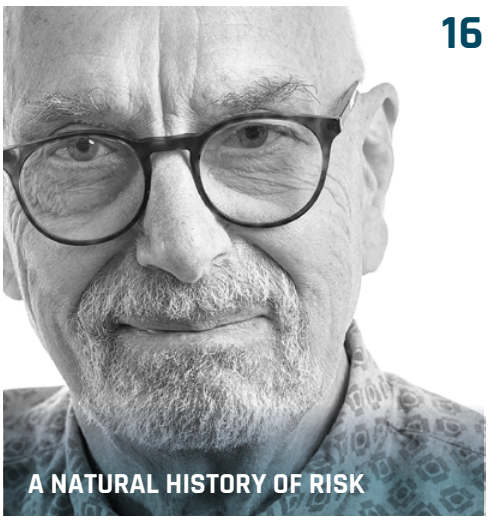
THE EUROPEAN ACTUARY

THEME
INSURTECH

QUARTERLY MAGAZINE OF THE ACTUARIAL ASSOCIATION OF EUROPE



aae
actuarial association of europe

N° 31
SEPT 2022

INTERVIEW

THE FUTURE IS INNOVATION

INTERVIEW BY
JENNIFER BAKER

The CEO and chairman of Austria's UNIQA Insurance Group, Andreas Brandstetter, was elected president of Insurance Europe in 2018. Last year that mandate was unanimously extended by the European insurance and reinsurance federation for a further three years.

That's good news for the industry, because Brandstetter, who has headed UNIQA since 2011, has a wealth of experience, but more importantly a great vision of the future of the industry.

ANDREAS BRANDSTETTER

> ***This is what it's all about: not so much about what insurance companies need, but much more about what customers need.***

First of all, how would you personally define InsurTech?

'Well, you know InsurTech is something completely different. It's a new world. A new way in how you treat customers, and a new perspective that focuses on the needs of customers. And what supports this new way of thinking is a completely different approach to how technology is used. So I would say, InsurTech is a revolution. It is a completely different approach in how we treat customer needs, what kind of services we provide to them, and how we use technology in the best way.'

It seems that the adoption of this sort of innovative technology use is slower in insurance than in the banking world. Are InsurTechs needed by the insurance industry, and why?

'I would say they are definitely needed by the customers. This is what it's all about: not so much about what insurance companies need, but much more about what customers need. And I think the level of quality, the speed, the access, everything that makes the life of our customers who buy insurance easier, is highly welcome. But having said this, it is true that insurance is a heavily regulated market. It is clear though that InsurTech is something which is completely changing the world and the tradition of insurance companies, and which really delivers a high value to our customers.'

How big are the opportunities?

'I would say they are huge if we put ourselves into the shoes of our customers. Because it's about protecting the life of our customers, it's about protecting the health of our customers, the belongings of our customers, and everything that makes the life of our customers easier and safer. So I would say from the perspective of the customers, the opportunities are huge.

From the perspective of the traditional insurance companies, sometimes even called old-fashioned dinosaurs it's a game changer! Because either the old insurance companies are adapting, or they have an issue. I would say there's a lot of potential in the room. But for those from the old economy who are acting too slowly, or who think that InsurTech is something that will come and go, for those, the future might be a little bit difficult. But again, from the customer's perspective, it's a huge gain, it's a huge added value.'

You mentioned that insurance is a heavily regulated and technically challenging business. So looking from the insurer tech industry perspective, how do we make the cultural fit possible?

'Well, it's a completely different approach as far as the way of thinking is concerned. Speaking now as the CEO of a primary insurance company, I can say that some insurance companies in the past sometimes used to be a little bit arrogant, selfish, holding the position of 'I do not care so much about the real customer needs, but more about myself and my own needs as an insurance company.' The approach used to be 'How do I make my life as an insurance company, the easiest and most convenient possible?' And this, for sure, is the completely wrong way of thinking.

But in a world where technology helps to create a completely different service level, those traditional >

> ***It's not a fight between different primary insurance companies around the globe.***

insurance companies have to move and adapt. Customer expectations are increasing day-by-day in terms of quality – we want customer services like we experience when we are on holidays, or go to a restaurant, or take a flight. So I would say the cultural fit is coming from a shift of mind, and putting ourselves in a very focused and clear way without compromise into the shoes of our customers. It's a question of perspective. And this is something that I think we definitely can learn from InsurTechs.'

Which insurance areas could benefit most from working with InsurTechs?

'First of all, company culture. By that, I mean how we see the customer journey. We must ask ourselves, in all our internal processes and the way we build products, do we really follow the customer needs. Or do we just only follow our own needs, because we have a much too high cost ratio and this is why we have to sell certain products.

Second is the question of speed. What I like a lot about InsurTechs is how speedily they're working. How quickly they're adapting the time to market, which is often much better than in the old fashioned, traditional insurance industry.

And last but not least, frankly, it's about technology. InsurTechs don't have to deal so much with old patterns or old traditions, for example siloed thinking in the company. It's a much more 'green field' approach. And this is something which I like because it kills compromise. And again, also here, it's really putting ourselves into the shoes of the customers. This is, I think, where we can benefit most.'

I think what you're identifying here is that choosing the right business model is the key. So what could the future cooperation model have between insurer tech and established insurers? What could established insurance companies learn from the start-ups?

'Well, I don't think there's an issue between InsurTechs and traditional insurance companies so much. It's more a case of, what do we learn from InsurTechs? And clearly that is the customer journey, it's the way how we can increase our service quality, how we can adopt our products and services. And again, it's not a fight between different primary insurance companies around the globe. It's a competition between companies coming from different industries that provide services. If there is one thing relevant around this whole current technological transformation, the whole digitalization, then it's that boundaries between industries are melting. They're disappearing. If you just think about what Tesla is doing: sure, Tesla is providing mobility. But basically, it's a data company. And by instigating a completely different way of thinking, Elon Musk and his team completely crashed the party of the traditional automotives.

In our industry there is not so much to fight about between InsurTechs and traditional insurance companies, because we all have in mind that we want to improve the way how we protect the belongings and the life of our customers. It's much more about what we can learn from InsurTechs. As a provider of safety, of security, which means having a lot of responsibility towards hundreds of millions of European customers, we must learn from other industries. So it helps us, I would say, to get out of our own insurance bubble – which in >

> ***You need a completely different way of thinking in how you approach or tackle an issue or a problem.***

the past sometimes had some elements of a little bit of arrogance here and there, and a little bit of very traditional behaviour – and back to the real world.

I would compare the developments to those we experienced in the last 20 years in the media industry. If you look at how media industry trends have changed, especially since the year 2000, in both print media and electronic media, you can see how quickly the income streams changed. It's an example of how a completely different industry to ours was heavily transformed and changed. Now look at the amount of changes we are currently experiencing in the insurance industry! I would say the amount of changes we have seen in the last 10 years are greater and much more relevant than the sum of all the changes in the 100 years before! And I do not expect that to change or decrease. I would say the speed of change in our industry will actually increase in the next 10 years. So this is why both InsurTechs and traditional companies should really focus on combining their forces and work together and learn how we can best serve our clients.'

And what final piece of advice would you give to any future Elon Musks of insurance out there?

