Faculty Development Plan

NAME

June 2017

Teaching

Strengths

1. Respect for the students. I always learn all my students' names and try to be involved in their professional lives, helping them find jobs and internships, choosing between offers, etc.
2. Passion for my subject. I absolutely love the material that I teach. I think that love shows through to the students and helps them to also be excited about what they are learning.
3. High expectations. Knowing where my students need to be to be successful in both the exams and their careers, I expect a lot of them in my course. I make sure they realize that my expectations come from respect and concern for them and their future lives.

Weaknesses

1. I don't think I do enough to incorporate the Gospel into my course.
2. I don't know enough about my students' backgrounds and lives.

Goals for 2016/17 Academic Year

1. I hope to incorporate the Gospel more fully into my course. I appreciated the talk by Dr. Stice on how to incorporate the gospel into his accounting course. I will be able to directly apply some of the concepts. I especially hope to be able to focus more on the spiritual side of personal finance.
2. I also hope to know my students' backgrounds and dreams more fully. That will allow me to be better able to serve them.
3. I will better use the resources of the CTL.

Scholarship

Research Summary. My research focuses on the interface between statistics (especially Bayesian) and risk. I have published in most of the top actuarial journals and a few papers in statistics and applied engineering journals as well.

I plan to work to become one of the top actuarial statisticians, contributing in many areas in actuarial science, but especially property/casualty and health.

Here is the current state of my research projects.

- To appear
    - BART
        - Coauthors: My UConn power outage modeling team

        - Summary: We compare and contrast BART and quantile regression forests when predicting power outages for both hurricanes and thunderstorms in Connecticut.
        - Target Journal: Risk Analysis, top field journal
        - Status: To appear
- Submitted
    - Model selection in health insurance
        - Coauthors: Shujuan Huang, my PhD student from UConn and Vytaras Brazauskas, UW-Milwaukee.
        - Summary: We explore various ways to perform model selection when trying to model the size of health insurance claims. We developed a random forest-based classification method which is much faster than AIC/BIC or Bayesian methods, without losing too much accuracy.
        - Target Journal: ASTIN bulletin, one of the top 3 actuarial journals.
        - Status: Resubmitted Jan 12 (1^{st} resubmission)
    - Future Sandy
        - Coauthors: My UConn power outage modeling team
        - Summary: We use some predictions of the magnitude of a hurricane similar to Sandy if it were to happen in 2100. We use our outage prediction model to quantify the effect on Connecticut.
        - Target Journal: Journal of Applied Meteorology and Climatology, top field journal
        - Status: Submitted May 9
    - Wind Speed Model Averaging
        - Coauthors: My UConn power outage modeling team
        - Summary: We show a simple method to incorporate two different weather forecasts.
        - Target Journal: top field journal, Journal of Applied Meteorology and Climatology
        - Status: Submitted May 25
- In preparation (likely submitted in next three months, or so)
    - GP Reserving
        - Coauthors: Nathan Lally, Rylan Bateman (BYU UG)
        - Summary: We developed a new method for estimating the amount of money a company needs to keep in reserve. In our preliminary tests, we are killing the current state-of-the-art. That probably means there is a bug in the code. ☺
        - Target Journal: top actuarial journal
        - Status: Draft completed. We will be building out the analysis in the next month or so.
    - RSV Changepoint Model
        - Coauthors: Matt, Candace, Sierra Pugh (BYU MS Student), Chantel Sloan (BYU public health)
        - Summary: We are looking at the seasonal patterns in the incidence of bronchiolitis.

        - Target Journal: Statistics in Medicine
        - Status: We are just beginning to model the data. We have an idea for the changepoint model, and will start working on the spatial model soon.
    - MRSLN
        - Coauthors: Dave Engler, Chris Groendyke, Robert Morris University
        - Summary: We are developing multivariate regime-switching lognormal models while testing the impact of various prior structures on the results.
        - Target Journal: depending on the results, JBES, AoAS, top actuarial
        - Status: We are getting some strange results in our application. We are investigating it further.
- Active Projects (though submission is likely 3-12 months away)
    - Spatial utilities
        - Coauthors: Nathan Lally
        - Summary: We test the value of spatial correlation and expert prior elicitation in our outage prediction model. We find both to be rather valuable.
        - Target Journal: Annals of Applied Statistics, Bayesian Analysis
        - Status: Draft completed. Nathan wants to add a few more models before submission.
    - Spatial Auto Insurance Losses
        - Coauthors: Micaela Johnson (BYU MS Student), Peng Shi (UW-Madison).
        - Summary: We will examine the spatial correlation of auto insurance claims in the state of Massachusetts.
        - Target Journal: top actuarial journal
        - Status: I am currently building Micaela's modeling skills. We have performed some exploratory data analysis.
    - HMM with repulsion
        - Coauthors: Jose Quinlan, Garritt Page
        - Summary: We plan to extend Jose's work on repulsive distributions to hidden Markov models.
        - Target Journal: unknown
        - Status: Unknown. This project is relatively low on all our lists, though is rather low-hanging fruit it seems. With the death in Jose's family, there are no immediate plans or action items here.
- Future Ideas (1-2 years out, or more)
    - Spatial mortality modeling - Incorporate spatial correlation when modeling mortality for the US. Could look and individual mortality rates, or modeling the entire curve.
    - Bayesian Multiple-state Models – Building upon "Multistate Actuarial Models of Functional Disability"

Goals for 2016-17

1. Submit at least two papers not currently submitted, mostly likely RSV and MRSLN.
2. Push at least two papers all the way through to publication, mostly likely health model selection and future Sandy.
3. Start my spatial mortality projects (assuming I get the data).

4. Following the advice of “How to Write a Lot.” I will schedule consistent times to only write uninterrupted.

Service

The majority of my service relates to the actuarial program here. As the director I spend a good bit of time helping the students find internships, marketing our program to employers and the broader actuarial community, and to organize our curriculum to prepare our students to be successful.

My goals for 2016/17 are

1. Apply to become a Center of Actuarial Excellence. There are only 17 programs in the US which currently qualify.
2. Update the learning outcomes of the actuarial courses (274, 377, 475, and 477).
3. Update the BS Actuarial Science requirements.