

# DANIEL B. TUREK

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36 Haley Street, Williamstown, MA 01267, USA

Citizenship: USA, Poland

## EDUCATION

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*University of Otago*

*Dunedin, New Zealand*

**Ph.D.**, Statistics

2013

Thesis: "Frequentist model-averaged confidence intervals"

*Massachusetts Institute of Technology*

*Cambridge, Massachusetts*

**Undergraduate GPA: 4.9/5.0**

**Graduate GPA: 5.0/5.0**

**Master of Engineering**, Electrical Engineering and Computer Science

2004

Thesis: "Design of efficient digital interpolation filters for integer upsampling"

**Bachelor of Science**, Electrical Engineering and Computer Science

2003

**Bachelor of Science**, Mathematics

2003

**Minor**, Physics

2003

**Concentration**, Japanese

2003

## EXPERIENCE

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*Williams College, Williamstown, Massachusetts*

2016 – *current*

*Department of Mathematics and Statistics*

**Assistant Professor of Statistics**

**Courses taught:**

STAT101: Elementary Statistics & Data Analysis

STAT201: Statistics & Data Analysis

STAT202: Introduction to Statistical Modeling

STAT359: Statistical Computing

STAT360: Statistical Inference

STAT365: Bayesian Statistics

Chess, Speed Chess, Bughouse (Winter Study)

**Senior Thesis Supervision:**

"Bayesian Estimation of Age at First Capture in Mark-Recapture Studies of Trinidadian Guppies" (Sophie Lu '19)

"Bayesian Hierarchical Model for Estimating Particulate Matter (PM<sub>10</sub>) Levels in South

Korea” (Youngsoo Baek '19)

“A Comparison of Bayesian and Frequentist Model Averaging in Predicting the Demographics of Voter Turnout” (Kathryn Grice '17)

**Service:**

High Performance Computing Cluster (HPCC) Math & Stat Dept. Liason (2016-2019)

Statistics Department Colloquium Chair (2017, 2019)

Statistics Department Hiring Committee (2017-2019)

Honour & Discipline Committee (2018-2019)

SCS Implementation Committee (2017-2018)

*University of California, Berkeley, California*

2014 – 2016

*Berkeley Institute for Data Science*

**Data Science Fellow**, Researching software tools and environments, reproducibility and open science, data science education, career paths and alternative metrics.

**Data Science Collaborative**, Cross-campus collaborative data science research initiative. Served on leadership team and as statistical advisor.

**Conference Organization**, Reproducibility Conference, and Data Structures for Data Science Workshop.

*University of California, Berkeley, California*

2013 – 2016

*Department of Statistics*

**Postdoctoral Research Scholar**, Core development of open-source statistical software project for the analysis of hierarchical models. Responsibilities include: core software development, algorithm development and testing (including Markov chain Monte Carlo, sequential Monte Carlo, Markov chain expectation maximization, and other likelihood-based algorithms), and application-based research projects.

*University of Otago, Dunedin, New Zealand*

2010 – 2013

*Department of Mathematics and Statistics*

**Lecturer**, Statistical Methods, and Introduction to Biostatistics.

**Teaching Assistant**, Bayesian Statistics, Multivariate Methods, and Statistical Modeling for Research.

**Conference Organization**, New Zealand Statistical Association Conference.

*New Community Jewish High School, West Hills, California*

2007 – 2009

*Department of Mathematics*

**Mathematics Teacher**, Multi-Variable Calculus, Pre-Calculus, and Algebra.

**Course Organization**, Developed Multi-Variable Calculus curriculum.

*Northrop Grumman Space Technology, Redondo Beach, California*

2004 – 2007

**Aerospace Engineer**, National Polar-Orbiting Operational Environmental Satellite System (NPOESS). Developed sensor error budgets and data latency analyses.

## GRANTS AND EXTERNAL FUNDING

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### Fulbright Research Scholarship

Fulbright U.S. Core Research Scholarship Award #9183-FR, granted by the J. William Fulbright Foreign Scholarship Board, and the Franco-American Fulbright Commission. €16,800 (2019 – 2020).

### Class of 1945 World Fellowship

Williams College Class of 1945 World Fellowship, supporting Assistant Professor Leave sabbatical research in France. \$18,980 (2019 – 2020).

