

CURRICULUM VITAE

VÍCTOR LEIVA

Abstract

Dr. Víctor Leiva is a Full Professor at the School of Industrial Engineering of the Pontificia Universidad Católica de Valparaíso, Chile. He received his degree in Statistics from the same university and his PhD in Statistics and Operations Research from the University of Granada, Spain. He has postdoctoral studies in Statistics for Business and Industry at McMaster University, Canada. Dr. Leiva is an internationally recognized and established researcher. He is a Senior Member of the Institute of Electrical and Electronic Engineering (IEEE) and Elected Member of the International Institute of Statistics (ISI). Professor Leiva is the Editor-in-Chief of the Chilean Journal of Statistics and editor of several international journals. His research interests are in advanced multivariate analysis, artificial intelligence, big data, data science, machine learning, non-Gaussian distributions, operations research, quality control, statistical modeling and its diagnostics. His research has been funded by the National Research and Development Agency (ANID) of the Chilean government, through Fondecyt projects awarded consecutively for 15 years and recently renewed (2020) for four years with an outstanding rating. Dr. Leiva is the author of around 230 scientific papers, his research accomplishments have been recognized with honors and awards, and he has served on many committees, including the Karl Pearson Prize selection committee awarded by the ISI and recognized as the Nobel Prize in Statistics. Prof. Leiva was awarded by <https://research.com> as "Top One 2021" in the ranking of the best scientists in mathematics and statistics in Chile and Hispanic America <https://research.com/scientists-rankings/mathematics/cl>. For more details, see <http://www.victorleiva.cl>.

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- URL:** <http://www.victorleiva.cl>
- Passport number:** P05812836 (Chile)
- ID number:** 9640514-6 (RUT, RUN, Chile)
- Foreign languages:** • English • Portuguese • Spanish (native language).
- Education:** • Doctor in mathematical sciences (major in statistics and operational research), Universidad de Granada, Spain, under the supervision of Dr. José A. Díaz-García.
• Postdoctoral fellow (in statistics for business and industry), McMaster University, Hamilton, Ontario, Canada, under the supervision of Dr. N. Balakrishnan.
• Bachelor in statistics, Pontificia Universidad Católica de Valparaíso, Chile.
- Current and past positions:** • Full Professor (Profesor Titular)– School of Industrial Engineering – Pontificia Universidad Católica de Valparaíso – Chile (eii.pucv.cl).
• Full Professor (Profesor Titular) (2014-2017) – Faculty of Engineering and Science – Universidad Adolfo Ibáñez – Chile (www.uai.cl).
• Full Professor/Chair of the Department of Statistics (2010-2012)/Founder and Head of the PhD Program in Statistics (2010-2014)/Head of the Master Program in Statistics (2010-2012) – Universidad de Valparaíso – Chile (www.ideuv.cl).
• Board of Directors and Technical Manager (2015-2020) – G&R Consulting Group – Chile.
- Indexes:** h-index = 45 (Google Scholar: <https://scholar.google.com/citations?user=t6WTsxEAAAAJ&hl=en>) and h-index = 40 (ISI WoS).
- Editorial positions:** • Editor-in-Chief of the Chilean Journal of Statistics (by the Chilean Society of Statistics: www.soche.cl, ISI Wos and Scopus).
• Associate Editor of Journal of Multivariate Analysis (by Elsevier).

- Associate Editor of Applied Stochastic Models in Business and Industry (by Wiley).
- Associate Editor of the Biometrical Letters (by De Gruyter).
- Associate Editor of the Brazilian Journal of Probability and Statistics (by the Institute of Mathematical Statistics www.imstat.org/bjps).
- Associate Editor of the Colombian Statistical Journal (by UNAL, Colombia).
- Associate Editor of Communications in Statistics: Simulation and Computation (by Taylor & Francis: www.taylorfrancis.com/journals).
- Associate Editor of Communications in Statistics: Theory and Methods (by T&F).
- Associate Editor of Computational Statistics and Data Analysis (by Elsevier).
- Associate Editor of Entre Ciencia e Ingeniería (by UCP, ISI Wos, Scopus, Scielo).
- Associate Editor of Journal of Applied Statistics (by Taylor & Francis).
- Associate Editor of Journal of Statistical Computation and Simulation (by Taylor & Francis: www.taylorfrancis.com/journals).
- Associate Editor of the Pakistan Journal of Statistics (www.pakjs.com).
- Associate Editor of REVSTAT Statistical Journal (by INE, Portugal).
- Associate Editor of Signa Vitae (<https://www.signavitae.com>).
- Associate Editor of Stats (by MDPI: www.mdpi.com/journal/stats).

