

# Nicholas Michaud

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RESEARCH INTERESTS	Bayesian methods and inference - especially as applied to public health and epidemiological data - statistical computing, interactive statistical graphics.
EDUCATION	<b>Department of Environmental Science, Policy and Management and Department of Statistics, University of California, Berkeley</b> Postdoctoral Scholar, started August 2016 <ul style="list-style-type: none"><li>• Advisors:<ul style="list-style-type: none"><li>◦ P. de Valpine (Department of Environmental Science, Policy and Management, UC Berkeley)</li><li>◦ C. Paciorek (Department of Statistics, UC Berkeley)</li></ul></li></ul> <b>Department of Statistics, Iowa State University</b> Ph.D., Statistics, August 2016 <ul style="list-style-type: none"><li>• Advisor: Jarad Niemi</li><li>• Ph.D. Dissertation: <i>Bayesian Models and Inferential Methods for Forecasting Disease Outbreak Severity</i></li></ul> M.S., Statistics, May 2012 <ul style="list-style-type: none"><li>• Advisor: Philip Dixon</li><li>• Creative Component: <i>Joint Modeling of Survey and Survival Data to Estimate Population Trends in Mourning Doves</i></li></ul> <b>Bard College</b> B.A. in Mathematics and Economics, May 2009
SUBMITTED PAPERS	Michaud, N., de Valpine, P., Turek, D., and Paciorek, C. J. <i>Sequential Monte Carlo Methods in the nimble R Package</i> . Journal of Statistical Software.
CONFERENCE TALKS AND POSTERS	Michaud, N., Niemi, J. <i>A Bayesian Hierarchical Model for Predicting Influenza Epidemic Severity</i> , Poster Presentation, Conference on Data Analysis, Santa Fe, New Mexico. (March 2016) <ul style="list-style-type: none"><li>• 2nd place, ASA Defense and National Security Section Poster Award.</li></ul> Michaud, N., Kite-Powell, A., and Niemi, J. <i>CDCPlot: an Application for Viewing Weekly CDC MMWR Disease Count Data</i> , Poster Presentation, ISDS Conference, Denver, Colorado. (December 2015). Available at <a href="https://michaud.shinyapps.io/CDCPlot/">https://michaud.shinyapps.io/CDCPlot/</a> .

Michaud, N., Dixon, P., Clark, W., Fortin, D., and Howerter, D. *Using Ripley's L-Function to Examine Spatial Clustering in Duck Nests*, Poster Presentation, Joint Statistical Meetings, Montreal. (August 2013)

Michaud, N., Dixon, P. *Joint Modeling of Survey and Survival Data to Estimate Population Trends in Mourning Doves*, Contributed Talk, Joint Statistical Meetings, San Diego, California. (August 2012)

#### HONORS AND AWARDS

2016 2nd Place, ASA Defense and National Security Section Poster Award, CoDA Conference 2016  
2013 Teaching Excellence Award

#### TEACHING EXPERIENCE

2014 - 2016 Instructor, Introduction to Statistics (Stat 104)  
Responsible for lectures, laboratories, developing course notes, and creating exams for an introductory statistics class of approximately 60 students.  
2011 - 2014 Instructor, Principles of Statistics (Stat 101)  
Responsible for lectures, developing course notes, and creating exams for an introductory statistics class of approximately 100 students.  
2010 - 2011 Teaching Assistant, Principles of Statistics (Stat 101)  
Responsible for leading laboratory sections and grading homework.

#### RESEARCH EXPERIENCE

2015 - 2016 *Google Summer of Code Project: Sequential Monte Carlo Algorithms in the NIMBLE R Package*  
Advisors: P. de Valpine (Department of Environmental Science, Policy and Management, UC Berkeley)  
C. Paciorek (Department of Statistics, UC Berkeley)  
As a participant in the Google Summer of Code, I programmed a suite of sequential Monte Carlo algorithms for general models to be included in the NIMBLE R package. These generic algorithms can be applied to any state space model written in the BUGS language. Algorithms that were programmed include the Bootstrap Filter, Auxiliary Particle Filter, Liu and West Filter, Ensemble Kalman Filter, and a particle MCMC algorithm.  
2014 - 2016 *Bayesian Methods for Forecasting Disease Epidemics*  
Advisor: J. Niemi (Department of Statistics, Iowa State University)  
My dissertation focused on using Bayesian methods and hierarchical models to improve forecasting and analysis of infectious disease epidemics. Frequently these models combine multiple data streams, including traditional disease incidence data from the CDC and crowd-sourced data from online sources, to obtain forecast estimates that are robust to noise in individual data streams.  
2011 - 2012 *Joint Modeling of Survey and Survival Data to Estimate Population Trends in Mourning Doves*  
Advisor: P. Dixon (Department of Statistics, Iowa State University)  
We created a Bayesian hierarchical model for population trend estimation which combined four data streams of dove abundance, in conjunction with age and location-

specific survival information from a band recovery program. The hierarchical model, through the inclusion of survival data, more accurately models the underlying ecological processes driving trends in dove population.

## PROFESSIONAL EXPERIENCE

2015                      **Marion County Department of Public Health**  
Marion, Indiana  
*Remote Statistical Programmer*

Created applications using the Shiny R package to diagnose data quality. Application features included plots and tables of weekly data by location, as well as user-specified alerts if data sources stopped providing data, or sent in data which was inconsistent with previous weeks.

## RELEVANT SKILLS

- Statistical Computing: R, WinBUGS, JAGS, STAN, some experience with SAS.
- Programming Languages: C, C++, Unix shell scripts, and some experience with Java.
- Applications and Content Management: L<sup>A</sup>T<sub>E</sub>X, Git.

## SERVICE

2012                      STATers treasurer.  
2011                      STATers, social organization for graduate students, first-year representative.  
2010 – 2016            STATers member.