Curriculum Vitae

CONTACT

Natalie Karavarsamis

Department of Mathematics and Statistics, La Trobe University
Melbourne 3086, VIC Australia

n.karavarsamis@latrobe.edu.au

School of Mathematics and Statistics, The University of Melbourne
Melbourne 3010, VIC Australia

nkarav@unimelb.edu.au

natalie-karavarsamis.github.io

La Trobe staff profile

ACADEMIC POSITIONS

2018–
- Lecturer of Statistics, School of Mathematics and Statistics, La Trobe University.
- Honorary Research Fellow, School of Mathematics and Statistics, University of Melbourne.

2017
- Lecturer of Statistics, School of Mathematics and Statistics, University of Melbourne.
- Postdoctoral Research Fellow, School of Biosciences, University of Melbourne.
- Honorary Research Fellow, School of Mathematics and Statistics, University of Melbourne.

2016
- Lecturer, School of Mathematics and Statistics, University of Melbourne.
- Postdoctoral Research Fellow, School of Biosciences, University of Melbourne.
- Honorary Research Fellow, School of Mathematics and Statistics, University of Melbourne.

2015
- Postdoctoral Research Fellow, School of Mathematical and Geospatial Sciences, RMIT University.

2009–2014
- PhD Candidate, School of Mathematics and Statistics, University of Melbourne.
- Teaching Assistant, School of Mathematics and Statistics, University of Melbourne.

2008
- Research Fellow, School of Food and Land Sciences, University of Melbourne and Deakin University.
- Teaching Assistant, School of Mathematics and Statistics, University of Melbourne.

2004–2007
- Biometrician, Department of Primary Industries, Victorian State Government, Australia.
- Research Associate, Department of Primary Industries, Victorian State Government, Australia.
- Supervisor, Department of Primary Industries, Victorian State Government, Australia.
- Teaching Assistant, School of Mathematics and Statistics, University of Melbourne.

2001–2003
- Biostatistician, Cancer Epidemiology Centre, Cancer Council of Victoria, Australia.
- Research Associate, Cancer Epidemiology Centre, Cancer Council of Victoria, Australia.
- Teaching Assistant, School of Mathematics and Statistics, University of Melbourne.

2000
- Honours Candidate in Statistics, School of Mathematics and Statistics, University of Melbourne.
- Research Assistant, Statistical Consulting Centre, School of Mathematics and Statistics, University of Melbourne.

1999 Research Assistant, School of Medicine, University of Crete, Greece.

1998– Private Tutor.

1997 Business Analyst.

EDUCATION   2015
Ph.D. in Statistics. School of Mathematics and Statistics, University of Melbourne, Australia. Thesis: Methods for estimating occupancy. Supervisors: Prof. Richard Huggins, A/Prof. Ray Watson, Ass. Prof. Andrew Robinson and Ass. Prof. Graham Hepworth.

2000
B.Sc. Honours degree in Statistics - 1$^{\text{st}}$ Class Honours. School of Mathematics and

Statistics, University of Melbourne, Australia. Thesis: Methods of Meta-Analysis. Supervisors: Dr Ken Sharpe and Ass. Prof. Ian Gordon.

1996
B.Sc. in Statistics and Operations Research. School of Mathematics and Statistics, University of Melbourne, Australia.

TEACHING COORDINATOR

La Trobe University, School of Mathematics and Statistics
- 2019– STM3EPS Engineering Probability and Statistics – 3rd year Undergraduate.
- 2018– STA3AS   Applied Statistics – 3rd year Undergraduate & 4th year Honours, Advanced statistical methods.
- 2018– STA2ASM Applied Statistical Methods – 2nd year Undergraduate.
- 2018 STA3LM   Linear Models (3rd year undergraduate, Advanced statistical methods.

University of Melbourne, School of Mathematics and Statistics
- 2016–2017 Thinking and Reasoning with Data – Masters Postgraduate.

TEACHING ASSISTANT

University of Melbourne, School of Mathematics and Statistics
- 2001–2017 Experimental Design and Data Analysis (MAST10001) (1st year undergraduate, introductory statistics for biologists.
- 2008–2017 Data Analysis (1st Year Undergraduate.
- 2010–2017 Statistics for Research Workers (postgraduate and professional, intensive 6-day short course ran by the Statistical Consulting Centre).
- 2009 Critical Thinking with Data (1st year undergraduate).
- 2008–2007 Applied Statistics (2nd year undergraduate).
- 2008–2007 Experimental Design/Statistical Methods (2nd year undergraduate).
- 2008 Experimental Design and Data Analysis for Biomedical Science (1st year undergraduate).
- 1999– Tutor - private, Primary, secondary (including Year 11 and 12): Maths, Science, Chemistry, Physics. Undergraduate and postgraduate and professional level of private tutoring in statistics, including courses taught at the School of Maths and Stats, and courses from other University faculties.
- 2006–2007 Tutor - volunteer, Hanover Centre, General reading and comprehension, maths and science to primary and secondary students for the Drop-in After School Tutoring Centre.

