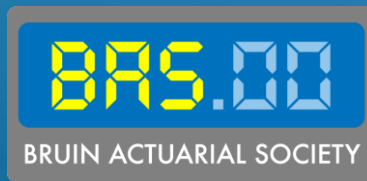


ACTUARIAL FIELDS / CAREER PATHS WORKSHOP

Bruin Actuarial Society

Note: Slides will be posted on our website after this meeting



AGENDA

- Overview
- Insurance
- Consulting
- Insurance vs. Consulting
- Nontraditional Actuarial Roles

OVERVIEW

WHAT IS AN ACTUARY?

actuary

noun

A business professional who uses mathematical and statistical techniques to put price tags on risks, calculating the costs of uncertain future events that range from tornados and hurricanes to changes in life expectancy

WHERE DO ACTUARIES WORK?

Actuaries can work in insurance companies, consulting firms, government, accounting firms, tech companies, and more.

Major Lines of Business:

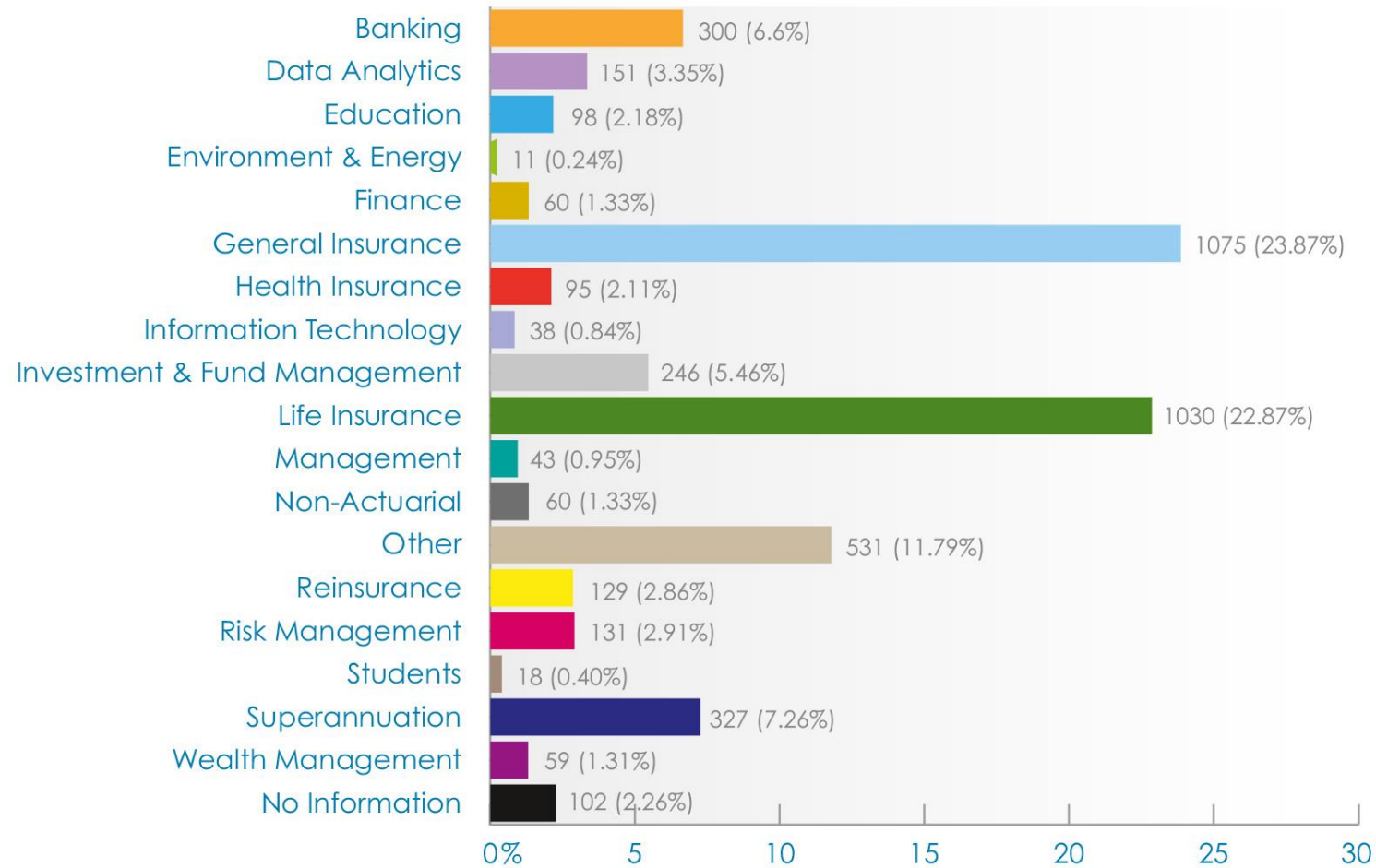
- Health and Benefits
- Property and Casualty
- Retirement
- Life
- Reinsurance

