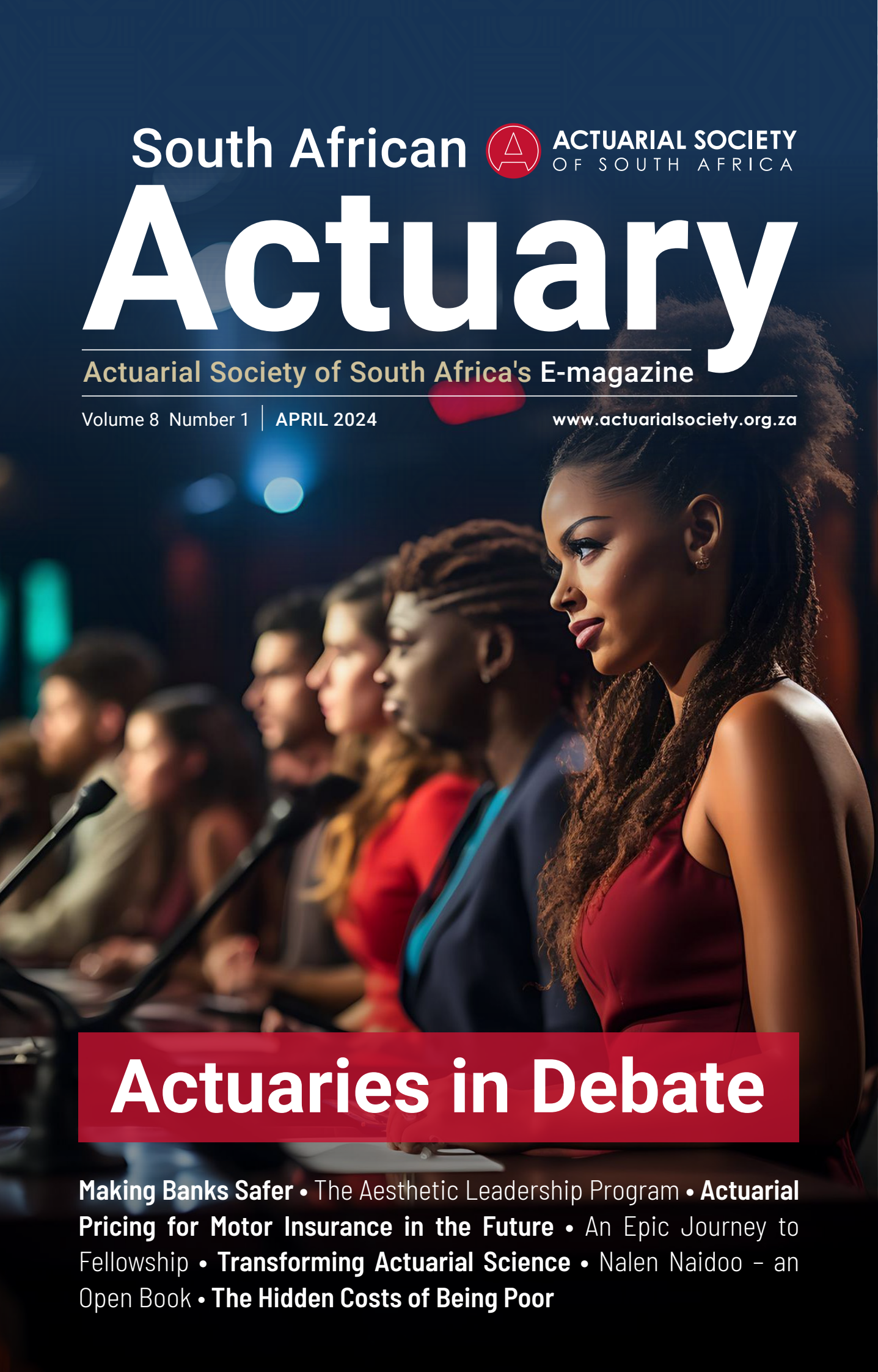
South African Actuary

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Actuaries in Debate

Making Banks Safer • The Aesthetic Leadership Program • **Actuarial Pricing for Motor Insurance in the Future** • An Epic Journey to Fellowship • **Transforming Actuarial Science** • Nalen Naidoo – an Open Book • **The Hidden Costs of Being Poor**

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South African Actuary Editorial Team: Adrian Burke, Hannah Chivaka, Mike McDougall, Lydia Mutepfa, Maseeha Rawat, Nomfundo Nkambule, Michael Tichareva (Lead Editor) **Design & Layout:** Vegiah Design


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Presidential Perspective

Costa Economou

In the dynamic tapestry of today's world, where challenges morph with the passing of each day, particularly here in South Africa, the actuarial profession stands at an interesting juncture. Our relevance has never been more vital. It is incumbent upon us not just to remain relevant but to redefine and assert our relevance. We are called upon to leverage our unparalleled analytical and strategic acumen to ensure the resilience and progression of our traditional domains.

Yet, our horizon is far broader. We are poised to make indispensable contributions to emerging domains and to address the pressing issues our nation faces. The imperatives of actualising the National Health Insurance (NHI), broadening the spectrum of social benefits, dealing with accounting related requirements for the institutions we serve, informing members of the consequences of accessing their retirement savings under the two-pot retirement fund legislation and addressing the multifaceted aspects of climate change, amongst many other considerable social challenges, demand our attention and expertise. It is within our grasp to offer rigorous, data-based, impartial advice and analyses that will help shape policies and guide decisions for the betterment of our society. The advent of Artificial Intelligence (AI) presents a unique dual-edged sword for the actuarial profession: a challenge to traditional methodologies and an opportunity to redefine our role in an AI-driven world. This technological revolution compels us to adapt and evolve, pushing the boundaries of what it means to be an actuary. Our opportunity lies in harnessing AI not as a replacement but as a complement to our analytical prowess and professional judgement. Our ability to merge traditional actuarial science with the innovative capabilities of AI, will help turn the potential threat into a significant opportunity for growth and impact.

In the rapidly evolving landscape of our profession, embracing continuous learning is paramount for ensuring relevance. This commitment is essential not only for keeping pace with technological advancements and emerging market trends but also for anticipating future challenges.

The SA Actuary Magazine emerges as an incredibly useful platform in all of these endeavours. It is more than a publication; it is a conduit for the exchange of ideas, a catalyst for stimulating debate, and a cornerstone for community building. Through its pages, we share insights, challenge conventions, encourage respectful debate and foster a spirit of innovation and collegiality. By showcasing member profiles, research projects, journal publications and other engaging content, we not only enrich our professional lives but also strengthen the bonds that unite us as a community.

I extend my heartfelt gratitude to the editorial team and the diverse voices that have contributed to this, and all other, editions. Your contributions are the lifeblood of this publication, enriching our collective wisdom and sparking conversations that matter. I urge each member of our community to see themselves as potential contributors to our next edition. Your perspectives and insights are what will propel us forward, ensuring that as actuaries, we not only keep pace with the changing world but also play a pivotal role in shaping its future.



Let us embrace this opportunity with enthusiasm and vigour, along with the requisite vision expected of us. Together, we can ensure that the actuarial profession not only remains relevant but becomes increasingly indispensable in navigating the complexities of our time.

Editorial

Michael Tichareva



Research and debate are the cornerstone for professional growth, innovation, and improved decision-making within the actuarial profession. The SA Actuary publication has, therefore, identified the need for increased debate within the profession.

As the SA Actuary launches a debating platform for actuaries, we have dedicated the editorial for this first edition of 2024 to how actuaries can engage in constructive debates. We have also included in this edition an article on encouraging professional and respectful debates within the actuarial profession.

When engaging in debates with other actuaries, it is essential for actuarial professionals to develop awareness and competencies in the following areas:

- **Professionalism and respect:** Maintain a respectful tone, avoid personal attacks, and focus on the issues at hand. Actuaries should uphold high ethical standards and demonstrate professionalism in their interactions.
- **Active listening:** Genuinely listen to other actuaries' arguments, ask clarifying questions, and demonstrate understanding before responding. This helps create a collaborative environment and ensures all perspectives are heard.
- **Open-mindedness:** Be receptive to different viewpoints and ideas, even if they challenge personal beliefs. This fosters learning, creativity, and collaboration among actuaries.
- **Fact-based arguments:** Present well-researched and substantiated arguments, supported by credible data, facts, and evidence. This ensures debates are rooted in reliable information and promotes rational decision-making.
- **Awareness of biases:** Recognise personal biases and assumptions and strive to overcome them to engage in objective and impartial debates.
- **Communication skills:** Develop strong communication skills, including active listening, articulating thoughts clearly, and engaging in dialogue to ensure mutual understanding and effective exchange of information.
- **Sensitivity to diversity and inclusion:** Encourage and respect diverse viewpoints, creating an inclusive environment where all actuaries feel comfortable sharing their perspectives.
- **Awareness of ethical implications:** Consider the ethical implications of the topics being debated, particularly in areas such as data

usage, predictive analytics, and the impact of actuarial work on society.

By developing awareness and competencies in these areas, actuaries can engage in constructive and respectful debates that foster professional growth, innovation, and improved decision-making within the profession.

As you prepare for debate, a typical process to follow for constructive debates involves the following key steps:

1. **Preparation**

- **Research the topic:** Gather relevant facts, data, and evidence to support arguments.
- **Understand opposing viewpoints:** Familiarise yourself with different perspectives to anticipate counterarguments.
- **Organise arguments:** Structure your arguments logically, including an introduction, main points, and a conclusion.

2. **Opening statements**

- **Present your position:** Clearly state your stance on the topic and provide a brief overview of your main arguments.
- **Set the tone:** Demonstrate respect, professionalism, and open-mindedness from the start.

3. **Presentation of arguments**

- **Present your arguments:** Elaborate on your main points, using facts and evidence to **support your position.**
- **Use clear and concise language:** Ensure your arguments are easily understood by all participants.



- **Be open to questions:** Encourage participants to ask clarifying questions and respond respectfully.

4. **Rebuttals and counterarguments**

- **Listen actively:** Pay attention to opposing arguments and take notes to prepare your response.
- **Address counterarguments:** Respectfully address opposing viewpoints and present counterarguments based on facts and evidence.
- **Remain open-minded:** Be willing to consider the merits of opposing arguments and modify your position if warranted.

5. **Closing statements**

- **Summarise your position:** Briefly reiterate your main arguments and emphasise your position's strengths.
- **Acknowledge common ground:** Highlight any areas of agreement or shared understanding among participants.
- **Express gratitude:** Thank participants for their contributions and emphasise the value of the debate.

6. **Follow-up**

- **Reflect on the debate:** Consider the strengths and weaknesses of your arguments and identify areas for improvement.
- **Engage in further discussion:** Continue the conversation with other participants to deepen understanding and explore potential solutions or compromises.

By following this process, debates within the actuarial profession can foster productive discussions, enable participants to learn from one another, and lead to more informed decision-making. We, therefore, look forward to actuaries debating on the SA Actuary debating platform.

Please also remember to send us your comments and articles for future issues of the SA Actuary – the next issue is in July/August 2024!

Michael Tichareva
Lead Editor on behalf of the Editorial team.



Making Banks Safer

by Dr. John Young and Iain Allan



Dr. John Young *originally planned an academic career as an engineer, studying at Oxford, MIT and Cambridge, before he became an actuary. He worked in a life insurance business for six years before joining Iain Allan in Group Strategy at RBS. From there, John was recruited into the retail bank, where he created new teams to improve pricing and create customer value metrics. John lives in Edinburgh and retains an interest in actuarial risks through Lloyds of London. He wrote Money, Mayhem and Madness, a book that seeks to show how simple good banking should be.*



Iain Allan *is from Edinburgh, Scotland. Since qualifying as an actuary, he has spent most of his career in banking. He was Group Director, Strategy at RBS (now known as NatWest) for 15 years. In this role, he was involved in all aspects of the Group's activities. He has subsequently worked as an independent consultant, helping various smaller banks with responses to consultations and submissions to regulators. Iain is an Honorary Visiting Professor in the Faculty of Actuarial Science and Insurance at Bayes Business School, City, University of London. He is Vice Chair of the IAA Banking Virtual Forum.*

I HAVE HEARD IT ASSERTED THAT THE TRADE OF THE CITY OF GLASGOW DOUBLED IN ABOUT FIFTEEN YEARS AFTER THE FIRST ERECTION OF THE BANKS THERE; AND THAT THE TRADE OF SCOTLAND HAS MORE THAN QUADRUPLED SINCE THE ERECTION OF THE TWO PUBLIC BANKS AT EDINBURGH - ADAM SMITH, WEALTH OF NATIONS

The father of economics recognised that banks could make society richer. Banks play a central role in facilitating economic growth by taking deposits and making loans and by enabling payments to be made, domestically and internationally. However, banks are vulnerable to larger losses in periods of recession, and they can amplify economic cycles by easy lending in good times and by tight lending in bad times. They are also vulnerable to systemic risk. The combination of these factors has led to periodic banking crises. However, rather than revisiting past problems (other than to understand what happened), it seems more important, and in the public interest, to suggest actions to reduce the risk of banking crises in future, and to consider how actuaries can contribute to such actions.

Banks in many countries must comply with the Basel regulations and with requirements imposed on them by their national banking regulator. Since the banking crisis of 2008, extensive additions and amendments have been made to the Basel regulations, to address the shortcomings that became apparent in the banking crisis. In particular, Basel III regulations, issued soon after the banking crisis, introduced the concept of Core Equity Tier 1 (CET1) capital and required banks to hold much larger amounts of equity capital. In 2008, banks' equity capital could be as low as 2% of their risk-weighted assets. In the first quarter of 2023, the average of UK banks' CET1 capital ratios was close to 16%. Also, since the banking crisis of 2008, in the UK,



the Prudential Regulation Authority (PRA) has required banks to hold additional capital (on top of that required by the Basel regulations) for risks that are not allowed for, or not allowed for adequately, under the Basel regulations.[v]

As a result of higher equity (CET1) capital ratios and other improvements to their regulation and supervision, banks were able to cope well with economic uncertainties caused by Covid-19 lockdowns. Indeed, they were able to support their customers through the difficult period, rather than curtail their lending and exacerbate recessionary pressures.[vi]

Most banks have also coped well with the move to higher interest rates. Many banks have been able to widen their net interest margins, which had been depressed during the period of very low interest rates. Silicon Valley Bank (SVB) and Credit Suisse (CS) were, for very different reasons, 'special cases', not indicative of a system-wide banking crisis such as that which occurred in 2008.

At SVB, there were two bank-specific risks. Firstly, an unusually high proportion of SVB's deposits were large deposits (above the limit for deposit insurance) from the venture capital and technology sectors, creating concentration risk and a vulnerability to withdrawals when these sectors found it more difficult to raise new capital. Secondly, SVB had invested funds from deposits in longer-term US Treasuries, creating mismatch risk and a vulnerability to losses when interest rates went up.[vii]

Assets in banks' banking books do not have to be marked to market because it is assumed that they will be held to maturity. UK banks (and large systemically-important US banks) have to hold capital for interest rate risk in the banking book, but SVB (along with other US banks below a certain size) was not required by US regulations to hold capital for this risk. In March 2023, news of a realised loss on the sale of US Treasuries to finance deposit outflows, and of a plan to raise new capital, accelerated SVB's outflow of deposits and led to the bank's failure.[x]

CS had been involved in a series of scandals (including the Archegos and Greensill failures in 2021), had been subject to enforcement action, and had issued a profit warning in June 2022. In March 2023, CS announced a delay in the publication of its 2022 annual report, and a major shareholder said that it would not provide more financial support. In the aftermath of SVB, markets tested other banks: the share price of CS fell and there were large outflows of deposits. To protect financial stability and the Swiss economy, the Swiss authorities adopted measures that led to CS being taken over by UBS. [xi]

As far as the authors understand, the problems at SVB and CS did not reflect breaches of banking regulations; as indicated above, the root causes of the problems seem to have been weaknesses in the banks' business models and/or risk management governance and controls. It was, therefore, not surprising to see Sam Woods, CEO of the PRA in the UK, making comments, in his recent speech Bank failures, about matters other than capital and liquidity, such as governance and culture, risk controls and operational resilience, and firms' business models.[xii]

Although the failure of SVB and CS was not followed by a system-wide crisis, there is a need for vigilance, as Andrew Bailey, Governor of the Bank of England, said to the Treasury Committee in March 2023.[xiii] Changes to banking regulations, made to address past shortcomings, may not help banks anticipate future problems. What might be done to encourage banks to be better prepared for both known and unknown unknowns in future? The authors have three suggestions:

Firstly, although the extensive additions and amendments to the Basel regulations are well-intended, they mean that the Basel regulations now run to 1,881 pages.[xiv] The original Basel Accord, which was published in 1988, contained only 30 pages.[xv] The volume and complexity of the current regulations may have the unintended consequence of encouraging 'tick-box compliance', contrary to the objectives of the UK's new approach to financial regulation after the banking crisis of 2008, in which the importance of understanding and judgement was recognised.[xvi] We don't know what the future may hold. Looking to the future, banking regulations and risk models are both useful, but they have their limitations, and they may lead to a false sense of security. On top of regulations and models, judgement is required.

Secondly, the approach taken by the Basel regulations is to quantify capital requirements for individual risks and then to aggregate capital requirements across all risks. However, an important aspect of the banking crises of 2008 and 2023 was higher correlations

between risks in periods of stress. In 2008, losses on collateralised debt obligations ([xvii]In 2023, at SVB, interaction between liquidity and capital risks led to problems that had not been anticipated[xviii] Correlations and interactions between risks might be addressed in banks' stress testing exercises to quantify their capital requirements, rather than in the quantification of their capital requirements. The importance of this matter supports the case made by Sam Woods, in his speech Bufferati in 2022, for proportionally less time to be spent on modelling risk weights and proportionally more time be spent on stress.[xixxx]

Thirdly, given the weaknesses and past failures in the three lines of defence model that were identified by the Financial Stability Institute in 2015,[xxi] the authors believe that there is a case for considering the establishment of a new independent function in banks, equivalent in some ways to the actuarial function in an insurance company[xxii] and in other ways to the Strategy function in which the authors worked for a large UK bank. The new function would be a small team, separate from the risk management and internal audit functions, but working closely with them, in a strengthened three lines of defence model. The new function would benefit from being free from day-to-day bureaucracy and able to spend time thinking about possible emerging risks and possible responses to them. The new function would give input to a bank's capital and liquidity stress testing exercises, and would review its regulatory submissions, including its capital and liquidity adequacy reviews (ICAAPs and ILAAPs)[xxiii] and its recovery and resolution plans,[xxiv] all prepared by the risk management function. The new function would be required to submit a paper to the bank's board, at least annually, setting out any concerns about the bank's ability to maintain its capital and liquidity adequacy, and making recommendations about remedial actions.

CANDIDATES FOR THE SUGGESTED NEW FUNCTION WOULD HAVE TO DEMONSTRATE GOOD UNDERSTANDING OF ENTERPRISE-WIDE BANKING RISKS AND OF POSSIBLE INTERACTIONS BETWEEN THEM, THE ABILITY TO MAKE SOUND JUDGEMENTS RATHER THAN JUST TO COMPLY WITH REGULATIONS, AND THE ABILITY TO COMMUNICATE CONCERNS AND REMEDIAL ACTIONS IN A CLEAR AND CONSTRUCTIVE MANNER.

Importantly, in the light of the reasons for the problems at SVB and CS in 2023, the responsibilities of the new function would go beyond ensuring compliance with regulatory requirements, under various scenarios, to making judgements about adverse outcomes that might arise from bank-specific risks related to the bank's business model, risk appetite, and/or risk management activities. In doing so, it would be expected to evaluate a wide range of adverse stress scenarios, allowing for different types of economic and other external threats and for possible interactions between the bank's risks under each scenario. Within the stress testing exercise, reverse stress testing can be a very useful tool for identifying risks, and combinations of risks, that could cause the bank to fail. It is to be hoped that, had the suggested function existed in banks, it would have expressed concerns about SVB's concentration of large deposits and at CS's involvement in a series of scandals, and would have recommended remedial actions.