'I think what we can learn from people who revolutionised industry and from companies and leaders who really define new standards is that you need a completely different way of thinking in how you approach or tackle an issue or a problem. Our industry is sometimes heavily criticised, but it's not about us, it's about our clients' needs. And our clients' needs are changing, both on the retail side and on the corporate side.

Climate change is a huge topic for the next generation and a completely different game. So how can we make the lives of our customers better? How can we make their lives safer? How can we contribute to longevity, for instance? We have to adapt our business models, and we cannot do it with an incremental approach. I think it must be done with a more radical approach. And here is the point where InsurTechs can really deliver value, because as I said, they have a different culture. They attract more talent, whereas we as traditional insurance companies are heavily fighting to attract that talent. And last but not least, they often have a completely different approach to integrating breath-taking new technology.

In my view, the combination of those new entrant insurance FinTechs and the experience of the old world is something super interesting – because don't forget, as we discussed before, it's a heavily regulated market. And I think that we as so-called traditional insurance companies understand how to deal with regulators better- we just need a secured level playing field for all market participants. We also understand why there are regulators both on national and at European Union level, because it's clear that governments and politicians want to have a maximum of safety for their voters and the public. Sometimes InsurTechs struggle with that regulation because they are only focused on big ideas. But this is where our industry can succeed by joining forces. So overall I'm quite optimistic.' <



EUROPEAN CONGRESS OF ACTUARIES 2022

MADRID 2-3 JUNE 2022

NEW PROSPECTS FOR ACTUARIES

BY **GUNN ALBERTSEN**
AND **GIAMPAOLO CRENCA**

On 2 and 3 June 2022, the Actuarial Association of Europe (AAE) and the Instituto de Actuarios Españoles held the 4th European Congress of Actuaries (ECA 2022) in Madrid, Spain.

In total, around 250 experts and executives from Europe and beyond participated in the congress, organized by the European Actuarial Academy. Following two years of remote working due to the coronavirus pandemic, the ECA was an excellent opportunity for many people in the European community of actuaries to meet with their peers. We were delighted to welcome around 250 participants – a good number considering that this was the first in-person, post-Covid AAE event.

The congress featured a varied and inspiring programme, with excellent keynote sessions given by renowned guest speakers, as well as opportunities to watch experts presenting across the full scope of actuarial topics. >




Once the scheduled presentations were over, there was also the chance for after-hours networking at a typically Spanish get-together event on the first evening.

The sessions covered a wide range of interesting topics, on traditional issues and also broader themes including new emerging risks. In terms of traditional matters, there was a lot of attention on the review of Solvency 2 in insurance and the application of IORP2 in pension funds. We also observed that even traditional themes now include new questions relating to broader issues and emerging risks, for instance ESG, climate, disasters, sustainability and pandemics.

Another hot topic for actuaries is IFRS17. This was approached from different angles, including with discussion of the role of actuaries in IFRS17 calculations and reporting. Several presentations were dedicated to new data processing techniques and data science as an important extension of the traditional toolset for actuaries.

Congress presentations on subjects including science, professional topics, professionalism and predictions for the future were delivered by both actuarial colleagues and external stakeholders. To summarise the themes covered at ECA 2022 in Madrid, the wider focus was on building a bridge to the future, and a new functional role for actuaries.

External stakeholders gave keynote speeches during four plenary sessions: Gonzalo Garcia Andres, Spain's Secretary of State for Economy, underlined the contribution of actuaries to the economic process; Santiago Arechaga, CEO of Swiss Re Iberia, talked about the actuary in sustainability, speaking for a widened view that includes the wellbeing of people and society, as well as consideration of the planet; Petra Hielkema, Chairperson of EIOPA, highlighted the review of Solvency 2 and the start of IFRS17 as current issues under discussion in Europe; Andreas Märkert, Chair of CRO Forum, illustrated the world of emerging risks, where actuaries need to make a substantial contribution.

The keynote speakers confirmed the important role of actuaries not only in traditional fields but also in wider areas. In conclusion, this congress was full of ideas and perspectives, for an actuarial profession that is more dynamic and energetic than ever. If you missed ECA 2022, the recordings are available to watch at actuview, which is the first international streaming platform designed especially for actuaries.

We work to raise awareness of AAE among actuaries throughout Europe, and to support this aim the first-ever AAE video was shown for the first time in Madrid. The message of the video was that an actuary must be open to many kinds of risks, and that being best prepared involves a change of mentality.

The next ECA is scheduled to take place in 2024. <


AN **INSIGHT** INTO **DIVERSITY AT AAE**

BY **MÁRIA KAMENÁROVÁ**

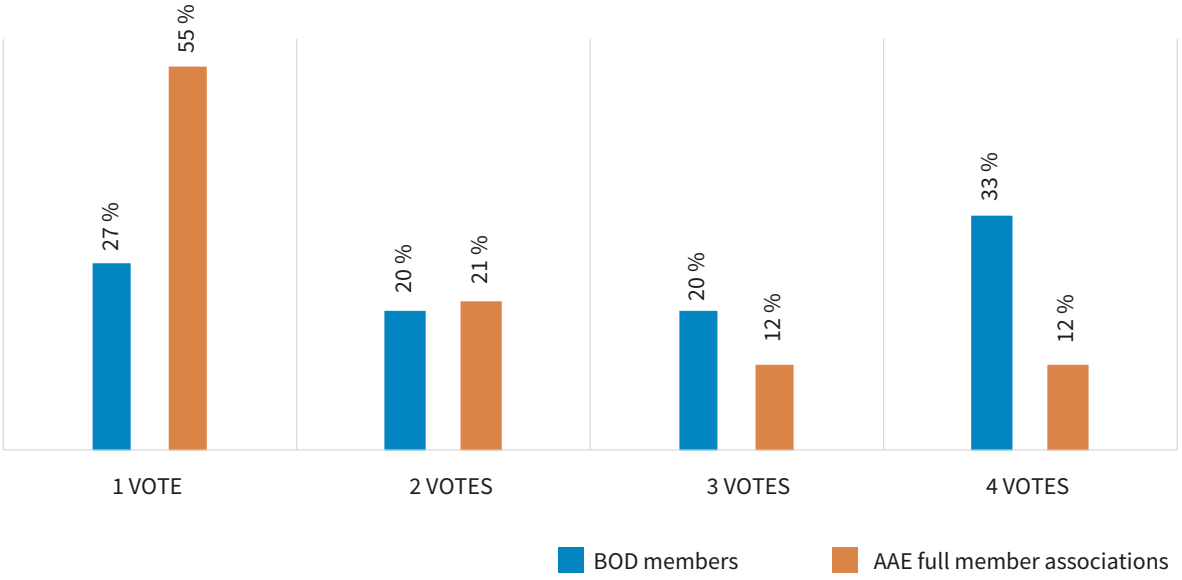
Diversity delivers what is needed to become more resilient, with a view to addressing future global challenges. It is ten years since the European Commission put forward a proposal to require 40% female representation on executive boards of all listed companies. Based on 2021 data there has been some progress towards this, with France and Norway achieving 35% representation of women in leadership roles. However, women in CEO roles were reported in just 7% of the 650 companies surveyed. In this context, it is no surprise that recent years have seen many more female leaders of EU institutions, including the president of the EU Commission, the European Central Bank, the ESMA and the EIOPA, to name just a few.

