Institute and Faculty of Actuaries

Role of the Actuary in Health & Care

REPORT OF THE IFOA HEALTH & CARE WORKING PARTY

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1. Introduction

1.1 Objective of the IFoA

The Institute and Faculty of Actuaries (IFoA) is the UK's only chartered professional body dedicated to educating, developing and regulating actuaries based both in the UK and internationally. The IFoA's purpose is 'To be the voice of actuaries, and to support, develop and be the voice of our members.'

The IFoA's values are:

- Member-focused: The IFoA puts members at the heart of everything they do;
- Action-oriented: The IFoA works hard, works smart and takes pride in getting things done, valuing action over perfection;
- Forward- and outward- looking: The IFoA is always looking to be bold and improve, innovate, and take the next step; and
- Team-driven: The IFoA works in partnership, advancing together as one IFoA.

In addition, the IFoA seeks to find ways the profession can work in line with and uphold its Royal Charter. Under that Royal Charter the IFoA has a duty to regulate the actuarial profession in the public interest. This applies to all areas of the regulatory role such as qualifications, developing materials to support and educate about professionalism and compliance. The IFoA seeks to ensure the public has confidence in the work of actuaries. The IFoA's policy and public affairs work seeks to inform and influence public policy, legislation and regulation to promote decisions and systems that serve the public interest. This is done by working with members to promote the relevance and value that actuaries' expertise and long-term perspective can add to the understanding and good management of risks across society over time. Further information can be found on the IFoA's website (Institute and Faculty of Actuaries (IFoA)).

With this in mind, the IFoA's Health and Care Research Sub-committee which supports the Health and Care Practice Board of the IFoA, created a working party in 2021 to consider the Role of the Actuary within Health and Care in our society.

1.2 Objective of the working party

Out of over 30,000 members of the IFoA in December 2016, only 440 (1.5%) identified health and

care as being a practice area. However, with the COVID-19 pandemic and stresses on health care financing systems throughout the world, Health and Care is garnering increased attention amongst actuaries within and outside the UK.

This paper describes:

- the existing roles of actuaries in Health and Care including the main areas IFoA members work within in relation to the health and care sector in the UK and abroad;
- potential for expansion both within and outside the insurance industry, including supporting public health care systems and policy makers;
- the barriers to more engagement of actuaries in Health & Care; and
- Suggestions for how the IFoA can better equip and enable its members to expand and deepen their involvement in Health and Care.

Further information can be found on the IFoA's website (Institute and Faculty of Actuaries (IFoA)).

1.3 Scope of research undertaken

The four countries with the highest number of IFoA members outside the UK are China, India, Ireland and South Africa. The working party therefore focused attention on these countries.

The working party undertook secondary desktop research and quantitative research of examination and membership qualification data. Primary qualitative research was undertaken through surveys of members and interviews with actuaries and non-actuaries working in the health and care sector.

The authors of this paper are indebted to the authors of the paper "The Role of the Actuary in Healthcare: Where are we, and where are we going?" (Dyson) which was written in 2003 for an Australian audience. The paper made reference in its introduction to the question posed by the UK profession's sixth annual Health Care Conference: "Are we treading water in the area of healthcare provision, or are we really making the most of the opportunities that exist?"

This working party have considered this question within scope for this research; that is, we believe it is timely in 2021 to re-examine this question, not just for the those of the IFOA's members based in the UK, but for the IFoA's growing international member community.

1.4 Key findings

Through the working party's efforts to date, the following key findings are provided. These are not

exhaustive and further effort may provide more detailed understanding. However, with the IFoA's values in mind, these are proposed to be a basis for considering action, rather than the result of perfection in our research.

- Actuaries specializing in the health and care sector remain a distinct minority in the UK. The proportion is significantly higher in some other countries.
- The forces that influence actuarial involvement in health and care within and outside the UK are likely related to government health finance policy and financing as well as the structure of the insurance market.
- Supply of health and care actuaries through the IFoA examinations
    - An increased number of non-UK candidates for all examinations reflects the IFoA becoming more global, partly through its association with other countries' actuarial bodies.
    - Health & Care examinations are more popular amongst non-UK candidates not only in number but also in terms of rank amongst all specialist subjects. This is thought to be driven by the potential for private insurance to play a role in health care financing in other markets relative to the UK.
    - A 40% higher success rate for UK candidates notwithstanding 85% lower participation relative to non-UK candidates could be due a multitude of reasons which may include differences between the availability in and outside the UK of study support and exam preparation assistance, understanding and relevance of course material. For exams being taken earlier in the curriculum having English as a second language may also be a reason for candidates in countries where English is not widely spoken .
    - Given that international Health and Care candidates outnumber UK candidates twofold, it is important that the IFoA continues its efforts to ensure the examination syllabus is relevant to international candidates and is flexible to global emerging trends, notwithstanding the specificity of local health care financing systems.
- Views of stakeholders in Health and Care of actuaries:
    - In cases where the interview participant was aware of actuaries and the profession, the reflections of the known characters are positive, and these reflections are extended to the wider actuarial profession. Actuaries were considered as professionals who can add value through good communication of technical concepts to a diverse audience.
    - When the participant was unaware of actuaries or the profession, there is little to no grounding to know how actuaries can contribute.
    - There is a distinction between the role of an actuary and the role of the actuarial profession. The role of the profession is seen as potentially one of advocacy; to steer

policy, regulation, showcase solutions within government departments, and be a Profession to consult.

    - When considering the barriers to engagement, it would appear that the lack of awareness of the actuarial profession within the health sector is key.

- Views of IFoA members with an interest in health and care:
    - Our poll highlighted opportunities for inclusion of more areas of knowledge in the actuarial curriculum that are relevant internationally in health care financing.
    - Responses highlighted the value that a broad actuarial skillset, but more importantly, real- world experience as an actuary can bring to the health and care sector.
    - Many actuaries perceive themselves as engaging in health and care as part of their work in the insurance sector even when it is not their primary focus. However, barriers to engagement in other parts of the health and care sector are evident amongst members. These include a lack of clarity around entry points or the value that an actuarial skillset and experience can add.
- Roles for Health and Care Actuaries
    - Within insurance, health and care actuaries may take varied roles. There are many peer actuaries who work in these areas and support members.
    - Beyond the private insurance industry, it is our opinion that the actuarial profession could create additional value for society by working across the continuum and in various forms of health systems arrangements. This could be achieved by communicating and displaying the value the actuarial expertise and profession can bring to the objective of the stakeholders in that area.

1.5 Report structure

The reader will find in the following main areas of this report:

- Section 2: Overview of the market for actuarial services in health and care. An overview of health care financing and the role of private health insurance in each of the five countries in scope is provided as the background to drivers for the market for actuarial services in health and care. We appreciate the work of the authors of the IAAHS paper which provides a valuable overview of health system financing by country (Society of Actuaries USA).
- Section 3: The supply of health and care actuaries from the IFoA's qualification process. This analysis is supported by quantitative analysis on secondary data provided by various actuarial professions. We appreciate the support of the Education teams at the IFoA, the Institute of Actuaries of India (IAI) and the Society of Actuaries (SoA).

- Section 4: Feedback from the industry through qualitative interviews. We appreciate the time provided to us by interview participants.
- Section 5: Perceptions from IFoA members with an interest in health and care of the health and care examinations, motivations to engage in health and care, barriers to engagement and areas of support that the IFoA could provide. This section summarizes the results of a 15-question poll distributed through social media and emails to IFoA members.
- Section 6: Existing roles undertaken by actuaries in the health and care sector and the potential for further opportunities.

2. An overview of the market for actuarial services in health and care

The four countries with the highest number of IFoA members outside the UK are China, India, Ireland and South Africa (Institute and Faculty of Actuaries (IFoA)). Although it is not our intention to examine the health and care systems of each of these countries in detail, we aim to provide commentary on key differences or similarities in the hope that this will contextualize our discussion of the factors influencing actuarial involvement in health and care.

As the next section details, Health and Care actuaries in the UK are a distinct minority, compared to other countries. The structure of the health and care system within a country, the level of regulation and insurance provision can be considered main factors in the market for actuarial services in health and care. For example, in the UK the existence of the National Health Service since 1948, providing universal health coverage to all residents in the UK that is centrally funded with one of its most well-known pledges being virtually no fees or charges to patients, leaves a relatively small insurance-based health and care market. However, it does not necessarily follow that there is no need for actuarial expertise, only that the market has not created such a demand.

The IFoA's membership outside the UK exceeds IFoA membership in the UK and is growing quickly. Over 65% of the IFoA's student members reside outside the UK. In this section, the forces at play influencing actuarial involvement in health and care within and outside the UK are considered. These forces include health financing policy and financing sources, and the role of public or private insurers in health financing.

Several excellent resources are publicly available which describe the health care financing systems of the UK and other countries (R. a. Tikkanen) and (Mossialos) . While it is outside the scope of this working party to comprehensively describe the workings of these systems in detail,

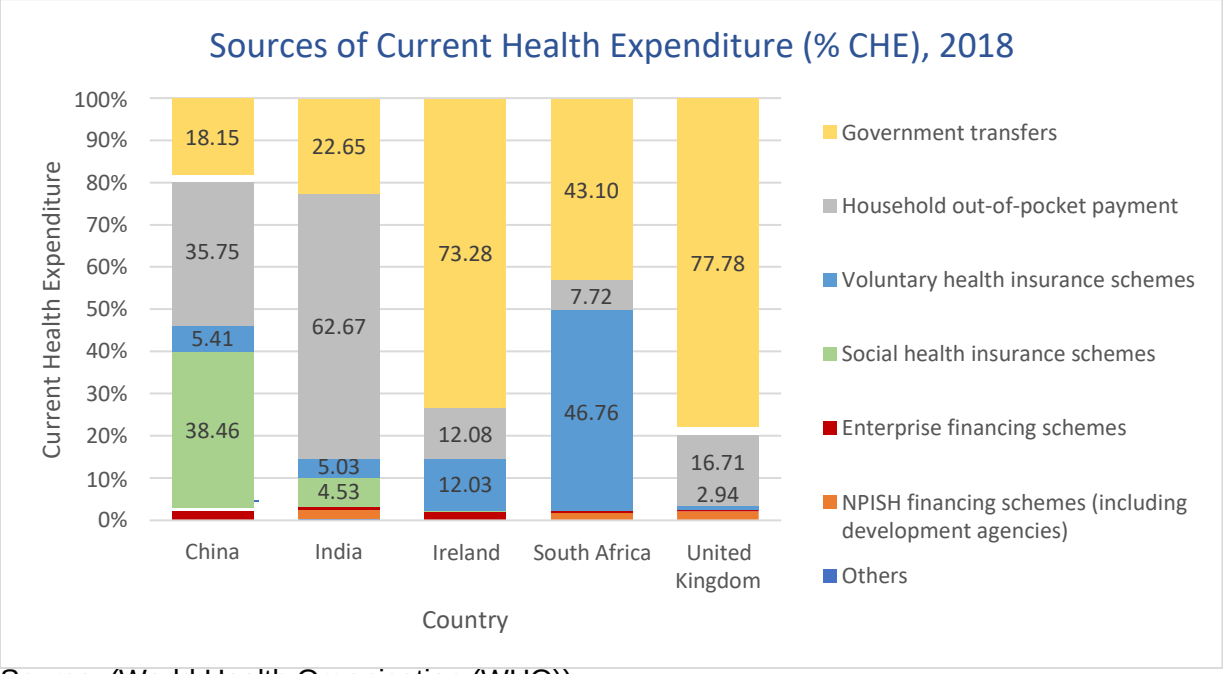
we present in this section diagrams reproduced with permission from the "International Health Care Funding Report" produced by the IAAHS in 2020 which illustrate these health care financing systems and highlight the roles of the key players in these systems.