### National Geographic Society: AI For Earth Grant

National Geographic Grant #NGS-55651T-18, “Developing the first open source, scalable bird song classification software,” J. Kitzes (PI). \$91,208 (2018 – 2019).

### NSF SI2-SSI: Integrating the NIMBLE Statistical Algorithm Platform with Advanced Computational Tools and Analysis Workflows

Senior Personnel, Subaward of NSF Grant #1550488, with P. de Valpine (PI), B. Shaby, D. Temple Lang, and C. Paciorek. \$74,820 (2016 – 2020).

## BOOKS

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Justin Kitzes, Daniel Turek, Fatma Deniz (Eds.) (2017). *The Practice of Reproducible Research: Case Studies and Lessons from the Data-Intensive Sciences*. Oakland, CA: University of California Press.

## PUBLICATIONS

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Dao Nguyen, Perry de Valpine, Yves Atchade, Daniel Turek, Nicholas Michaud and Christopher Paciorek. Nested adaptation of MCMC algorithms. *Bayesian Analysis (under review)*.

Cyril Milleret, Pierre Dupont, Joseph Chipperfield, Daniel Turek, Henrik Brøseth, Olivier Gimenez, Perry de Valpine and Richard Bischof. Estimating abundance with interruptions in data collection using open population spatial capture-recapture models. *Ecological Applications (under review)*.

Chloé R. Nater, Yngvild Vindenes, Per Aass, Diana Cole, Øystein Langangen, S. Jannicke Moe, Atle Rustadbakken, Daniel Turek, L. Asbjørn Vøllestad and Torbjørn Ergon. Size- and stage-dependence in cause-specific mortality of migratory brown trout. *Journal of Animal Ecology (under review)*.

- Chad M. Topaz, Bernhard Klingenberg, Daniel Turek, Brianna Heggeseth, Pamela E. Harris, Julie C. Blackwood, C. Ondine Chavoya, Steven Nelson and Kevin M. Murphy (2019). Diversity of artists in major U.S. Museums. *PLoS ONE*, 14(3): e0212852.
- Floriane Plard, Daniel Turek, Martin U. Gruebler and Michael Schuab (2019). IPM<sup>2</sup>: Toward better understanding and forecasting of population dynamics. *Ecological Monographs*.
- Adam R. Zeilinger, Daniel Turek, Daniele Cornara, Anne Sicard, Steven E. Lindow and Rodrigo P. P. Almeida (2018). Bayesian vector transmission model detects conflicting interactions from transgenic disease-resistant grapevines. *Ecosphere*, 9(11).
- Adam R. Zeilinger, Giovanni Rapacciuolo, Daniel Turek, Peter T. Oboyski, Rodrigo P. P. Almeida and George K. Roderick (2017). Museum specimen data reveal emergence of a plant disease may be linked to increases in the insect vector population. *Ecological Applications*, 27(6): 1827-1837.
- Daniel Turek, Perry de Valpine, Christopher Paciorek and Clifford Anderson-Bergman (2017). Automated parameter blocking for efficient Markov chain Monte Carlo sampling. *Bayesian Analysis*, 12(2): 465-490.
- Perry de Valpine, Daniel Turek, Christopher Paciorek, Clifford Anderson-Bergman, Duncan Temple Lang and Rastislav Bodik (2017). Programming with models: writing statistical algorithms for general model structures with NIMBLE. *Journal of Computational and Graphical Statistics*, 26(2): 403-413.
- Daniel Turek, Perry de Valpine and Christopher Paciorek (2016). Efficient Markov chain Monte Carlo sampling for hierarchical hidden Markov models. *Environmental and Ecological Statistics*, 23(4): 549-564.
- Daniel Turek (2015). Comparison of the frequentist MATA confidence interval with Bayesian model-averaged confidence intervals. *Journal of Probability and Statistics*, 2015(1).
- Jennifer Turek, Elisabeth Slooten, Stephen Dawson, William Rayment and Daniel Turek (2013). Distribution and abundance of Hector's dolphins off Otago, New Zealand. *New Zealand Journal of Marine and Freshwater Research*, 47(2): 181-191.
- Daniel Turek and David Fletcher (2012). Model-averaged Wald confidence intervals. *Computational Statistics and Data Analysis*, 56(9): 2809-2815.
- David Fletcher and Daniel Turek (2012). Model-averaged profile likelihood intervals. *Journal of Agricultural, Biological, and Environmental Statistics*, 17(1): 38-51.

