Institute of Actuaries of India

www.actuariesindia.org

the Actuary INDIA

THE MAGAZINE OF THE INSTITUTE OF ACTUARIES OF INDIA

April21 - May21 Issue

Vol. XIII - Issue 4-5

Pages 22• ₹20

INDIAN ACTUARIAL PROFESSION
Serving the Cause of Public Interest

We are hiring industry leaders

CHUBB®

Who are We?

Chubb is the world's largest publicly traded P&C insurance company having operations in 54 countries and writing $US 40 billions of premium.

The Chubb India office is growing fast and provides key support to the actuarial, risk, capital and data analytics teams across the globe. We work alongside the onshore teams, and very often as part of those teams, and we interact with global team members in the actuarial, underwriting and analytics departments on a day-to-day basis. We are building a center of excellence capability in key areas of technical work that are highly sought after from the actuaries in other countries. Our team on the ground includes senior actuarial and analytics professionals.

We work in a learning environment. This environment benefits our staff and enables us to deliver on the challenging projects that we deliver to global stakeholders.

Position:

Assistant Vice President – Reserving and Capital

Key Objective:

The role is to lead CBSI's Capital and Reserving Team. The team includes more than 20 actuaries and actuarial analysts and is growing. In addition to building strong relationships with the onshore actuaries you will provide technical guidance and be innovative in how you design work solutions.

Requirements:

- Qualified Actuary
- 12+ years of experience, mostly in general insurance
- Experience with leading teams
- Strong actuarial judgement and technical actuarial capability
- Experience building or conceptualizing automation solutions within the actuarial functions
- Proficient in using MS Office applications such as PowerPoint, Excel and Word
- Knowledge of applications such as SQL, R, and Python would be an added advantage
- Must possess excellent written and verbal communication skills
- Must be willing to work out of the Bangalore office

Share your resumes with -

Deepthi.Nadendla@Chubb.com

Chubb. Insured.℠

the Actuary INDIA
www.actuariesindia.org

CONTENTS

"A noble man's thoughts will never go in vain. -Mahatma Gandhi."
"I hold every person a debtor to his profession, from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavour themselves by way of amends to help and ornament thereunto - Francis Bacon"

Printed and Published monthly by Vinod Kumar Kuttierath, Head of Education and Training, Institute of Actuaries of India at PRINT VISION, 75/77, 1st floor, Punjani Ind. Estate, Near Abhishek Hotel, Khopat, Thane (W) 400 601, for Institute of Actuaries of India L & T Seawoods Ltd., Plot No. R-1, Tower II, Wing F, Level 2, Unit 206, Sector 40, Seawoods Railway Station, Navi Mumbai 400 706
Email: library@actuariesindia.org, **Web:** www.actuariesindia.org

From Chief Editor's Desk

Ms. Bhavna Verma

As I write this in the aftermath of the devastating Wave 2 of Covid-19 in the country, I would first and foremost like to remember our fraternity member Mahidhara Devangere with the deepest regard. His untimely passing away due to Covid-19 is an immense loss to the actuarial fraternity, not just in India but also globally. With an infectious energy and very pleasant demeanor, Mahidhara has set a great example for the new generation of actuaries with his active volunteer work for the profession and his commitment to furthering the actuarial footprint in wider areas. The profession has indeed lost a gem, yet we must celebrate the life that he was. My prayers remain with his family.

How uncertain life has become for people as well as institutions. In the new world, actuaries and risk managers are required to apply their skills and judgement to manage risks and also uncertainty. A google search threw up the following definitions of risk and uncertainty; risk is defined as <u>measurable uncertainty</u> while uncertainty is <u>immeasurable risk</u>. Since financial institutions are in the business of risk, avoiding risk and uncertainty cannot be the answer. It is then inevitable then that the approach to risk in times to come will be based heavily on selective risk taking using extensive data analytics and dynamic risk management. I am beginning to actually visualize the new era of a data and analytics driven life of an actuary. In financial institutions in particular, data is a commodity which actuaries are best placed to mine (best equipped may need some more upskilling) as well as effectively apply to business.

On a separate note, I'm wondering if any of you are also starting to feel some remote work fatigue now due to a combination of extended working hours and absence of social contact with our teams, peers and seniors. The reassuring thought I came across and would like to leave you with is *"There is no such thing as work life balance. The balance has to be within you. - Sadhguru"*. Certainly truÉ and worth working towards, as we are and will probably continue to live in a very dynamic environment for some more time.

Best wishes to all students taking actuarial examinations in the upcoming diet. Do write into us with your thoughts and suggestions at library@actuariesindia.org.

From President's Desk

Mr. Subhendu Bal

I'm writing this column after a break of 2 months; not because the Indian Actuarial profession is in a standstill, but the magazine took a pause to gather required contents over a period.

During the period, we lost three members of the Actuarial Profession - Mr. A D Gupta, Mr. Buddev Chatterjee and Mr. Mahidhara Davangere. They all have immensely contributed to growth and development of actuarial profession. The profession is grateful to them for their services. Our heartfelt condolences to their family, friends and well-wishers.

I am glad to inform that the Executive Director, Mr. Mohan Bhatia and Head – Accounts & Finance, Ms. Smitha Padmanabhan joined the Institute which has strengthen the administration of the Institute.

As a part of our consistent effort to increase the awareness among different stakeholders including the Government, I met Hon. Finance Minister, Ms. Nirmala Sitharaman on 6th April 2021 to appraise on the Actuarial profession. The meeting was very encouraging and the Finance Minister had a patient hearing on various developments and issues relating to Actuarial Profession. On behalf of the Institute, the 75 years Coffee Table Book was presented to the Finance Minister.

I would like to extend my warm welcome to the Central Government nominees to the Council - Mr. Amit Agarwal, Additional Secretary, Department of Financial Services, Mr. Sudhir Shyam, Economic Advisor, Department of Financial Services and Mr. Parmod Kumar Arora, Member Actuary, IRDAI . IAI is looking forward to getting benefited from their wisdom.