2.1 Health financing structure

The World Health Organization (WHO) reports current health expenditure (CHE) data collected from individual countries classified in general by financing arrangement. However, each country's financing system is unique, and typically involves a complex interplay between public and private financing sources that reflects historical, socio-economic, cultural and political influences.

In the chart below, the distribution of CHE for the five countries in scope is shown to highlight the key differences in financing systems. Not only are there different ratios of public to private financing sources, but also the financing arrangements that distribute those funds, and the extent to which the population is covered by a risk-pooling or government arrangement.

Figure 1: Sources of Current Health Expenditure, 2018 - for those countries in scope



Source: (World Health Organisation (WHO))
*NPISH refers to non-profit institutions serving households
Government transfers refers to government expenditures on health by national agencies (e.g. Ministries of Health) which are captured in the national government accounting and reporting system.

Each devolved nation in the UK has a department of health and a national health service operated by a central authority (for example, NHS England, NHS Scotland, NHS Wales and Health and Social Care (HSC) in Northern Ireland); this is the key driver of health care spending in those countries. Within the UK, the NHS is free to the user at the point of care, one of its key founding principles. It is responsible for delivery of primary care and most forms of outpatient care and inpatient care. Given the clear dominance of government spending on health, private health insurance in the UK is typically purchased by individuals or by employers on behalf of employees as supplementary insurance to access private clinics and hospitals.

In the Republic of Ireland, there is a Health Service Executive (HSE). Most services are free for Medical Card holders; residents under a qualifying income. Those not entitled to a Medical Card pay fees for certain health services. Due to this different funding system, there is more of a need and market for private health insurance. Indeed, this health system is known for its lifetime community rating insurance system (Public Policy Ireland).

South Africa‘s tax-funded public health care services are estimated to be utilized by 84% (Ataguba) of the population, who nevertheless pay out-of-pocket to use private sector primary care providers and pharmacies. Voluntary health insurance in South Africa takes the form of private medical schemes. Some are restricted i.e. administered by employers on behalf of employees and dependents, some designated for specific industries, and some open to the public. With the goal of achieving universal and equitable access to care, the implementation of the National Health Insurance (NHI) in South Africa began in 2012 and is taking place in phases over 14 years. It is envisioned to ultimately take the form of a single fund, financed by mandatory contributions, and providing universal access to health care through accredited providers.

In China, social health insurance (SHI) refers to a web of different insurance schemes covering different population segments, with varying funding strategies. The Urban Employee SHI covers employees in urban areas, and contributions are funded by employees and employer payroll taxes. The design, coverage and funding composition of the Urban Employee schemes vary from one municipality to another. The Urban Residents SHI covers urban, self-employed individuals, children, students, elderly adults and others. The Rural ‘New Cooperative’ SHI covers rural residents and contributions are largely subsidized by central and provincial governments.

In India, the majority of health care expenditure remains out-of-pocket. As a significant step towards universal access to health care, a government-funded national health insurance scheme, the Ayushman Bharat, was launched in 2018 to cover India’s poor and vulnerable population,

subsuming the various state- and sector-based health insurance schemes that have been operating across the country. Voluntary and social health insurance remain small but with growing health care expenditure over half of total health care expenditure remains out-of-pocket.

2.2 Private insurance

The role of private health insurance varies according to the structure and maturity of each health care financing system.

In the UK, the NHS dominates both delivery and financing of health care services; in 2015 around 10% (LaingBuisson) of the population were covered by a private health insurance plan. Individuals and employers may purchase private health insurance. This is done primarily to: access care sooner (including secondary and dental), gain financial reimbursement (cash plans), access a wider range of treatment options, have freedom to choose practitioner and facility, and access international or travel coverage. The private health insurance market is highly concentrated, with 90% of premiums being written by only four insurers i.e. Bupa, AXA PPP, Aviva and Prudential / Vitality in 2016, of which over half is written by Bupa alone (Mordon Intelligence). Some providers, such as Bupa, also run various health provision services including hospitals, outpatient clinics, dental centres and digital services. Aged care facilities may also be run by these companies in the UK. This also occurs in other countries including Australia, Spain and New Zealand.

In the Republic of Ireland, the Health Insurance Authority (HIA) plays a key role in regulating the voluntary private health insurance market, including defining the lifetime community rating system and operating a risk equalization fund amongst private health insurers. Three insurers (Irish Life, Laya, VHI) offer open private health plans, however premiums for restricted plans are a small proportion (3.8% in 2019) of overall contributions. Statistics published by the HIA showed 2.3 million people in Ireland, or 46.2% of the population owning an inpatient health insurance plan as of December 2020 (Health Insurance Authority Ireland).

In China and India, health insurers play diverse supporting roles in the health care system. The roles played have evolved over recent decades due to periods of rapid economic growth, and social and demographic change.

In China, health insurance companies perform the following roles:

- **Operators of social health insurance (SHI) schemes**

  Several SHI schemes are administered by insurance companies in return for administration fees. For example, the rural residents' co-operative scheme, Urban Employees SHI and Severe Illnesses SHI in some municipalities. Insurance companies may provide technical support to improve the efficiency of enterprise operations.

- **Complementary to SHI schemes**

  There is widespread population coverage by SHI; in 2011 95% of the population was enrolled in some form of SHI (R. O. Tikkanen). However, there are significant gaps in reimbursement of eligible expenses due to co- payments and deductibles, and restrictions on which health care expenditure are considered eligible for coverage. This leaves scope for products which complement SHI. Employers fund compulsory employer SHI contributions and many also purchase voluntary group benefits from private health insurers. These private benefits reimburse, at least in part, copayments, deductibles, and expenditure not eligible under SHI. These voluntary private group insurance plans are known as "Qibu". Citizens may purchase individual products known as "City Customized Supplementary Insurance" in order to meet the medical needs for catastrophic illnesses. These generally have high annual deductibles, broad coverage in benefit design, and less stringent underwriting requirements.

- **Supplementary coverage for access to better health care facilities**

  Private health insurance may also be purchased by different segments of the population to gain access to better medical resources, including private treatment including private wards in public hospitals, medicines or treatments out of SHI scope, faster access to care and a wider and new range of preventive health or well-being services.

- **Development of alternative health care ecosystems**

  Provider solutions powered by technology and artificial intelligence are also supported by health insurance companies. Health insurers are keen to invest in or co-operate with InsurTech companies who provide solutions all along the health insurance value chain including online distribution, third party administration, automatic underwriting, automatic claims management, health management, and pharmacy benefit management.

In India there are also multiple examples of public-private partnerships in health care financing, with private health insurance companies providing administration, data analytics and reporting, enrolment and claims management services to publicly financed insurance schemes for population segments such as the poor and vulnerable. For example, before Ayushman Bharat was launched the Rashtriya Swasthya Bima Yojana (RSBY), one of the largest health insurance schemes

operating at a state or sector level, played a key role as health insurer. These schemes funded private health care providers which often operated individually and in a fragmented way to provide care to members of the scheme. Because a large proportion of health care expenditure remains out-of-pocket, the Insurance Regulatory and Development Authority of India (IRDAI) has continually encouraged voluntary take-up of health insurance in India through standardization of product guidelines and tax benefits.

Mediclaim is a tax-deductible health insurance plan first launched in the 1980s which covers inpatient treatment up to pre-specified sums assured for individuals and families, and group benefits for employers. Insurers are free to differentiate their Mediclaim offerings and innovate through benefits or additional services. At the start of the COVID-19 pandemic in 2020, to encourage the take-up of voluntary health insurance the IRDAI announced that all non-life and health insurers had to offer the Arogya Sanjevani. The Arogya Sanjevani is a standard “no-frills” basic insurance policy covering hospitalization expenses, up to a maximum sum assured stipulated by IRDAI. Health insurance in India has long been regarded as the purview of non-life insurance companies with 25 non-life insurers and 5 specialist health insurers offering Mediclaim policies. Health insurance regulation changed in 2016 in India to specifically exclude life insurers from selling standalone medical reimbursement plans; these companies were limited to write “Combi” or long-term savings products bundled with health insurance. However in 2020, the IRDAI announced that it would be reviewing this restriction (Insurance Regulatory and Development Authority of India).

South Africa is widely described as having a two-tier system in which private health insurance serves primarily middle and upper-middle income customers and employees, providing them access to high quality and comprehensive health care at a relatively high cost. In South Africa, private health insurance providers are regulated by the Medical Schemes Act, and health insurance plans are available for individuals and families. Private medical reimbursement plans are also known as medical aid.

South Africa’s private health insurance industry is known for pioneering world-class innovation. This market was the origin of the Critical Illness insurance product in the 1980s. More recently, Discovery Health, a South African medical scheme, is credited for pioneering behavioural-science based wellness programs linked to insurance through its trademark Vitality program. This shared value insurance model links consumer behaviour to the insurance policy via a reward program; members are rewarded for healthy behaviours which in turn reduce the cost of health insurance. Other health insurance programs offer prepaid subscriptions to a network of private providers for

fees paid upfront.

2.3 Observations

The structure of the health and care system within a country, the level of regulation and insurance provision can be considered main factors in the market for actuarial services in health and care. The presence of private insurance-based solutions within the health and care market creates a traditional need for actuarial expertise. However, alternative arrangements do not necessarily imply there is no need for actuarial expertise, only that the market has not created such a demand.

3. Supply of Health & Care Actuaries to the market

This section discusses the supply of health and care actuaries via the IFoA's qualification process. This analysis is supported by quantitative analysis on secondary data provided by various actuarial professions. We appreciate the support of the Education teams at the IFoA, the Institute of Actuaries of India (IAI) and the Society of Actuaries (SoA) of the United States of America (USA). We wished to include data from the SoA due to the high number of actuaries in the USA participating in health and care.

3.1 Health & Care practice within the IFoA membership

As of August 2021, 1404, or just over 4% of IFoA members selected Health & Care as their practice area (Institute and Faculty of Actuaries (IFoA)). This number however has grown almost threefold compared to the 440 members who selected Health and Care as their practice area as at December 2016. Two thirds of these members are based outside the UK, compared to 47% of the IFOA's total membership of 34,000 members. The proportion of IFoA members in the Health & Care practice area is likely to be understated. This is because the 4% refers to the percentage of IFoA members selecting Health & Care as one of up to five practice areas in their online member's account. Some members may not have made an area selection on their profile. However, when comparing the 4% selecting Health and Care to 29% of members who selected Life insurance and 20% who selected General insurance as a practice area; it shows the membership focused in this area is in the minority.

