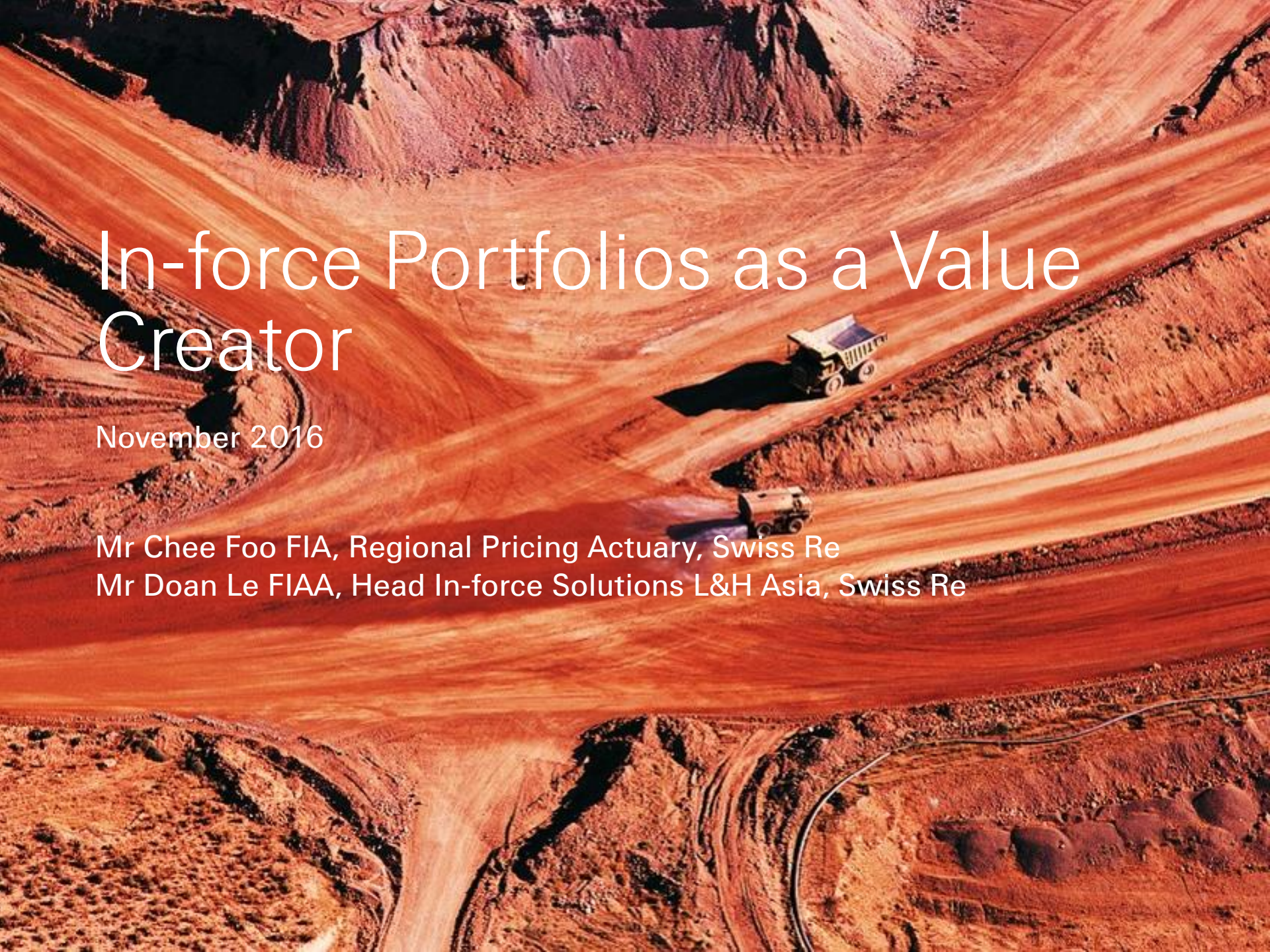

In-force Portfolios as a Value Creator

November 2016

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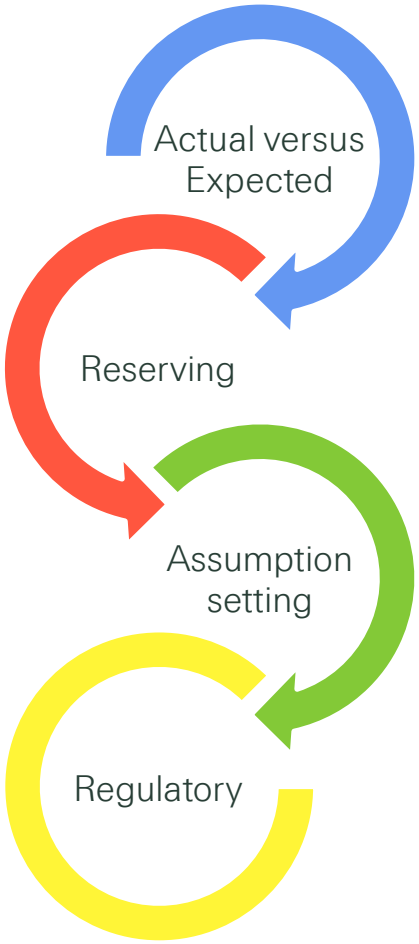
Agenda

- Traditional view of In-force
- The issue with In-force
- Why is it possible now?
- What are the possible solutions?

Traditional view of In-force

The traditional view of looking at in-force



- Traditional risk factors like age, gender, smoker status
- Conventional tools like SAS, MS Access

- An end in itself?
- Actuarial black-box

- Using the past to predict the future
- Time-consuming and not dynamic
- Results tended to be used only for pricing and reserving purposes