Candidates for the suggested new function would have to demonstrate good understanding of enterprise-wide banking risks and of possible interactions between them, the ability to make sound judgements rather than just to comply with regulations, and the ability to communicate concerns and remedial actions in a clear and constructive manner. The new function would benefit from being free from day-to-day bureaucracy and able to spend time thinking about possible emerging risks and possible responses to them. Were such a function to be established, it would benefit from diversity of skills and experience in banking risk management and strategy. It would provide interesting opportunities for actuaries in banking, who could bring complementary skills to small multi-disciplinary teams. Even if the suggested new function is not established in banks, the activities for which it would be responsible provide interesting opportunities for actuaries in banking to contribute to making banks safer in future.

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Encouraging professional and respectful debate within the actuarial profession



MICHAEL TICHAREVA

BCOM (HONS.), FASSA, FIA, MBA
LEAD EDITOR: SA ACTUARY



Back in the old days, we enjoyed professional and respectful debates within the actuarial profession. In South Africa, this was typically delivered at the annual convention where actuaries would debate opposing views. In the UK, this was typically delivered at sessional meetings and seminars. In the UK, in particular, transcripts of such debates would also usually be published in the British Actuarial Journal. We seem to be lacking such debating platforms today in the South African actuarial profession.

It was, indeed, encouraging to see some debating sessions at the 2023 ASSA Convention. We believe that such debates should be encouraged and continued. In view of this, and to help foster a culture of debate within the profession, the SA Actuary has created a debating platform to encourage constructive debates on various topics among actuaries. This will largely be delivered through sessional meetings and seminars, with summary transcripts published in the SA Actuary, and recordings posted on the ASSA website.

Professional and respectful debate plays a crucial role within the actuarial profession for several reasons:

1. **Enhancing decision-making:** Actuaries must make informed decisions to assess risk and develop effective strategies. Engaging in respectful debates fosters critical thinking and enables professionals to explore various perspectives, resulting in more well-rounded and well-informed decisions.
2. **Encouraging professional growth:** Through constructive debates, actuaries can gain deeper insights into complex issues, develop communication skills, and broaden their understanding of different viewpoints. This fosters personal and professional growth, benefiting both individuals and organisations.
3. **Fostering collaboration:** A culture of open, respectful debate encourages collaboration and teamwork by enabling professionals to exchange ideas and learn from one another. By engaging in constructive debates, actuaries can build trust and respect among





colleagues, ultimately leading to more effective collaboration.

4. **Promoting diversity and inclusion:** Encouraging professional and respectful debates helps create an inclusive environment where diverse perspectives are welcomed and valued. This inclusivity can lead to better problem-solving, innovation, and a stronger sense of community within the profession.
5. **Maintaining professionalism and integrity:** Actuaries are expected to uphold high ethical standards and demonstrate professionalism in their work. Engaging in respectful debates ensures that disagreements are handled responsibly and ethically, maintaining the profession's reputation for integrity and impartiality.
6. **Contributing to the profession's development:** Open and respectful debates can contribute to the ongoing development and evolution of the actuarial profession by raising awareness of emerging trends, fostering critical thinking, and promoting continuous improvement.

Debate can lead to better decision-making, innovative ideas, and professional growth through the following ways:

1. Better decision-making

- **Encourages critical thinking:** Debates stimulate participants to think deeply about issues and explore all angles, helping to uncover potential flaws or consequences that may have been overlooked.
- **Facilitates information exchange:** Participants share their knowledge, expertise, and unique perspectives during debates, which can lead to a more comprehensive understanding of the issue at hand.
- **Promotes evidence-based conclusions:** Constructive debates encourage the use of facts, data, and well-supported arguments to reach conclusions, ensuring that decisions are grounded in evidence.

2. Innovative ideas

- **Sparks creativity:** Debates often lead to the exploration of alternative solutions and outside-the-box thinking, which can generate innovative ideas and approaches.



- **Challenges assumptions:** By questioning existing beliefs and assumptions, debates can inspire the development of novel ideas and approaches that may not have been previously considered.
- **Fosters collaboration:** Through respectful debates, professionals can collaborate more effectively and combine their strengths, skills, and knowledge to generate innovative ideas.

3. Professional growth

- **Enhances communication skills:** Engaging in debates helps individuals refine their communication skills, including active listening, articulating thoughts clearly, and persuading others.
- **Broadens understanding:** Debates expose participants to diverse perspectives and deepen their understanding of complex issues, which can facilitate personal and professional growth.
- **Builds confidence:** Successfully participating in debates can boost confidence and self-esteem, empowering individuals to take on new challenges and responsibilities in their careers.

In summary, constructive debates can lead to better decision-making, innovative ideas, and professional growth by fostering critical thinking, collaboration, and open-mindedness within the actuarial profession.

Maintaining professionalism and respect during debates is essential for actuaries as it helps with:

1. **Upholding ethical standards:** Actuaries are expected to adhere to high ethical standards in their work, and respectful debates ensure disagreements are handled ethically and responsibly.
2. **Preserving trust and integrity:** By focusing on facts, remaining respectful, and seeking common ground, actuaries can preserve trust among colleagues and uphold the profession's integrity.
3. **Supporting ongoing professional development:** Constructive debates contribute to the profession's continuous growth and evolution, promoting a culture of learning and improvement.

Constructive and respectful debates, therefore, play a crucial role in supporting the actuarial profession's success, fostering innovation, and upholding the high standards expected of its members.

The SA Actuary is encouraging actuaries in different areas of actuarial practice to come up with topics for debate and approach the SA Actuary for a debating platform.

We summarise below examples of potential areas for debate within different areas of actuarial practice:

1. Life Insurance

- The impact of advances in medical technology and mortality improvements on pricing and reserving.
- The role of data analytics and predictive modelling in life insurance.

- The ethical considerations of using genetic information in life insurance underwriting, and potential implications for pricing and coverage.
- The impact of changing family structures and societal norms on life insurance product design and marketing.
- The challenges of managing longevity risk, particularly in the context of annuities and pension products.

2. General Insurance

- The increasing role of InsurTech and its impact on traditional insurance models.
- The ethical implications of using big data and AI for risk assessment and pricing.
- The impact of climate change on short-term insurance products, particularly in property insurance, and catastrophe modelling and risk management.
- The use of telematics, big data, and AI in underwriting and pricing motor insurance, and the ethical implications of these technologies.
- The potential implications of the sharing economy and digital platforms (e.g., ride-sharing and home-sharing services) on short-term insurance models.
- The challenges and opportunities associated with cyber insurance, including the evolving nature of cyber risks and the development of adequate pricing and reserving methodologies.
- The role of actuaries in addressing the protection gap in emerging markets, particularly in property and motor insurance.
- The increasing importance of product innovation in short-term insurance to meet changing customer needs and preferences.





3. Pensions and Social Security

- The role of alternative investment strategies in pension fund management.
- The impact of legislative changes on pension systems.
- The potential impacts of pension system reforms, such as changes in contribution rates, retirement ages, or benefit formulas, on pension adequacy and intergenerational fairness.
- The role of behavioural economics in pension plan design and communication, including strategies to improve retirement savings behaviours.
- The challenges of addressing pension fund deficits and designing sustainable funding strategies.
- The sustainability of pension systems in an aging population.

- The sustainability of social safety nets, e.g. social grants in South Africa, in the face of increasing inequality, poverty, and unemployment.

4. Healthcare

- The impact of healthcare reform on healthcare actuarial practice.
- The challenges of managing long-term care risks and solutions.
- The increasing role of big data, AI, and predictive analytics in healthcare risk management.
- The implications of healthcare cost inflation on insurance premiums, affordability, and access to healthcare.
- The potential impacts of precision medicine and personalised healthcare on actuarial practice, particularly in pricing and risk assessment.
- The role of actuaries in addressing healthcare system inefficiencies, waste, and fraud.

5. Investments

- The impact of responsible investing and environmental, social, and governance (ESG) factors on portfolio management.
- The role of actuaries in developing investment strategies that address ESG factors and promote sustainable investing.
- The role of actuaries in managing investment risks in a low-interest-rate environment.
- The implications of low-interest-rate environments and market volatility on asset allocation, risk management, and actuarial modelling.
- The challenges of asset-liability management in an uncertain economic climate.
- The challenges and opportunities of alternative investment strategies, such as private equity, private debt, infrastructure, and real estate, for long-term institutional investors.

6. Banking

- The impact of regulatory changes on banking institutions, capital adequacy, and risk management practices in banks.
- The challenges of stress testing and scenario analysis in an uncertain economic climate.
- The evolving role of actuaries in banking, particularly in areas like credit risk modelling, stress testing, and liquidity risk management.
- The challenges of incorporating ESG factors into banking risk management frameworks and lending practices.

7. Enterprise Risk Management (ERM)

- The integration of ESG factors into ERM frameworks.
- The challenges of managing emerging risks such as cyber risk and reputational risk.
- The role of data analytics and predictive modelling in ERM practices.
- The integration of emerging risks, such as cyber risk, climate risk, and reputational risk, into ERM frameworks.





- The importance of fostering a strong risk culture within organisations, and the role of actuaries in promoting risk awareness and ethical decision-making.
- The potential benefits and challenges of using advanced analytics, AI, and machine learning in ERM practices, and the need for ethical guidelines in their application.

8. Public interest

- The role of actuaries in addressing social and economic inequality, and designing solutions that promote financial inclusion and social justice.
- The ethical considerations of using data and predictive analytics in public policy decisions, particularly in areas like public health, welfare, and criminal justice.
- The actuarial profession's contribution to climate change adaptation and mitigation, and its role in promoting sustainable practices in finance, insurance, and risk management.
- The importance of public-private partnerships in addressing global challenges like pandemic risks, aging populations, and disaster resilience, and the role of actuaries in facilitating such collaborations.
- The development of ethical frameworks and guidelines for actuaries working in public interest domains to ensure their work promotes the common good and addresses the needs of vulnerable populations.
- The challenges of communicating actuarial concepts and recommendations to policymakers and the public, and the importance of effective communication in promoting sound public policies.

9. Professionalism and ethics

In the area of professionalism and ethics, several key topics can be debated by actuaries, including the following:

a. **Ethical use of data and predictive analytics:** Discuss the responsibilities and potential ethical implications of using big data, artificial intelligence, and predictive modelling in actuarial work.

b. **Conflicts of interest:** Explore how actuaries should navigate situations where their professional judgment may be influenced by personal or organisational interests.

c. **Professional standards and guidelines:** Evaluate the adequacy and effectiveness of existing professional standards and ethical guidelines in addressing emerging challenges and issues.

d. **Duty of care and responsibility to the public: Discuss the responsibilities of actuaries to serve the public interest and promote fair and equitable outcomes for stakeholders.**

e. **Ethical implications of emerging technologies:** Examine the ethical considerations related to the adoption of new technologies, such as blockchain, AI, and machine learning, in actuarial practice.

f. **Diversity, equity, and inclusion:** Explore the role of actuaries in promoting diversity and inclusion within the profession and addressing potential biases in actuarial models and decision-making.

g. **Whistleblowing and ethical decision-making:** Debate the responsibilities of actuaries in reporting unethical behaviour and promoting transparency within their organisations.
h. **Balancing professional and personal values:** Discuss how actuaries can navigate situations where their personal values may conflict with their professional obligations.

These topics, among others, offer opportunities for constructive debate and discussion within the actuarial profession, fostering innovation, professional growth, and improved actuarial practices. These topics also provide opportunities for actuaries to engage in meaningful debates on professionalism and ethics, fostering a deeper understanding of the challenges and promoting a stronger ethical culture within the profession.

We call upon Practice Area Committees, Task Forces, ASSA Boards and their Committees, ASSA Council, and all the other ASSA structures to promote and lead in these debates. It may well be appropriate to include debate as a standing item on your regular meeting Agendas, and select topics for debate.

Michael Tichareva
BCom (Hons.), FASSA, FIA, MBA
Lead Editor: SA Actuary

HEALTH WARNING:
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Contact Paper Video (**Chris Mills, 072 347 6154, chris@papervideo.co.za**) or the Actuarial Society Educational Trust (**Mike McDougall, 087 073 8952, mmcdougall@actuarialsociety.org.za**) and make education a powerful catalyst for change in more children's lives.

PaperVideo

ACTUARIAL SOCIETY OF SOUTH AFRICA

THE AESTHETIC LEADERSHIP PROGRAM

By Derek Pead and Siham Boda



SIHAM BODA



DEREK PEAD

Designed particularly with the actuarial profession in mind, the Aesthetic Leadership Program will be piloted in 2024.

Participants will be immersed in a multifaceted exploration of leadership, with a keen emphasis on conflict resolution, respectful and principled debate, and the skill of effective negotiation. These competencies not only foster harmonious work environments but also serve as catalysts for enhanced productivity and innovation within teams.

Aesthetic leadership can be described as a holistic approach to leadership that emphasizes the cultivation of a harmonious and inspiring organisational environment. It focuses on the integration of emotional intelligence, creativity, and inclusivity to foster a culture of innovation and excellence. Aesthetic leadership values authenticity, empathy, and mindfulness, guiding leaders to connect deeply with their teams and stakeholders. It encourages leaders to appreciate the beauty in diversity and complexity, leveraging it to drive meaningful change and sustainable growth. Aesthetic leadership emphasizes the importance of creating experiences that resonate with individuals on an emotional level, inspiring them to contribute their best work and pursue collective goals with passion and purpose. Ultimately, aesthetic leadership aims to transform organizations into vibrant and dynamic spaces where creativity flourishes, relationships thrive, and success is not only achieved but also celebrated.

The program has been designed and curated by Siham Boda and Derek Pead, with substantial and valuable input from the leadership of ASSA.

Siham is an admitted advocate who has an impressive record in the fields of conflict and dispute resolution, as well as commercial and workplace mediation. Derek has a long and distinguished career in the insurance industry as both an executive and a non-executive director. He is also a professional executive coach and mentor, as well as a highly qualified and experienced negotiator and mediator. In 2020, as the only African team in the competition, Siham and Derek won the International Negotiation Challenge for Professionals, the unofficial world championship in negotiation.

The Debut of Deposit Insurance in South Africa

– by Johan Eybers



JOHAN EYBERS

Johan Eybers is a dynamic professional with a wealth of expertise in risk consulting within the banking sector. Currently employed at EY, one of the prestigious big four audit firms, Johan specializes in the Risk Consulting division, focusing specifically on the banking industry. Johan is pursuing a PhD in Finance at WITS, with a research focus on quantifying the impact of deposit insurance on bank run risk.

From 1 April 2024, bank deposits in South Africa will, for the first time, be legally insured by the deposit insurance scheme (DIS) signed into law by President Ramaphosa in January 2022. The insurance will cover qualifying deposits up to an aggregate total of R100 000 per qualifying depositor per bank. The DIS fund will be managed by the newly minted Corporation for Deposit Insurance (CODI) – a subsidiary of the South African Reserve Bank (SARB).

This marks a pivotal moment for the South African banking sector. The introduction of this safety net is crafted to safeguard the most vulnerable depositors, guaranteeing prompt access to their savings in the event of a bank failure. It also alleviates the government's responsibility to rescue banks and compensate depositors with taxpayers' money.

The CODI Journey to date

Following the global financial crisis, the Group of Twenty (G20) engaged the Financial Stability Board (FSB) to formulate strategies tackling the issue of institutions deemed "too-big-to-fail." Among the introduced standards is the Key Attributes of Effective Resolution Regimes, which directs jurisdictions to implement privately funded depositor protection or alternative mechanisms for recovering costs associated with bank failure, emphasising reliance on the private sector over the public sector.

In 2014, the government decided to enact a deposit insurance scheme, and initial proposals were formulated. The period from 2016 to 2022 witnessed the publication of a series of discussion papers open to public commentary, covering crucial topics such as the scheme's design, funding model, coverage, and reporting rules. In 2022, legislation governing deposit insurance levies and premiums was enacted, and the Minister of Finance released draft deposit insurance regulations in July 2023 with the intent of formalising them into law on April 1, 2024.

The Purpose of Deposit Insurance

The concept of deposit insurance first emerged in 1933, with the establishment of the Federal Deposit Insurance Corporation (FDIC) in the United States. This pioneering move aimed to curb banking failures witnessed during the Great Depression set the stage for other nations to adopt similar measures. Fast forward to the present, and South Africa, as part of G20, is among the last countries within the group to implement a formal deposit insurance scheme. The scheme's absence represented a gap in the structure of South Africa's financial safety net.

Historically, the government compensated depositors on a case-by-case basis, placing the burden on taxpayers to cover losses resulting from bank failures. This approach led to uncertainty regarding which depositors would receive compensation, the extent of protection offered, and the funding sources involved in the event of a bank failure.

The implementation of a DIS addresses these issues by establishing a systematic and efficient mechanism for protecting depositors, with an emphasis on safeguarding the most vulnerable. The DIS ensures that depositors are well-informed about the timing and amount of compensation they can expect in the event of their bank's failure, contributing to a more transparent and predictable financial landscape. This commitment aligns with SARB's mandate of ensuring financial stability. Deposit insurance is a key component in fostering confidence in the banking system, promoting stability, and protecting the interests of depositors.

Reporting and Coverage

CODI is set to cover the balances of eligible products held by qualifying depositors. Deposits (held by natural persons) and companies qualify for coverage, with the exclusion of deposits by financial firms. The rationale behind this exclusion lies in the belief that financial entities possess the requisite information to evaluate and manage their own risks, differentiating them from other depositors facing information asymmetry. Qualifying products encompass those with guaranteed nominal balances, repayable at par, covering standard deposits and the associated interest. However, products like share investment accounts or bonds, where the capital is not guaranteed, fall outside this coverage.

Qualifying accounts held by sole proprietors are treated separately from the individuals' personal bank accounts. CODI also extends its coverage to qualifying deposits in foreign currencies held by eligible depositors, with coverage up to R100 000. In the event of a bank failure, foreign currencies are converted to ZAR before disbursement.

Coverage is limited to an aggregate of qualifying balances, with a maximum of R100 000 per qualifying depositor. Practically, if the total of all qualifying deposits surpasses the R100 000 limit, the depositor will only receive R100 000 in the event of a bank failure. If the cumulative qualifying deposits fall below R100 000, the depositor will be entitled to the full qualifying amount. According to CODI, the R100 000 limit ensures complete coverage for 95% of the country's qualifying depositors.

Banks are mandated to compile and disclose total qualifying and covered deposit balances to the CODI monthly. These figures are crucial in determining the deposit insurance premium payable to CODI. Banks must also furnish – quarterly – a detailed account of qualifying and covered balances at the customer level using the Single Customer View (SCV) format. CODI reserves the right to request the SCV on ad-hoc dates, and in the event of the bank's closure by the PA, the SCV must be submitted within 48 hours. SCV files capture the necessary information to reliably identify customers as set out in the Financial Intelligence Centre Act (FICA).

Under the deposit insurance regulations, banks are obligated to distinguish between simple and complex accounts. In simple accounts, the account holder is also the ultimate beneficiary of the funds, while in complex accounts the account holder is not the ultimate beneficiary. Complex accounts are further categorised into formal (accountable institutions, such as law firms, maintaining comprehensive records of the underlying beneficiaries and their associated balances) and informal beneficiary accounts (non-accountable institutions, with elected signatories managing funds on behalf of the beneficiaries such as stokvels).

Upon the closure of a bank, the SCV file must be promptly submitted, showcasing the deposit balances at the close of the day. This submission will act as the foundation for CODI to facilitate the reimbursement of depositors. CODI's objective is to repay simple account holders within 4 to 20 days following the bank closure. The process for formal and informal beneficiaries may take longer due to the additional verification required before payout. To streamline the electronic payout process for depositors of the failed bank, CODI will appoint "pay-out agent banks" to facilitate the disbursement of funds.

The Funding Model

All banks operating in South Africa automatically become members of CODI. The DIS requires funding for two purposes. Firstly, to build the deposit insurance fund (DIF) to

facilitate the payout of depositors, funded by a monthly premium currently set at 0.2% of covered deposits per annum, i.e., a monthly premium of 0.2%/12 of covered deposits. Secondly, to cover operational costs, an annual levy currently set at 0.015% of covered deposits will be installed.

During the initial phase, the DIF will undergo a building period where the fund may not be sufficient to cover insured risks adequately. Unusually, CODI will not receive seed capital. Recent amendments to the Insolvency Act of 1936 prioritise covered deposits in the event of liquidation, which enables a significant portion of funds to be recovered from the failed bank.