3.2 Trends in Health & Care education of actuaries

To understand trends in education or specialization choices, past examination data comprising numbers of candidates sitting and passing exams, was gathered from the IFoA and other actuarial professions and analysed for trends. In addition, the proportion of students taking Health & Care

subjects was compared relative to other subjects. Detailed data was received from the IFoA Education team. In addition, the SOA and IAI provided less granular information which has been helpful but does not allow a direct comparison to the IFoA examination data, which covered the number of candidates sitting and passing each of the Specialist Principles (SP) and Specialist Advanced (SA) subjects over the 10 years 2011-2020 inclusive.

The full IFoA examination syllabus covers:

- Core Principles and Core Practice examinations, which are the core actuarial examinations that all aspiring actuaries are required to pass. Associateship is granted upon passing these examinations.
- Specialist Principles (SP) and Specialist Advanced (SA) examinations. Upon passing two SP examinations and one SA examination, Fellowship of IFoA is granted.
- Personal and Professional Development (PPD) is the practical work experience requirement that applies to all IFoA students on the path to becoming either an Associate or a Fellow. It is a key component of the IFoA qualification.

Health and Care Specialist Principles (SP1):

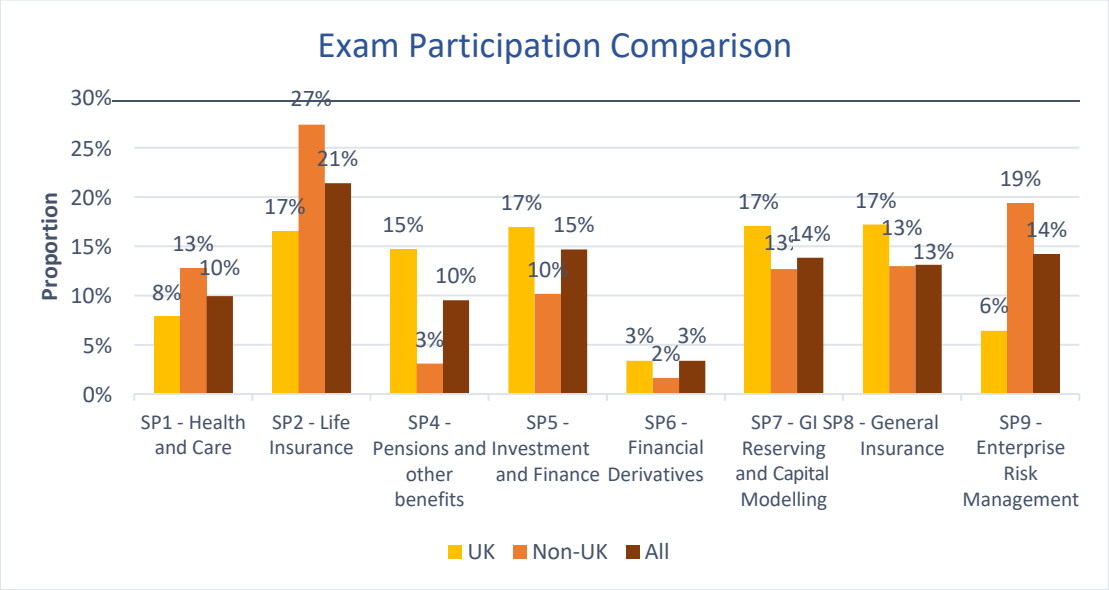
Ranking the SP exams in terms of number of candidates, it can be seen that SP1 ranks sixth in popularity for the UK but third amongst international exam sitters. Analysis of the most recent data (2019-2020) shows a similar pattern.

Table 1 Specialist Principal Exams by Subject Area

Rank by Number of participants - 2011 to 2020			
Exam	All	UK	Non-UK
SP1 - Health and Care	6	6	3
SP2 - Life Insurance	1	1	1
SP4 - Pensions and Other Benefits	7	5	7
SP5 - Investment and Finance	2	2	4
SP6 - Investment and Finance	8	8	8
SP7 - GI Capital Modelling and Reserving	4	3	5
SP8 - GI Pricing	5	4	6
SP9 - Enterprise Risk Management	3	7	2

Over the last 4 years the total number of SP1 international i.e. non-UK based exam sitters has outnumbered the UK region by approximately 85%. This reflects the relative size of the IFoA international student membership compared to UK student membership. International student participation in examinations specifically outnumbers UK participation in the Life, Health & Care, and Enterprise Risk Management exams.

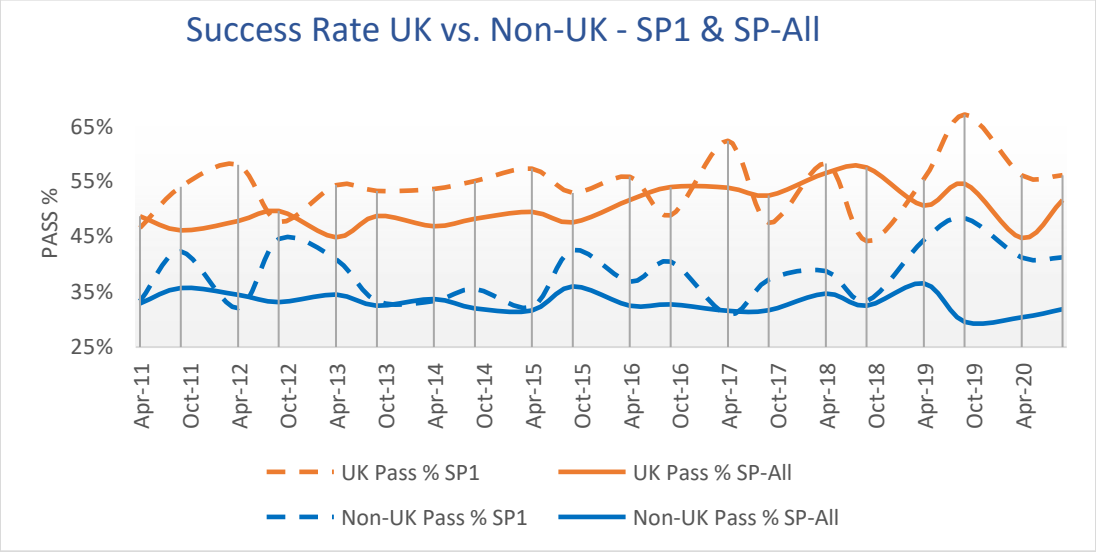
Figure 2: Exam Participation - Membership broken down to UK and Global (non-UK)



It is worth noting however that this trend does not translate to an equivalent higher number being successful in the sitting for international students. The success rate (the proportion of those presenting for the exam who passed) for the SP1 exam remains higher for UK candidates since 2011. The average over the last 4 years of data, show a 40% higher success rate for the UK SP1 candidates than non-UK candidates. However, this margin fluctuates given the relatively small number of candidates.

The IFoA's Education teams and the process of setting exams has a specific focus to ensure exam material is non-UK specific and exam setters, markers and reviewers are formed of members around the globe. It can be noted that the success rate for UK candidates always appears to be higher in April relative to the September sitting. This was not consistently seen in the non-UK candidates' success rate. It could be speculated that this may have to do with the availability and affordability of study assistance globally compared to in the UK. However, changes have been made since the COVID-19 pandemic to allow online access to tutorials. When comparing SP1 to all other SP exams, a similar pattern can be observed except the success rate for SP1 exam has been marginally higher for both UK and non-UK participants.

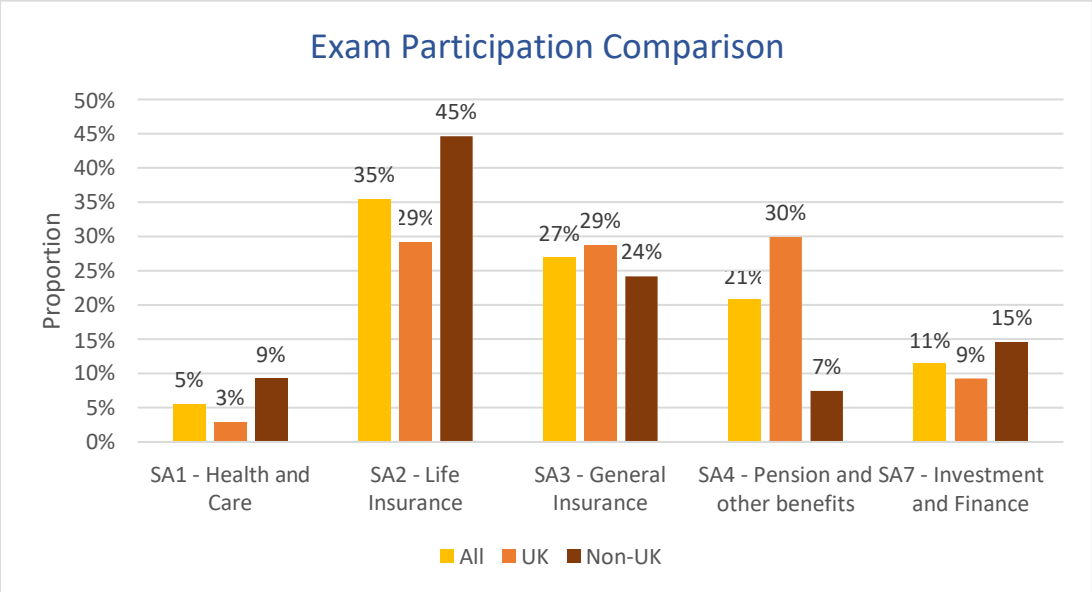
Figure 3: Success Rate of UK vs non-UK participants - SP1 and All SPs



Health and Care Specialist Advanced (SA1):

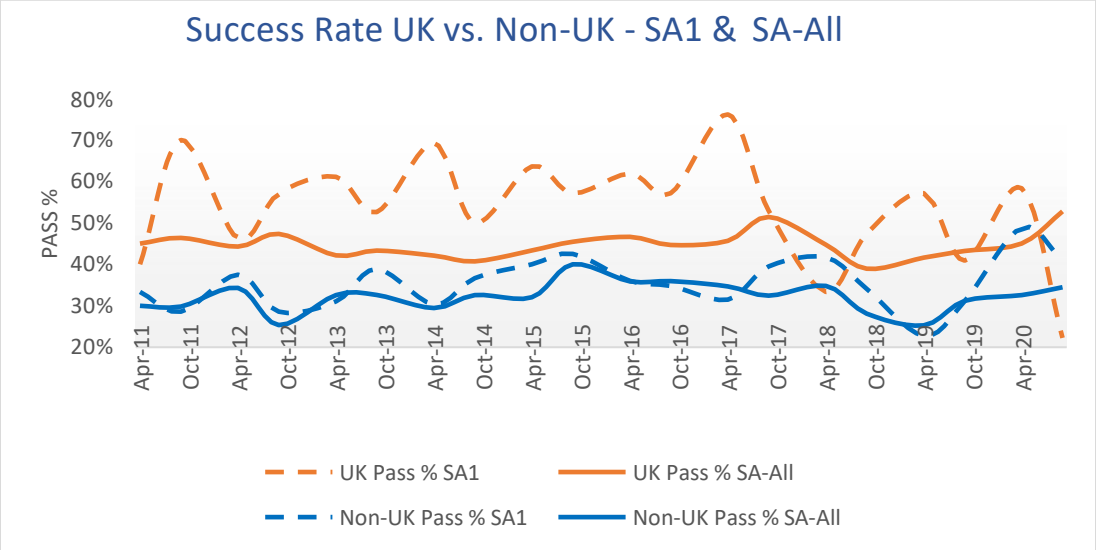
The analysis of SA1 examination data shows similar characteristics to the analysis of the examination data for the corresponding SP examination with few exceptions. Ranking the five Specialist Advanced (SA) level exams and splitting the analysis by UK and international, it can be observed that SA1 ranks lowest of the five amongst UK candidates, but fourth amongst non-UK participants over the whole 10-year period, improving to third in the last two years (2019-2020). Over the last 4 years, the total number of non-UK based exam sitters outnumbered, by nearly double, UK-based exam sitters.

