

1st Seminar on Data Science & Analytics

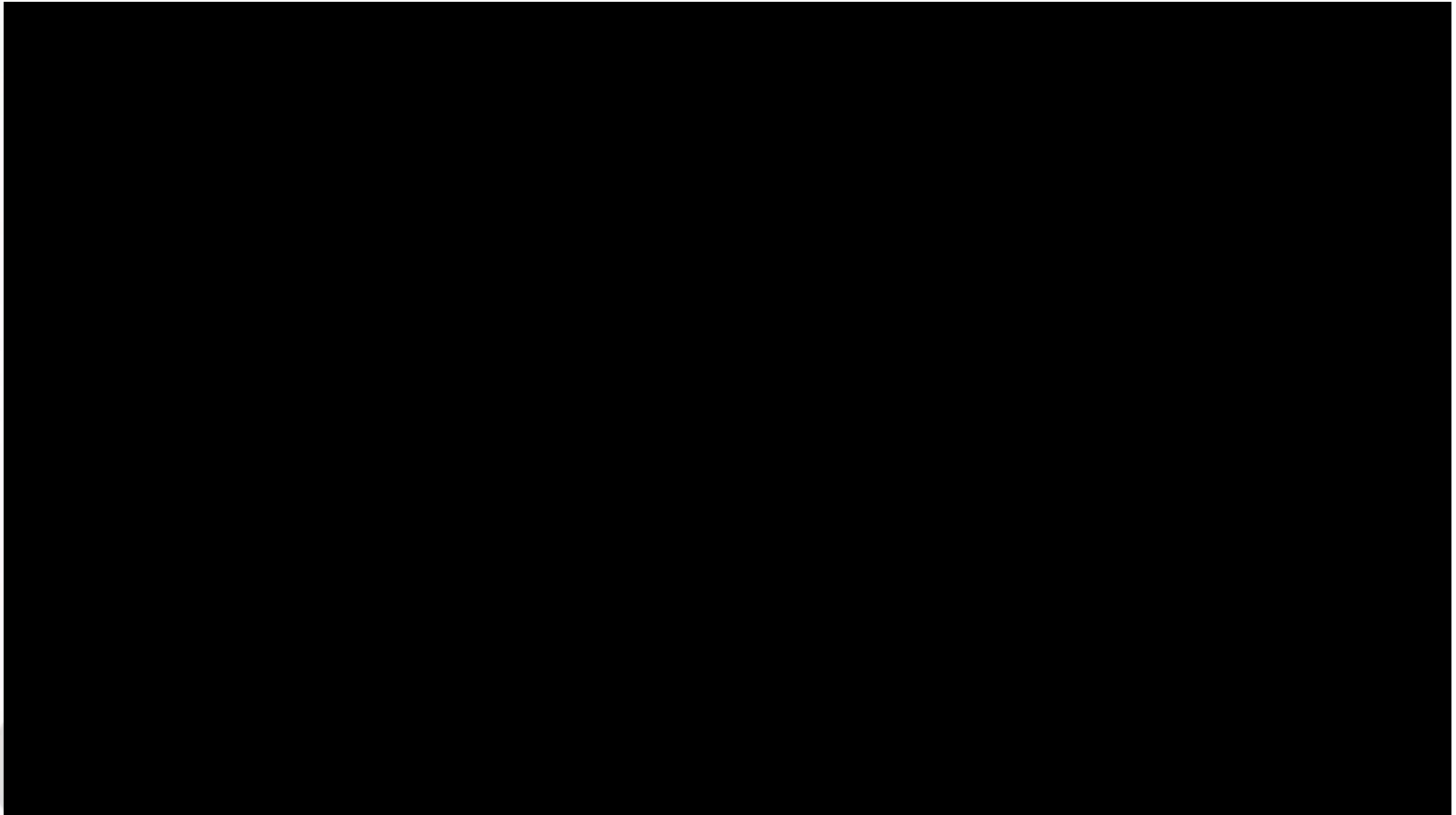
21st July 2018

Changing Landscape of the Actuarial Profession

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Managing Director, Pramatha



The World around us is changing

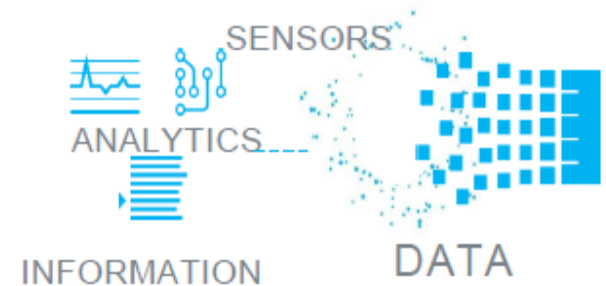


Businesses undergoing significant change

Changing Customer Expectations



The Explosion of Data 1



Changing Risks



Transition in the Workforce 2



TECHNOLOGY AND LARGE VOLUMES OF DATA TRANSFORMING BUSINESS

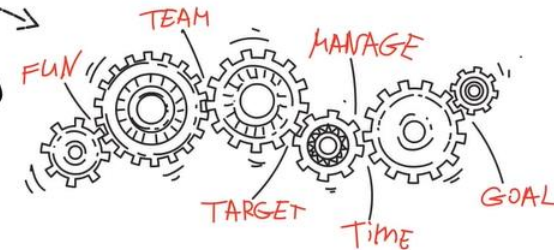
Drivers of Change - Data Science and Analytics



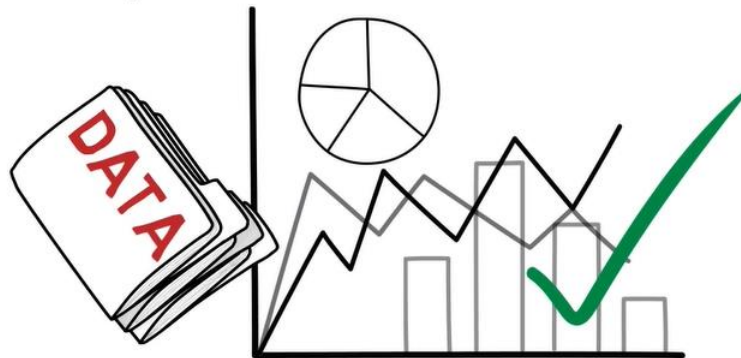
Data
Is The New Oil

Data Science and Analytics - a necessity

A day in the life of a Data Scientist



Experiment required → Hypothesis



What is Data Science?



A Multi disciplinary subject - Simplified



Data Science - Behind the Scene



U B E R



Data Science - Behind the Scene



Actuaries produce the NAB Online Retail Sales Index

NAB Online Retail Sales Index

Indepth report – July 2012




Chart 1: Growth in online sales vs. retail sales (% yoy)

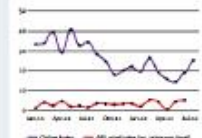


Chart 2: Growth in online sales by retail location (% yoy)

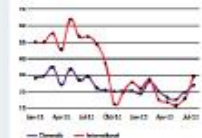


Table 1: Key online retail statistics

	Value (billion)	Year	YoY %	QoQ %
Online sales	177.0	2012	25%	10%
Retail sales	1094.0	2012	-2%	-1%
Online share of total	16%	2012	+1%	+0.5%

more give, less take

With traditional sales totalling \$200 billion in the year ended June 2012, online retail spending at \$17.7 billion now represents 9% of the traditional sector. Both have experienced strong growth in recent months – 25% and 24%, respectively.

Domestic sales growth increased by 2.8% year-on-year in July, but international sales really surged – growing by 28% year-on-year. Domestic retailers remain the dominant force in online retail sales, but trends in individual categories remain quite divergent – the Household Goods & Electronics and Toy & Hobby sectors have been weak, given lower product penetration typically seen discretionary in nature.

Those aged in the 20s and 40s continue to click and buy with conviction. While the under 30s are lagging, they are buying more international retailers – around one-third of their spending is international, compared with around one-quarter for the other groups. Regional Nielsen Australia is still supporting online growth, recording 17% year-on-year per capita growth, and online sales in the state have outperformed the rest of the country, thanks to buyers in their 20s, 30s and 40s.

This snapshot is just a taste of the detailed information the NAB Online Retail Sales Index provides. Enjoy the rest of the report.

— Alan Oster, Group Chief Economist, NAB

Since launching the NAB Online Retail Sales Index in association with Quantum in February, many of our clients across the retail sector are leveraging these insights to help them make future business decisions.

The Index shows that domestic retailers remain the dominant force in online sales as retailers take a multi-channel approach by developing an online presence alongside a traditional footprint.

Interestingly, many of our mid-thru small clients are seeking a shift to the profile of the online consumer as more customers purchase online for the very first time.

