

1st SOUTH ASIAN ACTUARIAL CONFERENCE



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Risk: Threat or an opportunity?

By

Yogita Arora

Principal & Consulting Actuary

Actuarial Analytics & Risk Consultants

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Introduction

- ✓ What is common between Mr Trump and Mr Modi landslide win?
- ✓ When was the first time that advance analytics was used in election campaigns?
- ✓ How do we draw a parallel with the insurance industry?

Source1 : https://www.washingtonpost.com/politics/how-the-obama-campaign-won-the-race-for-voter-data/2013/07/28/ad32c7b4-ee4e-11e2-a1f9-ea873b7e0424_story.html

Source2: <http://analytics-magazine.org/big-data-analytics-and-elections/>

Source 3: <http://blogs.lse.ac.uk/usappblog/2016/11/26/how-trumps-campaign-used-the-new-data-industrial-complex-to-win-the-election/>

Drawing Parallels in Insurance

First An Illustration 😊

Example 1- Health Insurance for Diabetics

Risk

- Providing Coverage to Diabetics can be very risky for the Insurance Company

Threat

- Increased Loss Ratio
- Increased Capital Requirement
- Reduced New Business Writing Capacity
- Product withdrawal
- In extreme case, shutting down of company(esp. for Small Sized)

Opportunity

- LET US ANALYZE

Some facts about Diabetes

- Three Forms: Type 1, Type 2 and Type 3
- One of the biggest health issue worldwide and major reason for Kidney Failure
- By 2030, Diabetes will become the 7th leading cause of death on global level
- Nearly 4 Million diabetics in 2015 in SriLanka, as per the Statistics of the Diabetes Association of SriLanka i.e. nearly **one- fifth of Sri Lanka population had diabetes in 2015, and statistics are similar for India**

Coverage in India

- No Policy in India which covers Type 1 and Type 3 Diabetes
- 3 Insurance companies which provides exclusive cover for Type 2 Diabetes
- Diabetes claims constitutes 5% to 6% of the number of claims and are on rise
- Frequency of Claim increases after age 40
- Claim by young people(<25) is also on rise

Hence,

- ✓ Need of Health Insurance Plan to combat the Medical Expense
- ✓ Large Population set to be covered

Expected Premium for Diabetic Age 30, Male- Illustrative-Page1

Approach 1: Traditional Way

Average Expected Pure Loss cost = 65

Total Expense plus Commission Loading = 30%

Expected premium = $65 / (1 - 0.3) = 93$

- **SAME RATE FOR ALL DIABETIC PEOPLE**
- **Discounts on Future premiums basis claim experience**

Ways to Reduce Risk:

- ✓ Clearly Defined Underwriting Standards – both at Policy Issuance and Claims
- ✓ Reinsurance
- ✓ Others

Expected Premium for Diabetic Age 30, Male- Illustrative – Page2

Approach 2: Using Advanced Analytics

- ✓ Similar Medical Condition, but different Lifestyle, Social Economic Standards & Behaviors

Pure Loss Cost

Age Band/Level of Risk	Low	Medium	High
0-20			
20-35			
35-50			
50-60			
>65			

<50
55- 70
>70

- ✓ Assuming Same expense for all 3 categories of 30%

- ✓ Premium:

	Low	Medium	High
	57	89	129

Where it can help

- ✓ Better & Clearly defined Underwriting Standards
- ✓ **Better and more competitive Pricing**
- ✓ Target Marketing
- ✓ Better Business Planning
- ✓ Better Understanding of Risk on books
- ✓ Better Loss Ratio Prediction & Financials
- ✓ Better Claims Monitoring

Example 2 – Cross Sell and Up sell

Risk

- Sales/Renewal Operations

Threat

- Not meeting the needs of your customers
- Lapses
- Missing Opportunity
- Competitors taking away your policyholder

