ACTUARIAL SOCIETY of HONG KONG 香港精算學會

Actuarial Society of Hong Kong's Newsletter

Hong Kong Actuaries

JULY 2020 I VOLUME 02

Council & Committee Updates

Feature Articles

Call for Articles or Views for the next issue of Newsletter!

While all articles are welcome, we would especially like to receive articles for the Feature Articles and Knowledge Sharing sections. If you have written any inspiring articles or have read any interesting articles from other actuarial organisation(s), please feel free to let us know. We will try to reprint them in our newsletter. Welcome to email your articles or views at info@actuaries.org.hk.

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Editorial

Dear Readers,

Welcome to another exciting edition of the ASHK Newsletter!

2020 has been a challenging year so far, and now that the year is already halfway through, it's the perfect time to catch up and be ready for any further changes in the insurance industry.

The COVID-19 outbreak made us stay on the pulse of business and digital transformation. With this in mind, our theme in this issue is 'Investing against the COVID-19 headwind'. We solicited an informative article, ***'A New World Order,'*** written by Mr. Alistair Chamberlain of HSBC Life. This will examine the impact that COVID-19 is having on business, the actuarial profession, the way we work and what the actuaries can do. Furthermore, we have included an article on '***The Impacts of Covid-19 on Life Insurance Through the Lens of an Auditor"*** contributed by Thijs Bodaar and Florence Li from KPMG who provide us with viewpoints on insurance market demand, policyholder behavior, operations, operating assumptions of pandemic era. '***Impact of COVID-19 on Actuarial Assumptions'*** by Rahul Khandelwal is the third feature article to share insightful views on this aspect.

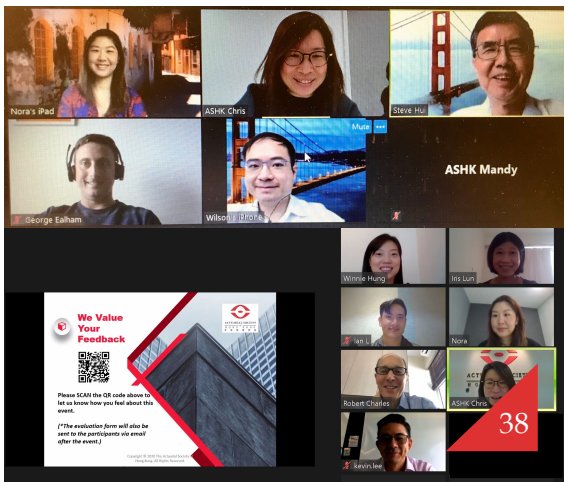
The Actuarial Innovation Committee also brought us an insightful survey analysis from KPMG, ***'More Similarities than Meets the Eye in Hong Kong SAR and Mainland China Consumer Bases'*** along with one great article, ***'Identifying Vulnerable Populations in Australia Using the COVID-19 Susceptibility Index'*** from IAAust.

There have been a lot of changes in the design of the newsletter, we hope you like the design. I think the team has done a fantastic job in this new look and hope you will enjoy the various updates and the new edition as much as I have.

Happy reading and prepare to be inspired!

Best Regards,
Alexander Wong
EDITOR

ACTUARIAL SOCIETY of HONG KONG 香港精算學會



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Others

Council – Peter Duran

Engagement with the Insurance Authority (IA)

The HKIA/ASHK Working Group just had its third meeting in June. The meeting focused on a progress update of the ASHK Statutory Path Project, the local actuarial examination development, our experience study as well as follow-ups on the Group Medical Pricing matters and HKRBC. The HKIA and the ASHK will keep holding open and constructive discussions with respect to critical industry topics.

ASHK Events Go Virtual

With a mission to develop and to inspire the actuarial profession in Hong Kong, the ASHK is proud to organize a series of online events from April 2020 onwards to keep our members updated on actuarial innovations and developments in the local landscape, starting with hot topics that actuaries would be interested in.

We were glad to have over 70 members join us in our first ever webinar hosted by the Actuarial Innovation Committee on 24 April. The session ended with a Q&A where the participants had a chance to clarify any queries they had. A total of 5 actuarial innovation webinars are being held during Q2 and Q3 in 2020.

The Professional Development Committee also successfully launched its first online seminar scheduled on 29 June, followed by a second seminar on 7 July. We were pleased to invite the most knowledgeable and passionate speakers to share their insights.

Special thanks to all our guest speakers for their fruitful and inspiring sharing:

Mr. Steve Monaghan (GenLife), Ms. Nora Li (AIA), Ms. Celine Chiu (HKFI),

Mr. Matt Ralph (Montoux), Dr. Kevin Cheng (Hong Kong Monetary Authority),

Ms. Iris Lun (10Life), Mr. Bob Charles (Coherent), Ms. Winnie Hung (Coherent),

Mr. Kevin Lee (AXA), Mr. Ian Lee (ZA) and Mr. Fred Ngan (Bowtie)

Council – Peter Duran

International Actuarial Colloquium 2021

We would like to bring to your attention the International Actuarial Colloquium scheduled on 26-28 April 2021 at Kerry Hotel, Hong Kong co-sponsored by The Actuarial Society of Hong Kong (ASHK), International Actuarial Association (IAA) Life Section (IAALS) and Pensions, Benefits and Social Security (PBSS) Section. The Colloquium is making a return to Hong Kong since it was last held here in 2012 and 2016.

The overall theme of the Colloquium is "Global Pandemic - Beyond the New Normal". With over 13 million confirmed cases of COVID-19 across the globe and more than half a million deaths that have resulted from the pandemic so far, this event aims to address issues and changes needed with hindsight from the pandemic. Insurers and Pension Funds need to make tough decisions beyond this new normal and be able to deal with all the different challenges facing the industry. The Colloquium will provide insights on the transformation of regulation, social protection, capital, investments, risk, products, customers and distribution with over 300 attendees expected including insurance executives and senior actuaries from Asia and around the world. It is a great opportunity to meet with global actuarial and insurance, pensions and social security experts to help shape our future. Keep a lookout for our call for papers and sponsorship opportunities.

Pension & Employee Benefits Committee – Gary Lee

Riding on the industry survey on Group Medical Pricing from 2019, the Committee has setup a taskforce to explore the feasibility of developing a best practice note on this topic with the aim of enhancing the long-term sustainability of this market. The Committee has also setup a taskforce to refresh the market study on MPF Market Size Projection which was last updated in 2015.

Life Committee
– Foong Sai-Cheong and Kevin Lee

Hong Kong Assured Lives Mortality 2018 (HKA18)

We are pleased to announce that the Life Committee is expected to publish shortly the latest full report on the mortality of assured lives in Hong Kong. This new mortality table is named Hong Kong Assured Lives Mortality 2018 (HKA18) and provides an overview of the assured lives experience in Hong Kong for the period from 2010 to 2017. Based on data collected from seventeen Hong Kong life insurance companies that have participated in the study, the report aims to serve as a better indication of the recent industrial experience for the insurance industry for both pricing and valuation purposes particularly in the coming exercise under Risk-Based Capital framework.

Professional Matters Committee
– Rockson Leung

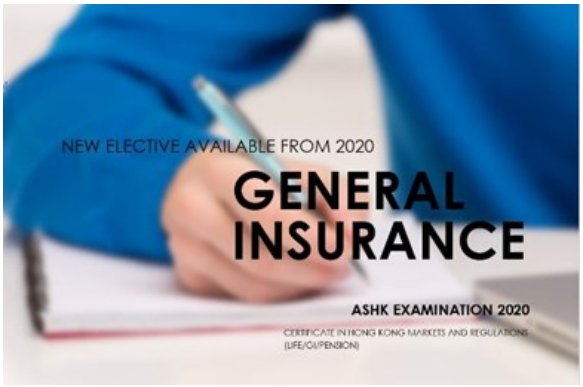
The ASHK's Disciplinary Panel

The ASHK's Disciplinary Procedures are one of the ways in which we aim to maintain public confidence in the actuarial profession in Hong Kong. Under these Procedures, facts or allegations which suggest that a Member may be guilty of misconduct or may not be fit and proper may, under the direction of Council, be investigated through a defined and transparent process. As well as investigating the facts, this process also offers Members the opportunity to defend themselves via written responses to inquiries and attendance at hearings. The ASHK Council needs to appoint a standing disciplinary panel of at least 11 members. Fellow members, if you are keen to volunteer and help uphold the standard of our profession, we encourage to contact the ASHK office at info@actuaries.org.hk for more details.

Curriculum & Exam Taskforce
Professional Development Committee – Nora Li

Exam Information Session

The Professional Development Committee and the Curriculum/Examination Taskforce made tremendous effort in hosting our first virtual ASHK Examination Info Session in May! It was indeed a great opportunity for all to understand more about the benefits of this additional qualification and to interact with the Task Force and to learn about the available candidate support from ASHK. An exam passer was also invited to share his own useful study tips. Over 20 ASHK members, candidates, potential candidates and employers attended this session.



As you may be aware, the General Insurance (GI) track is available starting in the 2020 ASHK examination diet in addition to the current Core, Life and Pension papers. Enrollment for the Aug 2020 examination is open until 21 July.

Toolkit for Young Actuaries

The Committee is in the process of developing a series of self-learning resources and toolkit that are accessible online to help young actuaries extend their knowledge to other areas within insurance in a more structured and guided manner. There is an increasing number of emerging topics and we understand that actuarial careers are continuing to evolve where new skills and knowledge are sought for to strengthen one's understanding in how their work is contributing and impacting the industry. This online toolkit would also be a great way for self-learning which counts towards relevant CPD requirements. The first topic under development in the toolkit shall be relevant to digitalization. Stay tuned for more information!

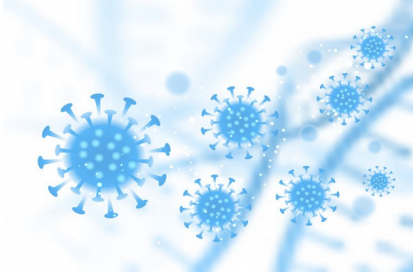
Financial Reporting Committee
– Steve Cheung

ASHK IFRS 17 Seminar will be postponed to 2021

Given the recent resurgence of COVID-19 local cases, the ASHK Financial Reporting Committee regrets to inform you that the IFRS 17 Seminar 2020 scheduled for 16-17 September 2020 will be postponed to 2021. The health and safety of our members will always be our top priority. We will continue to monitor the developments and announce the details when the situation has stabilized.

Thank you for your patience, cooperation and support on ASHK events. Stay safe and healthy!

Health Committee
– Sam Yeung

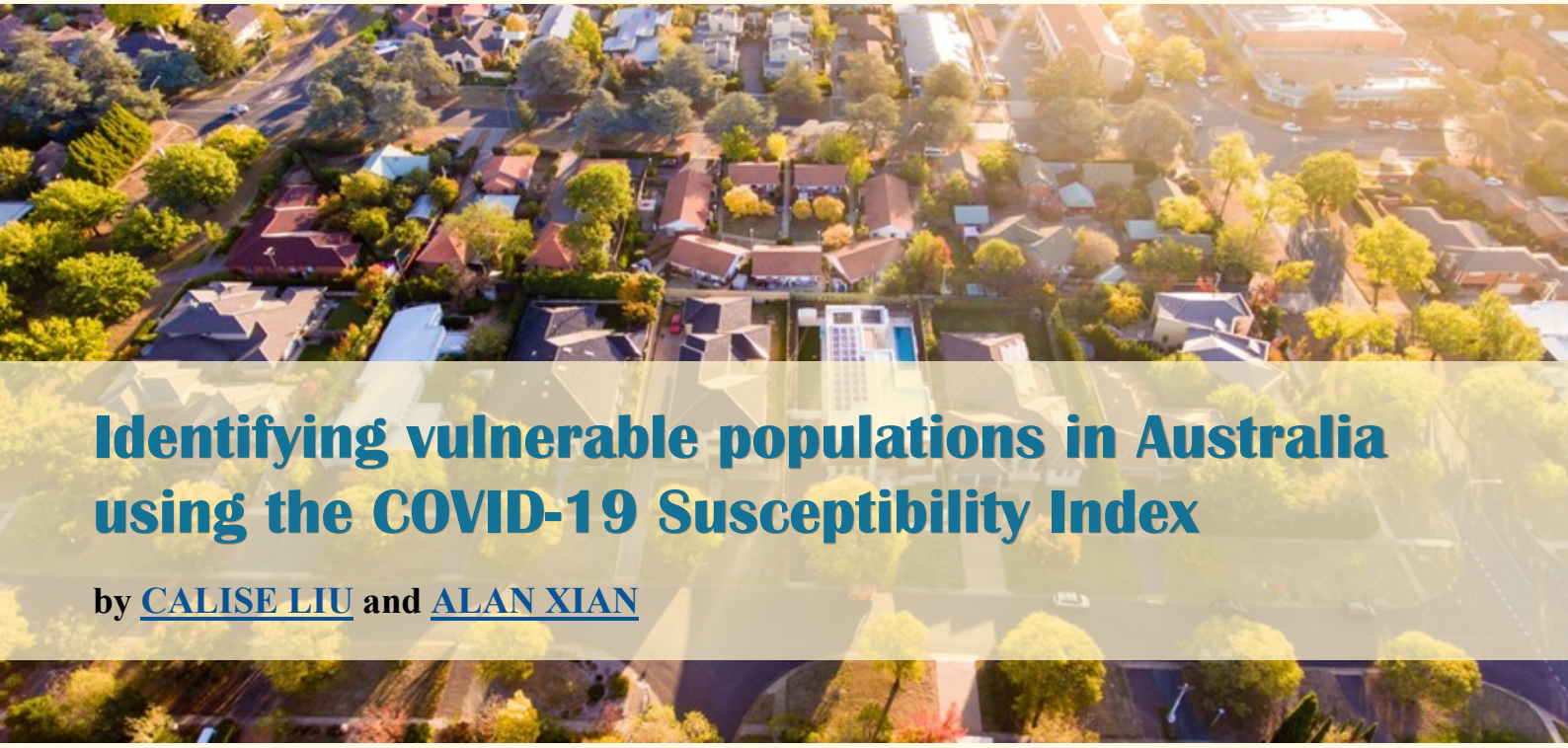


The ASHK Health Committee has continued to monitor the development of the health insurance market in the midst of the Covid-19 outbreak. We have actively followed up with the Food and Health Bureau on the Voluntary Health Insurance Scheme (VHIS). Members can look forward to a presentation on the VHIS topic at the upcoming Actuarial Summit. In addition, we have provided input to the Pension and Employee Benefits Committee's proposed actuarial guidance note on group medical pricing practice. The Committee also reached out to the Hong Kong Federation of Insurers' Medical Insurance Association with suggestions on how to improve the annual medical claims statistics report and our proposal was well received. We hope by doing so, we can help strengthen ASHK's professional image and influence in the public domain.