The age group spending patterns highlight consumer preferences for “click and collect” products, giving them the convenience of online browsing and the ability to pick up their purchases in-store.

Retailers are no longer viewing online simply as a sales and marketing channel but as a distribution and supply chain optimisation strategy. Consequently they are investing in a distribution model that sees their products being delivered to the customer when and where it matters.

— David Thom, Managing Director, Head of Consumer Sector, NAB Institutional Banking

At a glance

Traditional v online (m, July yoy)

Growth in traditional sales (June): 9%

Growth in online retail sales: 25%

Domestic v international (m, July yoy)

Growth in domestic online retail sales: 24%

Growth in international online retail sales: 29%

Online purchases hit \$17.7bn compared with \$16.6bn in Q1 12, or 5.3% of the size of traditional retailing

Domestic online for around 75% of total online

Share of spend by region

WA: 11.6%

ACT: 1.3%

Online spend by sector and age group

27% 20% 15% 10%

36% 34% 32% 31%

40 38 36 34



Where to: afrsmartinvestor.com

retail hit by caution

per capita (1000)

24% Australian metropolitan purchases

37% WA regional purchases

RELATED QUOTES

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More examples Data Science at Work



**Cancer
Research**



**BRIGHAM AND
WOMEN'S HOSPITAL**
A Teaching Affiliate of Harvard Medical School



**Connected
Vehicle**

**Price
Optimisation**



**Network
Optimization**

**Customer
Interaction**



**Nationwide[®]
Insurance**



**Race
Optimisation**

**Performance
Predication**



**England
Rugby**



Traffic Analysis



Insurance Industry Disruptions



Insurance data will grow

94%,

84% of which is
unstructured

*“By 2020, Internet of Things spending
will rise to **\$3 trillion** and nearly*

30 billion devices”



Organisations looking to move from Descriptive to Cognitive Solutions



Cognitive

How can we learn dynamically?

Prescriptive

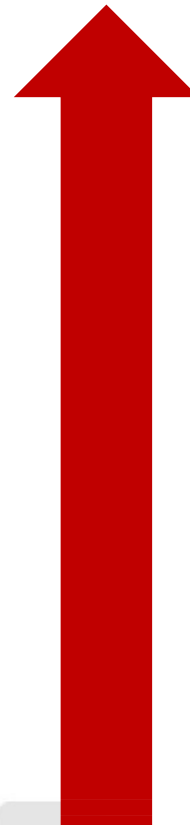
How can we achieve the best outcome?

Predictive

What could happen?

Descriptive

What has happened?