Other Roles:

- Data Mining
- Catastrophe Modeling
- Investment Management
- Software
- Quantitative Analytics

WHERE DO ACTUARIES WORK?

Membership by Primary Practice Area



WHY BECOME AN ACTUARY?

✓ **High compensation**

✓ **Work-life balance**

✓ **Job stability**

- During economic recessions, risk management is even more important
- Our work requires a certain level of human input that computers can't replace

✓ **Impactful work**

- We can see how our solutions and proposals affect the real world

✓ Instead of paying to go to graduate school, career advancement is made through a series of (**employer-funded**) exams

✓ **Salary increases** with passed exams and accrued experience

WHY BECOME AN ACTUARY?

According to PayScale,

Best Jobs For Math Majors in 2019

Math majors have countless career options. Here is a list of some of the highest paying jobs among math majors.

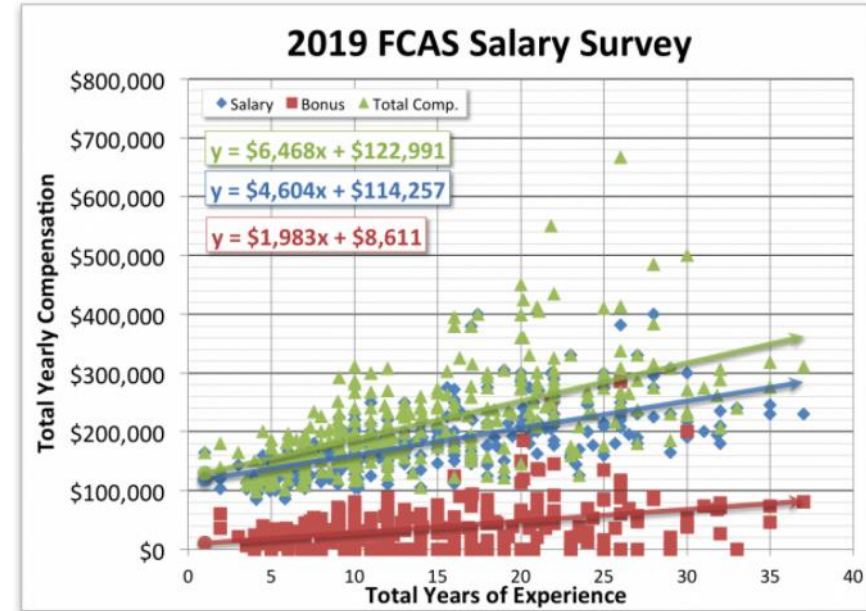
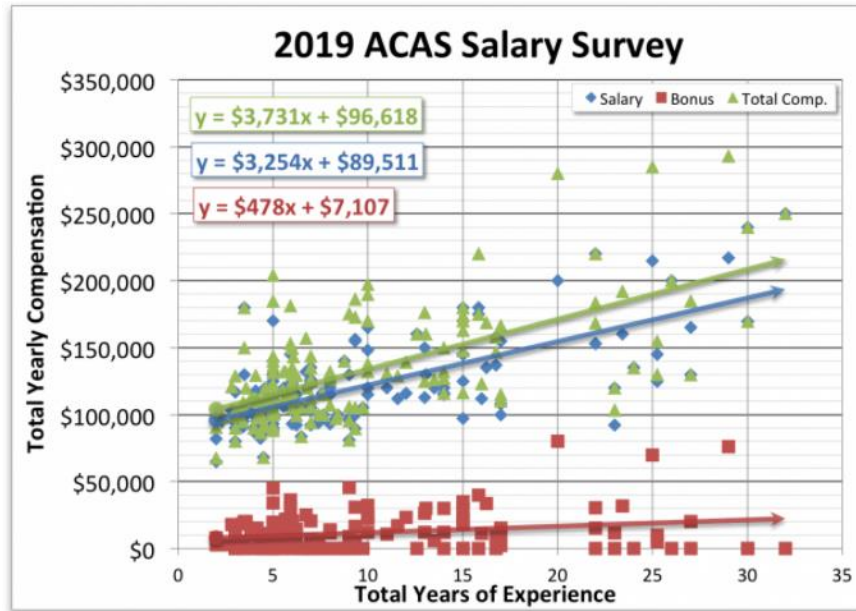
[Read more](#)