Actuarial Innovation Committee

– Nora Li

The Actuarial Innovation Committee is pleased to present two insightful articles, one from IAAust to examine the potential for the pandemic to impact unevenly across the Australian population, while the other one is a survey analysis from KPMG to investigate whether the life insurance markets in various Asian regions were meeting consumer needs. We hope you find these two articles relevant and useful.



Identifying vulnerable populations in Australia using the COVID-19 Susceptibility Index

by CALISE LIU and ALAN XIAN

Original article was published on the Actuaries Digital by Actuaries Institute Australia on 22 April 2020, https://www.actuaries.digital/2020/04/22/identifying-vulnerable-populations-in-australia-using-the-covid-19-susceptibility-index/

Over the past few weeks, there has been significant work on modelling infection and transmission rates in Australia. Much of the public discussion on COVID-19 to date has focused on lockdown measures and overall levels of infection. To add to the public conversation, we wanted to examine the potential for the pandemic to impact unevenly across the Australian population.

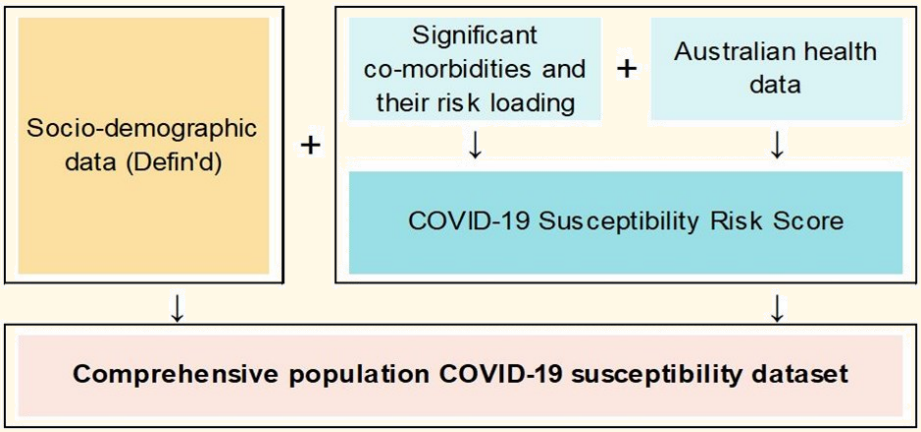
In this article, we provide some preliminary insights into identifying and locating potentially vulnerable demographic groups in our society. This information can assist ongoing attempts to model the pandemic's development as well as inform decisions regarding preventative measures.

Considerable medical research exists on the co-morbidities of COVID-19. It has been well publicised that age and existing health conditions are significant risk factors. However, leveraging this information to identify the most at-risk communities requires additional analysis on its interaction with various sociodemographic factors. This is what we have modelled with our COVID-19 Susceptibility Index – an interactive map of this can be found here.

What is the COVID-19 Susceptibility Index?

A model of the Australian population has been developed by Finity which comprises profiles of households and individuals which when aggregated replicate the actual known multi-dimensional characteristics of Australians in each local community. Models such as these are often used to analyse the impacts of government policy. Finity's model is called Defin'd.

The **COVID-19 Susceptibility Index** provides a risk score for each of the local communities that are represented by the modelled attributes within Defin'd. This score ranks the risk of severe illness if individuals in these communities were to contract the virus, based on the profile of significant co-morbidities (age, cancer, diabetes, cardiovascular disease, obesity and lung disease)[i]. These were identified through a review of published clinical research[ii] and consultation with doctors. Co-morbidity prevalence statistics from publicly available Australian health data[iii] by age, gender and geographic area were merged onto the Defin'd database in order to obtain the overall risk scores.



The resulting comprehensive population dataset containing risk scores, health conditions and socio-demographic attributes allows investigation into the susceptibility of different population segments to severe COVID-19 illness.

An important disclaimer: we have not modelled infection rates or transmissions. There is already a large body of impressive work on this topic – some Australian examples include the USyd network modelling, Doherty COVID-19 modelling, and USyd's NSW database of COVID-19 cases. Instead, our work to date simply identifies the most vulnerable populations if these individuals were to be infected, and suggests some interesting possibilities for susceptibility which should be further explored.

Highlights

Our main take-away from the analysis so far is that COVID-19's potential impact differs substantially between different communities. There is likely to be a disproportionately larger effect on Australians in lower socio-economic groups, with the disadvantaged retired population especially at risk.

Our results could be used by policymakers to target specific geographic areas and demographic segments for highest impact. For example, when a vaccine becomes available, the index could be used to identify which population segments should be prioritised. Another use case could be informing decisions around testing for COVID-19 in populations who are more likely to go on to develop severe reactions to the disease should they become infected.

Conversely, identifying segments of the population who face lower risk if infected would be useful in making decisions about selectively lifting lockdown or social distancing measures. This could allow for a more tailored approach in balancing efforts to reinvigorate the economy while keeping the population safe.

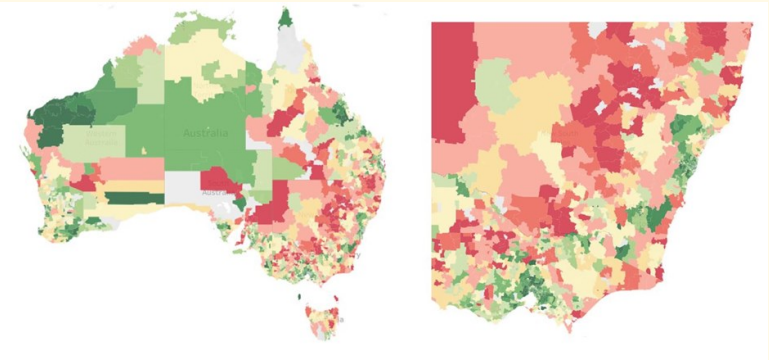
The rest of the article explores our modelling in more depth: Where are the most vulnerable, what makes them vulnerable, and which communities are most at risk? We also share our thoughts on how this Susceptibility Index could be used by government agencies, policymakers, and the general public.

Where are the most vulnerable Australians?

The maps below depict the average Susceptibility Index risk score per postcode. A higher score indicates a greater chance of severe illness/death, which is indicated by darker red on the map. You can also view an interactive version of this map here

It can be seen that the vulnerable population segments are generally situated away from capital cities. In NSW and Victoria, there is a central 'belt' where the population is at greater risk. The data above is shown by postcode, but it is also available by LGA, PHA etc. down to an SA1 level.

Figure 1: Average risk score by postcode across Australia and NSW & Victoria

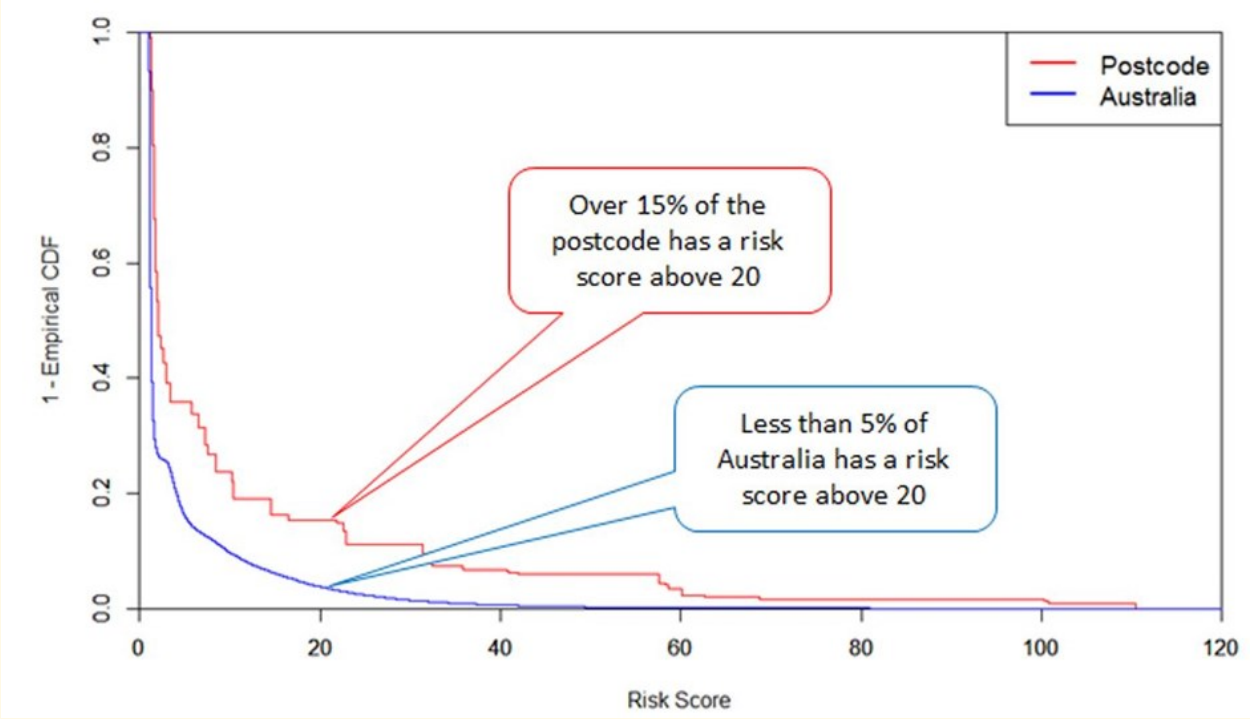


We note that a postcode with a minimal average risk score does not mean that everyone in the suburb is safe. The above maps only show a summarised average of our results; however it is likely that even in low average risk suburbs, there are individuals with significant co-morbidities who would be at severe risk if they were to contract COVID-19. Thus **it is crucially important to understand the distribution of the risk scores within a postcode and other demographic segments**, which we explore in the next section.

Which Australians are the most susceptible to COVID-19 and why are they vulnerable?

We examine a case study of a postcode with one of the highest average risk scores: 2440 (Kempsey Shire, NSW and surrounds). Figure 2 shows that the risk scores across the postcode are significantly higher than the general Australian population.

Figure 2: Risk Score Distribution



In the following charts, we investigate the drivers underlying the high risk scores in 2440 by looking at the contribution of each co-morbidity to the overall risk index.

Figure 3 combines the interaction between the inherent risk of each co-morbidity and its incidence rate in the postcode, to tease out its contribution to the overall risk score. For 2440, the major contributors are older ages, cardiovascular disease and lung disease. By way of example, Figure 4 below shows that the incidence of cardiovascular disease in postcode 2440 is significantly higher than the general Australian population. The area also scores poorly for other co-morbidities. The combined effect indicates that 2440 may have, on average, a much higher risk to severe illness than the general Australian population.

