Agenda

Society of Actuaries Overview
  Tiffany Tatsumi – SOA Academic Administrator

ASA Curriculum Changes Overview
  Stuart Klugman, FSA, CERA, PhD - SOA Senior Staff Fellow, Education

The Future of Insurance is Predictive
  Dorothy L. Andrews, ASA, MAAA, CSPA – Consulting Actuary
Society of Actuaries Overview

MEMBERS BY REGION

31,811 TOTAL MEMBERSHIP COUNT AS OF JUNE 30, 2018

- United States: 5,306
- Canada: 20,886
- China: 24
- Asia-Pacific: 1,279
- Latin America*: 1,231
- Rest of the world: 3,085

*Argentina, Brazil, Chile and Colombia
Candidate Connect

• Newsletter
• Events
• Webcasts

SOA.org/candidateconnect
SOA Explorer Tool

- Members
- Employers
- Universities and Colleges
- Actuarial Clubs
- Jobs and Internships
- e-Learning Candidates

https://explorer.soa.org

Search hundreds of actuarial jobs and upload your resume

https://jobs.soa.org
The Actuary Magazine

- Featured content
- Web exclusives
- Archived issues

https://theactuarmagazine.org

Podcasts

- Listen At Your Own Risk
- Research Insights
- SOA Podcasts

https://www.soa.org/resources/podcasts/
Get Connected

Facebook: @SOActuaries
Twitter: @SocietyofActuaries
Instagram: @soactuaries
LinkedIn: Society of Actuaries

ASA Curriculum Changes Update
ASA 2018 – The Pathway

Statistics for Risk Modeling Exam

• First offering was in September
• Waiver credit for those with VEE Applied Statistics
• 3.5 hours, 35 questions, CBT multiple choice
• Regression (including GLM), time series, decision trees, principal components, and clustering
• Pre-requisite for Predictive Analytics exam
Predictive Analytics Exam

- Five hour project completed at a Prometric test center
- Available resources
  - Word
  - Excel
  - R/Rstudio
  - PDFs as deemed appropriate

PA Exam Goals

- Demonstrate ability to apply the five techniques from SRM to a realistic problem and data
- Demonstrate ability to organize and communicate the results
- Do so by submitting
  - Formal report in Word
  - R markdown file with code
  - Other documents that the candidate creates to support the work done
E-Learning Support

- Exam registration includes access to nine modules. Over 700 registrations to date
- Syllabus has the learning outcomes for each module, at a high level:
  - Working with R and R Studio
  - Project definition
  - Data preparation and exploratory analysis
  - Implementation of analytic methods
  - Report writing
- Sample project included
What is a Model?

- A representation or a simulation (conceptually, physically, or mathematically) of a real-world phenomenon.
WHO CAME UP WITH THE NAME “BIG DATA”? 

1944 
(Probabilistic theory, developed by J. B. Birnbaum) 

1980 
(Understanding the concept of big data) 

1990 
(Peter Drucker coined the term “big data” in the 21st century) 

1998 
(According to Time Magazine, the term “big data” was popularized in the late 1990s) 

2001 
(Google began to use the term “big data”) 

2004 
(Michael Gan and David Ellis) 

2005 
(Google released its first data set) 

2013 
(1.4 terabytes of information are produced every second) 

2016/Presente 
(Renewed interest in big data: technologies and challenges) 

2008 
(Google released 23 petabytes of data for 100 days) 

THE 10 Vs OF BIG DATA 

Volume 
Data Size 

Velocity 
The speed at which data is generated 

Variety 
Different types of data 

Veracity 
Data accuracy 

Value 
Useful data 

Validity 
Data quality, governance, master data management 

Variability 
Dynamic, evolving behavior in data source 

Venue 
Distributed heterogeneous data from multiple platforms 

Vocabulary 
Data models and semantics that describe data structure 

Vagueness 
Confusion over meaning of Big Data and tools used 

Source: wememake.com
The Big Four in Analytics

Machine Learning Taxonomy

Source: SOA, Predictive Analytics & Futurism Newsletter, December 2016, p. 25
Linear Regression Modeling

Linear Regression Model

\[ y = 0.792x - 0.7262 \]
Data is Not Always Predicted Linearly!!!

Comparing GDP per capita with internet speeds

Driver Telematics Data
- Coordinates of vehicle every second
- Hundreds of driving trip per driver
- Unsupervised model – Only path not driver known
- Coordinates are relative to position (0,0)
- Geolocation data hard to use in predictive models
- Feature extraction used to identify explanatory variables (X)
- The target variable (Y) is an categorical variable for driver
A Cluster Analysis of Comedic Categories

Machine Learning: The Future of Fraud Prevention?
Society of Actuaries CAE Student Webcast

October 1, 2018

Results-Driven Innovation: AI, Machine Learning and Chatbots Improving Insurance Profitability & CX

Paul Travers
MetLife
Senior Vice President of Finance Technology, Data and Process

Andrew Pelcin
Chubb
Vice President, Claims Data Analytics Implementation

Amish Amin
Nationwide Insurance
Director Claims Data Analytics

#insuranceAI
Termiology: NLU vs. NLP vs. ASR

- **NLU**
  - paraphrase &
  - natural language
  - inference
  - dialogue
  - agents
  - sentiment
  - analysis
  - question
  - answering (QA)
  - summarization

- **NLP**
  - relation
  - extraction
  - semantic
  - parsing
  - coreference
  - resolution
  - machine
  - translation

- **ASR**
  - automatic
  - speech
  - recognition (ASR)
  - named
  - entity
  - recognition (NER)
  - part-of-speech
  - tagging (POS)
  - text
  - categorization

Image Source: https://medium.com/@Lihsin/chatbots-landscape-at-a-glance-6613257c1d32
R code for Twitter Analytics

```r
# R code for Twitter Analytics

# Loading necessary packages
library(tidyverse)
library(tm)
library(SnowballC)
library(wordcloud)

# Preprocessing the data
text <- clean_tweets(data)

# Creating a word cloud
wordcloud(text)```

---

What 7 Creepy Patents Reveal About Facebook
1. Romantic Relationships
2. Personality Classification
3. Predict Life Events
4. Identify Your Camera
5. Monitor TV Viewing
6. Track Weekly Routine
7. Monitor Social & Sleeping Habits

Ethical Behavior is Learned

Three Ecosystems: Natural, Human & Digital.

Digital Natives vs. Digital Immigrant
Privacy Concerns

Attributes of a Digital Community
Psychological, Community, Identity & Morality Shifts

Rebirth of Public Values in a Digital Era

Build a New Ethical Framework
for Digital Privacy
The actuarial profession needs you. Become an Actuary!!!

BE AN ACTUARY.

Questions?