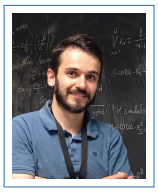

Joaquín Martínez-Minaya

Personal information

Basic Information

First and Family name: Joaquín Martínez-Minaya
ID number: 47099962X **Age:** 33
ORCID: 0000-0001-7305-6564
ResearchGate: @Joaquin-Martinezminaya
github: `https://github.com/jmartinez-minaya`

Education

2014 - 2019. **Ph.D. in Statistics and Optimization**
*University of Valencia,*Valencia (Spain). Cum laude
2013 - 2015. **M.Sc. in Biostatistics**
*University of Valencia,*Valencia (Spain).Honours
2008 - 2013. **B.Sc. in Mathematics**
*University of Valencia,*Valencia (Spain).

Professional experience

2024 - **Associate Professor**, Department of Applied Statistics and Operational Research and Quality, Polytechnic University of Valencia, Valencia, Spain.

2021 - 2024 **Assistant Professor**, Department of Applied Statistics and Operational Research and Quality, Polytechnic University of Valencia, Valencia, Spain.

2019 - 2021 **Postdoctoral researcher**, Basque Center for Applied Mathematics (BCAM), Bilbao, Spain.

2016 - 2019 **Predoctoral researcher**, University of Valencia, Valencia, Spain.

2014 - 2016 **Biostatistician**, Valencian Institute for Agricultural Research (IVIA), Valencia, Spain.

2014 **Biostatistician**, Experior S.L., Valencia, Spain.

Summary

My primary interest lies in **Applied Bayesian Statistics**, where I am actively engaged in advancing the field of **Species Distribution Modeling** through the application of spatio-temporal Statistics. This involves a comprehensive exploration of the dynamic behaviors exhibited by plant and marine species, utilizing sophisticated modeling techniques to enhance our understanding of their spatial and temporal patterns.

Currently, **Health, Environment and Economics** stand as fundamental pillars of my research, and I am currently involved in projects whose aims cover the study of the relationship between **pollution and respiratory diseases**; **understanding microbiota** using multivariate hierarchical Bayesian models; assessing **measurement agreement** through Bayesian mixed models; conducting **Bayesian survival models** in medical research, and applying spatial statistics to the field of **spatial transcriptomics**.

Moreover, my expertise extends to **Bayesian computational methods**, where I specialize in implementing techniques within the framework of the Integrated Nested Laplace Approximation (INLA) and Markov Chain Monte Carlo Methods (MCMC). This computational aspect forms an integral part of my holistic approach to addressing diverse challenges within the health and environmental sectors, now including the multifaceted impacts of climate change.

Relevant Publications

1. A. Adin, E. T. Krainski, A. Lenzi, Z. Liu, **J. Martínez-Minaya**, and H. Rue (2024). Automatic cross-validation in structured models: Is it time to leave out leave-one-out?. *Spatial Statistics*,100843. `https://doi.org/10.1016/j.spasta.2024.100843`
2. **J. Martínez-Minaya** and H. Rue (2024). A flexible Bayesian tool for CoDa mixed models: logistic-normal distribution with Dirichlet covariance. *Statistics and Computing*, 34(3), 116. `https://doi.org/10.1007/s11222-024-10427-3`
3. F. García-García, D.-J. Lee, P. P. España Yandiola, I. Urrutia Landa, **J. Martínez-Minaya**, M. Hayet-Otero, M. N. Ermecheo, J. M. Quintana, R. Menéndez, A. Torres and R. Zalacain Jorge (2024). Cost-sensitive ordinal classification methods to predict SARS-CoV-2 pneumonia severity. *IEEE Journal of Biomedical and Health Informatics*. `https:`

