



International Actuarial Association
Association Actuarielle Internationale

Future Actuary Risk and Opportunity Radar

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Future Actuary Risk and Opportunity Radar

This report has been developed by the Future Actuary Task Force of the IAA Executive Committee and approved by the Executive Committee

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1 Executive Summary

Who is the future actuary? What will be the domain knowledge and the skillset required by actuaries in the future? Rapidly evolving technologies like artificial intelligence (AI), machine learning, and automation create a new future of work. New threats, and in parallel opportunities will continue to arise with emerging risks such as demographic and economic changes, climate-related risk, and pandemics. In addition, global and local regulatory requirements such as Environmental, Social & Governance (ESG) are continuously evolving. The actuarial profession must ensure that it takes on dynamic business and advisory roles, while maintaining the professional approach to all actuarial services.

The classic actuarial skill set of mathematics, analysis and strong domain knowledge provides a strong foundation for the profession to build on to prepare for the future. Skills that the actuaries possess, but don't market enough, such as the ability to synthesize information and use their strong analytical skills in managing new and emerging financial risks, will only rise in demand in the future. However, actuaries can apply their skills in wider fields, improve their strategic thinking, communication skills and emotional intelligence, which will assist them to stay relevant and take on more leadership roles in the future.

Expansion in and outside of the traditional domain areas is certain and the future actuary must be prepared to continuously learn and adapt. Recently emerging issues such as ESG, climate risk, data analytics and AI, all illustrate new areas where the actuarial skill set can be applied in many valuable ways.

The risks and opportunities do vary from market to market, with those in more mature economies facing challenges such as M&A activities, consumer regulation defining products and data privacy regulations. For those in quickly growing economies, the pace of change will be even faster, as regulators and products may leapfrog the development taken by the more mature economies (e.g., starting off with a critical illness product covering 100 diseases versus 3).

The risks and opportunities for the individual actuary will vary from market to market. The individual actuary must invest in their own development, continuously improving their hard skills as well as soft skills, while, if desired, looking for opportunities to move into wider fields.

The IAA's mission is to support the development of the actuarial profession and its member associations to sustain the relevance of the actuary. The approach should be strategic rather than reactive.

This report of the first Future Actuary taskforce has identified the risks and opportunities for the profession as well as the individual actuary.

To address these risks and opportunities, it is proposed that a taskforce be created to identify and evaluate any gaps in skills against the emerging opportunities and propose how actuarial associations can potentially address them. In addition, a "Brand Actuary" task force should be considered. This taskforce would examine how to increase the demand and supply of actuaries by creating a global branding exercise that could be used by the IAA and the actuarial associations.



2 Risk and Opportunity Radar - The Actuarial Profession

The risks and opportunities for the actuarial profession can differ across the world due to various factors. One way to identify risk and opportunities for the profession is to contrast the difference in environments between mature economies and relatively fast-growing economies.