Figure 3: Risk Score Distribution by Co-morbidity

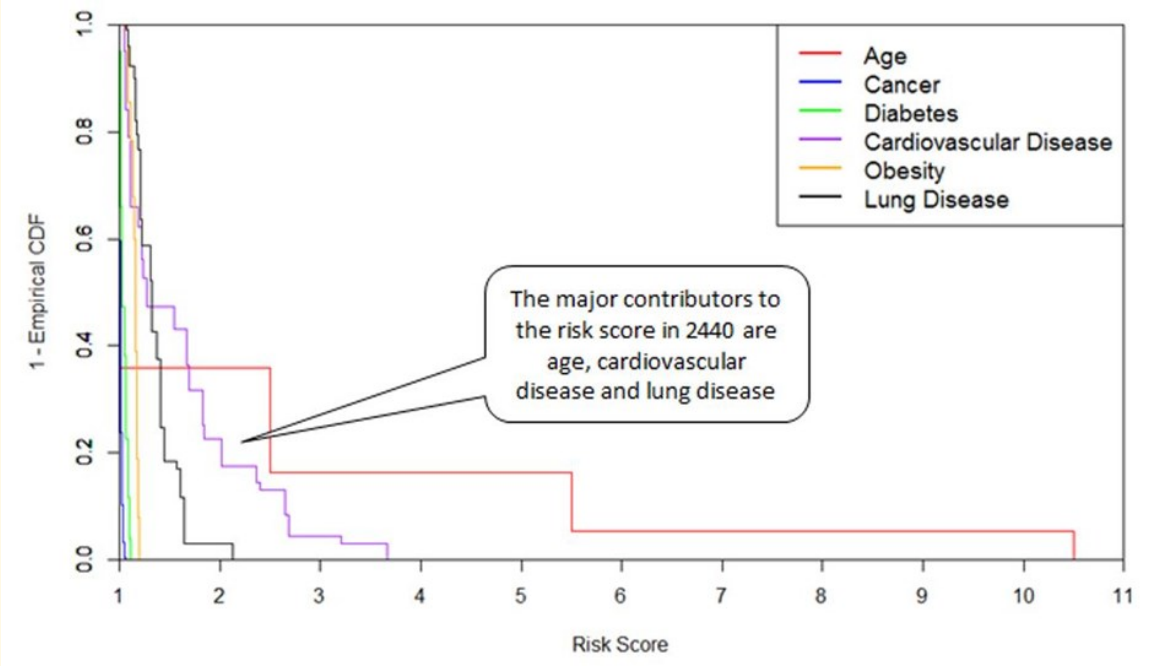
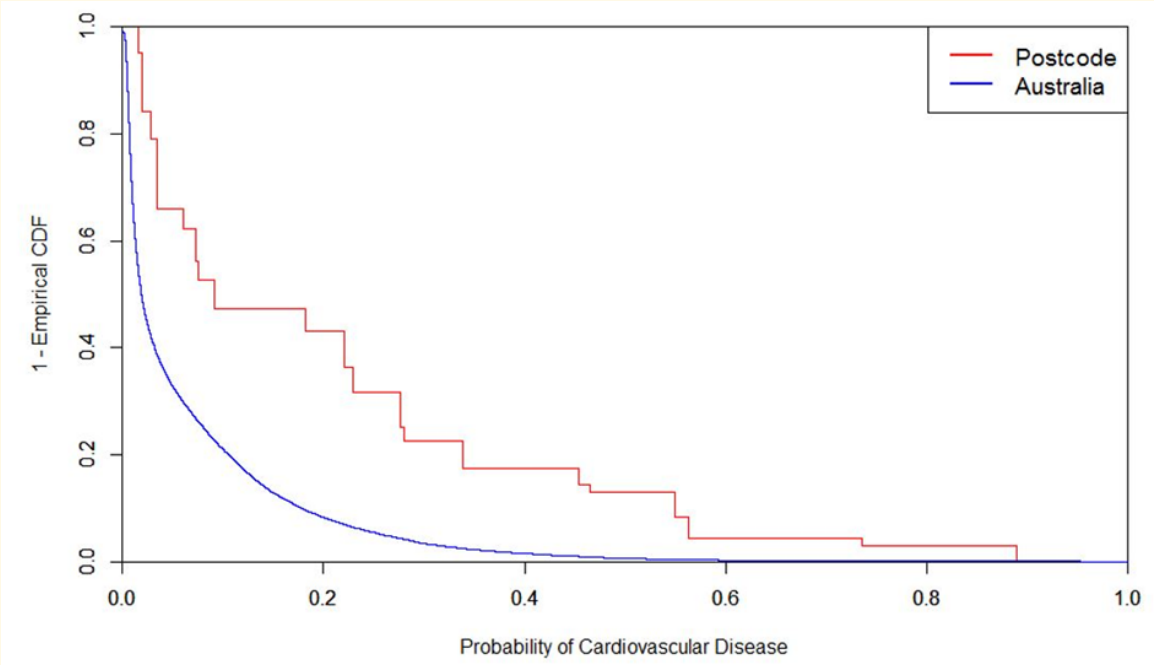


Figure 4: Incidence of Cardiovascular Disease



Which communities are most at risk?

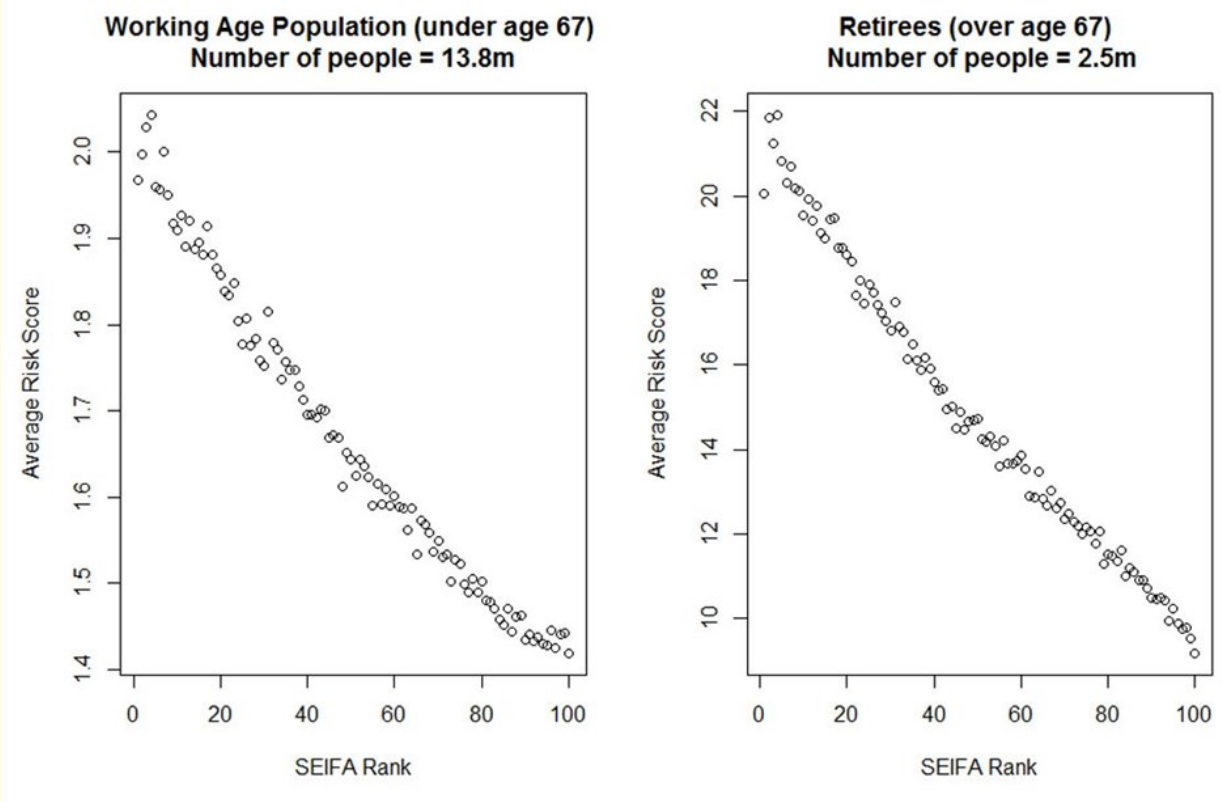
A finding from our analysis is that socioeconomically disadvantaged areas seem to have greater susceptibility to severe illness for COVID-19.

This is based on our examination of some results obtained by segmenting the dataset by the Socio-Economic Indexes for Areas Score (SEIFA) [iv]. The plot below demonstrates a **strong negative correlation** between SEIFA ranks and the average risk score for both the working population and retirees. Note that the risk score values for retirees are much higher than for the working population.

This is perhaps unsurprising – it is known in the medical community that in general, lower socio-demographic status is associated with worse health outcomes across many of the co-morbidities for COVID-19.

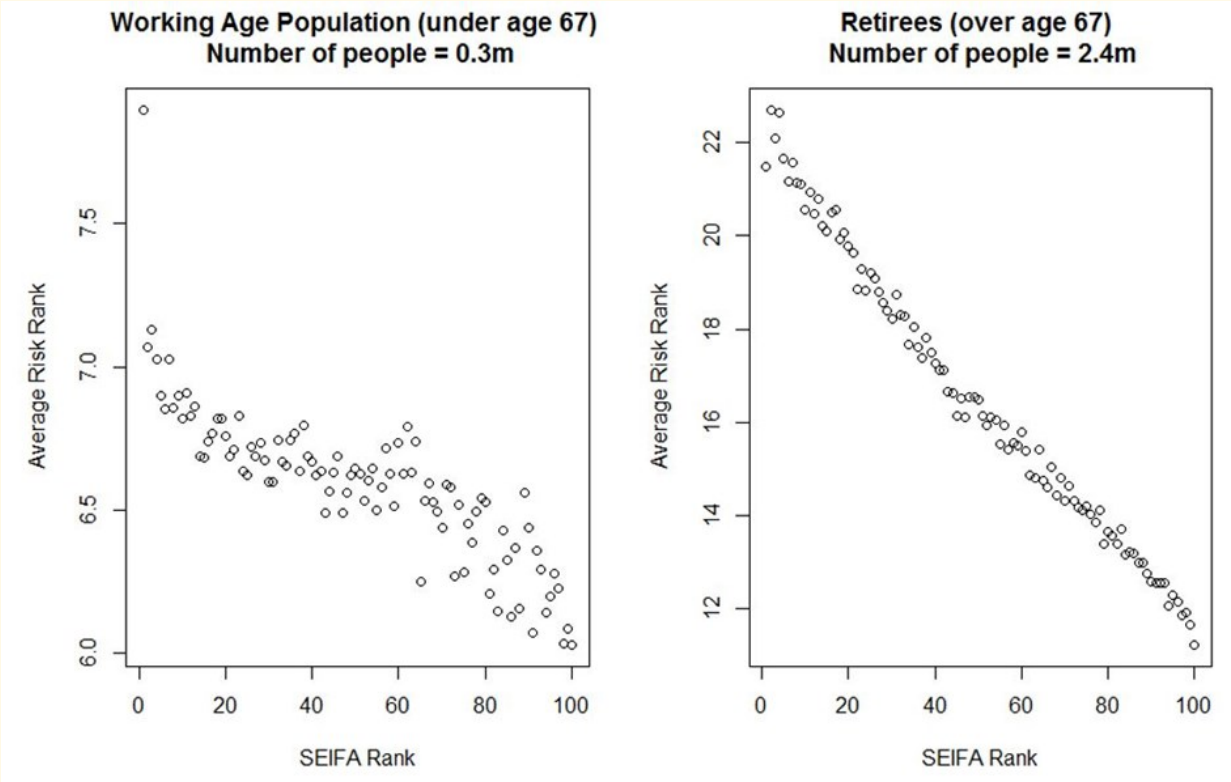
We also examine the most extreme risk scores (top 15%) across the Australian population to see whether this same relationship exists for individuals at highest risk, as identified by our model. This quantile was chosen based on the hospitalisation rate of diagnosed cases in this study.

Figure 5: Average Risk Score by SEIFA Rank



The plots above suggest that lower socio-economic levels correspond consistently to higher average risk of severe COVID-19 illness, regardless of age. A potential implication of these results is that **there may be a disproportionately larger impact on lower socio-economic segments of the population**.

Figure 6: Average Risk Score by SEIFA Rank for the top 15% of the Australian population



While the negative correlation still clearly holds for the population over age 67, the trend for the working age population is flatter in communities with SEIFA rank between 20 and 80. This means that the potential for severe cases is more randomly distributed across the middle socio-economic segments of the working age population. However, the strong negative trend is still largely present in highest and lowest SEIFA quintiles.

An important takeaway from this analysis is that **one of the most susceptible groups to critical illness or mortality seems to be the disadvantaged retired population.**

How can the COVID-19 Susceptibility Index be helpful?

We think there might be several places where the Susceptibility Index could be useful to government agencies, policymakers and the general public. As demonstrated by our analysis above, it is possible to identify which areas and demographics would be most at risk of severe illness or death if they were to contract COVID-19. This could aid medical, infrastructure and logistical planning, and the optimisation of resource allocation. Overlaying estimates of hospitalisation, ICU and death rates (from sources such as this New York study and this UK simulation-based model) may also help in planning for medical loads by geographic area.

When a vaccine becomes available, the index could be used to identify which population segments should be prioritised. The Index could also help with decisions around testing for COVID-19 in populations who may be likely to go on to have severe reactions to the disease should they become infected.

There are other demographic factors in our dataset which we have not yet investigated which may in due course yield valuable insights about specific segments of the population. For example, examination of risk score by household composition may be helpful in evaluating policy decisions, such as whether keeping schools open poses risks to their communities.

We can also investigate economic impacts resulting from illness or death within certain demographic segments or geographic areas. A clear use case is the examination of the impact of a widespread outbreak on specific industries and locations.

In terms of government planning, we envisage several ways in which the Susceptibility Index may be of use. Firstly, by providing a summary measure of severe illness risk by area, it is possible to get an estimate of the impact of different government policies, such as tightening lockdown measures.

Finally, the index can also provide insights concerning which demographic or geographic segments are the least risky. What suburbs could have quarantine restrictions eased with less risk? Which individuals in industry X of age group Y and geographic area Z could be most safely sent back to work to help revitalise the Australian economy?

We hope to have some further insights for you very shortly.

To view the map of the COVID-19 Susceptibility Index click here.

Our greatest thanks to all contributors who took the time to offer their professional expertise, interrogate our approach and results, and provide feedback.

If you would like access to the COVID-19 Susceptibility Index, please get in touch with the authors. Also if you have any suggested use cases, improvements or criticisms, we would be keen to discuss this with you. Please email calise.liu@finity.com.au.

[i] There have been several other co-morbidities identified in medical texts, such as hypertension and smoking. However, the interactions between these factors are not yet clear. Our modelling assumptions for the Susceptibility Index will be expanded upon in a future article.

