

# Shannon Gallagher

## Curriculum Vitae

### Education

- 2014–2019 **PhD in Statistics and Data Science**, *Carnegie Mellon University*.
- 2014–2015 **MS in Statistics**, *Carnegie Mellon University*.
- 2010–2014 **BS in Mathematical Sciences**, *Carnegie Mellon University*.  
University and College Honors

### Dissertation

- Expected 2019 "Building a Hybrid Model from Compartment and Agent-based Models." Advisor: William F. Eddy. Committee: Joel Greenhouse, Howard Seltman, Cosma Shalizi, and Samuel L. Ventura.

### Publications and Reports

- 2018 Gallagher, S., Richardson, L., Ventura, S.L., and Eddy, W.F. "SPEW: Synthetic Populations and Ecosystems of the World." Tentatively accepted to *Journal of Computational and Graphical Statistics*, 2018.
- 2018 Gallagher, S. and Eddy, W.F. "On the stochastic equivalence of compartment and agent-based models." Submitted, 2018.
- 2018 Gallagher, S., Chang, A., and Eddy, W.F. "21 dubious ways to estimate  $R_0$ ." In preparation, 2018.
- 2017 Gallagher, S. "Comparing compartment and agent-based models." Proposal Document, 2017.
- 2016 Gallagher, S., Rosenfeld, R., Eddy, W.F., and Tibshirani, R.J. *Prediction Fever: Modeling Influenza with Regional Effects*. Advanced Data Analysis Report, 2016.

### Selected Presentations and Posters

- 2017 "Comparing Compartment and Agent-based Models." Presentation. Advisor: William F. Eddy. Committee: Joel Greenhouse, Howard Seltman, Cosma Shalizi, and Samuel L. Ventura. Joint Statistical Meetings. Baltimore, MD.
- 2017 "Generating Synthetic Ecosystems: A Tutorial". **Invited presentation**. Joint work with Lee Richardson, Samuel Ventura, and William Eddy. International Conference on Synthetic Populations. Lucca, Italy.
- 2016 "Women in Statistics at Carnegie Mellon University." Joint work with Purvasha Chakravarti. Presentation. Women in Statistics and Data Science. Charlotte, NC.
- 2016 "Statistical Modelling of Infectious Diseases: Influenza and the 'Next Disease.'" Poster. Joint work with Roni Rosenfeld, Ryan Tibshirani, Lee Richardson, Samuel Ventura, and William Eddy. Women in Statistics and Data Science. Charlotte, NC.

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- 2016 “Services for the MIDAS Network: Visualization and Synthetic Ecosystems.” Poster. Joint work with Lee Richardson, Samuel Ventura, and William Eddy. MIDAS National Conference. Washington D.C.
- 2016 “From Forecasting the Flu to Predicting the ‘Next’ Disease.” Poster. Joint work with Roni Rosenfeld, Ryan Tibshirani, Lee Richardson, Samuel Ventura, and William Eddy. UP-STAT. Buffalo, NY.

## Software

- 2018-Present **catalyst**: Compartment and Agent-based model Temporal Analysis and Testing. In development.
- 2016-Present **spew**: R package for synthetic ecosystem generation. Lee Richardson, Shannon Gallagher, Samuel L. Ventura, and William F. Eddy.
- 2017 **spew\_d1**: R Shiny application to easily browse our synthetic ecosystems produced by **spew**. Shannon Gallagher, Lee Richardson, Samuel L. Ventura, and William F. Eddy.
- 2016 **spewview**: R Shiny application for infectious disease visualization. Shannon Gallagher and Lee Richardson.

## Honors and Awards

- 2017 AT&T Labs Graduate Student Symposium Selected Presenter. One of fourteen PhD students out of 79 applicants selected to give a presentation on ongoing research to AT&T researchers in NYC. **Awarded \$800** in travel funding.
- 2016 MIDAS MISSION Public Health **Hackathon Champion**.
- 2016 UP-STAT **2nd Place Student** Presentation.
- 2014 Gertrude M. Cox Scholarship Honorable Mention; ASA Committee on Women in Statistics and the Caucus for Women in Statistics.
- 2014 Judith A. Resnik Award for Outstanding Women in the Sciences; Carnegie Mellon University.
- 2013 Phi Beta Kappa Honor Society.

## Research, Teaching, and Work Experience

- 2014-Present **Research Assistant**, Carnegie Mellon University. Generated high-resolution synthetic ecosystem of U.S. and 70+ countries for use in agent-based models for transmission of disease.
- 2012-Present **Teaching Assistant**, Carnegie Mellon University. Oversaw lab for 100 students, organized, and led review sessions for a variety of statistics and mathematics classes including Epidemiology, Statistical Computing, Intro to Probability, Advanced Undergraduate Research, Concepts of Mathematics, and Calc 3D.
- 2015 **Graduate Intern**, PNC. Scraped and analyzed social media data for sentiment analysis. Parallelized code with Hadoop.

## Programming Languages

R (expert), julia (proficient), Python (intermediate), C++ (intermediate), C (intermediate), SQL (some experience), jekyll (some experience)

## Professional Service

- 2017-Present **President.** Carnegie Mellon University Women in Statistics. Organized a panel about applying to graduate school for 30+ undergraduate and masters students. Organized a seminar by a former PhD student about her experiences as a post-doc at Harvard Biostatistics. Organized dinner with new dean of Mellon College of Science.
- 2016-Present **Co-organizer.** Pittsburgh useR. Organized meet-ups for 30+ members on a variety of topics including cross-language coding and integrating R with github.
- 2016-Present **Reviewer.** Statistics in Medicine and Journal of Quantitative Analysis in Sports.
- 2016-Present **Judge and volunteer.** Tartan Data Science Cup – 3 to date.
- 2016-2017 **Vice President.** Carnegie Mellon University Women in Statistics
- 2016 **Presenter.** Coding for Girls.

## Relevant Course Work

- Machine Learning I & II (**Grad**)
- Statistical Computing (**Grad**)
- Modern Regression (**Grad**)
- Hierarchical Models (**Grad**)
- Multivariate Methods & Data Mining
- Data Matching and Record Linkage
- Advanced Methods for Data Analysis
- Epidemiology