



THE ACTUARIAL CAREER

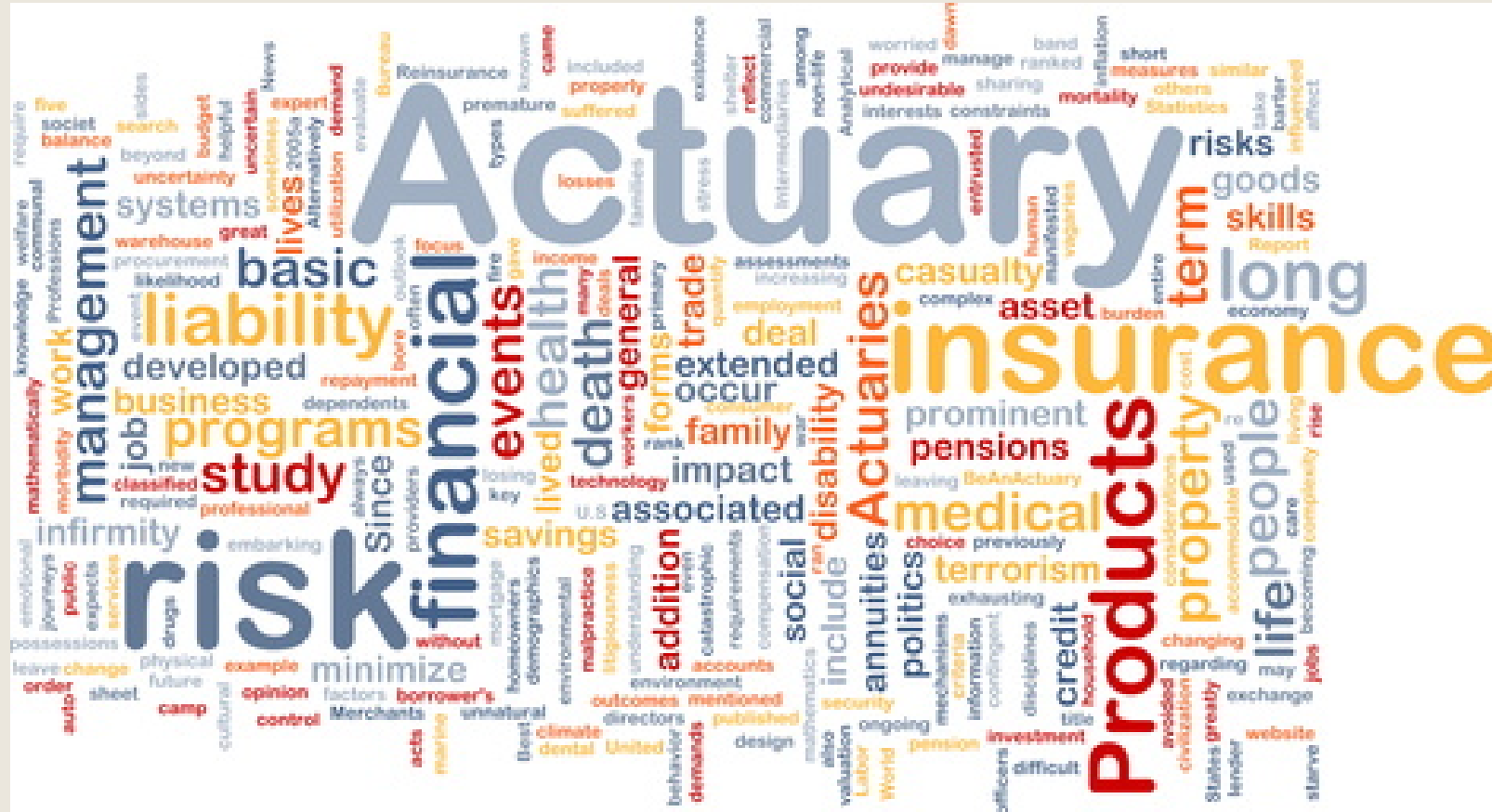
Kelly McManus, FSA, MAAA
John Hancock Financial Services

What Is An Actuary?

