

Luis Gutiérrez Inostroza

Profile

I am an Assistant Professor of Statistics with ten years of experience developing novel statistical methods. My research has focussed on Bayesian inference, with a strong emphasis on the solution of problems involving complex data structures. I have higher education experience teaching and mentoring bachelor's, master's, and Ph.D. students. I am motivated to solve problems in different scientific fields using Bayesian Nonparametric statistics.



Personal Data and Contact Information

Nationality : *Chilean*

Civil Status : *Married, one son*

Languages : *Spanish, English*

Research fields: *Bayesian nonparametric, Bayesian hypothesis testing, Statistical shape analysis, Data Science and Applications*

Current Position: *Assistant Professor of Statistics, Facultad de Matemáticas, Pontificia Universidad Católica de Chile*

Professional Address : *Avenida Vicuña Mackenna, 4860, Santiago, Chile*

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Bibliometrics links: [MathSciNet](#), [Google Scholar](#)

Academic degrees

- **PhD in Statistics**, Pontificia Universidad Católica de Chile, 2011. Thesis: *Multivariate Bayesian Methods for Authentication of Food and Beverages*. Advisor: Prof. Fernando Quintana.
- **Master in Forestry Science**, Universidad de Concepción, 2004. Thesis: *Using Geostatistics for Determining tree volumes in forests*. Advisor: Prof. Pedro Real.
- **Forestry Engineer**, Universidad de Concepción, 2001.

Professional
experience

- 2016–** Assistant Professor, Department of Statistics, Pontificia Universidad Católica de Chile
- 2015–2016** Postdoctoral research fellow, Department of Probability and Statistics, IIMAS-UNAM, Mexico
- 2011–2014** Assistant Professor, School of Public Health, Faculty of Medicine, University of Chile
- 2003–2005** Research Assistant, Department of Instrumental Analysis, Faculty of Pharmacy, Universidad de Concepción, Chile

Awards and
Scholarships

Awards [2], Scholarships [7]

9. Honorable Mention, Francisco Aranda Ordaz Award for an excellent PhD thesis in statistics, March 2012. Latin American Society of Probability and Mathematical Statistic
8. “Cátedra Extraordinaria” IIMAS–UNAM, Mexico. 2015–2016
7. BECAS CHILE, CONICYT, Postdoctoral Research Scholarship. 2015–2016
6. “Becas Iberoamérica”, Young Academics and Researchers, Santander Universidades 2012
5. CONICYT (National Commission for Scientific and Technological Research), PhD thesis scholarship. 2010
4. CONICYT (National Commission for Scientific and Technological Research), scholarship for Ph.D. studies in Chile. 2006–2010
3. Universidad de Concepción, scholarship for Master studies, 2001–2003
2. University of Concepción award, the best student in his class (Forestry Engineering studies), 2001
1. Universidad de Concepción, scholarship for bachelor studies in forestry engineering, 1996–2000

Teaching [17]

At Pontificia Universidad Católica de Chile (Responsible instructor) [10]

10. Advanced Computational Statistics, 2019, 2020, 2021, 2022. *PhD in Statistics*
9. Failure Time Analysis, 2022. *Master in Artificial Intelligence*
8. Advanced Statistical Methods I, 2017, 2018, 2019, 2022. *PhD in Statistics*
7. Survival Analysis, 2020, 2021. *Master in Statistics*
6. Multivariate Analysis, 2021. *Bachelor in Statistics*
5. Stochastic Simulation, 2020, 2021. *Bachelor in Statistics*
4. Survival Analysis, 2019, 2022. *PhD in Statistics*
3. Survival Analysis, 2016, 2017, 2018, 2020. *Bachelor in Statistics*
2. Computational Statistics, 2008, 2009, 2010. *Master in Statistics*
1. Exploratory Data Analysis, 2008, 2009. *Bachelor in Statistics*

At Universidad de Chile (Responsible instructor) [7]

7. Mathematics for Biostatistics, 2014. *Master in Biostatistics*
6. Statistical Reasoning, 2014. *Master in Biostatistics*
5. Linear Algebra, 2011, 2012, 2013, 2014. *Master in Biostatistics*
4. Biostatistics, 2012. *Master in Medical Informatics*
3. Multivariate Analysis, 2010, 2011, 2012, 2013. *Master in Biostatistics*
2. Computational Statistics, 2010, 2011. *Master in Biostatistics*
1. Biostatistics, 2011, 2012, 2013, 2014. *Bachelor in Medicine*