- Other appointments, memberships:
- Visiting scholar in the University of North Carolina at Chapel Hill, US.
 - Visiting scholar in the University of Leeds, UK.
 - Visiting scholar in the Universidade de Sao Paulo, Brazil.
 - Visiting scholar in the Universidade Federal de Pernambuco, Brazil.
 - Visiting scholar in the Universidade Federal de Goiás, Brazil.
 - Visiting scholar in the Universidad del Norte, Colombia.
 - Visiting scholar in the Universidade do Minho, Portugal.
 - Visiting scholar in the Universidade Aberta, Lisboa, Portugal.
 - Visiting scholar in the Universidade de Lisboa, Portugal.
 - Member of the expert committee for evaluation of research projects of the National Commission of Scientific and Technology Investigation (Colciencias) of the Colombian government (www.colciencias.gov.co)
 - Member of the evaluator peer committee of the Science Fund of the Republic of Serbia (www.fondznanauku.gov.rs).
 - Member of the scholarship committee of the advanced human capital program of the National Research and Development Agency (ANID, ex-Conicyt) of the Chilean government (www.anid.cl)
 - Evaluator peer of the Public Science Program of the Ministry of Science, Technology, Knowledge and Innovation, of the Chilean government (<http://cienciapublica.cl>).
 - Member of the evaluator peer committee of the National Commission of Accreditation of the Chilean government (www.cnachile.cl).
 - Member of the evaluator peer committee of the National Commission of Accreditation of the Colombian government (www.cna.gov.co).
 - Past member of the board of directors of the IEEE-Chile.
 - Past member of the board of directors of the Chilean Society of Statistics.
 - Past member of the finance committee of the International Biometry Society (IBS).
 - Member of several scientific societies (SOCHE, ISI, ASA, ABE, SAE, IEEE, IBS, Statistical Modelling).
 - Past member of the Committee of Academic Evaluation of the Faculty of Sciences of the Universidad de Valparaíso, Chile.
 - Member of numerous national and international scientific committees.

- Research interests:
- Advanced multivariate analysis
 - Artificial intelligence
 - Big data
 - Business intelligence
 - Data mining
 - Data science
 - Distribution theory on non-Gaussianity
 - Goodness-of-fit methods
 - Influence diagnostics
 - Lifetime methods (reliability, survival, censorship)
 - Machine learning
 - Statistical modeling
 - Statistical quality control
 - Stochastic inventory models.

Publications:	233 articles in indexed international statistical journals and book chapters; see details in Appendix II.
Talks:	Over 200 talks and courses in local and international meetings, as well as in diverse international academic centers.
Books:	A total of 5 and several book chapters.
Projects:	30 research project grants developed in Brazil, Colombia, Chile, Mexico and Portugal; see details in Appendix III.
Thesis supervision:	15 doctoral theses • 15 master theses • 35 undergraduate theses.
Thesis committee:	16 doctoral theses (8 from Brazil, 1 from Chile, 4 from Colombia, 3 from Pakistan) • 16 master thesis (1 from Argentina, 5 from Brazil, 10 from Chile) • Over 50 undergraduate theses in Chile and Brazil.
Refereeing work:	Over 200 reviews of papers and books for indexed journals and publishers such as Springer and Elsevier; see details in Appendix IV. Over 30 evaluations of research projects from different countries.
Academic experience:	Experience as lecturer in big data, data science, machine learning, quality control, operational research and in practically all the topics of statistics.
Consulting experience:	Experience as statistical consultant and lecturer in several local and international companies and universities.
Business management:	2015-present: member of the board of directors and technical manager of G&R Consulting Group – Chile
Honors and awards:	<p>See details in Appendix V. The most important ones are:</p> <ul style="list-style-type: none"> (i) To be awarded by https://research.com as "Top One 2021" in the ranking of the best scientists in mathematics and statistics in Chile and Hispanic America https://research.com/scientists-rankings/mathematics/cl. (ii) To be awarded as The Educator of the Year 2012 in Latin America, Brazil, Portugal and Spain by the Juárez-Lincoln-Martí Prize from USA. (iii) To be elected in 2013 as member of the Award Selection Committee (formed besides by Professors from Australia, Korea, Norway, UK and USA) for The Karl Pearson Prize for Contemporary Research Contribution awarded by the International Statistical Institute, considered as the Nobel Price in Statistics. (iv) To have an article awarded by Elsevier Publisher to the most cited article during two consecutive periods (2005-2010 and 2006-2011). (v) To be elected in 2012 as member of the International Statistical Institute. (vi) To be elected in 2012 as senior member of the IEEE. (vii) To have an article awarded by Elsevier to the most downloaded/read article during 2017. (viii) To have three articles awarded by Wiley to the most downloaded/read papers in 2017-2018, 2018, 2019,2020,2021 (ix) To be appointed as Editor-in-Chief of the Chilean Journal of Statistics in 2019. (x) To have an article awarded by the Statistical Institute of Catalonia, Spain. (xi) To have an article awarded by Taylor & Francis to the most downloaded/read paper in 2020.