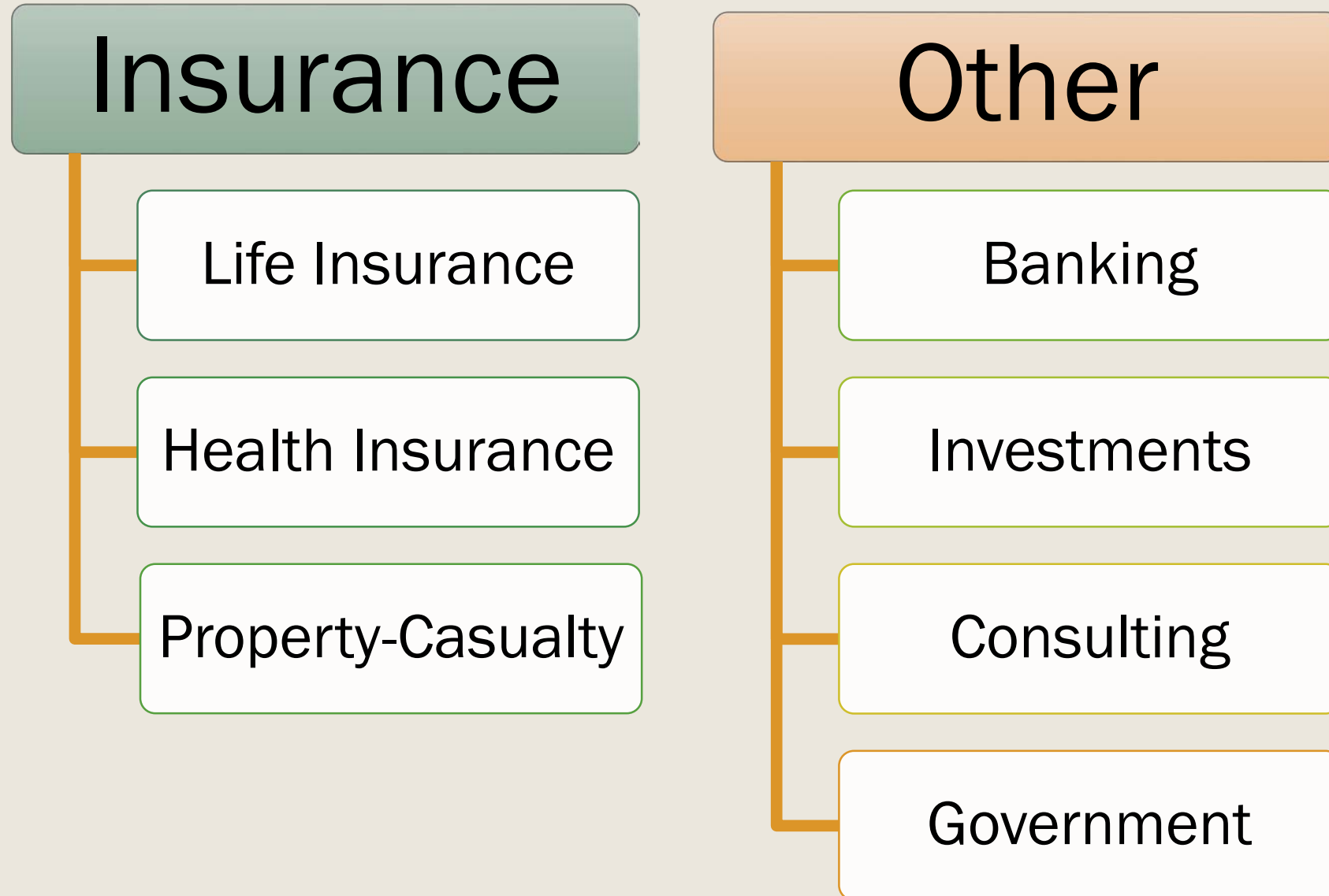
“Actuaries are highly sought-after professionals who develop and communicate solutions for complex financial issues.”



