware of the groups influencing it.
- ▶ Geopolitical: UK actuaries may be unaware of local political considerations.

Regulatory Change



...actuarial work is adversely impacted by the level of regulatory change resulting in poor outcomes...

▶ Current Influences

- ▶ Recent changes may not yet be fully embedded:
 - ▶ Revised TAS, Actuarial Professional Standards;
 - ▶ Solvency II, Pension Freedoms, Senior Insurance Managers Regime.

▶ Key Drivers

- ▶ Primary: legal/regulatory
- ▶ Secondary: political and international factors



Regulatory Change and Actuaries



- ▶ Risk to high quality actuarial work:
 - ▶ Demands on actuarial resource (e.g. embedding Solvency II, IFRS17 preparation);
 - ▶ Overreliance on professionalism, reluctance or inability to speak up in difficult circumstances;
 - ▶ Commercial pressures, e.g. focus on short term profit generation;
 - ▶ Conflicts of interest;
 - ▶ Silo thinking or group think;
 - ▶ Mistrust of experts may lead actuaries to be considered anti-competitive, too cautious or a barrier to innovation.

Market Performance and Uncertainty



...actuaries fail to make sound judgements and risk based decisions given the uncertainty in the current financial market conditions...

- ▶ Current Influences
 - ▶ Brexit and the continuation of the low interest rate environment since GFC;
 - ▶ new and volatile economic and financial market conditions e.g. impact of Brexit on inflation, real interest rates, business investment and currency markets;
 - ▶ Challenges for actuaries managing and communicating uncertainty.
- ▶ Key drivers
 - ▶ Primary: economic
 - ▶ Secondary: political, environmental and international factors



Market Performance and Uncertainty and Actuaries



- ▶ Risk to high quality actuarial work:
 - ▶ Market Conditions
 - ▶ Monetary policy post GFC;
 - ▶ Uncertain impact of Brexit;
 - ▶ Persistent low interest rates.
 - ▶ Search for yield
 - ▶ Innovative solutions – ILS, illiquid or complex asset classes
 - ▶ Excess capital in insurance – pricing pressures, consolidation

Climate-Related Risk



...actuaries may not take into account appropriately, or communicate clearly, the assumed impact of changing climate on decisions of users.

- ▶ Current Influences
 - ▶ Increasing body of evidence;
 - ▶ Governments and users are taking action to manage exposure to the physical, transition and liability risks;
 - ▶ Increasing involvement of actuaries.
- ▶ Key drivers
 - ▶ Primary; Environmental
 - ▶ Secondary: **inter-connections**: economic impact, legal/regulatory and political responses to changes including international situation, ethical investment policies



Climate-related Risk and Actuaries



- ▶ Risk to high quality actuarial work:
 - ▶ Climate-related risk impacts all areas of actuarial work;
 - ▶ Risk of poor quality actuarial work if actuaries do not fully consider impacts of climate related risk;
 - ▶ Mitigations available to actuaries;
 - ▶ Opportunity for actuaries to advise on solutions.

Financial Security



...actuaries fail to communicate the impact of changing economic and social priorities on the current and ongoing appropriateness of the assumptions inherent in products...

- ▶ Current Influences
 - ▶ Slow economic growth, ageing populations, benefit freezes, rising income and wealth disparity
 - ▶ Political and societal changes meaning governments are less willing or able to provide support.
- ▶ Risk that individuals will not have sufficient wealth or income to meet their financial needs.
- ▶ Key drivers
 - ▶ Primary: economic
 - ▶ Secondary: social (e.g. *intergenerational fairness*), international



Financial Security and Actuaries



- ▶ Selection of assumptions and relevance of historical data:
 - ▶ Changes to the benefits provided by government or employers;
 - ▶ Changes in societal attitudes and policyholder behaviour to individual financial security; or claiming under private policies,
- ▶ Product Design
 - ▶ Using new technology and data to facilitate new features or increase product reach;
 - ▶ Reviewing product design such as charges and tax implications over the long term.
- ▶ A lack of public understanding of financial products, low saving rates and mistrust of banks and insurers may increase the risk to financial security.

Technological Change

Automation and digitisation, Big Data, AI & Cyber risk



...actuaries may not recognise and take account of technological changes such as Big Data and new modelling techniques, increasing cyber risk or changing business models.

