Data Science Techniques in Pricing & Involvement of Actuaries in Unconventional Areas

5th Capacity Building Seminar on Health Care Insurance
4th December 2017

Introduction

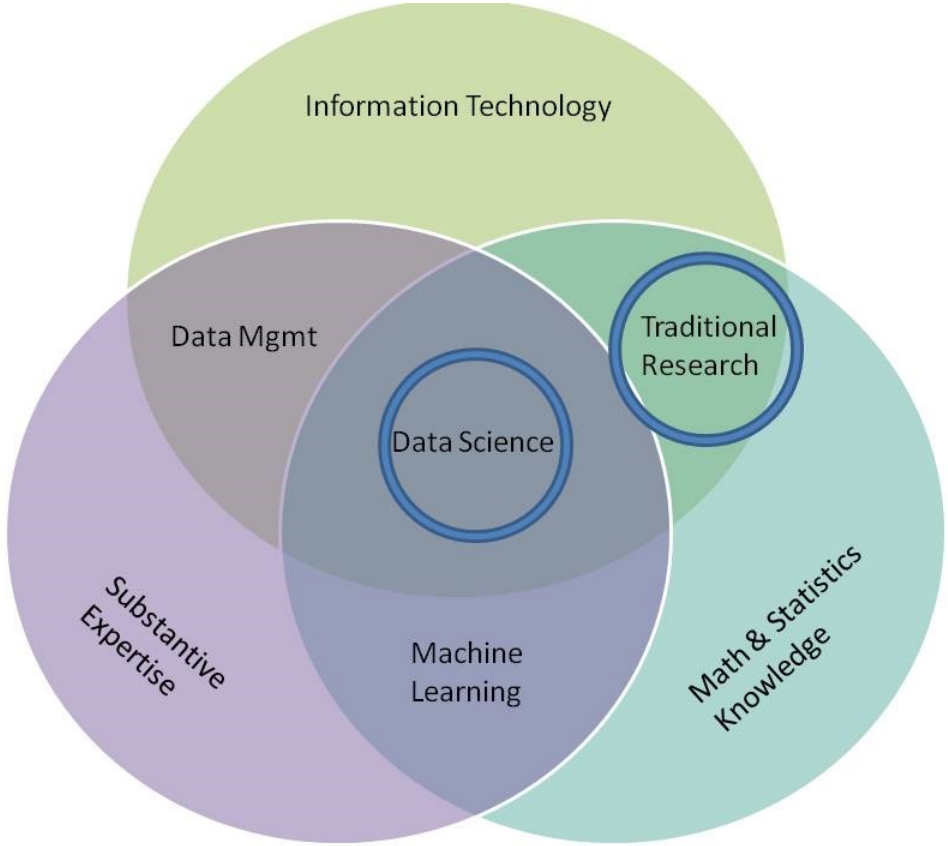
- ✓ What is common between Mr Trump and Mr Modi's election wins?
- ✓ When was the first time that advance analytics was used in election campaigns?
- ✓ How do we draw a parallel with the insurance industry?

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/

Why Data Analytics

- ✓ Actuaries have been using advanced Math & Financial Theory to and understand the costs of risks and have been the stalwarts of insurance business forever
- ✓ However, over part 15-20 years, revolutionary advances in computing technology and availability of new & different data sources, has pushed the scope of Advanced Analytics far beyond the areas of traditional science
- ✓ More and More use of Analytics is driven by increased competition, declining profitability and increased requirement of risk management with emerging of new risks