[ii] Special thanks to the contributors to the COVID-19 Open Research Dataset Challenge on Kaggle https://www.kaggle.com/allen-institute-for-ai/CORD-19-research-challenge

[iii] Health incidences by Population Health Area from Australian Health Policy Collaboration http://www.atlasesaustralia.com.au/ahpc/data.html; Health incidences by Age and Gender from various sources including AIHW analysis of ABS data, Heart Foundation, Cancer Research UK, and ABS 2001 National Health Survey

[iv] We used the Index of Relative Socio-Economic Advantage and Disadvantage from https://www.abs.gov.au/websitedbs/censushome.nsf/home/seifa

Calise Liu

Calise is a Fellow of the Institute of Actuaries of Australia with five years of experience at Finity Consulting. She works in a range of general insurance areas including long-tail reserving, pricing, data analytics and climate risk

Alan Xian

Alan is a part-time actuarial PhD candidate at the School of Risk and Actuarial Studies at the University of New South Wales. His research investigates the application of analytic techniques to insurance inference and prediction. In this capacity, he explores a variety of theoretical, computational and practical considerations. Alan graduated with 1st class Honours and the University Medal in 2015 from Actuarial Studies and Statistics. He has also held GI, Life and capital analyst roles at Finity Consulting, TAL Life and Allianz Australia.

Actuarial Innovation Committee
– Nora Li

IFoA Asia Consumer Needs Survey: More Similarities than Meets the Eye in Hong Kong SAR and Mainland China Consumer Bases

By Kai Zhu
Actuarial Services Manager, KPMG Advisory (Hong Kong) Limited
Member of IFoA Life Asia Sub-Committee

1. Background

The IFoA commissioned Nielsen to conduct an independent consumer needs survey in Asia to investigate whether the life insurance markets in various Asian regions were meeting consumer needs. The survey is conducted through telephone interviews across Mainland China, Hong Kong SAR and Singapore. In total, 1,085 people participated in the survey with 684 in Mainland China (170 in Beijing, 179 in Guangzhou, 185 in Shanghai and 150 in Shenzhen), 201 in Hong Kong SAR and 200 in Singapore. All the respondents had a life insurance policy and were evenly distributed in terms of gender and age between 18 and 50 with the majority having full-time employment and a university degree or above. The results and findings on Hong Kong SAR and Mainland China consumers presented in this report form part of this IFoA Asia consumer needs research initiative. Using Nielsen's survey data on Hong Kong SAR and Mainland China, segmentation analysis is conducted to identify consumer segments and their underlying drivers, and to obtain a better understanding of consumer needs and purchase motivations in both markets. While the sample size used in the current study cannot be viewed as statistically significant given the large population in each market, we believe that the results based on the survey data are informative of the characteristics of the socio-economic segments of the consumer markets surveyed.

2. Insights

The IFoA Asia consumer needs survey results show that consumers in both Hong Kong SAR and Mainland China considered life insurance to be important to help them protect their families, to provide peace of mind against potential events, and to provide financial security.

Consumer satisfaction is a somewhat complicated story. Over 95% of respondents felt that they made a good decision when selecting their policy, however over 65% of those surveyed have experienced a change in circumstance since the initial policy purchase, and over a third would consider purchasing a different policy today if given the opportunity.

These results suggest that existing products have not provided enough flexibility to address the ever-changing protection needs of the consumer during the policy term. It would also suggest there is an opportunity for insurance companies to make more frequent contact with customers and better help them in assessing their evolving needs and make appropriate changes to their policies after the initial policy purchase.

Our segmentation analysis on the survey data identified the same consumer segment structure in both Hong Kong SAR and Mainland China markets. The three consumer segments identified in both markets are 1) Savers & Budgeters, 2) Managing Competing Needs, and 3) Supporting the Next Generation. Further interrogation of the consumer segments identified future financial priorities as the more significant indicator of consumer needs, more so than the typical demographical factors such as region, age, income or education level. This suggests that understanding a consumer's current and future financial priorities and explicitly incorporating these factors into product design, financial advice practice, marketing and sale processes can be valuable for insurers to better address the evolving needs of their customers. This in turn, would improve long-term consumer satisfaction and retention while also increase the potential opportunities to cross-sell and upsell. Using policyholder's present and future financial priority profiling can be an additional tool for insurers to more accurately identify and anticipate policyholder's financial protection needs.

Based on the Nielsen survey data and our consumer segmentation analysis, we find that the Hong Kong SAR and Mainland China markets share high degree of similarity in consumer needs and consumer base structure.

Demand for insurance is high in both markets, with nine out of ten respondents intending to purchase a protection policy within the next 12 months. The intention to purchase a protection policy from Mainland China is found to be significantly higher. The implication for the Hong Kong insurance market is that in order to maintain a higher market growth rate compared to other more developed Asian insurance markets, they may need to embrace the additional demand from Mainland China through Greater Bay Area market integrations, such as the "Insurance Connect" initiative.

3. Results

3.1 Consumer need and motivation

Whole life insurance product is popular in both Hong Kong SAR and Mainland China markets. Critical Illness or Cancer Protection is more popular in Hong Kong SAR while universal life and term life insurance products are more popular in Mainland China. We note that the results observed here can be affected by the distribution channels, which can impact policyholders' propensity to purchase certain life insurance products in these markets.

Protecting beneficiaries and peace of mind are of prime importance to consumers of life insurance in both markets. Respondents in Hong Kong SAR were more likely to report taking out life insurance for general good financial governance while respondents in Mainland China were more likely to take out life insurance for financial security.

Figure 1: Responses to 'What sort of protection policy do you hold?'

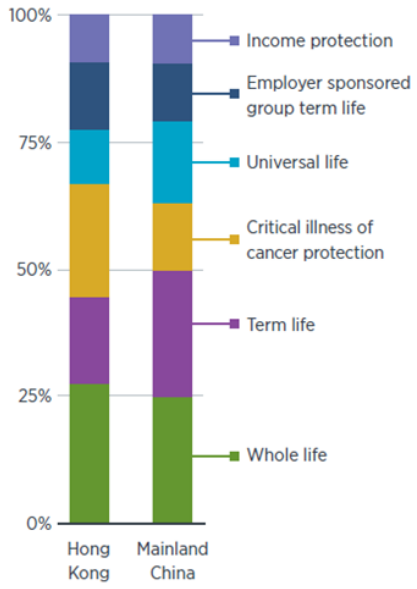


Figure 2: Responses to 'For what purpose did you purchase the policy?'

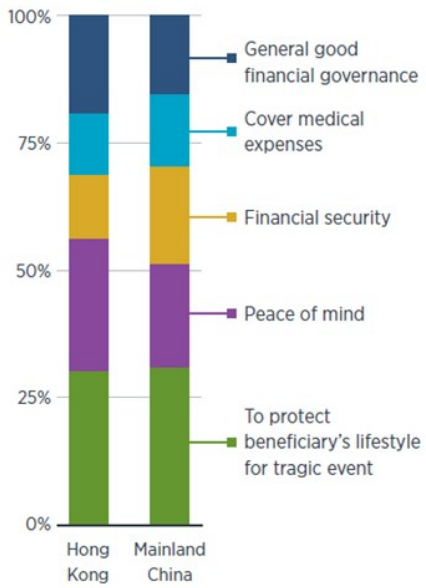
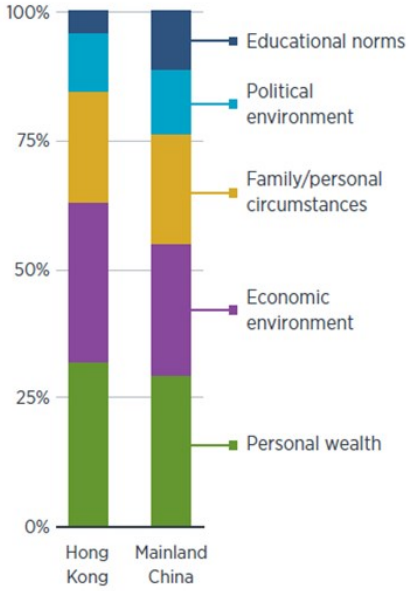


Figure 3: Responses to 'Which of the following factors are affecting your protection needs?'



When asked what factors affect respondents' protection needs, in both markets consumers identified personal wealth, economic environment and family / personal circumstance as being the most important.

3.2 Mismatch between financial protection provided and changing consumer needs over policy term

Policies appear to be appropriate at the time of purchase, but they fail to meet consumer needs over time as circumstances change during the policy term.

Over one third of consumers would consider purchasing a different protection policy, with only a quarter of respondents stating that they would purchase the same protection policy that they currently have in place. In addition, one in five would conduct further research before taking out another product indicating that there is appetite for greater consumer engagement.

It is worth noting that in Mainland China the respondents listed a wider range of changes they would like to make to their existing policy, such as critical illness and medical cover, as well as changes to the beneficiary. In Hong Kong SAR, the most popular changes that the respondents wanted to make to their existing policy were increasing the extent and value of the coverage. The difference between Hong Kong SAR and Mainland China could be reflective of their relative market maturity.

The findings above suggest that across the two markets there is a greater need for insurers and advisers to help consumers to understand their current and future financial goals and update or change their policies at regular intervals accordingly. Life insurers could benefit from giving greater recognition of the changes in consumer circumstances and the impact this has on the consumer's satisfaction with the product purchased. This recognition may take the form of life insurers reviewing their current product design and whether their products provide sufficient flexibility and options to meet consumer's changing financial protection needs. The current charging structures for surrendering or updating policies may also deter consumers from amending their policies to reflect any changes in their circumstances.

Figure 4: Responses to 'Assume you did not have this policy in place, what action would you take?'

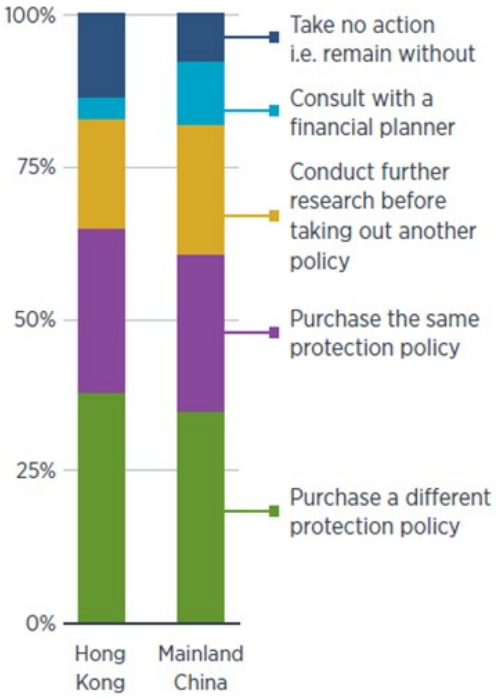
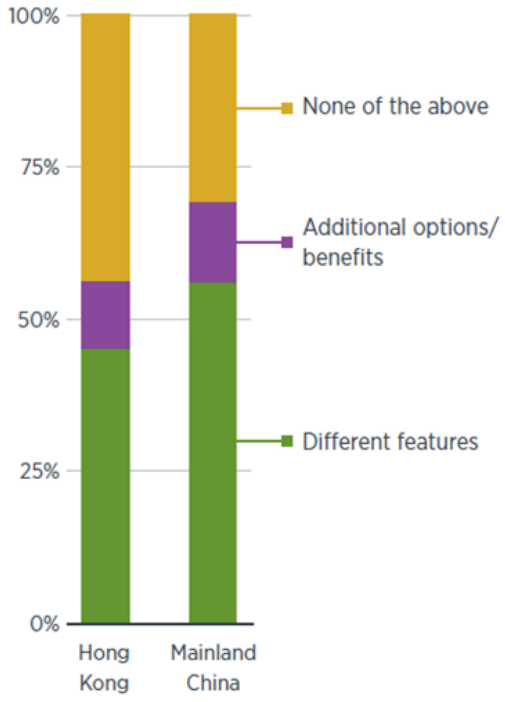


Figure 5: Responses to 'What would you change about your policy?'



3.3 Propensity to purchase

The overwhelming majority of respondents in Hong Kong SAR and Mainland China stated that having life insurance is important or extremely important in order to achieve their financial goals.

In both markets there is a high reported level of intention to purchase a protection product over the next 12 months. Intention to purchase a protection product is even higher in Mainland China (95%) as compared with Hong Kong SAR (82%). Again, we suggest that this is reflective of relative market maturity and suggests there is a larger and more rapidly growing insurance gap in Mainland China as compared with Hong Kong SAR. We note that this survey is conducted on respondents who already have life insurance policies, the propensity to purchase protection products among those who currently do not have life insurance policies may be different from those who have already purchased life insurance policies.

3.4 Insurance consumer segment analysis

Owing to the large number of demographic and behavioural factors included in the survey we conducted segmentation analysis. This analysis identified three distinct consumer segments, with respondents' future financial priorities identified as the main factor explaining the variance between the different consumer segments - more so than country, age, income or education level. The approach adopted in this study is outlined below.

Step 1: The K-mean clustering method, which is an unsupervised machine learning method, was used to identify the distinct 'segments' within the data based on interviewee's responses to the questionnaire.

First, the Elbow Method was used to determine the appropriate number of distinct 'segments'. The method examines the amount of variance explained by the segment analysis as a function of the number of distinct 'segments' used. The segment number used in the K-mean clustering exercise is chosen such that any additional segments used would yield a decreasing marginal gain in reducing the variance explained in the segment analysis.

For both Hong Kong SAR and Mainland China markets, it is found that the segment number is three based on the Elbow method. Therefore the subsequent K-mean clustering analysis was completed based on the understanding that there are three distinct segments in each of the two markets.