//doi.org/10.1109/JBHI.2024.3363765

4. O. Bronte, F. García-García, D.-J. Lee, I. Urrutia, A. Uranga, M. Nieves, **J. Martínez-Minaya**, J. M. Quintana, I. Arostegui, R. Zalacain, L. A. Ruiz-Iturriaga, L. Serrano, R. Menéndez, R. Méndez, A. Torres, C. Cilloniz, P. P. España, COVID-19 and Air Pollution Working Group (2023). Impact of outdoor air pollution on severity and mortality in COVID-19 pneumonia. *Science of The Total Environment*, 164877. https://doi.org/10.1016/j.scitotenv.2023.164877
5. **J. Martínez-Minaya**, F. Lindgren, A. López-Quílez, D. Simpson, and D. Conesa (2023). The Integrated Nested Laplace Approximation for fitting Dirichlet regression models. *Journal of Computational and Graphical Statistics*, 1-19. https://doi.org/10.1080/10618600.2022.2144330
6. M. Hayet-Otero, F. García-García, D. J. Lee, **J. Martínez-Minaya**, P. P. España Yandiola, I. Urrutia Landa, M. Nieves Ermecheo, J. M. Quintana, R. Menéndez, A. Torres, R. Zalacain Jorge, I. Arostegui, with the COVID-19 and Air Pollution Working Group (2023). Extracting relevant predictive variables for COVID-19 severity prognosis: An exhaustive comparison of feature selection techniques.*Plos one*, 18(4), e0284150. https://doi.org/10.1371/journal.pone.0284150
7. I. Anguelovski, J. J. Connolly, H. Cole, M. Garcia-Lamarca, M. Triguero-Mas, F. Baró, ... and **J. Martínez-Minaya** (2022). Green gentrification in European and North American cities. *Nature communications*, 13(1), 3816. https://doi.org/10.1038/s41467-022-31572-1
8. **J. Martínez-Minaya**, D. Conesa, A. López-Quílez, J. L. Mira, and A. Vicent (2021). Modelling inoculum availability of *Plurivorosphaerella nawae* in persimmon leaf litter with Bayesian beta regression. *Phytopathology*, 111(7), 1184-1192. https://doi.org/10.1094/PHYTO-08-20-0359-R
9. **J. Martínez-Minaya**, D. Conesa, C. Alonso-Blanco, M.J. Fortin, X. Picó and A. Marcer (2019). A hierarchical Bayesian Beta regression approach to study the effects of geographic genetic structure and spatial autocorrelation on species distribution range shifts. *Molecular Ecology Resources*, 19(4), 929 – 943. https://doi.org/10.1111/1755-0998.13024
10. **J. Martínez-Minaya**, M. Cameletti, D. Conesa and M.G. Pennino (2018). Species distribution modeling: a statistical review with focus in spatio-temporal issues. *Stochastic Environmental Research and Risk Assessment*, 32(11), 3227 – 3244. https://doi.org/10.1007/s00477-018-1548-7

Research Projects

01 September 2023 - 01 September 2025 — **How good is this medical device? Bayesian mixed models for agreement measures**,
PERFORMING ENTITY: *Universitat Politècnica de València and University of Edinburgh*,
ROLE: Principal Investigator jointly with Vanda Inacio,
FUNDING: €12,000 (by The Royal Society).

01 September 2021 - 31 August 2024 — **PID2020-115882RB-I00 - New proposals for estimation, prediction and validation of semi-parametric models for the analysis of complex data with applications in health and climate change**,
PERFORMING ENTITY: *ASOC BCAM - Basque Center for Applied Mathematics*,
ROLE: research team,
FUNDING: €31,500 (by Spanish Government).

01 January 2022 - 31 December 2023 — **ComBIOTA - Bayesian Analysis of Compositional Data of Human Microbiota**,
PERFORMING ENTITY: *FISABIO, Universitat de València, Universitat Politècnica de València*,
ROLE: research team,
FUNDING: €20,000 (by Valencian government (GVA)).

01 January 2021 31 December 2021 — **BMTF-Applied Mathematical Modelling for Health**,
PERFORMING ENTITY: *ASOC BCAM - Basque Center for Applied Mathematics*,
ROLE: research team,
FUNDING: €1000000 (by Basque Government).

01 March 2020 31 December 2021 **3KIA-Integral and Cross-cutting Proposal for the Design and Implementation of Reliable Artificial Intelligence-based Systems**,
PERFORMING ENTITY: *Basque Governement (ELKARTEK)*,
ROLE: research team,
FUNDING: €134132.28 (by Basque Government).

01 September 31 December 2020 **Development of spatial erosivity factor prediction models under climate change scenarios**,
PERFORMING ENTITY: *Basque Institute for Agricultural Research (NEIKER)*,
ROLE: research team,
FUNDING: €6000 (by Basque Government).

International Research Stays

30/10/2023-05/11/2023 **University of Edinburgh, Edinburgh, UK**, PROFESSOR: *Vanda Inácio*.
Bayesian mixed models for agreement measures in Medicine.

16/01/2023-20/01/2023 **University of Edinburgh, Edinburgh, UK**, PROFESSOR: *Vanda Inácio*.
Bayesian mixed models for agreement measures in Medicine.