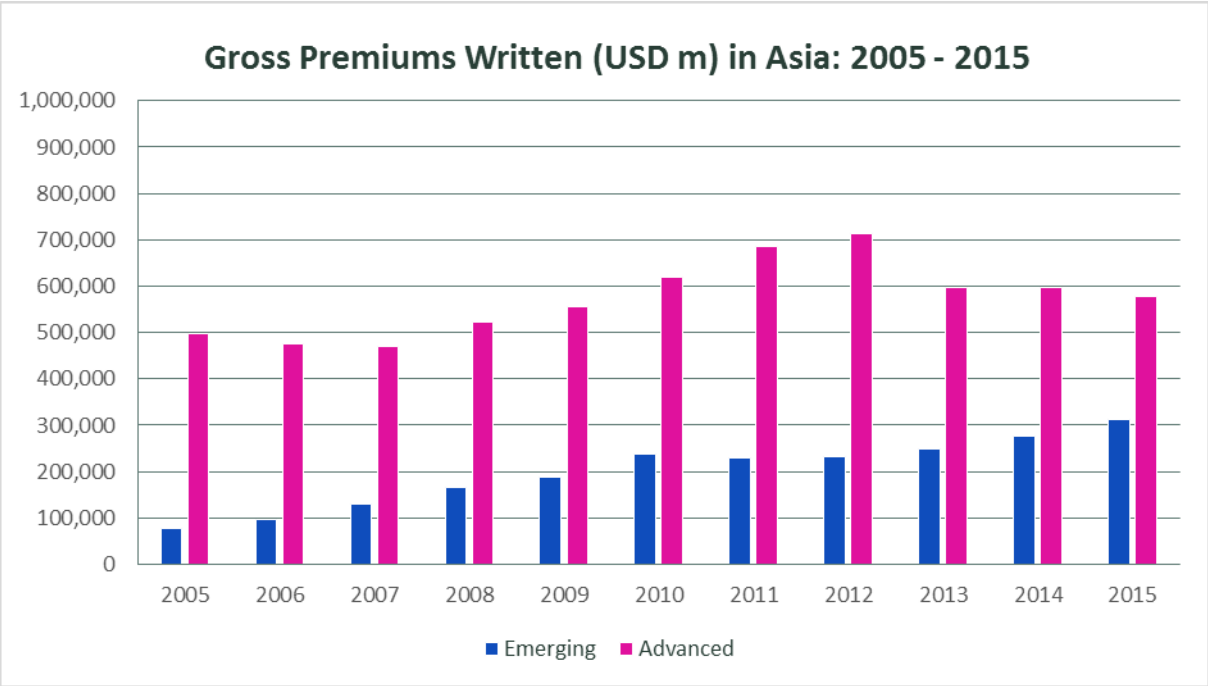
- For reporting purposes
- Results tended not to be used elsewhere

The issue with In-force

Why the focus on in-force?

1	**Economic & Political**	■ Low interest rate and low investment return, political uncertainty, economic slowdown etc.
2	**Regulatory**	■ Solvency II (Europe), excess reserve financing and cash flow testing (US), IFRS 4 and C-ROSS (Asia) etc.
3	**Weak New Business**	■ Declining new business, changing customer needs
4	**Persistency**	■ High policy lapse rates, outdated and inefficient policy management, inability to identify key lapse challenges, adverse selection etc.
5	**Inefficient capital**	■ Trapped or redundant capital, low ROE, lack of capital for new growth, AL mismatch, rating agency pressure, new accounting requirements (Solvency II, IFRS 4 etc).
6	**Liability & Claims Mgt**	■ High cost of holding risky liabilities, high guarantees granted in the past, underperforming blocks
7	**Operational Efficiency**	■ High cost of IT system, high risk of failure due to legacy IT system, pressure from regulators to reduce operating cost etc.

Asia's Life Insurance Landscape (1)

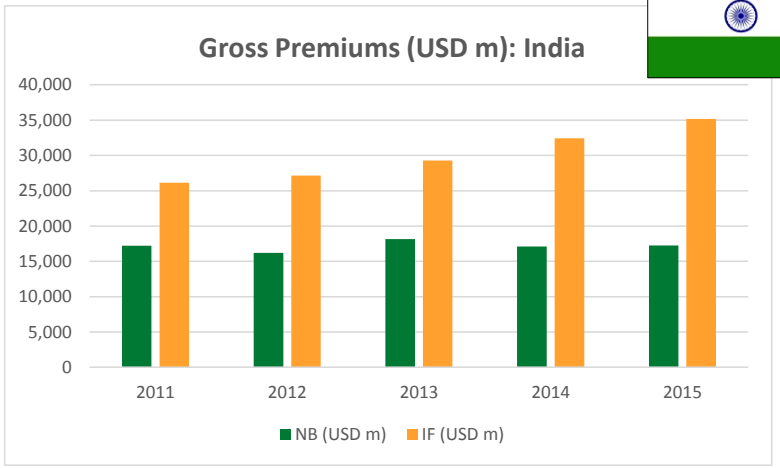


- The Asia life insurance market has exploded in the past decade on the back of 'emerging' markets.
- It is now a USD900 billion industry and the opportunities to maximise the value of this almost **USD1 trillion** portfolio is enormous.

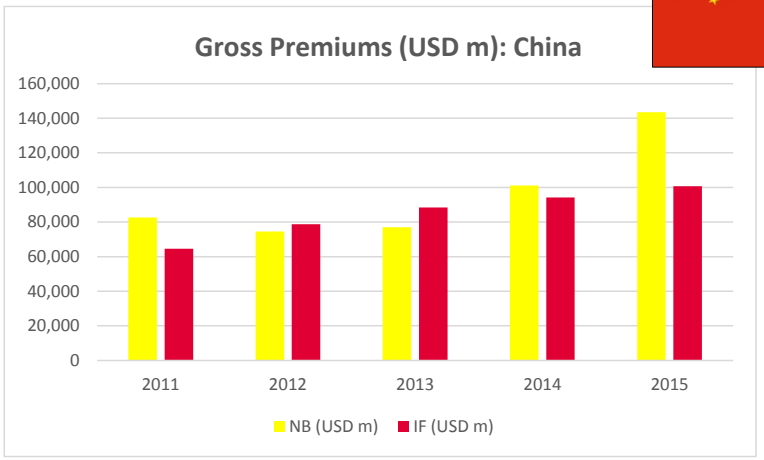
* Source = Swiss Re Sigma Explorer (http://www.sigma-explorer.com/)
* Advanced = Japan, Korea, Hong Kong, Singapore, Taiwan

Asia's Life Insurance Landscape (2)

...while NB attracts much of the attention, the impact of the Inforce on the overall portfolio is massive.



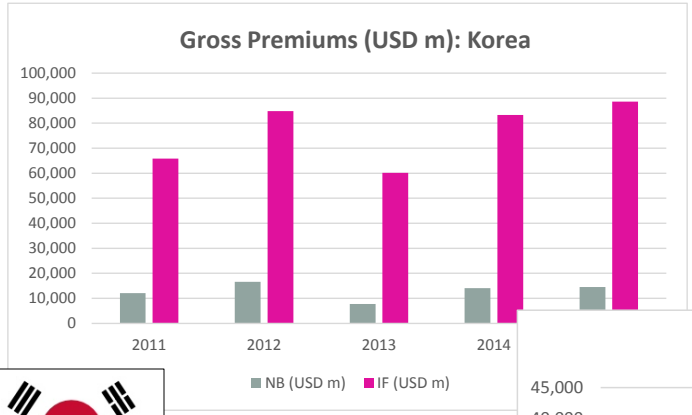
In India, lapses are clearly an issue -> how would better persistency impact things?