Figure 6: Responses to 'How important is having life insurance to helping you achieve your financial goals?'

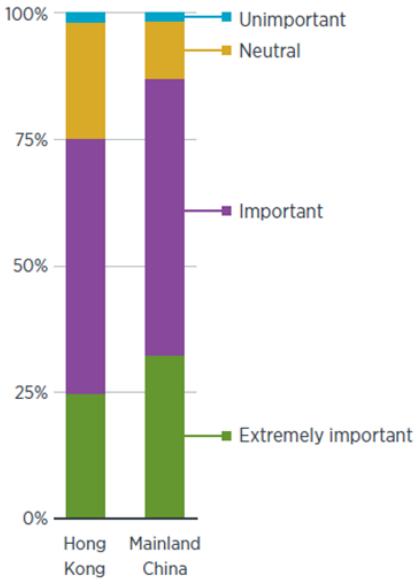
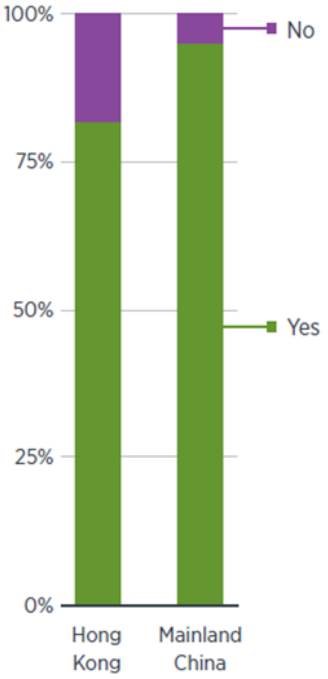


Figure 7: Responses to 'Will you purchase a protection policy in the next 12 months (Yes/No)?'



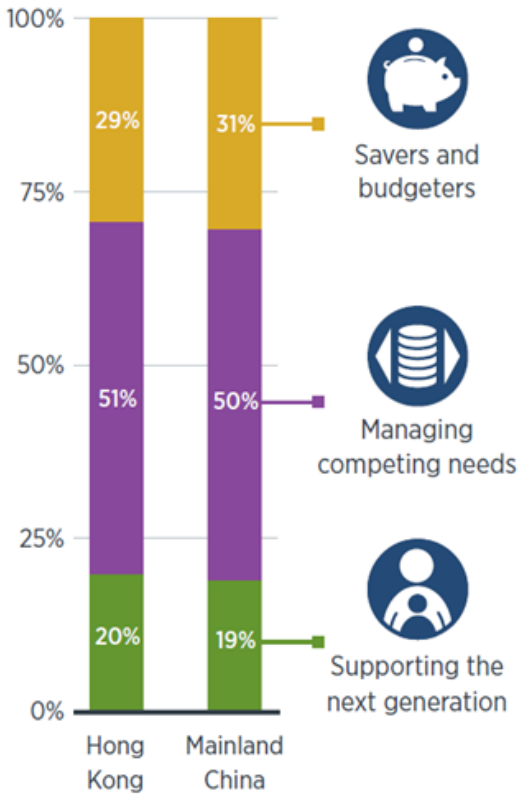
Step 2: After obtaining the K-mean results which have data points labelled as segment 1, 2 or 3, we combine the original data with the output of the K-mean segmentation results, and then apply a random forest classifier to this newly created set of "labelled" data. After training the random forest classifier to be able to predict which data point would belong to which segment based on the K-mean clustering results from step 1, we are then able to use the trained random forest model to tell us which features are most influential in predicting which segment the data point belongs.

The method for identifying which features are most influential in predicting which segment the data point belongs, used Python's sklearn library which uses the mean decrease impurity method. The random forest feature selection method in the sklearn library for Python ranks the variables in order of the information gain from each of them, and it found that the most important variable, accounting for more than two thirds of the total information gain, is individual's responses to the ranking of their future financial priorities.

Step 3: As 'future financial priorities' was identified as the primary determinant, a heat map was produced to assess the characteristics of each consumer segment.

Based on the above methodologies, it is found that Hong Kong SAR and Mainland China have similar consumer segment structure with the largest consumer segment in both markets as the 'managing competing needs' segment, followed by 'savers and budgeters', and then by 'supporting the next generation'.

Figure 8 : Consumer segment distribution by market



The average 'future financial priority' rankings based on the three consumer segments are shown below for both Hong Kong SAR and Mainland China. The ranking is based on a scale of 1 to 13 with 1 being the most important and 13 being the least important.

		Savings and Investing		
Region	**Group segmentation**	**Saving and budgeting**	**Investing (stock, funds, bonds etc)**	**Investing (eg. real estate)**
Mainland China	Savers & budgeters	3.0	3.9	4.9
	Managing competing needs	2.2	2.3	2.5
	Supporting the next generation	3.1	3.4	3.8
Hong Kong SAR	Savers & budgeters	1.8	4.3	5.5
	Managing competing needs	2.0	2.5	3.4
	Supporting the next generation	2.5	4.9	6.1

		Family-related needs				
		Marriage/short term desire	Buying a house	Buying a car	Saving for next generation	Saving for kids education
Mainland China	Savers & budgeters	9.7	6.0	7.3	6.5	7.7
	Managing competing needs	3.8	2.9	3.7	3.2	3.1
	Supporting the next generation	6.8	5.5	6.6	4.8	4.7
Hong Kong SAR	Savers & budgeters	9.5	6.4	8.3	7.6	8.8
	Managing competing needs	3.8	3.7	4.7	3.6	3.7
	Supporting the next generation	6.9	4.8	8.8	4.7	5.3

		Managing debts incl. mortgage		Retirement	Emergency	Tax
		Managing credit and debt	Paying mortgage	Retirement	Emergency fund	Paying taxes
Mainland China	Savers & budgeters	4.9	8.3	11.4	9.4	6.5
	Managing competing needs	2.6	3.6	4.4	3.2	3.0
	Supporting the next generation	4.4	5.9	6.5	4.6	6.5
Hong Kong SAR	Savers & budgeters	6.3	8.3	8.5	7.4	7.2
	Managing competing needs	3.5	3.2	4.1	3.2	4.6
	Supporting the next generation	6.1	6.1	6.0	5.3	7.9

We observe the following common characteristics for each of the three consumer segments across the two markets.

1. Saves & budgeters

- Apart from a high future financial priority in saving and budgeting, which is prevalently high for all three consumer segments and across both markets, and managing credit and debt for this consumer segment in Mainland China only, consumers in this segment have no other notable future financial priorities.
- This segment contains a higher proportion of the younger age group (18-25), single respondents and those with no dependents.

2. Managing competing needs

- This segment has multiple future financial priorities to fulfil simultaneously, these priorities include the following:
    - family-related financial priorities to fulfil such as marriage, buying house/ car, saving for children's education;
    - managing debt and mortgages – suggesting this segment borrows in order to fulfil its multiple financial priorities; and
    - this segment also rates saving for retirement and having an emergency fund higher than the other segments.
- This segment has a higher proportion of those aged between 26 and 35 for Mainland China, and between 26 and 40 for Hong Kong SAR. It also has a higher proportion of married individuals with no dependents as compared to the other segments.

3. Supporting next generation

- Generally, this segment places less priority on family-related needs such as marriage, buying cars, and managing credit and mortgages compared with the consumer segment that has multiple competing needs. However, it gives higher financial priority to saving for the next generation such as saving for children's education, and in saving and investing.
- This consumer segment has a higher proportion of individuals between the ages of 36 and 50 where 50 is the maximum age in this survey. This segment has a higher proportion of individuals whose family status is both married with children and divorced.

4. Conclusion: What does this mean for the Hong Kong life insurance industry

The findings presented here have implications for product design, charging structures, information from guidance services and regulated financial advisors, as well as for sales and marketing practices in the Hong Kong insurance market. In particular, the strong influence that financial priorities have over both decision-making and longer-term consumer satisfaction identify the need for insurers to offer product flexibility.

Whilst individuals felt that they had purchased the right level of protection at the time which they made the purchase, as their lives and needs change so too do their protection requirements. This is indicative that the insurance industry could better serve consumers through more frequent contact to assess the consumer's needs and help them to make changes to their policy, or purchase additional protection, throughout their lifetime.

Consumers show a desire for products which have built-in flexibility to change the extent and nature of financial protection offered if needed. The extent of flexibility required in a life insurance product would differ based on consumers' profiles such as the policyholder's present and future financial priority profile that can be used as an additional tool for insurers to more accurately identify and anticipate policyholder's financial protection needs.

The need for review and financial advice support differs for consumers with different financial priority profiles. For those with competing financial priorities and changing financial and family circumstances, more frequent assessment would be required to ensure their life insurance product keeps pace with their changing needs and priorities. In addition, those with more pressing and complex needs are likely to need advice, whereas those with less complex imminent needs could benefit from general information sharing and education on life insurance products. This could be aimed at helping consumers to increase their financial literacy to be better able to understand the options available to them when any financial protection needs arise in the future.

As Hong Kong insurance market has historically observed strong demand from the Mainland China consumer base, looking ahead to the future, this source of demand is important for the Hong Kong insurance market to sustain a higher growth rate compared to its other developed markets in Asia. The high level of similarity in consumer bases between the Hong Kong SAR and Mainland China observed in this study means that Hong Kong insurers remain well-placed to meet the needs of Mainland China consumers. At the same time, it highlights the importance for the Hong Kong insurance industry to continue innovating and improving its product and service offering for itself to differentiate and maintain a competitive edge. This theme of interplay between opportunities and threats would become more apparent as the Greater Bay Area market integration progresses. Hence the need to improve customers' longer-term satisfaction with the life insurance products purchased is as relevant now as it will be, if not more so, for the Hong Kong insurance industry in the future.

Impacts of Covid-19 on Life Insurance Through the Lens of an Auditor

by Thijs Bodaar, Senior Manager, KPMG Audit Hong Kong and Florence Li, Associate Director, KPMG Advisory Hong Kong

Covid-19 is impacting all our lives, at home and at work. It imposes a big strain on the medical services and causes major disruption to businesses. For insurers, there has been a decline in sales, changes in policyholder behaviour and day to day operational challenges. Additionally, the pandemic is causing increased volatility in the financial markets: equities have been extremely volatile; bond yields have hit record lows and credit spreads have widened dramatically due to concerns over increased defaults. This has impacted insurers' balance sheets and capital ratios significantly. Insurers will have to assess how Covid-19 and the effect on the financial markets will impact their accounting and financial statements disclosures. Similarly, the auditors will need to perform additional audit procedures in these uncertain times particularly on the assumption that the business continues to be a going concern.

In this article, we discuss the impacts of the Covid-19 pandemic on insurance market demand, policyholder behavior, operations, operating assumptions, financial markets and financial statements disclosure requirements. We discuss potential areas of concern and how this may increase auditor scrutiny. We focus our discussion on life insurers in Hong Kong and while there may be similarities, we understand that insurers are unique and so our observations are made looking at the market in general.

Sales Markets

The Hong Kong life insurance market is unique in that a large portion of the new business sales arises from Mainland Chinese visitors. Covid-19 induced border closures have had a big impact on the Hong Kong life insurance sales in 2020. According to a recent report by the Hong Kong Insurance Authority ("IA") [1], new business premiums for policies issued to Mainland Chinese visitors dropped from a total of HK$12.8 billion in Q1 2019 to HK$5.4 billion in Q1 2020, a decrease of 57.7%. New business premiums from Mainland Chinese visitors constitutes 15.5% of the total individual life insurance new business premiums in Q1 2020 as compared to 26.4% in Q1 2019. This decline in new business premiums from Mainland Chinese visitors is likely to be even bigger in Q2.

While Covid-19 may generate awareness and the desire for protection type of products through increased health and medical insurance sales, the impact on savings type insurance products – where the premium sizes are typically much larger – may be the opposite. With business closures and rising unemployment there is a tendency to maintain liquid savings to counter any unforeseen circumstances. Furthermore, social distancing measures means most of the insurance intermediates are unable to meet clients face to face and therefore fewer leads are being generated. On February 21, 2020, the IA has announced a set of temporary facilitative measures to reduce the risk of infection from selling insurance from face-to-face meetings2. For Qualifying Deferred Annuity Policy and Voluntary Health Insurance Scheme products, insurers and intermediaries may dispense with the need to conduct a Financial Needs Analysis in the selling process of these products, provided that they have duly performed upfront disclosure of important information with their clients and applied an extended cooling-off period of not less than 30 calendar days and providing the policyholder with the opportunity to ask follow up questions. Despite the facilitative measures, new business premiums (excluding retirement schemes) of long-term business from all buyers in Q1 2020 slumped to a total of HK$35.1 billion from the same period in 2019, a drop of 27.5% [2].

To stimulate new business and to attract local customers, some insurers have launched campaigns designed around Covid-19. For example, including a cover for Covid-19 related death or providing additional benefits for Covid-19 hospitalisation. These additional benefits would need to be reflected in the insurance liabilities.

As an auditor, we are interested in the actions that management has taken to combat the adverse impacts from Covid-19. Our focus is on the financial and accounting implications. We would need to verify whether these additional liabilities are adequate and free of material misstatement. In terms of new business sales, we would investigate the impacts on key metrics such as (but not limited to) New Business Premiums and Annual Premium Equivalent. As these key performance indicators come under pressure, a skeptical auditor will consider the possibility of management bias or incentives to influence these metrics to reflect a better or worse result. Another area of focus is on the valuation of intangibles and distribution agreements which may be more susceptible to impairment as a result of lower new business volume projections.