The funding model comprises three tiers, ordered by usage during payout scenarios. The first involves DIF's own funds, accumulated through monthly premiums. The second, known as the liquidity tier, includes contractual deposits placed by members with CODI, earning interest. The size of the liquidity tier, ranging from 0.5% to 3.0% of covered deposits, is set annually by CODI. This tier is considered an asset on banks' balance sheets, mitigating the impact on profitability resulting from the implementation of deposit insurance. The third tier is an emergency funding facility provided by the South African Reserve Bank (SARB), used in exceptional circumstances after exhausting the other tiers.

In the future, CODI plans to introduce differentiated premiums based on members' risk profiles and implement ex-post premium contributions, since it can take years to recover funds from failed banks. CODI has set a target DIF size of 4%, with 1% as DIF's own funds (Tier 1) and 3% as the liquidity tier (Tier 2). The DIF fund is expected to be built over five years, considering the current premium rate of 0.2% per year, payable monthly. CODI commits to reviewing the funding model every five years, potentially adjusting the size of the three funding tiers, as well as the premiums and levies payable.



Public Awareness

CODI's primary goal is to foster and fortify the stability of the financial system, a mission that hinges on the informed awareness of the protection it affords. Consequently, one of CODI's mandated functions is to actively promote public awareness of deposit insurance.

In collaboration with the SARB, CODI will launch public awareness campaigns. Strategic partnerships with the Financial Sector Conduct Authority (FSCA) will also be established to ensure initiatives are aligned with reinforcing consumer protection. These collaborative efforts will involve educating the public about the scope of CODI's protection and its inherent limitations. Member banks are integral to this process, required to support CODI in its public awareness campaigns by disseminating standardised and consistent information. CODI will issue periodic directives to guide banks on effectively promoting public awareness of deposit insurance.

To ensure clarity and transparency, banks will also be obligated to submit details of their current and future product offerings to CODI which will then assess whether a product qualifies for coverage. A comprehensive product register will be maintained by CODI, accessible on its website, enabling the public

The incorporation of CODI into a bank's resolution strategy addresses the "too-big-to-fail" problem, allowing for the orderly failure of banks with reduced economic repercussions and minimal impact on overall trust in the banking system.

to verify the coverage status of their financial products.

CODI, in conjunction with SARB's Communications Division, is currently in the process of formulating a comprehensive, board-approved strategy for long-term public awareness and communication. This strategy will encompass an evaluation of existing public awareness levels and the anticipated impact of successful implementation. It will also outline a detailed implementation plan covering the types and frequency of public awareness campaigns, supporting activities, required resources, and potential outsourced activities. The strategy will also provide updates on communication plans for various scenarios, including times of crises, and detail planned simulations and tests.

CODI has initiated a public awareness survey to inform the development of its awareness strategy and campaigns. Some international DISs have set targets for the optimal level of public awareness to reduce the likelihood of a bank run. Canada, for example, deems an awareness level between 60% and 65% as optimal. CODI is aligning with international best practices and will continuously monitor the public's awareness of CODI's offerings, identifying potential information gaps, and depositors' perceptions of the institution.

The Proponent's View

The advent of deposit insurance is a pivotal move that not only fortifies stability but also bolsters confidence in the banking system by explicitly safeguarding depositors' funds. In the unfortunate event of a bank in distress, the introduction of CODI ensures a timely payout, dissuading depositors from a panicked rush to reclaim their funds.

In South Africa, CODI emerges as a shield for the most vulnerable members of society, particularly those with limited financial literacy, who are disproportionately affected by the loss of their bank deposits. Recent incidents, such as the VBS bank failure, illustrate the devastating impact on vulnerable communities vividly, especially burial societies and stokvels held by impoverished individuals in the Limpopo province.

Under CODI, the need for a case-by-case assessment by SARB of depositor protection, as witnessed in the VBS case, becomes obsolete. This shift ensures that depositors gain confidence in the protection of their funds, with the payout process streamlined, expedited, and transparently communicated. Moreover, CODI alleviates the financial burden on the South African government and taxpayers by minimising the necessity for bank bailouts.

South Africa, as one of the last G20 member countries to implement a formal deposit insurance scheme, aligns its financial system with global standards, reinforcing international trust in the national banking system. The incorporation of CODI into a bank's resolution strategy addresses the "too-big-to-fail" problem, allowing for the orderly failure of banks with reduced economic repercussions and minimal impact on overall trust in the banking system.

The prospect of risk-based premiums charged by CODI incentivises banks to manage their



risk more judiciously, aligning their interests with depositors. This, in turn, encourages the adoption of safer banking practices and contributes to the overall resilience of the financial system. The eligibility of financial products for coverage under deposit insurance also becomes a crucial consideration for banks launching new products and depositors making investments.

CODI is poised to enhance public trust in the banking system, fortify financial stability, protect vulnerable depositors, and relieve the pressure on South African taxpayers to shoulder the costs of bank failures.

The Critic's View

The impact of CODI's deposit insurance implementation on South Africa's financial stability remains somewhat uncertain. While CODI's coverage of up to R100 000 safeguards vulnerable depositors and over 95% of depositors, this only represents approximately 20% of total deposits. Given South Africa's low savings rate, banks heavily rely on funding from sophisticated and unprotected financial institutions like investment firms, insurers, and pension funds. Consequently, the risk of bank failures persists, particularly if there are runs on deposits held by these financial entities.

In the event of a failure involving a domestically systemically important bank (D-SIB), CODI's coverage may prove insufficient. The economic repercussions of losing substantial deposits from financial institutions such as pension funds could be far-reaching, possibly necessitating intervention by SARB and the government to prevent an economic catastrophe.

While deposit insurance aims to enhance depositor confidence, it introduces the risk of moral hazard, potentially encouraging depositors to become less cautious in choosing banks and taking on riskier investments due to the safety net of insurance. This may also weaken the market discipline mechanism on banks, as depositors might be less vigilant in monitoring banks' risk-taking behaviours.

Concerns persist about public reaction, potential disinformation, and confusion if the communication regarding deposit insurance is unclear. The substantial costs incurred by banks for system implementation, processes, hiring, and payment of premiums and levies pose additional challenges and may be passed on to consumers. Despite the reporting requirements, the speed and efficiency of payouts for vulnerable individuals, particularly those in burial societies and stokvels with informal beneficiary accounts, remain uncertain due to potential delays in verification processes.

CODI's presence may act as a barrier to entry for smaller banks, potentially burdening them more than larger, established counterparts. This could impact banking competition and long-term market innovation. The effectiveness of CODI's public awareness strategy and the level of trust the public places in the institution are critical factors. Public confidence, especially during the first bank failure, will determine CODI's utility, and only time will unveil the true impact of CODI on the South African banking system.

The Implication for Actuaries and the Banking Sector

Deposit insurance is not a standard product within the realm of public insurance where actuaries typically operate. This is primarily because depositor insurance contradicts key principles of insurable risks, notably the requirement for many independent and identically distributed risks, along with limitations on adverse selection and moral hazard. The anticipated impact on actuaries is therefore expected to be somewhat restrained. Actuaries within the banking sector could contribute significantly by aiding banks in meeting regulatory requirements and quantifying the associated risks, particularly concerning the effects on bank liquidity management and funding costs.

This marks a pivotal juncture for the South African banking sector. Banks will now grapple with additional reporting and compliance costs, influencing the overall cost of conducting business. Integrating CODI reporting into their business-as-usual processes and resolution planning submitted to the Prudential Authority becomes imperative. The introduction of CODI may impact product offerings, and banks bear the responsibility of accurately reporting covered balances to avoid potential fines, especially concerning deposits by financial institutions where the underlying beneficiary qualifies as a depositor.

On a broader scale, this development will instil greater confidence among depositors in the banking sector. CODI emerges as a crucial addition to the safety net established by the SARB.

For additional information, visit the CODI webpage: **https://www.resbank.co.za/en/home/what-we-do/Deposit-insurance**

MARKET CONDUCT IN THE MEDICAL SCHEMES ENVIRONMENT

By Sarika Besesar



SARIKA BESESAR

Medical schemes are regulated under the Medical Schemes Act 131 of 1998 which came into force in 2000 (McLeod, 2005). While medical schemes operate in a highly regulated environment, the social solidarity regulatory framework is incomplete and has not been updated despite an extensive Health Market Inquiry conducted by the Competition Commission and completed in 2019.



The Council for Medical Schemes (CMS) is the statutory body governing medical schemes and scrutinizes the operations of medical schemes. For example, the CMS has a statutory obligation to approve annual contribution increases, any changes in benefit design and review new products before they are implemented (Kaplan J. and Ranchod S., 2015). The Medical Schemes Act defines a blanket minimum solvency requirement for medical schemes (although a risk-based capital framework has been under consideration but seems unlikely to be implemented any time soon). These features of the regulatory and legislative landscape restrict the leeway that healthcare actuaries have with regards to benefit design, pricing and reserving, and create additional challenges for healthcare actuaries with regards to market conduct and treating customers fairly (TCF).

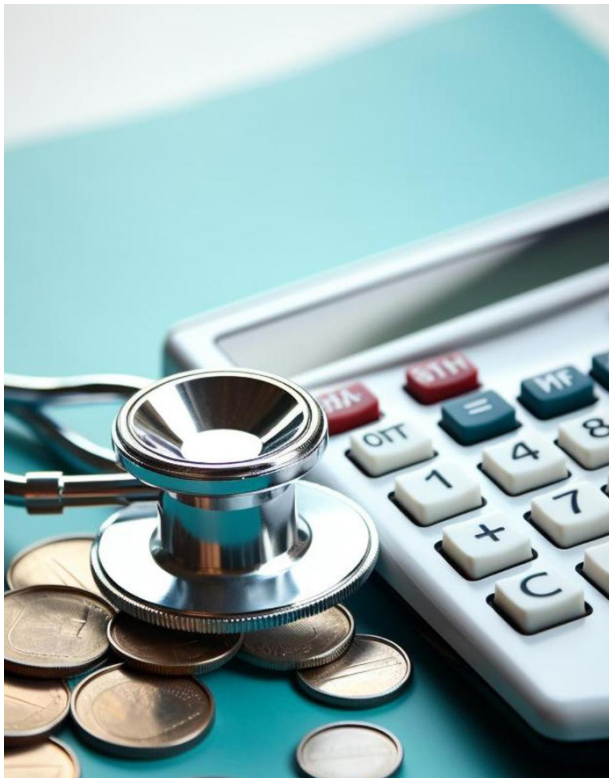
In line with social solidarity objectives, medical schemes operate in an environment of community rating and open enrolment and must provide all eligible beneficiaries with a comprehensive prescribed minimum benefit package (McLeod, 2005). However, there is no risk equalization fund and membership is voluntary. This exposes individual medical schemes and the industry at large to the risk of anti-selection (Kaplan J. and Ranchod S., 2015).

Over the years, the effect of compounded anti-selection has driven up utilization rates of healthcare services to unsustainable levels which is negatively impacting consumer affordability and sustainability of the industry (Harris R. and Besesar S., 2021). Healthcare actuaries, therefore, find themselves in a difficult predicament of having to find innovative ways to attract younger and healthier lives into the medical scheme risk pool within the constraints of social solidarity principles. This encourages medical schemes to compete on attracting lower risk members in order to ensure that the risk pool can continue to sustain benefits for the older and sicker lives (Kaplan J. and Ranchod S., 2015).

In order to manage the sustainability of the risk pool, healthcare actuaries use benefit design/ differentiation to encourage early entry.

By employing various rationing tools (such as co-payments, limits, deductibles, provider networks, formularies etc.) of benefit design, medical schemes aim to manage anti-selection risk as sicker lives prefer more comprehensive cover. While this may be necessary to stabilise the market, critics argue that this practice goes against the spirt of the Medical Schemes Act which is embedded in social solidarity principles (Kaplan J. and Ranchod S., 2015). It is, therefore, the responsibility of the healthcare actuary to ensure that new benefit options are introduced into the market in a manner that still enables a fair degree of risk cross-subsidy at the scheme level. This becomes incredibly complex in practice, as the Medical Schemes Act requires that each benefit option should be self-sustaining.

While the Medical Schemes Act is silent on the topic of TCF, medical schemes are bound by the Financial Service Regulation Act and the Consumer Protection Act (CPA). In particular, the CPA states that any representation made to the consumer should be in plain language and prohibits discriminatory marketing. However, although the Registrar of Medical Schemes assesses new benefit options, it is difficult to make an upfront assessment in terms of its fairness and responsibility to the members due to the inherent complexity of healthcare benefits.



Further, whilst the Council for Medical Schemes does require benefit option brochures to be provided before approval, there is no formal framework for their assessment with regards to TCF. There is also no prescription in terms of language in the Medical Schemes Act and the Act puts the responsibility of the understanding of the rules on the member, irrespective of the industry complexities. The Health Market Inquiry noted this challenge in their final report and recommended more standardization in how benefits are communicated, while still encouraging innovation in how benefits are structured. This is an important nuance as benefit standardization is more likely to drive up costs by retarding innovation of positive competition.

The benefit option proliferation, compounded by the complex nature of medical care, thus creates additional complexities for the consumer who must navigate the various products on offer. As discussed above, while benefit option proliferation is a result of an inherently unstable market, it creates tension for healthcare actuaries between the imperative of having to treat customers fairly and the management of scheme risk profiles and sustainable risk pools (Kaplan J. and Ranchod S., 2015).

Unlike other insurance products, medical schemes are not-for-profit mutual funds (McLeod, 2005). This means any surpluses or deficits incurred are absorbed into the medical scheme. Underpricing or mismanagement of funds therefore has a direct and serious impact on members. Should a medical scheme deplete its reserves due to sustained losses or

a catastrophic event, the scheme will face large contribution increases or be declared insolvent, and members will be left without cover. In this event, members may join other medical schemes. However, they will be subject to waiting periods which may have significant financial impact on the most vulnerable members. This places significant onus on healthcare actuaries to ensure that products are priced correctly and that reserves are adequate.

Statutory solvency is prescribed at 25% of the medical scheme's gross contribution income. As market experience has shown with the rapid demise of the Health Squared Medical Scheme, this may be insufficient for smaller schemes or schemes with particularly poor demographic profiles. Without a risk-based capital framework to calculate necessary levels of reserves dependent on the scheme's unique risk profile, the onus is on the healthcare actuary to advise the trustees on whether the scheme is holding sufficient reserves to support the risk, which may be well above minimum statutory levels.

Further, the regulator applies strict oversight over the medical scheme. For instance, the regulator publishes an annual guideline which sets out the maximum recommended contribution increase that medical schemes should apply. However, given the regulator's focus on consumer affordability, the recommended increases are largely based on CPI estimates, with little consideration to other factors driving healthcare inflation such as increases in utilization. This puts the healthcare actuary in a difficult position, as they must balance shorter-term affordability constraints of members with the longer-term sustainability of the medical scheme. The projection of solvency which is part of the regulatory submission guideline is a key consideration for assessing the sustainability of contribution increases.

As evidenced from the above, the medical schemes market is highly complex, and regulations, although intended to protect medical scheme members, have limitations due to their incomplete nature. This has the effect of introducing challenges for the healthcare actuary who has to balance social solidarity of the industry with the individual scheme's need to be sustainable. As such, the potentially conflicting objectives of treating customers fairly and ensuring the sustainable management of scheme's risk pool may lead to decision-making dilemmas for the healthcare actuary advising medical scheme trustees.

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An epic journey to Fellowship

- by Johan de Jager

It's nearly 10pm on the 4th of March 2024. In two weeks' time, I will be at the fellowship professionalism course in Cape Town, and we would have completed day one already. One last box to tick. As I look back at the last 18 years (the time it took it me to become a Fellow, from 1st year at Tuks to now – more on this later), I can't help but consider two things about time. One, how these years have actually flown by, and two, wondering how it took me so long! Nonetheless, I am immensely proud of how I have persevered, and hence I write this story to hopefully encourage at least one other individual to do the same. As they say in Afrikaans: Byt vas! And, "hulle weet nie wat ons weet nie". They (whoever they may be) do not know the grit and strength of South Africans. And much less, they do not know the perseverance of a South African actuary!

As a 37 year-old, happily married man, and trying to keep it that way, as well as father of two toddlers (5 and 3 years old), I am no stranger to opening my laptop at 10pm after some quality family time. I've had to do this for the past 5+ years, while writing F203 a full 10 times. Yes. You read that right. 10. The first 8 attempts were done in 8 consecutive sessions, meaning 8 failures in a row. At some point in those 4 years, this Winston Churchill quote became relevant: "***Never give in. Never, never, never, never – in nothing, great or small, petty or large – never give in, except to convictions of honour and good sense***". Was it good sense to keep going? I certainly did question my sanity at times. But I never gave in. And I'm glad I didn't.

So, how exactly did this insanity unfold? Well, it started in 2004 when I matriculated with top marks, as most actuaries do. I did not really know what to study, and hence ended up in Mechanical Engineering at Tuks in 2005. I did well in the maths subjects, but kind of sucked in the engineering subjects. I then learned of this actuarial thing, and hence started my second 1st year in 2006. I did not really understand the full journey ahead, and the value of exemptions. I also enjoyed res-life way too much, and therefore ended up leaving Tuks at the end of 2009 with only 2 exemptions. As I started my work career in 2010, at a small firm specialising in damages calculations, I did not write any board exams in that year.

In 2011 I started working at a medium-sized life insurance company, and here my exam journey starts. The timeline below is a long one, but read all of it if you have the time. Otherwise, at least read 2015 to 2017, 2020 and 2023.

I can only hope that it inspires others, to continue on their own journey of insanity, and to never give in.





2011 Pass 2x "CT" exams in the first sitting. Thinking this is going to be a breeze. Next session I write one exam, and fail spectacularly, with an FC. We also had a death in the family – my cousin who was 1 year younger than me.

2012 I really messed around in the 1st session, as I was struggling with career path, young love stories (drama!), and the death of my cousin. I get an FC and FD in the 1st session. Big question marks arise, and I decide to buckle down. I get a pass in the 2nd session.

2013 I write 2 "CT" exams in each session, and I pass 1 per session, so that's 2 for the year. Building some momentum. I also attempt Communications, but fail twice.

2014 I write Communications again, and fail again. I also attempt another CT (fail 1st session, pass 2nd session). I get married in November.

2015 All my CT's are done, and I do the Models (documentation & reporting) module, and I attempt "CA1", but I fail on 1st attempt. I then change jobs and industry. I move into General Insurance, working for a new insurer (3 years old at the time).

2016 First session I pass CA1, and I'm over the moon. As I got the results, my older brother arrived at my house. I was jumping up and down, and gave him a huge hug. He didn't know what was going on, but started jumping as well! Until I could eventually gather myself and tell him what had happened. I then write F103 and get an FA. Close, but momentum is high.

2017 First session, I write F103 again, and it really goes badly. I'm really down in the dumps, and I tell my wife I'm done with all of this. I'll just be an Associate member, and that's fine. Results come out, and I pass! Miracles do happen, but now I'm thinking "eish, now I need to carry on, because what's the point of being an Associate plus one exam? Might as well try the last 2". Second session I even pass Communications. On the night of the results being released, my older brother passes away. He was a year older than me. Devastated.

2018 Trying to carry on, I'm thinking the best way is just to write F203, and try to rely on F103 knowledge and momentum. At the same time I register for Associateship, and become an AMASSA in May. For F203, I get an FA on 1st attempt, and FB on 2nd attempt. In the meantime, my wife also falls pregnant, and baby is due in January 2019. After the FA, I was thinking I'll pass in the 2nd session, just before baby's arrival. But not to be.

2019 Baby is born, and I'm thinking "it's fine, they sleep the whole time anyway, I'll write F203 again, and hopefully pass in the 1st session while mom is still on maternity leave". I get FA, and then FB in 2nd session. My wife falls pregnant with baby number 2, because you can't keep life on hold forever.

2020 Covid hits. First session, we are home alone – dad, mom, a one-year-old. Juggling work, nappies and studying. I register for tuition, and we start receiving Wim Els' lockdown chronicles in a weekly email. They were hilarious. I reach out to him for support, and he asks if I want some of his home-brewed beer. Of course I can't resist, and he sends them over, saying "if you pass, you celebrate with the beer, if you fail, you'll have some condolence drinks". Well… I failed, again. Baby number 2 is born, and at some point during this time I also thought it would be wise to attempt the CERA exam (twice!) together with F203, because what's the point of studying for F203 anymore, right? Wrong. Anyway, during this time I also took over the reserving function at work, having worked in pricing only before that.

