

EDUCATION

Rice University, Houston, TX

Ph.D. in Statistics

M.S. in Statistics

Thesis: "Bayesian Applications to Clinical Trials and Survival Analysis"

Honors: Qualifying exam passed "with distinction"

2014-2018

Louisiana State University, Baton Rouge, LA

Masters of Applied Statistics M.Ap.St.

Thesis: "Assessment of Simon and Price models for predicting citation accumulation"

2012-2014

Louisiana State University, Baton Rouge, LA

B.S. in Mathematics

Area of Concentration: Statistics

2008-2012

AWARDS

T32: Cancer Training Grant

2014 – 2016

OFDA 2016 Scholarship

2016 – 2017

O'Bayes Conference Travel Award

2017

PUBLICATIONS AND PAPERS

Peak, T., Su, Y., Chapple, A.G., Chryr, J., Pollack, J., Deep, G. (2018) Syntaxin 6: A novel predictive and prognostic biomarker in papillary renal cell carcinoma. *PLOS ONE Journal*. **Under Revision**.

Peak TC, Chapple AG, Coon G, Hemal A. (2018). Utilizing a Semi-Competing Risk Model to Predict Perioperative and Oncologic Outcomes after Radical Cystectomy. *British Urology Journal*. **Submitted**.

Chapple, A.G., Thall, P.F. (2018). Subgroup-specific dose finding in phase I clinical trials based on time to toxicity allowing adaptive subgroup combination. *Journal of Pharmaceutical Statistics*. **Accepted**.

Chapple, A.G., Thall, P.F. (2018). A Hybrid Phase I-II/III Clinical Trial Design Allowing Dose Re-Optimization in Phase III. *Biometrics*. **Accepted**.

Chapple, A.G. (2018). Modeling ISIL terror attacks and their fatality rates with a Bayesian reversible jump marked point process. *Journal of Economics and Econometrics*. *Economics and Econometrics Society*. 61(3): 1-14.

Chapple, A.G., Vannucci, M., Thall, P.F., Lin, S.H. (2017). Bayesian variable selection for a semi-competing risks model with three hazard functions. *Journal of Computational Statistics and Data Analysis*. 112: 170-185.

Liru, H., Chapple, A.G., Liao, Z., Komaki, R., Thall, P.F., Lin SH. (2016) Bayesian regression analyses of radiation modality effects on pericardial and pleural effusion and survival in esophageal cancer. *Journal of Radiation Oncology*. 121 (1): 70-74.

Chapple, A. (2016) A Bayesian Reversible Jump Piecewise Hazard approach for modeling rate changes in mass shootings. *Journal of Economics and Econometrics*. 59 (3). 19-31.

Han, K.J., Pitman, W.D., Chapple, A. (2014). Moisture Concentration Variation of Silages Produced on Commercial Farms in the South-Central USA. *Asian-Australasian Journal of Animal Sciences*. 2014;27(10):1436-1442.

SOFTWARE AVAILABLE ON CRAN

BayesPieceHazardSelect: Bayesian variable selection on covariates in a cox-like hazard with a piecewise exponential baseline hazard.
<https://cran.r-project.org/web/packages/BayesPieceHazardSelect/BayesPieceHazardSelect.pdf>

BayesPiecewiseICAR: Fits a piecewise exponential model to survival data.
<https://cran.r-project.org/web/packages/BayesPiecewiseICAR/BayesPiecewiseICAR.pdf>

SimSCRPiecewise: Simulates survival data from piecewise hazards.
<https://cran.r-project.org/web/packages/SimSCRPiecewise/SimSCRPiecewise.pdf>

SCRSELECT: Implements the SVSS and DIC-Tau_g procedures from the paper: Bayesian variable selection for a semi-competing risks model with three hazard functions. <https://cran.r-project.org/web/packages/SCRSELECT/SCRSELECT.pdf>

SubTite: Implements Sub-TITE dose finding in phase I clinical trials and provides functions for simulating these trials.
<https://cran.r-project.org/web/packages/SubTite/SubTite.pdf>

PieceExpIntenisty: Bayesian reversible jump MCMC for a marked Poisson point process.
<https://cran.r-project.org/web/packages/PieceExpIntenisty/PieceExpIntenisty.pdf>

TEACHING EXPERIENCE

Rice University, Houston, TX

Teaching Assistant

2014-2016

I taught introductory labs on using R for homework assignment and gave bi-weekly review lectures for an introductory probability and statistics class. I wrote and graded assignments for an applied stochastic processes class on generating functions.

Louisiana State University, Baton Rouge, LA

Lab Lecturer

2012-2014

I taught 8 undergraduate labs on how to use SAS enterprise guide. Held problem sessions for undergraduate students. Taught one graduate lab on how to use SAS to perform analyses learned in class, writing and grading each lab assignment.

RELATED EXPERIENCE

Louisiana State University Health Science Center, New Orleans, LA

Assistant Professor

2018 – present

I research survival analysis and clinical trials and teach lectures to PhD students in Biostatistics.

MD Anderson, Houston, TX

Trainee

2015 – 2018

I performed statistical research for medical applications under the supervision of Dr. Peter Thall. First we worked with Dr. Steven Lin on one application and one methodology paper involving semi-competing risks data. I took Dr. Thall's Bayesian clinical trial course in spring 2016, afterwards we developed two novel clinical trials, both of which have been published.