Policyholder Behaviour

Unemployment rates in Hong Kong has hit a 15-year high at 5.9% in June 2020 [3], with Covid-19 as the main culprit. The rise in unemployment could cause difficulties with insurers' premium collection. Policyholders might not have the funds or ability (due to travel restrictions) to make good on their regular premium payments and policies with sizeable cash surrender values may lapse. This in turn may trigger the need to revise persistency assumptions.

Insurers have been offering relief to policyholders to avoid policy lapses including extending the grace period for overdue premiums. Management could also consider increasing the permitted payment methods for easier cross-border money transfers or providing policy loans to policyholders.

As an auditor, we will want to assess how changing policyholder behaviour and management actions may impact the persistency assumptions. If the insurer provides policy loans as a relief measure, the valuations of the loans will need to be assessed against the surrender value on the policies.

Operations

Covid-19 has also impacted from an operational perspective with challenges to the governance and control environment and many insurers invoking cost reductions across the business. Working from home arrangements have been in place for prolonged periods and many processes were not designed to be performed remotely. Where internal controls are not automated and performed 'hardcopy', this poses challenges to the effectiveness of the control environment. Controls and the usual governance mechanics may have had to be relaxed, overridden or skipped over, with no compensating controls, to accommodate the unprecedented number of workers staying at home and ensuring the business continues to operate.

While there may not be anything malicious with these modifications in the control environment, an auditor will need to apply additional scrutiny on management override of controls, controls that were completed outside of their normal cycle and frequency and changes in the design and operation of any controls. If controls have not been operated effectively, there is a risk that the financial reports have not been prepared in a controlled environment leading to a higher risk of material misstatements. If this cannot be mitigated, it impacts the extent of substantive procedures that the auditor needs to perform.

Insurers might also consider reducing costs by restructuring their operations and (amongst others) reduce staff levels, to bring cost levels in line with the reduced new business volumes. In the Hong Kong life insurance industry, we have seen project deferrals, delays and cancellations; and a general hiring freeze, but we haven't seen severe cost cutting measures such as redundancies and down-sizing that has been witnessed in other industries. Many insurers consider the situation as temporary and resources need to be maintained to support the business when markets recover.

If cost cutting measures are taken, for example through restructuring, we would assess the adequacy of the provision for restructuring. Hong Kong Accounting Standard ("HKAS") 37 describes the criteria a restructuring needs to meet in order to allow the recognition of a provision. These criteria are that (1) the insurer has a detailed plan for the restructuring and (2) has raised a valid expectation to those affected that it will carry out the restructuring by starting to implement that plan or announcing its main features to those affected by it. As an auditor, we would be assessing the provision against those criteria.

Operating Assumptions

For the actual experience of the mortality rates and morbidity rates, due to the fact that Covid-19 is quite well contained in Hong Kong for the time being, the impact from Covid-19 is expected to be minimal. The expectation is therefore for minimal changes to the mortality and morbidity rates assumptions.

Interestingly, there might be an impact on the actual experience of the morbidity rates related to other diseases and medical conditions. Due to the fear of contracting Covid-19, the general public has delayed or cancelled non-urgent and non-critical visits to clinics and hospitals. Thus there is a possibility that the actual experience of the morbidity rates on health and medical insurance might decrease or defer to later periods. Since such decrease or delay of the actual experience is considered to be temporary, a large change to the morbidity rates assumptions is not expected.

On the actual experience of the lapse rates, the impact from Covid-19 on protection type of insurance products and savings type of insurance products might be different. As noted earlier, Covid-19 has created an awareness and a fear factor among the general public to keep or to purchase protection type insurance and therefore the actual lapse rates on such products may improve, while the actual lapse rates on the regular pay savings products might be higher due to the financial and logistical difficulties faced by the policyholders to pay the premiums.

On the maintenance expenses, due to the reduction in new business sales, there may be a negative impact if the total expenses do not reduce in proportion to the reduction in new business sales. Inflation for expenses is expected to be low in the immediate and longer-term impact or as Olivier Blanchard of Peterson Institute for International Economics argues, looks strongly deflationary: unemployment has soared, commodity prices have collapsed, much spending has vanished, and precautionary savings have soared [4].

As an auditor, we will ask for the actual experience studies performed in the year. For areas in which we observe abnormal trends, we will enquire further on the underlying causes and may ask insurers to perform additional and more detailed analysis. A potential area of debate is to what extent the actual experiences resulting from Covid-19 should be taken into consideration when setting the long-term assumptions. Is there a need to change the existing assumptions setting methodologies to address the impacts from Covid-19? Assumptions setting is both a science and an art. It is important to have the actual data, but it is even more important to decide how the data is used with sound justification. We anticipate more frequent communications and active discussions with insurers to address any potential issues.

Financial Markets

Movements in equities, interest rates and credit spreads create tremendous asset liability management risks for life insurers. Life insurers invest most of the assets in bonds and the yields on these have fallen dramatically. The crisis also puts pressure on corporate bonds which may cause credit concerns and may lead to an increase in bond downgrades. On June 10, the U.S. Federal Reserve pledged to keep interest rates at zero, most likely through to 2022 as the Federal Reserve leaders predict a slow recovery for the U.S. economy [5].

With the extremely low interest rates environment which is expected to prolong into the future, the valuations of liabilities will trend upwards. Insurers as well as regulators are considering to re-visit their existing methodology of setting the discount rates. For example, on June 13, the Actuarial Society of Hong Kong has proposed to the Hong Kong Insurance Authority to change the reinvestment yield under the Hong Kong Insurance Ordinance (HKIO) basis from the current 50% yield at valuation date and 50% forward looking yield based on a three-year historical average (50/50 and 3-Year Averaging) to 20% of the yield at valuation date and 80% forward looking yield which is based on a five-year historical average (20/80 and 5-Year Averaging).

The developments in economic assumptions can result in solvency challenges as well. The reductions in discount rates lead to increases in the valuation of the liabilities and a lengthening of the durations. The extent to which the increases in liabilities exceed the changes in asset values drives a reduction in solvency.

Insurers might take management actions to combat the adverse impacts of financial market on liabilities and solvency. For example, insurers could reduce the level of crediting interest rates on universal life products and reduce the cash dividend or reversionary bonus on participating products. They might also re-price or even shelve certain products that are or have become loss making. Closer solvency monitoring and taking of mitigating actions by insurers have been observed, such as limiting dividend distributions, entering new reinsurance contracts or managing the assets to generate higher yields.

In addition, some insurers are considering to re-assess their solvency methodologies to ensure no excess prudence remains in the basis; and some are considering to review the severity of stresses in determining the resilience reserves given recent experience.

As an auditor, we will assess carefully any proposed change to the methodology on discount rates. Insurers will be expected to demonstrate that the change of methodology is appropriate and justifiable, and in agreement with local regulations. Regarding solvency, we would be investigating if any regulatory solvency requirements have been breached and what this means in terms of the going concern principle and required disclosures. The auditor would also be assessing the actions taken by management and seek to validate the resulting consequences for financial reporting.

On the asset side, the value of bonds has increased as a result of lower yields and the value of equities has been extremely volatile. Insurers need to assess whether impairment losses should be recognized for investments that are not classified as fair value through profit or loss. Under HKAS 39, an investment in a debt instrument is impaired if there is objective evidence of a loss event since initial recognition that has an impact on the estimated future cash flows. Indicators of impairment include a borrower's significant financial difficulties or it becoming probable that the borrower will enter bankruptcy or financial re-organisation. A decline in the fair value of a debt instrument or a change in its credit rating may not in itself be an indicator of impairment. However, it may be evidence of impairment when it is considered with other available information. For available-for-sale equity investments, HKAS 39 requires an impairment loss to be recognized if there has been a significant or prolonged decline in the fair value of the investment below its cost. If an insurer applies HKFRS 9 and has financial instruments that are within the scope of the expected credit loss ("ECL") model, management should consider the impact of Covid-19 on the ECL.

As an auditor, we would be auditing managements' impairment assessment to verify if we agree with managements' decision to impair or not to impair or in the case of HKFRS 9 assess the impact of Covid-19 on the ECL models.

Disclosures [6]:

The Covid-19 pandemic may increase the level of estimation uncertainty when measuring insurance liabilities and assets. This may require enhanced disclosures and may also affect the disclosure of sensitivity analysis. Insurers should disclose the assumptions used, and sensitivities, for the measurement of insurance liabilities. This may involve explaining the impact of Covid-19 risks on each type of insurance business, how experience to date from Covid-19 deviates from existing assumptions about pandemic risk and how those risks are managed. These disclosures should also include considerations around risk concentrations, claims development tables and credit, liquidity and market risk.

For investment portfolios, insurers should disclose the nature and extent of risks arising from financial instruments and how they manage those risks. Insurers will need to exercise judgement to determine the specific disclosures that are relevant to their business and necessary to meet these objectives.

Decreases in asset valuations arising from Covid-19 may impact regulatory capital and solvency calculations and disclosures about how the entity manages capital. Disclosures may also be required about non-adjusting events occurring after the reporting date that impact subsequent financial asset or insurance liability measurements. For some insurers, further disclosures around potential going concern issues may be required.

As an auditor we would be assessing the completeness and accuracy of these disclosures.

Concluding

The impacts of Covid-19 on the life insurance industry are not limited to the areas discussed in this article and all of the above observations and discussions are based on the current situation in Hong Kong. The pandemic is far from over and it is evolving over time. Too little is known about the virus at this time, and although medical researchers and pharmaceutical companies are actively developing vaccines and effective treatments, there are a lot of uncertainties on how the virus will develop over the coming years.

It is clear however that Covid-19 has caused significant disruption to Hong Kong life insurers. The management, actuarial and finance functions are under significant pressure. The focus of the auditor will be on adequate and complete translation of the broad effects of Covid-19 to the financial reporting. In addition, because of the wide-ranging implications and the various management actions that are being taken by insurers, the auditors will perform additional procedures and more extensive execution of the existing procedures.

The actual experiences resulting from the pandemic will change over time and both insurers and the auditors will need to monitor this evolution closely in order to stay on top of the development to assess the financial reporting implications. We expect on-going and much more frequent communications between the insurers and their auditors in order to facilitate a timely and open discussion, avoid last minute debate and agree on sensible conclusions and reporting that will allow us to ride through the waves together.

[1] *Hong Kong Insurance Authority – Insurance Authority releases provisional statistics of Hong Kong insurance industry in the first quarter of 2020*

[2] *Hong Kong Insurance Authority – Insurance Authority introduces temporary facilitative measures to reduce the risk of virus infection in the selling process of selected insurance products*

[3] *South China Morning Post – Hong Kong Unemployment Hits 15-year High, with 5.9 Percent out of Work*

[4] *Financial Times – Why Inflation Might Follow the Pandemic*

[5] *The Washington Post – Federal Reserve Predicts Slow Recovery with Unemployment at 9.3 Percent by End of 2020*

[6] *KPMG – What are the Specific Accounting Implications for Insurers*

Impact of COVID-19 on Actuarial Assumptions

By Rahul Khandelwal, Appointed Actuary of Transamerica Life (Bermuda) Ltd based in Hong Kong.

One of the primary building blocks for generating actuarial outputs are actuarial assumptions. On one hand, these outputs blended with expert judgments act as key decision-making tools for insurance business and on the other, business variances are explained by these actuarial outputs and scenario analysis. Therefore, appropriate actuarial assumptions and selected models are of paramount importance to the solvency levels and overall performance of the companies. The need for better understanding of pandemics or other potential global health threats and their associated impact is very pronounced now. This article explores diverse possibilities of expected changes to such assumptions to continue to produce reliable robust outputs under the risk posed by Covid-19.

Mortality assumption is a key factor for projecting expected liabilities. Generally, this assumption varies by model point profile and makes references to standard mortality tables. Sometime, internally developed tables with appropriate adjustments are implemented. Use of reinsurance rates or with possible adjustments to the base rates by referencing to reinsurance rates is a common practice as well. Current pandemic poses significant challenges to the way in which this assumption is currently set.

Continued infection and associated co-morbidity indicate that this assumption can be assumed to vary not only by age rather by pre-existing and potential underlying health conditions or a combination of both. For the blended approach, it can be assumed that with no underlying health conditions it still varies by age, but with underlying health conditions it only varies by underlying health condition irrespective of age. It could lead to changes in product design, where COIs are guaranteed only for a limited period with periodic underwriting in place to allow proper pricing and adequate reserves. Role of underwriters become crucial in designing such periodic underwriting at minimal cost to remain competitive in terms of profitability and affordability.

Any impact of climate change on mortality rates is important to account for by referencing climate data levels with historical mortality rates under appropriate climate metrics. Due to better climate, fatality rates can be expected to reduce, whilst it may be higher in reality due to inadequate availability and access to medical facilities or fear of patients to visit hospitals. Existence of in-force block with inbuilt accidental death cover may offset such increased claim cost as people are self-isolating and spending less time on roads. Moreover, mortality rates can be expected to reduce due to lower incidence of infection from other communicable diseases from practicing Covid-19 precautionary measures in daily life. Increased awareness in rural areas to maintain good health would certainly extend impact to overall mortality rates.

Simultaneously, the level of continued high stress developed due to the fear and anxiety during the pandemic would be an important consideration in forecasting long term mortality rates. It would require an appropriate loading at older ages. In addition, the impact of this pandemic on substandard in-force polices, joint life polices, group term life policies, expected changes in reinsurance structure/ rates/coverage and evolving underwriting practices (e.g. face to face underwriting vs digital underwriting) has to be considered while setting mortality assumption.

