200 Barnes Street
Apartment 16D
Carrboro, NC 27510

jpwill@live.unc.edu
630.709.7018

# Jonathan P Williams

## EDUCATION

**University of North Carolina, Chapel Hill, NC** — 2014 - (2019 expected)
Department of Statistics and Operations Research
PhD Statistics

**New York University, New York, NY** — 2012 - 2014
Courant Institute of Mathematical Sciences
MS Mathematics
Thesis: *Penalized Least Squares Estimation of the Linear Mixed Effect Model*
Advisor: Dr. Ying Lu

**Eastern Michigan University, Ypsilanti, MI** — 2008 - 2012
Honors College
BS double major in Economics and Mathematics, minor in Finance
GPA: 3.93/4.0
Thesis: *Entropy and Related Principles*
Advisor: Dr. Ovidiu Calin

## PAPERS

1. J P Williams, C B Storlie (2017). A Bayesian approach to multi-state hidden Markov models: application to dementia progression. *In preparation.*
2. J P Williams, J Hannig (2017). Non-penalized variable selection in high-dimensional linear model settings via generalized fiducial inference. *Submitted.*
3. J P Williams, Y Lu (2015). Covariance Selection in the Linear Mixed Effect Model, *Journal of Machine Learning Research: Workshop and Conference Proceedings*, 44, pp. 277–291.

## PRESENTATIONS

1. Non-penalized variable selection in high-dimensional settings via generalized fiducial inference. *27th Nordic Conference in Mathematical Statistics*, Tartu, Estonia, June 2018 (invited).
2. A Bayesian approach to multi-state hidden Markov models: application to dementia progression. *Graduate Seminar*, Department of Statistics and Operations Research, University of North Carolina, Chapel Hill, NC, September 2017.
3. Non-penalized variable selection in high-dimensional linear model settings via generalized fiducial inference. *Graduate Seminar*, Department of Statistics and Operations Research, University of North Carolina, Chapel Hill, NC, February 2017.
4. A Bayesian approach to multi-state hidden Markov models: application to dementia progression. *Tea Time for Science*, Biomedical Statistics and Informatics, Health Sciences Research, Mayo Clinic, Rochester, MN, August 2016.

## POSTER PRESENTATIONS

1. Generalized fiducial inference for high dimensional problems. *Invited Poster Session, Joint Statistical Meeting*, Baltimore, MD, July 2017 (invited poster with Jan Hannig).
2. Non-penalized variable selection in high-dimensional linear model settings via generalized fiducial inference. *Fourth Bayesian, Fiducial, and Frequentist Conference*, Harvard University, May 2017.
3. Covariance Selection in the Linear Mixed Effect Model. *Feature Extraction: Modern Questions and Challenges, NIPS*, Montreal, Canada, December 2015.

## AWARDS

| | |
|---|---|
| Carl M. Erikson Mathematics Department Scholarship | 2011 - 2012 |
| Regents Scholarship | 2009 - 2012 |
| National Scholars Program Scholarship | 2008 - 2012 |
| Leader Award Scholarship | 2009 - 2011 |

## PROFESSIONAL ACTIVITIES

Referee for *Journal of Computational and Graphical Statistics*
Referee for *Stat*

## TEACHING

**STOR-BIOS Dept. Boot Camp for incoming statistics and biostatistics graduate students**     Summer 2017

· Manager of the two-week Boot Camp, and instructor of the real analysis section.

**Teaching Fellow, UNC, Chapel Hill, NC**     2014 - 2016

· Introduction to Statistics (Full teaching responsibilities for a class of 46 and for a class of 80 students).
· Introduction to Statistics (Teaching Assistant).
· Undergraduate Regression Analysis (Teaching Assistant).

## WORK EXPERIENCE

**Research Collaborator, Mayo Clinic, Rochester, MN**     2017 - Present

· Work contributing PhD Thesis
· Develop a statistical model for hemoglobin as it is affected by blood transfusion.
· Continuation of Alzheimer's project from previous internship (see below).

Reference: Dr. Curt Storlie, Associate Professor of Biostatistics - Storlie.Curt@mayo.edu

**Biostatistics Intern, Mayo Clinic, Rochester, MN**     Summer 2016

· Studied the progression to dementia from a cohort study data set of 4989 subjects.
· Constructed a Hidden Markov Model within a Bayesian framework to model the transitions between developing states of dementia.
· Implemented a Markov chain Monte Carlo algorithm to estimate the infinitesimal transition rates of the Hidden Markov Model.

Reference: Dr. Curt Storlie, Associate Professor of Biostatistics - Storlie.Curt@mayo.edu

**Statistical Consultant, Caster Concepts, Inc, Albion, MI**     2011 - 2014

· Continuation and updating of a statistical sales forecasting model using a cointegrating equation for predicting future company sales, monthly and quarterly for multiple years into the future.
· Analyzed company sales and quote data using regression tools to find potential customer leads based on location and SIC industry codes and to compare the performance of inside/outside sales broken down by direct/distributor sales.
· Developed a logit model to predict the likelihood of a sales quote being met.
· Developed a sales forecasting model using a cointegrating equation. Experimented with VAR and VEC models.

Reference: Dr. Bill Dobbins, President and CEO - bdobbins@casterconcepts.com

**Tutor, Eastern Michigan University, Ypsilanti, MI**     2009 - 2012
Tutored students in Economics and Mathematics.
Reference: Dr. Kemper Moreland, Professor - kmoreland@emich.edu

## OTHER ACTIVITIES

Fed Challenge Competition - Chicago Federal Reserve District
March 2008, November 2008, 2009, 2010, 2011

## ADDITIONAL REFERENCES

**Dr. Jan Hannig**
Professor of Statistics
Department of Statistics and Operations Research
University of North Carolina at Chapel Hill
hannig@email.unc.edu

**Dr. Curt Storlie**
Associate Professor of Biostatistics
Health Sciences Research
Mayo Clinic
Storlie.Curt@mayo.edu