I am pleased to inform you that new Indian Individual Annuitant's Mortality Table (2012- 15), within the provisions of sub-regulations 2 of Regulation 5 under Schedule II (Valuation of Liabilities- Life Insurance) of Insurance Regulatory and Development Authority of India (Assets, Liabilities, and Solvency Margin of Life Insurance Business) Regulations, 2016 is published and is effective from 1st April 2021. This standard table has been published after due consultation and concurrence of the Insurance Regulatory Development Authority of India (IRDAI). I would like to thank all members of AORC, IAI Council Members, IRDAI, IIB, and LIC for their contribution and support in preparation of this published table.

My hearty congratulations to all successful candidates for March 2021 examination and best of luck to those who couldn't get through. To assist our students, we have started with series of R-statistical webinars. Online coaching programs for all core technical subjects are rolled out which spreads over the coming months. Some of the higher order subjects which require guidance and support have prioritized for this time, viz., SA2, CP1 and CP2 and many candidates are making use of this facility. There are number of software and other training programs in the planning which includes Python, the data analytics software, widely used in the data analytics across the world. This program may be useful for all members cutting across Fellows, Associates and Students.

When some expectations and predictions about the COVID 19 third wave is in the air and the entire world is in a transition state of all walks of life, I remember a famous quote- "It is when we are in transition that we are most completely alive". With the same reason, we tend to progress and develop more in the coming times.

It is with great pleasure, we welcome our new Executive Director, Mr. Mohan Bhatia.

Mr. Mohan Bhatia has joined Institute of Actuaries of India as Executive Director(ED) on 1st April 2021.

Mr. Mohan Bhatia is M.Sc and completed PG Diploma in Software Technology . He is also an Associate member of Institute of Cost of Accountant of India. He is passionate speaker and was visiting faculty of ICAI, ICSI, CAFRAL & IIM, Bangalore.

He has overall 35 years' experience in Administration, Finance, IT and Legal in various companies including LICI,RBI, Infosys, Oracle and Wipro. He has delivered several of management consulting and technology implementation assignments in Risk and Compliance, Payments, Banking platforms, Insurance platforms and accounting and GL for Tier I Financial Institutions from USA, UK, Japan, and Asia . His publications are in the areas of Auditing in Computerized Environment, Economic Capital, Founding Editor, Credit Risk Management etc.

Mr. Mohan Bhatia will be responsible for the day to day management of the affair and activities of the Institute of Actuaries of India. He will undertake all such duties and powers in relation to the Institute's work as covered in Actuaries Act 2006 and Rules & Regulations made thereunder.

CALL FOR ARTICLES

Institute of Actuaries of India

We invite articles from the members and non members with subject area being issues related to actuarial field, developments in the field and other related topics which are beneficial for the students of the institute.

The font size of the article ought to be 9.5. Also request you **to mark one or two sentences that represents gist of the article.** We will place it as **'break-out' box** as it will improve readability. Also it will be great help if you can suggest some **pictures that can be used with the article, just to make it attractive.** Articles should be original and not previously published. All the articles published in the magazine are guided by **EDITORIAL POLICY of the Institute.** The guidelines and cut-off date for submitting the articles are available at http://actuariesindia.org.in/subMenu.aspx?id=106&val=submit_article

Brief presentation, minimal disclosures

The higher turnover and borrowing thresholds to classify a small and medium sized company advance fresh arguments on presentation and disclosures for post-employment defined benefit plans.

Mayur Ankolekar explores what this means for the employee benefits practice.

The new Companies (Accounting Standards) Rules, 2021 when read in the context of AS 15 (revised 2005) would accommodate a majority of Indian companies within the 'SMC' definition and thus exclude them from extensive presentation and disclosures on the commonly valued gratuity benefits.

Preparing auditors for the change, that is "brief presentation, minimal disclosures" is urged.

To define a company as a 'Small and Medium Sized Company' (SMC), the June 2021 notified Companies (Accounting Standards) Rules, 2021 have raised the turnover and borrowing thresholds to ₹ 250 crores (₹ 50 crores earlier) and ₹ 50 crores (₹ 10 crores earlier) respectively. So what? So what changes? So what is it to the employee benefits practice?

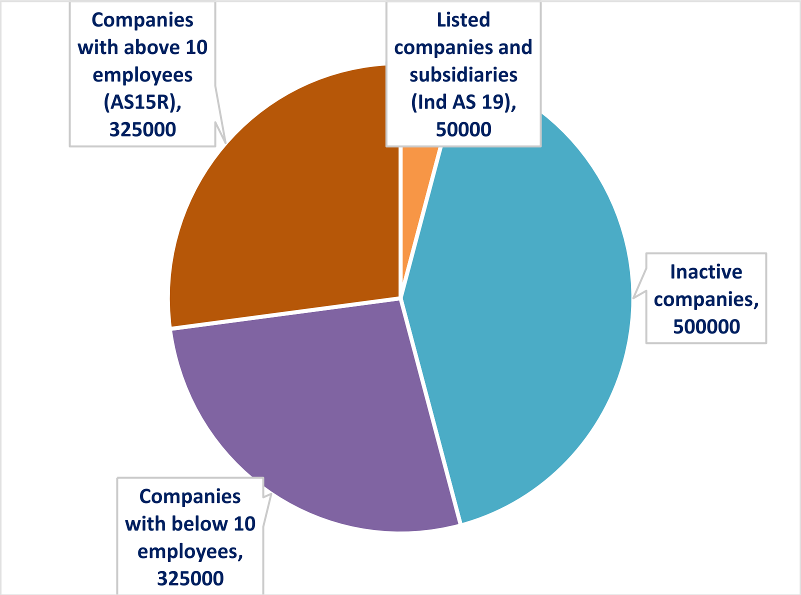
The employee benefits practice has two parallel reporting paths: the IFRS-adapted Ind AS 19 and the older AS 15 (revised 2005). Reporting under Ind AS 19 is applicable to all listed companies and companies with net worth over ₹ 250 crores. Assuming each listed company has on an average six subsidiaries, this universe would be approx. 50,000 companies. An overwhelming body of the 1.2 million registered companies in India still reports under the old AS regime.

