Felipe Osorio

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https://faosorios.github.io/

Research Interests

Applied statistics, Generalized Linear Models, Inference functions, Likelihood-based inference, Longitudinal data analysis. Statistical diagnostics.

Education

2006 **D. Sc. in Statistics**, *Universidade de São Paulo*, Brazil.
Thesis topic: *Diagnóstico de Influência em Modelos Elípticos com Efeitos Mistos*.
Advisor: Professor Gilberto A. Paula.

2001 **Engineer in Statistics**, *Universidad de Valparaíso*, Chile.
Topic: *Detección de Puntos de Cambio en Modelos de Regresión Lineal t-independiente*.
Advisor: Professor Manuel Galea.

Book

86 citations Vallejos, R., **Osorio, F.**, Bevilacqua, M. (2020). *Spatial Relationships Between Two Georeferenced Variables: With Applications in R*. Springer, Cham. doi: 10.1007/978-3-030-56681-4

Publications

Ogueda, A., **Osorio, F.** (2025). Influence diagnostics for ridge regression using the Kullback-Leibler divergence. *Statistical Papers* **66**, 85. Q2

1 citation Acosta, J., Vallejos, R., Ellison, A. M., **Osorio, F.**, de Castro, M. (2024). Comparing two spatial variables with the probability of agreement. *Biometrics* **80** (1), ujae009. Q1

4 citations **Osorio, F.**, Gárate, Á., Russo, C.M. (2024). The gradient test statistic for outlier detection in generalized estimating equations. *Statistics & Probability Letters* **209**, 110087. Q3

1 citation **Osorio, F.**, Galea, M., Henríquez, C., Arellano-Valle, R. (2023). Addressing non-normality in multivariate analysis using the t-distribution. *AStA Advances in Statistical Analysis* **107**, 785-813. Q2

12 citations **Osorio, F.**, Vallejos, R., Barraza, W., Ojeda, S.M., Landi, M.A. (2022). Statistical estimation of the structural similarity index for image quality assessment. *Signal, Image and Video Processing* **16**, 1035-1042. Q2

3 citations Vidal, G., Yuz, J., Vallejos, R., **Osorio, F.** (2022). Point-process modeling and divergence measures applied to the characterization of passenger flow patterns of a metro system. *IEEE Access* **10**, 26529-26540. Q1

6 citations Acosta, J., Alegría, A., **Osorio, F.**, Vallejos, R. (2021). Assessing the effective sample size for large spatial datasets: A block likelihood approach. *Computational Statistics & Data Analysis* **162**, 107282. Q1

Crudu, F., **Osorio, F.** (2020). Bilinear form test statistics for extremum estimation. *Economics Letters* **187**, 108885. Q2

12 citations Leal, C., Galea, M., **Osorio, F.** (2019). Assessment of local influence for the analysis of agreement. *Biometrical Journal* **61** (4), 955-972. Q1

Acevedo, C.A., Tomic, G., Santander, R. Creixell, W., **Osorio, F.**, Sánchez, E. (2016). A Chemometrics approach to analysis volatile molecules released by post-mortem bovine fast-twitch muscles. *CyTA - Journal of Food* **14** (3), 399-404. Q2

8 citations Acosta, J., **Osorio, F.**, Vallejos, R. (2016). Effective sample size for line transect sampling models with an application to marine macroalgae. *Journal of Agricultural, Biological, and Environmental Statistics* **21** (3), 407-425. Q2

11 citations **Osorio, F.** (2016). Influence diagnostics for robust P-splines using scale mixture of normal distributions. *Annals of the Institute of Statistical Mathematics* **68** (3), 589-619. Q2

10 citations Vallejos, R., **Osorio, F.**, Mancilla, D. (2015). The codispersion map: a graphical tool to visualize the association between two spatial variables. *Statistica Neerlandica* **69** (3), 298-314. Q2

40 citations Vallejos, R., **Osorio, F.** (2014). Effective sample size of spatial process models. *Spatial Statistics* **9**, 66-92. Q2

77 citations Meza, C., **Osorio, F.**, De la Cruz, R. (2012). Estimation in nonlinear mixed-effects models using heavy-tailed distributions. *Statistics and Computing* **22** (1), 121-139. Q1

24 citations **Osorio, F.**, Paula, G.A., Galea, M. (2009). On estimation and influence diagnostics for the Grubbs' model under heavy-tailed distributions. *Computational Statistics & Data Analysis* **53** (4), 1249-1263. Q1

Cademartori, D., Navia, R., Galea, M., **Osorio, F.** (2008). Prediction of the economic activity from the short and long-term interest rate differential: New evidences in Chile and the United States of America cases. *Applied Economics Letters* **15** (9), 707-712. Q3

78 citations **Osorio, F.**, Paula, G.A., Galea, M. (2007). Assessment of local influence in elliptical linear models with longitudinal structure. *Computational Statistics & Data Analysis* **51** (9), 4354-4368. Q1

23 citations **Osorio, F.**, Galea, M. (2006). Detection of a change-point in Student-t linear regression models. *Statistical Papers* **47** (1), 31-38. Q2

Submitted papers

Gárate, Á., **Osorio, F.**, Crudu, F. An invariant modification of the bilinear form test.