Figure 4: Exam participation comparison - UK to Global membership (non-UK)



Again, as observed below this does not translate to a higher success rate for non-UK participants. The success rate for the SA1 exam continues to be higher for UK participants since 2011 on average by 40%. The graphic below shows the significant fluctuation amongst UK and non-UK exam success rate of SA1 since 2011 and other SA exams due to a small number of exam sitters.

Figure 5: Success Rate - UK and non-UK exam participants for SA1 and all SAs



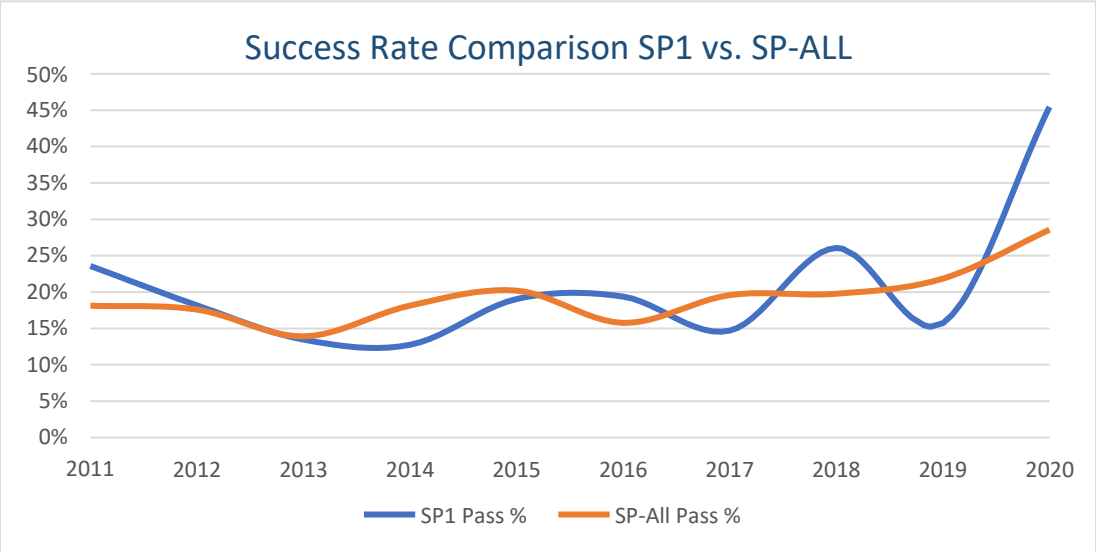
Institute of Actuaries of India (IAI):

The data shared by the Institute of Actuaries of India was limited relative to IFOA as split by exam sitting as well as exam participants' location was missing, however we can surmise that the majority of candidates were based in India. IAI provided the last 10 years of data covering the number of exam sitters and passers during 2011 to 2020 by each specialist level exam. The overall number of exam sitters has been increasing steadily since 2011.

The SP1 exam ranks 2nd amongst the seven Specialist Principles examinations in terms of number of candidates. The SA1 examination ranks 3rd, following the SA3 examination closely in terms of number of candidates.

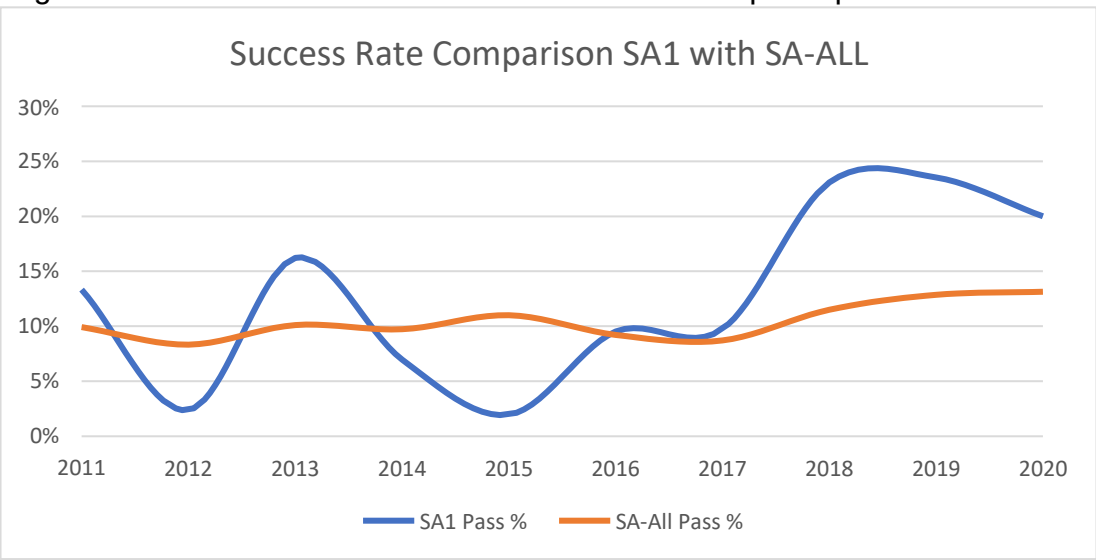
The average success rate since 2011 has been approximately 20% for all SP examinations, with SP1 aligning closely. The analysis by timing of exam session (April or September) could not be performed since this split was not provided by IAI. The success rate for all SP examinations has been steadily increasing since 2011.

Figure 6: Success Rate – SP1 and SP overall exam participants of IAI



The average success rate since 2011 has been approximately 10% for all SA examinations, with SA1 aligning closely. Since 2018, SA examination success rates have been showing an upward trend. Like the SP examinations, the overall number of exam sitters has also been increasing steadily since 2011.

Figure 7: Success Rate – SA1 and SA overall exam participants of IAI



The Society of Actuaries (SOA):

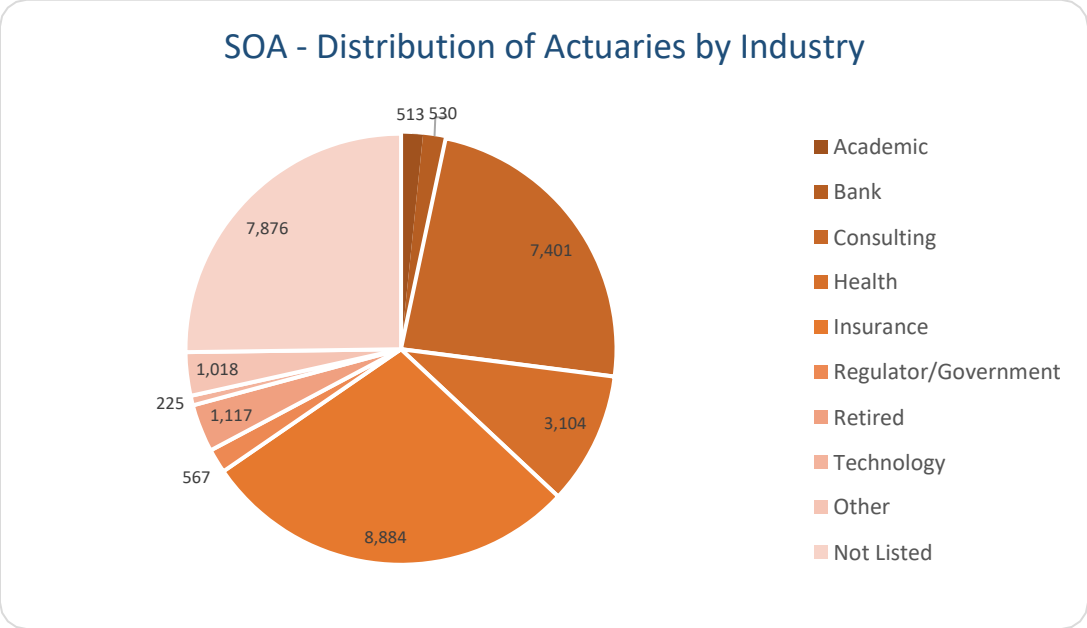
The Society of Actuaries (SOA) shared Fellow and Associate membership information split by location and industry. Approximately only 35% of SOA members are based outside United States, of which 50% are in Canada.

Table 2 : SOA members' distribution by countries

SOA - Global Spread	Fellows	Associates	Total
United States	12,556	8,025	20,581
Canada	3,422	1,685	5,107
Other	2,894	2,653	5,547
Total	**18,872**	**12,363**	**31,235**

Additionally, by analysing industry level spread of their membership, 10% were found to be aligned to the Health industry.

Figure 8: SOA members' distribution by industries



3.3 Observations

The following observations are put forward by the working party:

- An increased number of non-UK candidates for all examinations reflects the IFoA becoming more global, partly through its association with other countries' actuarial bodies.
- IFoA Health & Care examinations are more popular amongst non-UK candidates not only in number but also in terms of rank amongst all specialist subjects. We speculate that this

is driven by the potential for private insurance to play a role in health care financing in other markets relative to the UK.

- A 40% higher success rate for UK candidates notwithstanding 85% lower participation relative to non-UK could be due a multitude of reasons which may include access and affordability of study support and exam preparation assistance outside the UK, understanding and relevance of course material, or having English as a second language. Further research would be required to understand the reasons.
- Given that international Health and Care candidates outnumber UK candidates twofold, it is important that the IFoA continues to ensure the examination syllabus is relevant to international candidates and is flexible to global emerging trends, notwithstanding the specificity of local health care financing systems. Further research would be required to understand this more fully however, given our observations in section 1, this could entail revisiting the potential application of Health and Care actuarial skillsets not only within private health insurance, but throughout health care systems.