DB reporting

The greatest chunk of post-employment defined benefits - also requiring the greatest financial disclosures - is consumed by the statutory 'post-employment gratuity' benefit. The post-employment gratuity is obligated on employers having ten or more employees (reference: the First Schedule to the Social Security Code, 2020).

After excluding the listed companies and subsidiaries and the inactive companies (reportedly half a million), it can be assumed that one-half the remaining universe of active companies employ ten or more employees, and hence are existing and potential clients to the AS 15 (revised 2005) employee benefits practice.

The chart below breaks down the companies by status and DB reporting paths of Ind AS 19 and AS 15 (revised 2005).



Source: Total companies as per the Ministry of Corporate Affairs.
Author's assumptions: a listed company has on average 6 subsidiaries, of the active companies, one-half employ beyond the gratuity threshold of 10 employees.

The rise of the SMC company

It is conceivable that, with the wide sweep of the new rules, most companies reporting under AS 15 (revised 2005) would become SMCs. And that potentiates a paradigm shift! Let us see how.

The opening lines of AS 15 (revised 2005) define the applicability of the standard on measurement, recognition and disclosures.

Paragraph (b), AS 15 (revised 2005) reads that "The accounting standard is mandatory in its entirety, except the SMCs. It further excuses the SMC from complying with “recognition and measurement principles laid down in paragraphs 50 to 116 and presentation and disclosure requirements laid down in paragraphs 117 to 123 of the Standard in respect of accounting for defined benefit plans.” SMCs are however required to actuarially determine and provide for the accrued liability in respect of defined benefit plans using a) the projected unit credit method, and b) applying the discount rate determined by reference to market yields at the balance sheet date on government bonds.

Of interest to this article is the SMC's dispensing with presentation and disclosure requirements laid down in paragraphs 117 to 123 of AS 15 (revised 2005).

The SMC in restraint

Employee benefits actuaries seem to concur that the deliverables related to presentation and disclosures need significant efforts. The new Companies (Accounting Standards) Rules, 2021 when read in the context of AS 15 (revised 2005) would accommodate a majority of Indian companies within the 'SMC' definition and thus exclude them from extensive presentation and disclosures on the commonly valued gratuity benefits.

Preparing for change

The considerably reduced delivery requirements would lead to fewer resources to achieve compliance on measurement, recognition and disclosures in respect of post-employment defined benefit obligations. Preparing auditors for the change, that is “brief presentation, minimal disclosures” is urged.

Disclaimer: I hereby certify that the content of the Article titled Brief presentation, minimal disclosures which I have offered for publication in the Actuary India magazine is my own work and I agree to be responsible for anything adversarial that may arise from its publication.

Written by

Mayur Ankolekar

mayur.ankolekar@ankolekar.in

Mayur Ankolekar is a fellow member of the Institute of Actuaries of India.

Validating Machine Learning Models

This article provides an overview of augmentation techniques and ML platform-based tools.

The Financial Services industry is adopting Machine Learning Models at a rapid pace. With alternative data sets including text analytics, public dataset, alternative algorithms, and real-time data financial services firms are exploring novel modeling methods to augmenting their traditional decision-making processes and workflows. Financial Services firms are adopting more open source technologies with a plethora of choices for building, testing, and scaling models. While timely guidance for model validation was available for traditional models in terms of issuance of SR 11-7 framework by FRB and reissued as OCC 2011-12 and similarly by other supervisors, there is no special guidance issued by any financial supervisor so far world over.

FEAT Framework for Machine Learning Models - Published by Monetary Authority of Singapore

The Monetary Authority of Singapore has issued Principles to promote Fairness, Ethics, Accountability, and Transparency (FEAT) for use of AI and Data Analytics Models in the Financial Sector. This may provide some guidance. The key principles of FEAT are

- The use of personal attributes as input factors in the ML model is justified
- Individuals or groups of individuals are not systematically disadvantaged by the use of ML models
- Data and Models are to be reviewed for accuracy, relevance, and unintentional bias
- Model behavior to be reviewed for design and intention
- The model must align with the Financial Services firms code of conduct and ethical standard
- Firms are responsible for both internal and externally developed model
- Board of Directors must be proactively made aware of the ML model used in the Firm
- Data subjects must be provided with a channel to enquire about, submit appeals, and request for review of ML model decisions affecting them
- Verified and supplementary data provided by the data subject are taken into account when performing ML model validation
- A clear explanation of the model decision has to be documented and communicated

All the above are important inputs for ML model validation methodology. Following are the recommended steps in ML model validation

Data Integrity

All Model Validation methodologies start with data validation. However, tools required for ML models must be able to validate data integrity for real-time data, very large volume of structured and unstructured data. The dimensionality of unstructured data may be very wide, requiring good metadata management tools and data governance tools. Cloud Platforms like GCP provides integrated metadata manager with the requisite APIs to integrate with different data types.

Managing and Detecting Bias

Bias may get introduced into the model due to the large sample size or due to unstructured data or due to biased metadata structure. Many times, the input unstructured data is generated by human decision-makers and this itself may be biased. The text generated by human beings, personal attributes selected for individuals or firms, technical and business metadata rules – all may contribute to creating bias.

In many jurisdictions, regulators impose heavy penalties on the undesired or prohibited bias. Bias can be detected by benchmarking against another model, or by subject matter experts. Statistically, the following techniques are useful in the detection of bias

- Quantile Mapping
- Randomization
- Sample weighting
- Alternate dataset

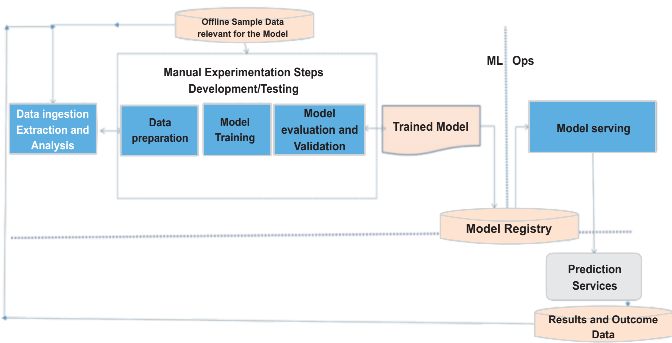
Explainability of Model

Neural Network, Deep learning models are very difficult to explain. In the first place, Neural Network models are used to model the non-linear relationship of input vs output. Many a time, Neural Network models may provide better results, however, regulators and therefore model validation teams may not be open to acceptance of black-box models. Statistically, better techniques measure non-linearity at different levels of input and establish score ranges/categories to provide explainability. In addition, establish a bias management governance process with the Financial Service firm to connect with the data subject and seek supplementary data and address the bias issues. Many financial services firms are still struggling to establish the explainability of ML models.