▶ Current Influences

- ▶ Technological advances and developments in AI;
- ▶ Significant investment in Big Data and Analytics.
- ▶ Impacts:
 - ▶ disruptions to current business models;
 - ▶ invalidate the current judgements, models and assumptions.

▶ Key drivers

- ▶ Primary: technological
- ▶ Secondary: social, international nature leads to political and legal/regulatory



Technological Change and Actuaries



- ▶ Risk to high quality actuarial work:
 - ▶ New data and tools;
 - ▶ Impact on the underlying risk;
 - ▶ Ethical considerations;
 - ▶ Cyber Risk;
 - ▶ Opportunity for new products and new business models.

Terrorism and Cyber Crime



actuaries may fail to update assumptions or adjust working practices to reflect the changing nature of terrorism and cyber crime risks

▶ Current Influences

- ▶ High-profile terror attacks on major cities in Europe, US and Australia – using irregular, low tech means to target the general population;
- ▶ High-tech crimes increasing e.g. NHS ransomware attack;
- ▶ Alleged political espionage;
- ▶ Use of cyber crime, scams and frauds by organised criminal gangs.

▶ Key drivers

- ▶ Primary: political and economic
- ▶ Secondary: international, technological



Terrorism and Cyber Crime and Actuaries



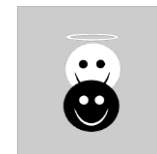
- ▶ Economic and technological drivers are changing the nature of crime and may pose challenges in managing disruption and associated costs.
- ▶ Setting assumptions for pricing, accumulations and reserving for terrorism and cyber is challenging given data limitations and uncertainties in developments of the risk profile.
- ▶ Actuaries may need to work collaboratively with others to increase their understanding of the underlying risk drivers and develop ways to measure and respond to them.
- ▶ Terrorism coverage traditionally designed to cover property damage but significant losses can occur from business interruption e.g. police cordons, reduced visitors, supply chain. Coverage may be insufficient e.g. small business, individual travel policies.
- ▶ Cyber Crime often exploits people's culture and behaviour to breach computer security.
- ▶ Personal and financial data held by insurers and pension schemes is attractive to criminals. Scheme members and policyholders are also vulnerable to fraud and scam attacks.

Defined Benefit Pension Scheme Management



...actuaries provide poor quality advice such that trustees are unable to respond effectively to the challenges facing DB schemes resulting in poor outcomes for members...

- ▶ Current Influences
 - ▶ Economic conditions, ongoing low interest rates
 - ▶ Transfer values are extremely high making transfers from DB to DC schemes seem highly attractive
 - ▶ White Paper on the security and sustainability of the sector
- ▶ Key drivers
 - ▶ Primary: economic and political
 - ▶ Secondary: legal/regulatory, ethical

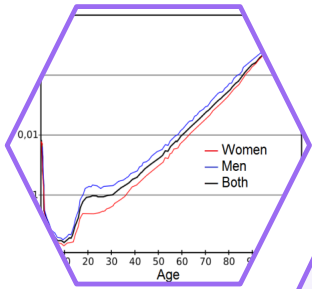


Pension Scheme Management and Actuaries



- ▶ Scheme Funding:
 - ▶ Commercial pressure from sponsors to adjust assumptions to reduce contribution requirements or to recommend complex investment strategies in the search for higher returns.
 - ▶ Economic uncertainty makes it more difficult to assess employer covenant.
- ▶ Scheme Consolidation:
 - ▶ Uncertainty around how employer covenant will be replaced by commercial investor backing. Risk that actuaries recommend consolidation based on assumptions that prove to be ill founded.
- ▶ Pension Freedoms and low interest rates have led to historically high levels of DB to DC transfers:
 - ▶ Actuaries face a challenge to choose assumptions suitable for the ongoing scheme as well as the transferees e.g. allowing for selection risk, funding level of the scheme, the liquidity of assets, volatility of the investment markets.
 - ▶ Potential commercial pressure to encourage transfers and so reduce sponsor's long-term liabilities.
- ▶ Modelling:
 - ▶ Scheme sponsors using modelling systems to test alternative actions or to assess progress of scheme solvency. may not fully understand the complexity and inter-relationships of the assumptions.
 - ▶ Risk that the data, systems and assumptions used for robo-advice to individuals do not adequately reflect the circumstances of the specific transferee (e.g. attitude to risk, dependents, other financial resources)

Mortality

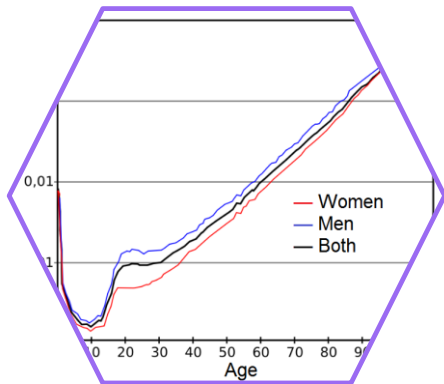


...failure to pick up, understand and respond to changes in mortality trends in an appropriate and timely manner.