PhD Students Supervisions [3]

3. Francisco Segovia. PhD in Statistics. Pontificia Universidad Católica de Chile. Started August 2022. Expected December 2024. Thesis title: *Bayesian model selection for flexible regression models*
2. Iván Gutiérrez. PhD in Statistics. Pontificia Universidad Católica de Chile. Started August 2019. Expected December 2022. Thesis title: *Bayesian Nonparametric Hypothesis Testing for Complex Data*. Co-Supervised with Danilo Alvares
1. Luz Adriana Pereira Hoyos. PhD in Statistics. Pontificia Universidad Católica de Chile. Started March 2017. Awarded, August 2019. Thesis title: *Bayesian nonparametric hypothesis testing procedures*. Current position: Assistant Professor at Universidad del Valle Colombia

Master Students Supervisions [9]

9. Leonardo Jofré Flor. Master in Statistics. Awarded July 2019. Thesis title: *Equivalencia entre algunas clases de distribuciones de tipo fase y la mezcla finita de distribuciones Erlang*. Current position: PhD Student at Pontificia Universidad Católica de Chile
8. Seomara Palominos Gamba. Master in Statistics. Awarded: November 2018. Thesis title: *Inferencia Bayesiana en el modelo ETAS*. Current position: Manager Artificial Intelligence & Data at Deloitte
7. Madelaine Acosta Donoso. Master in Statistics. Awarded: November 2018. Thesis title: *Inferencia Bayesiana en Distribuciones tipo fase*. Current position: Analyst at Banco Santander
6. María Constanza Prado. Master in Statistics. Awarded: January 2018. Thesis title: *Análisis estadístico de la forma de objetos utilizando superficies cerradas*. Current position: Data Scientist at Banco Ripley
5. Ignacio Rossi von Mühlenbrock. Master in Statistics. Awarded: November 2017. Thesis title: *La distribución normal proyectada para landmarks tridimensionales*. Current position: Risk models analyst at Banco Falabella
4. Claudio Galleguillos Cruz. Master in Biostatistics. Awarded: March 2017. Thesis title: *Efecto de las termoelectricas sobre la incidencia de enfermedades cardiovasculares en Chile 2001-2010: Un enfoque Bayesiano de estimación*. Current position: Veterinarian in CRMF Moggie Cat's
3. Hugo Andrades Aguilera. Master in Biostatistics. Awarded: July 2015. Thesis title: *Statistical Shape Analysis: A Bayesian approach applied to brain images*
2. Sandra Pardo Vargas. Master in Biostatistics. Awarded: June 2014. Thesis title: *Bayesian analysis of the effect of thermoelectric plants on the cardiovascular mortality at county level in Chile 2000–2010*. Current position: Biostatistician at Comando de Salud del Ejercito)

1. Francisco Marro. Master in Biostatistics. Awarded: December 2012. Thesis title: *A Bayesian semi-parametric model for spectroscopy data: applications in food authentication*. Current position: Adjunct Professor, Universidad de Chile

Teaching
Innovation

- Certificate Program in University Teaching, 2019. Center for Teaching Development. Pontificia Universidad Católica de Chile.

Grants [10]

Principal Investigator [5], Co-Investigator [5]

10. FONDECYT 1220229. 2022 – 2025. Bayesian nonparametric models for the analysis of complex datasets. Principal Investigator
9. COVID0248. 2020 – 2021. Estudio epidemiológico observacional para evaluar el efecto de medidas de control gubernamentales sobre la dinámica espacio-temporal de COVID-19 en Chile. Alternate Director
8. Millennium Nucleus Center for the Discovery of Structures in Complex Data. 2018 – 2021. Adjoint Investigator
7. PUENTE 009/2019. Bayesian nonparametric hypothesis testing procedures. 2019–2020. Principal Investigator
6. PCI REDI170094. 2018–2019. Inferencia Bayesiana en distribuciones tipo fase: Nuevos desarrollos y aplicaciones. Principal Investigator
5. FONDECYT 11140013. 2014–2017. Bayesian approaches for statistical shape analysis: New developments and applications. Principal Investigator
4. 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
2. 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
1. FONIS SA12I2046. 2013–2014. Análisis espacio-temporal de morbilidad y mortalidad en Chile: Efecto de megafuentes en áreas pequeñas. Co-Investigator