Outcome Analysis for Manually Managed Machine Learning Model

Unless Machine Learning Models are implemented on a cloud-based machine learning platform, almost all Machine Learning models at financial services firms are maintained manually. The entire model training and evaluation process is typically manual and must follow the typical model validation requirements for any other model. And this includes data preparation model training and model validation process. Many a time machine learning models work along with the traditional model, either as a supplement or challenger, or champion. Machine learning models are typically deployed as a part of prediction services. The prediction services results and the business outcome is stored. A Sample Data relevant for validating the machine learning model in the Offline sample mode is extracted and used.

Machine Learning Models Managed Manually



Following are the typical steps in validating machine learning models which are managed manually

1. Exploratory Data analysis:
    - Exploratory data analysis (EDA) to understand the input and result data. This process is typically driven by the Bias detection, benchmarking and SME requirements leads to validating the following:
        - The data schema and characteristics that are expected by the model.
        - Data preparation and feature engineering that are needed for the model.

2. Data Preparation: The data is prepared for the ML task.
    - Data preparation typically involves data cleaning, and data split into training, validation, and test sets. Validation typically covers
        - Data Split Rules
        - Data transformations and feature engineering process that solves the target task.
        - The output of this step accuracy in the data splits and preparation of format and bias or logical loops in the metadata definitions for unstructured data.

3. Model Validation with algorithms and hyper parameters:
    - Different algorithms, feature engineering, and metadata definitions are built on the same available input data and measure outcomes for each algorithm and feature.
    - The output is algorithm, feature, and metadata definition which provide better predictive performance

Real-Time or Ongoing Model Monitoring

In the real-time and ongoing model monitoring, all the above steps are automated and model performance is monitored for algorithms, features, and metadata definition, and the model is promoted to a business decision (prediction services) based on the model performance. Model is withdrawn or substituted or paused if performance deterioration is detected.

Machine Learning models aim to enhance accuracy, predictive power and actionable insights, the increased complexity of managing fragmented technology processes, real-time data, large data volume, unstructured data, and public datasets creates challenges for model validation. The selected model validation techniques and tools must be able to manage these challenges.

Conceptual Soundness of ML Parameters and Methods

SR 11-7 mandates the establishment of controls and processes for model validation and approval. However, the model validation and approval process may be more complex and challenging for machine learning models. At the same time, financial services firms are developing tools and templates on the Machine Learning Platforms provided by Public Cloud Providers like Google, Azure, and AWS.

Every Financial Services firm aims to automate Machine Learning Model development, deployment, and up-gradation or redevelopment. This makes the entire process very complex since models are automatically promoted to production or as prediction services. SR 11-7 spirit mandates checks and controls to be introduced for model promotion, model monitoring, and model validation. As a part of the Machine Learning modeling infrastructure, the validation and control capabilities need to build in mandated controls in the automated machine learning model pipelines, data pipelines, continuous integration, and continuous deployment pipeline. Entire validation control on the machine learning parameters and methods need to be established. This may typically require additional feature engineering and control metadata and collection of live output data and performance metrics.

Augment SR 11-7 with FEAT requirements for validating Machine Learning Models

The rigor prescribed by a regulator is also applicable to Machine Learning Models. Typical techniques prescribed for the validation of the model are data integrity, sensitivity analysis, outcome analysis, and benchmarking. In addition, the Machine Learning models archetypal requirements like high data volume, unstructured data, dependency on metadata, bias due to unstructured data, real-time data should also be validated. The FEAT requirements are the combination of both with more focus on later. To manage the typical requirements of Machine Learning models, SR 11-7 based model validation framework has to be augmented by FEAT techniques and supported by tools to manage automation requirements of real-time machine learning models.

Disclaimer: I hereby certify that the content of the Article titled Validation Machine Learning Models which I have offered for publication in the Actuary India magazine is my own work and I agree to be responsible for anything adversarial that may arise from its publication.

Thank You

Written by

Mohan Bhatia

ED@actuariesindia.org

Mohan Bhatia is Executive Director at Institute of Actuaries of India.

CB3 December 2021 Examination - Registration announcement

Introduction:

CB3: Business Management Online Module involves students taking part in a ten day online business game, and submitting seven completed exercises. Students who take the online examination will be required to do advance study involving online tutorials, and also an online examination following the ten days business game.

Key Dates:	
Registration starts	4th May 2021 from 3.00 P.M.
Registration close	31st August 2021 up to 3.00 P.M.
Login Details (for study material and case studies)	2nd September 2021
Last date to submit the pre course assignment	9th November 2021 up to 3.00 P.M.
Online Examination starts from	1st December 2021 from 3:00 P.M. onwards.
Business Game: Business game will be scheduled for 10 days for all the students, dates of which will be communicated via confirmation email sent to your registered email ID.	

For more details kindly visit http://www.actuariesindia.org/subMenu.aspx?id=267&val=CB3

For any queries kindly contact Mr. Naresh Raheja at 022-62433334 or email at naresh@actuariesindia.org

My Actuarial experience

I first heard about the word actuary from a distant relative who used to work in the insurance field. At that time, I came to know that there were 15 actuarial papers (now 13), the papers are difficult to clear, the field involves a lot of Math and that there is a huge sense of pride associated with the title. My passion for Mathematics and all this were sufficient for me to convince myself to step into this field.