2.1 Mature vs Fast Growing Economies

Table 1

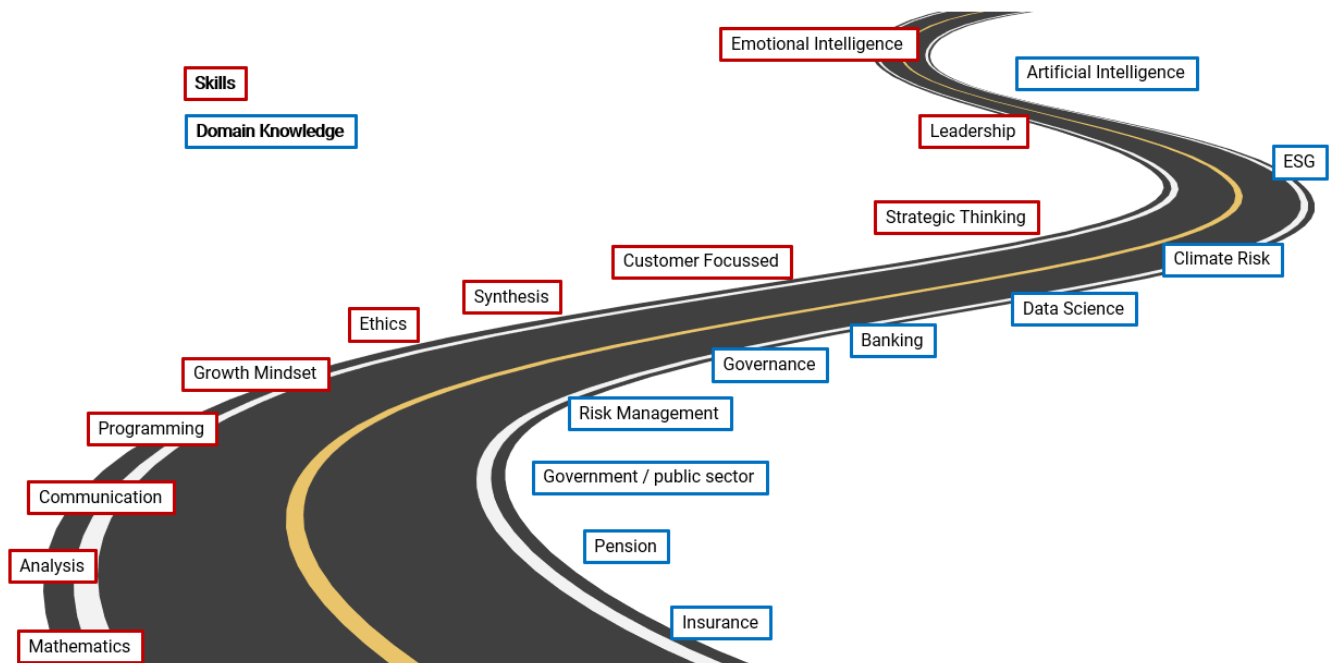
Description/Factor	Mature Economies	Fast-Growing Economies
Growth	Slow or no growth	growing quickly May leapfrog steps that mature economies took
Regulations	Stable, established regulations	Modernizing towards Solvency II or similar policies
Demographics	Aging population	Growing or younger population
Actuaries in regulatory roles	Regulatory role exists for actuaries	May or may not have a regulatory role for actuaries
Actuarial association	Established actuarial association(s)	May nor may not have an actuarial association
Consumer rights	Consumer rights well embedded	Consumer rights may not be well founded
Number of actuaries	Larger number of actuaries	Smaller number of actuaries
Data - availability and quality	Likely to have more data, not only within the industry but from other sources and may be impacted by data regulations.	Likely not as much reliable data available.
Examples	Canada, Europe, Japan, Korea, Singapore, US	Indonesia, Vietnam, India

While mature and fast-growing economies require similar actuarial skills and domain knowledge, the risks that the profession faces in each case differ.

2.2 Skills and Domain Knowledge – Mature and Fast-Growing Economies

Both mature and fast-growing economies require similar actuarial skills and domain knowledge:

Figure 1 Skills and Domain Knowledge



The public may be aware of the fundamental proficiencies such as mathematics, analysis, communication, risk management and professionalism that actuaries have mastered. However, less recognized are skills such as synthesis and the ability to connect information from disparate sources, strategic thinking and leadership. Backing this skillset, is a growth mindset which is highly supported with continuing education ([Appendix 1](#)) and professional judgement backed by a professional code of conduct.

Although the skills do not vary based on the type of economy, in a fast-growing economy an actuary may often be called upon to be more of a generalist than a specialist, depending on the size of the actuarial team.

In a region where the actuarial profession is small, it can be difficult to learn actuarial skills once in the role. It is important for the individual actuary to find a mentor or use consultants and seek out support as needed.

Some skills such as leadership and strategic thinking may be called upon even more in fast growing economies, as the individual actuary may have greater responsibilities working within a small team.

It is important that actuaries and the actuarial profession remain relevant by developing and growing the skill set as the requirements evolve. A gap analysis and skill development task force could be set up to identify and evaluate gaps in skills and propose how the actuarial associations in those markets can potentially address them.

2.3 Risks: Mature Economies

There are many factors that are impacting the ability of the actuary to contribute today and will influence their contributions in the future.

Macro-economic factors that can material impact how actuaries conduct their assignments includes data privacy regulation, consumer regulations and nationalization ([Appendix 2](#)). Macro-

economic factors are difficult to directly control, but some may be managed by engaging with a local regulator.

The risk to the actuarial profession is fundamentally a question of supply and demand, with both needing to be managed actively. Attracting talent could be challenging and the IAA and FMAs should explore ways to reach potential actuaries and the traditional gatekeepers (e.g., teachers and university professors). Development of a “Brand Actuary” that describes the work, skills and possibilities of the profession, could assist FMAs that don’t necessarily have the resources to develop this on their own.