2021 Not much happened here, except nappies, more lockdowns, and 2x FB's for F203. And maybe some exam counselling and more tuition courses.

2022 I attend the first actuarial mentoring program. After sharing this whole journey with my mentor, Elash Mistry (who is a blind actuary working in life insurance), he remarked that I have hit a wall or mental block with F203, and suggested that I step away and attempt my other F100. Oh yes, that's right! I still had another F100 to do. The question was which one. After some discussions and gauging past papers, I settled on health (F101). I failed the 1st session and passed the 2nd session. At this stage, my kids are 2 and 3.5 years old.

2023 With renewed optimism and momentum, I was ready to tackle F203 once more. But my kids were getting older, and life and family time were becoming more of a priority. We also had a trip to Europe trip planned in September. And hence, I made this statement to my wife: "No matter what happens in this session, I'm done studying. If I pass, I'm done. If I fail, I'll go write again, but I'm done studying". Well…. I failed. Again. FA. Again. We fly over to Europe and enjoy the Rugby World Cup, the Ryder Cup, and very expensive food and beer. I did not think about the upcoming exam at all. We arrive back 3 weeks before the 2nd session exam. In the week of the exam, my wife is back in Europe for work. I'm home alone with the kids. On the Thursday, they sleep over at grandma's, and I go write on the Friday morning. No studying. Well…. I passed!

Now, that's a long story! And I certainly would NOT recommend this pathway to anyone. My recommendation would definitely be to pass the first time. But if you don't, and you end up having to write something 10 times, then maybe don't study the 10th time. And go on an overseas holiday just before you write. But again, don't write 10 times! Let's not even get into the financials.

Anyway, as mentioned at the start, I am very proud of the perseverance and resilience that I was able to show and find within myself, in order to reach this major milestone. I can only hope that it inspires others, to continue on their own journey of insanity, and to never give in. I don't necessarily have awe-inspiring advice or words of wisdom, but I just hope that the story is enough to encourage someone out there to carry on. Whether it's with exams, or life in general.

I could also not have done it without the unconditional love and support of my wife, who is my rock and cheerleader, and the greatest mom in the world (and also, by the way, works a full-time professional job and a side-hustle).

FASSA!!! (soon)

TRANS-FORMING ACTUARIAL SCIENCE:

THE ROLE OF AI IN SHAPING THE FUTURE

- by Thapelo Sekanka



THAPELO SEKANKA

In recent years, the integration of artificial intelligence (AI) into various industries has led to transformative changes, and the field of actuarial science is no exception. Actuaries, who traditionally rely on statistical models and data analysis to assess risk and uncertainty for insurance and financial sectors, are increasingly turning to AI technologies to enhance their methodologies and decision-making processes. This article explores the potential benefits, challenges, and implications of AI adoption in the actuarial profession.

AI algorithms, particularly machine learning techniques, enable actuaries to develop more accurate predictive models by analysing vast amounts of data. This capability enhances risk assessment for insurance underwriting, pricing, and claims management, leading to more precise premium calculations and improved profitability. AI streamlines repetitive tasks such as data processing, report generation, and data visualization, allowing actuaries to focus on higher-value activities like strategic planning and risk analysis. Automation not only increases efficiency but also reduces human error, enhancing overall decision quality.

Liability Driven Investment (LDI) strategies involve matching the duration and cash flow characteristics of assets with liabilities. AI-driven LDI systems would be able to continuously monitor and adjust investment portfolios in response to changing liabilities and market conditions, optimizing investment decisions to meet long-term obligations effectively. AI-powered underwriting systems can assist to automate risk assessment, customize policy offerings, and expedite the quotation process. These systems may be able to analyse diverse data sources, including medical records, social media activity, and telematics data, to assess individual risk profiles accurately and provide personalized quotes in real-time.

One concern with AI adoption is the potential exclusion of certain demographic groups, particularly in regions with limited internet access or technological infrastructure. Actuarial firms and insurance companies would have to ensure accessibility and fairness by offering alternative channels for interaction and service delivery, such as phone-based or offline solutions. Can AI be implemented on the alternative channels? While AI offers immediate benefits, its integration into long-term actuarial decision-making processes requires careful consideration. We must balance the need for timely innovation with the preservation of robust risk management practices and regulatory compliance, especially in industries with extended liability durations.

THE SUCCESSFUL INTEGRATION OF AI REQUIRES CAREFUL CONSIDERATION OF ACCESSIBILITY, LONG-TERM IMPLICATIONS, AND ETHICAL CONSIDERATIONS.

AI implementation introduces new risks, including algorithmic bias, data privacy breaches, and model interpretability challenges amongst many others. These risks must be proactively addressed by incorporating ethical guidelines, transparency measures, and rigorous validation processes into AI development and deployment. The message to actuaries and insurance companies is clear: embrace AI or risk falling behind in an increasingly competitive landscape. By harnessing the power of AI technologies, actuarial professionals can drive innovation, enhance risk management practices, and deliver greater value to their organizations and clients.

In conclusion, AI presents unprecedented opportunities for the actuarial profession, from improving predictive modelling and automating routine tasks to enabling dynamic investment strategies and personalized underwriting processes. However, the successful integration of AI requires careful consideration of accessibility, long-term implications, and ethical considerations. Actuaries who embrace AI-driven innovation may stand to redefine the future of their profession and maintain a competitive edge in an evolving industry landscape.

Continuous Risk Assessment in Life Insurance: Unveiling its true worth, or is it just hype?

by **Petro Appelo** and **Maseeha Rawat**
| New Business and Solutions, Life and Health, Hannover Re South Africa



PETRO APPELO



MASEEHA RAWAT

Life insurance actuaries are experts in understanding mortality and morbidity risk. We classify and quantify risk at the start of a policy, and then different scenarios play out with respect to lapses and our policyholders' health over time – which is in turn influenced by a host of factors, some of which are manageable and some not. With significant changes in the data landscape over recent years, there is potential for us to rethink how we approach our understanding of risk and what that means for the life insurance industry.

In the context of life insurance, Continuous Risk Assessment (CRA) implies an ongoing view of the mortality and morbidity risk that a policyholder exhibits over the future years. With the way the world has progressed, we now have access to a wide range of potential data sources that allow us to form a view of risk on a continuous – or near-continuous basis. These include, amongst others:

- Health Monitoring / Wearable Devices;
- Electronic Health Records (EHRs) / Medical Aid Claims Data;
- Health Apps and Mobile Health (mHealth) Data;
- Health Surveys / real-time Health Monitoring Platforms;
- Behavioural Data;
- Telemedicine and Remote Monitoring; and
- Financial Data.

This article focuses on wearable data as a use-case, but there are several alternative potential data sources that can provide an indication of risk on a continuous or near-continuous basis. Looking at wearable data, tracking steps or heart rate over time are well-known examples. Tracking steps has indeed been shown to have a strong correlation with emerging mortality. However, looking at the average number of steps taken doesn't provide a full picture of the mortality risk, at least not in lieu of a life insurance underwriting risk assessment. Similar to obtaining an HIV or

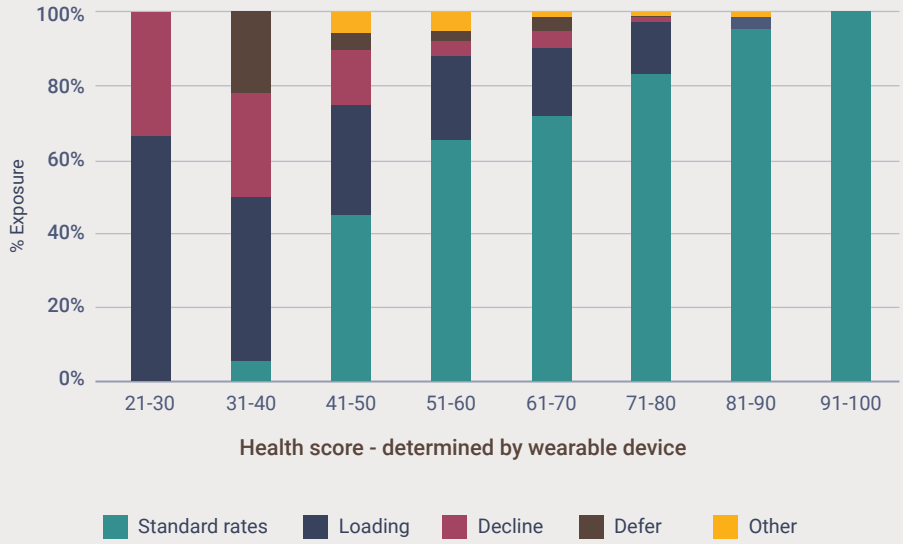


gamma-glutamyl transferase (GGT) test result, the data is definitely useful, but insufficient in drawing conclusions about a life's full risk profile.

Wearable technology has progressed and there are an increasing number of providers that are able to provide a good proxy of risk at a more holistic level. The graph below shows the correlation between:

- a health score, as determined by a specific provider, using only wearable results; and
- the underwriting decision that Hannover Re determined doing our traditional life insurance underwriting assessment, which was based on a completed application form with medical questions, associated medical tests, as well as supplementary investigations due to specific disclosures.

Figure 1: Graph showing correlation between traditional underwriting assessment outcome and that determined by wearable device



There is a very strong correlation between these results, showing that individuals who were classified as "standard" lives at underwriting stage have a very good health score. Similarly, there is a very strong correlation between lives where cover was declined and the poor score coming from the wearable. This means that we can get a very similar overall risk assessment of a person's mortality risk by using only information from a wearable device as compared to answering medical questions and doing a host of physical tests.

The first important takeaway is that this information, i.e. information that is able to provide a proxy for an overall health assessment, already exists. Secondly, while this comparison was done at underwriting stage, the wearable data exists on a continuous basis. We can therefore have a view of what is happening with the risk over time - provided the individual keeps wearing their device.

The traditional life insurance process generally assesses and performs a risk assessment at policy inception, followed by limited engagement over the policy lifetime, and then an eventual lapse or claim. But CRA allows us to rethink almost all aspects of this typical journey. Product actuaries are often quick to think about pricing applications, but we believe there is broader potential, and the opportunities can be summarised in the following areas:

1. Underwriting and Distribution;
2. Product and Pricing; and
3. Prevention and In-Force Portfolio Management.

1. UNDERWRITING AND DISTRIBUTION

It's too early to throw out the current underwriting rulebook in its entirety. However, there is a real possibility that we would, at some point, be able to use information gathered from wearables to perform this assessment. We believe that we should be experimenting with the use of this information, understanding what opportunities it creates, and what the shortcomings are. Potential applications of CRA include the following:

Understand applicant risk profile through wearable data

Firstly, we should consider whether we can or should incorporate information gathered from CRA into the underwriting process. Our research shows that there is valuable information that is available which could augment the information that we use to form a view of risk.

Simplify our current underwriting process

The current customer journey includes completing a host of application forms, followed by making an appointment to have blood tests done, the results of which are passed to the underwriter to assess, with the potential outcome that further tests and additional forms are needed. While we are doing a good job at assessing the risk, applicants can easily wait six weeks, if not longer, to be offered insurance cover - a cumbersome customer journey. CRA could be used to support:

- Waiving of underwriting medical questions and physical investigations; and
- Reducing complexity and speeding up the time taken to issue life insurance policies.

With respect to distribution, one approach is to use wearable devices to inform distribution strategy in the life insurance industry. This involves partnering with wearable tech companies as a new distribution channel for insurers. A second approach is embedded insurance in wearables, with a strong focus on health monitoring and tracking.

2. PRODUCT AND PRICING

Imagine life insurance products with automatic claims qualification or payment triggers based on the biometric output that is generated by wearable data, so-called "biometric products". This has the potential to meet genuine customer needs, and also allows for Pay-As-You-Live (PAYL) and Save-As-You-Live (SAYL) frameworks or Reward Based models.

PAYL models generally link life insurance premiums to some underlying metrics that are typically linked to some measure of health status. Whereas SAYL models charge the same base premiums to all policyholders – irrespective of your health status – but provide 'savings' or 'cashbacks' to policyholders as a result of good health behaviours.

It's important that we continue to discuss and interrogate what we believe is appropriate and fair to offer to policyholders, while always ensuring that we don't veer away from the main purpose of insurance, which is to provide cover and certainty of cover when individuals need it most.

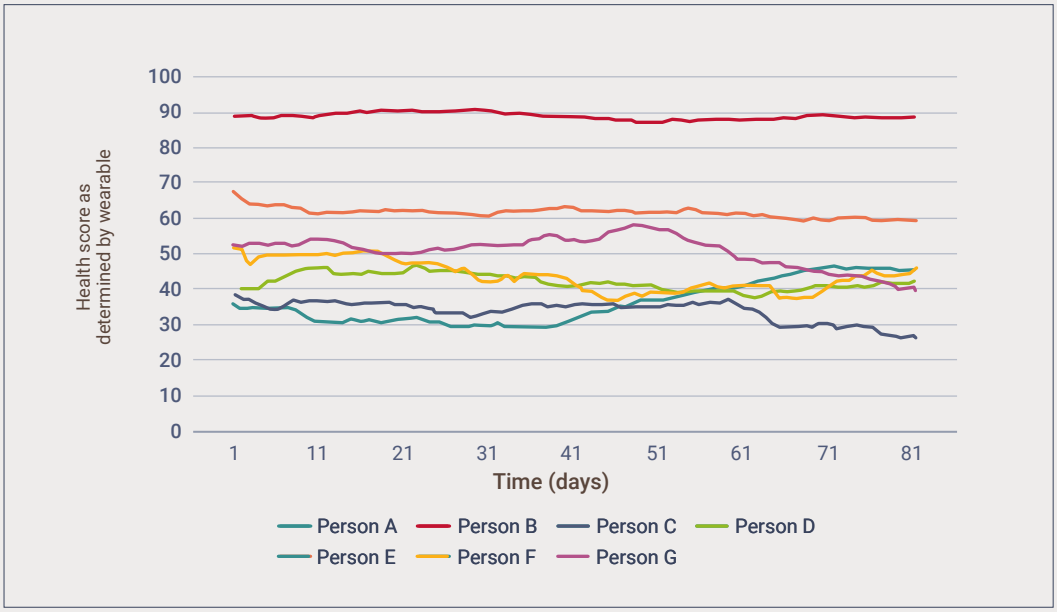
3. PREVENTION AND IN-FORCE PORTFOLIO MANAGEMENT

Understanding risk on a continuous basis means that we understand when that risk changes. For example, early warnings before Critical Illness (CI) events occur that help to reduce severity, delay or even prevent claim events from happening is becoming increasingly possible.

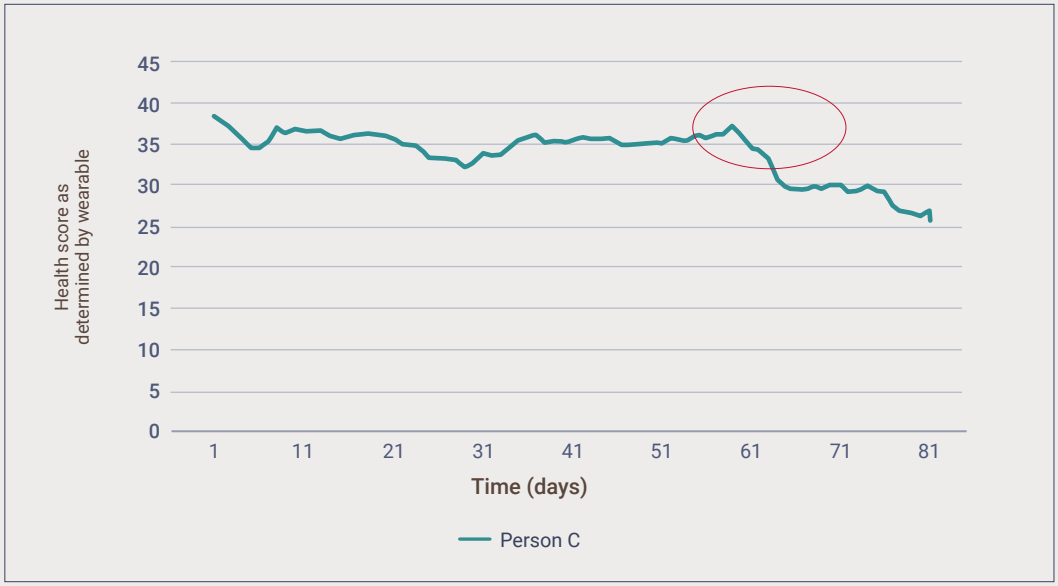
Anecdotally, we've heard feedback that before a stroke occurs, subtle physiological changes start occurring as much as 4 weeks prior to the actual event. Wearable technology can allow us to identify these changes and give appropriate warning. The technology is also already able to flag certain diseases – with clearance by the U.S. Food and Drug Administration (FDA) – such as sleep apnoea. Research shows that sleep apnoea is a highly prevalent and hugely undiagnosed condition – as much as 90% of individuals do not know that they have the condition, and it's estimated to impact between 20% and 30% of the US population. Individuals with moderate sleep apnoea have a 30% increased all-cause

mortality risk. It is estimated that flagging of this condition alone could reduce mortality by 2% - 3%, a substantial sum for a single condition. Technology manufacturers are working on identifying more conditions and estimate being able to flag up to 40 underlying conditions in the next 1.5 - 2 years. With improved understanding of existing portfolios, in-force management activities could alter and change our emerging outcomes from forgotten books. This is where we believe the technology can change the way we do life insurance business.

The graph below is an extract of the health score information for a few individuals over a three-month period. It illustrates what information we have access to on a summarised basis.



Firstly, these results are not static – there are continual changes in these values over time – some remain relatively stable, while others improve or deteriorate. The next graph zooms in on one individual:





THE DATA IS TRANSFORMED INTO INFORMATION USING COMPLEX INTERACTIONS AND CALCULATIONS TO PROVIDE THIS RISK-MEASURED OUTPUT, WHICH WE AS ACTUARIES DON'T UNDERSTAND GIVEN THE CLOSE LINKS TO HUMAN PHYSIOLOGY.

There is a noteworthy change in the individual's physiology at the circled point in time, and over the period. A deterioration in the individual's mortality risk of almost 40% is estimated. Regardless of the exact quantification, this information remains valuable and provides the insurer – or the wearable company – an opportunity to intervene and suggest medical investigation or follow up.

There are, of course, complications. All wearables are not made equal and there is no industry-standardised approach to interpreting data from wearables. The data is transformed into information using complex interactions and calculations to provide this risk-measured output, which we as actuaries don't understand given the close links to human physiology. It's important, however, that we understand the potential that this type of data has.

In conclusion, the data already exists to allow us to understand life insurance risk on an ongoing basis. The quality and extent of this data will only continue to bring along with it increasing possibilities. The life insurance industry has the opportunity to fundamentally change the value that we can bring to our policyholders and shareholders alike. We need to formulate a view on how best to use this data.

Facts and Fictions: DECIPHERING THE RISK DYNAMICS OF DISABILITY PRODUCTS



BRICE SALENCE
HEAD OF ACTUARIAL, SCOR

In this article, we delve into disability products within the group risk industry, aiming to distinguish between prevalent perceptions and empirical realities. Using data from SCOR's datapool, we scrutinise two commonly debated problem statements to unveil whether they are fact or fiction.

1. "It has become more difficult, over the past few years, to terminate income disability claims after the initial period."

To claim on a group disability income product, a potential claimant must meet the product's disability definition. Products typically apply one definition during the first 12 or 24 months, and another, stricter, definition thereafter. The first period is referred to as the initial period, and the subsequent period is referred to as the extended period.

During the initial period, claimants must be unable to perform their own occupation with either their own or any employer to qualify for a claim.

Thereafter, a claim is reassessed in the extended period, against a different definition of disability. The most common definition applying in the extended period is the inability to perform your own or any reasonably suited alternative occupation, given the member's age, education, training and experience with any employer.