Rank ▲	Job Title ▲	Most Common Major	% Workers with Major ▲	Mid-Career Pay ▲	% High Job Meaning ▲
1	Actuary	Mathematics	54%	\$131,000	41%
2	Data Engineer	Mathematics	34%	\$113,000	41%
2	Quantitative Analyst	Statistics	26%	\$113,000	-
3	Data Scientist	Mathematics	29%	\$111,000	36%
4	Business Intelligence Manager	Mathematics	50%	\$110,000	41%
5	Analytics Consultant	Mathematics	29%	\$98,600	40%

WHY BECOME AN ACTUARY?

Steady and prolonged salary growth (Source: [DW Simpson](#))



ACTUARIAL ORGANIZATIONS

There are two major actuarial organizations that govern different practices:



**SOCIETY OF
ACTUARIES**

Health

Life

Retirement



Property and
Casualty (P&C)

Within each practice, actuaries can also be divided into Insurance or Consulting.

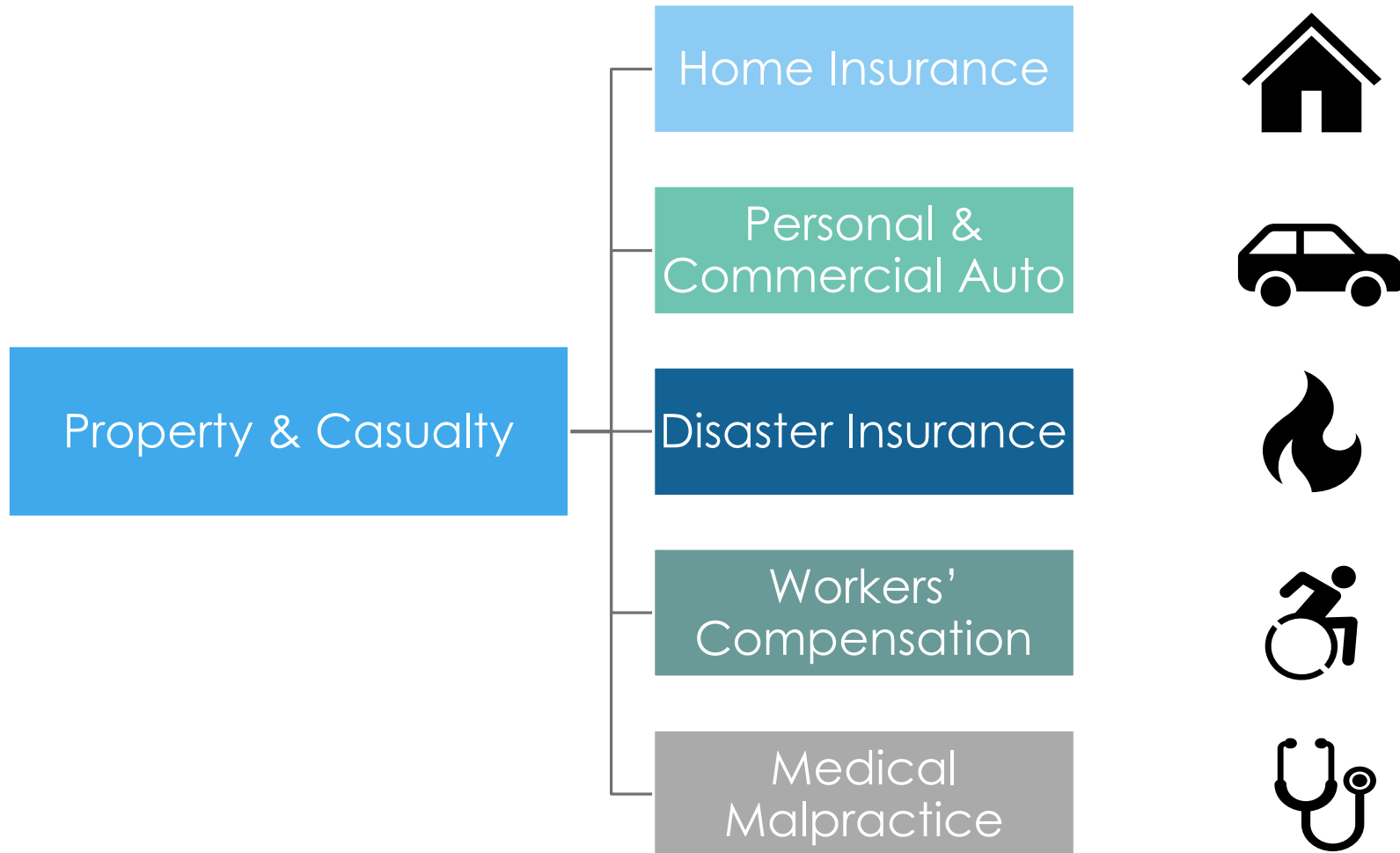
INSURANCE

PROPERTY AND CASUALTY (P&C)



P&C actuaries help protect individuals and businesses against losses from property damage, theft, automobile accidents, and commercial liability. New technologies and developments in predictive analytics and modeling allow P&C actuaries to quantify and manage emerging risks such as self-driving cars, climate change, and ridesharing.

PROPERTY AND CASUALTY (P&C)



QUESTIONS THAT P&C ACTUARIES MIGHT ANSWER

Pricing	Reserving
Ex: How much more does Allstate have to charge drivers who have a DUI conviction? How much of a discount can we give drivers whose cars have more airbags?	Ex: How much cash does Farmers have to keep on-hand to pay claims? How much can it use to invest for profit?