Jaques, A., Schwarzenberg, C., **Osorio, F.**, Kohnenkamp, E., Veliz, M., Aracena, A. Best practices in kinetic parameter estimation via regression in ore leaching processes.

Vallejos, R., **Osorio, F.**, Ferrer, C. A new coefficient to measure agreement between continuous variables. arXiv:1611.05289

Works in preparation

Avello, P., Tapia, A., **Osorio, F.**, Galea, M. Local influence in ordinary differential equation models.

Bazurto, Z., **Osorio, F.**, Galarza, C., Galea, M. Assessing influence in generalized linear models based on maximum Lq-likelihood estimation.

Osorio, F., Galea, M., Giménez, P. A robust approach for generalized linear models based on maximum Lq-likelihood procedure. arXiv:2408.04176

Osorio, F., Galea, M., Palacios, F. Agreement assessment between two measurement systems using robust P-splines.

Osorio, F., Tapia, A. An EM-based approach for influence diagnostics in LAD regression.

Osorio, F., Tapia, A., Liu, S. Assessment of local influence in LAD regression.

Vallejos, R., **Osorio, F.**, Vidal, S., Britos, G. Optimized imaging prefiltering for enhanced image segmentation.

arXiv preprint

21 citations Vallejos, R., **Osorio, F.**, Cuevas, F. (2016). SpatialPack: Computing the association between two spatial processes. arXiv:1611.05289

Conference Proceedings

Osorio, F. (2011). Smoothing parameter selection and outliers accommodation for smoothing splines. In: *Proceedings of the 58th World Statistics Congress of the International Statistical Institute*, Dublin, Ireland. Session CPS008, 6037-6042.

De la Cruz, R., Eyheramendy, S., Meza, C., **Osorio, F.** (2010). Exact estimation procedures in a spatial mixed-effects probit model with binary outcomes. In: *Joint Statistical Meetings Proceedings*, Statistical Computing Section. Alexandria, VA: American Statistical Association. 3629-3637.

Software

3 citations **Osorio, F.**, Ogueda, A. (2025). *fastmatrix: Fast computation of some matrices useful in statistics*. R package version 0.6. Total downloads: 119K
doi: 10.32614/CRAN.package.fastmatrix

24 citations **Osorio, F.** (2019). *heavy: Robust estimation using heavy-tailed distributions*.
R package version 0.38.196. Total downloads: 58K
URL: CRAN.R-project.org/package=heavy

1 citation **Osorio, F.** (2025). *india: Influence diagnostics in statistical models*.
R package version 0.1-1. Total downloads: 4676
doi: 10.32614/CRAN.package.india

5 citations **Osorio, F.**, Wołodźko, T. (2025). *L1pack: Routines for L1 estimation*.
R package version 0.60. Total downloads: 97K
doi: 10.32614/CRAN.package.L1pack

5 citations **Osorio, F.** (2024). *MVT: Estimation and testing for the multivariate t-distribution*.
R package version 0.3-81. Total downloads: 38K
doi: 10.32614/CRAN.package.MVT

81 citations **Osorio, F.**, Vallejos, R. (2024). *SpatialPack: Tools for assessment of the association between two spatial processes*. R package version 0.4-1. Total downloads: 125K
doi: 10.32614/CRAN.package.SpatialPack

Grants

2024,2025 Principal Investigator UTFSM grant PI_LIR_24_02
Métodos robustos para cuantificar la concordancia entre dos instrumentos de medición.

2024,2025 Co-investigator STIC AmSud grant BIO-CIVIP 23-STIC-02
BIOlogical Control of Insect Vectors and Insect Pests.

2020,2021 Co-investigator UTFSM grant PI-LIR-2020-20
Estimation of the image similarity index using a regression model with errors in the response variable.

2020,2021 Co-investigator MATH-AmSud grant 20-MATH-03
Concordance and covariance functions for environmental modelling.

2018,2019 Co-investigator project Oliver Espiniza DGD-USM
Incorporación de Medios Audiovisuales en el Proceso de Enseñanza y Aprendizaje del curso de Probabilidad y Estadística en la UTFSM.

2018,2019 Principal Investigator UTFSM grant PI-LI-19-11
An adaptive approach for robust estimation in GLM.

2017 Co-investigator DI project Investigación Innovadora Interdisciplinaria (PUCV)
Inteligencia artificial para el monitoreo de la estabilidad de depósitos de relaves.
with Dr. Gabriel Villavicencio (PUCV) and collaborators.

2014,2015 Principal Investigator UTFSM grant 12.14.14.
Influencia local y análisis de residuos para funciones de inferencia cuadráticas.

2014-2017 Principal Investigator FONDECYT grant 1140580
Influence diagnostics and residual analysis in inference functions with applications to longitudinal data.

2011-2014 Associate Researcher CONICYT grant 791100007.
Fortalecimiento del Área Estadística en el Departamento de Matemática de la USM.
Coordinator: Dr. Ronny Vallejos (USM).

