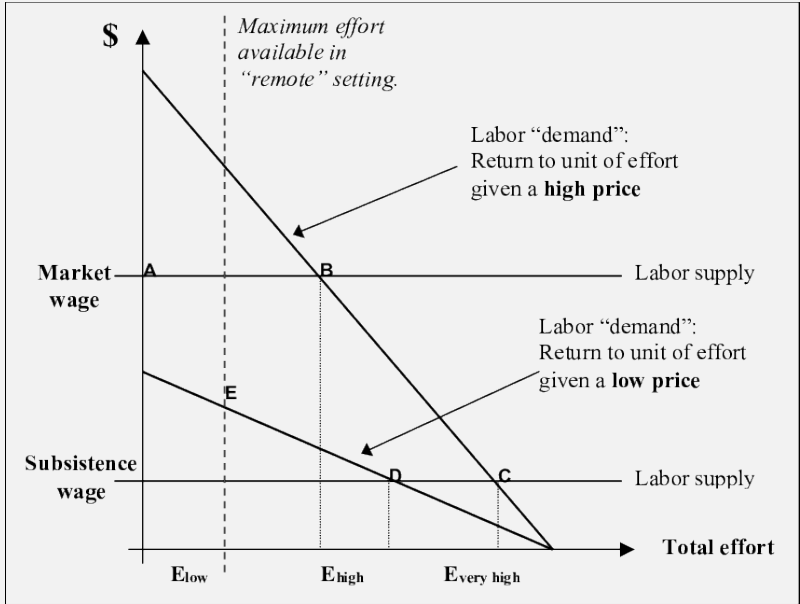


ACTUARIAL SCIENCE: MY INTERNSHIP EXPERIENCE

Hailey Hudson

A LITTLE BIT ABOUT ME...



Economics Major

$$\frac{\partial \rho}{\partial t} + \nabla \cdot [\rho \mathbf{v}] = 0$$

$$\frac{\partial(\rho \mathbf{v})}{\partial t} + \nabla \cdot [\rho \mathbf{v} \mathbf{v} - \mathbf{B} \mathbf{B} + P^*] = 0$$

$$\frac{\partial E}{\partial t} + \nabla \cdot [(E + P^*) \mathbf{v} - \mathbf{B} (\mathbf{B} \cdot \mathbf{v})] = 0$$

$$\frac{\partial \mathbf{B}}{\partial t} - \nabla \times (\mathbf{v} \times \mathbf{B}) = 0$$

$$P^* = P + \frac{\mathbf{B} \cdot \mathbf{B}}{2}$$

$$E = P/(\gamma - 1) + \frac{\rho(\mathbf{v} \cdot \mathbf{v})}{2} + \frac{\mathbf{B} \cdot \mathbf{B}}{2}$$

Mathematics Major



Division One Athlete

WHAT IS AN ACTUARY?

- The overarching role of an actuary is to **measure & manage risk and uncertainty**, primarily in a financial context
- Study impact of future events and develop strategic solutions grounded in mathematical, statistical, and business reasoning
- Typically, an actuary works for an insurance company (Life or P&C)

ACTUARY'S ROLE IN INSURANCE

- **Pricing:** establishing appropriate insurance rates (premiums) to charge customers
- **Reserving:** determining how much money should be held in a company's reserves
- **Modeling:** developing accurate models to predict outcomes
- ...and more!
- Many actuaries will be promoted into management positions after sufficient experience

ACTUARIAL SKILLSET EXAMPLES

- **Analytical** → identify and analyze trends/patterns based on available data
- **Technical** → coding/programming languages, spreadsheets, databases, statistical analysis tools/software programs
- **Communication** → communicating process and results to team/management, also to those with a less technical background
- **Mathematical** → quantifying and analyzing risk through mathematics, statistics, probability, and other concepts
- **Problem Solving** → identifying not only the risks but possible and appropriate business solutions to construct recommendations

WHY INSURANCE?

- Stable industry
- Diverse fields within insurance
 - Real-world impact
- Fast pace and changing landscape
- Strong compensation and benefits

LIBERTY MUTUAL

- Headquarters in Boston, MA
- Personal and commercial insurance
- Auto, home, renters, etc.
- Operate on a global scale (presence in 30 countries)



- Top Five P&C insurer in the United States
- Fortune 100 company
- Forbes Recognitions (one of the top employers for new grads, diversity, & more)

ACTUARIAL RESERVING

- Selling of a **promise** rather than a concrete commodity- with an uncertainty of the future
- How much money should be set aside that is sufficient to cover future claim payments?
- An actuary in a reserving role will **quantify, evaluate, and monitor** the estimates of unpaid claims (liabilities) and project losses to their ultimate value
- Several techniques to construct these projections
- Profitability insight, State Law Regulation, etc.

PROJECT EXAMPLE

- Team Task: perform second opinion review of East & West reserves (quarterly analysis)
- Individual Task: Private Auto in Spain
- For private auto in Spain: ~227 million dollars in reserves as of prior quarter
- Are the current reserves sufficient? Are they too high? Too low?
- **Project Structure:** Data Exploration → Methodology → Analysis → Results

OTHER INSURANCE POSITIONS

- Underwriting
 - Auditing
 - Analyst
 - IT
 - Marketing
- ...and more!

SKILLS ACQUIRED FROM MY INTERNSHIP

- Technical Skills (Excel, ResQ)
 - Business acumen
 - Professionalism
 - Communication
 - Team-Skills
 - Public Speaking
- Industry Knowledge

WHAT'S NEXT FOR ME?

- Actuarial exams
- Full time position at Liberty Mutual (moving to Boston after graduation!)
- Actuarial Development Program (three 16-month rotations)

NAVIGATING YOUR CAREER PATH: PIECES OF ADVICE

- Hard skills **and** soft skills
- Diversify your class schedule
- Embrace the uncomfortable
- If you think you may be interested in the **actuarial career** path...
 - Look into the exam process
 - Visit the SOA/CAS website
 - **Network!**

QUESTIONS/COMMENTS?

- Thanks for Listening!
- Contact: hmhudson@syr.edu