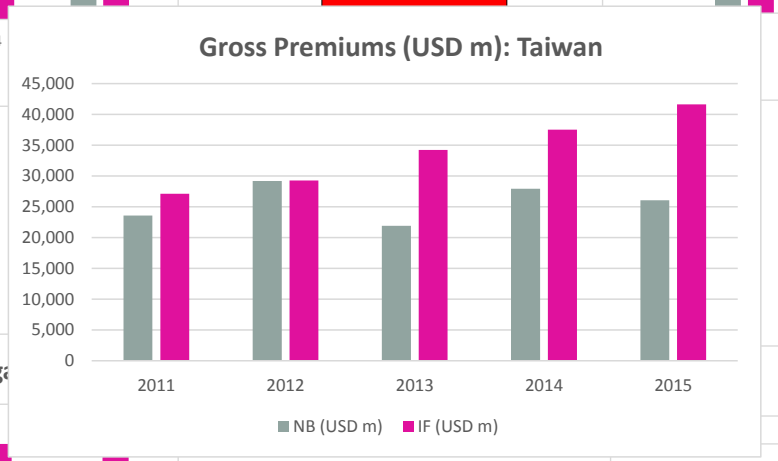


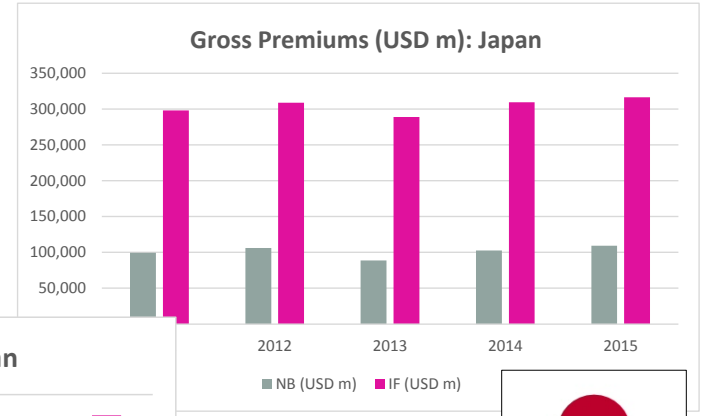
Insurance penetration & growth is so strong in China that NB volumes have often exceeded the entire IF portfolio!!

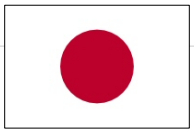
Asia's Life Insurance Landscape (3)

