

Casualty Actuarial Society: Annual Meeting 2019

University Engagement: Training Actuaries for the Real World

Commitment Beyond Numbers

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Agenda

- Universities, Actuaries and Challenges
- Educator Prospective
- IABA Bootcamp
- Pinnacle U

About the Presenters



Erich Brandt

Consulting Actuary

Pinnacle Actuarial Resources, Inc.

- CAS Fellow
- Illinois State University
- 22 years of experience
- Reserving studies for insurance companies, captives and self-insureds
- Experience includes:
 - Financial statement data reviews
 - Commercial and liability lines
 - Workers' compensation
 - Medical professional liability

About the Presenters



Dr. Krzysztof Ostaszewski

Actuarial Program Director
Illinois State University

- Ph.D (Mathematics) University of Washington
- Chartered Financial Analyst (1991)
- Fellow of the Society of Actuaries (1999)
- Member of American Academy of Actuaries (1994)
- Chartered Enterprise Risk Analyst (2009)
- Fellow of Singapore Actuarial Society (2010)
- Member, National Academy of Social Insurance (2014)

About the Presenters



Kendra Letang

Actuary
Uber Technologies, Inc.

- Associate of the CAS
- Howard University
- Professional experience across consulting, large insurance, and technology entities
- Member and Volunteer of IABA
 - Volunteer Committee Co-Chair
 - Past Treasurer and Board Member
 - Past Education Committee Member

About the Presenters



Christina Negley

Associate Actuary
Pinnacle Actuarial Resources, Inc.

- CAS Associate
- B.A., Cedarville University,
M.S. (Mathematics), Illinois State University
- Reserving studies for insurance companies,
captives and self-insureds
- Experience includes:
 - Commercial and liability lines
 - Workers' compensation
 - Medical professional liability
 - Predictive analytics

CAS Mission Statement

- CAS Mission Statement
 - To increase the awareness of actuarial science
 - To advance the body of knowledge of actuarial science applied to general insurance, including property, casualty and similar risk exposures
- CAS 2017 Strategic Plan
 - Envisioned Future – Vivid Descriptions
 - Other actuarial organizations will view the CAS as a leading collaborator in developing research and delivering actuarial education. Actuarial and other related (including math, statistics, etc.) degree programs will want to have a material casualty actuarial component and will look to the CAS to partner on these efforts.

Universities and Actuaries

- CAS University Award
 - First awarded in 2016 to four schools (including Illinois State)
 - Only 3-4 winners per year
- Dozens more schools offer actuarial programs and or exam related course work
- Actuarial career often suggested to students who are good at math
 - What else? People who like puzzles? Music? I like the math part of physics more than the science part?

Liberal Arts Colleges and Smaller Schools

- Network Differently
 - Alumni-focused
 - Far from actuarial jobs?
- May be flexible in offerings
 - Western Illinois University
- Students may need to finish VEE
- Exam expectations of graduates may be different

Discussion Question

- What is the single most important trait that differentiates interview candidates?

Common Forms of University Engagement

- Attend career fairs
- Speak to actuarial science club
- Offer internships
- Office visits for students

Challenges with University Engagement

- Limited number of internships
- Joint actuarial exams

“Some things you can only learn by going in and doing them, and I think the actuarial career is no exception.”

— Amanda Mickelson –Senior - Milwaukee School of Engineering

Challenges with University Engagement

- Insurance knowledge
 - 49 U.S. colleges and universities with risk management and insurance programs in 2019 IRMI Directory
- Linking math classes to real world exercises
- Communication

“Risk professionals who are able to visit classes provide a valuable perspective to students on opportunities and the changes occurring that help make the risk and insurance industry a challenging and exciting field in which to build a rewarding career.”