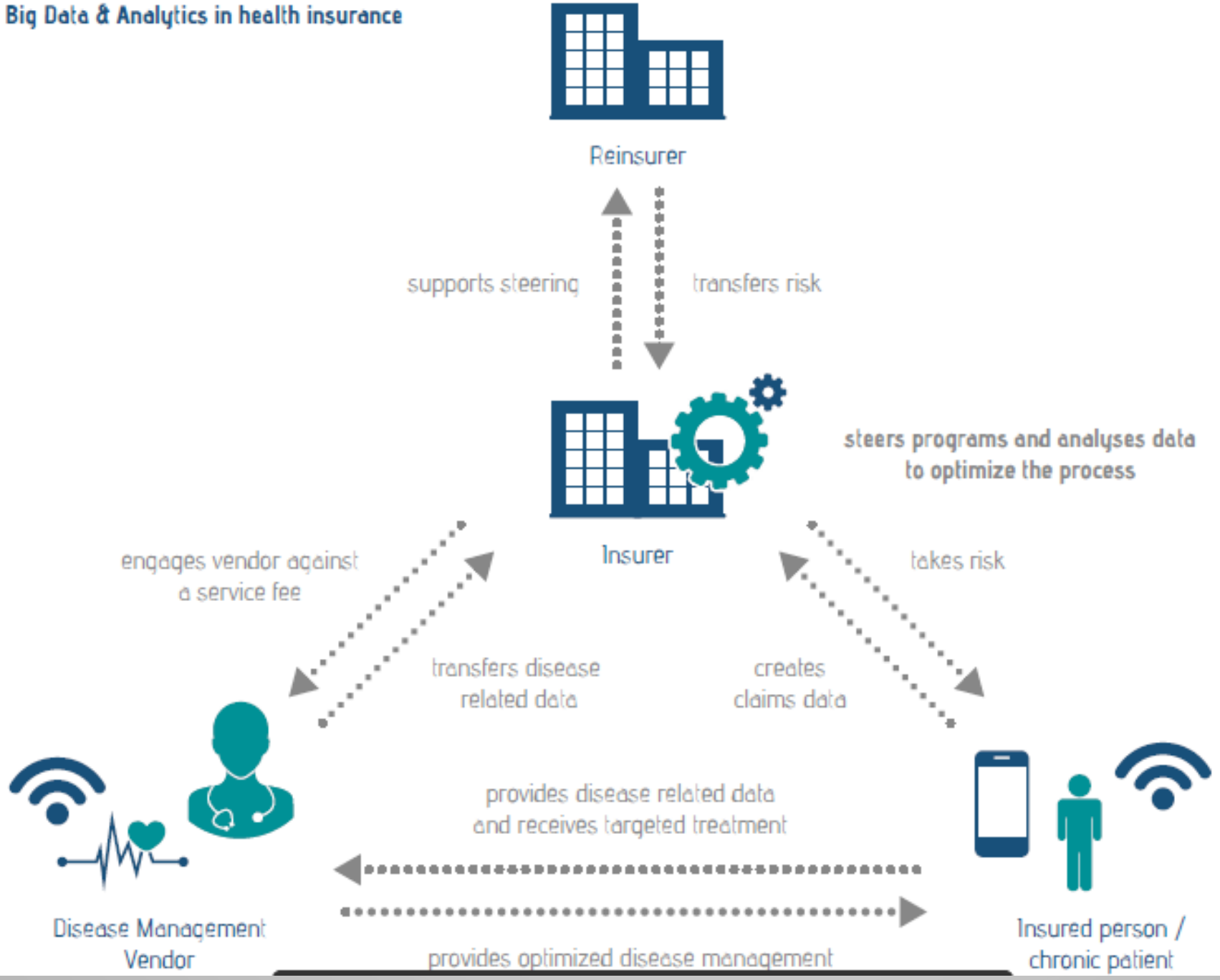
Actuaries v/s Data Science



- ✓ Actuaries have great substantive expertise in analytical thinking & quantitative skills, domain knowledge and statistical knowledge putting them as leaders in traditional research.
- ✓ But to be true data scientists they must have the technology skills viz. programming, visual representation ability, handling unstructured data etc., to interact with both their statistical and domain knowledge.

Image Courtesy : www.smithhanley.com

Big Data & Analytics in health insurance



Courtesy : www.thecroforum.org

Data Sources: Traditional vs. New Age

Traditional	New Age
Policy Data	Medical records
Inforce Experience Data	Search Engines
Reinsurance Data	Social Media
CMI	Wearables
National/Government Statistics	Genetic Data
Economic Data	Subject Access Requests
Credit Ratings	