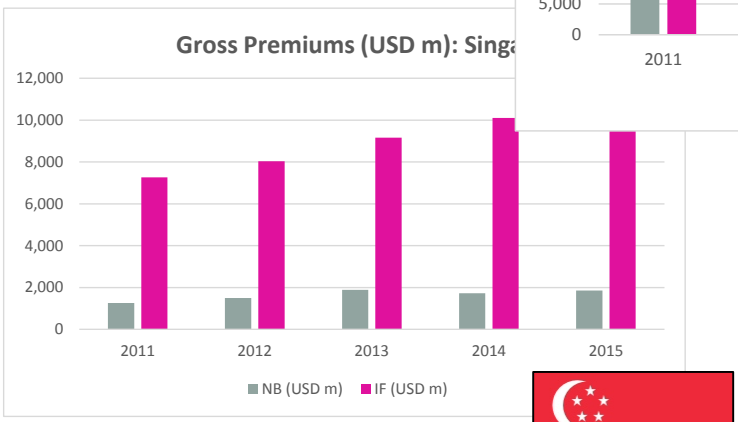
...and in advanced markets

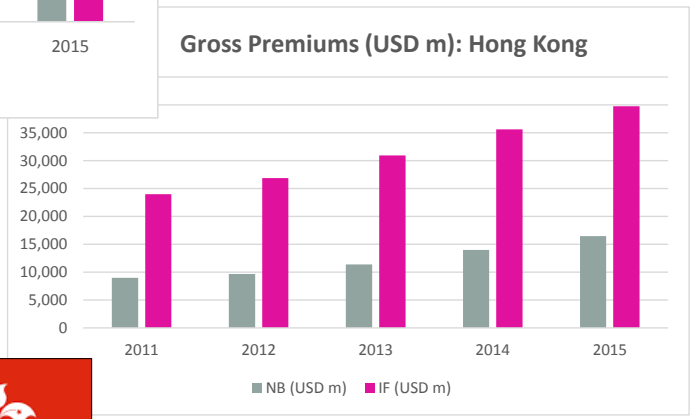












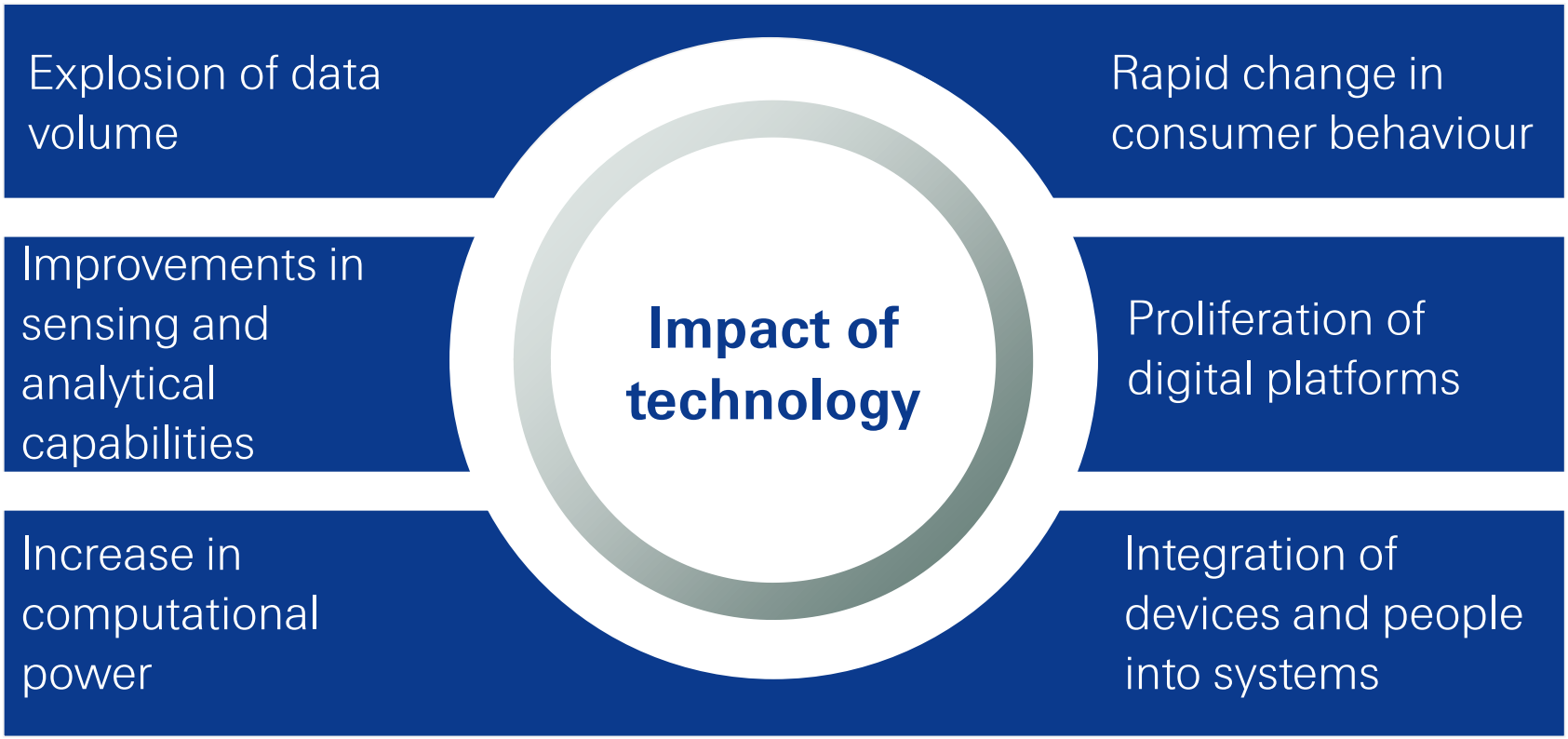
Case example: managing persistency

- A 1% sustainable decrease in actual lapse rate can equate to up to a 20% uplift in profit per annum
- The costs of acquiring a new insurance customer is more than 7 times more than for retaining an existing customer. In other words....
- ...to maintain the same economic value if you lose $1m of inforce premium, you need to then sell $7m of additional new business premium
- A 1% improvement in actual lapse rate may lead to roughly a 10% increase in embedded value
- $1 of DAC writeoff saved via persistency equals $1 of extra profit (before tax)

Associated benefits to insurers are higher customer satisfaction, a larger pool of insured risks reducing exposure and volatility and improved loyalty and control of agents.

Why is it possible now?

Technology advancement has created many possibilities



The in-force data is a Gold Mine!

Actuaries

Pricing, Reserving, Experience analysis, Propensity modelling

Underwriters

Simplify UW questions

Improve STP, Reduce med requirements

What is the business opportunity ?
What is the problem you want to solve ?
What data do you have?
How will you use it?

Sales

New business, new products, up/cross/down sell

Operations

Efficient customer service, Manage / pay claims and partners

Possible solutions

Why the focus on in-force?

1	**Liability Management Tools**	■ Understanding portfolio profitability and strategic importance ■ Claims management, including using technology & behavioural economics ■ Derisking ■ Leveraging profitable portfolios & addressing unprofitable ones
2	**Asset Management Strategies**	■ Incorporating non-traditional higher-yielding assets ■ Strategic asset allocation
3	**Capital Management Solutions**	■ Efficient reserve financing ■ Lower capital requirements through risk transfer ■ Capital release via VIF monetization, sales of closed books/underperforming blocks of business
4	**Product Portfolio & New Business Management**	Boosting new business via: ■ Understanding customer preferences ■ Improving customer interaction and engagement ■ Cross-selling and upselling
5	**Administration Efficiency Tools**	■ Advanced underwriting, e.g. automated process, predictive models, which trim costs and could improve accuracy ■ Harmonising systems ■ Advanced sales & claims support

Case study 1: using technology & data to manage portfolio

Opportunity

- **People are living longer even after diagnosis of critical disease** such as cancer, CVD
- **National insurance claims databases** have wealth of data that can help us identify the protection gap

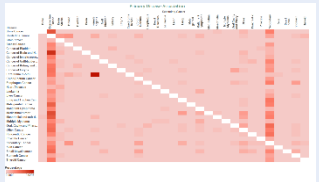
Need to understand disease journey better to close protection gap

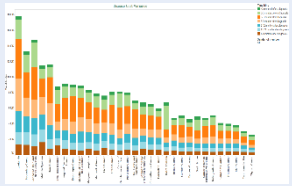
Approach

- **Aim**: Build visualizations of disease journeys that can trigger ideas for insurance products to close gaps
- **Data**: National insurance claims data
- **Analytics**: Visualization, predictive modelling

Benefits for L&H business

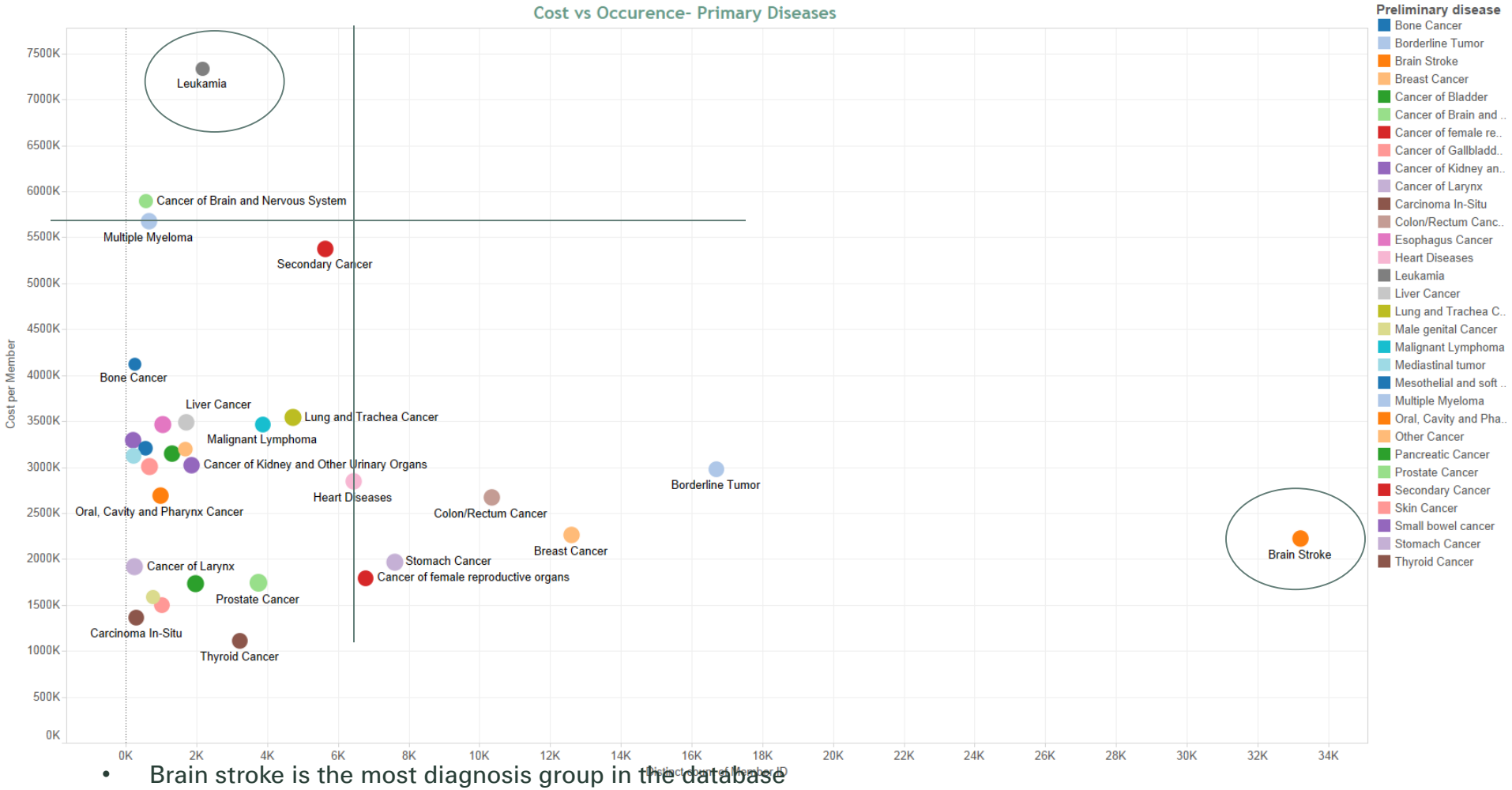
- **Understand customers better** to meet needs beyond existing products
- **Understand costs and treatment outcomes** better to steer product design
- **Present new and unfamiliar data** differently to get insights from all business functions
- **Benchmark** against existing pricing and UW practices