- **James Carson–Daniel P. Amos Distinguished Professor in Insurance – University of Georgia**

Advanced Forms of University Engagement

- Speak to insurance classes
- Mock interview and resume workshops
- Joint research with students and/or professors
- Actuarial science major advisory board
- On-site educational offerings for interested parties
 - Hewitt Associates in the 1990's

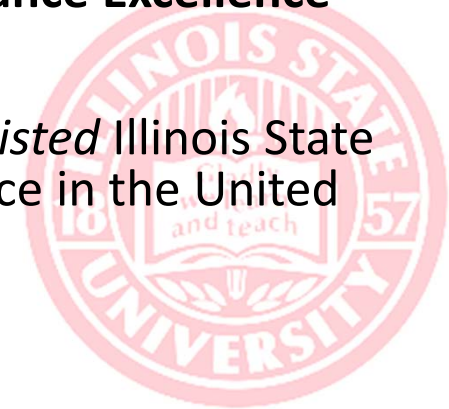
Responding to the Challenge

- Be loyal to your alma mater.
- Recruit and work with universities where you normally go.
- Offer activities and events that engage the students in real-world actuarial experiences.

University Perspective

About Illinois State University

- The Actuarial Program at Illinois State University began in the early 1990s, but the official major was created in 1997, when Bachelor degree in actuarial science was first offered. Master degree offering started in 2001.
- Illinois State University was among the first four winners of the inaugural **Casualty Actuarial Society University Award** in 2016, and then won it again in 2019 after a required three-year waiting period ended.
- Illinois State University was among the first 13 universities designated by the Society of Actuaries as **Centers of Actuarial Excellence** in 2009, and was just successfully renewed as CAE in a five year review in 2019.
- Illinois State University is also a **Global Center of Insurance Excellence** since 2018.
- In February 2018, A.M. Best publication *Best's Review* listed Illinois State University among the four best places to study insurance in the United States.



Summer programs for high school students

- Midwest High School Scholars Analytics Academy (MHSSAA), the only Summer program for high school students from underrepresented groups (Black/African-American, Hispanic/Latino, Native American) that introduces those students to actuarial profession held continuously for 25 years. We have nearly a quarter of our actuarial students from these underrepresented groups studying with us. The industry and profession talk a lot about diversity, talk and talk. We do it, with dramatically low support from the industry. We do it anyway.
- Redbird Risk Management Challenge, Summer program for high school students from any background.
- Information: <http://smartURL.it/SummerPrograms>



Katie School and students involvement in research programs

- Katie School of Insurance and Risk Management
<http://www.KatieSchool.org>
- Katie School is not an academic department, or college, it is a center organizing research and education in insurance, actuarial science, and risk management, at Illinois State University.
- Fundraising from the industry -> Scholarships, research funding, events, seminars and conferences.



Recent Katie School studies

- Beneficial Role of Insurance Industry in Illinois 2019
- Impact of Illinois Insurance Industry on State of Illinois 2019
- Drought-Triggered Index Insurance Using Cluster Analysis of Rainfall Affected by Climate Change
- The Risk Management Implications of UAVs and Drones
- Pet Insurance & Stakeholder Decision-Making Processes: Awareness, Goals, and Perceived Value
- The Role of Large Deductibles for PEOs in the Failures of Small Workers' Compensation Insurers



Actuarial Case Studies Online Library at Illinois State University

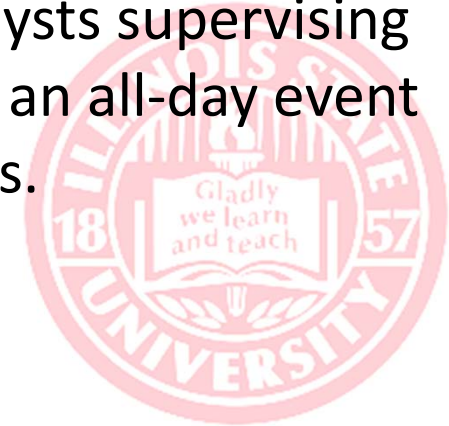
<http://smartURL.it/ActuarialCaseStudies>

- This site provides links to all projects done in Pinnacle U since the beginning of the program in the 2014/2015 academic year.
- We also hold an annual Predictive Analytics Competition for statistical projects done by students, and successful projects from that competition are posted at the same site.
- Our students also work on projects at the Katie School of Insurance and Risk Management, and those projects are posted at that site as well.