Global management consultancy firm McKinsey has also been concerned with diversity for some time, and regularly publishes reports monitoring diversity in leading companies. Their research has repeatedly demonstrated that high gender diversity, ethnic diversity and inclusion is closely linked with performance. Their 2020 report, ***Diversity wins: How inclusion matters***, reinforced the commercial benefits, as summarised in an **article accompanying the report's release**: 'Over the past five years, the likelihood that diverse companies will out-earn their industry peers has grown. So have the penalties for companies lacking diversity... Similarly, our previous research found that women tend to demonstrate, more often than men, five of the nine types of leadership behaviour that improve organizational performance, including talent development.' Their research also found that women more frequently apply three of the four types of behaviour – intellectual stimulation, inspiration, and participative decision making – most effectively.

These are strong arguments, apparently proven by research and observation, so let's take a look at where the Actuarial Association of Europe stands on this issue. Since 1978 the AAE has had 32 chairpersons, of whom were 3 women: that constitutes a 9% share of people in the leadership position. This seems to confirms the traditional assumption that the actuarial profession is dominated by men. However, this data spans a relatively long period of time, and society's expectations concerning female leadership have changed enormously in the meantime – so we should seek to avoid an interpretation which is unfairly balanced on historical data, and must not judge the past by current social norms and optics.

So let us explore more recent information about AAE leadership. Since 2017 the renewed Statute of AAE sets the number of seats on the board at 9 people. AAE board members should be drawn from a broad base to effectively represent the diversity of actuarial associations, and as such the aim is to nominate the best possible candidates who contribute to >

FIGURE 1: VOTING RIGHTS DISTRIBUTION SPLIT BY SIZE OF MEMBER ASSOCIATION



the modern development of the European actuarial profession. For selection of AAE board members there are only two diversification requirements which are specified in writing: a majority of members must be from full member associations within the EU, and all voting categories (based on association size) must be represented. The AAE Nomination Panel (the body that preselects candidates for board position) applies further diversity principles based on the defined terms of reference:

- size of the member association
- geographical region
- actuarial field of specialisation (Life, Pension, Non-Life)
- gender
- (non-)native English speaker

These criteria are not mandatory but considering them helps to promote diversity within the organisation.

Now we can take a closer look at the composition of AAE board members over the last five years, a time period that corresponds with the 2017 changes to the AAE Statutes. During this period 15 persons acted as AAE board members. We will proceed to examine some of the above-mentioned diversification criteria – size of member association, EU membership, geographical location and gender – for close analysis and comparison to the benchmark.

Firstly, the size of member association is a mandatory criterion which counts the number of fully qualified actuaries[1] in an association's membership and is reflected in the number of voting rights awarded. The AAE has 33 full member associations and 4 observer member associations, for a total membership of 37. The biggest associations have 4 voting rights and smallest ones have 1 voting right. The split of AAE full associations and board members can be observed in *Figure 1*.

It can be seen that 55% of AAE membership is made up of small associations with 1 voting right, and these were represented by 27% of the total AAE board members. The biggest associations, making up 12% of the membership body, had 33% of total board members to represent them. This disparity is easy to explain given their size: the biggest associations have the most opportunity to nominate suitable candidates who meet the qualitative requirements.
For the other categories with 2 and 3 voting rights, the split is even and proportionate. >

[2] AAE full member associations from non-EU countries: Channel Islands, Iceland, Norway, United Kingdom, Turkey, Switzerland

FIGURE 2: SPLIT OF AAE FULL MEMBER ASSOCIATIONS AND AAE BOARD MEMBERS BY GEOGRAPHICAL REGION

The split of AAE board members between EU and non-EU countries is 80% and 20% respectively, which corresponds well with the make-up of member associations: 82% are in EU countries and 18% are not being members of EU[2]. This split is also representative.

Distribution by geographical region is not a mandatory diversity criterion, however it is often taken into account because it usefully indicates various historical developments and the position in the home society of the different AAE member associations.
The geographical composition of AAE member associations and AAE board members is shown in *Figure 2*.

The historical data shows that at 40%, more AAE board representatives come from the western part of Europe compared to the eastern part, which contributes 7%. This could be driven by the fact that the largest associations come from western Europe and often have a longer actuarial heritage and stronger status within their countries, so it could reasonably be argued that they are able to nominate more strong candidates. Nonetheless, the figures are somewhat disproportionate.

Finally, the split by gender shows that in the last five years there were 27% female and 73% male representatives on the AAE board; this reflects a more favourable gender diversity than the 9% figure relating to AAE chairpersons.

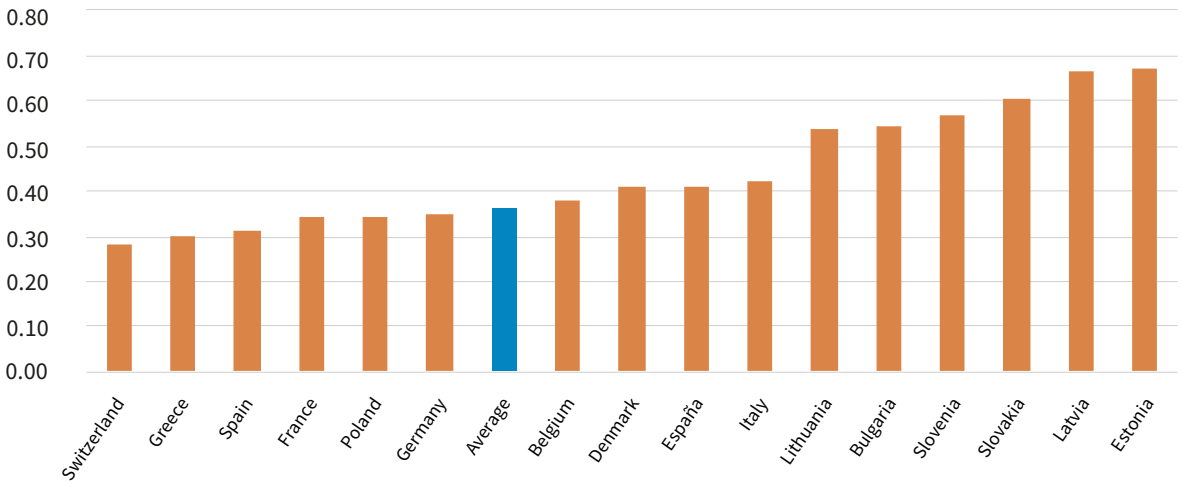
Overall it is possible to conclude that diversity in AAE leadership has improved over the last five years, not just in terms of gender but also other diversity perspectives.

For another viewpoint, the AAE has 34 full members and 38 members in total, among which there are currently 11 full member associations with female presidents, making 32% of AAE full member associations; and looking at the total member associations there are 13 female leaders constituting a 34% share. The data is always changing and this is just a snapshot from the summer of 2022. An accelerating trend towards more women in top roles can be observed.

In 2022, the AAE board decided to issue a diversity questionnaire to gather data about the actuarial population of its member associations. >

[1] Size of the association is defined in AAE Statute.