A question would arise on how to adjust the mortality rates and mortality improvement assumptions appropriately. Fuzzy expert systems could be explored to deal with this expected volatility around mortality assumption setting due to this pandemic and its emerging complex correlation with underlying health conditions where neither the prediction nor the impact on mortality risk is clear cut.

While projecting liabilities ***lapse and premium persistency assumptions*** not only allow in managing cash flows and liquidity but also maximizes returns to policyholders by proper asset liability management (ALM). Reasonable liquidity cash flow management and ALM are also dependent on cash generation from new business. Liquidity drags overall returns on assets and hence impacts policyholders' benefits in long term and thereby profitability. The effect of this pandemic on socioeconomic factors poses significant challenges to lapse and premium persistency assumption setting.

Current market conditions and economic recession due to COVID-19 may force liquidation of policies. Coupled with persistent low and uncertain interest rate environment instigate to revisit any dynamic lapse assumption in liabilities projection and ALM. It can reduce overall cost of ALM and thereby benefitting policyholders. By setting up reserves dynamically, it not only provides clarity to the capability of absorbing any potential economic shocks but also makes room for proactive action.

Unemployment, inability to pay premiums and perceived deviation in benefits from the original purpose of buying policies cause to explore premium persistency assumption setting to vary by income, occupation or even by industry. In addition, involuntary use of digital transactions could mean premium persistency to improve under certain block of business. A scoring mechanism to assess awareness and willingness to use technology by policyholders confirmed through an appropriate underwriting questionnaire could allow forecasting this assumption better.

Expense assumption takes into consideration in-force and new business projections. A comparison of allowance with operating expense is generally used to set long-term expense assumptions. This pandemic poses risks to in-force management as well as to new business and the way in which the policy servicing activities are generally performed.

For example, any expected adjustment to operating expenses due to changes in acquisition and maintenance activities (e.g. face to face underwriting vs digital underwriting), use of digital communication only for servicing, increase in staff training cost, reduction in rents (encouraged by small office areas and work from home), cost of acquisition of new technology etc. needs to be reflected in the long term expense assumptions. The long-term sustainability together with a target operating model encompassing the recurrence of this or any new pandemic has to be factored.

Economic assumption allows projection and discounting of liabilities as well as to perform ALM exercise to derive appropriate investment strategy. Persistently low and uncertain interest rate or even having negative interest rates is problematic as investment grade bonds are one of the popular choices for ALM amongst insurers. This poses significant reinvestment risk and leave with a choice between long term matching vs short term matching. Being in cash in short term can allow tapping on attractive investment types (not yet emerged) on the horizon (e.g. new Sector Bond). Influence of climate change on asset returns should be observed closely to tap on opportunities to manage guarantees and asset returns. A more frequent assumption review is encouraged specially during this pandemic.

Expected asset default assumptions are to be derived with a term structure factoring economic conditions. Similarly, attention needs to be drawn towards the expected volatility in credit spread. Analyzing and modeling by sector to allow this assumption to vary by rating and sector could be useful.

Balancing between the hedge costs coupled with expected default risk and achieving organic hedging through product diversification can be considered as viable alternatives.

In order to reduce ALM cost and to manage reinvestment risk in conjunction with dynamic lapse assumption warrants that ALM is performed by splitting liabilities based on the level of inherent guarantees. As such, it needs to be considered in the long-term interest rate assumption setting. Credit risk management by using SPVs allows possible shift to the interest rate assumption net of expected default. Due diligence is to be made to minimise concentration risk as there could be market run at this moment to procure such instruments.

In ***conclusion***, while COVID-19 poses significant risks to business, use of updated assumptions in planning will not only allow reliable output for efficient decision making but also fuel business growth by generating value for money to policyholders. It can result in increased penetration rate with increased confidence of customers on insurance industry.

The details mentioned in this article are the independent view of the writer of this article and not that of his employers.

Rahul Khandelwal MSc FIA FIAI FASHK is the Appointed Actuary of Transamerica Life (Bermuda) Ltd based in Hong Kong. He carries more than 13 years of experience in life insurance industry – spanning across both Hong Kong and international markets.

A New World Order

By Alistair Chamberlain

Group head of product and actuarial, global insurance at HSBC Life

Coronavirus is one of the greatest challenges the modern world has faced. From its macroeconomic consequences to the human mortality impact and mental health challenges of self-isolation, it has the potential to impact the lives of nearly everyone on the planet. Huge pressure is being put on healthcare services, and governments are to act pragmatically, changing policies daily. For business, the watchword is 'agility', adapting to new ways of operating to protect the health of the workforce while trying to maintain continuity for clients, customers and business partners.

As we digest the news and the impact it is having on us, our families and communities, actuaries must also discharge the responsibilities and professional duty we have to the companies and societies we serve. The impact to our respective businesses and wider society comes from multiple and varied sources.

Business disruption impact

As white-collar workers, the go-to business interruption solution is working from home. As we settle into the new 'normal', specific home-working challenges for actuaries include mobile computing power (some companies allowing actuaries to take desktop and other equipment home, as well as laptops) and new communication challenges, including with those teammates and colleagues we would normally communicate with on a real-time, face-to-face basis. Thankfully, this crisis has reached us in the broadband age, and in most cases the communication solutions are excellent. While conference call facilities and servers are challenged by the volume of traffic, and family interruptions on work video calls are now commonplace, those businesses that stress tested their business continuity and contingency plans will be grateful. When this pandemic is over, the largest work from home exercise of all time is likely to change the way we work forever. Overall, the business disruption impact seems manageable and rather minor in the context of the unfolding crisis.

Business volumes impact

In Q1 2020, consumer behaviour changed in a way we couldn't have imagined in January. Sorting out one's personal finances, often seen as a 'job for tomorrow', is even further down the priority list in the immediate term. A long face-to-face meeting with a complete stranger – a standard element of financial planning in many places – is currently unimaginable. Actuaries need to distinguish between short-term disruption and long-term paradigm shifts, bearing in mind that the long-term change in trend is likely to be facilitated by our now-intimate familiarity with remote connectivity. Financial planning via video conference is likely to be rapidly accepted and normalised. Consumer appetite for insurance is also likely to change, with awareness of and sensitivity to potential life events at an all-time high, and an increasing demand for new types of cover. People may start to think about their policy, and the cover provided, in more detail – a number of customers have had travel insurance claims rejected as a result of government advice regarding travel, even though customers reasonably changed their plans. In Asia, insurance companies saw strong demand immediately after the SARS crisis. In some markets, we are already seeing a large increase in uptake of protection products that consumers have, in the past, struggled to engage with.

Market impact

The initial phase of the crisis, when cases appeared to be limited to Asia, was largely shrugged off by the financial markets. The current phase, in which the impact is hitting home in Europe and North America, has sent markets spiralling, calling the valuation of long-term assets into question. This, in turn, quickly generates questions about capital measures, what the numbers mean and what actions companies should take. As actuaries take this in, they need to bear in mind the limitations inherent in the bases and models, which are now being operated with previously unseen and unforeseen parameters. As well as understanding and relaying all this, actuaries need to consider the macro context and the underlying, sometimes implicit, limitations. Helping companies make sense of the numbers in fast-moving and uncharted territory is a moment when all of our skills, knowledge and judgment are put to the test.

Claims impact

So far, the insurance claims impact has largely been felt on general insurance product lines, with a massive incurrence of travel cancellation claims and business disruption cover potentially triggered. Indeed, swathes of suppliers in the UK responded to the crisis by completely withdrawing travel insurance products from the market before the government imposed travel restrictions.

In some markets, policy clauses will often exclude governmental action (eg forcible closure of businesses, even when they are not directly impacted) or can limit exposure with respect to new viruses. Insurance that doesn't deliver at the moment of truth, while being actuarially logical, will raise major questions about the effectiveness of the industry when it is most needed. It remains to be seen if this will change people's willingness to pay for stronger cover, or if governments will accept that they effectively underwrite unexpected universal loss events such as COVID-19. Either way, it will provide a test for insurance industry bodies, insurers, reinsurers and intermediaries, determining how far they are willing to go to define what they are prepared to protect individuals and businesses from during an 'unexpected, unforeseen event' for a customer.

While mortality cases make vivid images and headlines, as an insurance mortality claims event, the experience has so far not been extreme; even medical insurance claims are limited, with treatment in most countries restricted to government-controlled facilities. The mortality impact is focused on some of the most vulnerable groups of society, who are either aged, and therefore largely not in the insured population, or who may have struggled to get insurance in the past due to inherent health conditions. The latter group especially may be one where we have questions to answer about access to insurance cover.

Longer-term implications

The long-term implications of the current crisis seem likely to be profound on many levels – maybe more so in Western society, where this is the first major pandemic for 100 years. Impact is likely to range from the relatively minor (maybe more appetite for remote working) to major questions about how we organise as a society on a local, national and global basis. For insurers, the impact will be felt for some time across life and general insurance, covering both immediate-term balance sheet implications and also some longer-term questions about how we serve society and how our products and services responded in the hour of need. Questions will be raised about policy limits, wording, exclusions and coverage levels – how will insurers, corporates and individuals react if another 'unforeseen' event hits? We will need to find new solutions to these societal challenges.

What can actuaries do?

First of all, we must keep going through these tough and strange days – which include extended working from home while managing our personal lives and supporting family near and far. These things should not be trivialised, and it will test our perseverance and impact aspects of our mental and physical health. Secondly, we must do what actuaries are required to do in our professional capacity – manage the immediate and also take the long view, exploring and optimising a range of plausible outcomes. Our businesses and societies are being asked tough questions, and so are we. While we won't have all the answers, our training to understand a new range of implications and scenarios and enabling rapid, level-headed and sound decision-making is fully needed now.

Originally published by The Actuary, May 2020.

MARKET UPDATES

MPFA

Revised Mandatory Provident Fund (MPF) Guidelines

The Mandatory Provident Fund Schemes Authority (the Authority) has recently approved the following two sets of revised MPF Guidelines:

1. Guidelines on Equities and Other Securities (Guidelines III.2); and
2. Guidelines on Default Investment Strategy (Guidelines III.14).

Guidelines III.2 have been amended to give effect to certain changes to the existing investment restrictions on listed real estate investment trusts (REITs) as follows:

(i) REITs authorized by the Securities and Futures Commission and listed on the Stock Exchange of Hong Kong (HREITs) and REITs listed on the approved stock exchanges in Australia, the UK and the USA
The investment restriction that the total amount of funds invested in any HREIT or REIT listed on the approved stock exchanges of Australia, the UK and the USA and other kinds of securities approved by the Authority cannot exceed 10% of the net asset value of an MPF fund is changed. After the change, the amount invested in any one of these REITs shall be subject to a separate and individual limit of 10% of the net asset value of an MPF fund.

(ii) REITs listed on the approved stock exchanges in Canada, France, Japan, Singapore and the Netherlands
Permissibility for MPF investment purpose is extended to REITs listed on the approved stock exchanges in Canada, France, Japan, Singapore and the Netherlands. That is, the total amount invested in these REITs and other kinds of securities approved by the Authority cannot exceed 10% of the net asset value of an MPF fund.

Moreover, we have made textual edits to Guidelines III.2 and consequential amendments to Guidelines III.14 for housekeeping purpose.

Copies of the revised MPF Guidelines can be downloaded from the Authority's website at www.mpfa.org.hk. If you would like to have hard copies of the revised Guidelines, please contact Ms Teresa Lee on 2292 1286.

Insurance Authority

Guideline on Actuarial Review of Insurance Liabilities in respect of Employees' Compensation and Motor Insurance Business *(GL9)*

Paragraph 6.1 of GL9 stipulates the qualification and work experience requirements of an actuary accepted by the Insurance Authority ("IA") for certifying and signing actuarial reserves certification in respect of an authorized insurer's employees' compensation and/or motor insurance business. With the introduction of a General Insurance ("GI") qualification system by the Society of Actuaries' ("SOA"), the IA has decided to accept, with immediate effect, a fellow of SOA GI track with module "Advanced Topics in GI Exam" as an actuarial qualification comparable to the qualifications listed in paragraph 6.1 of GL9.