23/08/2022-06/09/2022 **University of Edinburgh, Edinburgh, UK**, PROFESSOR: *Ruth King*.
Compositional data for microbiome analysis.

25/07/2022-04/08/2022 **Basque Center For Applied Mathematics, Bilbao, Spain**, PROFESSOR: *Dae-Jin Lee*.
Compositional data using Hamiltonian Monte Carlo.

11/11/2022-11/12/2022 **King Abdullah University of Science and Technology, Saudi Arabia**, PROFESSOR: *Haavard Rue*.
Implementing R-package to deal with compositional data using INLA methodology. Implementing validation measures in this context.

16/02/2020-12/03/2020 **King Abdullah University of Science and Technology, Saudi Arabia**, PROFESSOR: *Haavard Rue*.
Compositional data using INLA methodology.

01/09/2018-30/11/2018 **University of Edinburgh, Edinburgh, UK**, PROFESSOR: *Finn Lindgren*.
Implementation of a new R-package to approximate the Bayesian Dirichlet Regression using INLA methodology.

01/09/2017-30/11/2017 **University of Edinburgh, Edinburgh, UK**, PROFESSOR: *Finn Lindgren*.
Learning deeply a Stochastic Partial differential Equation (SPDE) methodology to approximaete Bayesian spatio-temporal models using the Integrated Nested Laplace Approximation (INLA), and develop a method to approximate the Bayesian Dirichlet Regression.

Doctoral thesis Supervision

- **Spatio-Temporal Cluster Analysis in Fisheries Using Bayesian Compositional Data Models** (2024-) - Jorge Mestre. Supervisors: Marta Col, José María Bellido and **Joaquín Martínez-Minaya**. Statistics and Operations Research thesis, Universitat Politècnica de València.
- **Bayesian Multivariate Modeling of High-Dimensional Compositional Microbiome Data** (2024-) - Oihane Álvarez Polo. Supervisors: Blanca Sarzo, María José López-Espinosa and **Joaquín Martínez-Minaya**. Statistics and Operations Research thesis, Universitat Politècnica de València.
- **Effect of B-cell lymphomas on the immune system and immune reconstitution after chemoimmunotherapy** (2023-) - Eva María Donato Martín. Supervisors: María José Terol Casterá and **Joaquín Martínez-Minaya**. Medicine thesis, Universitat de València.

Visiting Doctoral Students Supervision

- **Bayesian Analysis with INLA for Survival Models with Latent Variables Modeled by the Zero-Modified Power Series Distribution** (09-2024–02-2025) - Katy Rocío Cruz Molina from University of São Carlos. Collaborative work with Vera Tomazella and Danilo Alvares.

Master thesis Supervision

- **Bayesian zero-inflated modeling of the incidence and burden of injuries in professional European football** (2022-2023) - Oihane Álvarez Polo. Supervisors: Dae-Jin Lee and **Joaquín Martínez-Minaya**. Master's degree in Biostatistics, Universitat de València, Mark: 9.
- **Predictive Models for a Modal Split Problem** (2023-2024) - Luis Enrique Palma Mejía. Supervisors: Eva Vallada and **Joaquín Martínez-Minaya**. Master's Degree in Data Analysis, Process Improvement and Decision Support Engineering, Universitat Politècnica de València, Mark: 9.5.
- **Spatial Analysis of Spanish Bank Branches** (2021-2022) - Constanza Dalla Quercia. Supervisors: David Conesa and **Joaquín Martínez-Minaya**. Master's degree in Data Analysis for Business, Università Cattolica del Sacro Cuore, Mark: 9.5.
- **Spatial modeling of fish richness in the Mediterranean Sea** (2019-2020) - Joao Carmezim. Supervisors: David Conesa and **Joaquín Martínez-Minaya**. Master's degree in Biostatistics, Universitat de València, Mark: 9.
- **Spatial Bayesian geo-additive modelling: predicting soil texture in the Basque Country** (2019-2020) - Miguel Ruá del Barrio. Supervisors: Dae-Jin Lee and **Joaquín Martínez-Minaya**. Master's degree in Biostatistics, Universitat de València, Mark: 9.5.

