Rising in the Actuarial Profession through the CAS

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University Liaisons, CAS
Outline

- What is an Actuary?
- Areas of Work
- Why be an Actuary?
- What is the difference – CAS and SOA?
- How do you become an Actuary?
- What skills are needed to be an Actuary?
- Career Paths
- How can I find out more?
What is an Actuary?

- A business professional who deals with the financial impact of risk and uncertainty
- Analyzes, manages and measures the financial implications of future risk
- Develops and validates models and communicate results to guide decision-making
- “Calculates the price tag on risk transfer”
Why be an Actuary?

- High earnings potential
- Graduate school not required – no loans to repay
- Advance by examinations – no “glass ceiling”
- Advancement opportunities expand throughout career
- Professional interactions – “Front Office” role
- Variety of avenues to choose
- Newsworthy projects
- High demand – less sensitive to economic cycles
- Job security
- Overall, a highly ranked profession
  - Actuary is rated the #1 job in America, according to a 2013 CareerCast.com report.
Areas of Work

- **Insurance Industry**
  - Property and casualty (P/C)
  - Life and annuities

- **Employee Benefit Industry**
  - Retirement benefits
  - Health benefits

- **Financial Services Industry**
  - Banks, investments, risk management
  - Mergers & Acquisitions

- **Government**
  - Social Security
  - Regulation of insurance companies
CAS and SOA

- **Two Societies**
  - Casualty Actuarial Society (CAS), focus on property/casualty
  - Society of Actuaries (SOA), traditional focus on life, health, and pensions

- **Very different theoretical focus**
  - P&C – loss generation much less certain
  - Life – generally loss producing phenomenon reasonably known
Salaries for FCAS vs. Other Actuarial Designations
Casualty Actuarial Society

- World’s *only* actuarial organization focused exclusively on property and casualty risks
- 100-year track record in training property/casualty actuaries
- Nearly 7000 members worldwide, and growing
- Vibrant, growing community with deep and extensive resources to help CAS members, candidates, and students advance their careers; strong employer support
Membership Statistics

CAS Member Growth
2004-2016

CASstudentcentral.org
A Global Society

<table>
<thead>
<tr>
<th>Country</th>
<th>2016 Geographic Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>6,139</td>
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<tr>
<td>Switzerland</td>
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<td>United Kingdom</td>
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<tr>
<td>Other</td>
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</tbody>
</table>
CAS Members by Type of Employment

- P&C Insurers
- Consultants
- Reinsurance
- Service Org's
- Other
- Retired
- Brokers & Agents
- Academic
- Government
Many Paths to Success

people oriented

management

broking

consulting

reinsurance pricing

ERM

banking/investment

reinsurance reserving

reinsurance ratemaking

academic

regulator

stable schedule

travel and variety

data intensive

insurance reserving

insurance reserving

service agency
Typical Actuarial Projects

- Property/Casualty: Estimating the amount of money to be set aside for insurance claims that have not been paid
- Life Insurance: Designing and pricing life insurance products
- Health Benefits: Setting HMO premium rates.
- Retirement Systems: Pricing the cost of increasing retirement benefits
- Finance & Investments: Portfolio diversification studies
What do Property/Casualty Actuaries do?

- Ratemaking
- Reserving
- Capital Adequacy
- Reinsurance
- ERM
- Trends
Ratemaking / Pricing

- Are current rates meeting our objectives?
- Are some classes performing better or worse than others?
- How do driving patterns influence risk of loss?
- How does an insured’s loss experience influence its premium?
- How does price sensitivity enter into loss cost projections?
Loss Reserving

- What is the company’s unpaid claim liability as of 12/31/17?
  - Best estimate, central estimate, key assumptions
- What is the probability distribution of unpaid claims as of 12/31/17?
- Role with Audit Committee for governance (management influence on amounts booked, independence of actuarial function)
Capital Adequacy

- How adequate is company surplus to respond to adverse results (e.g., loss reserves higher than estimate)?
- How much capital is required to support different types of business?
- How does portfolio diversification enter into economic capital requirements?
Reinsurance

- **(Insurer)** What are risk/reward trade-offs related to different reinsurance structures?
- **(Reinsurer)** Pricing and reserving issues, but with much less data.
Enterprise Risk Management

- Enterprise-wide view of risk that allows insurers to identify, quantify, and manage risk on a more holistic basis
- Risk identification and related management and mitigation
- ERM integration into governance, strategy and decision-making
- Board and Audit Committee responsibilities
Trends