Published and/or accepted articles in indexed journals [20]

20. Luz Adriana Pereira, **Luis Gutiérrez**, Daniel Taylor-Rodríguez, Ramsés Mena. Bayesian nonparametric hypothesis testing for longitudinal data analysis. *Computational Statistics and Data Analysis*, In Press, 2022
19. Daniel Ayala, Leonardo Jofré, **Luis Gutiérrez**, Ramsés Mena. On a Dirichlet process mixture representation of phase-type distributions. *Bayesian Analysis*. 17(3): 765–790 , 2022
18. Jessica Pavani, Jaime Cerda, **Luis Gutiérrez**, Inés Varas, Iván Gutiérrez, Leonardo Jofré, Oscar Ortiz, Gabriel Arriagada. Factors associated to the duration of COVID-19 lockdowns in Chile. *Scientific Reports* 12, 9516, 2022.
17. Luz Pereira, Daniel Taylor-Rodríguez, **Luis Gutiérrez**. A Bayesian nonparametric testing procedure for paired samples. *Biometrics*. 76(4): 1133–1145, 2020
16. **Luis Gutiérrez**, Ramsés Mena, Carlos Díaz-Avalos. Linear models for statistical shape analysis based on parametrized closed curves. *Statistical Papers*. 61: 1213–1229, 2020
15. Arrigo, Coen **Luis Gutiérrez**, Ramsés Mena. Modeling failures times with dependent renewal type models via exchangeability. *Statistics*. 53: 1112–1130, 2019
14. **Luis Gutiérrez**, Andrés, F. Barrientos, Jorge González, Daniel Taylor-Rodríguez. A Bayesian nonparametric multiple testing procedure for comparing several treatments against a control. *Bayesian Analysis*. 14: 649–675, 2019
13. **Luis Gutiérrez**, Eduardo Gutiérrez-Peña, Ramsés Mena. A Bayesian approach to statistical shape analysis via the projected normal distribution. *Bayesian Analysis*. 14: 427–447, 2019
12. 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: 130–138, 2016
11. **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
10. **Luis Gutiérrez**, Eduardo Gutiérrez-Peña, Ramsés Mena. Bayesian nonparametric classification for spectroscopy data. *Computational Statistics and Data Analysis*. 78: 56-68, 2014

9. **Luis Gutiérrez** and Fernando Quintana. Optimal information in authentication of food and beverages. *Statistical Modelling*. 14(2): 179-204, 2014
8. **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
7. **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
6. 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
5. 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
4. 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
3. Maria, A. Rubio, Natalia Zamorano, Eduardo Lissi, Alicia Rojas, **Luis Gutiérrez**, and Dietrich von Baer. Volatile carbonylic compounds in downtown Santiago, Chile. *Chemosphere*. 62: 1011-1020, 2006
2. 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.
1. 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

Proceedings [2]

2. Iván Gutiérrez, **Luis Gutiérrez**, Danilo Alvares. (2022). A Bayesian nonparametric test for cross-group differences relative to a control. Conference Proceedings. New Frontiers in Bayesian Statistics. BAYSM 2021. *Springer Proceedings in Mathematics and Statistics*. In Press

1. **Luis Gutiérrez**, Ramsés Mena, and Matteo Ruggiero. (2016). On GEM diffusive mixtures. *In JSM Proceedings 2016*, Section on Nonparametric Statistics. Alexandria, VA: American Statistical Association. [ISBN: 978-0-9839375-2-4]

Book Chapters [2]

2. 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*
1. 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*

Manuscripts under review [2]

2. Iván Gutiérrez, **Luis Gutiérrez**, Danilo Alvares. A New Flexible Bayesian Hypothesis Test For Multivariate Data. Second round in: *Statistics and Computing*
1. Vianey Palacios, Miguel de Carvalho, **Luis Gutiérrez**. Heavy-Tailed Pitman-Yor Mixture Models. First round in: *Journal of the Royal Statistical Society, Series B*.