Engineering life:

I am a computer engineer. Ever since the second year of college, I was unsure if this was exactly the field for me. I enjoyed Mathematics and had good PCM (Physics Chemistry and Mathematics) scores in 12th, so the first option that came to my mind was Computer Engineering. The reasons were similar – it paid better, had more Math and I wasn't bad at coding.

After graduation, I got a job at a software start-up and my work involved writing new codes, understanding existing codes and making changes to the existing codes. One month into the job and I was sure this would drain all the life out of me and I could not continue this way. I submitted my resignation and decided I needed to pursue a field more in line with my interests.

Shift from engineering:

I was looking for fields that would match my liking. I decided I would pursue CA along with Actuarial and that I would manage my time and resources between the two.

I began my articleship and was enquiring about how to get started with Actuarial. I registered for ACET and started preparing for it along with my articleship. I solved half a dozen mocks a week before the exam which was in June 2019. Going through the mocks was, fortunately, enough for me to clear the entrance exam. With confidence now, I started preparing for my first actuarial paper – Cs1.

First actuarial paper - Cs1:

I started preparing for CS1 and I immediately fell in love with the subject. I have to mention that IFoA's study materials are very well organised and I was impressed by it. I practiced R alongside. Combined with a few past papers, I took a total of 3 months to prepare for both paper A and B.

IAI had held mock R examinations few days before the actual exams. The mock test began and I saw that it was last year's CS1-B paper. Few moments after the test had started, I realised that the clock was racing. I had spent a lot of time writing detailed comments which would fetch me no more than 2 marks. I could only attempt 40 marks out of the total 100 marks in the 105 minutes provided for the test. I was petrified. More so because I was already familiar with the questions and even then, I could not even attempt the 100 marks, let alone get them right. I came back home pondering over the test and how I could have done better. I understood the primary goal was to attempt the 100 marks paper completely and for that the conclusive statements had to be succinct.

I was not worried about paper A as I had scored 60+ in all the 3 X assignments provided in the study material. I had not solved any past papers, just the X assignments. Looking back, I think I had some "beginner's luck" that helped me get away with it and now I cannot imagine not going through past papers.

It was exam day and I felt fairly nervous. I saw the question paper and started solving it. There were only 2-3 straight-forward questions and all the rest made you think before proceeding. Some made you doubt your answer too. I managed to finish my paper barely 15 minutes before the time was up. I had no idea if I would clear my paper and, to top it off, I heard two candidates talking about how easy the paper was. I didn't care enough about my result then, but I wanted to know if they passed.

Result day:

It was a regular day at home when I received a text message on my phone saying I cleared CS1. It was the happiest I had ever been for a long, long time. I called my father and told him about the result. I was partially screaming and so he could not understand half of what I said. I tried again, not very differently, but this time he could hear the word PASS. He was very happy. So happy that it felt like he had cleared his first paper too. I called my mother, sister, grandmother and everyone I could remember. It was one of the happiest days of my life.

At this point I was fairly certain that this was the right field for me. I felt this way not because I cleared my first paper in my first attempt but because I enjoyed studying for CS1 thoroughly and I could see that I was capable enough to manage this level of difficulty. Clearing your first paper is an important step and it gave me a big boost in confidence.

Online exams:

I was enjoying preparing for CM1 and CB1 which were going to be held online because of COVID. I was new to CB1 as I had a science background but my experience from my articleship and the little bit of accounts I had come across helped me understand the basic concepts of debit-credit. IFoA's material was good enough for someone who had never learnt accounts to understand the concepts well and clear the paper easily.

IAI had conducted mocks for all the papers for students to confirm if their system fulfilled the test requirements. There were a lot of technical issues faced by students in the first mock. Some of the issues were resolved before the second mock but there were some which persisted and this was a concern for a lot of students.

Exam day had arrived. The test editor worked fine and IAI had done a pretty good work with that. I had prepared for CB1 really well and so the exam went well. I was confident I would clear the paper. Next was CM1. CM1 paper A went fairly well. The platform lagged despite having a decent internet connection but it was manageable. CM1 paper B was on the same day. I was unsure about my preparation for paper B as I could not solve past papers convincingly. I was already a little low on confidence and this combined with the new software, existing technical issues, exhaustion after paper A was not a good sign for me.

I started with paper B and I was stupefied to find that not only did the unresolved technical issues persist, but the older ones which were apparently solved in the second mock popped up again. It was a nightmare. A lot of functionalities were disabled. The platform lagged. Every time you switched to your excel file from the question paper a new blank workbook opened. At the end of the exam, I had 67 workbooks opened. In a nutshell, there were a lot of things that most students did not expect and that affected their performance to some extent. I was unhappy with the technical difficulties and my performance too. I was pretty sure that only a miracle would make me pass.

Internship and results:

I had given 3 papers now and I was fairly confident of the field and so I decided that I would quit my articleship and find an entry level job or an internship in the actuarial domain. I had only cleared CS1 and I got to know from a lot of colleagues that it is difficult to get an internship, let alone an entry level job, with just one paper. I really had no option and I just had to apply. I applied at many places and never got a call back. Eventually, I started applying at non-actuarial companies into investments and financial analysis. I was getting desperate for a job and I would've grabbed any opportunity that would come my way. This impatience led me to a fake internship and a job fraud that cost me around Rs. 9,000. I learnt the hard way and made myself understand that not having a job for some time would not be the end of the world and I needed to be patient with my search. I tried sticking to actuarial fields this time. After some 30-40 applications with no response, I got a call from XYZ general insurance company. In the interview, I was asked about my background and experience and few simple questions on insurance. I was not satisfied with my interview and losing all hopes of getting a call back, I continued with my applications. Two weeks later, I got a call from a lady who said she was from XYZ and was asking me when I could join.

Few weeks later, IAI results were out. I had almost forgotten about them. It was a Sunday and I checked the website. I was not surprised at all to see CB1 PASS and CM1 FAIL. It was exactly what I had expected and I was okay with the results. I knew the places where I made mistakes and now, I was also familiar with the online platform.

The passing marks for both the subjects was 50 and I had scored 70 in CB1 and 41 in CM1. Honestly, I wasn't too disappointed with CM1 and I was pretty sure I could clear it next time. Few moments later, I got a message from one of my acquaintance from Telegram asking if I had cleared my papers and congratulating me for scoring highest marks in CB1...

