Benjamin E. Noland

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Education

- **MS in statistics, Rutgers University**, New Brunswick, NJ (with honors)
  September 2017–May 2019
- **BA in mathematics, Rutgers University**, New Brunswick, NJ (with honors)
  September 2012–May 2016
  Minor in physics
  School of Arts and Sciences Honors Program

Experience

Freelance statistician
Princeton, NJ
June, 2020–Present

- I currently offer data analysis and programming services through freelancer sites such as Guru and Upwork.

Independent mathematics tutor
Princeton, NJ
February 2020–March 2020

- Tutored students from Princeton High School and Princeton University in mathematics.

Part-time research assistant
Rutgers Infrastructure Monitoring and Evaluation Group, Department of Civil and Environmental Engineering, Rutgers University, New Brunswick, NJ
June 2019–November 2019

- Used R to process and manage data on bids made by contractors for construction jobs nationwide, using data from the Bid Express bidding service.
- Assisted in research investigating bid price distributions and forecasting future bid prices. Included extensive exploratory analysis, including producing visualizations using ggplot, along with analysis of the time series of bid prices using standard R modeling tools.
- Assisted in writing a report for the New Jersey Department of Transportation on bid price distributions for construction bids statewide. The report was written in RMarkdown, and the process automated using the drake R library.
- **Skills used:** R, data processing, statistics

Part-time research assistant
Alan M. Voorhees Transportation Center, Bloustein School of Planning and Public Policy, Rutgers University, New Brunswick, NJ
June 2018–July 2018

- Used R and the Elsevier Scopus API to scrape roughly two-decades worth of abstracts from articles published in transportation-related journals. The goal was to determine whether writing quality in these journals has degraded or improved with time.
- The scraped data was cleaned using R and fed into the Coh-Metrix system, developed at the University of Memphis to analyze linguistic cohesion among a collection of text corpora.
- No conclusive results from this brief study, but open to further investigation.
- **Skills used:** R, data processing

Part-time research assistant
School of Management and Labor Relations, Rutgers University, New Brunswick, NJ
May 2018–May 2019

- Designed and implemented a web application using R and Shiny to explore the unionization trends of registered nurses in the United States using Current Population Survey (CPS) data.
- Included extensive preprocessing of the raw data using R.
- The application allows the user to select, aggregate, and visualize the data to explore union membership and union contract coverage rates. The application was built using the Shiny framework, with visualizations done using ggplot.
- Wrote extensive documentation for the tool, formatted using LaTeX.
- The tool is currently in use by the School of Management and Labor Relations at Rutgers and other interested parties to analyze unionization trends among registered nurses in the United States.
- The application is currently available at:

  `https://smlr.rutgers.edu/content/nurse-unionization-data-tool`

  The latest version of the code can be found at:

  `https://github.com/bnoland/nurses_web_tool`

- **Skills used:** R, Shiny, data processing

Independent mathematics tutor
Mercer County Community College, West Windsor, NJ
May 2017–July 2017

- Established an independent tutoring service.
- Tutored students from Mercer County Community College in mathematics (mainly calculus and precalculus).

Programming intern
Alan M. Voorhees Transportation Center, Bloustein School of Planning and Public Policy, Rutgers University, New Brunswick, NJ
June 2016–November 2016

- Formulated heuristic methods for detecting possible groups of riders in Citi Bike trip data.
- Designed and implemented R scripts to process the raw data and implement these methods. The latest versions of the scripts can be found at:

  `https://github.com/bnoland/citibike`

- Implemented a website for visualizing the results of this study, using Google Fusion Tables to store the processed data and the Google Maps API to visualize it. The source can be found at:

  `https://github.com/bnoland/citibike-map`

- **Skills used:** R, data processing, HTML, CSS, JavaScript, SQL

Programming intern
Vertices, LLC, New Brunswick, NJ
May 2015–August 2015

- Worked on Mappler, an online geographic information system (GIS) tool. Designed and implemented a feature that allows users to upload images, extracts GPS data from the images, and adds them to the map database. Used PHP for the backend code, and JavaScript for the frontend.
- Implemented a daemon in Python for extracting images and associated GPS data from email accounts and adding them to a map database.
- **Skills used:** HTML, CSS, JavaScript, PHP, Python, SQL

Programming intern
Alan M. Voorhees Transportation Center, Bloustein School of Planning and Public Policy, Rutgers University, New Brunswick, NJ
July 2014–August 2014

- Designed and implemented a website that maps crashes involving vehicles and pedestrians (including bicyclists) using data provided by the New Jersey Department of Transportation.
- The site allowed the user to submit search queries to filter the data. Google Fusion Tables was used to store the data, and visualization was done using the Google Maps API.
- **Skills used:** HTML, CSS, JavaScript, SQL

Extracurricular Activities

Head of Computer Club
Princeton High School, Princeton, NJ
September 2009–February 2012

- Worked with club members towards developing a robot that could navigate a maze.
- Organized fundraising for the club.
- Taught other students the basics of programming.

Skills

Statistics and data analysis skills:

- Knowledge of statistical theory (classical and some Bayesian).
- Knowledge of a variety of modeling techniques (for both inference and prediction).
  - Ordinary least squares regression
  - ANOVA
  - Time series analysis
  - Multivariate analysis
  - Generalized linear models (e.g., logistic and Poisson regression)
  - Penalized linear regression methods (ridge regression and the LASSO)
  - Classification methods (e.g., logistic regression, LDA, QDA, KNN, SVMs)
  - Bootstrapping methods
  - Unsupervised techniques (e.g., clustering methods and PCA)
  - Deep learning and neural networks
  - Others (e.g., spline methods and tree-based methods)
- Proficient in data processing using R (including data wrangling, modeling, and visualization), as well as building web applications with Shiny.
- Experience with Python data analysis tools (NumPy, pandas, scikit-learn, etc.).
- Experience using Keras to build deep learning models.
- Some experience with Stata.

Computer skills:

- **Proficient with:** R, Python, C, Java, LaTeX, Unix, Windows, Git, Microsoft Office (and similar tools)
- **Experience with:** MATLAB, Stata, JavaScript, HTML, CSS, PHP, MySQL, x86 assembly language
- **GitHub account:** `https://github.com/bnoland`

Honors

- **2014 Rutgers Academic Excellence Award**, April 2014
- **Princeton High School Computer Science Award**, June 2012