- ▶ Current Influences
 - ▶ CMI updates continue to report a reduction in the rate of mortality improvement in UK mortality.
 - ▶ Slowdown in general population mortality improvements has been greater than that predicted by most projection models.
- ▶ Key drivers
 - ▶ Primary: social
 - ▶ Secondary: political, economic, environmental



Mortality and Actuaries



- ▶ Slowing pace of UK mortality improvements (also seen in US, Canada and Ireland). CMI_2017 noted that all users of CMI tables expected mortality improvements would continue, albeit at a slower rate.
- ▶ A recent study showed link between levels of deprivation and mortality with higher deprivation levels showing adverse mortality.
- ▶ The level of improvement could continue to decline, and possibly even move to deterioration e.g. due to increasing obesity levels (including in childhood), increasing sleep deprivation (linked to Alzheimer's, heart attack and stroke), potential antibiotic resistance, opioid addiction.
- ▶ Advances in medical technology may reverse recent trends: advanced medical procedures, artificial organ transplants, genetics to personalise medicine and healthtech to support lifestyle choices
- ▶ Climate related risks to mortality are complex and uncertain e.g. increased walking/cycling and eating less meat (reduction in air pollution and methane production), greater volatility in temperatures, impact on food production, emergence of new diseases.
- ▶ Actuarial judgement to assess how, when and whether to recognise a change in trend. May need to develop new tools and analysis if past experience not the best guide for future.
- ▶ Actuaries need to keep up to date with emerging research and consulting with professionals in other relevant disciplines to help users understand the reasons for the changes seen in mortality patterns.

Discussion using Slido

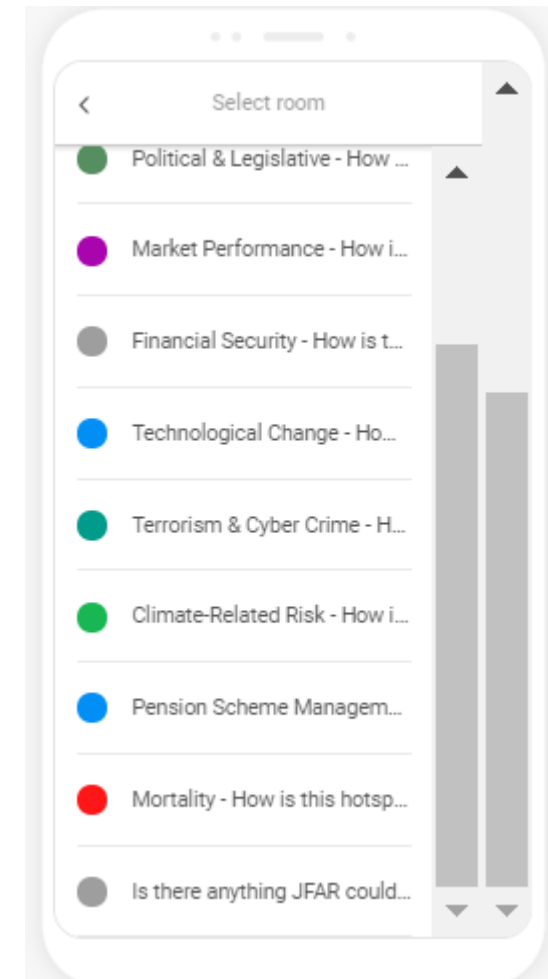
- ▶ We would like your input on the hotspots we have discussed, or on any of the others.

There is a “room” for each hotspot:

- ▶ How is this hotspot impacting your work?

And one further “room”

- ▶ Is there anything JFAR could do to help?