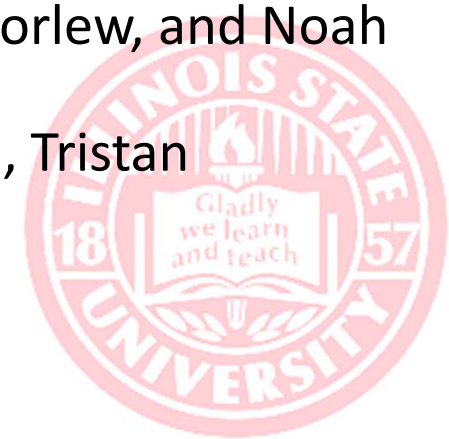
Pinnacle U

- Starting in the 2014/2015 academic year, Illinois State University Actuarial Program has worked with Pinnacle Actuarial Resources on this program called Pinnacle U.
- A group of students, usually six to eight, are chosen from all interested candidates, to create small case-study-like projects, supervised by one or two analysts from Pinnacle Actuarial Resources.
- At the end of the program, students and analysts supervising them make presentations of their projects at an all-day event at Pinnacle Actuarial Resources' headquarters.



2018/2019 Student Projects

- ["Cyber Security: The Evolving Threat,"](#) by Hannah Kaufmann, Patryk Wiech, and Nathan Schuele.
- ["The Evolving Role of AI in Insurance,"](#) by Michael Kelch, Sam Heil and Adam Ramos.
- ["Generalized Linear Models: Theory vs. Practice,"](#) by Amanda Conklin, Linda Der Schwartz, and Sarah Schwarzentraub.
- ["Catastrophe Modeling Methods,"](#) by Emmanuel Agyare, Taylor Daigle, Scott Damery and Trenton Lipka.
- ["On Demand Insurance,"](#) by Judy Cheng, Elisha Corlew, and Noah Sierer.
- ["Insurance Goes to College,"](#) by Steve Jagodzinski, Tristan Rhodeside and Henry Haase.



Google search: “How to pass actuarial exams”

- You will most likely get this site:
<https://math.illinoisstate.edu/krzysio/pass.html>
- We are very serious about actuarial science at Illinois State University.
- <http://www.IllinoisState.edu/actuary> or
<http://smartURL.it/actuary>
- YouTube channel:
<http://smartURL.it/PassActuarialExams>



IABA Perspective



International Association of Black Actuaries **Actuarial Boot Camp**

IABA and the Actuarial Profession

Mission of IABA

Contribute to an increase in the number of black actuaries and to influence the successful career development, civic growth and achievement of black actuaries.

Diversity

Diversity within the actuarial profession is a longstanding issue, with only 3% of actuaries identifying as Black or Latino. Concerted efforts are underway by the CAS, SOA, and their strategic partners to drive change.

Industry Research

A recent study identified key barriers to entry for underrepresented groups, highlighting awareness as one of the greatest barriers.