Creating demand for actuaries, especially beyond the traditional domain roles, can be limited by a lack of understanding of what actuaries can contribute. To support actuaries, both in traditional and non-traditional domains and roles, the profession can assist with selling “Brand Actuaries” to employers by emphasizing the fact that actuaries bring value well beyond the limited contribution assumed by the stereotypes that employers may have.

The concept of Brand Actuary is to build a global branding campaign about the skills and knowledge that actuaries have, so as to assist with both demand and supply of actuaries. This concept will be explored further in a future taskforce.

The biggest risk, that is currently being managed, is the profession having an inward focus and hubris, and not see the risks facing it from other domains.

2.4 Risks: Fast-Growing Economies

The risks faced in the fast-growing economies can be similar to the mature economies, however there are some differences.

The macro-economic factors can differ, as there may be a focus to grow the economy and to launch inclusive insurance products. The social security schemes may not be supportive except for the poorest. The knowledge of insurance products in the general population, and actuaries as a profession, may be low.

Attracting talent can be very difficult, especially if there are few actuaries in a country. English language examination system, fees or the requirement for a university education, which might have to be pursued overseas if there is no actuarial curriculum, can be a barrier to enter the profession. There may not even be demand in the traditional domains, especially if it is not in the regulator’s focus ([Appendix 3](#)).

This is where a “Brand Actuary” campaign could be impactful. In countries with few actuaries, starting with the regulators and local companies in traditional domains may be helpful, to create awareness and demand. Simultaneously, there could be a push to build supply.

2.5 Opportunities: Mature Economies

Actuaries have strong domain knowledge in the traditional actuarial fields (e.g., insurance, pension). However, domain knowledge will need to expand into new topics, not only for actuaries in wider fields, but for those within the traditional fields. Some examples of opportunities for actuaries and the profession include risk management, banking, ESG (Environment, Social, Governance) topics, climate change, artificial intelligence, public sector and others ([Appendix 4](#)).

The skills that actuaries possess today and are expanding for the future will assist them to venture into new domains.

The “Brand Actuary” campaign can be impactful to support these efforts. It can be used as a marketing tool to educate new employers about the skills that actuaries possess, but as well, attract talent into the profession when they see the wider scope for career paths.

2.6 Opportunities: Fast-Growing Economies

The domain knowledge may be more restricted to the traditional areas (e.g., Insurance) depending on the size of the actuarial profession. However, the fast-growing economies may reference more mature economies when developing regulations, or as global standards are implemented (Appendix 5). Actuaries will need to keep pace with those changes.

3 Risk and Opportunity Radar – The Individual Actuary

The market the actuary is in, whether a fast growing economy or a mature economy will impact the roles available for the actuary. In addition, the actuarial qualification system (whether university based, exam based or a combination) will impact how the hard skills and soft skills are acquired.

However, actuarial career development will generally follow the same large themes as discussed below.

Figure 2: The Individual Actuary - Career



At the start of the career, there could be a focus on the hard mathematical and programming skills. As they progress, financial literacy, knowledge of technology and the domain knowledge will grow and take on a greater focus. As they reach the height of the career, risk management and the ability to synthesis this information will be needed, but there will be a much deeper reliance on the soft skills, depending on the role.

As an actuary, being adaptable, persistent, and determined will be useful. As the domain knowledge increases, the ability to synthesis the information from various sources and remain curious and with a growth mindset¹ will help in any role, whether it is traditional or non-traditional.

As the actuary matures into management and other influential leadership roles, professionalism, strategic thinking, and emotional intelligence will all be needed.

4 Next Steps

Considering the identified risks and opportunities to the actuarial profession, as well as the individual actuary, the Future Actuary Task Force proposes that:

- a. Share this report with Member Associations to create awareness about the risks and opportunities for the profession and encourage each association to develop a plan to identify and address the risks and opportunities for the profession and the association, locally.

It is our hope that this paper will inspire the actuarial associations to work on some of the issues that can be managed locally (e.g., consumer regulation, data privacy) and bring the actuary's voice and perspective to these issues. New opportunities are developing for climate impact modelling, new ways of reducing protection gaps and the challenges of potential future pandemics.