Image Courtesy : www.actuaries.org.uk

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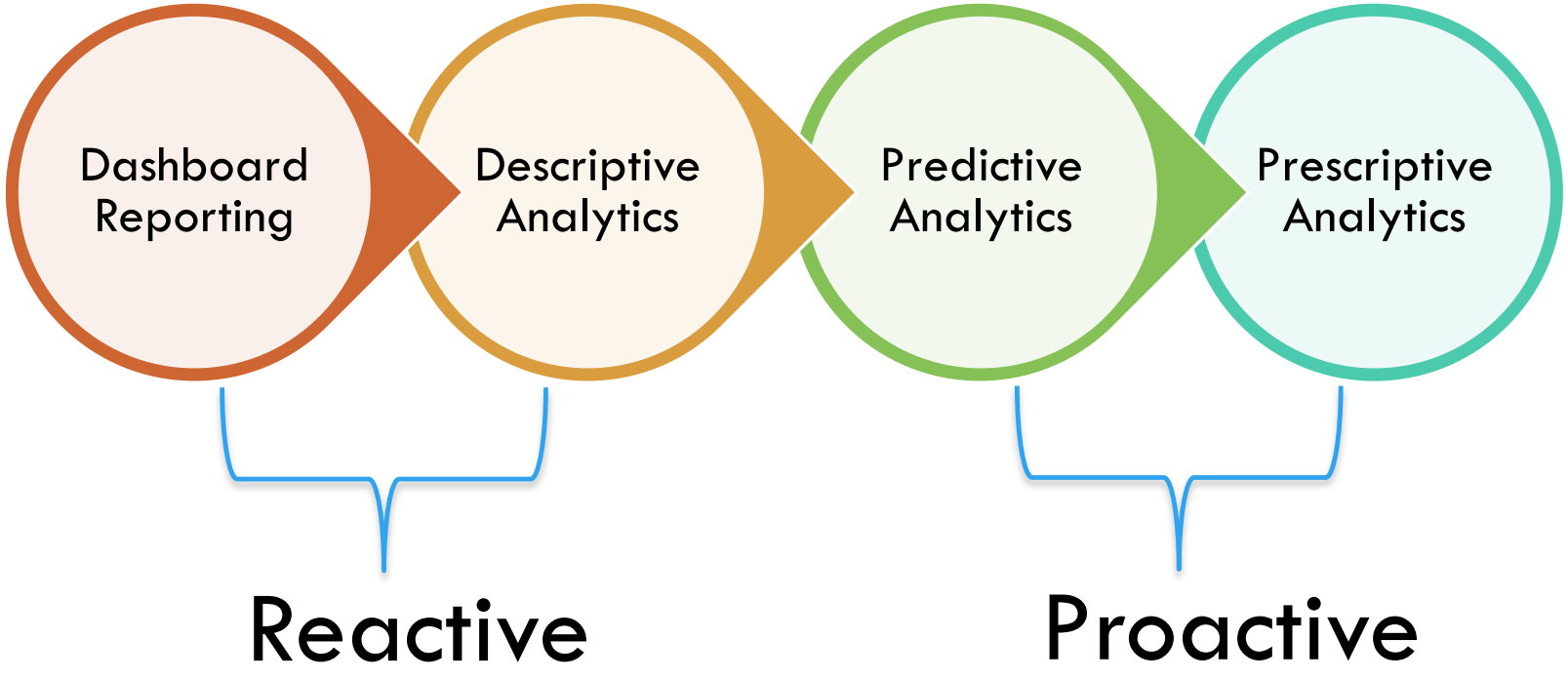
Type of Analytics