As an example, if a marketing actuary is required to travel for a large proportion of their job, becoming a paraplegic and wheelchair bound would mean that they would not be able to perform their own occupation, and they would qualify for disability in the initial period. After the initial period, the claim would be reassessed. Depending on the claimant's age, it could be reasonable to propose that the

claimant be reskilled and move to performing a more technical role which requires no travel, and for which the claimant could be more easily accommodated by working remotely. Under these circumstances, the claim would be terminated at the change of definition.

One of the prevailing notions in the industry, though, is that it has become more difficult to terminate income disability claims at the change of definition, even though the disability definition becomes stricter.

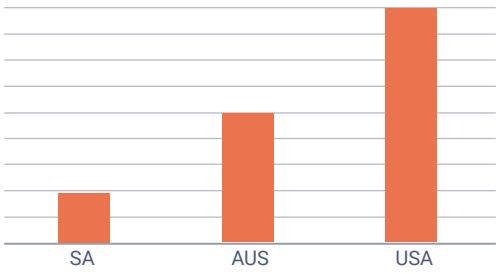
The definition of disability in the extended period can be interpreted as relatively subjective and defining what a reasonably suited alternative occupation is, or could be, challenging. Although the responsibility doesn't lie with an insurer to find a job for the claimant, to terminate the claim, they must be able to show that there is a reasonably suitable job that the claimant could fulfil. As such, claims assessors are finding it more and more difficult to apply the definition consistently, leading to them having to become occupation experts, as well as medical experts. Their decisions are being regularly challenged, mainly by the claimants themselves.

If we analyse the observed termination rates of group disability income claims, we find that there is indeed a spike in the termination rate near the 24-month mark as per figure 1. This indicates that the stricter disability definitions in the extended period are being applied, leading to fewer claimants remaining in force after the initial period. While this seems to counter the problem statement mentioned above, in figure 2, it is worth noting that similar products in other countries observe far higher terminations at the end of the initial period.

Figure 1: Termination Rate by Duration



Figure 2: Number of claims terminated per 100 claims in force at the change of definition



To assess if it is becoming more difficult, we analysed the number of claims terminated per 100 claims in force at the change of definition for claimants that fell under a 24-month initial period over the last 6 calendar years.

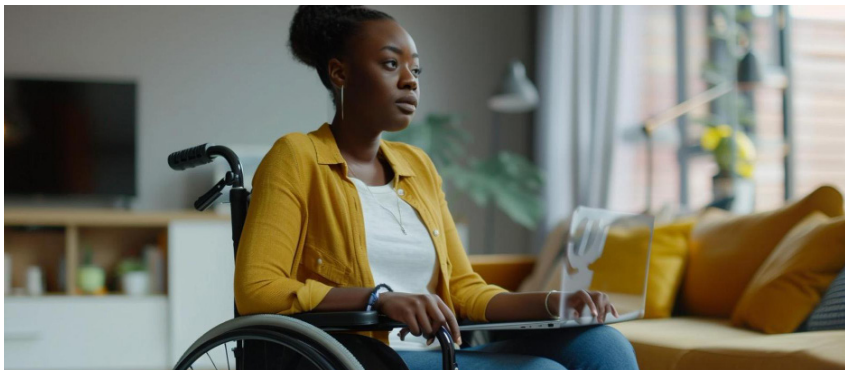
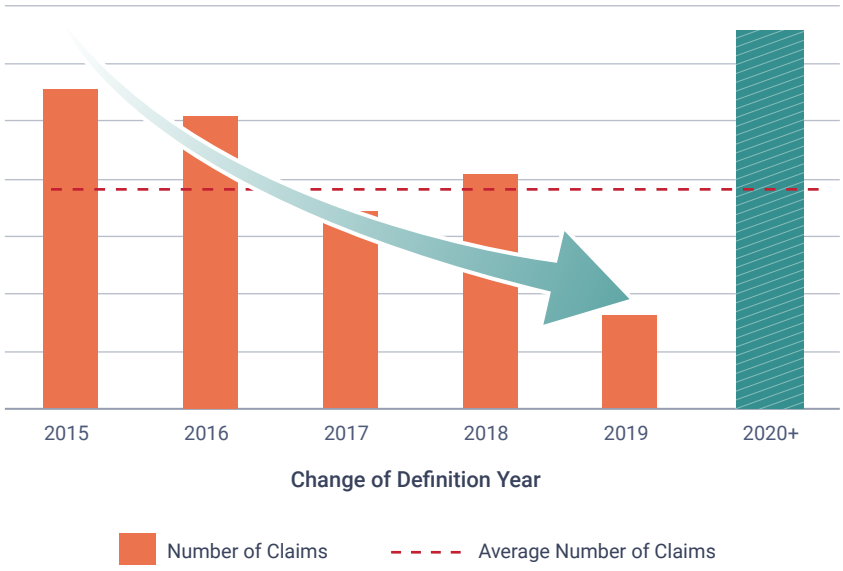


Figure 3: Number of claims terminated per 100 claims in force at the change of definition



From figure 3, we see that from 2015 to 2019, there has been a decreasing trend in terminations at the end of the initial period. This indicates that it is becoming more difficult to terminate claims when the disability definition changes and, thus, over the period analysed, more claims are staying in force at the beginning of the extended period. There is a significant increase in 2020, this reflects a general increase in termination rates at all durations during the COVID-19 pandemic as a result of COVID-19 excess mortality.

The data highlighted that we are terminating claims at the change of definition, however this has been at a level far lower than seen in other countries. Although insurers do not need to find alternative employment for a claimant, the current high unemployment rate in South Africa, low levels of claimant motivation and the general reskilling opportunities could be contributing to this. Additionally, the data suggests that our success in terminating claims at the change of definition isn't as the product design intended and has reduced over time, indicating that our problem statement is fact.

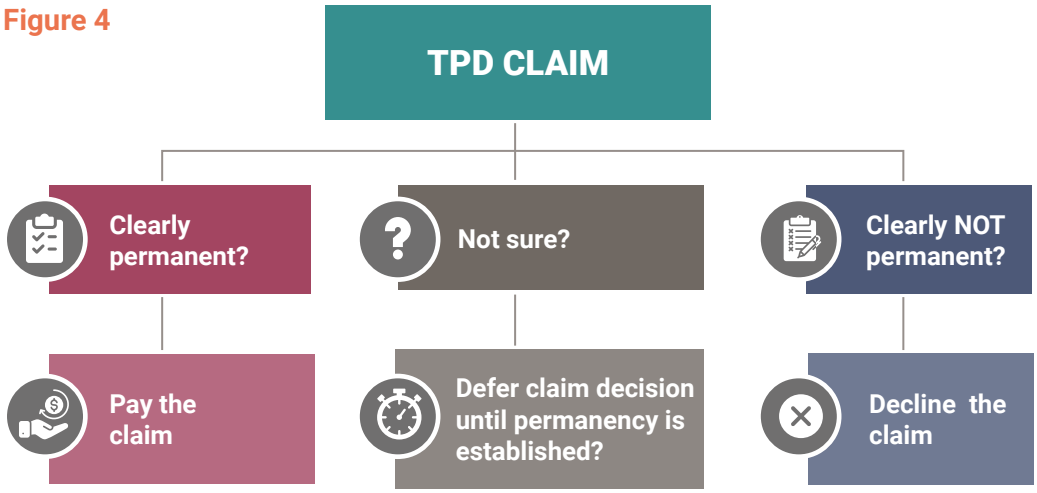
2. "Since permanency needs to be established, reducing or removing the deferred period for Total and Permanent Disability (TPD) shouldn't have a pricing impact."

Group Total & Permanent Disability (TPD) products pay a lumpsum benefit when a member is unable to work due to a total and permanent disability. This could be as a result of an illness or an injury where there is no prospect of a recovery. Benefits are often subject to the member's surviving and remaining continuously disabled throughout a deferred period.

Although there are a variety of ways in which being "unable to work" can be defined, a common underpin is that the member must be permanently and totally incapable of returning to work.

Questions often arise about the relevance of deferred periods, because of the permanency requirement. Or, to be more specific, would reducing or removing the deferred period for TPD products have any pricing impact? Figure 4 below shows a simplified decision tree for assessing TPD claims in the group market.

Figure 4

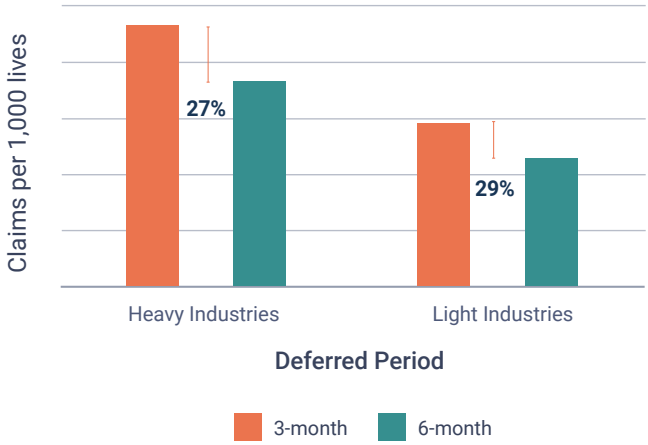


Once a TPD claim is received, it would be paid after the deferred period where it has been established that the claimant is totally unable to perform their occupation as defined in the policy. An insurer may choose to pay these claims before the end of the deferred period.

For claims where assessors cannot establish permanency immediately, the claim decision would be deferred until such time as permanency can be established (or refuted). Claims that clearly do not meet the definition of disability would be declined. Given this assessment process, the reality is that the claims trigger relies on establishing permanence, rather than completing the deferred period. One could argue then that the deferred period on TPD products serves less of a purpose and should not lead to a pricing differential.

So, what does the data tell us? When analysing the experience of group TPD products, split by industry, to compare experience for 3- and 6-month deferred periods, a clear difference in claim incidence rates can be seen. The analysis in figure 5 highlights a 27% difference for heavy industries and a 29% difference for light industries.

Figure 5: PTD Claims per 1,000 lives



One possible explanation for this differential could be mortality risk. Although we wouldn't normally expect mortality to be significant over the course of a few months, it is possible that those claiming for TPD could exhibit substantially higher mortality than normal. If a claimant passes away during the deferred period, then they would not be eligible for the benefit payout.



Thus, longer deferred periods could show lower incidence because of mortality during the deferred period.

On the other hand, many assessors consider TPD claims to be among the most complex claims to assess. Could it be that we are possibly admitting more non-permanent claims at the end of shorter deferred periods? In the group risk environment, this could be heightened by pressure from the claimant, employer and broker to finalise the claim once the deferred period has expired. In addition, perhaps shorter deferred period products offer a shorter time period within which to assess the claim. This could potentially reduce the accuracy of the claim assessment.

In light of the analysis above, it seems that our TPD problem statement – that the need to establish permanency negates the effect of reducing, or removing, the deferred period – leans toward fiction. Reducing or eliminating the deferred period does indeed impact pricing, even across different industry segments.

Closing Thoughts

As actuaries, we navigate the delicate balance between risk management, pricing and product design to develop products that meet customer needs. The insights in this article have shown that experience can be different to expected, highlighting the importance of continuously understanding the risk dynamics within product features to ensure pricing sustainability.

Additionally, it reminds us of the value of collaborating with wider teams for improved outcomes as part of the control cycle. In particular, actuaries and claims teams share a common purpose and by aligning our efforts we can create a seamless bridge between risk assessment, pricing and claims philosophies. Actuaries can appreciate the human impact of their calculations being borne out in practice, while claims assessors can gain insights into the underlying statistics. By working more. closely together we can be more effective in distinguishing fact from fiction.

Profile: Mabalemi Maleka



In this edition we profile **Ms. Mabalemi Maleka**, the current Chief Financial Officer of Stanlib - Multi-Manager(INN8 Invest). Mabalemi Maleka is an extraordinary individual who has not only conquered Mount Kilimanjaro but has also achieved remarkable heights in her career as an actuary. Mabalemi's transition to the role of CFO at Stanlib Multi-Manager demonstrates her versatility and multi-dimensional thinking, honed through years of experience. As a leader, she emphasizes humility, respect, and consistent values. In this profile, she is sharing the invaluable lessons learned throughout her career. Beyond work, Mabalemi enjoys a balanced life, and her story serves as an inspiration to aspiring professionals as it underscores the importance of resilience, continuous learning, and embracing life's diverse experiences.

Could you provide a glimpse into your personal background and share any cherished memories with us?

I was born and raised in Limpopo, specifically in Lebowakgomo. My childhood was filled with diverse memories. Like many children in the former homelands, I cherished simple joys like playing outside on the streets and within neighbours' yards. In particular, I relished mogusha, one of the many indigenous games played by girls using mogusha which is a long loop made of strips cut-off from stockings, and the game involves artistic jumps with lots of teamwork). I was also equally happy playing various indoor games (lego, snakes and ladders, monopoly, etc). My upbringing offered a rich tapestry of experiences within the context of the society I was raised in.

What led you to discover the actuarial profession, and what motivated you to pursue this career path?

Our high school used to subscribe to monthly publications of Mathematical Digest (yes, I am that old), and I remember one day my Maths teacher (the late Mr Kateule) telling me to try one of the quizzes at the end of the booklet, and I immediately became a committed participant in the monthly quizzes. One day whilst paging through the Mathematical Digest, I came across an advertisement on actuarial science as a super career for those with passion and talent for mathematics, and that piqued my interest. I was fortunate that by the time I was in matric, there were already a few older individuals within my family and school, who had enrolled for their degrees in actuarial science, making this career path feel more tangible and relatable.

What were some of the expectations you had when you signed up to study Actuarial Science?

I understood that the programme would be demanding mathematically-speaking and it was. No surprises there.

However, the wordy nature of some of the exams was most unexpected for me, and I have never recovered!

Your expertise in investment management and product development is evident. Could you share some of the significant insights you've acquired in these areas? Additionally, how have you found your roles to intersect and complement each other?

It's intriguing to note that I had no knowledge of the product development field during my university years. I used to dream of becoming a health actuary. I often jest that a career in product development found me rather than the other way around. My career started at Old Mutual, Pinelands, where I got placed in a product team (part of the programme of how they placed actuarial bursary graduates) After 4.5 years in this role, I had experienced all the different stages of a full product cycle—from product support to product management and ultimately to new product development—I discovered and got to appreciate the multifaceted nature of this domain. An effective product team, which I believe we were, demanded a comprehensive skillset which extended beyond mere product functionality. I credit my current legal astuteness to those early days of working with the legal team on policy contracts. I always look back at this period of my career with gratitude for a formidable training ground it provided as a financial services product professional I had become later in life.

Product skills are transferrable and the scope for branching out into other sectors of the financial services or even outside financial services is massive to those desiring and persistent. I was able to transition from insurance into asset management, and thanks to my hiring manager who did not see my sole experience in insurance/bancassurance as a barrier. The transition itself was a steep learning curve not only from legislative/technical perspective but also from a cultural view.

With my natural flair for numbers coupled with deep commercial understanding of products, I slowly found myself being increasingly involved in our business financial planning and budgeting, ultimately resulting in my promotion to the CFO of our division.

I would say that my current role is a culmination of all my prior roles in both product and actuarial finance. The ability to think in a very multi-dimensional way and to interact with different stakeholders enables me to play a more commercial role (as opposed to a pure reporting role).

What challenges did you overcome in your career seeing as there was still great need for transformation in the profession. What qualities would you say you possessed that allowed you to stand out?

One my earliest challenges was interestingly the language barrier because I didn't study Afrikaans in school and I once worked in a very Afrikaans team. I felt that I couldn't always be part of all the social conversations with the rest of the team. This raised awareness in me about being more intentional about the use of a common language especially at the workplace to ensure inclusivity. What helped me navigate this was actually getting to know my colleagues on a one-on-one basis.

The other challenge I faced was navigating the corporate political world wherein I found that communication is often implied and not direct. As an example, when asked for my view on say a product project timeline, I'd give an unfiltered and honest answer, allowing for the pre-requisites which include any expected system build and internal and/or regulatory sign-offs or approvals. At times, this unfiltered answer may sound too bearish, making others conclude that I lacked 'tactfulness' whilst some of my colleagues would rather deflect the question and not answer directly.

I wonder why this would be the case?

From my 20-year work experience, when people deflect questions on critical project moments, there is often a lot at stake, but there may also be a lack of integrity and/or self-doubt. For me giving honest answers, even when unfavourable, is part of being a professional, and it ensures that my work aligns with my value system and that I continue to create value for my employer because project delays are expensive and most of them can be avoided with detailed planning and honest difficult conversations right from the start. It is crucial to be firm even if you know you are going to be a bearer of bad news. Over time, this has earned me the respect and confidence of my colleagues and seniors.

It sounds like you were able to be firm and set boundaries and thus communicate efficiently. How would you advice up-and-coming actuaries to communicate well in a corporate environment?

I will point out that assertiveness always comes at a price, and it does not happen overnight. At times, the audience will understand your view and may appreciate the honesty and the attached value for the business but at other times, you may face a push-back especially when your view is against the already approved strategy. I still remember with great fondness the many difficult product discussions I have been part of throughout my career.

Nonetheless, my advice is simple; remain honest and realise you are also building your own long-term personal brand not only within your current employer but also amongst current colleagues who may be your future employers elsewhere.

Even when giving a less popular view which you are most confident about, have humility and be willing to learn from both your juniors and seniors. Lastly, be open-minded enough to learn from other disciplines as well, after all, actuaries are not always the cleverest people on every topic. This is a skill I nurtured during my numerous product roles where I had to interact with a wide range of specialists covering legal, marketing, compliance and distribution.

Indeed, what you have shared is insightful, the actuarial profession is so diversely technical and intricate that one person can't know everything. How did you navigate this aspect?

You need the humility and ability to openly express when you don't know certain things. It's amazing how people will be willing to simplify their technical world once you are honest enough to express your lack of understanding and willingness to learn. Unfortunately, we live in a time when many people are content to carry on by just winging it. It's important to know that when you are part of a community, you need to feed off each other. This is easy to achieve when there is respect between all parties in a team.

What would you say being a CFO entails and how were you able to transition from a technical actuarial background?

I believe what facilitated my transition to the role of CFO is my various background to date. Product development is a very broad and well-

rounded area of work; it involves pricing which translates into net revenue and operational expenses for the business. Furthermore, my career has spanned traditional insurance, bancassurance and investment management. My experience has certainly been varied but I found that being inquisitive has enabled me to learn a lot more. Even the experience I seemingly underrated in that moment, the lessons learnt always culminated into something relevant in future. Therefore, I can draw from work that I did many years ago. Information remains dormant within you even if you do not use it immediately and this informs your future decisions.

As a CFO, I must point out that I am not a traditional financial reporting person but more of a commercial finance person as I also help drive the strategy of the business by identifying inefficiencies. This is different to operational finance and financial reporting. Actuarial studies allow us to develop long-term thinking skills as well as the ability to consider information in a multi-faceted manner. Dealing with the level of complexity in my role requires a certain level of multi-dimensional thinking which has been honed gradually over the years.

What are some of the key lessons you learnt as a leader and in different stages of your career?

In addition to humility and asking questions, I would say it's important to treat everyone with respect. You must also be consistent with the values you hold dear in your career. A lot can happen between the time you start working and your chosen retirement age therefore you must also have a level of flexibility/versatility while holding on to your core values. Most importantly, whatever you do in your twenties, you need to grow skills in your chosen field because money can always be pursued later if you have the right skills. A very high-paying job will also be highly demanding, so as a young person you must give yourself room to grow at a healthy pace before you take on certain roles.

In pursuit of career success, you need to do so in a sustainable way. There are very high-paying jobs out there, but not everyone can do them well or it may not be the right season to pursue that highly demanding job. One must understand oneself and one's mental capacity and resilience to handle the pressure.



Could you please share a glimpse of your daily routine and your daily life?

I'm not exactly a morning person, so I stick to a very simple routine to kickstart my day. This usually involves having the same breakfast each morning before rushing off to work.

My weekends are varied, thanks to my large extended family and friends and church family.

I believe in education being a great tool to help us change the trajectory of our nation, and thus spend a good portion of my free time serving in this area.

Before my recent leg injury, I was an avid hiker and I consider Table Mountain one of my favourite quick trails. My hiking highlight was when I summited Kilimanjaro – it was a moment of many answered prayers. General travel is another passion of mine, as I enjoy opportunities to immerse myself in different cultures and landscapes around the world.