I was confused initially, not understanding what that exactly meant. I couldn't find anything under my login so I asked her to send me the file. At the top of the pdf file I could see **"List of students scoring highest marks in November 2020 Examination"** and I found my name beside CB1. I was overjoyed and as a ritual called my father, mother and a lot of my relatives to give them the good news. It was the first time I ever got a rank at this scale. AIR1 meant a lot to me and that too in one of my favourite papers. My manager at work was happy and I received a lot of praise from the entire office. It was a great week for me.

Anxiety and CB2:

A week after the results my focus was entirely on the internship. Travelling was hectic and I could not make time to study for a new paper. I decided it would be wise to go with one of the easier papers and so I picked CB2. I was struggling with parts of my work and that did not make my manager happy. I was not sure about the reason but now I think I was just nervous about my performance and was trying too hard to get the work done rather than learn from the work. I wanted to have a good impression on my manager and get retained as a full-time employee. All of this was worsening my performance. I could see my mistakes but not learn from it. It was a feeling difficult to express and caused me a lot of anxiety later.

I started preparing for CB2 along with my internship. Economics was completely new to me, even newer than what CB1 was to me when I had started it. I had heard people saying that CB2 is the easiest paper of all and you can be done with the studies in 1 month. This was not true for me. I took time to absorb the concepts and tiring work days made it even more difficult. I was still struggling with my work and CB2. I was not in a very good position few weeks before the exam but a close friend of mine helped me a lot to understand some of the concepts and chapters that I had left. I appeared for the paper and it felt relatively manageable.

Now all I had to do was focus on the internship and improve my performance. While working from home, I got a new project where I got to work on building premium calculators on Excel for different company products and I enjoyed working on it. I also learned a lot from it and my Excel skills improved significantly after that. I started getting better at both my old task and my new task and kept learning new Excel features. All thanks to my experience working at XYZ, I got good at Excel and that helped me a lot with my job applications.

Takeaways:

I had some great times and some really rough ones through this small journey I have had so far in the Actuarial field. The thing that kept me going was honesty. It is important that you be honest to yourself. If you are not being totally candid with yourself then things could get tough later on. There was a point when I felt so anxious that I had second thoughts about the field. During such trying times, it is vital that we try and see through our anxiety or impulsive feelings. I know that I find working with numbers interesting. Just because I am unable to perform a task well does not mean I should give it up and find something that I would be good at. The solution, that I think, is to ask yourself again - What makes you happy? What interests you? What makes you believe in something? And the answer you get is something that you should be doing. It does not necessarily have to be coding or dealing with numbers or calculating taxes. It is what you truly feel and you can know this by being a little more mindful and asking yourself the right questions. I know sometimes it is not that clear, it is difficult to know what you genuinely like and difficult to be honest with yourself, but we can only try during such times. It is never too late to do the right thing and age is just a number. So do yourself a favour and be honest to yourself and once you've done that give it your everything and don't look back.

Written by

Shreesh Rao

shreesh1997@gmail.com

Shreesh Rao is an actuarial pursuant and currently working at a general insurance company.

The Actuary India wishes many more years of healthy life to the Associate & Fellow members above 60 whose Birthday falls in April - May 2021

A BALASUBRAMANIAN
A R PRABHU
K SRIRAM
M U UPADHYAYA
N M GOVARDHAN
NICK TAKET
P I MAJMUDAR
PRADIP KUMAR
R SRINIVASAN
S CHIDAMBARAM
S K VERMA
SAMBASIVA I RAO
SAMPAD N BHATTACHARYA

September 2021 Actuarial Examination

Registration Announcement

The upcoming September 2021 Actuarial examination has been scheduled in Home based online format from 1st September 2021 to 17th September 2021.

To appear for September 2021 Online Examination, all applicants are required to fulfil the below mandatory technical requirements,

Hardware	Personal Desktop/ Laptop
	Web Camera
	Microphone
Operating System	Licensed Windows 7 and above (NOTE: IOS / MAC BOOK ARE NOT ALLOWED)
	.NET Framework 4.5.1 and above
Web Browser (Any One)	Google Chrome – Ver. 63 and above (Recommended) Firefox - Ver. 52 and above (Recommended)
Internet	Minimum speed of 512 Kbps, preferred 1 Mbps and above
RAM	Minimum 512 Mb, preferred 1-2 GB
Note: Device should have free space of more than 65MB on the default hard drive.	

For the following subjects, applicants shall also fulfil the additional requirements as given below:

1. CM1, CM2, CP2:
   - **a. MS Office (Licensed)- 2010 or above**

2. CS1, CS2:
   - **a. MS Office (Licensed)- 2010 or above**
   - **b. R version 3.6.1 or higher**
   - **c. R Studio – Version 1.1 or higher for 32 bit operating system**
     Version 1.2 or higher for 64 bit operating system
   - **d. Packages – base, stats, utils, graphics, fpp, markov chain, forecast, dplyr, readxl, psych, corrplot, flexsurv, survival.**

Key Dates:	
Registration starts	15th June 2021 from 3.00 P.M.
Last Date of Registration without late fee	24th July 2021 upto 3:00 P.M.
Last Date of Registration with late fee	31st July 2021 upto 3:00 P.M.
Hall Ticket Live	21st August 2021

For more details visit at http://www.actuariesindia.org

For any queries kindly contact Ms. Jyoti Dubey at 022-62433336 or email at jyoti@actuariesindia.org

EVENT REPORT

6th Webinar on Health Insurance

Fraud Detection in Health Insurance Claims – A Machine Learning Approach

Date: 25th June 2021; Friday Time: 00:00 - 00:00 IST

Chair: Vishwanath Mahendra, Chair, Advisory Group on Health Care Insurance, IAI

Speakers: Abhijit Pal, Chief Analytics Officer, Munich Re, South Asia

Pritha Datta, Assistant Vice President, Manipal Cigna Health Insurance Company

Vote of Thanks: Sumit Ramani, Secretary, Advisory Group on Health Care Insurance, IAI

Introduction:

The Institute of Actuaries of India (IAI) has been organizing webinars on different topics to help the actuarial community to keep pace with the industry. The 6th Webinar on Health Insurance was on **"Fraud Detection in Health Insurance Claims - A Machine Learning (ML) Approach"**.