- Liability and property risks arise daily
- Digitalization and “big data”
- Increasingly sophisticated predictive models
- Terrorism
- Unmanned commercial aircraft, cyber liability, the aging population
- Globalization, international businesses and risks, global instability
- Climate change, volatility, crop insurance
- Population shifts, hazard prone areas
- Social media, automated vehicles, healthcare
Insurance is fun, no matter what they say.
Professional Exams and Study Benefits

- ~10 Actuarial exams plus various modules, depending on the path. Typically 6-10 years to complete

- Paid Study Time (100 – 120 hours per exam is not uncommon)

- Raises or bonuses for each exam ($2,000 - $5,000 range)

- Company pays for exam materials, seminars, exam fees, etc.
THE CAS PATH TO SUCCESS

**BEGIN**

EXAM 1* Probability

EXAM 2* Financial Mathematics

Validation by Educational Experience (VEE)**
- Corporate Finance
- Economics
  **Typically completed while in school**

EXAM 3F* Models for Financial Economics

ONLINE COURSES
- Risk Mgmt. & Insurance Ops.
- Insurance Accounting, Coverage Analysis, Insurance Law & Insurance Regulation

EXAM 5
Basic Techniques for Ratemaking and Estimating Claim Liabilities

EXAM 6 Regulation & Financial Reporting (Nation-Specific)

MAS-1 Modern Actuarial Statistics I

CONGRATS You have Completed the Foundational Requirements!

EXAM 4* Construction & Evaluation of Actuarial Models

CONRAD You have Achieved the ACAS Credential!

COURSE ON PROFESSIONALISM

EXAM 7 Estimation of Policy Liabilities, Insurance Co. Valuation, & ERM
Exam 7 is also required for an ACAS to sign a NAIC Statement of Actuarial Opinion

CONGRATS You have Achieved the FCAS Credential!

EXAM 8 Advanced Ratemaking

EXAM 9 Financial Risk & Rate of Return

CASstudentcentral.org
<table>
<thead>
<tr>
<th>New Path to ACAS</th>
<th>Old Path to ACAS</th>
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<tbody>
<tr>
<td>Exam 1/P</td>
<td>Exam 1/P</td>
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<tr>
<td>Exam 2/FM</td>
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<tr>
<td>Exam 3F/IFM</td>
<td>Exam 3F/MFE</td>
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<tr>
<td>Online Course 2</td>
<td>Online Course 2</td>
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<tr>
<td>COP - Course on Professionalism</td>
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</tbody>
</table>

MAS 1 will first be offered SPRING 2018
MAS 2 will first be offered FALL 2018
Exam C will last be offered SPRING 2018
Changes since we (Bro Ip and Bro Wang) started taking exams

These are requirement replacements. Material is similar, but not equivalent. You want to avoid getting caught in exam changes.
Skills Needed on the Job

- **Technical**
  - Understanding of math, probability, and statistics
  - Ability to apply actuarial techniques
  - Critical thinking/informed judgment
  - Programming

- **Soft**
  - **Communication**
  - Business etiquette
  - Handling pressure
# Top Employers of CAS Members

<table>
<thead>
<tr>
<th>Company or Organization</th>
<th>Number Employed</th>
<th>% of CAS membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberty Mutual Group</td>
<td>334</td>
<td>4.5</td>
</tr>
<tr>
<td>The Travelers Companies</td>
<td>254</td>
<td>3.5</td>
</tr>
<tr>
<td>Zurich (including Farmers)</td>
<td>232</td>
<td>3.2</td>
</tr>
<tr>
<td>AIG</td>
<td>169</td>
<td>2.3</td>
</tr>
<tr>
<td>Towers Watson</td>
<td>158</td>
<td>2.2</td>
</tr>
<tr>
<td>Chubb</td>
<td>152</td>
<td>2.1</td>
</tr>
<tr>
<td>Marsh (including Guy Carpenter &amp; Oliver Wyman)</td>
<td>132</td>
<td>1.8</td>
</tr>
<tr>
<td>The Hartford</td>
<td>123</td>
<td>1.7</td>
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<tr>
<td>Intact Insurance Company</td>
<td>114</td>
<td>1.6</td>
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<tr>
<td>Milliman, Inc.</td>
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<tr>
<td>CNA Insurance Companies</td>
<td>102</td>
<td>1.4</td>
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</tbody>
</table>
You’re Invited…

join online today at www.CASstudentcentral.org
CAS Student Central

- Membership program for university students:
  - No Membership fee
  - Access to resources including P&C internship listings, CAS Curriculum Guide, Case Studies, Online Community
  - Free webinars created specifically for students
  - Invitations to free networking events including student programs at CAS meetings and Seminars
- More than 5,000 student members from nearly 550 schools
CAS CURRICULUM GUIDE

This guide has been developed to help students and faculty build a stronger understanding of the academic strengths, technical tools, and personal skills successful actuaries possess. Students can use the guide to identify experiences to seek out while in college to help them prepare for a future career as an actuary, specifically as they embark on the path to earning actuarial credentials through the Casualty Actuarial Society. To that end, the guide makes references to preparing for and taking professional actuarial examinations and other requirements for earning CAS credentials. The complete set of requirements for earning CAS credentials, which are recognized as the gold standard for property/casualty actuaries by employers and regulators, can be found as an appendix of the guide.