Appendix I: awarded scientific publications

1. **Leiva, V.**, Barros, M., Paula, G.A., Galea, M., 2007. Influence diagnostics in log Birnbaum-Saunders regression models with censored data. *Computational Statistics and Data Analysis* 51(12):5694-5707. Article awarded by Elsevier to the most cited paper during two consecutive periods: 2005-2010/2006-2011.
2. Balakrishnan, N., **Leiva, V.**, Sanhueza, A., Cabrera, E., 2009. Mixture inverse Gaussian distribution and its transformations, moments and applications. *Statistics* 43:91-104. Article awarded by Taylor & Francis among the 25 most important papers of the history of "Statistics: A Journal of Theoretical and Applied Statistics" due to the international year of Statistics 2013.
3. Paula, G.A., **Leiva, V.**, Barros, M., Liu, S., 2012. Robust statistical modeling using the Birnbaum-Saunders-t distribution applied to insurance. *Applied Stochastic Models in Business and Industry* 28:16-34. Article awarded by Wiley to the most cited paper during 2012-2013.
4. Rojas, F., **Leiva, V.**, Quijada, J., Fuentes, M. 2013. Optimization of contribution margins for a food service by adapting inventory management models. *Global Conference on Business & Finance Proceedings* 8(2):479-487. Article awarded as the best paper (first place like outstanding research) in Session Award Winners, among 600 participants, by the Institute for Business and Finance Research.
5. **Leiva, V.**, Santos-Neto, M., Cysneiros, F.J.A., Barros, M. 2014. Birnbaum-Saunders statistical modelling: a new approach. *Statistical Modelling* 14(1):21-48. Article awarded by Sage Publisher to the most read paper during the month of February, 2014.
6. Rojas, F., **Leiva, V.** 2015. Inventory management in food companies with demand statistically dependent. *Proceeding of the CLADEA 2015*:1-19. Awarded as the "Best Paper" of the track "Operations Management and Value Chain" during the 50th. Annual Assembly of the Latin American Council of Management Schools (CLADEA) 2015.
7. **Leiva, V.**, Rojas, E., Galea, M., Sanhueza, A. 2015. Diagnostics in Birnbaum-Saunders accelerated life models with an application to fatigue data. *Applied Stochastic Models in Business and Industry* 28:16-34. Article awarded by Wiley to the most cited paper during 2014-2015.
8. Caro-Lopera, F.J., **Leiva, V.**, Balakrishnan, N. 2012. Connection between the Hadamard and matrix products with an application to a matrix-variate Birnbaum-Saunders distribution. *Journal of Multivariate Analysis* 104:126-139. Article awarded by Elsevier to the most downloaded/read paper during 2017.
9. Huerta, M., **Leiva, V.**, Lillo, C., Rodriguez, M. 2018. A beta partial least squares regression model: Diagnostics and application to mining industry data. *Applied Stochastic Models in Business and Industry* 34:305-321. Article awarded by Wiley to the most downloaded/read paper in 2017-2018.
10. Balakrishnan, N., **Leiva, V.**, Sanhueza, A., Vilca, F. 2009. Estimation in the Birnbaum-Saunders distribution based on scale-mixture of normals and the EM-algorithm. *Statistics and Operations Research Transactions* 33(2):171-192. Article awarded by the Statistical Institute of Catalonia, Spain, to the last year's top ten most cited papers in 2019-2020.
11. Ventura, M., Saulo, H., **Leiva, V.**, Monsueto, S. 2019. Log-symmetric regression models: information criteria, application to movie business and industry data with economic implications. *Applied Stochastic Models in Business and Industry* 35(4):963-977. Article awarded by Wiley to the most downloaded/read paper in 2018-2019.
12. Balakrishnan, N., **Leiva, V.**, Sanhueza, A., Cabrera, E., 2009. Mixture inverse Gaussian distribution and its transformations, moments and applications. *Statistics* 43:91-104. Article awarded by Taylor & Francis to the most downloaded/read paper in 2019-2020.
13. Ventura, M., Saulo, H., **Leiva, V.**, Monsueto, S. 2019. Log-symmetric regression models: information criteria, application to movie business and industry data with economic implications. *Applied Stochastic Models in Business and Industry* 35(4):963-977. Article awarded by Wiley to the most cited paper in 2019-2020.
14. Marchant, C., **Leiva, V.**, Christakos, G., Cavieres, M.F. 2019. Monitoring urban environmental pollution by bivariate control charts: new methodology and case study in Santiago, Chile. *Environmetrics* 30:e2551. Article awarded by Wiley to the most cited paper in 2019-2020.
15. **Leiva, V.**, Saulo, H., Souza R, Aykroyd, R.G., Vila, R. 2021. A new BISARMA time series model for forecasting mortality using weather and particulate matter data. *Journal of Forecasting* 40(2):346-364. Article awarded by Wiley to the most cited paper in 2020-2021.
16. Saulo, H., Dasilva A, **Leiva, V.**, Sanchez, L., de la Fuente, H. 2022. Log-symmetric quantile regression models. *Statistica Neerlandica* 76(2):124-163. Article awarded by Wiley to the most cited paper in 2020-2021.
17. Sanchez, L., **Leiva, V.**, Galea, M., Saulo, H. 2021. Birnbaum-Saunders quantile regression and its diagnostics with application to economic data. *Applied Stochastic Models in Business and Industry* 37:53-73. Article awarded by Wiley to the most cited paper in 2020-2021.