# PRESENTATIONS

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- Joint Statistical Meetings* 2018  
*Vancouver, Canada*  
“Efficient MCMC for Spatial Population Modeling”
- International Statistical Ecology Conference* 2018  
*St. Andrews, Scotland*  
“Efficient MCMC for Spatially Explicit Capture-Recapture”
- American Statistical Association Symposium on Data Science and Statistics* 2018  
*Session: The Best of the Journal of Computational and Graphical Statistics 2017*  
*Reston, Virginia*  
“Programming With Models: Statistical Algorithms for General Models With NIMBLE”  
► Invited Talk
- Joint Statistical Meetings* 2017  
*Baltimore, Maryland*  
“Hybrid Adaptive MCMC Block Sampling”
- Book Launch Symposium: The Practice of Reproducible Research* 2017  
*Berkeley, California*  
“Features and Trends of the Reproducibility Case Studies”  
► Invited Talk
- Joint Statistical Meetings* 2015  
*Seattle, Washington*  
“Automated parameter blocking for efficient MCMC sampling”
- Berkeley Institute for Data Science Faire* 2015  
*Berkeley, California*  
“NIMBLE: Programming algorithms for statistical models”
- Joint Statistical Meetings* 2014  
*Boston, Massachusetts*  
“Efficient and flexible hierarchical algorithms using the NIMBLE software package”
- International Statistical Ecology Conference* 2014  
*Montpellier, France*  
“Efficient and flexible MCMC algorithms using the NIMBLE software package”
- New Zealand Statistical Association Conference* 2012  
*Dunedin, New Zealand*

“A new approach to model-averaged confidence intervals”

*International Statistical Ecology Conference* 2012  
*Krokkeiva, Norway*

“A new approach to model-averaged confidence intervals”

► Best Student Talk Award

*New Zealand Mathematics and Statistics Postgraduate Conference* 2011  
*Wellington, New Zealand*

“Model-averaged Wald confidence intervals”

► Best Statistics Talk Award

*New Zealand Mathematics and Statistics Postgraduate Conference* 2010  
*Westport, New Zealand*

“Model-averaged profile likelihood intervals”

## WORKSHOPS

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**Applied Bayesian Computation: The NIMBLE Platform** 2019  
*València International Bayesian Analysis Summer School*  
*València, Spain*

Sole instructor, two-day workshop

**Software Carpentry** 2016  
*Berkeley Institute for Data Science*  
*Berkeley, California*

Co-instructor, two-day workshop

**Software Carpentry** 2015  
*Berkeley Institute for Data Science*  
*Berkeley, California*

Co-instructor, two-day workshop

## AWARDS AND HONOURS

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- Fulbright Research Scholar, Franco-American Fulbright Commission 2019
- Williams College Class of 1945 World Fellowship Recipient 2019
- American Statistical Association Advisory Committee on Reproducible Research 2016

- Data Science Fellow, Berkeley Institute for Data Science 2014
- Best Student Talk, International Statistical Ecology Conference 2012
- Best Statistics Talk, New Zealand Mathematics and Statistics Postgraduate Conference 2011
- Postgraduate Scholarship, University of Otago 2009
- Special Employee Award for Technical Excellence, Northrop Grumman Space Technology 2006
- Phi Beta Kappa Academic Honor Society 2003

## SKILLS AND INTERESTS

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- Programming languages: C, C++, Python, Perl, Lisp, SQL, MATLAB, Octave, L<sup>A</sup>T<sub>E</sub>X.
- Statistical software: NIMBLE, R, Stan, WINBUGS, JAGS, SPSS.
- Big data manipulation and statistical analysis using Apache Spark.
- Spoken languages: English, Spanish, French, Japanese.
- SCUBA certifications: Advanced Open Water, Rescue Diver, Dive Master.
- Avid long-distance bicycle tourist, including: USA, Europe, Asia, New Zealand.
- National level ultimate frisbee competitor: USA, New Zealand.