FIGURE 3: PROPORTION OF WOMAN ACTUARIES IN SELECTED AAE MEMBER ASSOCIATIONS



Source: AAE diversity questionnaire 2022 responses

Responses were received from 17 member associations. Though not all associations returned the AAE diversity questionnaire, the responses gathered relate to more than 95% of AAE's actuary members, once the UK is excluded. The proportion of working actuaries who are female is shown for each member association country in *Figure 3*.

The results show that 36% of AAE actuaries are female and 64% are male. The proportion of women varies from 28% in Switzerland to more than 67% in Estonia. The split by geographical region and size of association would show an overall lower proportion of women in the western region and large member associations, compared to north and east regions and other category sizes of member associations.

In general, there are at least three actions that can be taken to promote better diversity and representation in our societies:

- Track diversity metrics relating to gender, race/ethnicity, and the intersection of the two
- Hold senior leaders accountable for progress on diversity goals
- Create a sustainable work culture by adjusting policies, systems, and norms to enhance employee wellbeing

Despite the actuarial profession tending to qualify in technical universities, the data shows a relatively high proportion of women working in actuarial fields. It may turn out that there is already sufficient basis for increased diversification of future European actuarial leadership too, of course subject to the personal qualities of nominated candidates.

It could be interesting to follow up on statistical trends in the diversity area later on. Actuaries have their own ways of contributing to build more resilient societies in future, for example by monitoring and potentially helping to close the pension gap, improving life expectancy, acting against gender discrimination and in other broader areas too. <

MÁRIA KAMENÁROVÁ
is chairperson of the AAE

CLIMATE AND CAPITAL

SOME OUTSTANDING ISSUES

BY **MARCO BARDOSCIA, BENJAMIN GUIN** AND **MISA TANAKA**

Originally published *on the Bank Underground website in June 2022.*

MARCO BARDOSCIA is Senior Economist in the Research Hub of the Bank of England.

There is a lively debate about whether and how capital regulations for banks and insurers should be adjusted in response to climate change. The Bank of England will host a **conference** on Wednesday 19 October 2022 to discuss the points in favour of and against adjustments to the regulatory capital framework to take account of climate-related financial risks. More research is needed on appropriate capital tools to address these risks, e.g. whether risks point to microprudential tools which are firm-specific or rather macroprudential system-wide ones. Further research is also needed on appropriate time horizon over which the risks should be considered and how scenarios and forward-looking data should be used. This article will review the existing literature and identify some key gaps. >

MISA TANAKA is Head of Research of the Bank of England.

MEASURING CLIMATE-RELATED RISKS IN ASSET PORTFOLIOS

The main rationale for incorporating climate-related risks in capital regulation is to ensure that individual banks and insurers have sufficient capacity to absorb losses which could arise when these risks crystallise. Incorporating climate-related risks into the capital regime will require a reliable methodology to measure these risks.

The existing literature proposes several approaches for estimating banks' exposure to climate transition risks – i.e. risks associated with transitioning to a low-carbon economy. The first approach is to build climate stress testing around technologically plausible scenarios and carbon price paths which are consistent with climate goals (Batten et al (**2016, 2018 - Chapter 10**); **NGFS (2020)**). The second approach is to estimate capital shortfalls for banks arising from the 'stranding' of specific sectors exposed to climate policy (**Battiston et al (2017)**). The third approach consists of building market-based measures of exposures to transition risks based on the sensitivity of banks' equity prices to the excess return of fossil fuel firms (**Jung et al (2021)**).

Physical risks – i.e. risks arising from climate change itself – are harder to quantify than transition risks. While catastrophe models can incorporate the increasing frequency and severity of extreme weather events in the future, they cannot predict which specific region will actually experience an extreme weather event (**Leaton (2020)**). **BCBS (2021a)** acknowledges that limited progress has been made in capturing banks' exposures to physical risks, due to lack of data about the geographical locations of the physical assets underlying their financial exposures, and uncertainty about their ability to insure against prospective losses. Moreover, physical climate risks need to be estimated using non-linear, forward-looking models (**BCBS (2021a**) and **BCBS (2021b)**). But such models can give rise to radically different results and are hard to validate, as past data are unlikely to contain meaningful information about the future trajectory of key climate variables.

Setting capital requirements or buffers based on market-based climate risk measures is problematic for two reasons. First, these measures are likely to be directly influenced by the market reaction to regulators' actions. Second, market-based >

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measures provide reliable signals of transition risks only to the extent that investors price these risks.

By contrast, setting capital requirements or buffers based on climate stress tests is conceptually similar to basing these on other types of stress tests, as long as all major banks and insurers have granular data to map the stress scenarios to losses. But there are practical challenges in mapping climate stress test results to capital requirements. Further research in the following areas could potentially overcome these challenges.

First, more work is needed on how to approach risks that might materialise over a long time horizon and how much capital should be held against these. At the same time, there is a need to develop methodologies to estimate climate risks over relatively short time horizons that are consistent with the current microprudential capital framework (**BIS (2022)**). Second, reliable methodologies need to be developed to help regulators validate firms' data and models. Finally, there is a need to gauge the extent to which climate risks are already reflected in banks' and insurers' capital.

IDEAS FOR NEW POLICY TOOLS AND MACROECONOMIC CONSIDERATIONS

Others have made the case of incorporating climate risks into capital requirements on macroprudential grounds: as climate-related risks can ultimately destabilise the financial system, and regulators should use capital requirements to incentivise an early and orderly low-carbon transition.

One proposal is to introduce lower risk weights for green assets ('green supporting factors' GSF) and higher risk weights for carbon-polluting assets ('carbon penalising factors', CPF, also referred to as 'brown penalizing factor') in calculating capital requirements to incentivise green investment (e.g. **Dombrovskis (2018)**). **Campiglio (2016)** argues in favour of green supporting financial regulations, as a carbon tax might not provide enough incentive to stimulate low-carbon investment when banks face constraints in expanding credit. The implementation of these tools could be partially reconciled with a risk-based approach if green investments were consistently less risky. However, available evidence does not convincingly support this (see e.g. chapter 5 in **EBA (2022)**). >

Batten et al (**2016, 2018 - Chapter 10**) have argued that capital requirements are not the right tool for climate mitigation. Capital requirements for banks and insurers are designed to mitigate prudential risks, and hence adapting these to achieve climate mitigation objectives could undermine their primary purpose, or could give rise to undesirable effects. Moreover, unless those policies are implemented across major jurisdictions, carbon-polluting firms can bypass them by raising funds on international financial markets (**Campiglio et al (2018)**). Others have also questioned the usefulness of capital requirements as a climate mitigation tool using formal models. For example, **Dunz et al (2021)** develop a macroeconomic stock-flow consistent model and find that reducing risk weights for green loans to zero will result only in a small increase in the share of green capital goods in the economy and lead to an increase in the ratio of non-performing loans of carbon-polluting firms.