NALEN NAIDOO – an Open Book



GM OF PROPERTY24 AND ASSA PRESIDENT-ELECT **NALEN NAIDOO** TALKS TO HEAD OF INSIGHT LIFE SOLUTIONS, **PAMELA HELLIG**, ABOUT ALL THINGS BOOKS, LEADERSHIP, AND LEAPS OF FAITH.

It's commonly said (by me, if by no one else) that you can tell a lot about a person by the company they keep, the snacks they enjoy and the books they read. And what better way for actuarial bibliophiles to get to know one another than by talking about all things reading?

I recently sat down with Nalen Naidoo, General Manager at Property24 and President-Elect of ASSA, to record the inaugural episode of Open Books, a new series on the Insight InFocus podcast, in which we get to know fascinating and inspiring figures in the actuarial community through the books they have read and loved.

In each episode, we ask our guests to bring five books that have influenced their lives and left a lasting impression. In between talking about the books, we also cover their career journey to date, things they're passionate about and details of their reading habits.

Below are some snippets of my conversation with Nalen, in which we chatted about leadership, sleep, the hidden powers of actuaries and everything in between.

(Some responses have been edited for length).

HOW DID YOU MOVE FROM A TRADITIONAL ACTUARIAL ROLE TO HEADING UP ARGUABLY THE BEST-KNOWN ONLINE PROPERTY- AND CARS-CLASSIFIEDS BUSINESS IN SOUTH AFRICA?

During the last five years of my time at Liberty, various changes in the business meant that some of the Fintech and Insurtech assets and investments that the company had made over time needed someone to look after them. I was fortunate enough to have some of those assets move into my area of accountability, so things like business agility, agile methodologies, innovation, and design thinking were brought into my world.

This also meant that tech elements became a much bigger part of my job. And that's where the common ground with my current role started. Also, I spent a lot of time in distribution at Liberty, which gave me sales exposure (which is also important for my current role).

Around two years ago, an opportunity arose to take on my current role (Head of Property24). At first, it appeared quite daunting. Given the big change, it was an extremely long process to decide that this was the right role. Still, there were also a lot of similarities, given my career progression into innovation, technology, etc. So, I decided to make the move.

I'm very grateful I made that leap of faith – so far, it's been fun and a fantastic two years.

WHAT ARE SOME THINGS KEEPING YOU BUSY AT PROPERTY24?

We've been spending a lot of time thinking about the next three to five years, specifically, what it means to deepen our property classifieds vertical. In other words, what can we do to become more entrenched in the property sector in South Africa?

We're also exploring more emerging opportunities, like generative AI applications for online classifieds businesses. Early evidence suggests that the fears around replacing jobs are not as dramatic as first communicated. In fact, it seems to be about productivity enhancement in more skilled jobs. So, we're seeing interesting applications in marketing and IT and how our customers can use these tools to become more productive.

SINCE A YOUNG AGE, YOU HAVE HELD LEADERSHIP POSITIONS AND ARE CLEARLY PASSIONATE ABOUT LEADERSHIP. WHAT IS YOUR LEADERSHIP STYLE?

When I worked at Liberty, I completed a course that introduced me to the concept of servant leadership, and so much about it just made sense to me. In a nutshell, it's about putting the people around you first and focusing on their growth and development. The principles of servant leadership include listening, empathy, awareness, and a range of other skills that enable this collaborative style. It emphasises leading from the back, not from the front, and building other people up. All of these elements of this leadership style resonate with me.

WHAT ACTUARIAL SKILLS HAVE YOU BROUGHT TO YOUR NEW ROLE?

The actuarial skillset is quite broad. There are the technical skills, but there's also the normative professional component. As actuaries, we know

that the latter is there, but we don't engage with it as we should because it is actually a differentiator. Our technical skills are good, but training and working as an actuary allows us to build strong professionalism, problem-solving, ethics, leadership, and communication skills. It's all transportable: doing the right thing, clear communication, being a professional. One could argue that that's more than 50% of what being an actuary is – and all of that has come across with me. On the technical side, the general financial maths concepts are valuable everywhere. Even just the technical complexity we deal with as actuaries – with insurance businesses being much more complex than most other businesses – allows us to understand the drivers of different business models more easily than someone who hasn't had to deal with that complexity.

WHAT ADVICE WOULD YOU GIVE TO ACTUARIES TO PLAY UP THESE NORMATIVE SKILLS AND POTENTIALLY APPLY THEM TO WIDER FIELDS OPPORTUNITIES?

I think the first thing is to realise that they exist and that you have them and to think hard about what they are. The process of having diffractive conversations as part of our professionalism requirements helps you hone what it is that you bring as a professional. So, once you've had the conversation and figured out what you're good at, you can start communicating to others why you're good at it. It unlocks different parts of your mind and different ways of communicating and thinking about yourself. I would advise spending enough time on the normative side and starting to understand yourself better.

WHAT ARE SOME OF YOUR PRIORITIES AS PRESIDENT-ELECT OF ASSA?

The society currently has a clear strategy around assurance, membership support, the acquisition pipeline of members, professionalism, keeping us healthy as a society, etc. I think this strategy is solid as it is. The focus of the next set of leaders should be to continue the work that is being done, to be aware of the environment we're in and to tweak the strategy as the environment changes. We are grappling with weighty professionalism issues, governance issues, disciplinary issues, relevance questions, etc. That is part of how I think about the world and will inform my focus as President-Elect. I see my biggest role being prioritisation: we are a profession with limited resources. How we maximise these resources is what my role is. We have an extremely strong executive team that keeps the organisation on an even keel. We have enough strong-minded, extremely good people involved, including volunteer leaders, executive leaders, and council leaders. I will try to help us focus on the right things.

WHERE CAN PEOPLE FIND YOU IF THEY WANT TO BE IN TOUCH?

LinkedIn is probably the best place to connect with me **(https://www.linkedin.com/in/nalen-naidoo-69b36818/).**

WHAT ARE THE THOUGHTS YOU'D LIKE TO LEAVE US WITH?

Be kind to people, build up the people around you, be as inclusive as possible, and just keep learning and growing…and reading!

Catch the full interview here:

EPISODE 1:
YouTube: https://lnkd.in/dH9qFApK
Spotify: https://lnkd.in/dAidvfNs
Apple: https://lnkd.in/dWP8Qq3T

EPISODE 2:
YouTube: https://lnkd.in/dxAR23uk
Spotify: https://lnkd.in/dEizG-3f
Apple: https://lnkd.in/dyQidRBS



Memoir from the ASSA Council Student Representative

- Matthew Peters

Matthew Peters, who is an Associate Actuary was recently elected as the Student Representative at ASSA and serves as a Council Member. As such, he is a voting representative of the student community on the highest decision-making body. We wanted to get to know a little more about him, so he has shared some things that we thought might interest the student community.

I'm a 31-year-old coloured guy, born in Eersteriver and who grew up Malibu Village, Blue Downs. I matriculated from a public school, Malibu High School, where, at the time, my annual school fees were R1200.

My parents divorced when I was around 7 years old, and my siblings and I had been on our own with one of the strongest woman I know, my mother Francis Wyngaard till she remarried. We lived in servants quarters for a number of years, until my mother managed to purchase our own home when I was in grade 5.

In that same year, I developed a talent for chess and went from learning how the pieces move to placing 20th at Nationals (I had the privilege of losing to Anant Dole that year, one of the top South African chess players) all in the space of 18 months. Unfortunately, my chess career ended the following year due to the cost. However, I accepted this, as my mother had to adjust to paying a mortgage all on her own and I couldn't put her through that stress again.

Then, 2 years after that, we traded our DVD player in for my first violin. It was probably one of the cheapest instruments I received, but I can at least say that with my "blik" violin, I performed in:

- The New Apostolic Church Cape Town Orchestra, where I had been concert master or co-principal for works such as Handel's Messiah, Mozart's Requiem and other works including Mendelssohn's Elijah and other operatic works.
- The Cape Town Youth Philharmonic.
- The South African College of Music Symphony Orchestra.
- The Stellenbosch International Chamber Music Symphony Orchestra (where I also had the honour of having my violin case signed by Maestro Ivry Gitlis (1922 – 2020)).

- The South African National Youth Orchestra.

Though my journey in chess ended quickly, my music career had mostly been sponsored externally. Also, while in high school, I started making money playing at weddings and events. I mostly used this money to purchase supplementary textbooks and spent it on refreshments for students that I tutored maths and other subjects (including music) on the weekends.

At the time, my principal, Ricky Esterhuizen, recognized my ambition and struggles, so he promised to purchase me additional textbooks if I managed to get an A aggregate for the first term of grade 12. To most people reading this, it might seem easy. However, my mark average at the end of grade 11 was around 60-65, with maths marks of up to 99% and language marks as low as 45%. But, to everyone's surprise, I managed to not only pull off a 20% plus jump in my aggregate but jumped from a position lower than 20th to top student in the space of 4 months.

At this point you would ask, what changed? Well I decided to pursue a career in Actuarial Science, as I was looking for a career that I could add as much value to society as possible. So, as the lead editor of this magazine would say, my attitude to my education changed. Subsequently, I asked my principal to purchase an English and Afrikaans study guide.

In that year, I applied to UCT and was tentatively accepted (because of my radical spike in marks). I applied to 14 different Actuarial bursaries at the time and received 14 rejection letters. The most painful letter was the rejection letter from the South African Actuaries Development Programme (SAADP). However, the positive that came from this was that it created one of the most impactful relationships in my career with Billy Enderstein and Prof Steven Jurisich.

I applied to 14 different Actuarial bursaries at the time and received 14 rejection letters. The most painful letter was the rejection letter from the South African Actuaries Development Programme (SAADP).

When I completed high school, and my soul just dropped to the ground on results day, as I was short by 1 point in terms of meeting the minimum requirements to get into UCT. Fortunately, 3 days later, I was delighted to discover that I was granted a concession. However, since I did not receive a firm offer initially, I was not granted a place in residence. As a typical coloured person would do, I just accepted this and was happy that UCT accepted me.

During orientation week, I then proceeded to practice using the only means of transport available to me, which was taking the train. So, in order to make it for 08h00 on campus, I had to get up at 04h00, take a taxi to Blackheath station, travel in a packed train to Salt River, then change trains onto the southern line, to eventually get off the train at lower campus. During that week I was late 3 out of the 5 days. Also, I would often get home at around 18h00/18h30, even though the function on campus ended at 14h00.

At the time, I was faced with the following facts:

- I lost up to 5 hours simply travelling
- I did not have funding for my studies (I had not even thought about textbooks yet)
- I was already arriving late at campus.

I came to the conclusion that it was simply impossible to be successful in my studies. In the very last lecture of orientation week, I was feeling really down, and the faculty manager

was doing a lecture. I was presented with two options: accept my situation and rather drop out, or do something about it. At this point, I had nothing to lose, so after the lecture I walked up to the faculty manager and explained my situation (breaking down a bit) begging if there was anything at all that could be done to get into residence.

He stopped me mid conversation and told me to go to the faculty office. He said there is a letter waiting for me and I should immediately go to middle campus to get placed in residence. I went up to the office and as he said, the letter was already printed for me and I made my way down to middle campus, balling my eyes out, as I had almost lost all hope in my dream.

The dream was relatively short lived as campus had started, no money, no textbooks and no funding. I was not originally approved for textbooks with NASFAS but, after some pleading, they granted me an allowance. However, the money came much later. So, for the first 2 to 3 weeks, I did not have textbooks and had to depend on the library, friends or hope that lectures were sufficient. However, I had been struggling with economics, consistently failing everything. I had never done economics at school. The advice I got from tutors was that I needed to read the textbook and that there wasn't anything they could do about it.

Then one day I attended a lecture. I was on time and ready to do my best. Only to have my soul crushed in that I had absolutely no clue what the lecture was about from the start to the end. I left the room feeling absolutely destroyed. I watched a bunch of students walk past me with their White Lipsy & Chrystal textbooks in their hands, having a discussion about the lecture. I just turned around and went back to residence and stuck my head in the pillow. I proceeded to ask my mother to please buy the book, which was R800. She said that she didn't have the money. I responded by saying that I know, but I don't know what to do and that I'm failing and nobody can help me. Her response was that she would make a plan. The next day, she sent me the R800 and I bought the book. But she warned me that she didn't think she could do it again. I thanked her for this and I told her I would do my best to keep up without books until I get the NSFAS funding.

I eventually received the money for the books (which was slightly below what I needed for all the books) and did my best to play catch up. The book that I hadn't purchased yet at that point was the Calculus book by Stewart. I was eventually granted a bursary by the Michael and Susan Dell Foundation (Dell Young Leaders) and a bursary that I was previously rejected on had a student drop out, which was Standard Bank CSI bursary. I managed to finish the year passing all my subjects (one pass on a supp for EBM) and obtained all my exemptions for first year, but failed to make it into FinMaths as I missed the 70% requirement on Maths. I proceeded to attempt to continue in second year and met the maths requirement but missed the stats requirement.

Subsequently, I was required to change my degree to Finance. Which is why, today, I have an odd skills set compared with most students in that I actually had to do IFRS as part of my undergraduate degree. I had to learn Taxation and the laws that go with it, an unusual amount of Economics (including quantitative methods in economics) and specialist subjects in finance and investments (which included a chunk of ethics, as it is part of the CFA qualification route).

Today I'm an AMASSA, and I mentor students on A214. This is part 1 of my journey story. I'm an Actuary yes, but I struggled significantly, but also learned a lot more than most people might know.

But the message I want to bring across with my story so far is:

- Don't judge students for their underperformance. For some students, "hard work" is simply impossible.
- Don't assume that students have all that they need to be successful.
- Remain humble and be willing to learn.
- As a Finance degree holder:
- I respect CFA holders for their craft and the role they play in society. Unless you are an investments Actuary, I would rather leave my funds with a CFA as, in my degree, although we didn't learn how to derive the formulas, we learnt how to build large complex derivative portfolios and discussed the ethics thereof.
- I respect CA holders as I got a good taste of the complexities behind the fundamental principles of financial reporting. IFRS17 might seem annoying to some but learn to appreciate the beauty of it.
- The complexities of Tax and the role of tax practitioners. In the little I was exposed to in my undergraduate career, it taught me that simply listing tax on factors to consider in a A311 exam means more than just an afterthought. Pension Funds, NPOs, PBOs, the DSD and even the man on the street can explain how much it impacts their life.
- Economists and the impact of big picture thinking. I attribute this respect mostly to having done more economics than most Actuarial degrees. At an A1 level we learn a fair amount. But we never really practically applied it in decision making processes. In our profession, we learn the why, but in the economist line of work it goes onto the what now.

In conclusion, I have given you a small part of the actuarial student struggles in life, and I haven't even touched on the post qualification struggles. However, me having a difficult journey does not justify others having a difficult journey. Transformation means more than the circumstances that you are born into. But in the end, none of that matters. What matters is ensuring that I maximize my dream.

So, I will gladly accept the title of being self-centered or selfish if it means:

- More students get to feel that awkward anti-climax experience of looking at your phone or email seeing that you passed your final exam
- More students are able to feel safe to ask for help when they need it
- More students feel safe enough to express their knowledge when they are able to add it (as I have never met a single Actuary that knows everything). Most CEOs I've met so far have all told me that they have never met someone that they didn't learn something new from. Though the lesson they were teaching me was that the more you talk and listen to people, the more you will learn. But they had also inadvertently taught me that great leaders know when they don't know and learn from those who know
- And finally to help students find their purpose and love for their profession. Because, once you learn to love that which is precious to you, you will learn to want to protect it i.e. if an Actuary truly loves being an Actuary, they will protect the profession like a wolf in the pack.

Applying a concept that my manager once taught me: I have been elected to lead the student wolf pack, so out of love of my pack, I will do everything I can to ensure that they grow to be successful wolves who love being part of the pack.

#KeepWorkingHard
#KeepWorkingSmart
#KeepWorkingTogether



Actuarial Pricing for **Motor Insurance in the Future**

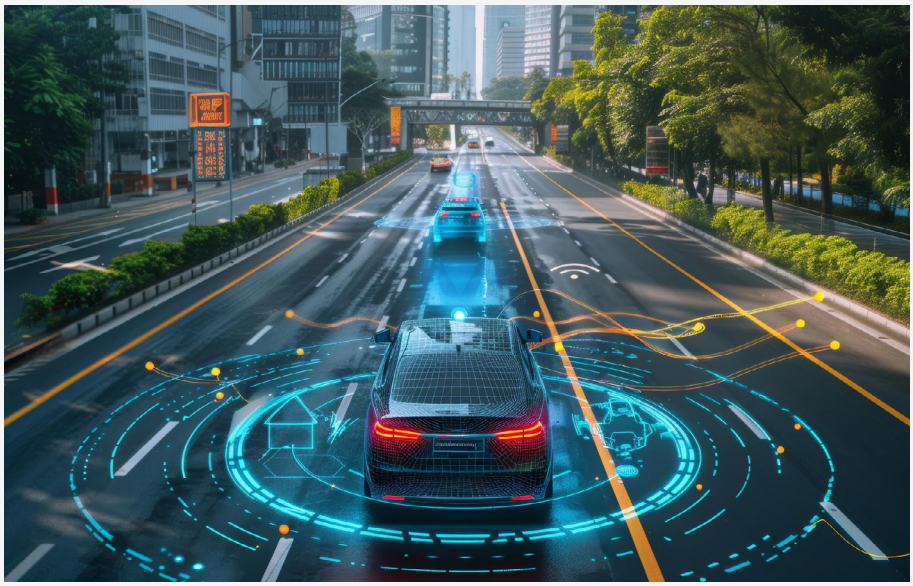
By Syed Danish Ali



SYED DANISH ALI

Introduction

In this article, we consider actuarial pricing for motor insurance in the future where we cover the impact on actuarial pricing if we were to price Tesla cars, Waymo cars, drones, and connected fleets in hive mind and swarm intelligence mode. With all the innovation happening in motor vehicles, it is an exciting time to be in the actuarial space where the need to update from small-micro-static pricing models to dynamic pricing models utilising big data becomes an imperative.



Currently, we just define the product and benefit limits like a derivative that if a contingency occurs in one way or another, we will cover it within these limits. We do this without having any real depth of understanding in the underlying exposure. For example, in group health, we just define the product and see aggregated statistics like loss ratio, frequency, severity, burning cost and combined ratio. As long as our financials and results show that we are profitable, we are satisfied. There is no data from driving, data from smart homes, data from monitoring utility services, medical underwriting, detailed bio-statistics per person, or wellness data. It's akin to shooting in the dark, and seems akin to gambling or speculation if we compare this to the future where our level of understanding the exposure at risk can be dramatically increased to levels unthinkable in the present. This would remove the shooting in the dark aspect of insurance in present days.

If we think that Autonomous vehicles (AVs) are exciting, then let us also think about the time in the future when, like Tesla does currently, each car's data contributes to the overall pool of data that is then analysed for learning using predictive modelling. This can lead to a 'hive mind' where a central brain does all the work and processing, but individual elements also play out their intended functions like a swarm of drones flying towards cities for deliveries, or self-driving cars working for each passenger but also being part of the connected whole of the hive mind. This concept of "machine teaching", instead of machine learning, in the context of AVs and connected drones refers to the idea of leveraging large datasets and potentially shared experiences to improve the performance, safety, and capabilities of these systems.

The sheer amount of data generated by a hive mind of AVs can provide highly granular insights into driver behaviour, vehicle performance, and situational risks. Actuaries could use this data to create incredibly nuanced risk models that we can only dream of in the present times.

Actuaries should be able to create new insurance products and pools. Insurance products could be designed to adapt in real-time, with premiums adjusted based on the latest collective learning updates. Given the dependency on network connectivity for hive mind operations, insurance products that cover network interruption risks might become more prevalent. Covering cyber risk and liability and litigation risk would become key product features. As data sharing is crucial for the hive mind, cybersecurity risks could be significant. Cyber insurance covering data breaches, unauthorized data manipulation, or network intrusions could be integrated into motor insurance policies.