The Daily Reveille, Baton Rouge, LA

Sports Writer

Fall 2011

I covered all LSU fall sports but was specifically the beat writer for cross country and track. I pitched several story ideas to my managers each week, interviewed relevant sources, and wrote articles in a timely manner for print.

Volunteers in Public Schools, Baton Rouge, LA

Math Tutor

2009 – 2011

I tutored children in second and third grade who had fallen behind in math, developing advisor-mentee friendships seeing major improvements in their ability and confidence.

Episcopal High School, Baton Rouge, LA

Middle School Track Coach

2009 – 2010

I was the head boys coach for two middle school teams but particularly worked with quarter milers. I developed workouts for each day, taught relay exchanges, and encouraged the kids to succeed in track and life.

RELEVANT COURSEWORK

Bayesian Statistics, Advanced Bayesian Statistics, Bioinformatics, Biostatistics, Applied Stochastic Processes, Categorical Data Analysis, Clinical Trials, Cancer Biology, Data Mining, Econometric Methods I/II, Experimental Statistics I/II, Foundations of Statistical Inference I/II, Microeconomics, Multivariate Statistics, Multivariate Analysis, Non-parametric statistics, Non-parametric Bayesian Statistics (spring 2018), Probability theory, Practicum in Statistical

Computing, Regression Analysis, Statistical Methods for Reliability and Survival Data, Survival Analysis, Statistical Computing and Graphics, Statistical Methods Inference I/II, Stochastic Control and Stochastic Differential Equations.

RELEVANT SKILLS

Coding proficiency in SAS, R and C++. Experience using clusters with putty and bash scripts. Proficiency using programs for developing clinical trials including East and several applications found on MDAnderson's website. Experience editing Wikipedia content. Proficiency in Excel and other Microsoft office programs.

MEMBERSHIPS

American Statistical Association: Houston Chapter
Society of Clinical Trials

INVITED TALKS

- MD Anderson Cancer Center (June, 2017): Bayesian variable selection for a semi-competing risks model with three hazard functions.
- MD Anderson Cancer Center (June, 2018): A Hybrid Phase I-II/III Clinical Trial Design Allowing Dose Re-Optimization in Phase III.
- ENAR 2019 Meeting Invitation: Bayesian variable selection for a semi-competing risks model with three hazard functions.

Research Interests

I'm interested in developing methodology to tackle real world problems, including the complexities of how the data is collected and structured. I have familiarity with many data types but have specialties in logistic regression, normal regression, and survival analysis. While I feel that a Bayesian approach to these problems often provides flexible framework to tackle complex relationships, I also use frequentist, optimization and machine learning techniques in my research.

At Rice and MDAnderson, I worked on three projects arising from medicine. I developed a Bayesian variable selection method for a semi-competing risks structure which we applied to real data from MDAnderson, finding clinically relevant results for a novel radiation therapy. I developed a Bayesian phase I clinical trial that performs dose selection for multiple patient subgroups, while allowing the data for different groups to be pooled together for improved performance. I also developed a novel Bayesian clinical trial that allows for dose switching in phase III based on mean survival and data from patients enrolled in earlier clinical trial phases. While most of my research has focused on problems that arise in medicine, I am also interested in problems that arise in economics, experimental design and public policy. My research is mostly driven by some unique dataset or problem which leads to new methodological improvements, but I have several projects that I want to work on in the upcoming years.

I want to extend both of my clinical trials to phase I/II data and semi-competing risks structures and extend the Bayesian piecewise exponential model to a more flexible class. I plan to determine if the Deviance Information Criteria can be used to find the optimal threshold for variable inclusion in a Bayesian variable selection setting for different hyperparameter values instead of using the median model. I also plan to work with a clinician at Wake forest to use patient comorbidities and predictive probabilities to determine if patients should receive an invasive surgery. Additionally, I plan to work on an extension of the O'Brien Fleming and Pocock stopping boundaries that is robust to the true time to event distribution, study the differences in survival distribution fits for semi-parametric and non-parametric Bayesian models, and work with Leonhard Held to assess Bayesian fractional polynomials versus their frequentist counterpart. I expect this list of future projects to grow as I collaborate with clinicians at MDAnderson, my collaborator at Wake Forest, and new colleagues.

Teaching Philosophy

I have experience teaching statistical computing labs to undergraduate and graduate students at both LSU and Rice. I've taught students SAS Enterprise Guide, SAS and R and also lectured on regression, experimental design, expectation and maximum likelihood estimation. At Rice I served as a TA for an applied stochastic processes class. I feel confident in my abilities to teach: Statistical Methods and Theory, Bayesian Statistics, Regression Analysis, Categorical Data, Survival and Reliability Data, Biostatistics, Clinical Trials, Statistical Coding and Non-parametric statistics.

My teaching style with graduate students is very conversational. While I want to deliver all the relevant information, students learn better when they are engaged throughout the lecture, instead of lecturing for the entire duration. Students in my classroom are encouraged to ask questions, particularly if it encourages discussion or even clarifies notation and I always encourage group discussion of tough homework problems in class. I believe that new students in statistics/biostatistics need to get their hands dirty coding and implementing methods learned in class. I don't think this requires a large amount of homework problems, but rather larger applications where students can collaborate together before being discussed in class. It is important to discuss homework problems in class to reinforce student learning rather than just giving out answer keys.

I also believe that examinations are helpful to students in that they need to review all the relevant course material and see the bigger picture. However, I think that homework assignments and projects should be more difficult than tests. I think all areas of statistics are useful in some way and would be sure to mention possible uses of methods learned in class in different fields.