Actuarial Boot Camp

Overview

2012

Inaugural IABA Actuarial Boot Camp is hosted in Atlanta, GA

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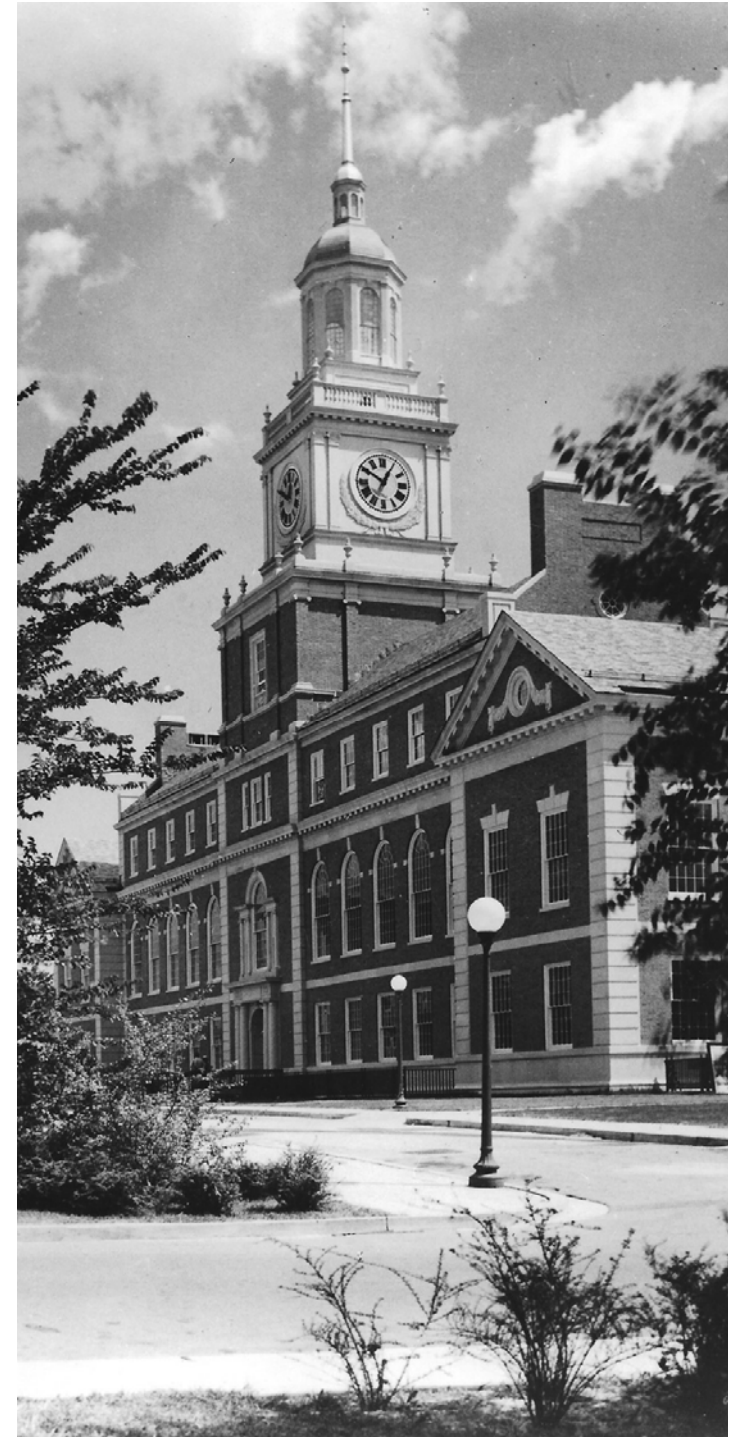
Intense days of workshops and networking, hosted at a local university in the city of the IABA Annual meeting

7

Cities to date - Atlanta, Chicago, New Orleans, Miami, Las Vegas, Washington, DC, Houston

200

Students (undergraduate and graduate level) and career changers successfully completed the boot camp