Actuarial Considerations

Telematics can capture driving behaviour that potentially accounts for the majority of accident risk. Other traditional pricing factors like socio-economic factors and vehicle factors should not be removed, but should also be evaluated along with telematics data. This should create a win-win combination of traditional and new factors when pricing and modelling for motor insurance. Since telematics is a feature with high-value and modern vehicles like hybrids, analysis on telematics can also pinpoint emerging risks in the rapidly developing hybrid segment. This can be used as a rough benchmark for making a specialised motor insurance policy for, say, electric vehicles and autonomous vehicles, or even drone insurance or connected fleet insurance.

Electric vehicles (EVs) and hybrids introduce unique variables that actuaries and underwriters must consider when developing and pricing motor insurance products. These unique variables include:

- The state and longevity of the battery can impact the vehicle's value and reliability, which may influence the insurance premium.
- Areas with sparse charging infrastructure may present higher risks, as drivers might face challenges in recharging, leading to potential roadside incidents.
- Electric and hybrid vehicles often have specialised parts and technology, making repairs potentially more expensive than their internal combustion counterparts.
- Fuel efficiency and battery range could be factors in determining the risk profile, especially for policies that are priced based on usage or distance driven.
- Some jurisdictions offer incentives for owning electric or hybrid vehicles. These incentives might also extend to insurance premiums and could influence pricing models.
- The rate at which electric and hybrid technology is being adopted in a particular market could influence the statistical models used for pricing, as rapid adoption could quickly change risk profiles.
- The availability of home charging facilities could influence the risk profile. For example, charging at home might be deemed safer than using public charging stations.



- Hybrids combine internal combustion engines with electric elements, adding complexity to the vehicle that may influence repair costs and, therefore, underwriting decisions.
- Electric and hybrid vehicles are often more reliant on software, introducing cybersecurity risks that might not be as prevalent in traditional vehicles.
- For electric vehicles, the range between charges can be a factor. Limited range might restrict the vehicle to certain types of driving (e.g. city driving), which could influence its risk profile.
- This feature, common in electric and hybrid vehicles, could influence driving behavior metrics captured by telematics, such as braking patterns.
- Early adopters of new technology may have different risk profiles, potentially being more tech-savvy but also more willing to accept risks associated with new technologies.
- Electric and hybrid vehicles may be more subject to recalls due to new technologies, impacting the underwriting process.
- There is some evidence to suggest that electric vehicle owners may engage in safer, more eco-conscious driving behaviours, which could be factored into the underwriting process.
- Government incentives might encourage quicker adoption but could also lead to younger, less experienced drivers obtaining these types of vehicles, affecting the risk assessment.

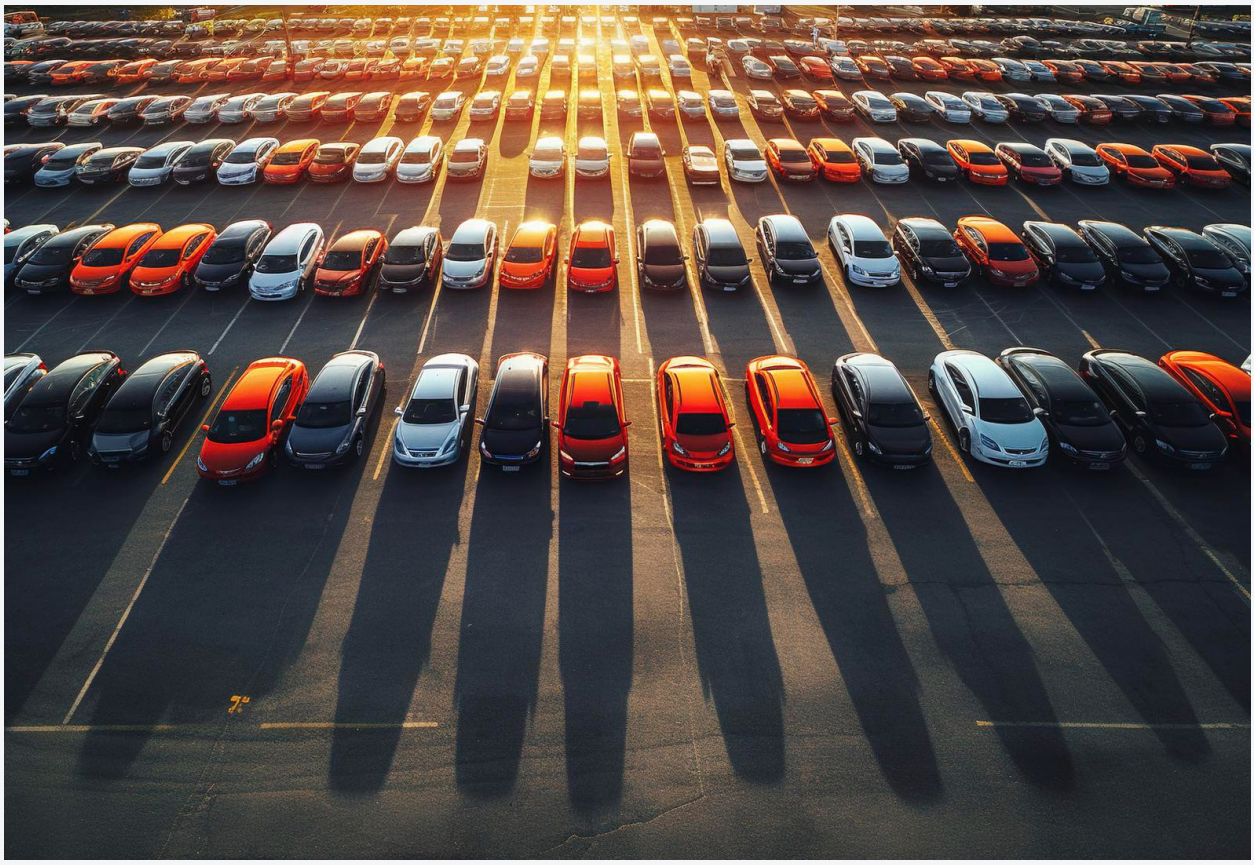
Autonomous vehicles introduce a paradigm shift in motor insurance, as the emphasis gradually moves from driver behaviour to vehicle technology and infrastructure. Some of the variables for consideration include:

- Different levels of autonomy (from Level 1 to Level 5) present varying degrees of risk and require different pricing models.
- Unlike human drivers, autonomous vehicles follow algorithms. Actuaries must consider how these algorithms affect risk.
- The accuracy and reliability of the vehicle's sensors (LiDAR, radar, cameras, etc.) can significantly impact the vehicle's safety and thus its risk profile.

- The availability of enough relevant data on autonomous driving to make statistically valid assumptions is a big challenge, given that the technology is relatively new.
- The potential for hacking and software malfunction needs to be quantified and incorporated into pricing models.
- Frequent software updates can alter a vehicle's risk profile, requiring dynamic pricing models that can adapt over time.
- The quality of road infrastructure and its compatibility with autonomous technology can affect risk and should be factored into pricing models.
- As vehicles become more autonomous, liability may increasingly shift from the driver to the manufacturer or software provider, affecting how risk is calculated.
- The transition period during which autonomous and non-autonomous vehicles share the road presents unique risks.
- Underwriters must validate the data sources that feed into autonomous systems, such as mapping data and real-time traffic data.
- The presence and reliability of fail-safe mechanisms in the event of system failure could be a key underwriting factor.
- Regulations around autonomous vehicles are still evolving. Compliance with existing and potential future regulations needs to be considered.
- The reputation and reliability of the technology providers (hardware and software) can be a key consideration.
- The specific use-cases for which the autonomous vehicle is designed can have a significant impact on risk. For example, a car designed for highway driving may have a different risk profile if frequently used in urban settings.
- The ability (or inability) for a human to take control of the vehicle in an emergency situation could affect the risk assessment.
- How the vehicle's algorithms are designed to make ethical decisions in unavoidable crash scenarios could be a factor in underwriting.
- The handling of the large amounts of data collected by autonomous systems could have implications for liability and must be considered in underwriting.
- Autonomous vehicles may often be part of a fleet, requiring a different approach to underwriting compared to individual ownership.
- The records of testing and validation for the autonomous systems can be critical in assessing the vehicle's reliability and thus its insurability.

Connected fleet insurance (like the services offered by Flock Insurance in the UK, or Root Insurance in the US) leverages real-time data and analytics to offer dynamic, usage-based policies. This poses unique challenges and opportunities for actuaries and underwriters. Those challenges and opportunities include:

- Unlike individual policies, fleets present aggregated risks. Actuaries need to model not just the risk for individual vehicles, but also the correlations and dependencies within the fleet.
- These policies often have flexible pricing that can change in real-time based on various factors. Actuaries must develop and validate algorithms that can handle this complexity.
- Fleets generate a large volume of data at a very granular level. Actuaries must decide how to aggregate this data for pricing and risk assessment.
- In fleets, multiple drivers may operate the same vehicle, and a single driver may operate multiple vehicles. Actuaries must determine how to attribute risk in these scenarios.
- Factors such as cargo type, route predictability, and fleet maintenance



schedules can influence risk and must be incorporated into actuarial models.

- With more vehicles and drivers, the frequency of claimable events may be higher, but their severity might be lower due to professional training and vehicle quality.
- As fleet size increases, administrative costs per vehicle may decrease. Actuaries must consider how these economies of scale affect pricing.
- The presence and effectiveness of driver training and safety programs within a fleet can influence underwriting decisions.
- Fleets often consist of vehicles from multiple manufacturers with varying levels of connectivity and data availability, affecting how risk is assessed.
- Some connected fleet insurance services offer real-time alerts for risky behavior or unsafe conditions, affecting the risk profile during the policy period.
- Just like in autonomous vehicles, the validation of data sources, including GPS and telematics providers, is crucial for accurate underwriting.
- How frequently and intensively vehicles are used can vary widely in fleets and may require specialised underwriting approaches.
- Fleets often cross jurisdictional boundaries and must adhere to various local, state, or even international regulations, complicating the underwriting process.
- Fleets may have different contractual obligations related to insurance, such as requirements imposed by clients or partners, affecting underwriting.
- The connected nature of these fleets opens up cybersecurity risks that must be factored into underwriting decisions.
- Predictive Modeling: Advanced analytics and machine learning models can be used to predict future risks based on historical and real-time data, informing underwriting decisions.



Drones can also be thought of a cross between motor and aviation while bringing some of their unique aspects into the insurance. Insurance for drones, also known as Unmanned Aerial Vehicles (UAVs), presents unique challenges given their operational diversity, technological complexity, and the evolving regulatory landscape. Some of the unique aspects for drones include the following:

- Unlike traditional aviation, drones can have much shorter flight times. Actuaries must consider how risk scales with the duration and frequency of flights.
- Drones used for commercial purposes may carry different types of payloads (cameras, goods, sensors, etc.), affecting both the drone's flight characteristics and the financial risk in case of an accident.
- Some drones are manually piloted, while others may operate autonomously. The level of automation can affect the risk profile.
- Many drones have built-in geofencing that prevents them from entering restricted areas. Actuaries must consider how these features may reduce risk.
- As drone technology is relatively new, actuaries have limited historical data. They may need to use experience curves to project future risk trends as the technology matures.
- Drones are more susceptible to weather conditions like wind and rain, and these variables must be factored into actuarial models.
- Drones are often battery-operated, and battery failure can be a significant risk factor.
- Although rare, drones do pose a risk to manned aircraft, and this must be quantified in actuarial models.
- The qualifications of the drone operator, including any certifications or training, can be a crucial factor in assessing risk.
- Drones used for commercial filming, agricultural surveying, or package delivery each present unique risks that must be individually assessed.
- The quality and reliability of the drone's hardware and software can be key underwriting factors.
- Commercial drones often collect and transmit data. The risk of data breaches or unauthorised data collection needs to be considered.

GIVEN THE DIVERSE APPLICATIONS FOR DRONES, UNDERWRITERS MAY NEED TO OFFER HIGHLY CUSTOMIZED POLICIES TO MEET SPECIFIC NEEDS, SUCH AS ON-DEMAND COVERAGE FOR SHORT-TERM PROJECTS

- Drones operating at different altitudes or ranges may have different risk profiles, affecting underwriting decisions.
- Features like auto-return, emergency landing, or parachute systems can mitigate risks and may affect underwriting decisions.
- Drones are subject to a variety of regulations, including flight ceilings, no-fly zones, and equipment requirements, which can vary by

jurisdiction.

- Determining liability in the event of an accident, especially for commercial operations, can be complex and must be considered in the underwriting process.
- Some advanced drones are integrated with air traffic control systems, which could be a positive factor in risk assessment.
- Given the diverse applications for drones, underwriters may need to offer highly customized policies to meet specific needs, such as on-demand coverage for short-term projects.

Having considered the unique features of different types of vehicles, let's now move more specifically to some big players like Tesla and Waymo, and the factors that need to be looked at when doing actuarial modeling and underwriting these vehicles for motor insurance.

Specific factors for Tesla include the following:

- Tesla's autopilot and full self-driving (FSD) features introduce a mix of autonomous and human driving, which requires a nuanced approach to risk assessment. Actuaries must consider how often these features are engaged and the safety record associated with them.
- Tesla frequently updates vehicle software to improve performance and safety. These updates can alter the risk profile of a vehicle overnight, requiring dynamic pricing models.
- Tesla's electric batteries are expensive to replace but are also designed to last a long time. The risk associated with battery failure or degradation over time must be assessed.
- Tesla vehicles generate a wealth of data that can be used for precise risk modeling. This includes driving behavior and vehicle



performance, and even whether autopilot was engaged during an incident.

- Tesla vehicles are known for high repair costs due to specialised parts and limited-service centers. This would be a key consideration for collision and comprehensive coverages.
- Tesla vehicles are capable of rapid acceleration, which could be a risk factor in certain types of accidents.

Similarly, for Waymo, the specific factors include the following:

- Waymo operates vehicles that are designed for full autonomy (Levels 4 and 5). The actuarial models need to focus less on driver behaviour and more on software and hardware reliability.
- Waymo vehicles typically operate within specific, well-mapped areas. The reduced operational scope could potentially lower risk but might also concentrate certain types of risks, like pedestrian interactions.
- Waymo has a "Rider-Only" mode, which leads to potentially zero bodily injury claims on streets, indicating a high level of safety performance that can lower premiums.
- Waymo has extensive data on its safety performance, which can be used for precise actuarial modeling. Like Tesla, the telematics data is rich but focuses more on the vehicle's autonomous system performance.
- A recent study compares the safety of autonomous and human drivers, suggesting that Waymo's autonomous systems have a track record of safety, possibly reducing claims related to driver error.
- Reporting and development are designed using insurance industry best practices to assess crash causation and predict future crash contributions via Waymo's collaboration with Swiss Re. This could imply lower volatility in claims, making it easier to price insurance products.

One study on safety record of autonomous vehicles showed that:

- The Waymo Driver incurred zero bodily injury claims in comparison with the human driver baseline, which implies a lower risk profile for bodily injury coverages.
- During autonomous testing operations, Waymo vehicles significantly reduced both bodily injury and property damage compared to human driver baselines. This could impact the pricing for property damage liability and collision coverages.
- While not specific to Waymo, the study includes data on precipitation-related motor vehicle collision and injury risk, implying that weather conditions could be a significant factor in risk models for autonomous vehicles.
- Even though Waymo vehicles are designed for full autonomy, they often have a human safety driver present. The role and effectiveness of this safety driver in preventing incidents should be considered.
- The evolving landscape of regulations governing autonomous vehicles will have a direct impact on liability and, consequently, insurance pricing.

These factors are not to suggest that Tesla and Waymo are the same. Under the hood of autonomous vehicle, there are considerable differences between the two, such as:

- Tesla's autopilot and full self-driving (FSD) systems rely on a combination of cameras, radar, and sometimes ultrasonic sensors. Tesla uses a neural network to process this information. Waymo employs a comprehensive set of sensors including LiDAR, radar, and cameras. It has a more extensive sensor suite compared to Tesla.
- Tesla's systems are generally considered to be Level 2 according to the SAE scale, meaning they require driver attention and oversight at all times. Waymo operates at

Level 4 autonomy, which means it can handle all aspects of driving in certain conditions without human intervention.

- Tesla sells cars to consumers and offers autopilot and FSD as additional features, whereas Waymo is primarily focused on providing a ride-hailing service using their autonomous vehicles, although they have also explored logistics and delivery.
- Tesla has global presence, with vehicles sold in various countries, whereas Waymo is limited to specific geographic areas where they have extensively mapped the environment.
- Tesla collects data from all Tesla vehicles on the road, not just the ones with FSD, which helps improve their algorithms, whereas Waymo relies on fewer, but highly specialised, vehicles for data collection.

Hence, the actuarial risk assessment also needs to tailor itself to the unique differences between Tesla and Waymo. Those differences include:

- Since Tesla are mostly manually driven or semi-autonomous, traditional actuarial factors like driver history may still be significant. Given the Level 4 autonomy in Waymo, the risk shifts more towards the technology and away from the driver.
- Insurers might consider the efficacy of Tesla's safety features like lane-keeping, emergency braking, etc., in reducing accidents. Insurers would need to assess the reliability of Waymo's full autonomy capabilities.
- Tesla's Telematics data could be used for more accurate pricing. A significant amount of data is available from Waymo's controlled trials and operations, which could help in risk modeling.
- No geographic limitations for Tesla mean that actuarial factors like location can still significantly influence insurance pricing. Insurance might be easier to price for Waymo due to geographic limitations but might require specific regional considerations.
- Liability may still largely fall on the Tesla driver, affecting personal insurance rates. Liability might more often fall on the technology or service provider for Waymo, affecting commercial insurance rates.
- Regarding frequency & severity of claims, both types of vehicles may result in fewer accidents but could involve higher claim amounts due to expensive sensor, hardware replacement and litigation.

One key difference is that Tesla doesn't have LiDAR whereas Waymo has. The presence or absence of LiDAR (Light Detection and Ranging) in autonomous vehicles has significant implications for the vehicle's capabilities, safety features, and consequently, insurance pricing. The following factors specifically relating to LiDAR need to be considered:

- LiDAR provides 360-degree, three-dimensional sensing capabilities that can detect objects, pedestrians, and other vehicles with high accuracy. This makes Waymo vehicles more capable in complex driving scenarios, potentially speeding up the transition to higher levels of autonomy. The high precision of LiDAR could mean a lower probability of accidents due to sensing errors, which can be factored into actuarial models as a risk mitigator.
- LiDAR generates a more detailed "point cloud" of the vehicle's surroundings, which can be advantageous for navigating complex or cluttered environments. This could mean that Waymo is better suited for urban environments, while Tesla might be more optimized for highway driving. The rich data provided by LiDAR can be used for more accurate risk modeling, potentially allowing for more precise pricing segmentation. Since Tesla relies on cameras and radar, the software algorithms that interpret this data are critical. The risk associated with software

errors or limitations may need to be higher in actuarial models for Tesla vehicles. Tesla's ability to improve its sensor fusion algorithms via over-the-air updates means that its risk profile could change more dynamically over time, requiring flexible actuarial models.

- LiDAR systems are generally more expensive than the cameras and radar systems used by Tesla. This cost could influence the overall vehicle price and consequently, the insurance premiums for comprehensive coverage. The absence of LiDAR could make Tesla vehicles more cost-effective, possibly resulting in lower comprehensive coverage costs, assuming all else is equal. LiDAR systems are specialised and may be expensive to repair or replace, potentially impacting the cost of claims and thus premiums for collision and comprehensive coverage.
- Tesla's sensor suite might have variable performance in different weather conditions compared to LiDAR, which can penetrate fog, rain, etc. This variability might be factored into pricing models, especially for regions with challenging weather conditions.

By understanding these specific factors, actuaries can create nuanced risk models that reflect the technological and operational differences between Tesla and Waymo vehicles. This should help in developing more accurate and competitive insurance products tailored to each type of vehicle.

Data from all vehicles in a fleet could be sent to a central server for analysis. Advanced machine learning models can learn from this collective experience, and the insights can be used to update the software on all vehicles. AVs could receive real-time updates based on the experiences of other vehicles in the fleet. For example, if one vehicle learns how to navigate a tricky intersection, this knowledge could be shared with all other vehicles. Shared data can help in identifying and reacting to anomalies more effectively. If one vehicle encounters a novel situation, the "hive mind" can quickly learn from it, and all other vehicles can be updated to handle the situation better. In traffic conditions, where cooperation is beneficial (e.g. merging lanes, navigating roundabouts), vehicles could communicate and coordinate their actions for smoother and more efficient driving.