P&C COMPANIES



895.00

BRUIN ACTUARIAL SOCIETY

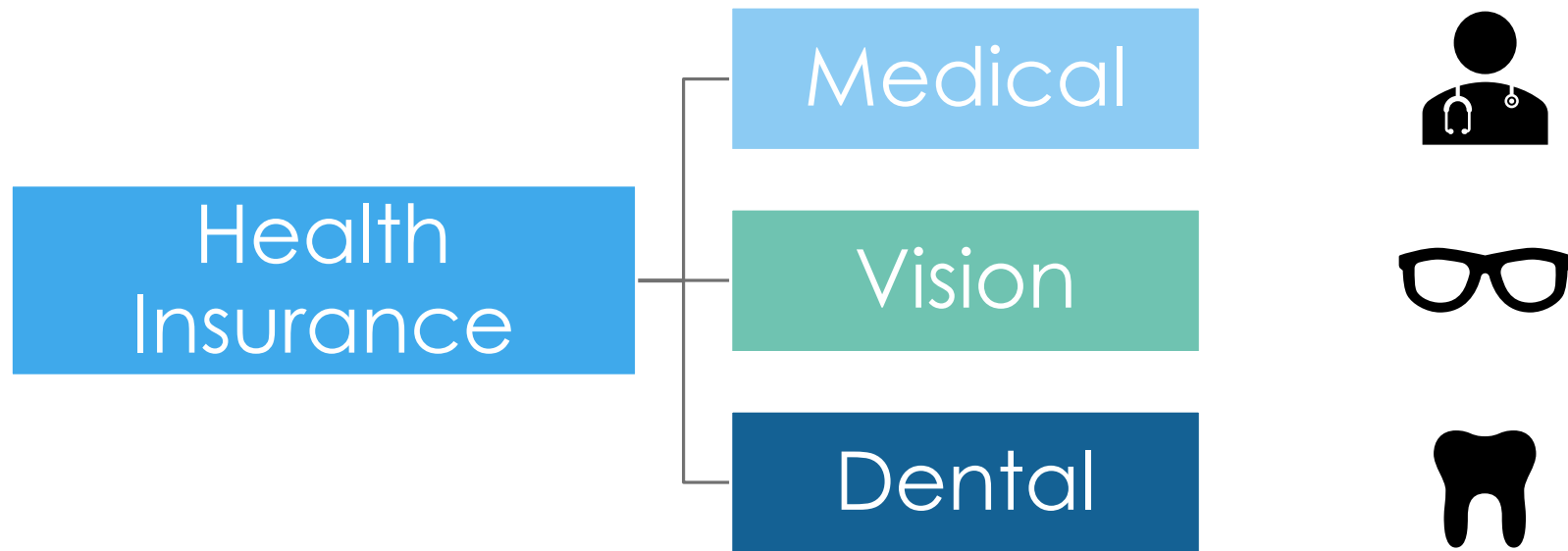
HEALTH

A blue and silver stethoscope is placed diagonally across a table of financial data. The table has multiple columns and rows of numbers, with some rows highlighted in light blue. The stethoscope's chest piece is on the left, and its tubing extends across the table towards the right.

3	652.581,59	1.454.211,00	54.89.563,00	578.131,59	6
4	456.543,43	157.678.786,00	78.369.921,55	949.631,78	9
7	9.446.528,00	162.354.466,82	49.123.725,00	165.463,81	7
3	14.657.873,00	856.214.378,21	10.945.447,67	348.851,49	7
5	664.891,23	454.549.327,81	16.354.549,88	729.543,87	8
3	1.356.577,88	139.685.374,59	65.464.621,01	258.369,46	1
3	652.581,59	1.454.211,00	54.89.563,00	578.131,59	6
4	456.543,43	157.678.786,00	78.369.921,55	949.631,78	9
7	9.446.528,00	162.354.466,82	49.123.725,00	165.463,81	7
3	14.657.873,00	856.214.378,21	10.945.447,67	348.851,49	7
5	664.891,23	454.549.327,81	16.354.549,88	729.543,87	8
3	1.356.577,88	139.685.374,59	65.464.621,01	258.369,46	1
3	652.581,59	1.454.211,00	54.89.563,00	578.131,59	6
4	456.543,43	157.678.786,00	78.369.921,55	949.631,78	9
7	9.446.528,00	162.354.466,82	49.123.725,00	165.463,81	7
3	14.657.873,00	856.214.378,21	10.945.447,67	348.851,49	7

Health actuaries help draft rates/premiums to cover cost of care for individuals and work with hospitals, medical device manufacturers, doctors, and pharmacists to make the whole health system work more efficiently.