4. Views from the health and care industry

As a working party, we wanted to gain perspectives and views from the health and care sector, including views on how the actuarial profession and its members were perceived in the sector. In addition, we wished to understand from the participants' point of view the relevance and value of actuaries' expertise and long-term perspective and if this was viewed as a profession that could add to the understanding and good management of risks across society over time. Finally, we wanted to understand what stakeholders considered barriers to engagement between the health and care sector and the profession.

The aim was to undertake qualitative interviews and analysis on transcript data such that key findings could be presented back to the profession within this paper. The working party sought to hear views of multiple and varied participants e.g. from payers and providers in health care, and from representatives of academia, government, national bodies, and the private sector. In line with the scope, the working party aimed to have participants from across the five countries representing the IFoA membership.

A participant guide was circulated between this working party and also the Population Health Management working party, such that invitations could be made to participants from varied parts

of the industry and countries. A qualitative interview guide was designed and circulated among working party members who would be undertaking interviews (see Appendix 2). The guide provides question prompts aligned to the working party's objective including:

- understanding of actuaries and the profession
- experience of and/or consideration for future work in health and care

Six interviews were undertaken with participants ranging from India, United Kingdom, Singapore and China. Research participants will remain anonymous, and transcripts have been deleted following analysis. We are grateful to participants time and have shared key conclusions from the research before the report is published within the IFoA membership or promoted externally.

4.1 Observations

The working party has come to the following key findings after reflecting on the interviews, which can be grouped in to two scenarios and a general reflection.

- Scenario 1: In cases where the participant was aware of actuaries and the profession, the reflections of the known characters are positive, and these reflections are extended to the Profession. The level of knowledge, professionalism, and quality of work is well regarded. The ethical code and duty to work in the public interest is known by some but is unknown to others. Actuaries are considered to be able to add value across a wide range of areas, but some individuals are more able to contribute in this way than others. Actuaries were considered as professionals who can add value through good communication of technical concepts to a diverse audience.
- Scenario 2: When the participant was unaware of actuaries or the profession, there is little to no grounding to know how actuaries can contribute. In addition, there is no awareness of the profession, ethical code but upon hearing of it, it is considered valuable.
- General: There is a distinction between the role of an actuary and the role of the Profession. Volunteering and research groups as part of the IFoA are well regarded. The role of the individual actuary is seen as professional, but the area of application seems to reside with that individual's interest. The role of the Profession is seen as potentially one of advocacy; to steer policy, regulation, showcase solutions within government departments, and be a Profession to consult.
- When considering the barriers to engagement, the lack of awareness of the actuarial profession within the health sector is key. Further barriers mentioned can be considered from a pre-qualified and post-qualified point of view. Post-qualification, a barrier to working within the health sector may be the public to private sector differential. We could speculate

that this is the reason mainly consultancies work within the public space but when the health financing model includes private models, actuaries can be found employed within the health system. This leads to a pre- qualification barrier. As actuaries train alongside their peers with part of the qualification process including work-based skills assessment, the lack of fellow actuaries within the health sector may give rise to concerns over career development outside of the insurance space.

It should be noted that the during the COVID-19 pandemic both the interviewer and interviewee pool was restricted in availability. Many interviews were rescheduled due to conflicting priorities. More interviews could be conducted but the time and availability were a restricting factor for interviewee participants.

5. Views from actuaries with an interest in health and care

This working party wished to also gather perceptions of IFoA's members across the world with an interest in Health and Care and to lay the groundwork to further explore how the IFoA can better support these members. We designed a poll of 15 questions to get a broad view of the following:

- About the members: location, experience, current areas of work, scope of interest in Health and Care
- Perceptions of the IFoA's Health and Care specialist examinations (SP1 and SA1) as a route to engaging in Health and Care;
- Perceptions of how the IFoA could better support members' desire to engage in Health and Care sector
- Perceptions of the barriers to engagement.

The initial circulation of this poll was to the 4%, or 1404 IFoA members selecting Health & Care as a practice area, and about 90% of responses were from this group. We extended the distribution of the poll as well to the rest of the membership in order to reach those members who had not made this selection in their account but were interested in participating.

5.1 Poll respondents

Of over 220 respondents, 42% were based in the UK. 12% were based in India, 8% in China, 4% in South Africa and 3% in Ireland, and the remaining 30% "Other". In the "Other" category, 9% of all poll respondents were based in Southeast Asia (mainly Singapore, Hong Kong) while 8% were based in Europe (EU + Switzerland).

Over 40% of poll respondents were very experienced (10+ years) actuaries. Most respondents worked within the insurance industry, in insurance companies (at least 37%), consultancies (24%) or reinsurers (17%). A very small minority were employed by health care providers (3 respondents) or government/intergovernmental agencies (11 respondents) including the United Nations.

Poll respondents were engaged in various types of actuarial work across the typical health insurance value chain, with almost equal numbers citing i) product development; ii) pricing, iii) reserving and capital management, and iv) experience analysis as areas of work they were involved in. Respondents also cited risk management, reporting, modelling, portfolio management or strategy consulting, with a few, likely outside the insurance industry, referring to population health management, NHS commissioning and structuring of national health systems.

31% of respondents were Health & Care actuaries, 24% were students, and 45% considered themselves "other", which included those who considered their health and care work part of a larger set of responsibilities for a life and health portfolio. This was echoed across many of the responses received in relation to the instruction "Please select the statement that best describes your interest in health and care". Many respondents expressed an interest in health and care as a wider area of interest beyond their current employment or previous study trajectory, with some clarifying that they considered themselves as practitioners in "life, health and care", rather than health and care specialists.

5.2 Perceptions of the Health and Care examinations

Those students who stated that they were planning to take neither SP1 nor SA1 gave additional inputs indicating a lack of immediate relevance of these exam subjects to their intended careers. 36% of these respondents indicated they might be interested post-qualification or at a later stage. Some indicated they did not feel that taking the Health exams were necessary for a career in Health & Care, or that taking the Health exams could limit work opportunities, since General Insurance or Life Insurance specialisations were more commonly selected in their markets, and actuaries qualifying with other specialisations regularly performed work relating to Health & Care anyway.

These students broadly agreed with most of the pre-determined answers offered in the poll for how the IFoA could better support them with their plans to engage in the Health & Care sector, with more than half agreeing that IFoA could better articulate the value actuaries bring to the health

and care sector. One respondent suggested the IFOA could better articulate the value proposition of the Health examination subjects to employers.

Many actuaries who are interested in Health & Care relate their interest to making meaningful contributions to society (68%) or exploring wider fields where actuaries can add value (48%), rather than because of career advancement or career entry opportunities, consistent with responses by students to preceding questions about the relevance of the examinations.

5.3 Perceptions of how the IFoA could better support members

As for how the IFoA could provide better support to actuaries overall in the Health & Care sector, over two hundred responses were received and highlighted two clear areas of support.

Examination material and syllabus. 40% of responses related to the examination material and syllabus. There were two clear ideas: one was to make examination material more relevant, for example, including content on health informatics, emerging trends in consumer propositions and encouraging broader business thinking, rather than emphasizing technical faculties. The second was to include Health content in other syllabi, notably Life and General insurance, in addition to, or instead of, defining Health & Care as a distinct area of specialization. However, the Life syllabus already covers products such as Income Protection and Critical Illness.

Articulating the value of actuaries. 44% of respondents agreed that the continued professional development provision could provide appropriate opportunities e.g. role models, key speakers from industry, communication of value of actuaries in health care, articles in The Actuary. Additional comments were also valuable. One respondent referred to “falling into health care” through exposure to work and suggested additional professional development for mid-career actuaries. Others referred to a general need to raise awareness of actuaries in the Health & Care sector and to differentiate the actuarial skillset from that of health economists, with some suggesting that the IFoA initiate more engagement with the NHS or other public health systems.

5.4 Perceptions of barriers to engagement in the Health and Care sector

While some felt there were no barriers, some others felt there was a lack of attractive career opportunities, including clear entry points into the sector, while others expressed that the actuarial qualification was not seen to add value within this sector.

A majority of respondents were confident (51%) or somewhat confident (36%) of their qualifications to work in the Health & Care sector. About half of all respondents agreed that additional areas of knowledge, such as epidemiology, biostatistics, behavioural science and health economics would have been helpful/would be helpful to actuaries working in this space, however, no single field of knowledge was felt to be as valuable as real-world experience working within the sector.

The next questions in the poll related to what respondents wanted to achieve within their careers as Health & Care actuaries, and which areas of work they preferred to engage in. Two thirds of respondents wanted to develop more innovative health insurance products or propositions, with many respondents agreeing that they wished to be involved in expanding access to care. Several clarified that this included social as well as health care, or to meet unmet financing needs for underserved segments, or in preventive health or aged care. Overall, respondents identified with the idea of a broader mission to serve public interests, with many seeing a path to these achievements within private health insurance.

5.5 Observations

Based on the results of the poll, the working party wishes to highlight the following key observations

- The responses highlighted opportunities for inclusion of more areas of knowledge in the actuarial curriculum that are relevant internationally in health care financing.
- The responses highlighted the value that a broad actuarial skillset, but more importantly, real-world experience as an actuary can bring to the health and care sector.
- Many actuaries perceive themselves as engaging in health and care as part of their work in the insurance sector even if it is not their primary focus. However, barriers to engagement in other parts of the health and care sector are evident, including a lack of clarity around entry points or the value that an actuarial skillset and experience can add.

6. Roles for a Health & Care actuary

On the IFoA website, the Health & Care practice area is described as:

> *"Actuaries have long been involved in financial planning for the NHS and this is now a growing area for actuarial work as the government looks for ways to restructure the welfare state to meet the changing needs, demands and expectations of a changing population.*
> *Evolving health provision models to meet changing needs is also a feature of the expansion of private sector work. Actuaries work with other health professionals to find appropriate solutions for private medical insurance, income protection, critical illness, and long-term care insurance."* (Institute and Faculty of Actuaries (IFoA))

Within the insurance industry, what tends to differentiate the work of a Health & Care actuary from other practitioners is the requirement for extensive collaboration with professionals outside of the insurance industry, typically within the health care sector, from clinicians to administrators and policy makers. In this section we consider roles of actuaries within the health and care industry within traditional insurance and beyond.

6.1 Health & Care roles within the insurance industry

Within the private health insurance industry, a Health & Care actuary has an important role to play all along the value chain of health insurance.

Within the UK, health & care insurance tends to be written by specialist health insurers, as in the US. In most other markets however, health and care insurance is likely to be sold as a rider or packaged with life or general insurance products than written as a standalone insurance product by a specialist health insurance company, a life or general actuary needs to "double-hat" as a Health & Care practitioner.

A Health & Care actuary's work in a private health (re)insurance company may involve pricing, product development, experience analysis, reporting, valuation, and risk management. Beyond the "core" functions of a Health & Care actuary's work, an actuary in a private health (re)insurance company could also expect to be involved in other areas of work including provision of guidance to sales and marketing colleagues on the communication of benefits and costs in a health insurance product or projecting the impact of changes in the external environment, ranging from regulation changes to the advent of a pandemic on their employer's health insurance portfolio. This is particularly true for Health & Care actuaries working in environments where health is part

of an overall portfolio of mainly life insurance business, and the Health & Care actuary is not only one of a lean team of insurance professionals who are generalists rather than specialists in their work, but also expected to be familiar with multiple lines of business at the same times.