Use of visualizations to trigger new ideas about how to meet customer needs and close protection gaps

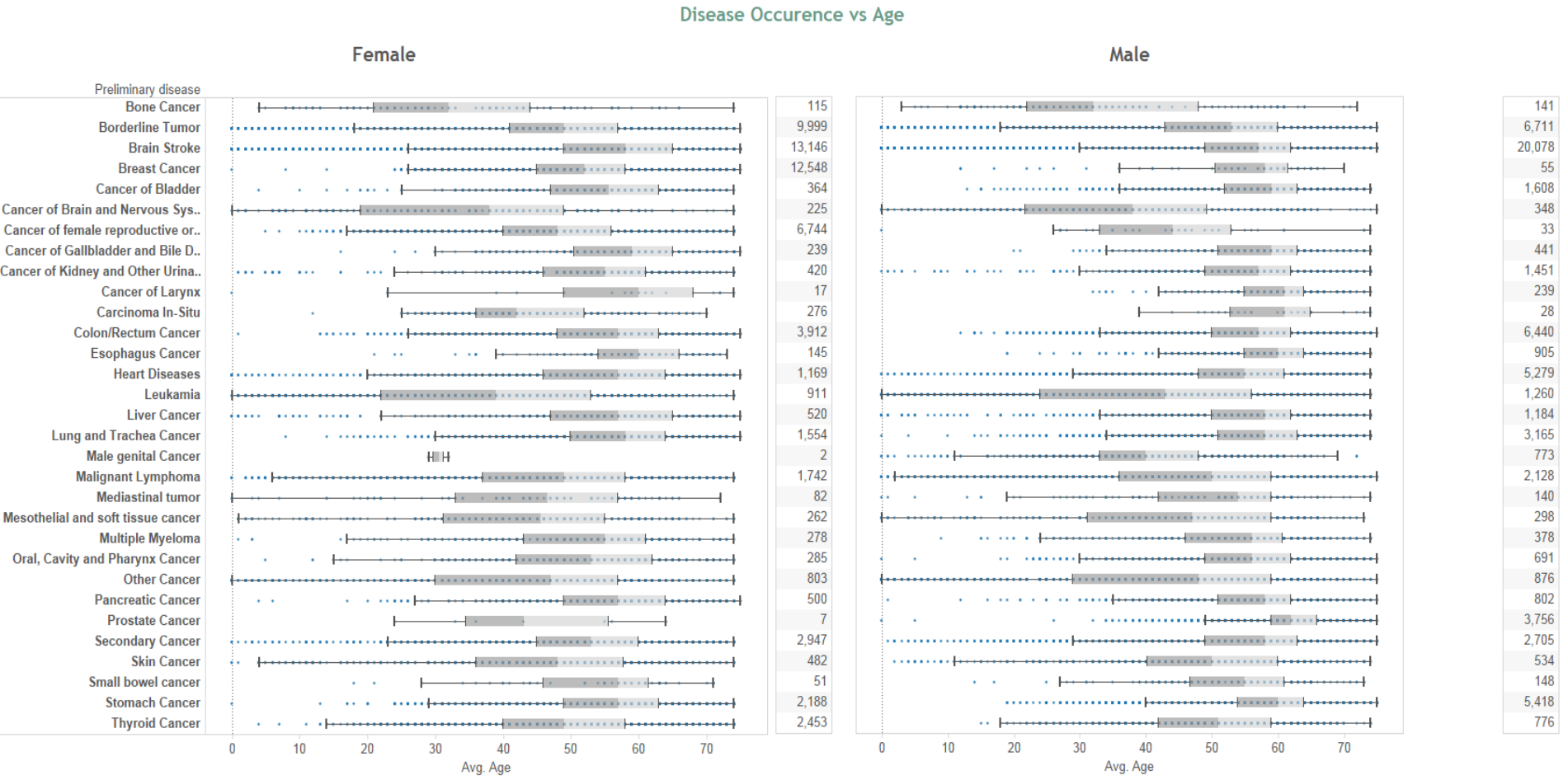
Cost vs Incidence



- Brain stroke is the most diagnosis group in the database
- Most expensive diseases are also relatively rare
- Majority of cancers have an overall cost of <4K units

