Agenda

Overview
Insurance
Consulting
Insurance vs. Consulting
Nontraditional Actuarial Roles
An actuary is a **business professional** who uses mathematical and statistical techniques to identify, quantify, and manage the risks that individuals and businesses face.
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 actuary?

Highest-paying Bachelor’s Degrees (Source: PayScale)

<table>
<thead>
<tr>
<th>Degree</th>
<th>Early Career Pay</th>
<th>Mid-Career Pay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Engineering</td>
<td>$94,600</td>
<td>$175,500</td>
</tr>
<tr>
<td>Actuarial Mathematics</td>
<td>$56,400</td>
<td>$131,700</td>
</tr>
<tr>
<td>Actuarial Science</td>
<td>$61,200</td>
<td>$130,800</td>
</tr>
<tr>
<td>Nuclear Engineering</td>
<td>$69,000</td>
<td>$127,500</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>$70,300</td>
<td>$124,500</td>
</tr>
</tbody>
</table>
High in demand

Actuaries’ Expected Change in Employment (2016-26)
22%
2% annual growth over a decade

All Workers’ Expected Change in Employment (2016-26)
7%
0.7% annual growth over a decade

(Source: Bureau of Labor Statistics)
Steady and prolonged salary growth!

(Source: DW Simpson)
Casualty Actuarial Society

Society of Actuaries

Overview
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Insurance Vs. Consulting
Other Actuarial Roles

Property & Casualty Insurance

Health
Retirement
Life

Casualty Actuarial Society

Society of Actuaries
### Property & Casualty Insurance

<table>
<thead>
<tr>
<th>Pricing</th>
<th>Reserving</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Ex:</em> How much more does AAA have to charge drivers who have a DUI conviction? How much discount can we give drivers whose cars have more airbags?</td>
<td><em>Ex:</em> 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>
Property & Casualty Insurance Companies

[Logos of Farmers Insurance, Liberty Mutual Insurance, AAA Insurance, and CSAA Insurance Group]
Health Insurance

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.
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Health Insurance

MEDICAL
VISION
DENTAL
### Health Insurance

<table>
<thead>
<tr>
<th>Pricing &amp; Reserving</th>
<th>Healthcare Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Ex:</em> 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><em>Ex:</em> 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 Insurance Companies

- Blue of California
- United Healthcare
- Molina Healthcare
- Kaiser Permanente
- Anthem Blue Cross
Life Insurance

- Life insurance actuaries develop annuity and life insurance policies for individuals and groups
  - Risk of diseases
  - General Health Levels
  - Location
  - Occupation
Retirement Insurance

- Retirement actuaries work on companies’ **PENSION PLANS** and **401(k) BENEFITS**.
  - Age
  - Time until requirement
  - Mortality risk
  - Interest rate
  - Defined benefit versus defined contribution
Retirement & Life Insurance

<table>
<thead>
<tr>
<th>Retirement</th>
<th>Life</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ex:</strong> Can a company’s pension program remain solvent when interest rates are low for a long period?</td>
<td><strong>Ex:</strong> What are some of the adjustments to a customer’s life insurance if he is a heavy “vaper”?</td>
</tr>
</tbody>
</table>
Life Insurance Companies
Retirement Insurance Companies
Actuarial Consulting

- Advising clients on financial and insurance-related decisions for their companies
- Must be great communicators
- More common in Retirement and Health
## Examples:

<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>Creating insurance products and providing strategic advice</td>
</tr>
<tr>
<td>Insurance</td>
<td>Consulting</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<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>
Actuarial Consulting Companies
Non-traditional actuarial roles

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

In every industry, there are various risks and ways to maximize efficiency. This is where actuaries can step in!
Specialist Insurance

- Lloyd’s of London (insurance market) has insured:
  - Bruce Springsteen’s voice
  - David Beckham’s legs
  - Egon Ronay’s taste buds
  - Alien abduction insurance for ~30,000 policyholders
Questions?