Working papers [3]

3. **Luis Gutiérrez**, Iván Gutiérrez, Danilo Alvares. Bayesian flexible models for N-way analysis of variance.
2. Iván Gutiérrez, **Luis Gutiérrez**, Jessica Pavani, Leonardo Jofré, Inés Varas, Jaime Cerda, Oscar Ortiz, Gabriel Arriagada. Evaluation of six methods for estimating the effective reproduction number (Re) of COVID-19 in small areas.
1. Iván Gutiérrez, **Luis Gutiérrez**, Danilo Alvares. A tractable variable selection approach in Bayesian nonparametric regression models

Conferences, Seminars and Short Courses [34]

Conferences invited talks [10], contributed talks [4] and posters [9]

23. BNP13 - 13th International Conference on Bayesian Nonparametrics. October 24–28, 2022. Puerto Varas, Chile. Poster
22. XXX Congreso de Matemática Capricornio COMCA 2022. 03–05 August, 2022, Chile. Virtual Conference. Invited Session
21. International Society for Bayesian Analysis World Meeting, ISBA 2022 Montreal, Canada, June 26th to July 1st, 2022. Poster

20. 14th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2021). December, 18–20, 2021. King’s College London, UK. Invited Session
19. 13th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2020). December, 19–21, 2020. Virtual Conference. Invited Session
18. 15th Brazilian Meeting of Bayesian Statistics. Maresias, São Sebastião, Brazil. March, 09–11, 2020. Invited Speaker
17. 12th Conference on Bayesian Nonparametrics, Oxford United Kingdom, June 24–28, 2019. Poster
16. Workshop on Bayesian Inference in Phase Type Distributions. Viña del Mar, Chile, March 25–26, 2019. Invited Speaker
15. 13 Congreso Latinoamericano de Sociedades de Estadística. Guadalajara, México, 01–05 October, 2018. Invited Session
14. The 28th Annual Conference of the International Environmetrics Society. Guanajuato, Mexico, 16–21 July, 2018. Invited Session
13. International Society for Bayesian Analysis World Meeting, ISBA 2018 Edinburgh, United Kingdom 24–29 June 2018. Invited Session
12. Jornadas Nacionales de Estadística. October 16–18, 2017. Valparaíso, Chile. Invited Talk
11. 11th Conference on Bayesian Nonparametrics, Paris, France, June 26–30, 2017. Poster
10. XII Congreso Latinoamericano de Sociedades de Estadística, Lambayeque, Peru, October 25–28, 2016. Contributed Talk
9. International Society for Bayesian Analysis World Meeting, ISBA 2016 Sardinia Italy, 13–17 June, 2016. Poster
8. 10th Conference on Bayesian Nonparametrics, Raleigh, NC, USA June 22–26, 2015. Poster
7. XI Congreso Latinoamericano de Sociedades de Estadística, La Serena Chile, 20–23 Octubre 2014. Invited Speaker
6. International Society for Bayesian Analysis World Meeting, ISBA 2014 Cancún México, 14–18 July, 2014. Poster

5. Jornadas Nacionales de Estadística. 23-25 Octubre 2013. Valparaíso, Chile. Contributed Talk
4. 9th Conference on Bayesian Nonparametrics, Amsterdam, The Netherlands, June 10–14, 2013. Poster
3. Jornadas Nacionales de Bioestadística, Enero 2013, Concepción Chile. Contributed Talk
2. III Latin–American Meeting on Bayesian Statistics COBAL, October 23–27, 2011. Pucón Chile. Poster
1. IX Congreso Latinoamericano de las Sociedades de Estadística, Octubre 2010, Viña del Mar, Chile. Contributed Talk

Invited Seminars [9]

9. Department of Statistics, PUC, Chile, May 2020
8. Department of Statistics, PUC, Chile, September 2018
7. Summer School of Probability and Statistics at CIMAT, Mexico, July 2016
6. Department of Probability and Statistics, IIMAS-UNAM, February 2016
5. Department of Statistics, ITAM, Mexico, November 2015
4. Faculty of Sciences, UNAM, Mexico, August 2015
3. Department of Statistics, PUC, Chile, September 2014
2. Department of Probability and Statistics, IIMAS-UNAM, November 2012
1. Department of Statistics, PUC, Chile, June 2010

Short Courses [2]