Vishwanath Mahendra started the session by providing a background on the prevalence of fraudulent claims in health insurance, its nature and the importance of dealing with it. He introduced the speakers Abhijit Pal and Pritha Dutta.

Fraudulent claims in Health Insurance:

Abhijit Pal set the context for the webinar by providing examples of the frauds prevalent at every stage of the insurance process from underwriting to claims. He described how traditionally insurers identified fraudulent claims by using different indicators like size of claim, location, provider etc. based on their experience. He explained how the increase in availability of digital information has provided new techniques like Machine Learning to identify fraudulent claims.

Machine Learning Techniques:

Pritha Datta started with explaining the current state of fraud detection methods, availability of data and how to bridge the gaps so that we achieve 100% fraud detection and minimize incorrect fraud classifications.

She touched upon the key Machine Learning concepts and went on to cover classification algorithms, ensemble learnings, use of Decision Trees to generate predictions and presented a Case Study.

Case Study: Fraud detection using XGBoost:

The case study dealt in detail the various phases in building a fraud detection model starting from data preparation, building the model, interpreting results and validating the model.

Data Preparation:

Applying unsupervised learning models to segment data and unearth hidden patterns. Using the data to train the supervised models that will be used to detect fraudulent transactions in the future. To make predictions accurate it will be advisable to build multiple models using ensembling techniques. The data should include all relevant information, cleaned and standardized.

Model Building:

Different algorithms are available to build models and XGBoost is a very popular algorithm as it uses techniques like combining results along the way and performs well when we have unbalanced data.

Interpreting Model output:

The model output will be in the form of a **Propensity Score** which is converted into a binary classification 0 if a claim is genuine and 1 if fraudulent using a **Decision Threshold**

Model Validation:

The model is validated by comparing its output against actuals. The proportion of frauds correctly detected (True Positivity Rate) and incorrectly detected (False Positive Rate) will be checked for different Thresholds. The optimal threshold is the one which gives the highest value for TPR minus FPR which is called as J Statistic.

After deploying the model, it is important to refresh at regular intervals to incorporate new fraud patterns.

Key Takeaways:

The ML models are modern techniques that can help in identifying fraudulent claims and can be of great use to health insurers. The success of the model will depend on data quality, appropriate choice of algorithm and robustness of feedback loop.

Written by

Muralidharan R

murali267@yahoo.co.in

Muralidharan is an Associate member of the IAI and is currently working with HCL Technologies as General Manager, Actuarial.

Canada

Canada is currently in its third wave of the pandemic with only essential services open and other retail is open only for outdoor pick-up. Offices have generally remained closed since the start of the pandemic with employees continuing to work-from-home where possible.

The 7-day average case counts are currently at 119 per 100,000 people. The most recent wave has currently peaked in mid-April with the 7-day average case count at 161 per 100,000 people. Previous waves peaked in January 2021 and in May 2020 with the 7-day average case count at 152 and 32 per 100,000 people, respectively.

Insurers recently released Q1 earnings, which has given the first year over year impact from the pandemic. Equity markets and interest rates increased over the year with the Toronto Stock Exchange's composite index increasing 40% and the 10-year interest rate increasing 84bps. The market impact on companies' earnings tended to vary depending on their sensitivity to interest rates. Companies generally experienced positive value of new business and sales growth, and continue to be well capitalized with strong capital ratios.

Written by

Kedar Mulgund

Kedar.Mulgund@sunlife.com

Mr. Kedar Mulgund is a Fellow of the Canadian Institute of Actuaries and currently works for Sun Life in Toronto.

Inviting Actuarial applications at mid and senior levels at SBI General

SBIG is a subsidiary of SBI bank and is the fastest growing general insurance company in India and rapidly expanding into new market and the rural segment.

To support this growth and reflecting the need to keep technical capacity in line with growth and development plans, we are increasing the actuarial team in several areas and at all levels from senior executive to senior actuary (including interested former AA's).

Available roles depend on experience, qualification, and expertise of the candidates.

We are looking for people from direct insurers, reinsurers, and consulting firms.

If you think you have the drive and skills to contribute to our successful growth, please send us your CV.

Experience & Qualifications:

1. 3 to 10 years of experience with some exam progress (experience and exams varies with seniority)
2. Very good excel skills and good written English skills.
3. Experience with SAS or WTW software is an advantage for Analysts.
4. Experience: Some of the below –
   - GLM's and retail pricing (particularly health and motor)
   - New product pricing & filing (including drafting Tech Notes), from "some experience", working with AA on Tech Notes or former AA experience.
   - Financial and capital projections, model office, IFRS (Life experience can be applicable)
   - Any of Government health, rural business, innovative products e.g. bite-sized products, banca distributed products.
   - Process costing
   - Monitoring & management/technical reporting (either reserves or products/portfolios)
   - Data work e.g. data specification, extraction, validation etc. (SAS would be advantageous)
   - Development and management of actuarial related inter-departmental processes
5. Applicants from direct insurers, reinsurers and consulting firms are preferrable.

Roles will be assigned according to the experience, qualification, and expertise of the candidates, which will be assessed through a selection process including a personal interaction.

How to apply:

Interested candidates can please send their CVs to Shruti.Kamath@sbigeneral.in

Website: www.sbigeneral.in

About NAVI General Insurance:
Navi General Insurance is a wholly owned subsidiary of Navi Technologies. Navi Technologies (erstwhile known as BACQ) is founded by Sachin Bansal & Ankit Agarwal to build consumer-centric, technology-driven businesses in the BFSI space.

The company was incorporated on July 5, 2016 and started its business operations in November 2017. It has more than 1.1 million customers as on December 31, 2020 and offers a variety of health, motor, property, commercial and gadget insurance solutions. Navi General Insurance inspires complete trust, assuring customers that it has their best interest at heart. In an industry where security is key, their product offerings and claims processes are fully transparent.

