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
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

- Banking: 300 (6.6%)
- Data Analytics: 151 (3.35%)
- Education: 98 (2.18%)
- Environment & Energy: 11 (0.24%)
- Finance: 60 (1.33%)
- General Insurance: 1075 (23.87%)
- Health Insurance: 95 (2.11%)
- Information Technology: 38 (0.84%)
- Investment & Fund Management: 246 (5.46%)
- Life Insurance: 1030 (22.87%)
- Management: 43 (0.95%)
- Non-Actuarial: 60 (1.33%)
- Other: 531 (11.79%)
- Reinsurance: 129 (2.86%)
- Risk Management: 131 (2.91%)
- Students: 18 (0.40%)
- Superannuation: 327 (7.26%)
- Wealth Management: 59 (1.31%)
- No Information: 102 (2.26%)
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.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Job Title</th>
<th>Most Common Major</th>
<th>% Workers with Major</th>
<th>Mid-Career Pay</th>
<th>% High Job Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Actuary</td>
<td>Mathematics</td>
<td>54%</td>
<td>$131,000</td>
<td>41%</td>
</tr>
<tr>
<td>2</td>
<td>Data Engineer</td>
<td>Mathematics</td>
<td>34%</td>
<td>$113,000</td>
<td>41%</td>
</tr>
<tr>
<td>2</td>
<td>Quantitative Analyst</td>
<td>Statistics</td>
<td>26%</td>
<td>$113,000</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Data Scientist</td>
<td>Mathematics</td>
<td>29%</td>
<td>$111,000</td>
<td>36%</td>
</tr>
<tr>
<td>4</td>
<td>Business Intelligence Manager</td>
<td>Mathematics</td>
<td>50%</td>
<td>$110,000</td>
<td>41%</td>
</tr>
<tr>
<td>5</td>
<td>Analytics Consultant</td>
<td>Mathematics</td>
<td>29%</td>
<td>$98,600</td>
<td>40%</td>
</tr>
</tbody>
</table>
WHY BECOME AN ACTUARY?

Steady and prolonged salary growth (Source: DW Simpson)
ACTUARIAL ORGANIZATIONS

There are two major actuarial organizations that govern different practices:

- Health
- Life
- Retirement
- Property and Casualty (P&C)

Within each practice, actuaries can also be divided into Insurance or Consulting.
INSURANCE
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.
**QUESTIONS THAT P&C ACTUARIES MIGHT ANSWER**

<table>
<thead>
<tr>
<th>Pricing</th>
<th>Reserving</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ex:</strong> 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?</td>
<td><strong>Ex:</strong> How much cash does Farmers have to keep on-hand to pay claims? How much can it use to invest for profit?</td>
</tr>
</tbody>
</table>
P&C COMPANIES

Liberty Mutual

Allstate

Farmers

AAA

State Farm
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.
<table>
<thead>
<tr>
<th>Pricing &amp; Reserving</th>
<th>Healthcare Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ex:</strong> 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?</td>
<td><strong>Ex:</strong> 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?</td>
</tr>
</tbody>
</table>
HEALTH COMPANIES

- Blue California
- Molina Healthcare
- Aetna
- Kaiser Permanente
- United Healthcare
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 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.
<table>
<thead>
<tr>
<th>Life</th>
<th>Retirement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ex:</strong> How can life insurance products be adjusted to ensure attractive returns for policyholders in a low interest rate environment?</td>
<td><strong>Ex:</strong> Can a company's pension program remain solvent when interest rates are low for a long period?</td>
</tr>
</tbody>
</table>
RETIREMENT COMPANIES

- CalPERS
- ascensus®
- Prudential
- AIG
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.
<table>
<thead>
<tr>
<th>Line of Business</th>
<th>Typical Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life</td>
<td>Clarify and analyze mortality rates</td>
</tr>
<tr>
<td>Health</td>
<td>Advise clients on the best healthcare plans for their company</td>
</tr>
<tr>
<td>Retirement</td>
<td>Help craft and price the best pension plan for their clients</td>
</tr>
<tr>
<td>P&amp;C</td>
<td>Create insurance products and provide strategic advice</td>
</tr>
</tbody>
</table>
## Insurance vs. Consulting

<table>
<thead>
<tr>
<th>Insurance</th>
<th>Consulting</th>
</tr>
</thead>
<tbody>
<tr>
<td>More standard hours</td>
<td>Variable hours</td>
</tr>
<tr>
<td>Less travel</td>
<td>More travel</td>
</tr>
<tr>
<td>Less direct contact with clients</td>
<td>Work directly with clients often</td>
</tr>
<tr>
<td>Interact with various departments so you get a good idea of how the company works</td>
<td>Interact with various firms and clients so you get a better view of the industry as a whole</td>
</tr>
</tbody>
</table>
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!
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?