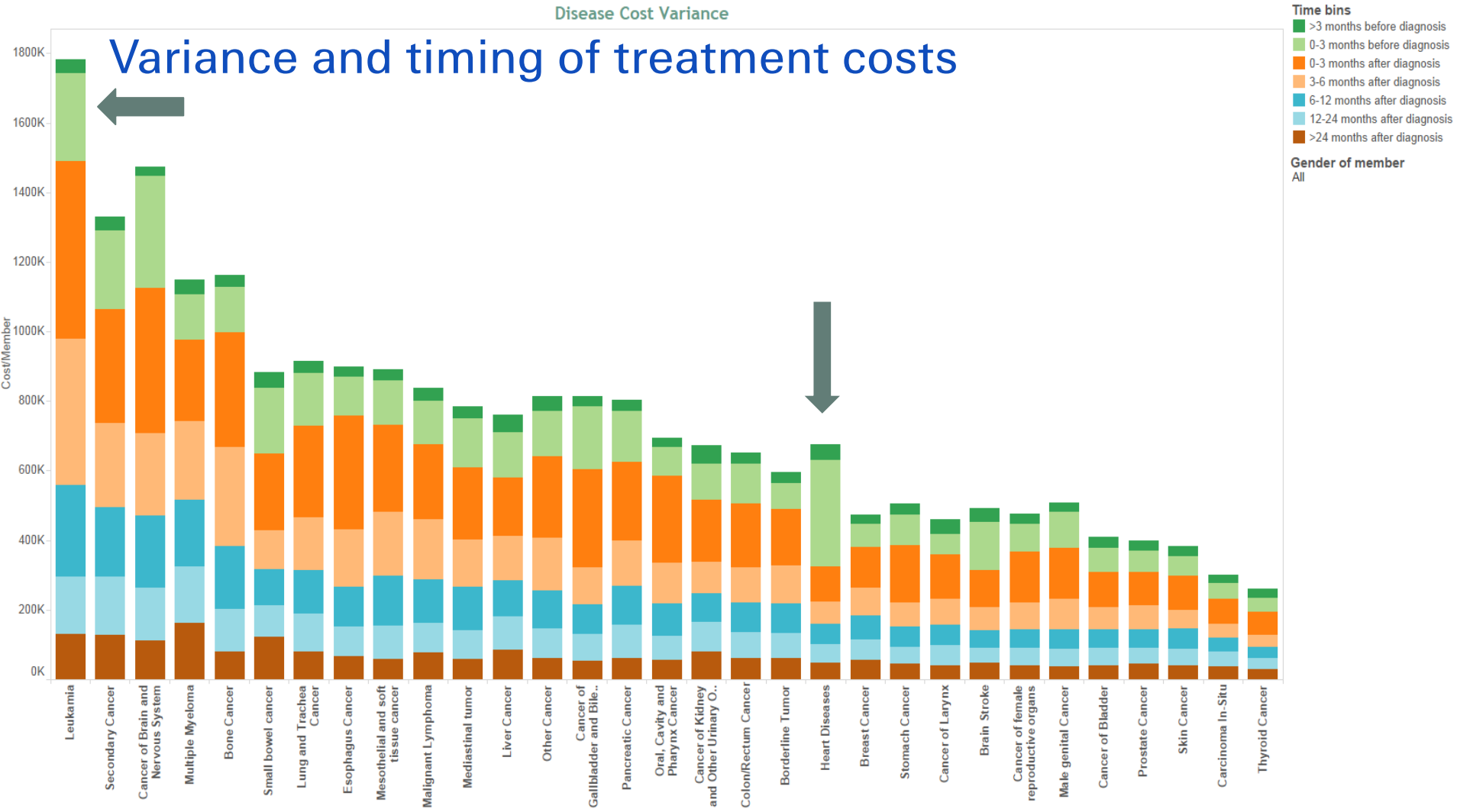
*This infographic is an average of all patients in the database and does not cover the entire disease journey

Incidence by age and gender



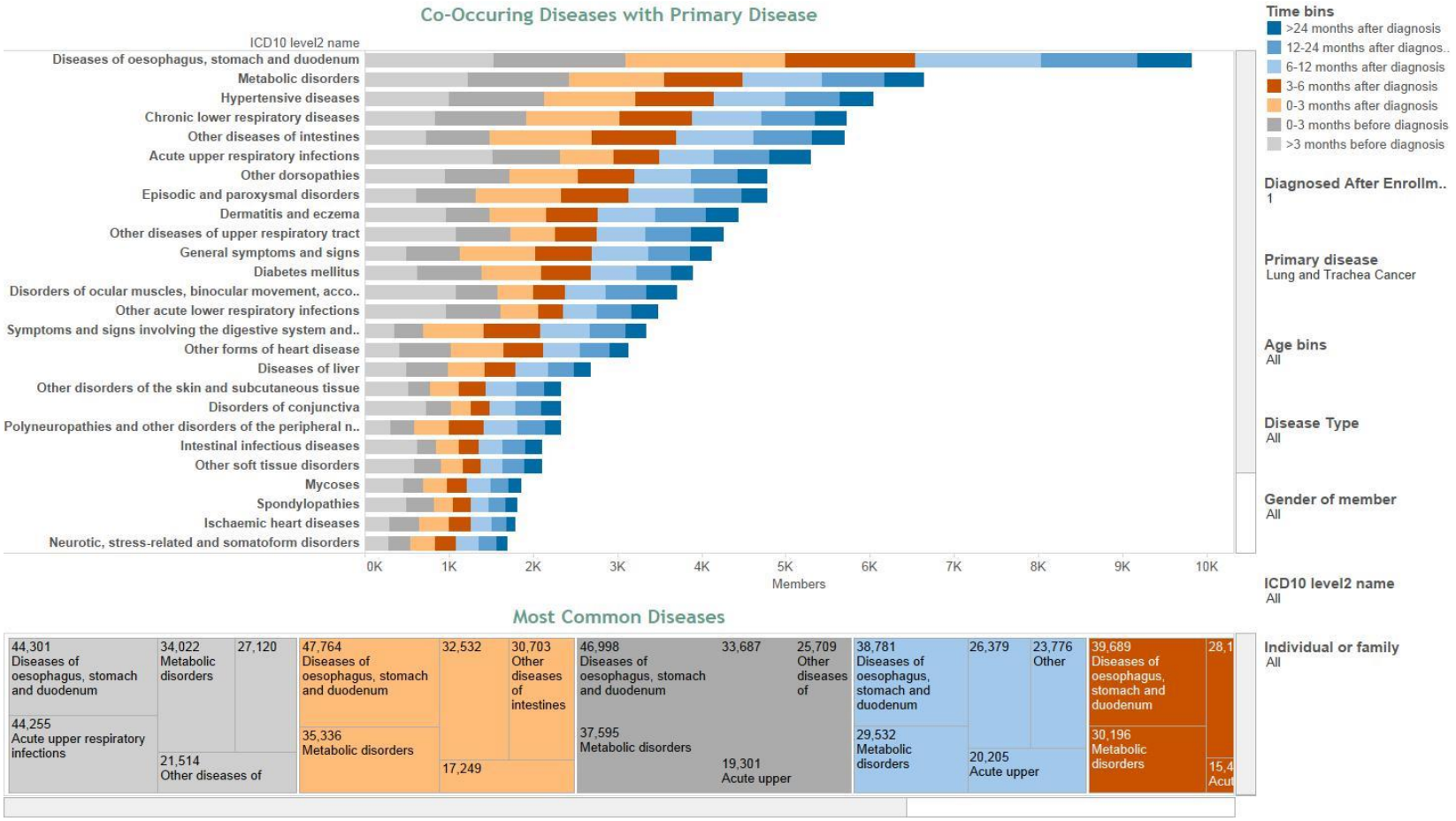
- Bone, brain cancer and leukaemia have a higher occurrence in relatively younger population (average ~40 years old)
- Prostate and stomach cancer are prevalent in older population (average ~60 years old)
- Lung cancer occurs 2 times more frequently for men than women
- Breast cancer is the most common cancer among women, accounting for ~35% of all cancers among women)