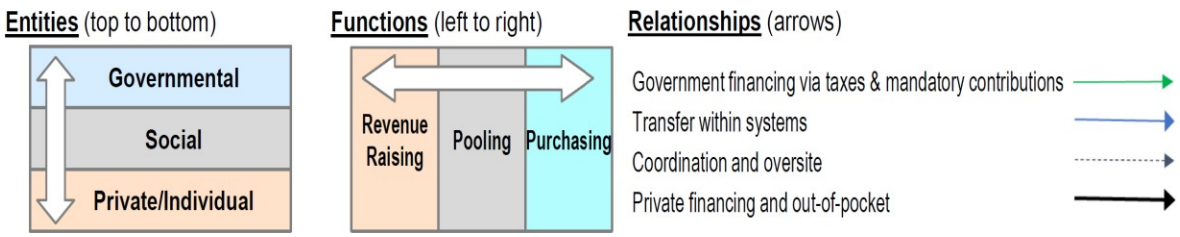
6.2 Health & Care roles beyond the insurance industry

It appears for the countries in scope that beyond insurance, actuaries are present in health and care systems in a limited way. For example, consultants providing solutions to a limited project scope, working directly with a specific health care payer or provider organizations e.g. a technical solution for a modelling problem in a hospital. Alternatively, actuaries provide a view during strategy level consultation, perhaps as government consultants e.g. to provide a view on benefit design and financing.

The Australian paper detailed multiple potential roles. This includes how actuarial expertise may help in Pharmaceutical Benefit Schedule, Medical Workforce planning, Cost Analysis and negotiations, Capital formation, and public -private partnership (source). Beyond the insurance industry, actuaries are not working along the continuum of the health care sector. The presence of private insurance-based solutions within the health and care market creates a traditional need for actuarial expertise. However, alternative arrangements do not necessarily imply there is no need for actuarial expertise, only that the market has not created such a demand.

Actuaries can work to support private, public, or blended health care systems for the benefit of society. When discussing where actuaries may add value, it is therefore less important to consider the job title or role but consider the objective of the work and how it aligns to actuarial expertise. This is especially the case when the role or job does not already exist. To further this discussion, the following images have been recreated from the IAAHS paper which provides some generic overview diagrams of health system financing (Society of Actuaries USA).

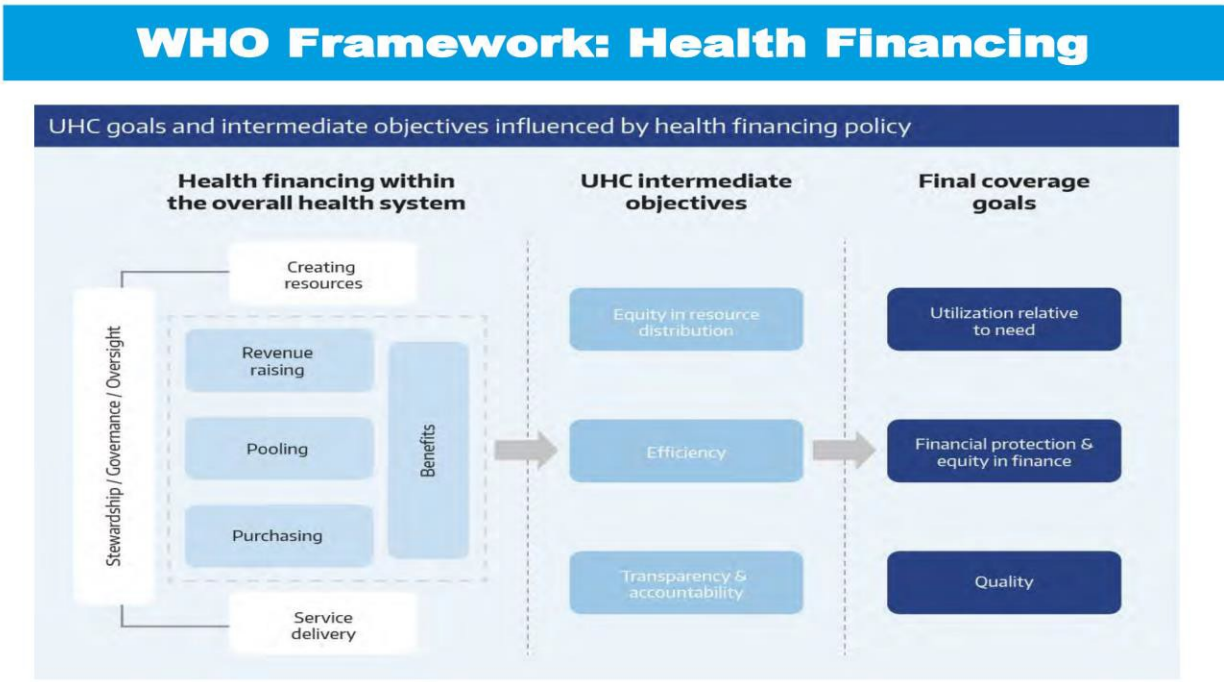
Figure 9: Entities, Functions, and Relationships in Health Sector (IAAHS)



Actuaries can be found across all functions and relationships when the health system relies more on private insurance e.g. evidenced in the US. In addition, where private financing creates a need for insurance to minimize the burden of out-of-pocket spending e.g. Republic of Ireland or South Africa.

However, actuarial expertise is indifferent to the model within which it operates. The same principles, skills, and knowledge applied across those functions and relationships in one health system structure are also valuable to others. This is apparent when looking at the WHO framework for health financing below. Many areas in the generic model have an objective of the work which resonates with existing actuarial expertise.

Figure 10: WHO framework for health financing (IAAHS)



Source: Developing a national health financing strategy: a reference guide (World Health Organization, 2017)

Actuaries are familiar with working in complex dynamic environment, applying expertise to understand the problem, develop and monitor solutions to create value for all stakeholders including society. Potential role for actuaries may therefore be better aligned to the objective of the work. This can be seen currently with actuaries working in health and care 'wider field' areas (i.e. beyond insurance) such as strategic and financial planning, population health management, risk sharing between organizations while moving to integrated ways of working, and optimal use of data to support care delivery.

6.3 Observations

Within insurance, health and care actuaries may take varied roles. There are many peer actuaries who work in these areas and support for members.

Beyond insurance, it is our opinion that the actuarial profession could create value for society by working across the continuum and in various forms of health systems arrangements. This does not mean altering the health system financing structure to an insurance model. It does mean communicating and displaying the value the actuarial expertise and profession can bring to the objective of the stakeholders in that area.

7. Appendix

Appendix 1: Overview of Health care financing systems

We have replicated below images, with approval, that provide excellent visual representations of very complex health systems with in the five countries in scope. We appreciate the work of the authors of the IAAHS report on International Health Care Funding in 2020 which provides a valuable overview of health system financing by country (Society of Actuaries USA).

