

## Luis A. Gutiérrez

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### CONTACT INFORMATION

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### RESEARCH INTERESTS

Bayesian nonparametric, Statistical shape analysis, Bayesian hypothesis testing, Graphical models

### ACADEMIC POSITIONS

**Pontificia Universidad Católica de Chile**, Santiago

- Assistant Professor, Department of Statistics 2016–present  
**IIMAS-UNAM**, México, D.F.
- Postdoctoral research fellow, Department of Probability and Statistics 2015–2016  
**Universidad de Chile**, Santiago
- Assistant Professor, School of Public Health, Faculty of Medicine 2011–present  
**Universidad de Concepción**
- Research Assistant (*Statistician*), Department of Instrumental Analysis, 2003–2005  
Supervisors: Glenn Hofmann, Dietrich von Baer

### EDUCATION

**Pontificia Universidad Católica de Chile**, Santiago

Ph.D., Statistics, 2011

- Thesis Topic: *Multivariate Bayesian Methods for Authentication of Food and Beverages*
- Advisor: Fernando Quintana, Ph.D

**Universidad de Concepción**, Concepción

M.S., Forestry Science, 2004

- Thesis Topic: *Using Geostatistics for Determining tree volumes in forests*
- Advisor: Pedro Real, Ph.D

B.S., Forestry Engineer, 2001

### REFEREED JOURNAL PUBLICATIONS

1. Ruiz, P., Arias, N., Pardo, S., Meyer, M., Mesías, S., Galleguillos, C., Schiattino, I. and **Gutiérrez, L.** (2016). Impact of large industrial emission sources on mortality and morbidity in Chile: A small-areas study. *Environment International*. *92–93*: 130–138, 2016
2. **Luis Gutiérrez**, Ramsés Mena, Matteo Ruggiero. A time dependent Bayesian nonparametric model for air quality analysis. *Computational Statistics and Data Analysis*. *95*: 161–175, 2016
3. **Luis Gutiérrez**, Eduardo Gutiérrez-Peña, Ramsés Mena. Bayesian nonparametric classification for spectroscopy data. *Computational Statistics and Data Analysis*. *78*: 56–68, 2014
4. **Luis Gutiérrez** and Fernando Quintana. Optimal information in authentication of food and beverages. *Statistical Modelling*. *14(2)*: 179–204, 2014

5. **Luis Gutiérrez** and Fernando Quintana. Multivariate Bayesian semiparametric models for authentication of food and beverages. *The Annals of Applied Statistics*. 5(4): 2385-2402, 2011
6. **Luis Gutiérrez**, Fernando Quintana, Dietrich von Baer, Claudia Mardones. Multivariate Bayesian discrimination for varietal authentication of Chilean red wines. *Journal of Applied Statistics*; 38 (10): 2099-2109, 2011
7. Carola Vergara, Dietrich von Baer, Claudia Mardones, **Luis Gutiérrez**, Isidro Hermosín-Gutiérrez, Nancy Castillo-Muñoz. Flavonol profiles for varietal differentiation between Carménère and Merlot wines produced in Chile: HPLC and Chemometric analysis. *Journal of the Chilean Chemical Society*. 56(4): 827-832, 2011
8. Claudia Mardones, Dietrich von Baer, Jorge Silva, Alex Ruff, **Luis Gutiérrez**, Alex Berg. Tribromophenol and pentachlorophenol uptake from sawdust to horticultural products. *Food Additives and Contaminants*. 26 (10) 1362-1371, 2009
9. Gonzalo Mendoza, **Luis Gutiérrez**, Karla Pozo-Gallardo, Daniel Fuentes-Ríos, Roberto Urrutia and Ricardo Barra. Polychlorinated biphenyls (PCBs) in mussels along the Chilean Coast. *Environmental Science and Pollution Research*. 13: 67-74, 2006
10. Maria, A. Rubio, Natalia Zamorano, Eduardo Lissi, Alicia Rojas, **Luis Gutiérrez**, and Dietrich von Baer. Volatile carboxylic compounds in downtown Santiago, Chile. *Chemosphere*. 62: 1011-1020, 2006
11. Claudia Mardones; Maria Antonieta Hitschfeld; Alejandra Contreras; Karla Lepe; **Luis Gutiérrez** and Dietrich von Baer. Comparison of shikimic acid determination by capillary zone electrophoresis with direct and indirect detection with liquid chromatography for varietal differentiation of red wines. *Journal of Chromatography A*, 1085, 285-292, 2005.
12. Dietrich von Baer, Claudia Mardones, **Luis Gutiérrez**, Glenn Hofmann, J. Becerra, Antonieta Hitschfeld, Carola Vergara. Varietal authenticity verification of Cabernet sauvignon, Merlot and Carménère wines produced in Chile by their anthocyanin, flavonol and shikimic acid profiles. *Bulletin O.I.V.*, vol 78, n 887-888, pp. 45-57, 2005