Variance and timing of treatment costs



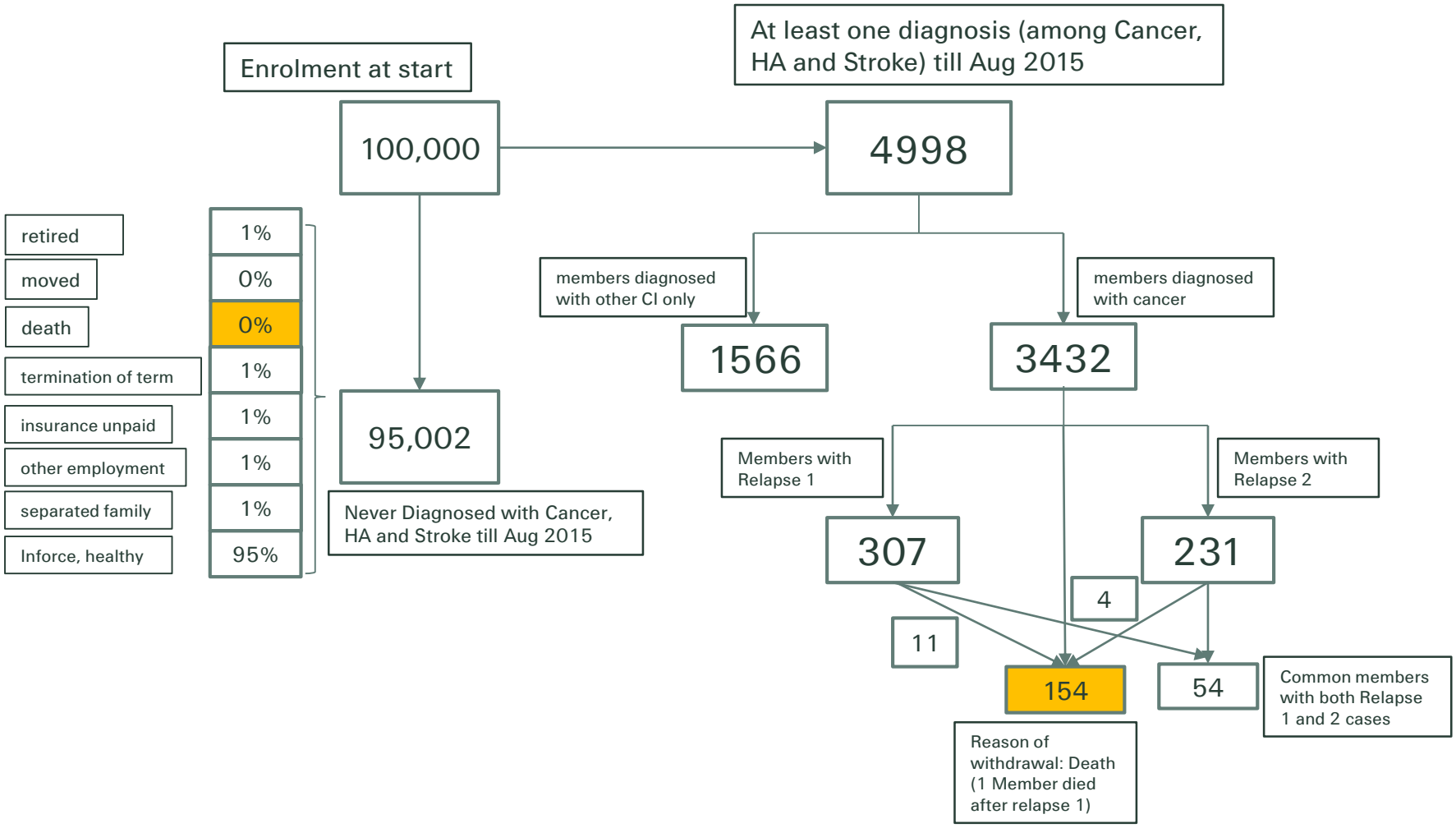
- Majority of the treatment costs for cancer is incurred in the first 6 months after cancer diagnosis
- Leukaemia and brain cancers are most expensive to treat, as well as cancers which have metastasized
- Heart Attack patients incur a high amount of expenses prior to a heart attack