HEALTH



QUESTIONS THAT HEALTH ACTUARIES MIGHT ANSWER

Pricing & Reserving	Healthcare Policy
Ex: How much more do we need to charge smokers to cover their higher risk? By how much can we lower premiums if we invest the premiums we collect?	Ex: What happened to premiums when the Affordable Care Act required all people to buy health insurance? What happens now that the individual mandate has been repealed?

HEALTH COMPANIES



LIFE



Life actuaries use knowledge of capital markets, mortality, and financial concepts when developing annuity and life insurance policies for individuals and groups to ensure that families are financially secure in the event of the policyholder's death. Modern life insurance actuaries are also involved in the investment of company assets to ensure solvency and strong long-term returns.

RETIREMENT



Retirement actuaries work on companies' pension plans and 401(k) benefits. They consider employees' ages, time until retirement, mortality risk, interest rate, and other factors when calculating how much employers must contribute to defined benefits plans. Retirement actuaries are valuable resources in helping companies design competitive retirement packages to effectively attract, retain, and replace employees.

QUESTIONS THAT LIFE AND RETIREMENT ACTUARIES MIGHT ANSWER

Life	Retirement
Ex: How can life insurance products be adjusted to ensure attractive returns for policyholders in a low interest rate environment?	Ex: Can a company's pension program remain solvent when interest rates are low for a long period?

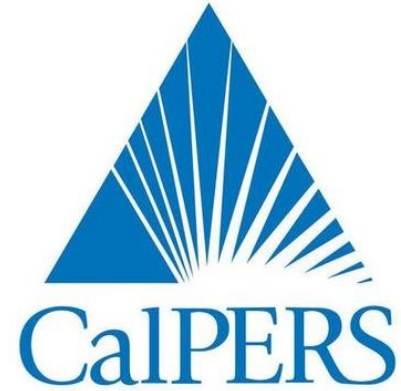
LIFE COMPANIES



∴ MassMutual



RETIREMENT COMPANIES



CONSULTING

ACTUARIAL CONSULTING



Actuarial consultants are great communicators who advise clients on financial and insurance-related decisions for their companies. They are more commonly found in Retirement and Health.

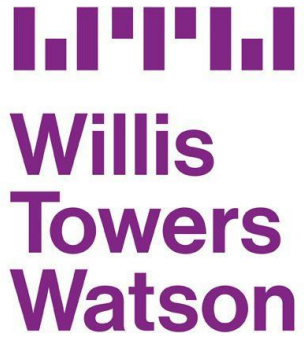
ACTUARIAL CONSULTING ACROSS DIFFERENT LINES OF BUSINESS

Line of Business	Typical Tasks
Life	Clarify and analyze mortality rates
Health	Advise clients on the best healthcare plans for their company
Retirement	Help craft and price the best pension plan for their clients
P&C	Create insurance products and provide strategic advice

INSURANCE VS. CONSULTING

Insurance	Consulting
More standard hours	Variable hours
Less travel	More travel
Less direct contact with clients	Work directly with clients often
Interact with various departments so you get a good idea of how the company works	Interact with various firms and clients so you get a better view of the industry as a whole

ACTUARIAL CONSULTING COMPANIES



NONTRADITIONAL ACTUARIAL ROLES

NONTRADITIONAL ACTUARIAL ROLES

There are various risks and ways to maximize efficiency in every industry. While actuaries are most commonly found in insurance companies, there are also actuaries in:

- Accounting/Auditing
- Government
- Banking/Finance
- Sports
- Meteorology
- Private corporations
- Teaching
- And many more!

SPECIALIST INSURANCE

There's insurance for practically everything. For example, Lloyd's of London has insured:

- Bruce Springsteen's voice
- David Beckham's legs
- Egon Ronay's taste buds
- Alien abduction insurance for ~30,000 policyholders

QUESTIONS?

BAS.00

BRUIN ACTUARIAL SOCIETY