What Do Actuaries Do?



Where Do Actuaries Work?





- Life, Health, Annuities, General Insurance, Investments
- 11,851 Associates
- 17,310 Fellows



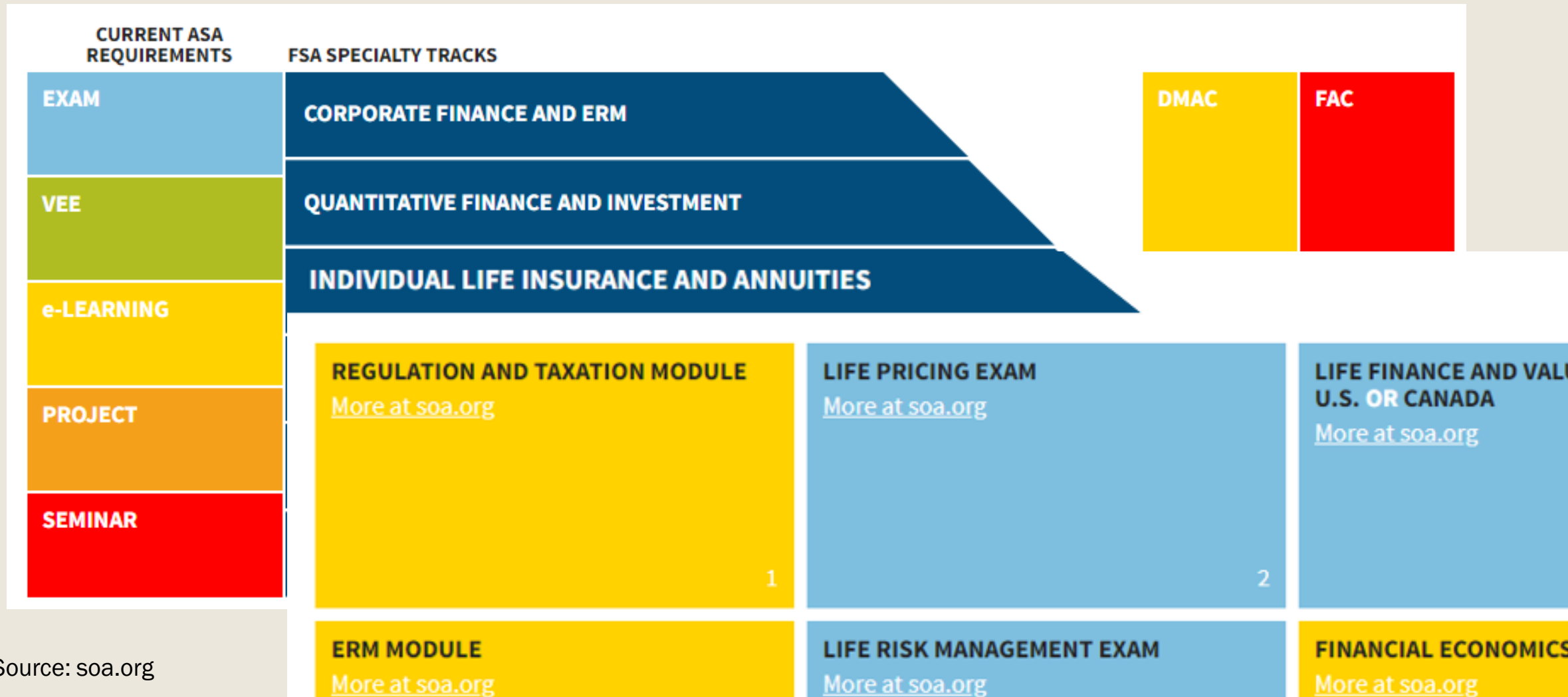
- Property and Casualty
- 2,206 Associates
- 4,709 Fellows