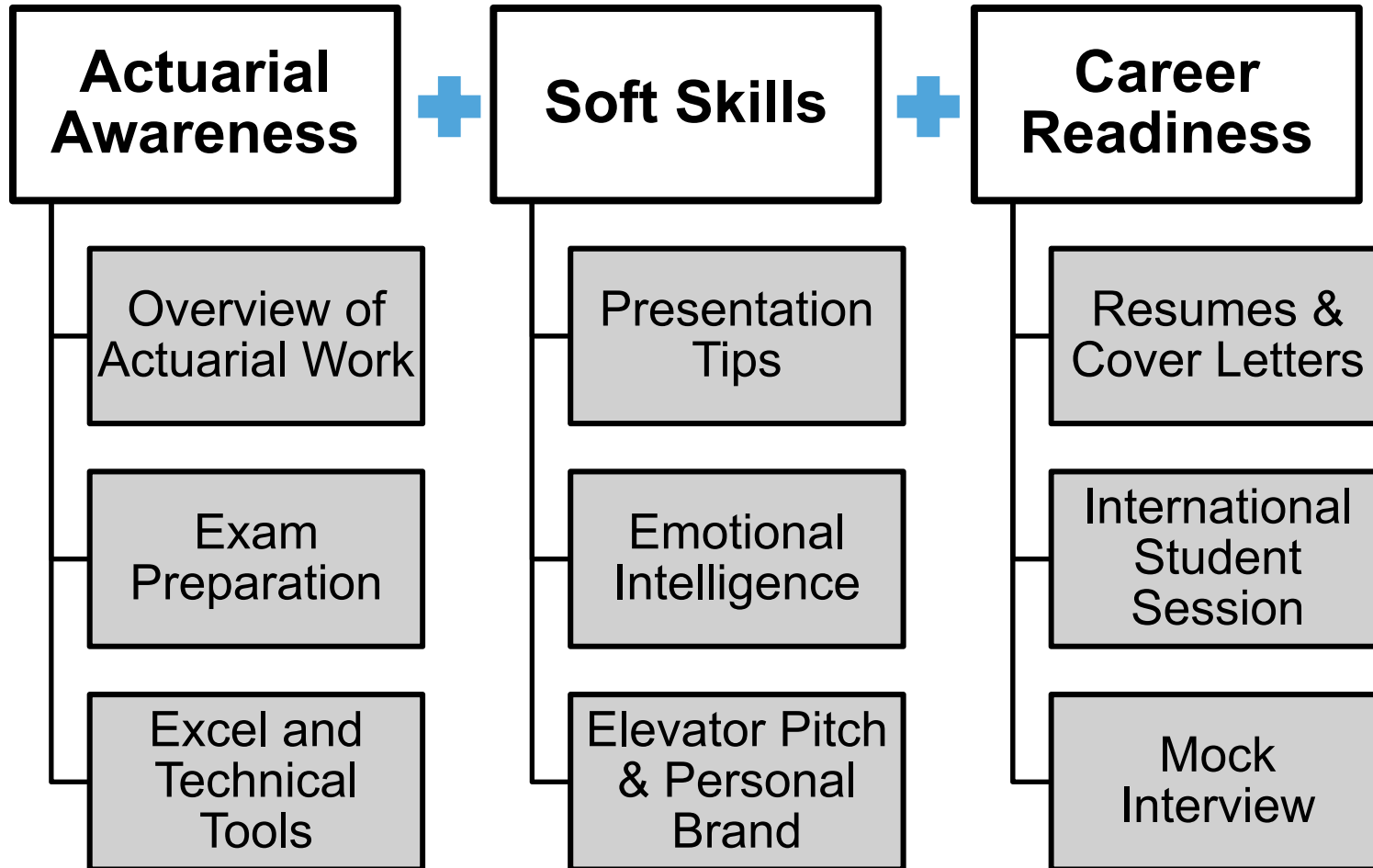
Actuarial Boot Camp

Structure

Goal	Increase industry awareness and better position students for a successful actuarial internship or entry-level role		
People	IABA volunteers design and execute the 4 day workshop, with valuable input and participation from corporate partners		
Approach	<p><u>Provide Training</u></p> <p>Workshops provide a thorough overview of the key skills required to become a successful actuary</p>	<p><u>Apply Learnings</u></p> <p>Participants are given the opportunity to practice newly developed skills</p>	<p><u>Ongoing Support</u></p> <p>IABA strives to stay connected with each participant for additional support and guidance</p>

Actuarial Boot Camp

Training



Actuarial Boot Camp

Application



Actuarial Case Study

- Exposure to real world actuarial problems, developed and presented by an IABA corporate partner
- Practice technical skills with realistic data
- Present to corporate partners and a panel of judges from the industry
- Work collaboratively with peers on an actuarial project