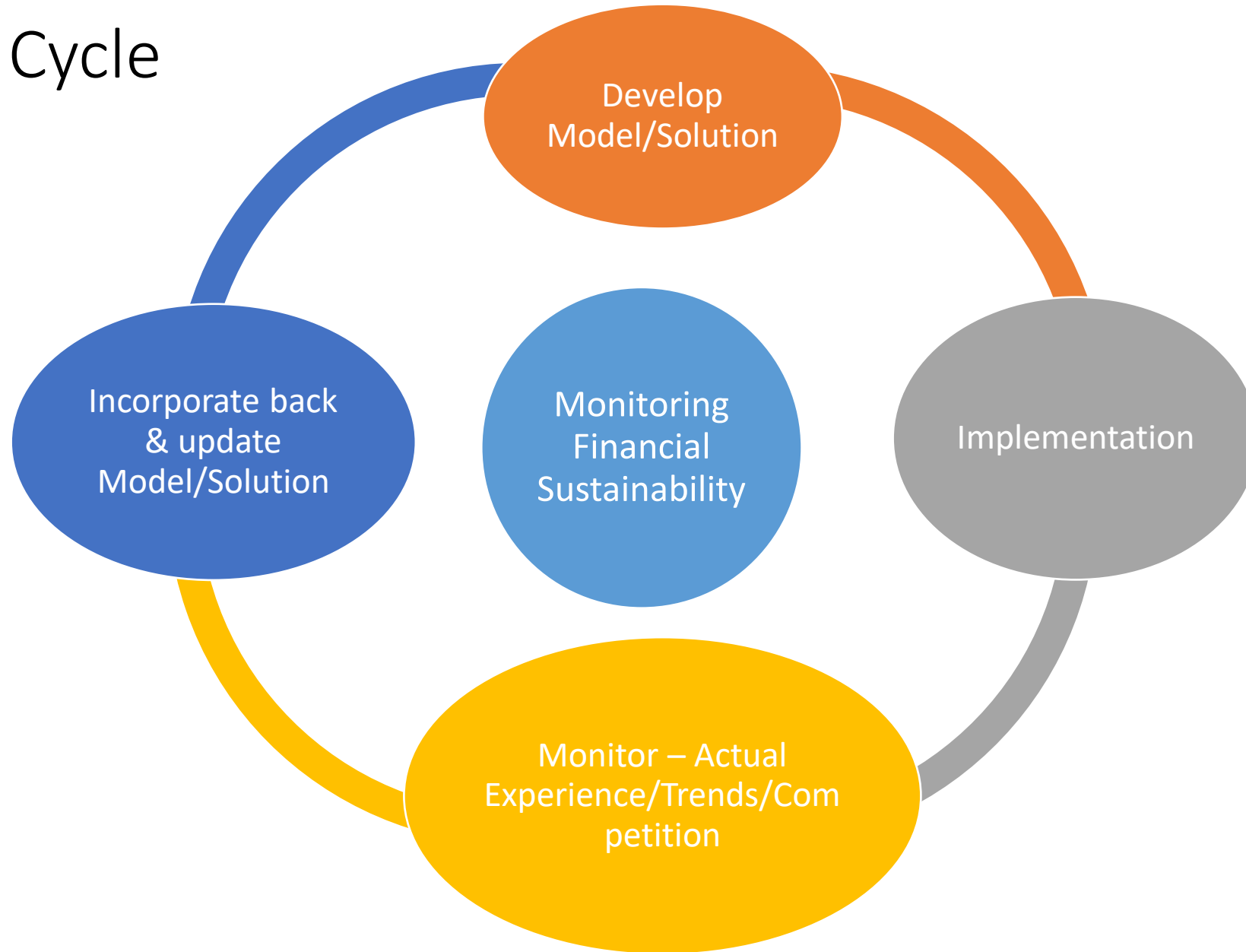
Opportunity

- Increased Sales/Top line
- Better market Share
- Addressing Policyholders need – Happy Customer 😊

Few more examples

- Increasing Sales Base Using Internet
- Fraud Analytics
- Business Planning & Strategy
- & Many More

Control Cycle



Current Issues

- Poor Data Base Management
- Non Integrated Data Bases
- Fewer Actuaries
- Actuaries focus more on Statutory work
- Departments working in silos
- Low Investment in Innovation
- Low Investment in Analytics

In my opinion actuarial techniques and analytics , should be applied to all aspects of insurance business - sales, renewals, operations, IT, etc.

Even to the Non-Insurance business 😊

Tools Available

- Data Mining techniques such as Risk Scoring Modeling etc.
- Predictive Modeling using Regression Analysis, CART/CHAID, Customer Segmentation/Clustering
- Advanced Machine Learning Techniques such as
 - Random Forest
 - Boosting Trees
 - Neural Networks
 - Support Vector Machines(SVM)
 - Gradient Boosting Models
 - KNN Algorithm
 - Natural Language Processing(NLP)

Languages Used: SAS, R, Python, SQL, Teradata, Java, R

Summary

- Deaveraging is the key
- Advance Analytics + Actuarial Science = Profitable business 😊
- Data is the Asset created today to enhance the future, so INVEST

Achieve a WIN-WIN situation where insurance companies can write profitable business, while ensuring that the needs of the policyholders are specifically addressed.

Introduction - Yogita Arora

- ✓ Yogita Arora is a Qualified Actuary from Institute of Actuaries of India.
- ✓ Yogita comes from a diverse background having 11 years of experience of life, general as well as health insurance. She has worked for Indian and US based companies.
- ✓ Since Dec'15, she is working as a consultant and is Principal & Consulting Actuary of Actuarial Analytics & Risk Consultants(AARC).
- ✓ Currently, she is also Appointed Actuary of ECGC Ltd.
- ✓ She has also been Appointed Actuary of Agriculture Insurance Company of India Ltd.
- ✓ She started and lead the Indian Actuarial team of McKinsey's Advance Health Analytics, and was serving US clients by helping them strategize in the changing environment of Obama care.
- ✓ Previously, she worked for Aviva Life Insurance for 4.5 years and before that she was serving Swiss Re in Genpact.

Reach Out to us at:

Yogita Arora, FIAI

Appointed Actuary –ECGC Ltd, India

Principal & Consulting Actuary – AARC

Ph: 91-9873712406

yogitaarora@aarconsultants.in

Rahul Jain

Senior Manager

Ph: 91-9873120494

rahuljain@aarconsultants.in

Actuarial Analytics & Risk Consultants

Address: AltF Spaces, 5th floor

Veritas Towers(Behind Hotel ibis)

DLF Phase 5

Gurgaon-Haryana

122002

www.aarconsultants.in