Figure 11: United Kingdom - overview of health system

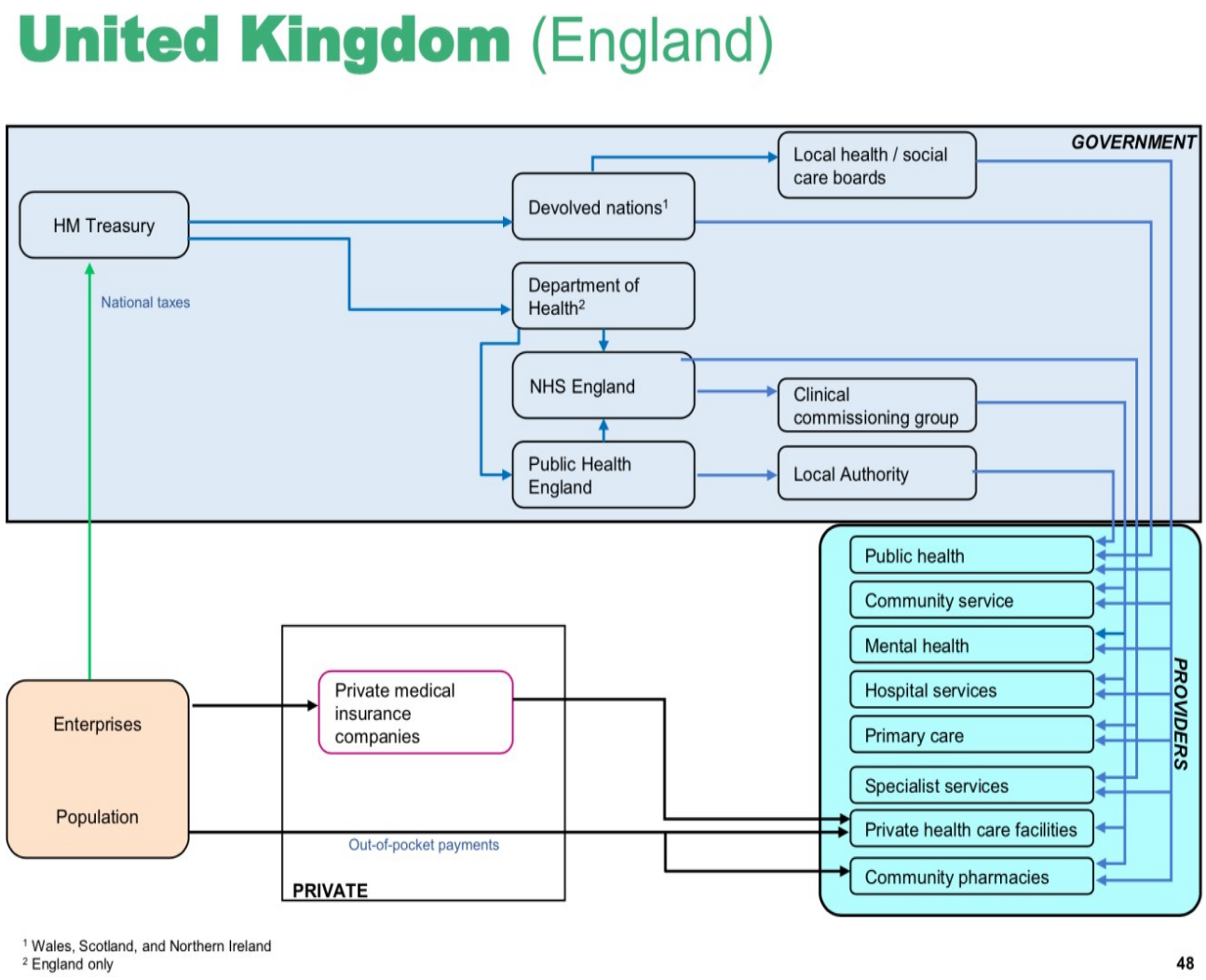


Figure 12: Republic of Ireland - overview of health system

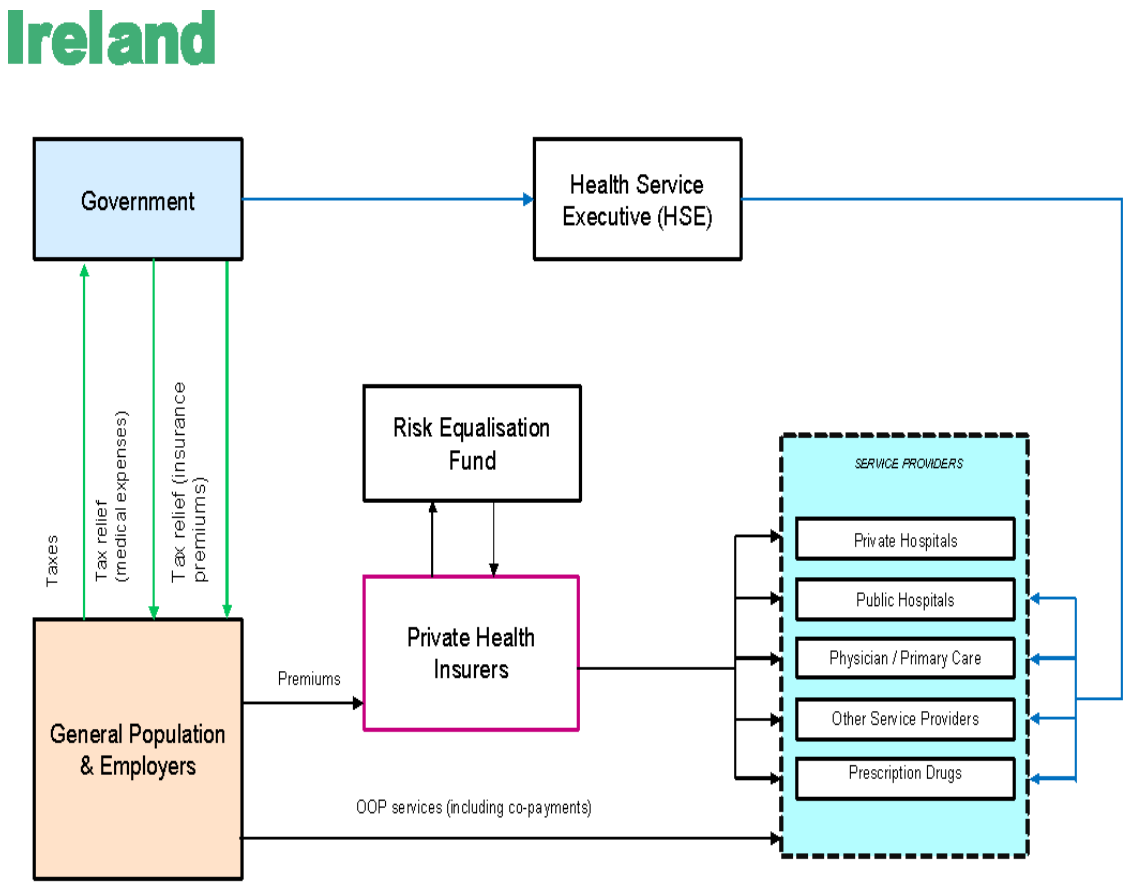


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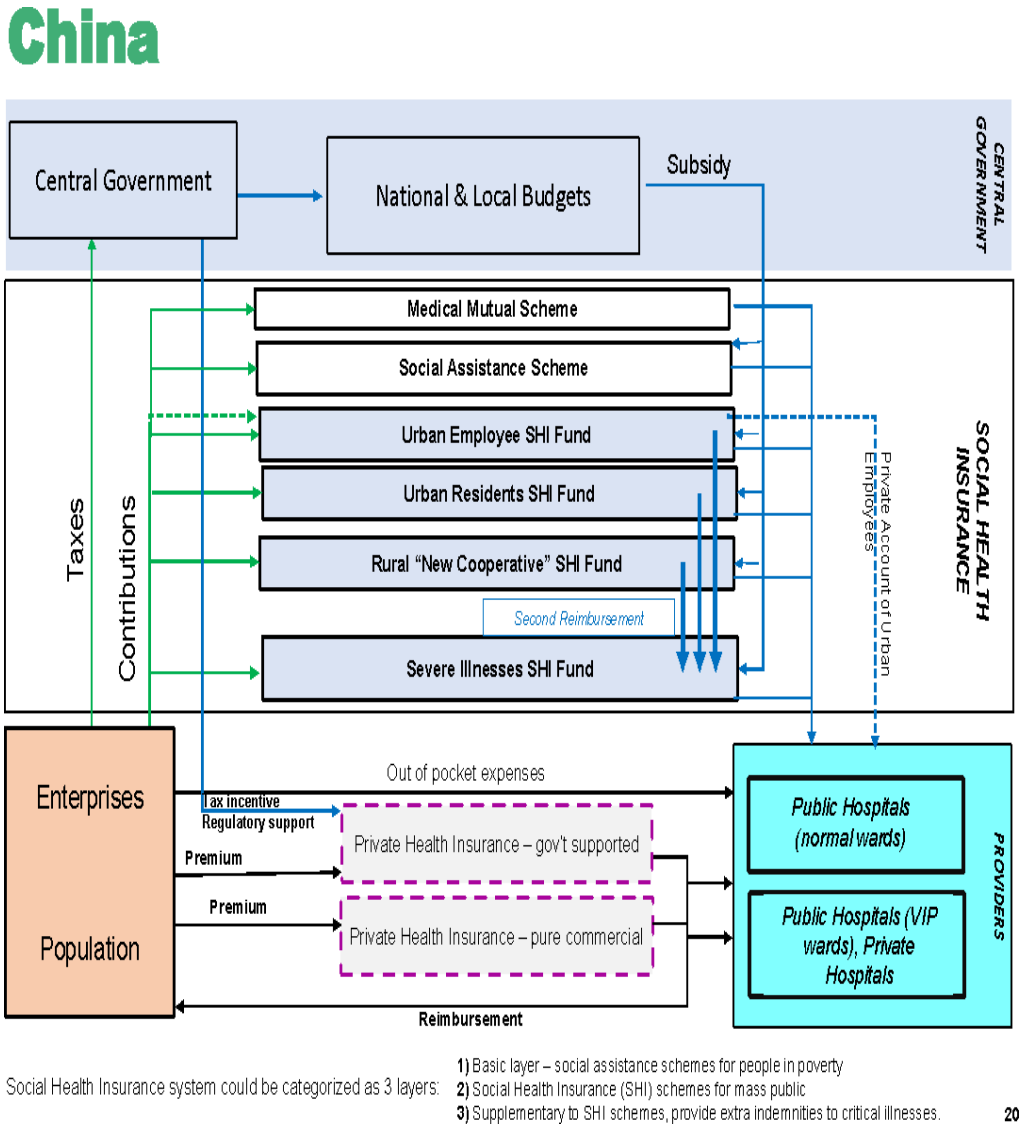
Figure 13: China - overview of health system

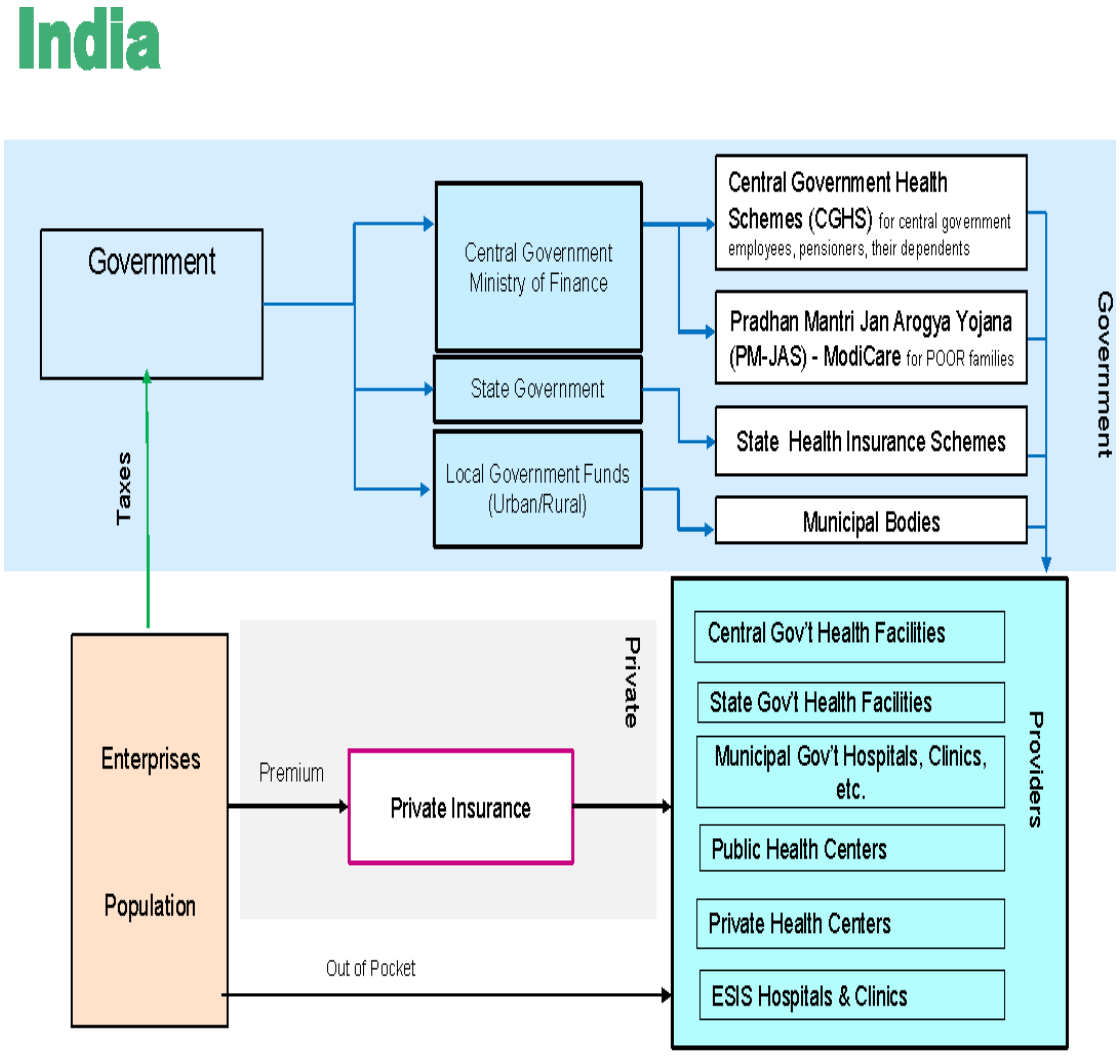


Social Health Insurance system could be categorized as 3 layers:

1) Basic layer – social assistance schemes for people in poverty
2) Social Health Insurance (SHI) schemes for mass public
3) Supplementary to SHI schemes, provide extra indemnities to critical illnesses.