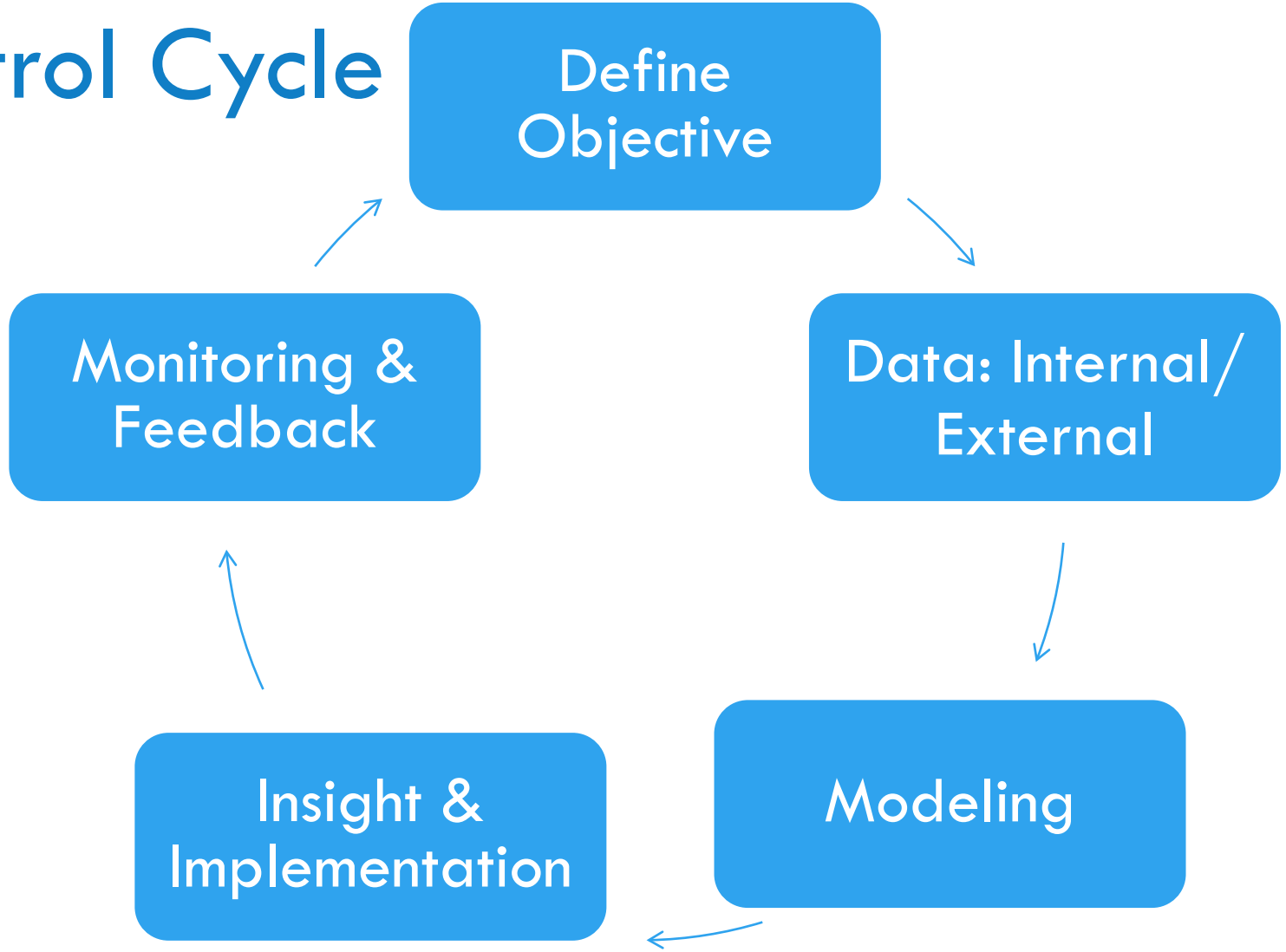


Data Analytics Applications

- **Customer Acquisition**
  - Target customer Segmenting
  - Product Design/Pricing
  - Channel Analysis
  - Agent Recruitment/Retention
  - Market Analysis/Campaign Management
  - Underwriting
- **Customer Management**
  - Attrition/Retention
  - Cross Sell/Up Sell
  - Lifetime Value Analytics
- **Risk Management**
  - Fraud Management
  - Risk Analysis
  - Claims Estimation Analysis
  - Claims Monitoring/ Management
- **Other Areas**
  - Business Planning & Strategy
  - Financial Projection
  - Basis Setting
  - Reserve Optimization

& many more…

Control Cycle



Current Issues

- Actuaries focus on Statutory/Regular work
- Actuarial resources are costlier
- Fewer Actuaries
- Departments working in silos
- Low Investment in Innovation
- Low Investment in Analytics/training of resources

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 ☺

Image Courtesy : www.actuaries.org.uk

Summary

- *Data gives you the most dispassionate view, but human intelligence is always more reliable than system intelligence*".
- Actuarial Science + Advance Analytics + Human Intelligence = Profitable business ☺
- Data is the Asset created today to enhance the future, so INVEST

Image Courtesy : www.actuaries.org.uk