- b. One or two workstreams be created for the following tasks:
 - Gap analysis and Skill Development – to identify and evaluate gaps in skills against the emerging opportunities in mature as well as fast growing economies, and propose how the actuarial associations in those markets can potentially address them; and
 - Supply and Demand – to examine the supply and demand for the future actuary, including how to create a “Brand Actuary”.

Actuaries have much to offer, and it is our responsibility to the public to stay relevant and use our knowledge and skills to enhance the wellbeing of society.

Future Actuary Task Force Members

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¹ https://en.wikipedia.org/wiki/Mindset#Fixed_and_growth_mindset

Appendices

Appendix 1 – Skills and Domain knowledge of Actuaries

Skill	Descriptor
Synthesis	ability to pull together information from many disparate sources and identify the connections
Analytical Skills	strong analytical skills that can be applied in non-traditional, broader fields for managing financial risks
Programming and data analytic skills	All actuaries need to understand the basic concepts of data analytics <ul style="list-style-type: none"> • This is a natural skillset of the actuary and the demand to be able to do this will continue to increase. • Many actuarial associations are already addressing this demand and offer courses and qualifications
Strategic Thinking	Actuaries possess strong synthesis skills and these capabilities should be put to use to bring the thinking up to a higher level
Leadership	Demonstrate and take leadership on topics that are important to society
Emotional intelligence	This is vital in order to be able to lead

Appendix 2 – Risks in Mature Economies

Macro-Economic factors:

Macro-economic factors are difficult to directly control, but some may be managed by engaging with a local regulator.

Macro-economic factor	Impact
Data privacy	as data is the backbone of actuarial work, what happens as data must become more anonymized? Data crossing national borders is becoming difficult. How can the work be appropriately done, especially for multinationals?
Nationalization	the inability for actuaries and actuarial work to cross-borders. This is particularly acute in countries that have quotas for nationals to have roles, but yet don't have a robust actuarial pool of talent, as well as the inability of data to cross-borders.
Outsourcing of actuarial jobs	while the receiving economy is the beneficiary, what does this mean for growing the pipeline of talent in sending country?
M&A activities	this reduces the pool of available jobs
Consumer regulations	the consumer regulations may make it difficult to properly price risk (e.g., data protection) or mandated benefits that are not actuarially sound. The fight for customers may also create tension between management and actuaries who are bound to maintain standards of practice.
Capital requirements	the increased need for regulatory capital, with the goal of reducing the risk of bankruptcy, has the potential consequence of making insurance products less risky for the insurer and hence more for the insured. The most prominent example of this is the interest rate risk being shifted to the consumer. This can impact the profession if consumers do not understand what is being purchased and can damage the credibility of the actuarial profession.

Actuarial Profession factors:

The risk to the profession is fundamentally a question of supply and demand, with both needing to be managed actively.

Risks Relating to Supply	Risks Relating to Demand
<p>Challenges in attracting talent – this will need to be managed actively in a number of ways:</p> <ul style="list-style-type: none"> • Careers with an initial similar skill set (e.g., data scientist) could appear more attractive in the short term • Diversity Equity and Inclusion (DEI) –the profession may be not getting the best talent if it is not seen as inclusive. While the profession is mainly merit based, through an examination system, there could be barriers with representation, cost and cultural factors. 	<p>Lack of awareness among potential employers</p> <ul style="list-style-type: none"> • Moving into broader fields can be limited by a lack of understanding as to exactly what actuaries can contribute. Actuaries can bring their skills to synthesize information, financial literacy, risk management lens and analytical ability, to nearly any domain that interests the individual. The profession can support the individuals wishing to make these career steps. • Even within the traditional domains, the demand needs to be actively managed by not only the individual actuary but the larger profession. • The growth in demand for AI and data science capabilities does not have to negatively impact the demand for actuaries. However, the added value of actuaries and how these professions can work best together can be better appreciated.
<p>Barriers for entry into the profession mid-career – For those who wish to pursue actuarial roles mid-career, the absence of the appropriate educational background may prove to be a high barrier for entry into the profession. This could be examined as people are expected to have multiple careers over their working lifetime, although an actuarial position may not be their first career step.</p>	<p>Increased competition for C-Suite roles -In the past, in some markets, actuaries were de facto in the C-Suite. This is currently not true for many mature markets. There is more competition for the C-Suite, and actuaries could sell themselves better and be open to new challenges outside of statutory roles to be seen as contenders for the C-Suite (CEO, CFO, COO, CRO, etc.).</p>
<p>Lack of interest to go into traditional roles – regulatory roles, such as Appointed Actuary, may become less attractive as a career path.</p>	