20

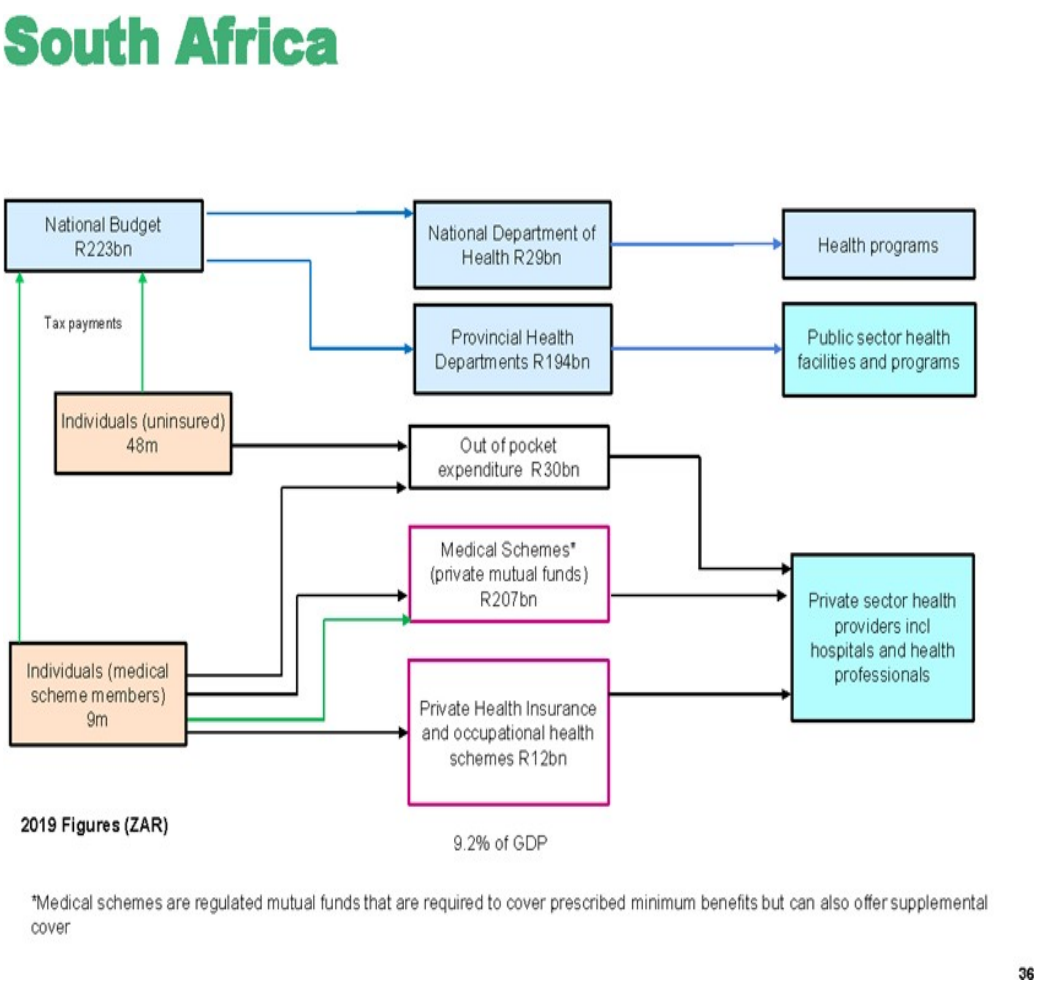
Figure 14: India - overview of health system



- In August 2018, the Government of India has approved Ayushman Bharat-National Health Protection Mission (AB-NHPM) as a centrally Sponsored Scheme contributed by both centre and state government at a ratio of 60:40 for all States, 90:10 for hilly North Eastern States and 60:40 for Union Territories with legislature. The centre will contribute 100 per cent for Union Territories without legislature.
- In Sept. 2018, Government of India launched Pradhan Mantri Jan Arogya Yojana (PMJAY) under AB-NHPM, to provide health insurance worth INR 500,000 (US$ ~7,000) to over 100 million **families** every year.

23

Figure 15: South Africa - overview of health system



Appendix 2: Qualitative Interview Process and Guide

Process

1) Cross reference proposed interviewee with participant grid
2) Set up interview with participant

   Invite and descriptive wording for research purpose:

   The Institute and Faculty of Actuaries is a professional body for Actuary members in the UK and globally. Actuaries provide support in navigating complex dynamic areas of work including insurance, investments, the environment, pensions, health and care, and more. Through the professional body, volunteer groups undertake member led research to better understand how as a profession, members can contribute toward the profession's royal charter objective of working in the public interest. These qualitative interviews are conducted by volunteering members of the IFoA to better understand how actuaries contribute in the health and care in UK and globally.

   Research participants will remain anonymous in the final written report and transcripts will be deleted following the team's analysis. All participants will be contacted with key conclusions from the research before the report is published within the IFoA membership or promoted externally.

   If you are happy to participate in this qualitative research please email back with written confirmation. If you have further questions, please do let us know.

   Kind regards,….

3) Conduct interview and record with permission of participant. Report any issues with Interview guide back to Josephine.
4) Type up transcript of the interview. Share back with central team.
5) Attend group meeting to review key conclusions for sign off.

Interview guide for interviewee group: Health & Care / Government / National Bodies

- Total 50 mins (book 60 mins)

1. **Set up (5 mins)**
    a. Check mics/ video working
    b. Introduce self / Ask for introduction from the other
2. **Setting groundwork (5 mins)**
    a. Purpose of the research
    b. Confidentiality and data use
    c. Recording for ease of analysing our interview data - ask for confirmation
    d. Sharing the outcome before publication with all participants
    e. Important to feel comfortable (water/breaks) whenever you want
3. **Comfort building (5 mins)**
    a. Start recording
    b. Tell me about your work, role
        i. Where is it based?
        ii. How long have you been working in this area?
        iii. What did you do before this?
4. **Focus Area 1: Understanding of actuaries (10 mins)**
    a. What do you think of when you hear actuary?
    b. Where/how have you heard of actuaries before?
    c. Would you be able to share a description of the work?
    d. What was your lasting impression?
5. **Focus Area 2: Understanding of the profession (10 mins)**
    a. What are your thoughts about professional bodies such as the IFoA?
    b. How do you feel about trusting regulated professionals?
    c. Beyond specific regulations, actuaries have an ethical code (to ensure members work with integrity, competence and care, impartiality, compliance, speaking up and appropriate communication) and a duty to act in the public interest under a royal charter. How does this resonate with you?
6. **Focus Area 3: Working together (10 mins)**
    a. Where or how do you think actuaries could help in your organization?
    b. How did you find working with actuaries?
    c. How would you engage an actuary with your work?
    d. Why would you choose not to work with actuaries?
    e. What has prevented you working with actuaries to date?

6. **Closing up (5 mins)**
    a. Would you like to add anything?
    b. Reminder of confidentiality and data use, sharing before publications
    c. Thank participant for their involvement
    d. Anything they would like to ask or add?

8. References

1. Ataguba, J.E. and McIntyre D. “Paying for and receiving benefits from health services in South Africa: is the health system equitable? .” *Health Policy Plan* (2012; 27): 35-45.

2. Dyson, S., Hardy, B. and Leung,. “The Role of the Actuary in Healthcare: Where are we, and where are we going.” *The Institute of Actuaries of Australia 2003 Biannial Conference*. 2003.

3. Health Insurance Authority Ireland. “Market Report 2021.” accessed on 12 March 2022. *Health Insurance Authority Ireland.* https://www.hia.ie/sites/default/files/HIA%20Market%20Report%20-%20Final.pdf>.

4. Institute and Faculty of Actuaries (IFoA). accessed on 23 July 2021. <https://www.actuaries.org.uk/system/files/field/document/IFoA-Annual-Report-20-21.pdf>.

5. Institute and Faculty of Actuaries (IFoA). *About Health and Care*. accessed on 30 November 2020. <https://www.actuaries.org.uk/practice-areas/health-and-care/about-health-and-care>.

6. Institute and Faculty of Actuaries (IFoA). “IFoA membership numbers in the Health and Care practice area.” 16 August 2021.

7. Institute and Faculty of Actuaries (IFoA). *Institute and Faculty of Actuaries*. accessed on 30 November 2021. <https://www.actuaries.org.uk/practice-areas/health-and-care/research-working-parties/role-actuary-health-and-care>.

8. Institute and Faculty of Actuaries (IFoA). *Institute and Faculty of Actuaries (IFoA) - About Us*. accessed on 30 November 2020. <https://www.actuaries.org.uk/about-us>.

9. Insurance Regulatory and Development Authority of India. *Committee on designing Combi Products for Micro-Insurance segment*. accessed on 23 February 2020. <https://www.irdai.gov.in/ADMINCMS/cms/frmOrders_Layout.aspx?page=PageNo4042>.

10. LaingBuisson. “Health Cover UK Market Report, 12th Edition.” accessed on 30 August 2015. *LaingBuisson.* <http://www.laingbuisson.com/wpcontent/uploads/2016/06/Health_Cover_12ed_Bro_WEB.pdf>.

11. Mordon Intelligence. “United Kingdom health and medical insurance market - growth, trends, covid-19 impact and forecasts (2022 - 2027).” accessed on 20 April 2022. *Mordon Intelligence.* <https://www.mordorintelligence.com/industry-reports/united-kingdom-health-and-medical-insurance-market>.

12. Mossialos, E., Djordjevic, A. and Wharton, G. accessed on 29 December 2020. <https://www.soa.org/globalassets/assets/files/static-pages/sections/international/2020-international-healthcare-funding-report.pdf>.

13. Public Policy Ireland. *Private Health Insurance in Ireland: Market Penetration and Lifetime Community RAting Reforms*. accessed on 29 March 2019. <https://publicpolicy.ie/papers/private-health-insurance-in-ireland-market-penetration- and-lifetime-community-rating-reforms/>.

14. Society of Actuaries USA. accessed on 30 November 2020. <https://www.soa.org/globalassets/assets/files/static-pages/sections/international/2020-international-healthcare-funding-report.pdf>.

15. Society of Actuaries USA. *International Healthcare Funding Report*. accessed on 30 November 2020. <https://www.soa.org/globalassets/assets/files/static-pages/sections/international/2020-international-healthcare-funding-report.pdf>.

16. Tikkanen, R. and Osborn, R. accessed on 29 December 2020. <https://www.commonwealthfund.org/sites/default/files/202012/International_Profiles_of_ Health_Care_Syst ems_Dec2020.pdf >.

17. Tikkanen, R., Osborn, R., Mossialos, A. and Whatron, G. *The Commonwealth Fund China*. accessed on 30 November 2020. <https://www.commonwealthfund.org/international-health-policy- center/countries/china>.

18. World Health Organisation (WHO). accessed on 30 November 2020. <https://apps.who.int/nha/database/Select/Indicators/en>.

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