Becoming an Associate of the Society of Actuaries

INTRODUCTORY I	INTRODUCTORY II	ACTUARIAL	ADVANCED	PROFESSIONALISM
VEE ECONOMICS	EXAM INVESTMENT AND FINANCIAL MARKETS	EXAM LONG-TERM ACTUARIAL MATHEMATICS	e-LEARNING FUNDAMENTALS OF ACTUARIAL PRACTICE	SEMINAR ASSOCIATESHIP PROFESSIONALISM COURSE
VEE ACCOUNTING AND FINANCE		EXAM SHORT-TERM ACTUARIAL MATHEMATICS		
EXAM FINANCIAL MATHEMATICS	VEE MATHEMATICAL STATISTICS	EXAM STATISTICS FOR RISK MODELING	PROJECT PREDICTIVE ANALYTICS	
EXAM PROBABILITY				

Source: soa.org

Becoming a Fellow of the Society of Actuaries



How to Become an Actuary

P	Probability	Law of total probability, discrete and continuous distributions, univariate and multivariate distributions, basic knowledge of insurance and risk management
---	-------------	--

How to Become an Actuary

P	Probability	Law of total probability, discrete and continuous distributions, univariate and multivariate distributions, basic knowledge of insurance and risk management
FM	Financial Mathematics	Fundamental concepts of financial mathematics, applied to calculating present and accumulated values of cash flows.

How to Become an Actuary

P	Probability	Law of total probability, discrete and continuous distributions, univariate and multivariate distributions, basic knowledge of insurance and risk management
FM	Financial Mathematics	Fundamental concepts of financial mathematics, applied to calculating present and accumulated values of cash flows.
IFM	Investment and Financial Markets	Theoretical basis of corporate finance, financial models, and the application of those models to insurance and other financial risks

How to Become an Actuary

P	Probability	Law of total probability, discrete and continuous distributions, univariate and multivariate distributions, basic knowledge of insurance and risk management
FM	Financial Mathematics	Fundamental concepts of financial mathematics, applied to calculating present and accumulated values of cash flows.
IFM	Investment and Financial Markets	Theoretical basis of corporate finance, financial models, and the application of those models to insurance and other financial risks
LTAM	Long-Term Actuarial Mathematics	Theoretical basis of contingent payment models and the application of those models to insurance and other financial risks

How to Become an Actuary

P	Probability	Law of total probability, discrete and continuous distributions, univariate and multivariate distributions, basic knowledge of insurance and risk management
FM	Financial Mathematics	Fundamental concepts of financial mathematics, applied to calculating present and accumulated values of cash flows.
IFM	Investment and Financial Markets	Theoretical basis of corporate finance, financial models, and the application of those models to insurance and other financial risks
LTAM	Long-Term Actuarial Mathematics	Theoretical basis of contingent payment models and the application of those models to insurance and other financial risks
STAM	Short-Term Actuarial Mathematics	Frequency and severity models, estimating parameters, aggregate models, credibility models, and basic methods of pricing and reserving for short-term insurance coverages.

How to Become an Actuary

Preliminary Exams

P	Probability	Law of total probability, discrete and continuous distributions, univariate and multivariate distributions, basic knowledge of insurance and risk management
FM	Financial Mathematics	Fundamental concepts of financial mathematics, applied to calculating present and accumulated values of cash flows.
IFM	Investment and Financial Markets	Theoretical basis of corporate finance, financial models, and the application of those models to insurance and other financial risks
LTAM	Long-Term Actuarial Mathematics	Theoretical basis of contingent payment models and the application of those models to insurance and other financial risks
STAM	Short-Term Actuarial Mathematics	Frequency and severity models, estimating parameters, aggregate models, credibility models, and basic methods of pricing and reserving for short-term insurance coverages.
SRM	Statistics for Risk Modeling	Introduction to methods and models for analyzing data. Regression models, time series models, principal components analysis, decision trees, and cluster analysis

A Day in the Life

7:30 AM: Wake up

8:30 AM: Commute to work

9:00 AM: Greet coworkers, catch up on people's evenings from the night before, and settle in to the workstation

9:10 AM: Go through emails and respond accordingly. Glance at the calendar to plan out the day.