EVENTS HIGHLIGHTS

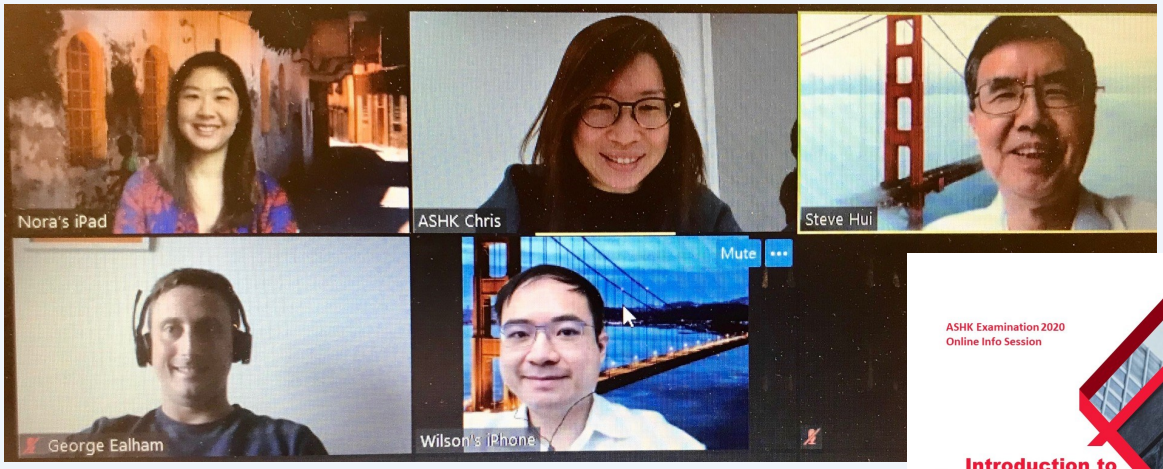
24 April 2020

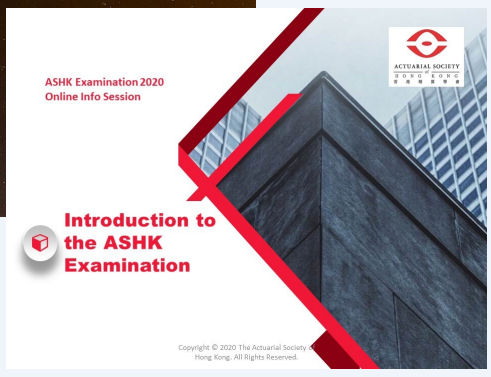
ASHK Actuarial Innovation Webinar

Human Can't Scale - The Limit in AI is Human

7 May 2020

ASHK Examination 2020 Online Info Session



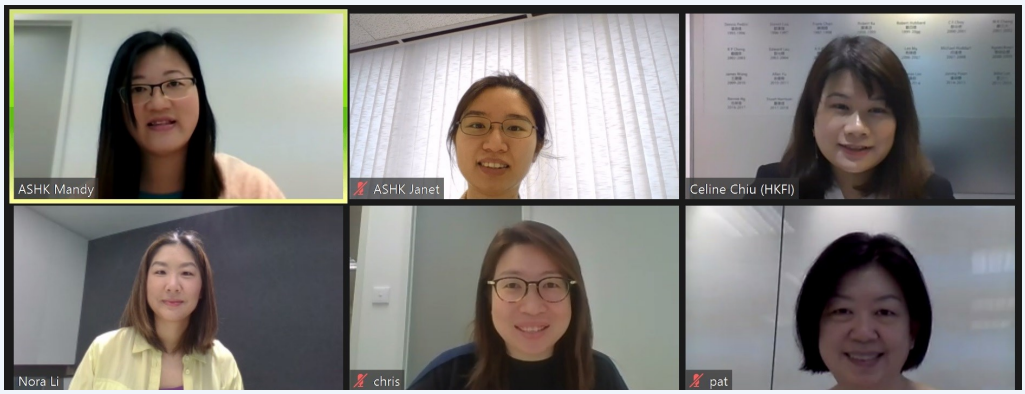


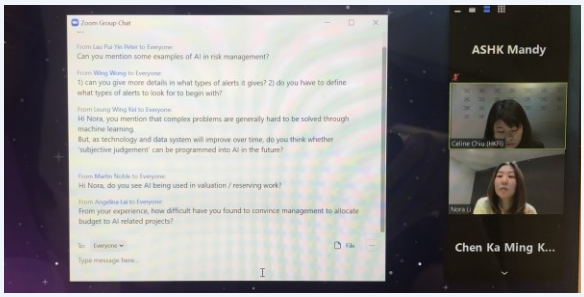
EVENTS HIGHLIGHTS

3 June 2020

ASHK Actuarial Innovation Webinar 2

Introduction to AI - Hype vs. Reality





29 June 2020

ASHK Online Seminar

The Current Global Economic and Financial Outlook, Risks and Vulnerabilities

EVENTS HIGHLIGHTS

30 June 2020

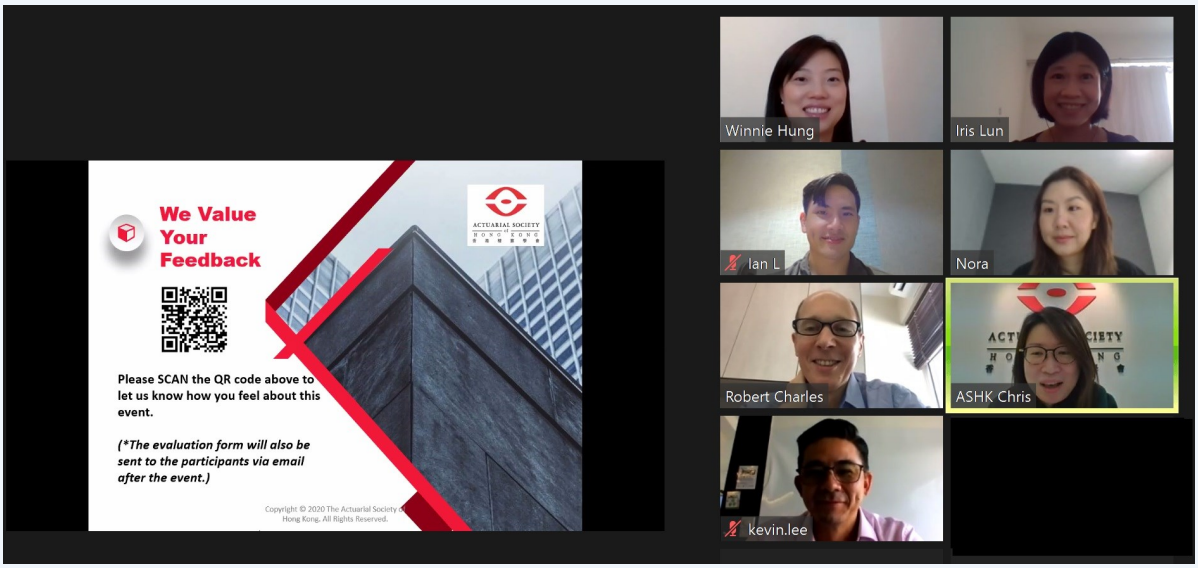
ASHK Actuarial Innovation Webinar 3

Enabling the Collaborative Power of Actuaries and Data Scientists in Life Insurance

7 July 2020

ASHK Online Seminar

COVID-19 – Catalyst for Digital Transformation in Insurance?

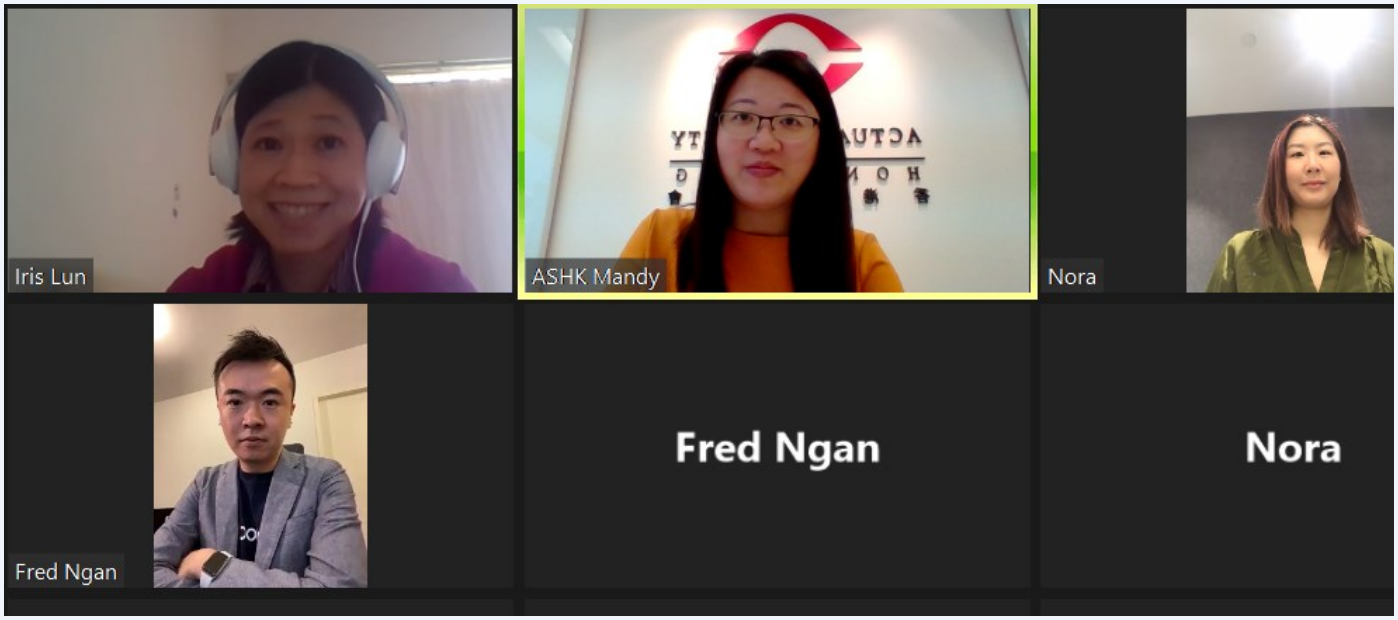


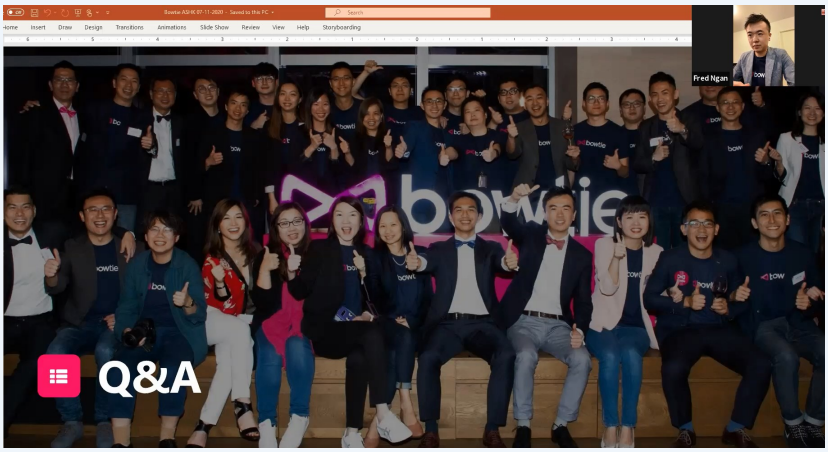
EVENTS HIGHLIGHTS

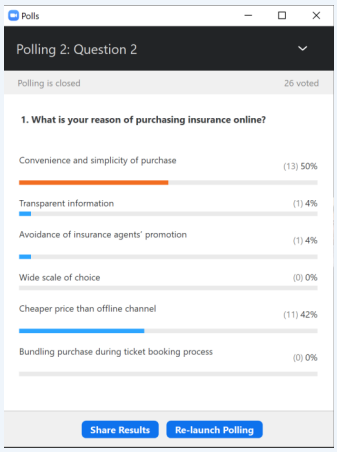
14 July 2020

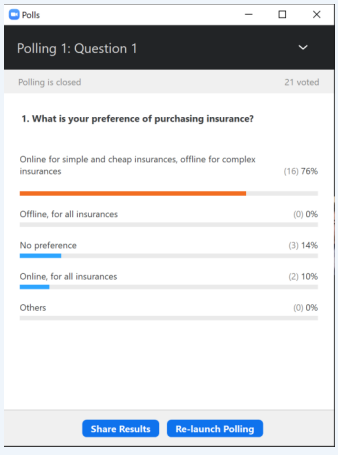
ASHK Actuarial Innovation Webinar 4

Founding the HK's first virtual insurer









UPCOMING EVENTS

SAVE THE DATE

6 August 2020

ASHK Actuarial Innovation Webinar 5
AI based illiquidity premium model
Register Now

21 August 2020

ASHK Examination 2020
See More

14 October 2020

ASHK Professionalism Seminar

25-26 November 2020

ASHK Hong Kong Actuarial Summit 2020
See More

2021

ASHK IFRS 17 Seminar
See More

26-28 April 2021

International Actuarial Colloquium 2021 —"Global Pandemic - Beyond the New Normal"
See More

MEMBERSHIP UPDATE

New Members

Associate

Chan Chi Yeung	Taiping Reinsurance Co. Ltd	Associate [ASA(2017)]
Mi Namkung	Ernst & Young Advisory Services	Associate [Fellow of Institute of Actuaries in Korea (2019)]
Ernst Adriaan Steenberg	AIA Group	Associate [FFA (2011)]
Wu Bo	HSBC Global Servies (HK) Limited	Associate [FCAA (2012)]
Zhou Rui	Taikang Life Insurance Company, Beijing	Associate [FSA (2011)]

Student

Chin Wing	-	University Student (The University of Hong Kong)
Ho Kai Tung Simon	Prudential General Insurance HK Ltd	Ordinary Student [SOA Student]
Keung Yik Suen	-	University Student (The University of Hong Kong)
Tang Xinnan	-	University Student (The Hong Kong Polytechnic University)

Membership Advancement

Fellow

Chau Shun Kwan	AIA International Limited	Fellow [FASHK (2019), FSA (2019)]

Reinstated Member

Associate

Chua See Ju	Sompo Holdings (Asia)	Associate [FIA (2015)]

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We welcome members' contribution to the "Hong Kong Actuaries" Newsletter, especially, the Feature Articles and Knowledge Sharing sections. If you have written any inspiring articles or have read any interesting articles from other actuarial organisation(s), please feel free to let us know. We will try to reprint the article(s) in our newsletter to share with our members.

For the above issues, please e-mail your articles or views to Alexander Wong by email at alexanderkpwong@hsbc.com.hk or ASHK Office by email at info@actuaries.org.hk. Publication of contributions will be at editor's discretion.