INDUSTRY CONSULTING PROJECTS

2006–2007 Validating the yield performance of alternatives to methyl bromide for pre-plant fumigation, TEAP and UNEP. Department of Primary Industries.

2003–2005 Reducing Spoilage and Contamination Risks of Fresh Vegetables in China and Australia, Chinese Collaboration. Department of Primary Industries.

2004–2005 National (Australian) Industry potato grower Project. Department of Primary Industries.

2004 Import Risk Analysis for Apples from New Zealand. Department of Primary Industries.

2001–2003 Melbourne Collaborative Cohort Study (MCCS) (commenced 1990). Cancer Council of Victoria.

2001–2003 Eating Patterns and Food Consumption Survey and Methods Development, MCCS, Cancer Council of Victoria.

2001–2003 Nutrient Analysis Methods Development and Testing. Software testing (Visual Basic- VBA) and software development (STATA). Cancer Council of Victoria.

1999 European Union Seven Countries Study. School of Medicine, University of Crete, Greece.

CURRENT RESEARCH FOCUS

Methods: Partial likelihoods; Zero-inflated data; Inference for zero-inflated data; GLMM; Statistical ecology methods; Hypothesis test for two sample occupancy models; Circular distributions; Cylindrical distributions; Time-series.

Applications: Analysis of high-dimensional data sets in life and social sciences, including data from neuroscience; Statistical ecology methods and applications, including spatio-temporal modeling for biological data.

MANUSCR-IPTS IN PREPARA-TION

1. **Karavarsamis, N.**, Huggins, R.M.. Two-stage approaches to the analysis of occupancy data with GAMs.
2. **Karavarsamis, N.**, Ullmann, J., Ngyuen, H. and Reutens, D.. Adult Zebrafish locomotor behaviour for controls with the cylindrical distribution.
3. **Karavarsamis, N.**, Ullmann, J., Ngyuen, H. and Reutens, D.. HMMs for Zebrafish.
4. **Karavarsamis, N.** and Watson, R.. Plausible region for estimating occupancy.
5. **Karavarsamis, N.** and Watson, R.. Bias of occupancy estimator.
6. **Karavarsamis, N.** and Huggins, R.M.. A two-stage approach to the analysis of occupancy data III. The Heterogeneous case with GAMs.
7. Staudte, R.G., **Karavarsamis, N.**. Evidence for goodness-of-fit in Chi-squared tests.
8. Semmens, K., **Karavarsamis, N.**, Watson, S.J., Griffiths, S.R.. Installing chainsaw-carved hollows in medium-sized developing trees increases rates of visitation by cavity-dependent fauna.

PUBLICATIONS

1. **Karavarsamis, N.** and Huggins, R.M. (2019). A two-stage approach to the analysis of occupancy data I. The Homogeneous case. *Communications in*

Statistics - Theory and Methods. `arXiv:1804.08694`
`DOI: 10.1080/03610926.2019.1607385.`

2. **Karavarsamis, N.** and Huggins, R.M.(2019). A two-stage approach to the analysis of occupancy data II. The Heterogeneous case. *Computational Statistics and Data Analysis*, 133:195–207. (`https://doi.org/10.1016/j.csda.2018.09.009`).

3. Bagnall, J., Jones A., **Karavarsamis, N.** and Nguyen H. (2019). The Fully-Visible Boltzmann Machine and the Senate of the 45th Australian Parliament in 2016. *Journal of the Royal Statistical Society. Under revision.* (`https://dx.doi.org/10.2139/ssrn.3287903`).

4. **Karavarsamis, N.**, Guillera-Arroita, G., Huggins, R.M. and Morgan, B. (2018). How can the score test be consistent?. *Under revision.* `arXiv:1805.05002`.
   (2015) **Karavarsamis, N.**. Methods for Estimating Occupancy. PhD thesis.

5. (2015) Mara, D., Hamilton, A.J., Sleigh, A., **Karavarsamis, N.**, Razak Seidu.. Tools for Risk Analysis: Updating the 2006 Guidelines. Wastewater Irrigation and Health. Earthscan.

6. **Karavarsamis, N.**, Robinson, A. P., Hepworth, G., Hamilton, A.J. and Heard, G.W. (2013). Comparison of four bootstrap-based interval estimators of species occupancy and detection probabilities. *Australian and New Zealand Journal of Statistics*, 55(3):235–252.

7. Kreidl, S., Holmes, R., Partington, D., **Karavarsamis, N.** (2012). The effect of calcium and nitrogen nutrition on the development of postharvest rots in pak choi. *Acta horticulture*, 944:73–82.