What do we do?
We are leading the way into the new age of banking and financial services. We are a future-ready brand with unlimited potential for growth and innovation. Overall, Navi General Insurance provides customers with a sense of empowerment that comes with financial independence through a wide range of well-priced products and a seamless user experience.

Our Vision and Mission:
Our vision is to use cutting edge technology for designing and offering insurance products to meet the demands of the new-age customer. Our mission is to simplify insurance so that every individual can enjoy the financial security provided by insurance plans.

Come, join us:
We are constantly looking for smart minds with new ideas and bring about transformation. We are scripting a new story, which could be your career story too. We are currently hiring for

Senior Manager - Actuarial department at Bengaluru (Corporate Office)

Role and responsibilities:

I. Design of new age innovative products across all lines of business
II. Leading the product design, pricing and filing of retail insurance products
III. Drive the actuarial implementation of Ind AS 117
IV. Annual valuation and statutory reporting
V. Portfolio performance analysis and advisory
VI. Understand requirements of various teams like underwriting, finance etc. and guide team to conduct required analyses

Required Professional Experience & Expertise:

I. Good progress in the Actuarial Examinations and en route to full qualification
II. Good business understanding of the Indian general insurance and health insurance market
III. Experience in design, pricing or product filing of individual health insurance products is preferred
IV. Drive for results, strategic thinking, thorough planning, and collaborative mindset

Interested candidates can email their CVs to disha.kelshikar@navi.com **or** careers.gi@navi.com

Seeking actuarial professionals

Milliman is seeking actuarial professionals with strong technical, actuarial modelling and communication skills to join our Life practice based in Gurgaon.

This is an opportunity to collaborate with our team of experts from across the world in a fast paced, challenging, and rewarding environment.

REQUIREMENTS

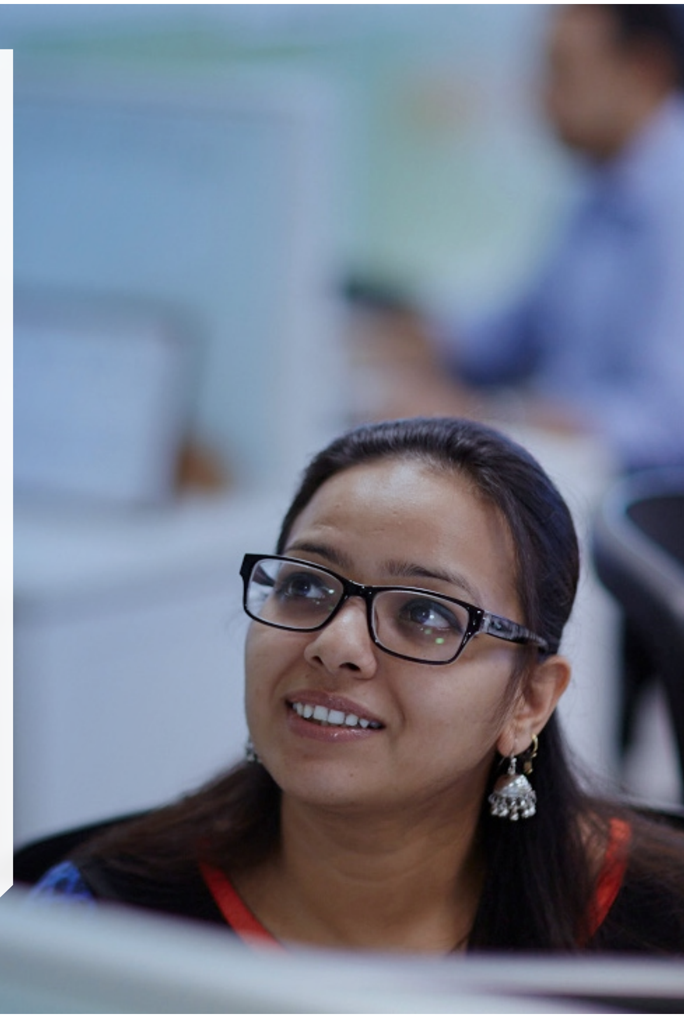
- 2-5 years of life insurance experience
- Demonstrable progress through actuarial exams
- Strong technical and actuarial modelling skills
- Excellent communication skills
- Driven and self-motivated

GET READY TO MAKE A DIFFERENCE

Please upload your applications along with a detailed Curriculum Vitae at **https://tinyurl.com/x6eaywhu**

Shortlisted candidates will be invited for interviews in June 2021.
For more information about Milliman, please visit: **in.milliman.com**

Milliman



Seeking actuarial professionals

Milliman is seeking junior actuarial analysts with strong analytical, problem solving, technical, and communications skills to join our Life practice, based in Gurgaon.

This is an opportunity to collaborate with our team of experts from across the world in a fast paced, challenging, and rewarding environment.

REQUIREMENTS

- 0-1 years of professional experience
- Basic actuarial domain knowledge of life and annuity products
- Excellent analytical and communication skills
- Passed one or more actuarial exams
- Knowledge of Python, R and SQL is preferred

Please upload your applications along with a detailed Curriculum Vitae at **https://tinyurl.com/ye622nne**

Shortlisted candidates will be invited for an entrance test/ interviews in June 2021.

For more information about Milliman, please visit: **in.milliman.com**

Milliman

78th Foundation Day

We, M/s. K. A. Pandit Consultants and Actuaries turn 78 on 1st February 2021.

On this special day, we acknowledge the support and faith our clients and well-wishers have bestowed on us, making it the biggest drive towards our continued growth.

We sincerely thank you for inspiring and endorsing us all these years and trust to receive this continued support in the future.

We endeavour to partner in your growth and look forward to the best in the coming years!

www.ka-pandit.com | +91-22-42922231 | kap@ka-pandit.com | LinkedIn

We work for you, wherever your business takes you!

RNI No. MAHENG/2009/28427
Published on 1st of Every Month
Postal Registration No. NMB/180/2020-22
Posting Date: 7th of Every Month
Posted at Mumbai Patrika Channel
Sorting office Mumbai - 400001