10:00 AM: Campus recruitment meeting

11:00 AM: Catch up with interns and ask if they have questions on the job

11:30 AM: One on One meeting with a team manager

12:00 PM: Lunch with a group of coworkers



The composite image includes a black and silver alarm clock showing approximately 7:30 AM, a building sign that says "BAY CROSS THE STREET", and a screenshot of the Outlook calendar interface. The calendar shows a weekly view for Monday through Friday, with various events scheduled. The interface includes a navigation pane on the left with "My Calendars" and "Team" sections, and a main calendar grid on the right. The status bar at the bottom indicates "Items: 14" and "All folders are up to date. Connected to: Microsoft Exchange".

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
25	26	27	28	29
8 AM				
9		US Tax Reform - Tax Reserve I Skype Meeting (Location: 3 Port Lane; Deborah L Martin)		
10				
11	One on One: 2 Cityview C, I		End of Coop Evaluation; 3 Sil	
12 PM	QikView Hands-on w/VST for 3 Port Lane (601 Congress) an Nay Naing	Spin	Excel and Beyond: New Features and Techniques Webcast, Michelle 3-Port Lane; CONIF C07 Emerald Elaine M Cipriano	Carter's Farewell Lunch City Tap House Kelly McManus
1		Expanded Staff Meeting 14 Video Conference Room E; Sinead O'Connor		
2		Baby Shower for Rebecca Kovach, Kim Navins and Samantha O'Shea 14th Floor Club Room Tessa (Little) Dancheck		Vitality Check in; Mac Seibl
3				
4		sign up for spin		Catch Shuttle to Back Bay
5		Monthly Co-op/Intern		

A Day in the Life

1:30 PM: Catch up on emails, send out agenda for my 3 p.m. meeting

2:00 PM: Get status updates from resources on their projects and tasks. Revise/update digital agenda accordingly.

3:00 PM: Meet with internal Audit

4:00 PM: Starbucks

5:30 PM: Gym

6:30 PM: Commute home

7:00 PM: Dinner

8:00 PM: Netflix



Quick Facts: Actuaries

2017 Median Pay	\$101,560 per year \$48.83 per hour
Typical Entry-Level Education	Bachelor's degree
On-the-job Training	Long-term on-the-job training
Number of Jobs, 2016	23,600
Job Outlook, 2016-26	22% (Much faster than average)
Employment Change, 2016-26	5,300