According to the '**Tinbergen Rule**', policy makers must use multiple policy tools if they want to impact multiple policy targets. Several recent studies use agent-based models to analyse a combination of prudential and government policies. They typically conclude that green prudential policies can give rise to undesirable effects if they are not supported by other policies. **Dafermos and Nikolaidi (2021)** find that GSF and CPF reduce the pace of global warming and thereby decrease physical risks. At the same time, GSF increases bank leverage by boosting green credit and CPF increases loan defaults by reducing economic activity. A mix of green fiscal policies and CPF is potentially synergic, as the former reduce the transition risk brought by the latter. **Lamperti et al (2021)** investigate green capital requirements alongside green credit guarantees and carbon-emission adjustments in credit ratings. They find that a policy mix comprising all three policies allows the economy to enter a virtuous cycle. **Lamperti et al (2019)** find that climate-dependent capital requirements can counterbalance excessively high or low credit provision, as they account for the impact of climate damages on firms' solvency. Such a policy could help address climate physical risks, even though it proves ineffective when damages surge.

In our opinion, an open question is whether capital requirements that are calibrated to imperfect measures of climate risks can achieve the intended aims of ensuring that banks and insurers have sufficient capital to absorb losses without giving rise to unintended side-effects. It is conceivable that imperfectly calibrated capital requirements could at worst interfere with climate mitigation. For example, suppose capital requirements against all oil sector exposure are raised without allowing for the fact that some companies within the sector are actively investing in renewable energy and are thus less exposed to transition risks. By raising the cost of finance for the entire sector it could end up discouraging investment needed for low-carbon transition.

CONCLUSIONS

The literature has proposed ideas of new capital tools but we think that both conceptual and practical challenges remain. For example, as we transition to a greener economy, do climate-related risks increase system-wide or are they simply re-distributed across firms pointing to microprudential requirements **(EBA, 2022)**?

Moreover, the literature shows some progress documenting and sizing firms' exposure to climate risks, e.g. via stress testing. However, further work is needed to explore the appropriate time horizons for capital requirements and how to use forward-looking information in the existing regime. More research is also needed on how to deal with the so-called model uncertainty, and issues around how to validate climate models using available data when certain risks have never materialised in the past.

New research that addresses those challenges can inform policymakers in developing their policy toolkit to tackle climate risks. <

A NATURAL HISTORY OF RISK

BY **GEOFF TRICKEY**

Some wait for permission to cross the road from the little green man signal, others skip through moving traffic. Some plan holidays carefully, in detail and well in advance, others just grab spur of the moment essentials and go. These revealing behaviours reflect a difference in wiring as profound as that of a squirrel or a tortoise. The way we deal with risk and make decisions is influenced by two independent neurological systems: Emotion and Cognition. Both have long evolutionary momentum.

GROUND ZERO

In a lifeless universe, risk does not come into any equation. Whether planets explode, collide, or are gobbled up by black holes is of no concern, 'stuff happens'. There is no one to feel or express emotion. Sentience is a faculty that emerges billions of evolutionary years beyond ground zero.

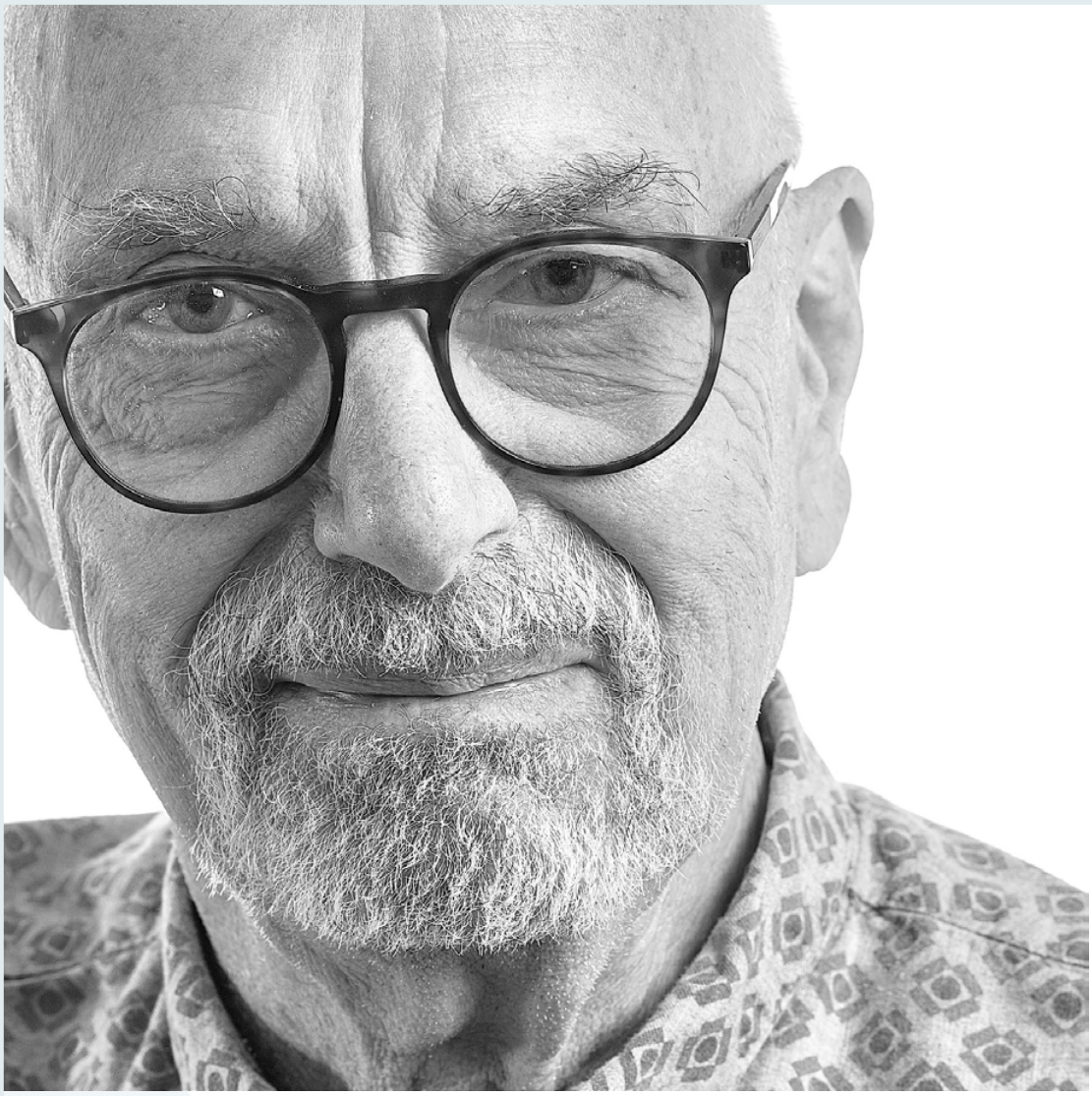
LIFE

About four and a half billion years ago, a single cell reproduced itself. This was the origin of all life. It was also the origin of risk. The potential for risk arises from our fragility, the necessity of taking risks to survive and the inevitability of each life coming to an end. Risk is a necessary corollary of mortality.

BIG NUMBERS IN A MICROBIAL WORLD

For three billion years microbes ruled our planet. A trillion species still take care of soil fertility, the plant life that feeds us, half the oxygen we breath, and the gut microbiota of digestion in all animals. They enable us to make bread to eat and beer and wine to drink, '*the most wonderfully complex and most important part of Earth involved in feeding us, healing us, nurturing us and sustaining us…*' (Mathew Evans, 2021).