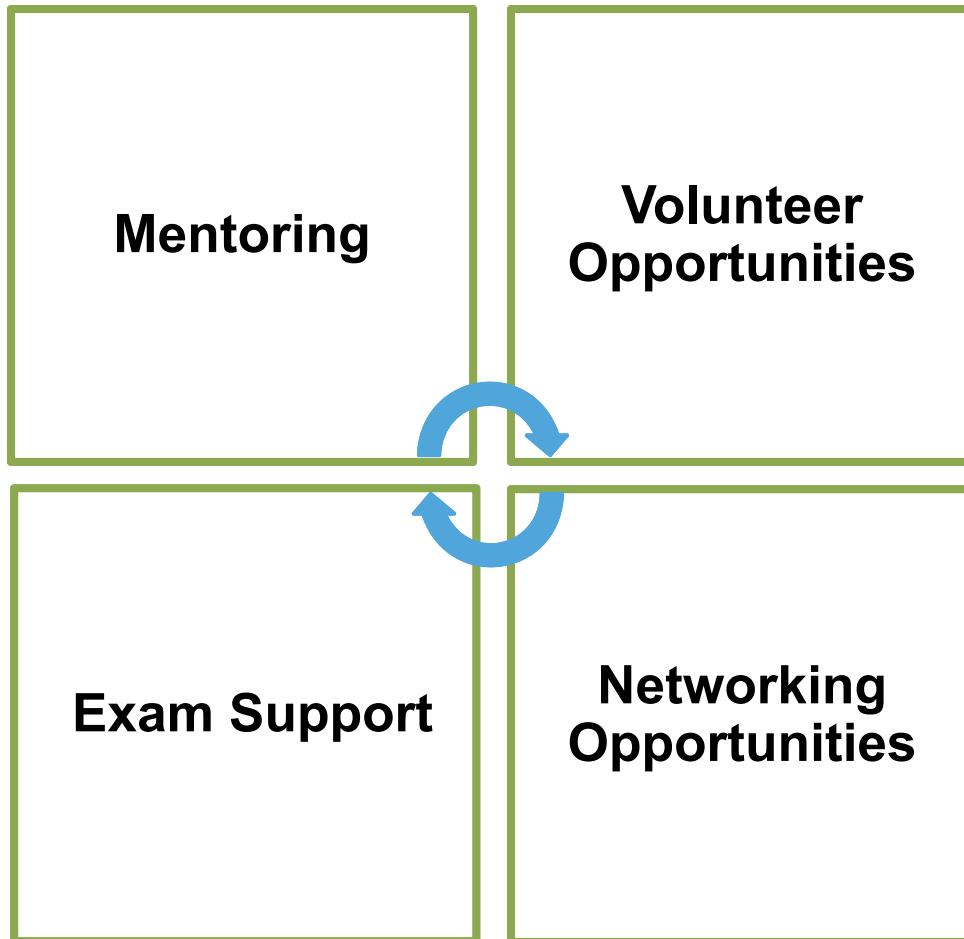


IABA Annual Meeting

- Development sessions specifically designed for university students
- Networking and relationship building with professionals from a variety of companies and backgrounds
- On-site interview opportunities

Actuarial Boot Camp

Ongoing Support



- One of the greatest outcomes of the boot camp is the sense of community developed over
- IABA offers a variety of options for participants to stay connected and involved
- Maintaining a strong network and support group increases a candidate's likelihood to remain in the profession

Participant Perspective

A Little About My Experience

- First heard about actuarial science as a graduate student at Illinois State University
- Positive business experiences significantly impacted career choice
- Involved in Pinnacle U first as a student intern, then an analyst, then as a mentor

Pinnacle U – The Program

- Groups of students and analysts prepare presentations on topic of their choice
- Presentations subject to peer review, dry runs
- Culminates in Pinnacle U
 - Actuaries and students from the community invited to attend
 - Panel of industry veterans provide feedback
- Presentations followed up with written blog post