8. Mara, D., Hamilton, A.J., Sleigh, A., **Karavarsamis, N.** (2011). Tools for risk assessment: updating the 2006 WHO guidelines. *Wastewater irrigation and health: Assessing and mitigating risk in low–income countries.* Earthscan, IDRC and IWMI. Editors: P. Drechsel and C.H.Scott and L. Easchild-Sally ajnd M. Redwood and A. Bahri (89–100).

9. **Karavarsamis, N.** and Hamilton, A.J. (2010). Estimators of Annual Probability of Infection for quantitative microbial risk assessment. *Journal of Water and Health*, 8(2):365–373.

10. **Karavarsamis, N.** (2010). Safeguarding our species. *The Age; The Voice*, June, 6(6). (`http://voice.unimelb.edu.au/volume-6/number-6/safeguarding-our-species`).

11. Mara D, Hamilton AJ, Sleigh A, **Karavarsamis N.**, Seidu R. (2009). Tools for risk analysis: Updating the 2006 WHO guidelines. In Wastewater Irrigation and Health: Assessing and Mitigating Risk in Low-income Countries. 89-100. (Book Chapter).

12. **Karavarsamis, N.**, and Hamilton, A.(2008). Estimators of Annual Probability of Infection. Australian Statistical Conference (ASC2008), Australian Mathematical Sciences Institute (AMSI) and Statistical Society of Australia Inc. (SSAI).

13. Porter, I.J., Trinder, L., Partington, D., Banks, J., Smith, S., Hannah, M., **Karavarsamis, N.** (2006). Special report validating the yield performance of alternatives to Methyl Bromide for preplant fumigation. *TEAP/MBTOC Special Report, UNEP Nairobi.*

14. **Karavarsamis, N.** (2005). Control of downy mildew of grapevines by boosting their natural defense system, Final Report to Grape and Wine Research and Development Corporation 2004 – 2005.

15. **Karavarsamis, N.** (2004). Reducing Spoilage and Contamination Risks of Fresh Vegetables in China and Australia, Chinese Collaboration.

16. **Karavarsamis, N.** (2004). Submission (to Australian Government) for the Revised Draft Import Risk Analysis Report for Apples from New Zealand.

17. Giles, G., English, D., **Karavarsamis, N.**, Thursfield, V. (2003). Cancer Survival in Victoria – Relative survival for selected cancers diagnosed from 1982 to 1997 with follow-up to 2000. *Cancer Council Monographs.*

18. **Karavarsamis, N.** (2003). Survival in women in the Victorian breast survey management cohorts: 1986-1995. *Cancer Council Monographs.*

19. **Karavarsamis, N.** (2003). Nutrient Analysis Software – Stata language. Commercial Release of Software.

    Roberts, S., **Karavarsamis, N.**, English, D., Giles, G. (2001). Hepatocellular carcinoma in Victoria Australia: survival and prognostic factors. 53rd Annual Meeting of the Association for the Study of Liver Diseases (AASLD), Boston, Massachusetts. *Hepatology.* (Conference publication)

ACADEMIC SERVICE

Editorial Positions

2018– Technical Sub-Editor, Australian and New Zealand Journal of Statistics (Wiley).

Peer Review

– Journal of Pediatric Rehabilitation Medicine (IOS Press).

– Austral Ecology, A Journal of ecology in the Southern Hemisphere, Ecological Society of Australia (Wiley).

COMMITTEES

2018 Founder and Administrator, Statistics Journal Club , Department of Mathematics and Statistics, La Trobe University.

2017 Founder & Committee Member, Mathematics & Statistics Female PhD & Academic Mentoring Program.

2014–2017 Member, Equity Plenary Committee, Melbourne University.

2009–2012 Journal Club organiser and presenter, School of Mathematics and Statistics, University of Melbourne.

2010 Organising committee member for the 2010 Victorian Mathematics and Statistics Student Conference, School of Mathematics and Statistics, Melbourne University.

2003–2005 Co-founder and Committee Member, Young Statisticians of Statistical Society Australia (SSA), Victoria, Australia.

OUTREACH 2018 Invited Speaker & Discussion Panel Member, Choose Maths, La Trobe University.

2017 Mentor, Mathematics & Statistics Female PhD & Academic Mentoring Program .

2012 Invited teacher, Year 9 Mathematics Class.

2009–2014 Mentor, International Students, University of Melbourne.

PROFESSIO-NAL SERVICE 2019– Bachelor of Science Course Advisor, Department of Mathematics and Statistics, La Trobe University.

2018– Honours Thesis Reviewer, Department of Mathematics and Statistics, La Trobe University.