Important Qualities



Typical Student Programs

Study Hours

2 Year rotations

Exam raises

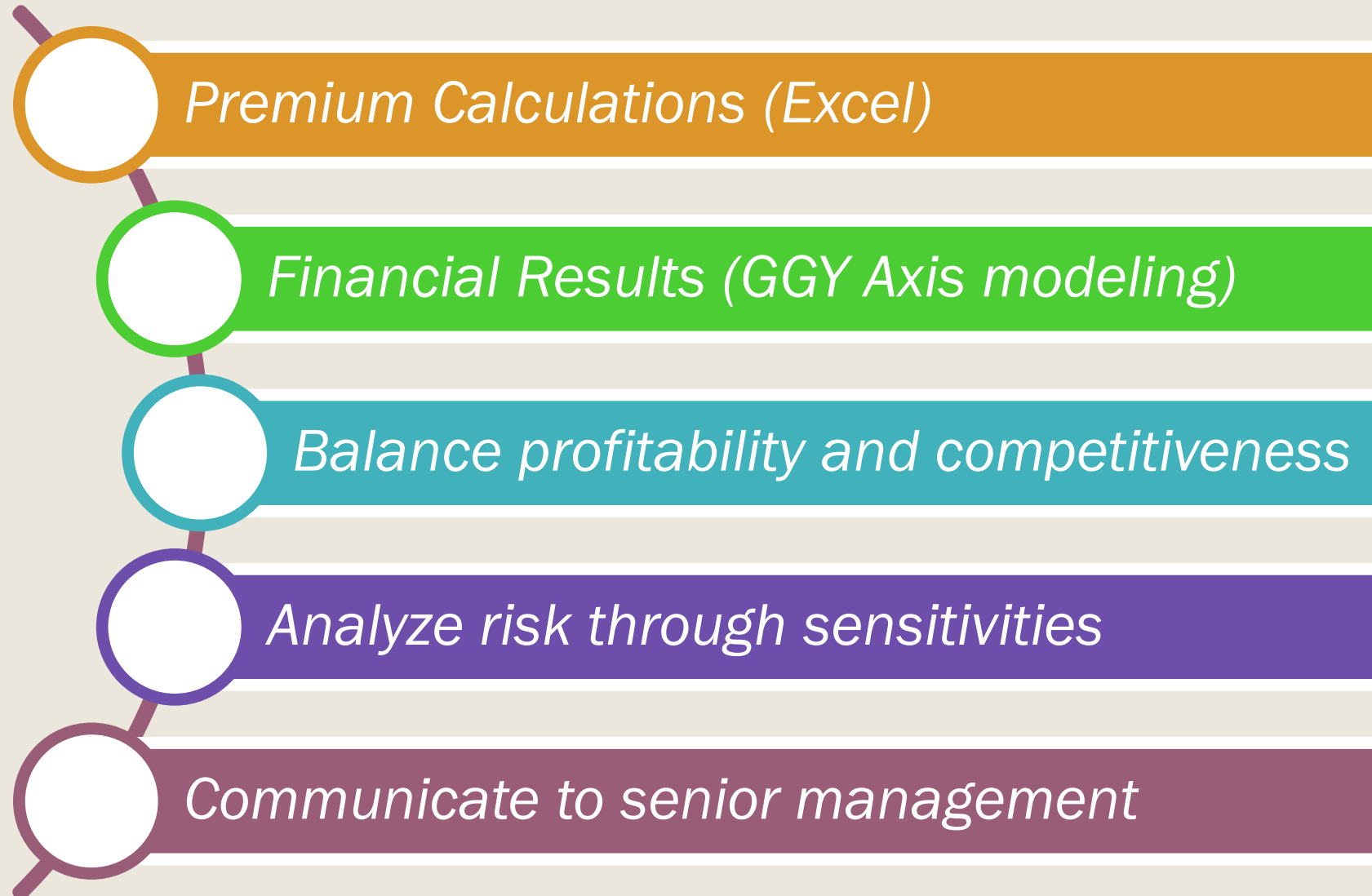
Bonuses with credentials

Seminars

Exam Materials

Celebrations

Insurance Product Pricing at John Hancock



Sample Problem

An insurance company determines that N , the number of claims received in a week, is a random variable with $P[N = n] = 1/2^{n+1}$, where $n \geq 0$. The company also determines that the number of claims received in a given week is independent of the number of claims received in any other week. Determine the probability that exactly seven claims will be received during a given two week period.

(A) $1/256$

(B) $1/128$

(C) $7/512$

(D) $1/64$

(E) $1/32$

Solution: D

Let N_1 and N_2 denote the number of claims during weeks one and two, respectively. Then since N_1 and N_2 are independent,

$$\begin{aligned}\Pr[N_1 + N_2 = 7] &= \sum_{k=0}^7 \Pr[N_1 = k] \Pr[N_2 = 7 - k] \\ &= \sum_{k=0}^7 \left(\frac{1}{2^{k+1}} \right) \left(\frac{1}{2^{8-k}} \right) \\ &= \sum_{k=0}^7 \frac{1}{2^9} \\ &= \frac{8}{2^9} = \frac{1}{2^6} = \frac{1}{64}\end{aligned}$$

Questions

Kelly McManus, FSA, MAAA

John Hancock Financial Services