Everything alive deals with risk instinctively and maximises opportunity. These simple microbial life forms sense the scarcity of nutrition and manoeuvre towards richer pastures, unconscious survival mechanisms now evolved in complexity. The simplicity of microbes makes assumption of a sentient inner life improbable. >



GEOFF TRICKEY,
CEO at Psychological Consultancy Ltd., Creator of the Risk Type Compass and host of the Sagacity Conference (September 14th, London)

SENTIENCE

Experienced feelings probably emerged as 'gut feelings' in the turmoil of an adrenaline driven fight and flight response. In life-threatening situations, even a glimmer of consciousness would have been a survival advantage.

CONSCIOUSNESS

William James characterised consciousness as a gradual emergence from darkness into light. One theory suggests that 50,000 years ago this coincided with language development and the explosion of tool artefacts, agriculture, fire and cooking. But unconscious emotions still impact decision making under risk.

EMOTION AND COGNITION

We recognised that '*we can only know in the nervous system what we have known in behaviour first*' (Julian Jaynes, 1983). A useful over-simplification differentiates an ancient 'emotional' (feeling) brain from a later 'cognitive' (thinking) brain'. The former looks after us, unconsciously maintaining bodily equilibriums. The latter operates mainly in consciousness, mediated by language, logic and reasoning plugging into memory and perception. However, the unconscious mind is also capable of conjuring up solutions, and: '*The emotional action program we call 'fear' can get most human beings out of danger, in short order, with little or no help from reason*' (Antonio Damasio, 2006).

PERSONALITY PSYCHOLOGY

Complementary to neuroscience, psychology has a long history of research exploring emotion and cognition. These two scales underpinning risk personality are capable of rich narrative interpretation: >

FIGURE 1

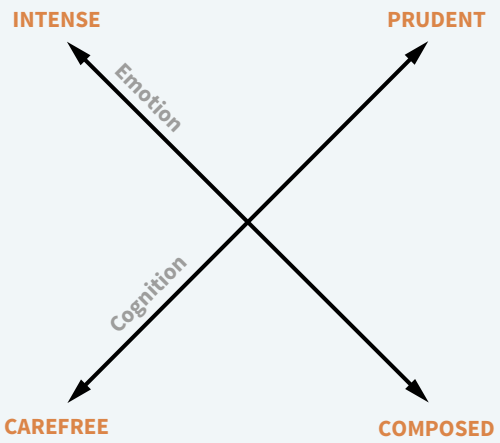
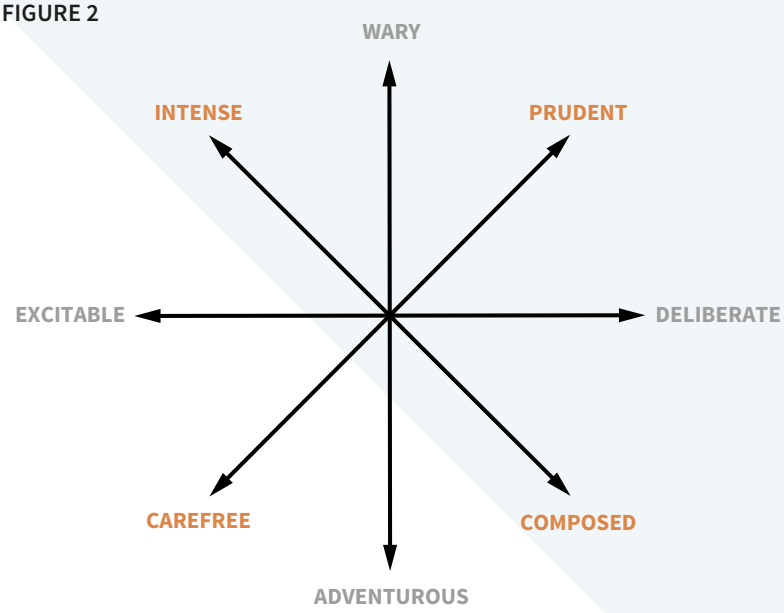


FIGURE 2



EMOTION

(High): 'Intense', fear of insecurity or loss, variable in mood, reactive, intuitive, astute, sensitive, insecure, passionate, anxious, volatile, enthusiastic
(Low): 'Composed', optimistic, forgiving, equable, self-confident, independent, stable, calm, even tempered, resilient, inexpressive, 'risk-taking by default'

COGNITION

(High): 'Prudent', 'needs to know', troubled by uncertainty, methodical, perfectionistic, precise, literal, predictable, prefers clear frameworks and routines
(Low): 'Carefree', spontaneous, unpredictable, curious, questioning, opportunity seeking, unperturbed by uncertainty or ambiguity, excitement seeking

DECISION MAKING HOMO-SAPIENS

Each description above represents one of the four Risk Type Compass 'poles' .
The two orthogonal scales *(Figure 1*) reflect the independence of the two systems. Usually assumed to be one dimensional, these are two independent risk appetites. The labelling and narrative for intermediate Risk Types reflects the interactive dynamic between them (*Figure 2*). Many are risk taking cognitively but, at the same time, risk averse emotionally (Excitable Risk Type). Others are risk taking emotionally, and risk averse cognitively (Deliberate Risk Type). The diversity of risk dispositions across the full 360º spectrum of the compass (*Figure 3*), illustrates our unique advantage over other species. Homo Sapiens includes individuals with every possible combination of emotion and cognition and Risk Types are distributed very evenly throughout the population (*Figure 4*). Each has earned its place as >

FIGURE 3

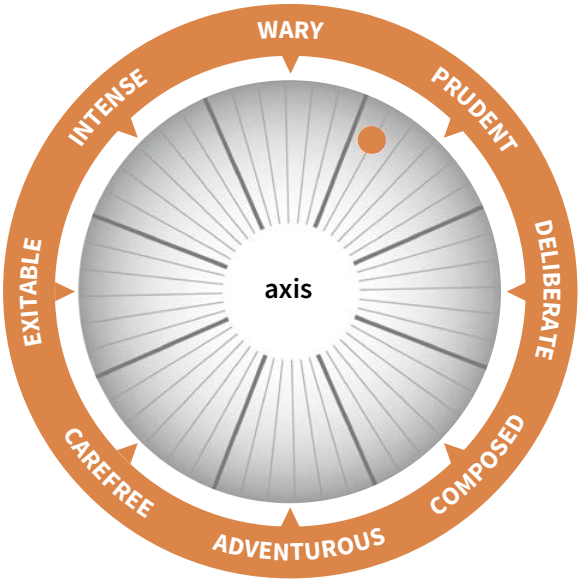
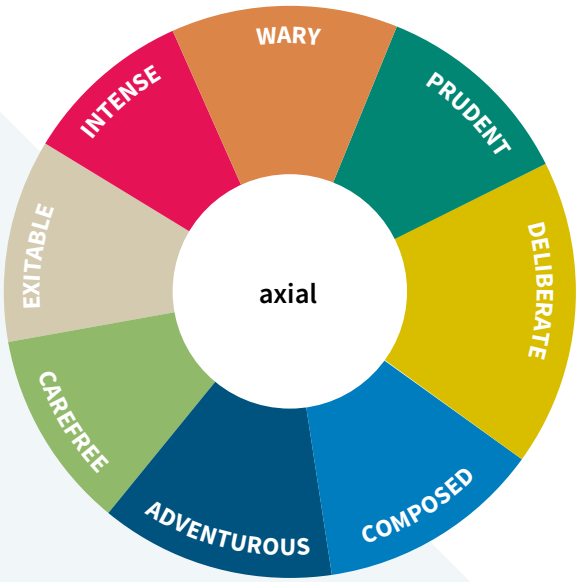


FIGURE 4



an evolutionary survivor in 'Team Homo-Sapiens'. Each has a valid contribution to make.