Bachelor thesis Supervision

- **Forecasting Shopping Basket Prices: A Time Series Modeling Approach** (2024-2025) - Berta Campos. Supervisor: **Joaquín Martínez-Minaya**. Double Bachelor's Degree in Food Science and Technology and Business Administration, Universitat Politècnica de València.
- **Risk-Based Portfolio Management: Methods for Investor Profile and Historical Performance Analysis** (2024-2025) - Carlos E. Domínguez Martínez. Supervisors: Pepe Tatay (Tweenvest company) and **Joaquín Martínez-Minaya**. Double Bachelor's Degree in Telecommunications Engineering and Business Administration, Universitat Politècnica de València.
- **Modelling of Market Shares using Latent Gaussian Models for Compositional Data** (2024-2025) - Óscar Jiménez Bou. Supervisor: Balaji Raman (Cogitaas Company, India) and **Joaquín Martínez-Minaya**. Double Bachelor's Degree in Telecommunications Engineering and Business Administration, Universitat Politècnica de València.
- **Forest Fire Prediction in Spain under Climate Change Scenarios** (2024-2025) - Álvaro Pérez Hernando. Supervisor: **Joaquín Martínez-Minaya**. Double Bachelor's Degree in Food Science and Technology and Business Administration, Universitat Politècnica de València.
- **Effect of Socioeconomic Factors on Stress Levels in Women** (2023-2024) - Sofía Borrás Asensico. Supervisors: Eva Vallada and **Joaquín Martínez-Minaya**. Double Bachelor's Degree in Computer Science and Business Administration, Universitat Politècnica de València.
- **Prediction of Sales for a Jewelry Company** (2023-2024) - Pablo Villanueva Latorre. Supervisors: Ángel Rodríguez Chicote (Jewelry Company) and **Joaquín Martínez-Minaya**. Double Bachelor's Degree in Telecommunications Engineering and Business Administration, Universitat Politècnica de València.

Teaching experience

University	Year	Subject	Degree	Hours
UPV	2023-2024	Predictive models	Data Science degree	22
UPV	2023-2024	Econometrics	ADE, dual degree ADE + Cta, ADE + Teleco	90
UV	2023-2024	Bayesian Inference	Master in Biostatistics	8
UPV	2021-2022	Statistics	Bachelor in Mechanical Engineering	52
UPV	2021-2022	Statistics	Bachelor in Aerospace Engineering	50
UPV	2021-2022	Econometrics	ADE, dual degree ADE + Inf, ADE + Cta, ADE + Teleco	130
UPV	2022-2023	Statistics	Bachelor in Industrial Technology Engineering	6
UV	2022-2023	Bayesian inference	Master in Biostatistics	8
UPV	2021-2022	Statistics	Bachelor in Industrial Technology Engineering	56
UPV	2021-2022	Statistics	Bachelor in Aerospace Engineering	30
UPV	2021-2022	Econometrics	Bachelor in ADE dual degree ADE + Inf	83
UPV	2021-2022	Statistics	Bachelor in Mechanical Engineering	30
UV	2021-2022	Bayesian inference	Master in Biostatistics	10
UOC	2020-2021	Statistics	Bachelor in Computer Engineering	60
UV	2020-2021	Bayesian inference	Master in Biostatistics	10
UV	2019-2020	Bayesian inference	Master in Biostatistics	12.5
UV	2018-2019	Mathematics II	Bachelor in Environmental Sciences	27
UV	2018-2019	Mathematics II	Bachelor in Environmental Sciences	6
UV	2018-2019	Mathematics II	Bachelor in Environmental Sciences	21
UV	2018-2019	Mathematics II	Bachelor in Biotechnology	3
UV	2018-2019	Mathematics II	Bachelor in Biotechnology	3
UV	2018-2019	Probability and Simulation	Bachelor in Data Science	20
UV	2017-2018	Mathematics II	Bachelor in Environmental Sciences	27
UV	2017-2018	Biostatistics	Bachelor in Optics and Optometry	15
UV	2017-2018	Biostatistics	Bachelor in Optics and Optometry	15

Educational innovation projects

01 November 2022 - 31 October 2024 **Coordination Among Subjects of the Bachelor's Degree in Industrial Technology Engineering to Enhance Training in Sustainable Development Goals**,
FUNDING AND PERFORMING ENTITY: *Universitat Politècnica de València*,
ROLE: Team Member.

01 November 2021 - 31 October 2023 **PBL for Data Analysis and Optimization**,
FUNDING AND PERFORMING ENTITY: *Universitat Politècnica de València*,
ROLE: Team Member.

Computer skills

OS: Microsoft Windows, Linux
Programming: C++, PYTHON, HTML, MARKDOWN, SHINY
Mathematics: Wolfram Mathematica, MatLab, LaTeX
Statistics: R, INLA, BUGS, JAGS, STAN