2. Introduction to Bayesian Nonparametrics. Jornadas de Ingeniería Estadística Universidad del Bío Bío, 2022. Concepción, Chile.
1. Survival Analysis. Escuela Doctoral 2022. Facultad de Matemáticas. Pontificia Universidad Católica de Chile. Santiago, Chile

Organization of **Scientific [3] or Organizing [3] Committee Member, Coordinator [2]**
Academic Events

[8]

8. 14th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2021). King's College London, UK. December, 18–20, 2021. Scientific Committee
7. Coordinator of the Statistical Seminar Series at Millennium Nucleus Center for the Discovery of Structures in Complex Data. Pontificia Universidad Católica de Chile. Santiago, Chile. Period 2019–2020
6. Workshop on Bayesian Inference in Phase Type Distributions. Viña del Mar, Chile, March 25–26, 2019. Organizing Committee
5. Midas 2019 Workshop. Novel Statistical Methods For Complex Data. Viña del Mar, Chile, March 25–29, 2019. Organizing Committee
4. XXIII Reunión Científica del Gab y II Encuentro Argentino - Chileno de Biometría. Neuquén, Argentina, October 10–12, 2018. Scientific Committee
3. Coordinator of the Statistical Seminar Series at the Department of Statistics. Pontificia Universidad Católica de Chile. Santiago, Chile. Period 2016–2017
2. V Congreso de Estadística Bayesiana de América Latina - Cobal V. Guanajuato, Mexico, June 7–10, 2017. Scientific Committee
1. Jornadas Nacionales de Estadística, Concepción, Chile 2015. Organizing Committee

Referee for
Publications,
Grants

Indexed Journals

- Statistics in Medicine
- Biometrics
- Bayesian Analysis
- Applied Stochastic Models in Business and Industry
- Computational Statistics
- Ecological Applications
- Computational Statistics & Data Analysis
- Latin American Journal of Probability and Mathematical Statistics
- Chilean Journal of Statistics
- Statistical Modelling

- Brazilian Journal of Probability and Statistics
- Journal of Applied Statistics
- Statistical Papers

Grants

- The National Fund for Scientific and Technological Development, FONDECYT, Chile. Program: Projects for Initiation in Research

Administrative duties

- Member of the Postgraduate in Statistics Committee. Pontificia Universidad Católica de Chile. 2021–present
- Member of the evaluation committee of the National Commission for Scientific and Technological Research for the Program of International Cooperation (PCI), mathematical area 2018 – 2021
- Member of the evaluation committee of the National Commission for Scientific and Technological Research for the Scholarships Program, mathematical area, 2015–present
- Member of the Undergraduate in Statistics Committee. Pontificia Universidad Católica de Chile. 2017–2021
- Member of the Postgraduate in Statistics Committee. Pontificia Universidad Católica de Chile. 2016-2017
- Member of the Postgraduate in Biostatistics Committee, University of Chile, 2014–2016
- Member of the Postgraduate in Public Health Committee, University of Chile, 2012–2014
- Member of the Research Committee of the School of Public Health, University of Chile, 2012–2014

Outreach

- Course: Statistics Tools and Forecast for the Certificate in Data Science at Pontificia Universidad Católica de Chile. 2019, 2020, 2021, 2022.
- Talk: Pruebas de Hipótesis Bayesianas. Día Internacional de la Estadística. Centro de Alumnos de Matemáticas, UC. October, 23th, 2020.

- Talk: La Estadística en Problemas de Salud Pública. Un Día en Estadística UC. Pontificia Universidad Católica de Chile. December 12, 2018, San Joaquín Campus.
- Talk: Contaminación Ambiental, Estadística y Salud Pública. Taller de Razonamiento Matemático, UC. August, 6th, 2018.

Other
Information

PhD exams committee

- Emmanuel Bernieri. PhD program in Statistics. The University of Edinburgh. August, 2022
- José Javier Quinlan Binelli. PhD program in Statistics. Pontificia Universidad Católica de Chile. March, 2017
- Andres Marcelino Iturriaga Jofré. PhD program in Statistics. Pontificia Universidad Católica de Chile. December, 2016
- Asael Fabián Martínez Martínez. PhD program in Mathematical Science. UNAM, Mexico, February, 2016

Affiliation to academic societies

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