Diseases co-occurring with CI



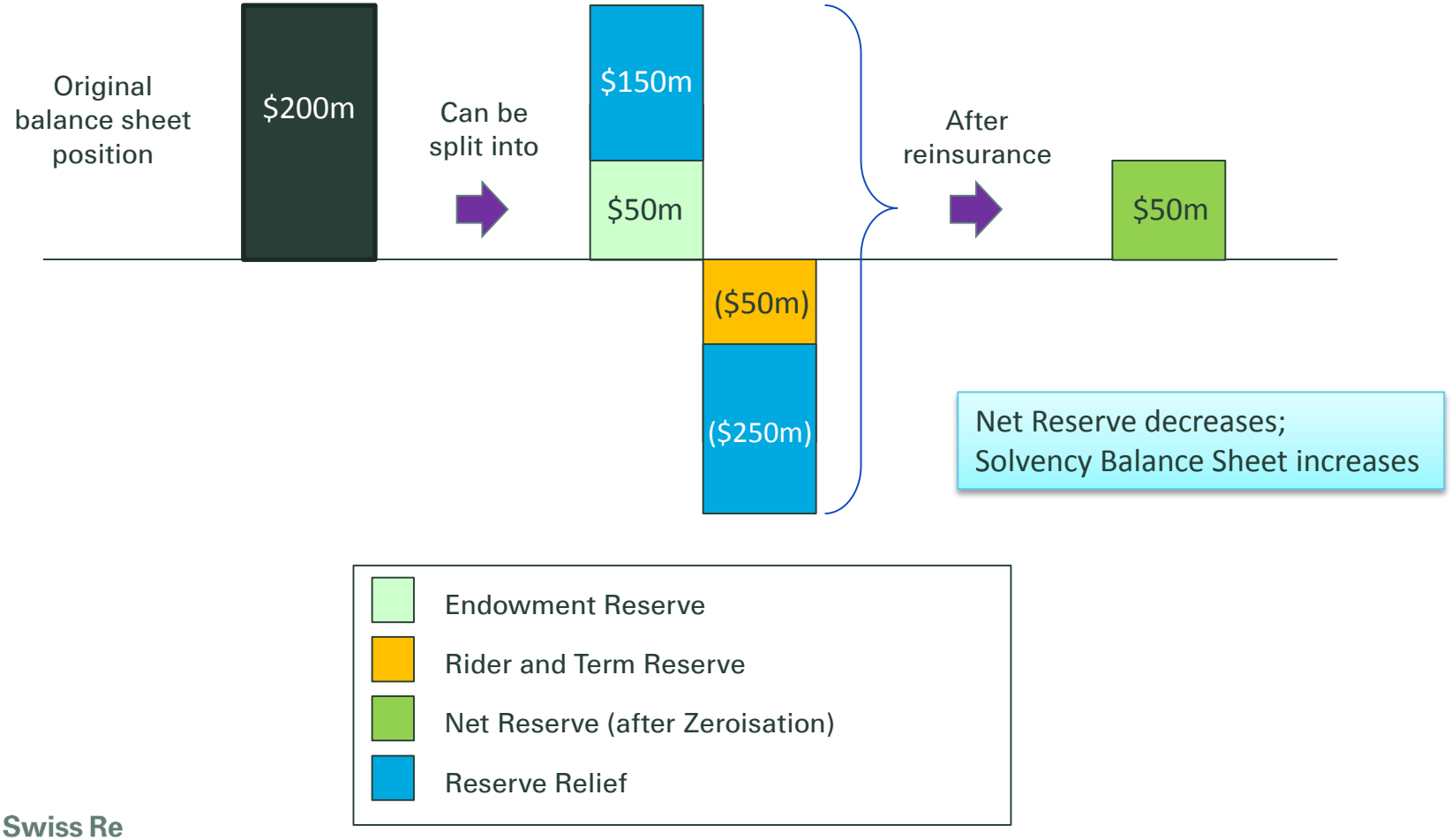
- Identify diseases which occur before, during and after a primary diagnosis of CI
- Help understand patient's needs beyond a lump sum payment

Multi state transition model (Follow one cohort)



Case study 3 : Capital Management of in-force

Note: the numbers below are for illustrative purposes only



Case study 5 : Using technology to predict smoker propensity

Problem

Need to segment customers risks better for L&H products

- China: smoker prevalence
- Low disclosure rates
- Smoking as key risk criterion
- Fluid test used to identify smokers (in USA, EMEA): time-consuming, costly and intrusive

Solution

A model to predict smoking status based on various indicators

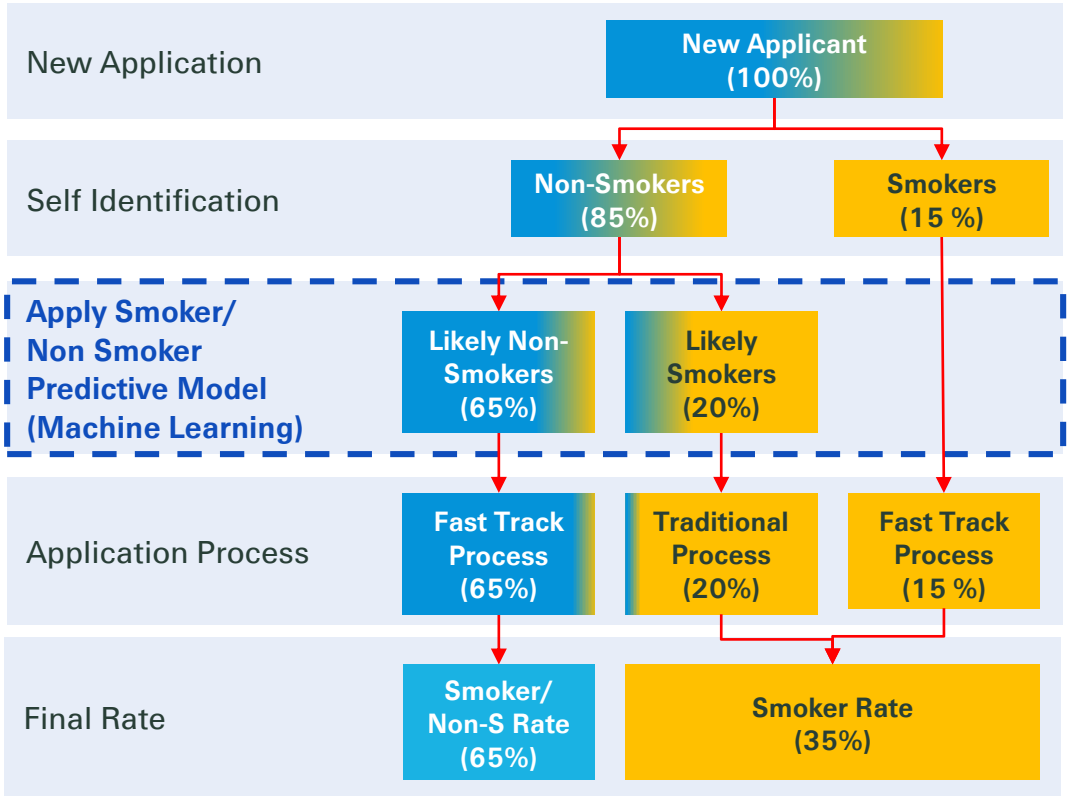
- Faster underwriting process
- Cheaper & less cumbersome for applicants than fluid tests
- Targeted marketing
- New capability as a service
- Scalability

Smoker Propensity Model (Example US)

Assess just with data the likelihood someone is a smoker

The model predicts the propensity of a customer to smoke using various data indicators:

- **Demographics**
  - Age
  - Gender
  - Education
- **Economic**
  - Job
  - Assets& Income
  - Retirement
- **Geo-Location**
  - Urban
  - Rural
  - Province code
- **Health / Social**
  - Alcohol consumption
  - Asthma
  - Hypertension



Application of the propensity model enables more accurate risk classification.

*In the US and EU most life insurance applicants get a medical check up, vs. China only for very high sum insured

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