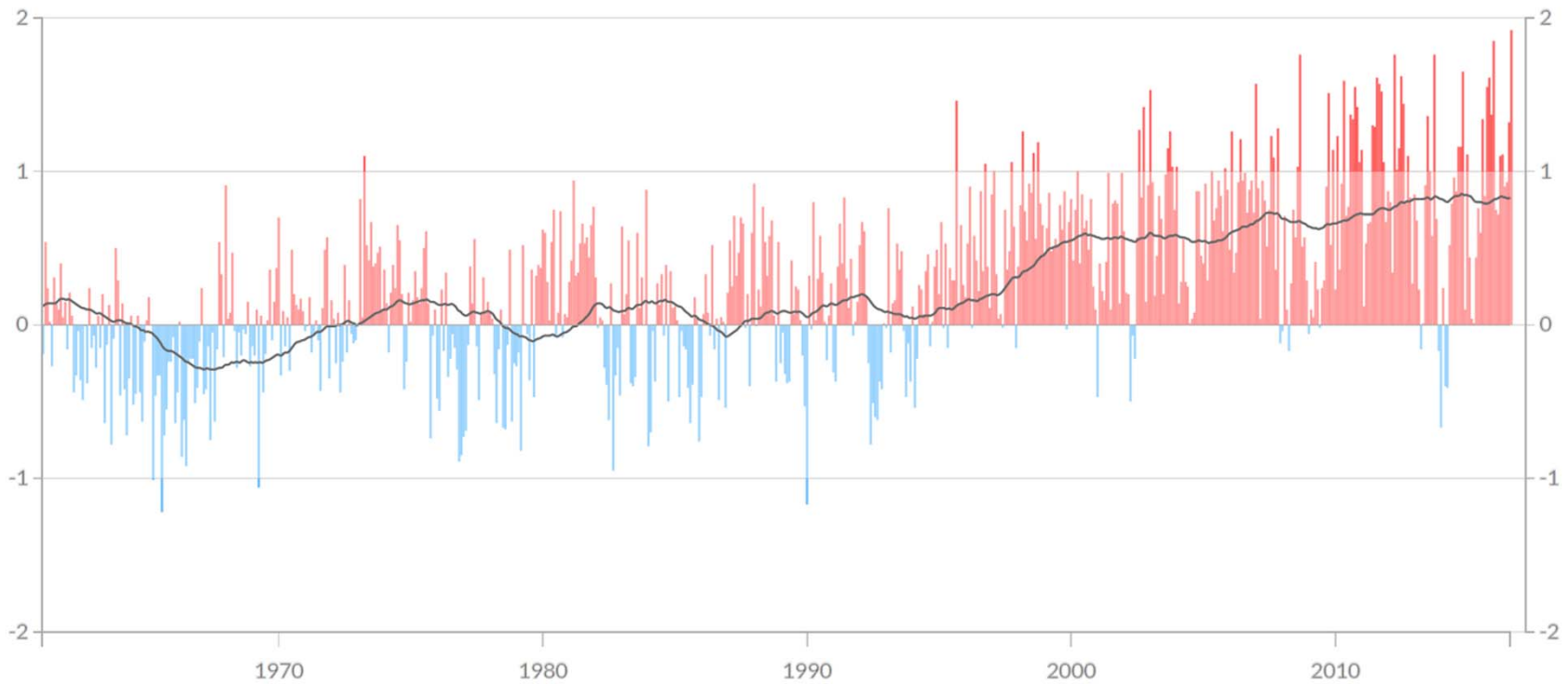
Actuaries Climate Index (ACI)

- Six components of the Actuaries Climate Index:
- High temperatures – above 90th percentile (T90)
- Low temperatures – below 10th percentile (T10)
- Heavy rainfall (P)
- Drought (consecutive dry days) (D)
- High wind (W)
- Sea level (S)

$$ACI = mean(T90 - T10 + P + D + W + S)$$

Graph of ACI - Monthly

USA and Canada Combined



Where Are We Now?

- ACI methodology was refined recently, slightly impacting prior chart
 - Now includes only locations with consistently reported data
 - Trend not significantly impacted
- Actuaries Climate Risk Index (ACRI) still under development
 - “to measure correlations between changes in the frequency of extreme events and economic losses, mortality and injuries.”
- ActuariesClimateIndex.org