Thank you

- ▶ www.frc.org.uk/jfar
- ▶ RiskPerspective@frc.org.uk

- ▶ Speakers
 - ▶ Des Hudson, IFoA
 - ▶ James Orr, PRA
 - ▶ Ann Muldoon, FRC
 - ▶ Hazel Beveridge, FRC

Appendices

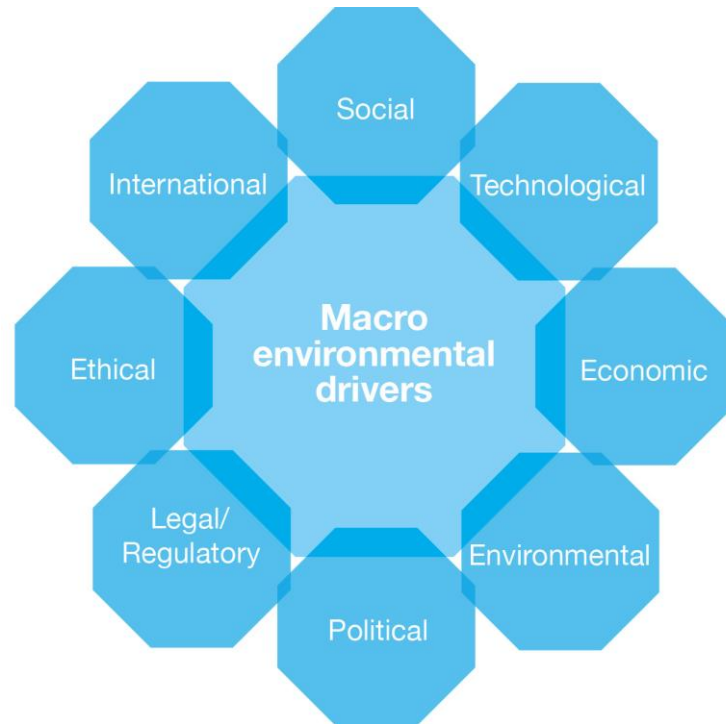
JFAR Members: Actuarial responsibilities

- ▶ FRC: Promote transparency and integrity in business.
 - ▶ Set Technical Actuarial Standards;
 - ▶ Provide independent investigation and disciplinary hearings in public interest cases;
 - ▶ Oversee the IFoA's regulation of the actuarial profession in the UK.
- ▶ IFoA: Serve the public interest by ensuring that, where there is uncertainty of future outcomes, actuaries are trusted and sought after for their valued analysis and authority.
 - ▶ Education;
 - ▶ Regulation;
 - ▶ Member support;
 - ▶ Public Affairs and Promotion;
 - ▶ Learned society and thought leadership.

JFAR Members: Actuarial responsibilities

- ▶ PRA: Promote the good of the people by maintaining monetary and financial stability.
 - ▶ Prudential regulation rules require financial firms to hold sufficient capital and have adequate risk controls in place. Close supervision of firms ensures that we have a comprehensive overview of their activities so that we can step in if they are not being run in a safe and sound way or, in the case of insurers, if they are not protecting policyholders adequately.
- ▶ FCA: Aim to make financial markets work well so that consumers get a fair deal.
 - ▶ Protecting consumers, Enhancing market integrity, Promoting competition
- ▶ tPR: protects workplace pensions in the UK.
 - ▶ We work with employers and those running pensions so that people can save safely for their retirement.

Macro environmental drivers STEEPLE I



▶ Social



▶ Technological



▶ Economic



▶ Environmental



▶ Political

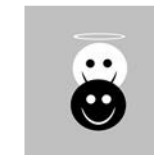
▶ Legal/Regulator



▶ Ethical



▶ International



LMAG Feedback: Any missing hotspots?



LMAG Feedback: How is Climate-related Risk impacting your work?

No impact/No impact as yet

"it isn't", "not at the moment", "nothing for now"

"Interesting concept but will take some time to make its way into changing non life practices"

"We are always being told to think about it"

"Probably impact on pricing CAT risk, but the contracts are short term, so I don't see any big changes or sudden impact in the short term."