Species variability enables consideration of risk and uncertainty from an infinite variety of perspectives. Emotion drives approach and withdrawal. Behind the 'need to know' maxim of cognition, is a vast depth of complex reasoning, abstract thinking, introspection, language, culture - a chasm between human and animal intelligence.

CONCLUSIONS

Beneath the radar, potent Risk Type dispositions shape news headlines, observable events, preferred business models and much more. Yet, in risk management, the focus is on the risk horizon; the hypothetical risk ahead, its likelihood and its probable impact, rather than on the 'here and now' characteristics of decision makers. Probabilistic reasoning embodies the promise of knowability and has the apparent authority of numbers. But however convincing or reassuring those calculations may be, it will be the risk chemistry of those who make and implement the decisions that will determine final of outcomes. Each Risk Type has its own narrative; its way of viewing the world. To manage risk without recognising these human factors and the group dynamics that they create, is to ignore the forces of nature.

Whether you skip through moving traffic to cross the road, wait for permission from the little green man signal, plan holidays in careful detail or just grab your essentials and go off on the spur of the moment, these will be characteristics that show up in other situations in life. Your risk dispositions will be your most distinctive and most consequential characteristics. <

CONVENTION A

19-23 SEPTEMBER, 2022 | ONLINE & WORLDWIDE

CONVENTION A

AN ONLINE CONFERENCE FOR THE ACTUARIAL COMMUNITY

With 'Connecting Knowledge' as its theme, this event will set a new standard for online conferences serving the international actuarial community.

The EAA (European Actuarial Academy) supported by actuview is organising the new CONVENTION A as an online-only conference taking place from 19 to 23 September, 2022. This event will, to an unprecedented extent, showcase actuarial institutions and high-ranking keynote speakers delivering an exciting and inspiring programme for actuaries from all fields, and covering the issues that are most relevant to them today.

The first CONVENTION A will host more than 1,000 participants, who can expect a state-of-the-art online event experience that allows them to schedule their personal programme, join varied sessions, catch-up on missed presentations, and interact with speakers and audiences. One feature which is unique to CONVENTION A is the availability of scheduled appointments to enable participants to meet their colleagues in between sessions.

The event programme will be jointly designed by 35 partners, spanning institutions from the actuarial community and companies active in the insurance industry. Each programme partner will design at least one four-hour programming block during the event week, and all participants will find offerings in a convenient time zone. Daily plenary sessions round out the offering. This combination means that CONVENTION A is sure to offer an appealing and unique networking experience for actuaries from all over the world, as well as all interested actuarial associations, universities, supranational umbrella associations, and partners from the industry.

The Actuarial Association of Europe (AAE) is taking over two exciting 4-hour programme slots:

- Tue 20/09 - 9.00-13.00
  Role of the Actuary / IFRS 17 with Petra Hielkema, Didier Millerot, Olav Jones and Peter Braumüller

- Latest results and insights of the AAE committees

Click here to see the full conference programme and filter by partner (such as AAE), language or topic. **www.convention-a.com**. >

REGISTER NOW!

You can already **register online** and secure your ticket for this extraordinary event for only 205 euros (ex. VAT) for the whole conference week. Make the most of our offer for actuview users, who save almost 50% with a special price of only 105 euros (ex. VAT).

Registration includes admission to the virtual event platform and the full five-day live event programme running from September 19 to 23, 2022. Recordings of sessions will be accessible after the live programme concludes.

PLAY, WIN & HELP

Start to engage with the international actuarial community right now: while CONVENTION A aims to connect actuaries around the globe, we know that unfortunately, not all actuaries can afford a ticket for the event. So we have decided to launch a lottery.

Have a little fun and try your luck at the **slot machine** to win a free ticket for a student or colleague, which will surely be appreciated. Additionally, there is a daily chance to win a 20% discount on your own event ticket.

STAY UP-TO-DATE

To follow all the news around CONVENTION A, **subscribe to our regular News Shots** and follow our social media channels on **LinkedIn** and **Twitter**. <

CLICK HERE TO SEE THE FULL CONFERENCE PROGRAMME

WEARABLES

BY **MARK FARRELL**

The goal of insurance, from the consumer's point of view, is to protect us when things go badly wrong.
If we get sick, die unexpectedly or if we get into a car accident then insurance comes to the rescue via a contingent payment made from the pooled policyholder premiums. But what if insurance could go beyond protection and also play a key role in the prevention of risks?

The use of novel data sources and analytics has the potential to revolutionise the insurance industry, particularly in relation to product pricing, underwriting and customer engagement.

Wearable technology is one new innovative way in which insurance companies can now change policyholder behaviour in a positive manner and bring about significant lasting change that results in the prevention of various health and mortality risks. >

TELEMATICS FOR THE HEALTH INSURANCE INDUSTRY

In many ways wearables usage in insurance can be viewed as being analogous to the use of telematics which has been used in car insurance for quite some time. Telematics devices monitor the behaviour of drivers by measuring information such as:

- mileage
- location
- time of day
- driving frequency
- behaviour around hazardous zones
- speed
- rates of acceleration
- braking habits

This information provides insurance companies with valuable risk-based information allowing a more precise premium to be calculated. Telematics devices are particularly attractive to policyholders who would previously have been priced as 'high risk' (e.g. young drivers), but who now have an opportunity to show that their risk profile is actually very low, despite the conventional rating factors used in the pricing, and hence should have a low premium applied.

Similarly, wearables can provide a range of different metrics on our state of health and in relation to factors that are known to impact health and mortality.