2009-2011 Co-Investigator PROSUL grant 490429/2008-4, CNPq-Brazil
Desenvolvimento de métodos de diagnóstico e teoria assintótica em modelos de regressão.
with Dr. Francisco Cysneiros (UFPE) and collaborators.

2007-2010 Principal Investigator FONDECYT grant 11075071
Robust estimation and influence diagnostics in mixed-effect models.

2006-2008 Co-Investigator CNPq-Brazil 471296/2006-6
Diagnóstico de influência em modelos de regressão de contornos elípticos.
with Dr. Gilberto A. Paula (USP) and collaborators.

Students

Doctoral

2025 Ángelo Gárate, Doctor in Statistics at PUC (co-advisor Dr. M. Galea).

2024 Claudio Henríquez, Doctor in Statistics at PUC (co-advisor Dr. M. Galea).

2017 Jonathan Acosta, Doctor in Mathematics at UTFSM (co-advisor Dr. R. Vallejos).

Master

2025 Francine Palacios, Master in Mathematics at UTFSM.

2021 Alonso Ogueda, Master in Mathematics at UTFSM.

2021 Carlos Schwarzenberg, Master in Mathematics at UTFSM.

2017 Paula Guerrero, Master in Statistics at PUCV.

2016 Jessenia Cortés, Master in Statistics at PUCV.

2013 Francisco Cuevas, Master in Mathematics at UTFSM (co-advisor Dr. R. Vallejos).

2012 Francisco Contreras, Master in Statistics at UV (co-advisor Dr. C. Meza).

2012 Rubén Miranda, Master in Statistics at UV.

2011 Patricio Maturana, Master in Statistics at UV.

2011 Marcelo Torres, Master in Statistics at UV (co-advisor Dr. M. Galea).
2009 Patricio Videla, Master in Statistics at PUCV.

Undergraduate

09/24-today Francisco Nilsson, Mathematical Engineer at UTFSM (co-advisor Dr. R. Vallejos).
2024 Rodrigo Pizarro, Mathematical Engineer at UTFSM (co-advisor Dr. A. Veloz).
2024 Fabián Rubilar, Mathematical Engineer at UTFSM.
2021 Pablo Huenchulao, Mathematical Engineer at UTFSM.
2021 Gabriel Vidal, Mathematical Engineer at UTFSM (co-advisor Dr. J. Yuz and Dr. R. Vallejos).
2018 Eileen Labalobich, Bachelor of Science in Statistics at PUCV.
2018 Alonso Ogueda, Mathematical Engineer at UTFSM.
2017 Diego Estay, Bachelor of Science in Statistics at PUCV.
2017 Fernando Salazar, Bachelor of Science in Statistics at PUCV.
2016 Carlos Schwarzenberg, Mathematical Engineer at UTFSM.
2015 Jessica García, Bachelor of Science in Statistics at PUCV.
2015 Agustín Uribe, Mathematical Engineer at UTFSM.
2014 Claudio Henríquez, Mathematical Engineer at UTFSM.
2013 Jonathan Acosta, Mathematical Engineer at UTFSM (co-advisor Dr. R. Vallejos).
2012 Denisse Suarez, Engineer in Statistics at UV.
2012 Rodrigo Toledo, Engineer in Statistics at UV.
2012 Natalia Vargas, Engineer in Statistics at UV.
2009 Orlando Cataldo, Engineer in Statistics at UV.
2009 Joel Herrera, Engineer in Statistics at UV.

Service

01/19-03/25 Associate Editor for the Chilean Journal of Statistics.
06/21-12/24 Member of the Universitary Committee for Court of Honor, UTFSM.
04/16-12/18 Managing Editor for the Chilean Journal of Statistics.

Reviewed articles for:

Automatica ○ BMC Medical Research Methodology ○ Brazilian Journal of Probability and Statistics ○ Chilean Journal of Statistics ○ Colombian Journal of Statistics ○ Communications in Statistics: Theory and Methods ○ Computational Statistics & Data Analysis ○ Environmental and Ecological Statistics ○ Expert Systems With Applications ○ Hacettepe Journal of Mathematics and Statistics ○ Journal of Agricultural, Biological and Environmental Statistics ○ Journal of Applied Statistics ○ Journal of Multivariate Analysis ○ Journal of Statistical Computation and Simulation ○ MathSciNet: Mathematical Reviews ○ Methodology: European Journal of Research Methods for the Behavioral and Social Sciences ○ Natural Resource Modeling ○ Pakistan Journal of Statistics ○ Research in Statistics ○ Sankhyā, Series A ○ Spatial Statistics ○ Statistical Methodology ○ Statistical Papers ○ Stochastic Environmental Research and Risk Assessment ○ TEST ○ The Journal of Open Source Software

Reviewed book for:

- SpringerBriefs in Statistics - ABE

Funding:

- Chilean National Institute of Science and Technology (CONICYT)
- Research and Development Directorate, Universidad Austral de Chile.

Academic databases

- ORCID: orcid.org/0000-0002-4675-5201
- ResearcherID: S-4213-2019
- Google Scholar, ID: IUsZ39UAAAJ

Viña del Mar, July 29, 2025