2007 Volunteer Tutor, Hanover Center, Melbourne, Australia .

2001–2017 Tutor at the First-Year Learning Centre, Department of Mathematics, University of Melbourne.

2003– Member, Statistical Society of Australia.

CONFERENCE, INVITED PRE-SENTATIONS, AND WORKSHOPS 2019 *Adult Zebrafish locomotor behaviour for controls with the circular distribution and time series.* **Karavarsamis, N.**. Invited Speaker, Statistics Seminar Series, RMIT University, Australia.

2018 *How can the score test be consistent?*, **Karavarsamis, N.**. Invited Speaker, La Trobe–Kyushu Joint Seminar Series, La Trobe University.

2018 *How can the score test be consistent?*, **Karavarsamis, N.**. Speaker, International Statistical Ecology Conference (ISEC) 2018, St Andrews, Scotland.

2018 *How can the score test be consistent?*, **Karavarsamis, N.**. Invited speaker, Statistical Seminar Series, La Trobe University.

2018 Invited Speaker & Discussion Panel Member, Choose Maths Day, La Trobe University.

2014 *Methods for Estimating Occupancy*, **Karavarsamis, N.**. PhD Completion Seminar. School of Mathematics and Statistics, University of Melbourne.

2013 *Occupancy Models*, **Karavarsamis, N.**. Invited Speaker, Fortnightly seminar series. School of Mathematics and Statistics, University of Melbourne.

2010 *Comparison of four bootstrap-based interval estimators of species occupancy and detection probabilities* **Karavarsamis, N.**, Robinson, A. P., Hepworth, G., Hamilton, A.J. and Heard, G.W.. International Statistical Ecology Conference (ISEC), University of Kent, UK.

2010 *Occupancy Methods* **Karavarsamis, N.**. ACERA, University of Melbourne.

2009 *Comparison of four bootstrap-based interval estimators of species occupancy and detection probabilities*, **Karavarsamis, N.**, Robinson, A. P., Hepworth, G., Hamilton, A., and Heard, G.. International Biometrics Society Australasian Region Conference (IBS), Taupo, New Zealand.

2008 *Estimators of Annual Probability of Infection*, **Karavarsamis, N.**. Speaker, Australasian Statistical Conference (ASC), Melbourne, Australia.

2005 The 55th Session of the International Statistical Institute (ISI) . Sydney, NSW Australia. Conference Delegate. Funding: Denise Lievesley Young Statisticians Award, and Department of Primary Industries.

2004 *Design of Experiments*, **Karavarsamis, N.**. Workshop Invited Presentor, Department of Primary Industries, Irymple, Victoria.

2004 International Biometrics Conference joint Statistical Society of Australia (SSAI). Cairns, QLD, Australia. Conference delegate. Funding: Department of Primary Industries (DPI).

2003 **Karavarsamis, N.**. Energy-adjustment methods for nutrient data. Work in Progress (WIP) Statistics Seminars, Centre for Genetic Epidemiology & School of Public Health, University of Melbourne. Convenor: Prof. John Hopper.

2001 The Australasian Epidemiological Conference and the Biostatistics Conference. Sydney, NSW, Australia. (Conference delegate).

GRANTS, AWARDS AND FUNDING

2018 Australian-French Association for Research and Innovation (AFRAN) AUD 3000.

2016 Establishment Grant, School of Mathematics and Statistics, University of Melbourne.

2009–2014 Ph.D. Scholarship, University of Melbourne AUD 6000.

2010 Ph.D. Stipend, Fox Control Program, Parks Victoria AUD 10000.

2010 Melbourne abroad travelling scholarships (MATS), School of Mathematics and Statistics, University of Melbourne.

2010 The Overseas Research Student Belz Award Scheme. School of Mathematics

and Statistics, The University of Melbourne.

2009 Travel Award, School of Mathematics and Statistics, University of Melbourne.

2008 Conference funding, Department of Land and Food Sciences, University of Melbourne.

2005 Denise Lievesley Young Statisticians Award, Statistical Society of Australia.

2004 Travel award, Department of Primary Industries.

2001 Travel award, Cancer Epidemiology Centre (CEC), Cancer Council of Victoria.

SUPERVISION 2018– Co-supervisor, PhD Candidate, Department of Mathematics and Statistics, La Trobe University.

2018 Supervisor, AMSI Summer Scholarships, Department of Mathematics and Statistics, La Trobe University.

2018 Supervisor, AMSI Summer Scholarships, Department of Mathematics and Statistics, La Trobe University.

2004–2005 Supervisor, Research Assistants, Department of Primary Industries.

OTHER ACHIEVE-MENTS 2011 Karavarsamis, N.. "Dance Class". Concept, Executive Producer and Dancer. Contemporary dance performance for 16 dancers with 6 choreographers. 1 year development from concept to performance. Gasworks Theatre Melbourne. Australia.