*Learning Models
Experience Memory*

*Optimization Models
Recommendations*

*Predictive Models
Scores*

*Reports
Dashboards
Visualization*



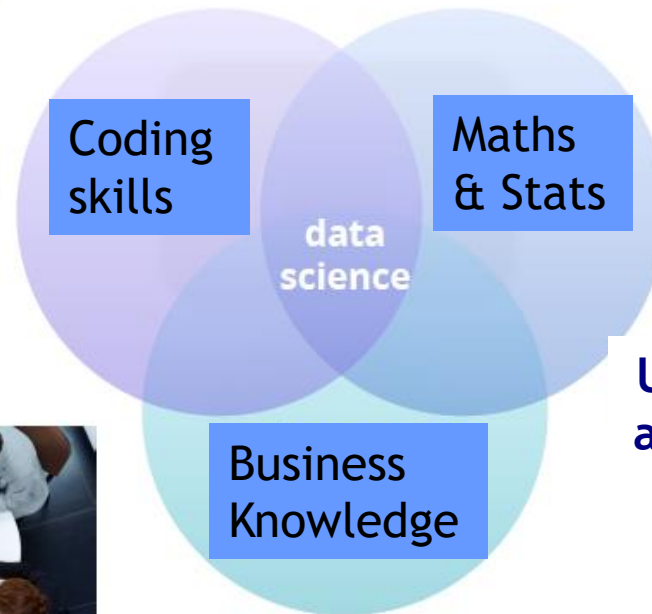
Businesses needs - Insights



Actuaries as Data Scientists - or perhaps *“Business Scientists”*



**Programming
& data
manipulation**



**Understanding
algorithms and
validation
framework**



**Business knowledge +
company data**



Actuaries - *the required skillset*

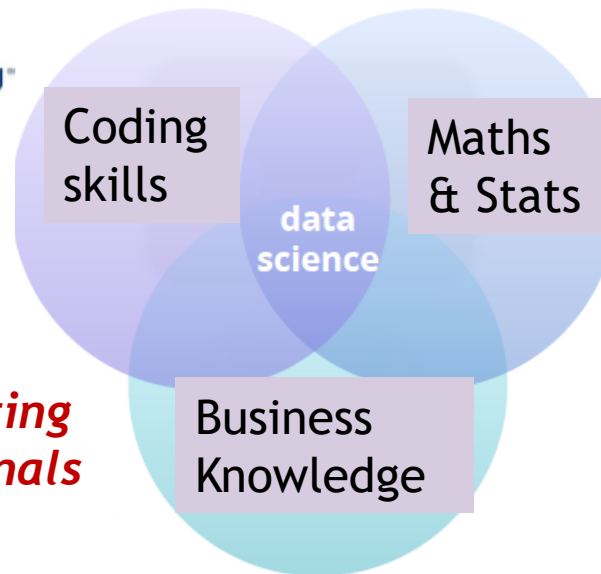


Programming &
data
manipulation



*Let Machines do
the coding*

*Actuaries collaborating
with other professionals*



Understanding
algorithms and
validation
framework



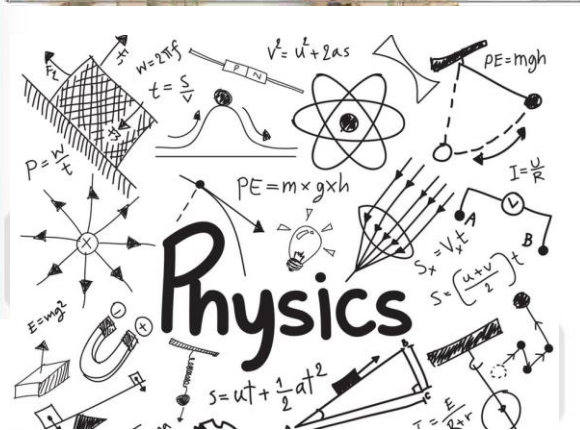
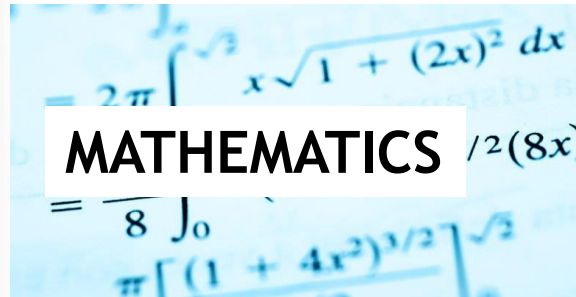
*Off the shelf
algorithms
from open
source
Working
knowledge is
sufficient*

Business knowledge
+ company data



Actuarial Science

A Multidisciplinary Subject



Evolving Actuarial Profession



- 2019 Curriculum change bringing it closer to Broader Data Science skillset
 - CT Series transformed to **Core Business, Core Statistics** and **Core Modeling**
 - **R programming** integral part of syllabus across all the Actuarial Associations
- Introduction of various roles for Actuaries besides Fellowship
 - Chartered Actuary (for Associates as Generalists)
 - Chartered Enterprise Risk Actuary (CERA- risk related roles)
 - Certified Actuarial Analysts (CAA - at entry level)



Initiatives of Actuarial Institutes around the world



- Actuarial Society of South Africa - *Business Intelligence Forum*
- The Actuaries Institute - Australia - *Data Analytics Working Group*
- Canadian Institute of Actuaries - *Predictive Modelling Committee*
- Casualty Actuarial Society - *New Qualification CSPA*
- Institute of Actuaries of France - *Big Data Committee*
- Institute and Faculty of Actuaries - *MAID Working Party*



Working Group on Wider Actuarial Applications - *Next Steps*



1. *Research*
2. *New approaches to current actuarial work*
3. *Possible ideas and solutions in new opportunities from actuarial work*
4. *Implications for professional affairs*
5. *Collaborations with*



Institute
and Faculty
of Actuaries



INTERNATIONAL ACTUARIAL ASSOCIATION
ASSOCIATION ACTUARIELLE INTERNATIONALE



The Road Ahead



- ***Data Science, Artificial Intelligence, Machine Learning, Internet of Things*** and the ever changing innovations represents a major opportunity for the actuarial profession
- Co-operation between different actuarial associations will enable the profession to make the most of the opportunity ***otherwise we may become marginalized***



Questions



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