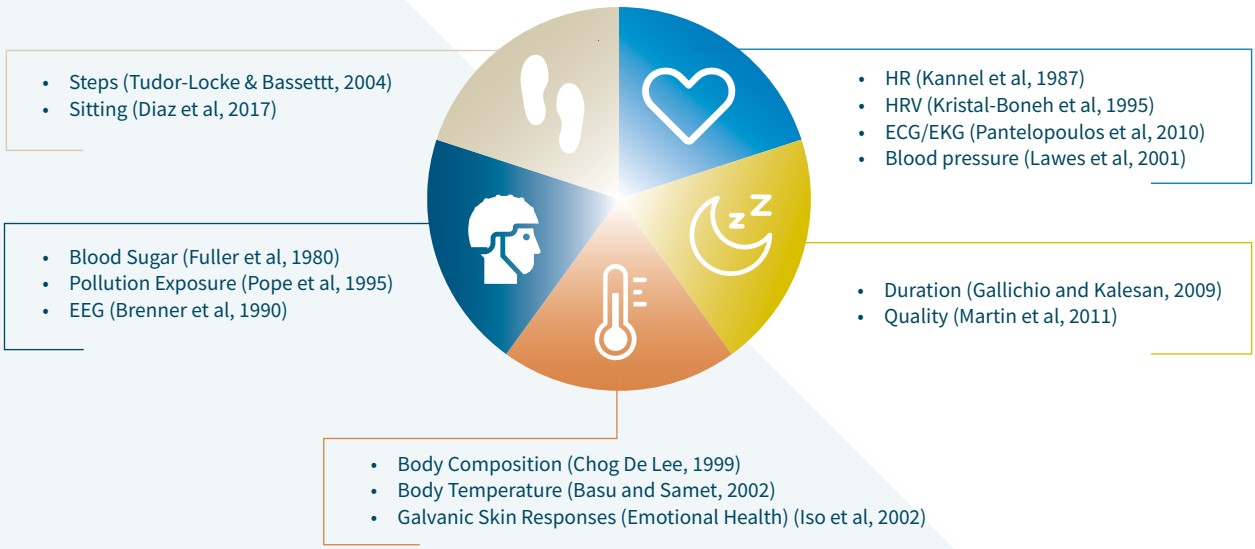
Some of these metrics include:

- Step Count
- Sitting Activity
- Heart Rate (resting and during activity)
- Heart Rate Variability
- Blood Sugar
- Pollution exposure
- Body Temperature
- Galvanic Skin Responses (Measuring Emotional Health)
- Sleep Quantity and Quality

Although wearables so far have typically been used as a marketing and engagement tool within insurance, our prior research (McCrea and Farrell, 2018) shows the potential for wearable data to be used for insurance pricing in the future. Our findings help to demonstrate the predictive capabilities of potential new rating factors, measured via wearables, which could feasibly be incorporated into actuarial insurance pricing models. The model also provides an initial step for insurers to begin to consider the incorporation of continuous wearable data into current risk models.

FIGURE 1: HEALTH METRICS AVAILABLE FROM WEARABLE DEVICES AND ASSOCIATED RESEARCH ON HEALTH IMPLICATIONS

Source: ProActuary.com



INCENTIVES DRIVING BEHAVIOUR CHANGE

One particular interesting area of the use of wearables in insurance is the potential to drive healthy behaviour and to develop habits that prevent future health related risks from materialising.

Charlie Munger has a famous quote where he states: '*Show me the incentive, and I will show you the outcome*.' The research seems to concur as behavioural psychology and economics research confirms that more immediate feedback results in a higher probability of behavioural adjustment of an individual (Volpp et al, 2011). The early evidence (see NICE guidance) on the use of wearable technology is that it is an effective tool in changing individual attitudes, behaviour and ownership of health problems to the net benefit of the subject's health (Cadmus-Bertram et al, 2015).

Discovery, a South African multi-national insurance group, and one of the key insurance pioneers with wearables usage in insurance, found that the behaviour changes persisted over time. Their research on 422,633 participants studied over 3 years found that the positive associations between the benefit and physical activity persist over at least the 24-month repayment period of their wearable devices (Hafner et al, 2018).

WHERE DO WE GO FROM HERE?

As highlighted in my recent in depth ProActuary article on this subject, there are many challenges to overcome if wearables usage in insurance is to become widespread. Some of the key impediments to widespread adoption include ethical considerations, privacy concerns and technology.

However, the potential of wearables usage in insurance appears to be significant, providing actuaries with novel new data sources and the means to develop new innovative products in health and life insurance.

REFERENCES

- Cadmus-Bertram LA, Marcus BH, Patterson RE, Parker BA, Morey BL. *Randomized Trial of a Fitbit-Based Physical Activity Intervention for Women.* Am J Prev Med. 2015 Sep; 49(3):414-8. doi: 10.1016/j.amepre.2015.01.020. Epub 2015 Jun 10. PMID: 26071863; PMCID: PMC4993151.

- Hafner, Marco, Jack Pollard, and Christian Van Stolk, **Incentives and physical activity: An assessment of the association between Vitality's Active Rewards with Apple Watch benefit and sustained physical activity improvements.** Santa Monica, CA: RAND Corporation, 2018.

- McCrea, M., & Farrell, M. (2018). *A Conceptual Model for Pricing Health and Life Insurance Using Wearable Technology. Risk Management and Insurance Review*, 21(3), 389-411. [3]. https://doi.org/10.1111/rmir.12112

- **NICE Guidelines**

- ProActuary, **Wearables in Insurance: Where Do We Go From Here?** (accessed August, 2022).

- Volpp KG, Asch DA, Galvin R, Loewenstein G. *Redesigning employee health incentives – lessons from behavioral economics.* N Engl J Med. 2011 Aug 4;365(5):388-90. doi: 10.1056/NEJMp1105966. PMID: 21812669; PMCID: PMC3696722. <

Dr Mark Farrell FIA is CEO of **ProActuary** and a Senior Lecturer in Actuarial Science at Queen's University Belfast.

COLUMN

BRIDGE TO TOMORROW

Since the launch of The European Actuary in 2010 we have, until now, produced 31 magazines for European actuaries and other professionals working in the financial field. By sharing our knowledge and insights we build bridges for European actuaries and financial professionals, one could say.

With the combined forces of actuaries and their associations from Germany, France, Great Britain, Italy, Norway and The Netherlands, supported by the AAE, we disclosed interesting developments and insights for the 27.000 actuaries throughout Europe who receive this magazine.

We interviewed – amongst others - members of the European Parliament, chairpersons of EIOPA, visionary people from various leading banks and insurance companies, but we also created room for articles from young and ambitious professionals like Floriane Moy, who wrote about the London InsurTech start-up Gaia in the December issue of last year. She is building bridges as well.

Building bridges is also the theme of the upcoming competition *The Young Actuaries World Cup*. And since young people are the promise of the future, I would like to make a call to the young generation of European actuaries to join this competition and make their contribution to the actuarial world of tomorrow.

More information:
www.actuaries.org/IAA/Diversity_Inclusion/YAWC.aspx

Frank Thooft
magazine manager

PS: take notice of the theme of December: *the new role of the actuary*. How can young people be inspired to become an actuary? Ideas or articles can be sent to info@theeuropeanactuary.org

COLOPHON

The European Actuary (TEA) is the quarterly magazine about international actuarial developments. TEA is written for European actuaries, financial specialists and board members. It will be released primarily as e-mail newsletter. The views and opinions expressed in TEA are those of the authors and do not necessarily reflect the official policy or position of the Editorial Board and/or the AAE. The Editorial Board welcomes comments and reactions on this edition under info@theeuropeanactuary.org.

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NEXT ISSUE: THE NEW ROLE OF THE ACTUARY

The next issue will appear 1 December 2022.
Suggestions can be e-mailed to info@theeuropeanactuary.org
The deadline is 1 November 2022.

EUROPEAN AGENDA

Please check
http://actuary.eu/event-calendar/
for the most actual forthcoming events.