Areas Impacted

"It impacts both pricing of risks and also risk accumulation"

"NatCat modellers pay particular attention to this"

"Reserving following cats"

"Impact on natural catastrophes modelling (frequency and severity) and capital modelling"

"Affecting our cat and non cat losses but not enough work done by us to assess full impact"

Impacts on modelling

"Impact on reference data assumptions and claim frequency"

"The ability for catastrophe modelling to sufficiently account for a changing climate"

"Increased uncertainty of models due to relevance of past data"

"Changing patterns of weather-related losses reduces the relevance of historical experience data when forecasting. This has financial impacts for insurers, but more importantly limits the certainty we can have that insurance products are meeting the needs of our customers and the general public. "

"We can't model the climate without climate change but difficult to model with it!"

New/changing risks

"Changing frequency and severity of weather events"

"1 in 100 events are happening quite often"

"(Potentially) Increased frequency and severity of hurricanes"

"Drought/water shortages"

"Expect more extremes both hot and cold weather"

"Impact on economic activity - e.g. carbon targets"

"As a reinsurer, reduced willingness to offer multi year natcat contracts"

"I live in a flood prone area!"

LMAG Feedback: Is there anything JFAR could do to help?

- ▶ **Raise awareness**
 - ▶ “JFAR could continue to engage actuaries on the topic.”
 - ▶ “Believe many actuaries are not aware of how climate-related risks and opportunities could/should be considered within their work.”
 - ▶ “The response to the previous question indicated that further engagement with actuaries in the impact of climate change is necessary!”
 - ▶ “Encourage actuaries to communicate long term solutions to adaption to climate change and carbon-free energy”
- ▶ **Help with frameworks, industry data and indices**
 - ▶ “Setting up a framework for assessing the impact of climate related risks”
 - ▶ “Collate industry data to use in reserving or pricing”
 - ▶ “Help develop useful indexes that help one get their heads around possible impacts (diff from climate change index)”
- ▶ “Encourage actuaries to go green”

LMAG Feedback: How is Technological Change impacting your work?

The future must be a more analytical, more efficient GI market.

The effective technology developers and users will take business from the ineffective.

Lower margin "soft" market conditions are the new norm. London must evolve to be part of this and lead the way globally.

Creating greater disparity in rating sophistication between market participants. The extremes being those that have embraced new analytical approaches and data sources vs those that remain reliant on existing relationships to secure business.

Distribution of products and quantity of data, Increased automation.
Silent cyber in policies.

How telematics might impact the freq/sev of large bodily injury losses.

Changing nature of risk of autonomous vehicles - cars, ships, planes. Considerations of the implications of driverless cars on the nature of insurance.

Growing areas of PI business in new tech industry.

Potentially pricing out vulnerable people because risks are priced on individual basis.

We use sensor data **and** open data to price and manage property risks.

Incremental change but yet to see any momentous shifts

I'm not sure anyone is REALLY using big Data in a meaningful way.

Hype/unrealistic expectations of new technologies may lead to disappointment in using new technologies/techniques if not carefully managed.

How to make sense of all the data collected is still a key problem. More data not sure how best to use it.

Tech change meant to increase productivity - too much data/information risks being detrimental to key messages.

Too much data, losing key messages and limited time to work with it given decreasing reporting timelines.

Can be hard to interpret machine learning results so a risk that outputs are misunderstood or biased - unintended consequences for company or groups (who may be vulnerable groups).

New systems and processes changing the way we work.

Use of robotics to speed up reserving processes.

Opportunity to radically change and improve the claims reserving progress.

Increased use of AI by firms in pricing.

Changing techniques for estimating reserves.

Actuaries trying to use "new" modelling techniques which have varying usefulness in a given situation.

Belief in scope for automation is squeeze on resources. Why hire or train when a computer can make it quicker?

Failure to keep up with technology will mean losing work to competitors who can do work more efficiently.

Actuaries are being left behind, particularly core actuarial. There is a danger that we become unresponsive to market trends or changes or do not move quickly enough.

Job losses. Reserving actuaries will become extinct.

LMAG Feedback: Is there anything JFAR could do to help?

▶ Raise awareness

- ▶ “Encouraging actuaries to stay ahead of the curve, upskill where necessary to keep ahead of the changes to ensure that actuaries remain relevant in the future.”
- ▶ “Encourage actuaries to communicate the issues and risks to the wider public.”
- ▶ “Lobbying for significant improvements in efficiency of operating in the GI market.”

▶ Help with frameworks, industry data and indices

- ▶ “How can we have a framework for how we approach modelling. E.g. what do we need to worry about (like extreme values which skew findings, normal structural drivers or where different models are more/less useful), communication strategies, working together with cross disciplines, etc.”