Drones flying in a swarm can share data and make collective decisions based on the whole swarm's perception, similar to the way in which schools of fish or flocks of birds operate. In a connected drone network, tasks could be dynamically allocated based on the capabilities and current states of individual drones. This would allow for more efficient use of resources. Drones could learn optimal formations based on environmental conditions, mission objectives, and the capabilities of other drones in the swarm. In search and rescue missions, drones could explore different areas and share their findings in real-time, allowing the swarm to rapidly adapt its search pattern.

However, this is not without its challenges. The computational power requirement might be too high, except for the top global vehicle makers, to compute or it might require quantum computers to first be invented and then be run on them. Privacy and cybersecurity as well as regulatory issues would also come into play concerning vehicle-to-vehicle (V2V) and vehicle-to-everything (V2X) communications. Despite these challenges, the potential benefits of a "hive mind" approach to autonomous systems are substantial. The concept represents an exciting frontier in the fields of machine learning, robotics, and transportation.

So how does this relate to the future actuarial profession? The hive mind approach would allow AVs to adapt and improve rapidly, potentially reducing the likelihood of accidents. Actuaries would need to model these dynamic risk profiles, which may require frequent adjustments to



pricing algorithms. The sheer amount of data generated by a hive mind of AVs can provide highly granular insights into driver behaviour, vehicle performance, and situational risks.

Actuaries could use this data to create incredibly nuanced risk models, which we can only dream of in the present times. In a swarm pattern, it might be challenging to isolate the responsibility of a single vehicle or drone in the event of an accident. This could necessitate the development of collective liability models and shared risk pools. Underwriting would need to evaluate not only the safety features of an individual vehicle, but also the effectiveness and reliability of the hive mind network it participates in.

The reliability, latency, and security of the network connecting the hive mind would become new underwriting factors. A weak or compromised network could pose systemic risks. Edge computing/fog computing are early precursors of looking at this from an internet of things point of view. The frequency and quality of software updates disseminated through machine teaching could affect vehicle safety and thus be a factor in underwriting. For drones operating in swarms, specialised policies that cover the collective behaviour and interdependencies between drones may be required.

Conclusion and Recommendations

Usage Based Insurance is a significant investment. First, an insurer should contact the solutions vendors and ask for costs of implementing and maintaining telematics. To reduce the enormous amounts of data, an insurer can replicate Progressive Snapshot product by only taking 30 days of data and generalising the patterns recorded from that to the rest of the policy period. A lot of factors have to be considered, such as the telecommunication infrastructure required for telematics, privacy concerns of the consumers and the willingness and ability to work with very different and huge amounts of data.

A pilot study for at least 6 months should be undertaken to check whether telematics insurance works practically on ground level and the response of the market. Based on the results of the pilot study response from policyholders, the level of premium telematics can potentially generate etc., an insurer can decide whether to introduce it or not.

1. https://flockcover.com/
2. https://waymo.com/blog/2023/09/waymos-autonomous-vehicles-are.html

THE HIDDEN COSTS OF BEING POOR... An update by the Poverty Premium Working Group

AUTHORS

The Life Working Party of the Poverty Premium Working Group produced this article:
Siebert Benade / Zandile Gobe / Nabeelah Kolia / Richard Montgomery / Vivek Moodley / Nicolette Patchett

The Poverty Premium

It shouldn't cost more to be poor

"In the extreme, the rich young woman gets almost 50 times more life cover than the poor old man, for the same premium on the same product. This extreme difference in benefits provided to different people may be considered unfair and discriminatory (in the negative sense of the word) by many observers." **AF Marais "Can discrimination in risk underwriting in life insurance industry be ethically justified?"**

Where did it all start?

In 2022, the IFoA (Institute and Faculty of Actuaries), published a series of articles under their Inclusive Insurance series that included the impact of the **"Poverty Premium"** i.e. the poverty premium refers to the extra costs incurred by low-income households when purchasing the same or similar essential goods and services as households on higher incomes.The Poverty Premium Working Group was established following the publication of the paper "Insurance and the Poverty Premium", by Matthew Oakley (an economist) and James Kirkup (a journalist), published by the Social Market Foundation in the UK. In this paper, the authors have challenged the insurance market, stating that the insurance market in the UK is failing. The nature of the failure relates to the relatively high price that people in poverty pay for insurance that would be cheaper for wealthier people. The paper identified this as a contributor to the entrenchment of poverty, where people cannot afford the insurance that they need.

While the Poverty Premium is a concern in the UK, we believe that the impacts are far more pronounced and severe in SA, with its large inequality gap. This issue should be seen as part of the wider context of Public Interest activities of our profession and other colleagues seeking to address the on-going issues of the day. The Actuarial Society of South Africa has supported its Public Interest objectives by forming working groups such as the Social Security and Retirement Reform Working Group and the Poverty Premium Working Group.

In this article, we reflect on the journey and discussions by the Life Working Party Poverty Premium Working Group from 2022 to date. We share some of our views on what the Poverty Premium is, the extent to which rating



factors should be taken into account, and what considerations might apply when attempting to address disparities.

This is a high-level discussion only. Our intention is to provide information and alternatives rather than propose solutions. We recognise that there are many role players involved, each needing to balance the diverse needs of their constituents, and that these needs may sometimes conflict with each other.

This article was drafted by members of the Life Working Party within the larger Poverty Premium Working Group.

Overview

One of the topics that did pre-occupy us was the distinction between **Poverty** and **Poverty Premium**, especially in the context of South Africa, where unemployment and poverty are rife. In this article, we provide some insights into our further reflection of:

- **What is the Poverty Premium?**
- **What drives the Poverty Premium?**
- **When are cross-subsidies acceptable?**
- **Various stakeholders that may assist our work with the Poverty Premium.**
- **Where to from here?**

We hope that our thoughts stimulate interest, discussion, insight and eventually action to help address the poverty premium.

What is the Poverty Premium?

The Poverty Premium is the additional cost borne by people who are poor that can be attributed to that poverty, when compared to the price paid by someone who is not in poverty. This is driven by various factors discussed in Section 4.

While we recognise that the existence of the Poverty Premium may arise from following accepted and technically justifiable pricing methodologies and decisions made by role players in a given social, cultural and regulatory context, we question whether the outcomes that such methodologies produce are fair.

To illustrate our concern and by means of an actual example, we refer to a paper written by AF Marais "Can discrimination in risk underwriting in life insurance industry be ethically justified?". The contents of this paper delve squarely into the topic of Poverty Premium.

To illustrate the issue, we quote an example below from the paper: where, for a given premium, age and gender, someone with better

Table 4: Soci-economic classification by education and income

Class 4	Four-year degree	or	matric and R30 000 p.m. income
Class 3	Three-year degree	or	matric and R16 000 p.m. income
Class 2	Matric	or	no matric and R16 000 p.m. income
Class 1	No matric and any income level		



Table 5: Comparision of cover by socio-economic class

Age at entry	20	40	60
Sum assured: Class 4	R650 000	R400 000	R100 000
Sum assured: Class 3	R400 000	R300 000	R70 000
Sum assured: Class 2	R250 000	R200 000	R50 000
Sum assured: Class 1	R150 000	R100 000	R30 000

education and a higher income, can access between 3 to 4 times more cover for the same premium than a person with lower education and lower income as follows:

In addition to the cost of insurance, the paper asserts that there are further obstacles to obtaining appropriate cover. These obstacles include:

- The cost of advice (applicants for small policies may find obtaining appropriate advice on their purchase to be prohibitively expensive).
- Applicants for insurance may be excluded (denied access) as a result of underwriting practices.
- Attempts to gain a desired level of insurance may be hampered to the extent that potential purchasers are forced to purchase an expensive or unsuitable product, or to forgo the required insurance altogether.

We question whether, as a profession, we are comfortable with this level of Poverty Premium and the implications thereof.

We note that no individual or group bears sole responsibility for the Poverty Premium and, to the extent that issues raised need to be addressed, all role players share in the responsibility for seeking viable and "fair" solutions.

What drives the Poverty Premium?

After several discussions around what should be considered Poverty Premium and what falls under "market forces" (including rating factors), we have identified some factors that, in our opinion, drive the Poverty Premium. These can be grouped under the following headings:

- Experience factors
- Cost factors
- Commercial factors
- Regulatory factors

Each of these are discussed in the sub-sections that follow. Each of these factors drew alternative views on the extent to which they were a material contributor to the Poverty Premium. There were even deeper discussions around how each of them might be addressed (and by whom).

Experience factors

The claims experience of any block of insurance business is clearly linked to and correlated with lifestyle, influenced by levels of wealth or poverty. The correlation with poverty could be directly linked to living standards, or wealth level might be a proxy for other factors. We have identified some drivers of genuine differences in experience adversely affecting poorer people, including:

- Reduced availability of healthcare.
- Poorer diet.
- Lifestyle limitations.
- Lower access to safe neighbourhoods.

These and similar factors have a genuine impact on rates at which people die, become ill, are victims of theft, or have their possessions damaged. These different rates are then incorporated into the calculation of premiums, resulting (more often than not) in premium rates that are higher for poorer people than richer people.

Cost factors

Poorer people tend to buy smaller policies. With smaller policies the portion of the total premium that is used to cover costs is typically higher due to:

- Proportionately higher costs of distribution.
- Proportionately higher costs of premium collection.
- Proportionately higher costs of administration.

- Less detailed or robust underwriting of smaller policies means that assumed average claim rates are higher (because less underwriting filters out fewer high risks).

This means that for a given cost to cover the insurance or investment components of a premium, small premiums would incur proportionately higher costs. These costs have to be covered by insurers, and they are then passed on to the consumer in the form of higher rates. In this way, poorer customers pay a greater percentage of their premium towards covering costs, and correspondingly less is available to cover benefits.

Commercial factors

In addition to technical factors concerning risk and expenses, companies selling insurance operate in a commercial environment. Market forces influence pricing, with commercial companies seeking to maximise their returns, varying the size of the margins charged and the volume of sales achieved.

To the extent that price elasticity of demand is higher for large policies than small policies (and any similar issues on the supply side) those in poverty may well face commercial margins that are proportionately higher than those facing wealthier customers. A full list of potential commercial factors is arguably inexhaustible, but we identified some key elements to consider:

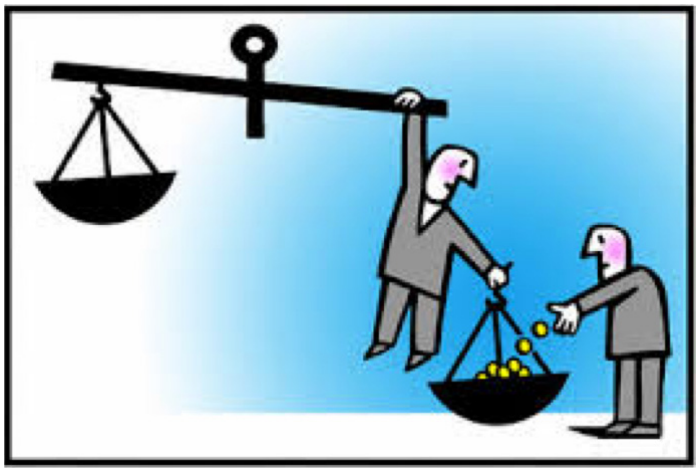
- Limited competition, which could possibly support the sustainability of high margins. (possibly).
- Risk perception, meaning shareholders expecting expect greater margins on small policies due to risk perception.
- Lack of (or limited) advice to policyholders means that they may not find the cheapest available product.



Regulatory factors

Regulatory factors include all steps taken through legislation and associated regulations by government to address the commercial terms on which insurance is written. This can be extended to include discussion of areas where government has left it to the market to establish the terms offered.

In current South African law, poverty is not a protected characteristic (like race, religion or home language). While some other factors are mentioned in equity laws and regulations, it is permissible for insurers to vary rates for different individuals (for the same policy) provided that there are sound commercial reasons for doing so, and the pricing difference is supported by relevant statistical analysis. So, for example, insurers are allowed to "discriminate" against older lives by charging them more for life insurance than they would charge younger lives, on the basis that the older life has a higher chance of death and therefore of the claim being paid than the younger life.



We note that many policies or pricing approaches include implicit or explicit rate adjustments for factors such as policy size, and personal income levels (or proxies for that) which directly aim to charge poor individuals more than wealthy individuals based on their higher chance of claiming.

Governments can take steps to influence markets through direct or indirect regulation of activities. One such initiative in South Africa is where government allows simpler regulation of micro-insurance companies (who often operate in poorer communities). Provided that these companies operate within restrictions (in terms of product size, guarantees offered, and other policy conditions) the regulatory touch imposed is lighter than that imposed on larger "full service" insurers. This might make insurance more accessible to poorer communities.

There have also been initiatives to establish social insurance on a national level, to date mainly in the healthcare sector. For life and property insurance, there are no such coverages provided in South Africa (at the date of writing).

Similar initiatives could equally be made into ensuring cover is provided on a group basis by employers or employee associations. Although many such schemes exist, at this stage there is no regulatory requirement for them to do so.

When are cross-subsidies acceptable?

Cross-subsidies, where the difference in the premium is lower than the difference in the level of risk, is considered acceptable (or even a requirement) in some circumstances. These circumstances vary with political and cultural views. For example, in South Africa the rates charged by a medical scheme are, with few exceptions, required to be equal despite statistically significant differences in experience when analysed by age, sex, or income level. This requirement was not extended to insurance. For medical schemes "fairness" was equated with charging the same premium for the same benefit. For insurance "fairness" was equated with charging the same premium for the same level of risk.

Examples where cross-subsidies are applied include:

- Many policies sold to cover funerals, to cover loans, or via mass marketing are sold simplified rating – the premium rates are the same irrespective of rating factors.
- Policies sold to groups of people often have simplified premium structures where there is an element of cross-subsidy.
- Tactical pricing approaches sometime lead to margins being wider for some policy types than others – for example expense recoveries could be above average cost for some policies but below average cost (although above marginal cost) for others.

The regulatory restrictions that drive cross-subsidy are typically driven by concepts of equity and inclusion. The other elements of cross-subsidy are driven by commercial considerations.

The Working Group has had many discussions around the topic of what elements of cross-subsidy are acceptable or desirable. Where cross-subsidy could be considered desirable, what are the optimum ways in which this could be achieved.?

Role players in tackling the Poverty Premium

The role players and stakeholders when considering the Poverty Premium (and other social issues) are many. They include regulators, commercial companies, academia, professional bodies, professional advisors, and individuals operating in their private capacities.

We have discussed each of these in the sections that follow. In our discussions:

- The regulators are the government.
- The commercial companies are insurers (long-term and short-term).
- Academia includes educational institutions as well as other research bodies.
- Professional bodies specifically focus on the Actuarial Society of South Africa.
- Professional advisers specifically focus on actuaries advising or working for other parties.
- Individuals are all encompassing, where our focus is on actuaries acting in their private capacity.



Government (regulators)

Government has a clear role in improving the economic life of its citizens. This is done in the context of social values and principles, as enshrined in the Constitution. We anticipate the following to be the role of government:

- Defining what is considered "fair" and what is "unfair" or prohibited in terms of using rating factors.
- Addressing possible solutions for people who are uninsured (or underinsured) and making appropriate laws and regulations.
- Ensuring a level playing field for companies operating within a particular market.
- Providing appropriate state sponsored benefit schemes when or where this is warranted.

We recognise that government has onerous and often conflicting priorities when balancing the different needs of its constituents and the nation as a whole. Some options may be unaffordable, impractical or of low priority.

Companies

The companies have a primary duty to their shareholders (or policyholders, in the case of mutual societies). They must operate within the law, but also need to recognise that their competitors will do so as well. Matters of equity and inclusion are addressed in company value statements and sustainability goals, as well as guidance from equity and commercial legislation.

We envisage companies seeking to play leading roles in the following areas:

- Supporting innovation and design to deliver creative solutions to those who are unable to access required insurance.
- Engaging with government to flag any issues that would cause disruption to the market.
- Promoting diversity, equity and inclusivity, in line with their stated values.

We note that some of the solutions might be available through public-private partnerships in which companies could play a leading role.



Academia

Academic bodies, including research groups, universities and others, take on roles of analysing matters around various topics, and presenting findings. Done correctly, these place decision-makers in a position to make better informed and more effective decisions in the areas concerned. Academia is expected to be in a position to carry out research independently of commercial or political objectives, thereby providing neutral, independent information to other stakeholders.

Professional bodies

Professional bodies such as the Actuarial Society of South Africa play many roles in the discussions around social issues. These roles include:

- Representing the interests of its members, in seeking clarity and providing guidance on the regulatory and other requirements expected of actuaries by government (and others).
- Overseeing the discipline of the profession, ensuring that members comply with professional standards (including adherence to regulatory requirements, where oversight is delegated to the profession).



- Offering a sounding board and advisory assistance to government in helping understand actuarial and related matters that impact on the issues at hand.
- Delivering on its own objectives in terms of supporting matters of social interest, equality, diversity, equity and inclusion.

Within these requirements, our committee Working Group sees our role as providing unbiased advice and options, independently of our personal circumstances or other work commitments. The Working Group committee delivers its advice to other parties via the organs of the Actuarial Society of South Africa.

Professional advisors

As professional advisors, actuaries and others are bound by their professional codes of conduct and their duties towards their principal (to whom they are providing advice). Giving optimum advice requires an understanding of the rules under which the principal operates, and the practical risks attaching to that circumstance. For example, in an environment where the rules allow rate discrimination based on sex it is likely that commercial considerations will drive insurers towards differential rates. An actuary would need to rate accordingly irrespective of personal views on whether the discrimination was morally "fair".

Members of the professions may be asked to provide advice to government on possible ways forward. They may need to do so independently of the professional body to which they belong (and possibly adopting an alternative view to that body, or other members of the profession). In such circumstances, it is important for all actuaries to present their findings, and the justifications therefore, in a balanced and neutral manner, avoiding dismissal of alternative views held by other actuaries or the professional body.

Individuals

All individuals in a free society have the right to hold their own beliefs and views. They usually have the right to present these beliefs or views to others, including in public forums or to government. The right to freedom of expression in such cases may not be absolute, with specific requirements of law (and professional codes of conduct) curtailing rights so as to avoid inciting violence, libelling or slandering others, or bringing the profession into disrepute. Professionals acting in a personal capacity carry obligations about what they say and how they say it.

Where we have a personal circumstance or view to share with regulators, work colleagues or the public at large, it is important to be clear that this is our own parochial view and not an independent professional view. We would always encourage a non-dogmatic and non-absolutist approach by any professional seeking to present a view (personal or professional). That is a standard that we have felt keenly within our Working Group committee, notwithstanding strong personal views and desires of individual committee members.

So where to from here?

- While we do not wish to propose solutions to challenges arising from the Poverty Premium at this stage, we have considered various options. The merits or otherwise of each option will depend on the particular circumstances that exist, as well as the current values of society. These options include:
- Government reviewing the use of rating that differentiates by size of policy or social economic class, either directly or by proxy.
- Consider a basic level of cover to be provided at a flat rate (for example, an individual must have R50,000 of life cover from a flat-rated provider before they can apply for individually rates rated policies).
- Regulations designed to support cost cutting activities, for example simplified regulation of micro-insurers, or lighter regulation of community-based distribution methods for small policies.
- Provision of cover via simplified and automated means, for example third party insurance funded via levies on fuel. These can include state-owned insurance bodies or cover outsourced to private insurers.
- Require basic level cover to be provided via employer-sponsored schemes, union membership, or as a statutory part of credit provision.
- Specific cover provided by government, for example via a national insurance scheme.

We recognise that there are many potential versions of each of these options, and the list is not exhaustive. We also recognise that there are many challenges associated with each proposed solution. We anticipate robust future discussion on these and other options that might be proposed.

We have outlined the current status of our discussions to date. We recognise that much wider engagement is needed if we are to find practical solutions to issues linked to the Poverty Premium. We look forward to continuing our work in this field.

The Working Group would like to thank relevant members of ASSA's Social Security Committee (SSC) and Francois Marais for their valuable input. We welcome comments and suggestions related to this document and the issues raised in it. **Please direct comments by email to richard@montgomery.co.za** or **vimoodley@deloitte.co.za**.

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