Appendix 3 – Risks in Fast Growing Economies

Macro-economic factor	Impact
Data availability	this will differ from market to market
Regulation	<p>The regulator may be understaffed and not from a finance background</p> <ul style="list-style-type: none"> • the finance regulators may have a stronger focus on banking regulation and not always see the differences among all the businesses • it may or may not define the role of the Appointed Actuary • the defining of the role of the Appointed Actuary helps sell Brand Actuary. However, there needs to be realistic expectations when defining a role and the current skill set available in the market • the regulation may also quickly move to a Solvency II or IFRS17 where the insurance companies are not well prepared to handle with their current data availability
Grow at any cost	The push for growth may make it difficult for the actuary to implement proper risk management but will have the accountability if losses occur
Foreign talent	<ul style="list-style-type: none"> • For markets without local talent, having to constantly import in talent for roles but without any ongoing development of local talent. • This can also be expensive and hence the work that is done by the foreign talent is limited in scope to keep costs down and not allow enough opportunities for training and development.

Macro-economic factor	Impact
	<ul style="list-style-type: none"> The foreign talent may be on a constant rotation with no view on long term growth for staff

Actuarial Profession factors:

Challenge	Impact
Challenges in attracting talent	if there are only a few actuaries in the country, letting young people know of this career option is difficult. Barriers can include: English language examination systems, fees, or the requirement for a university education.
Need to expand beyond statutory roles	Otherwise, this will hamper the development and attractiveness of the profession
Gatekeepers	The profession has to be sold not only to employers, but to traditional gate keepers such as university professors
Challenges to produce demand	An education process is needed if the actuarial profession is not well known and if it is not in the regulators focus.
No regulatory role; membership in the association is not a requirement²	In some countries (e.g., Mexico) individuals referred to as “actuaries” are not required to be members of an actuarial association and are not held to the professional standards. This can be exaggerated where there are no regulated actuarial roles, or the regulated actuarial role does not require membership with the actuarial association. This could have potential reputational risk to the profession and material impact to the actuarial association.

Appendix 4: Opportunities: Mature Economies

Opportunities	
Risk Management	enterprise risk knowledge could be expanded to include information security, third party risk management and other non-core actuarial topics
Banking	Insurance regulations are harmonizing with banking and regulators can be responsible for the entire financial system. Besides opportunities for careers, understanding the regulators point of view will assist with communication.
ESG (Environment / Social / Governance) topics	this is an exciting opportunity for actuaries to get involved and develop good governance surrounding the reporting and understanding of this data.
Climate risk	this is a rapidly evolving risk that has a received much public attention.
Artificial intelligence	actuaries can lean on their professionalism and ethics training to develop and use AI and the data behind it appropriately and ethically,
Government / public sector	as regulators and regulations become more sophisticated and complicated, opportunities will certainly arise

Appendix 5: Opportunities: Fast-Growing Economies

Opportunities	
Pension development	will depend on the social security system.

² Although we have identified this as a risk in fast-growing economies, some mature economies may face the same risk (e.g., France); further information may be gathered in the next steps following this report.

Opportunities	
Risk Management	will develop and mature alongside the regulation
Banking	will depend on the distribution channels of insurance, so that actuaries have that touch point into the banking world
ESG (Environment / Social / Governance) topics	will likely have to develop at the same pace as the Mature Economies as global standards are implemented.
Climate risk	

Appendix 6 – Activities per the Statement of Intent

Output	<p>Risk & Opportunity Radar</p> <p>Format to be a report, with supporting infographic.</p> <p>The report:</p> <ul style="list-style-type: none"> • Is for IAA's members, with breakdown of regional differences and similarities • Would include recommendations of what to do with the information & next possible steps
Timeline	12 months (started May 2022)
Resources	4–5-person task force + 1 IAA Secretarial support (Amali)
Actions	<ul style="list-style-type: none"> • Engage with members to determine what work has already been done. Gather and collate this information. • Analyze information for local, regional & global trends. • Create the report.
Outcome	Greater understanding of threats & opportunities to the actuarial profession with the goal of making it more resilient.