Transforming the life insurance industry

Lifestyle based Analytics

John King and Kim Cohen
What we will cover today

- What is analytics?
- Real world examples
- Life Insurance Applications
- ‘How to’ guide
- Where to from here?
What is analytics?

- Analysing historic data to identify patterns and make predictions about future trends and behaviours
- Lifestyle Analytics: Incorporating links between lifestyle characteristics and health
- Lloyd’s and London Market: facing an ‘analytical arms race’

- Successful outcome: **Turning data into actionable insights**
- Understand the customer as an individual → tailored solutions for each customer

Are you using existing data effectively and efficiently to get insights and value?

---

1Source: Actuarial Post Feb 2013
Online Retail Customer Experience

• Analytics can assist in customer experience:
  – Personalised solution to customer based on what they looked at last time they came to the website
  – Deliver insights back to customer based on what you know about them

TIP: Learn from other industries
Banking example

TIP: Tailor to the customer based on what you know about them
Melbourne Cup - Quant Style!

- Macquarie Equities Research each year picks the top-ranked horse for a win and a box-trifecta on the top six horses in the model.

TIP: Mix data to make new data?
General Insurance - Telematics

- Telematics in cars to detect driving parameters and then use to price
- M2M (machine to machine) real-time info → transfer info collected to a data warehouse.
- Box in car has a gyroscope, GPS, computer chip and sim to measure location, time, speed, distance, crash details, fuel consumption, mechanical failure, parts wellbeing.

-Life insurance equivalent: Personal health monitor? Heart Rate, etc.

TIP: Create or collect new data
... even Baseball and Election results!

TIP: Analytics can be applicable to any problem
Roshanda by any other name

• Does a name give insights into socio-economic status?

TIP: Sometimes the data is sitting under your nose
Life Insurance Analytics

Propensity to:

Buy
- Maximise take up by targeting marketing at life-stage or lifestyle
- Sell to those less likely to lapse/claim.

Sell
- Use in distribution force recruiting and retention
- Improve the online customer experience

Claim
- Triage: stratify applicant pool into different levels of underwriting
- Triage: focus underwriting and claims resourcing effort on high risk policies

Lapse
- Improve customer retention by combining customer lifetime value models with propensity to lapse

Improved customer experience

- Profitability: link together correlations between these models for experience analysis and customer lifetime value estimation
Marketing to Optimal Customers

Direct marketing database

Non-traditional data appended

Likely to Purchase Model

Likely to Qualify

Model Score

Algorithm Score

Low Score

High Score

- Continue current marketing efforts
- Focus marketing resources on the most attractive potential customers
- Do not target those least likely to respond or qualify for insurance
- Continue current marketing efforts
Managing Retention

- Inforce business
- Non-traditional data appended
- Change in Expected Underwriting Category

Likely to Lapse

- Algorithm Score
  - Low Score
    - Focus retention resources on the healthy customers most likely to surrender
  - High Score
    - Continue current retention processes

Model Score

- Low Score
  - Continue current retention processes
- High Score
  - Spend fewer retention resources where they will have the least effect
Streamlined underwriting process

- Customers undergo full underwriting
- Use analytical model to replicate fully underwritten decision
- Where there is close alignment, algorithm can be used to predict underwriting decision for future applicants
- May be used to bypass medical tests to streamline some applications
AVIVA/Deloitte employed predictive analytics to predict underwriting outcome
• Combined traditional application form with industry shared data and lifestyle customer-marketing data
• 60,000 underwritten applications:
  – First 30,000 used to build a predictive model
  – Predictive ability tested against next 30,000
• Third-party data: “persuasive across the board”- John Currier, chief actuary for Aviva USA

Underwriting Triage

Experience Outcomes

**Customer**
- Multiple experiences depending on customer
  - If healthy: undertake simplified underwriting and enjoy a smoother application
  - If less healthy or where data is unavailable: undertake standard underwriting

**Seller**
- More efficient
- Can focus on building relationship with customer, rather than a long, intrusive application

**Underwriter**
- Save time on simple cases
- Focus on unhealthy lives with disclosures where their skills add the most value

**Claims**
- Allow for mortality deterioration
- Initial results indicate improved mortality as less healthy drop off through onerous underwriting and higher penetration of healthy lives

TIP: Business case can be built on multiple benefits
Multiple Pricing Considerations

- **Granularity** of risk pricing allows portfolio profitability optimisation
- The business context for pricing extends beyond the cost to serve. Must weigh up market share factors and **cross subsidy of risk**
- The attractiveness of **competitor** and own products and prices charged must be factored in
- The **reputation** and perceived relevance of the brand
Census: Mortality Variation by Suburb

- Is gender, age and smoking status enough?
- Map depicts the variance in life expectancy from the standard life tables by age and gender.
- This robust and granular data can inform strategy through portfolio analysis, target marketing and pricing factors.
Define Objective
Data
Refine
Model
Execute
Test

Implementing a predictive model
Define Objective(s)

- How will the model be used?
  - Improve cross sell rate?
  - Streamlined underwriting?
  - Targeted retention?

- What is the financial impact to organisation if successful?

- Gain stakeholder buy-in
Implementing a predictive model

Data

- Cast a wide net - Internal and External
  - Basic individual and household demographics
  - Financial information
  - Lifestyle data

“I have no data yet. It is a capital mistake to theorise before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts.”
‘The Adventures of Sherlock Holmes’ by Sir Arthur Conan Doyle

TIP: More data is good, but the ‘right’ data is better.
Implementing a predictive model

Model and Test

- Apply systematic statistical approach to objectively assess the correlation of each data item on target variable.
- Modelling approach will depend on purpose
- Assess output
  - Is predictive ability sufficient to go forward with full implementation?
- There is still a place for experienced professionals!
- Test model output
  - Are the predictive drivers valid when applied to separate data?
  - Does the accuracy match your risk appetite?

TIP: No pre-conceived notion of predictive variables
Implementing a predictive model

**Execute**

- Apply tested algorithm to relevant customer group to stratify into cohorts
- Implement changes to business processes
- Monitor experience

**Refine**

- Behaviour is subject to change
- Are there new or better data sources available?
- Are model objectives still appropriate?
- Competitive landscape
- Technology advancements
Risks of doing...

...something

- Legal and reputational risks: Which variables? – Privacy laws
- Regulatory risks and discrimination
- Customer and distributor experience
- Additional claims risk
- Model Transparency and accuracy
- Data veracity and management
- Operational change management

...nothing

- Lose first mover advantage
- Loss of market share as grow slower than competitors
- Loss of distributors business given process complexity
- Worse claims experience from less targeted risk selection → priced out of the market

The solution?

Pilot now, learn, and make strategic decision