For faculty, this guide provides an overview of the key academic topics to cover in an actuarial curriculum and can help identify experiences that can be worked into a classroom to help their students develop the skills needed to hit the ground running in the business world. Links to examples of existing actuarial science courses and curricula offered at various types of universities are included in the appendix.

The guide is separated into three main sections:
1. **Academic Foundation:**
   - The academic subjects that are the building blocks of actuarial work
2. **Technical Toolkit:**
   - Important tools that help actuaries solve challenging business problems
3. **Workplace Readiness:**
   - The skills that help new employees make an impact on the job day one

Each main section is comprised of several subject/skill subsections that include:

1. **Description and Importance:**
   - What it is and why it’s important for an actuary
2. **On the Job:**
   - An example of where the subject/skill is needed in the workplace.
3. **Experiences:**
   - Experiences a student can seek out or faculty can provide that will help prepare students for success as an actuary

This guide was developed by the University Engagement Committee. Any questions or comments pertaining to the guide can be sent to: office@casact.org

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<table>
<thead>
<tr>
<th>Academic Foundation</th>
<th>Technical Toolkit</th>
<th>Workplace Readiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematical Base</td>
<td>Statistical Analysis</td>
<td>Presentation Skills</td>
</tr>
<tr>
<td>Probability/Theory</td>
<td>Data Manipulation</td>
<td>Teamwork Skills</td>
</tr>
<tr>
<td>Financial Mathematics</td>
<td>Programming Skills</td>
<td>Project Management</td>
</tr>
<tr>
<td>Statistics</td>
<td>Microsoft Office</td>
<td>Business Writing</td>
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<tr>
<td>Core Actuarial</td>
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<td>Ethics &amp; Professionalism</td>
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<tr>
<td>Economics</td>
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<td>Business Etiquette</td>
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<tr>
<td>Finance</td>
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<td>Exam Study Skills</td>
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<tr>
<td>Risk &amp; Insurance</td>
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STUDENT CAS CENTRAL

FOCUSED ON YOUR FUTURE
CAS Case Studies

- Case Study Topics:
  - Probability
  - Catastrophe Modeling
  - Warranties
  - Liabilities
  - Auto Insurance

- Case Studies include Facilitator’s Guide, Presentation Slides, Recording, and Excel Workbook
CAS Student Central
Online Community

- Future Focus Blog shares insights and tips (example posts):
  - CAS to Roll Out New Statistics Preliminary Exam
  - Strategies to Assist with Your Job Search – Advice from Actuarial Recruiters
  - A Scholarship That Pays in More Ways Than One
- Connect with other student members
- CAS member directory will give you a sense of how far and wide, broad and deep our network is.
- Receive latest news and updates from the CAS
Educational Opportunities for Student Central Members

- Webinars held fall and spring semesters
  - Topics have included: Predictive Analytics, Excel and R for Actuaries, and Career Paths in the Property and Casualty Actuarial Profession
- Student programs at CAS meetings/seminars:
  - CAS Spring and Annual Meetings
  - Ratemaking and Product Management Seminar
  - Seminar on Reinsurance
  - Casualty Loss Reserve Seminar
Additional Resources for Students Beyond CASstudentcentral.org

- CAS - casact.org
- Be An Actuary - BeAnActuary.org
- American Academy of Actuaries - actuary.org
- Salary Surveys
  - ezrapenland.com
  - dwsimpson.com
- Facebook – CAS Student Central
CAS Trust Scholarship Program
casact.org/trustscholarship

- Scholarship for students pursuing a career in casualty actuarial science.
- Up to 3 scholarships awarded per academic year
  - 1st Place Scholarship: $10,000
  - Runner-Up Scholarships: $5,000 each if selected
- Winners Attend the CAS Annual Meeting
- Application opens in December and is due March 1, 2018
  - Includes: application, essay, recommendation letters, and official transcript
- Visit the CAS website for eligibility requirements
  - Must be a member of CAS Student Central and have sat for 1 actuarial exam

To learn about other scholarship opportunities explore CASstudentcentral.org and BeAnActuary.org!
STUDENT CAS CENTRAL
FOCUSED ON YOUR FUTURE

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