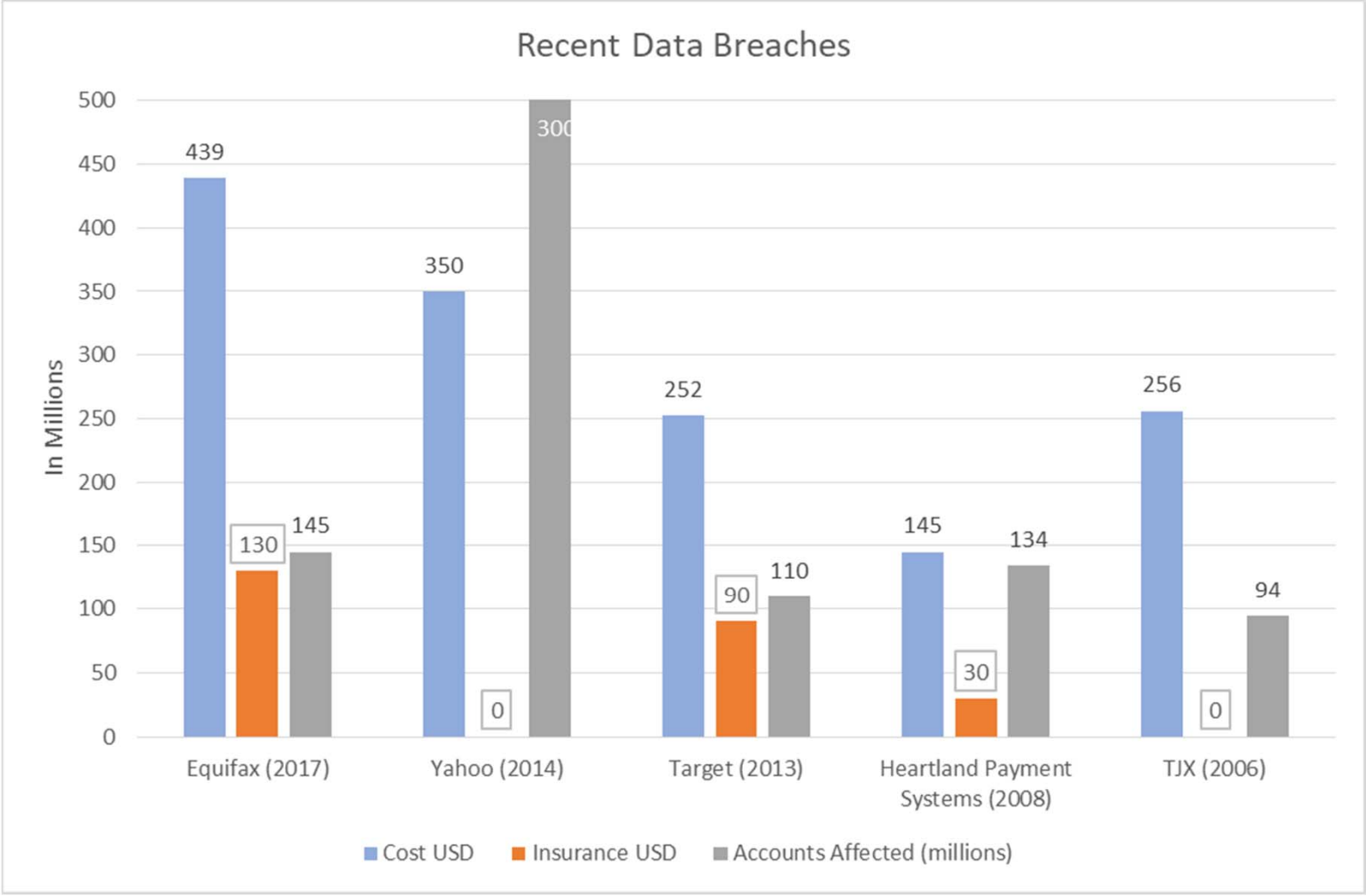
Pricing Cyber Insurance

Challenges

- Sparse data
- Unknown rating variables
- Cyber crime is quickly evolving

Potential Solutions

- Cyber Incident Data and Analysis Working Group (CIDAWG)
- Modeling is used to attempt to make due with what is available
- Indices, tools, and frameworks are being created to improve risk evaluation



Where Are We Now?

- Continued awareness of cyber liability and breaches
- Breaches in 2019 include Dunkin' Donuts, Toyota, and Walmart
- Physical damage possibilities
 - “Incentivizing Cyber Security Investment in the Power Sector Using an Extended Cyber Insurance Framework”, Homeland Security Affairs (May 2019)

Benefits to Students

- Research of relevant actuarial topics
- Peer support
- Presentation skills
- Professionalism
- Build community and network

Benefits to Employees

- Leadership skills
- Presentation skills
- Opportunity to shine

Building a Beneficial Program

- What are key aspects of a successful program?
 - Consistency
 - More valuable than a one-time event
 - Resource commitment
 - University/community connections
 - Appropriate metric for success

Questions?



Thank You for Your Time and Attention

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