MANUSCRIPTS IN  
PREPARATION OR  
UNDER REVIEW

1. Victor Saragoni and **Luis Gutiérrez** (2016). Modeling the effects of minimal post-PCR enhancements on the probability of allele recovery from pristine low template DNA dilutions . *Under review in: Forensic Science International: Genetics*
2. **Luis Gutiérrez**, Jorge González, Andrés Barrientos. (2016). Bayesian nonparametric hypothesis testing for the two sample problem.
3. **Luis Gutiérrez**, Eduardo Gutiérrez-Peña, Ramsés Mena. (2016) A Bayesian approach for statistical shape analysis via the projected normal distribution
4. **Luis Gutiérrez**, Ramsés Mena. (2016) Closed curves and Gaussian distributions for shape analysis: Bayesian approaches of inference
5. Miguel De Carvalho, Andrés Barrientos, **Luis Gutiérrez**. (2016). Predictor-Dependent Inequality Modelling: Linking income and consumption inequality

## BOOK CHAPTERS

1. Carola Vergara, Dietrich von Baer, Claudia Mardones and **Luis Gutiérrez**. Overview of chemical markers for varietal authentication of red wines. Progress in authentication of food and wine (2011). Chapter 7. *American Chemical Society Symposium Series 1081*
2. Dietrich von Baer, Claudia Mardones, **Luis Gutiérrez**, Glenn Hofmann, Antonieta Hitschfeld and Carola Vergara. Anthocyanine, flavonol and shikimic acid profiles as a tool to verify varietal authenticity in red wines produced in Chile. Authentication of food and wine (2007) Chapter 15. *American Chemical Society Symposium Series 952. Washington DC*

## GRANTS

1. FONDECYT 11140013. 2014–2017. Bayesian approaches for statistical shape analysis: New developments and applications. Principal Investigator
2. CONACyT (Mexico) project 241195. 2015–2018. Bayesian nonparametric statistics for complex data. Co-Investigator
3. IN106114- 3. 2014–2016. Análisis Bayesiano Aplicado. “Programa de Apoyo a Proyectos de Investigación e Innovación Tecnológica (PAPIIT) UNAM, México”. Co-Investigator
4. U-INICIA 02/12A. 2012–2014. Hierarchical parametric and nonparametric Bayesian classification models, new developments and applications to high dimensional data. University of Chile. Principal Investigator
5. FONIS SA12I2046. 2013–2014. Análisis espacio-temporal de morbilidad/mortalidad en Chile: Efecto de megafuentes en áreas pequeñas. Co-Investigator

## TEACHING AND ACADEMIC DUTIES

Teaching:

### At Universidad de Chile

- Mathematics for Biostatistics, 2014. *Master in Biostatistics*
- Statistical Reasoning, 2014. *Master in Biostatistics*
- Linear Algebra, 2011, 2012, 2013, 2014. *Master in Biostatistics*
- Biostatistics, 2012. *Master in Medical Informatics*
- Multivariate Analysis, 2010, 2011, 2012, 2013. *Master in Biostatistics*
- Computational Statistics, 2010, 2011. *Master in Biostatistics*
- Biostatistics, 2011, 2012, 2013, 2014, 2015. *Bachelor in Medicine*

### At Pontificia Universidad Católica de Chile

- Computational Statistics, 2008, 2009, 2010. *Master in Statistics*
- Exploratory Data Analysis, 2008, 2009. *Bachelor in Statistics*

Master Level Supervisions:

1. Hugo Andrades Aguilera. MSc. in Biostatistics. Awarded: July 2015. Thesis: Statistical Shape Analysis: A Bayesian approach applied to brain images (in Spanish)
2. Sandra Pardo Vargas. MSc. in Biostatistics. Awarded: June 2014. Thesis: Bayesian analysis of the effect of thermoelectric plants on the cardiovascular mortality at county level in Chile 2000–2010. (in Spanish)
3. Francisco Marro. MSc. in Biostatistics. Awarded: December 2012. Thesis: Bayesian semi-parametric model for spectroscopy data: applications in food authentication. (in Spanish)

Administrative duties:

- Member of the evaluation committee CONICYT scholarships, mathematical area, 2015 –present
- Member of the scientific committee, “Jornadas Nacionales de Estadística”, 2015
- Member of the Biostatistics Master committee, University of Chile, 2014–present
- Member of the Public Health Ph.D. committee, University of Chile, 2012–2014
- Member of the research committee, School of Public Health, University of Chile, 2012–2014

CONFERENCE  
PRESENTATIONS  
AND SEMINARS

Conferences:

- International Society for Bayesian Analysis World Meeting, ISBA 2016 Sardinia Italy, 13–17 June, 2016 Poster
- 10th Conference on Bayesian Nonparametrics, Raleigh, NC, USA June 22–26, 2015, Poster
- XI Congreso Latinoamericano de Sociedades de Estadística, La Serena Chile, 20–23 Octubre 2014, Invited Speaker
- International Society for Bayesian Analysis World Meeting, ISBA 2014 Cancún México, 14–18 July, 2014 Poster
- XL Jornadas Nacionales de Estadística. 23-25 Octubre 2013. Valparaíso, Chile, Contributed Talk
- 9th Conference on Bayesian Nonparametrics, Amsterdam, The Netherlands, June 10–14 2013, Poster
- XI Jornadas Nacionales de Bioestadística, Enero 2013, Concepción Chile, Contributed Talk
- III Latin–American Meeting on Bayesian Statistics COBAL, 23–27 Octubre 2011. Pucón Chile, Poster
- IX Congreso Latinoamericano de las Sociedades de Estadística, Octubre 2010, Viña del Mar, Chile, Contributed Talk

Invited Seminars:

- Summer School of Probability and Statistics at CIMAT, July 2016
- Department of Probability and Statistics, IIMAS-UNAM, February 2016
- Department of Statistics, ITAM, México, November 2015
- Faculty of Sciences, UNAM, México, August 2015
- Department of Statistics, PUC, Chile, September 2014
- Department of Probability and Statistics, IIMAS-UNAM, November 2012
- Department of Statistics, PUC, Chile, June 2010

#### AWARDS

- Honorable Mention, Francisco Aranda Ordaz Award for an excellent PhD thesis in statistics, March 2012. Latin America Society of Probability and Mathematical Statistic
- University of Concepción award, the best student of 1999 class Forestry Engineering studies

#### SCHOLARSHIPS

- “Cátedra Extraordinaria” IIMAS–UNAM, Mexico. 2015–2016
- BECAS CHILE Postdoctoral Research Scholarship. 2015–2016
- “Becas Iberoamérica”, Young Academics and Researchers, Santander Universidades 2012
- CONICYT (National Commission for Scientific and Technological Research), PhD thesis scholarship. 2010
- CONICYT (National Commission for Scientific and Technological Research), scholarship for Ph.D. studies in Chile. 2006–2010
- Universidad de Concepción, scholarship for Master studies, 2001–2003
- Universidad de Concepción, scholarship for bachelor studies, 1996–2000

#### COMPUTER SKILLS

- MATLAB, R, Fortran, C++
- SAS, STATA, MAPLE
- L<sup>A</sup>T<sub>E</sub>X, B<sub>I</sub>B<sub>T</sub>E<sub>X</sub>, T<sub>E</sub>X
- Linux, OS X, Windows

#### MEMBERSHIPS

- International Society for Bayesian Analysis
- International Biometric Society
- Sociedad Chilena de Estadística