Appendix II: all scientific publications

1. Giraldo, R., **Leiva, V.**, Christakos, G. Leverage and Cook distance in regression with geostatistical data: methodology, simulation, and applications related to geographical information. *International Journal of Geographical Information Science* (in press).
2. Carcamo, E., Marchant, C., Ibacache-Pulgar, G., **Leiva, V.** Birnbaum-Saunders semi-parametric additive modeling: Estimation, smoothing, diagnostics, and application. *REVSTAT - Statistical Journal* (in press).
3. Dhandapani, P.B., **Leiva, V.**, Martin-Barreiro, C. Construction of a repetitive magic square with Ramanujan's number as its product. *Heliyon* (in press).
4. Diaz-Rodriguez, M., **Leiva, V.**, Martin-Barreiro, C., Cabezas, X., Mahdi, E. The r-hypergeometric distribution: Characterization, mathematical methods, simulations, and applications in sciences and engineering. *Mathematical Methods in the Applied Sciences* (in press).
5. Manchini, C., Ospina, R., **Leiva, V.**, Martin-Barreiro, C. A new approach to data differential privacy based on regression models under heteroscedasticity with applications to machine learning repository data. *Information Sciences* (in press).
6. Perdomo-Arguello, F.J., Ortega-Gomez, E., Galindo-Villardón, P., **Leiva, V.**, Vicente-Galindo, P. STATIS multivariate three-way method for evaluating quality of life after corneal surgery: Methodology and case study in Costa Rica. *Mathematical Biosciences and Engineering* (in press).
7. Sardar, I., Akbar, M.A., **Leiva, V.**, Alsanad, A., Mishra, P. Machine learning and automatic ARIMA/Prophet models-based forecasting of COVID-19: methodology, evaluation, and case study in SAARC countries. *Stochastic Environmental Research and Risk Assessment* (in press).
8. Saulo, H., Vila, R., Bittencourt, V.L., Leao, J., **Leiva, V.**, Christakos, G. On a new extreme value distribution: characterization, parametric quantile regression, and application to extreme air pollution events. *Stochastic Environmental Research and Risk Assessment* (in press).
9. Akbar, M.A., **Leiva, V.**, Rafi, S., Qadri, S.F., Mahmood, S., Alsanad, A. 2023. Towards roadmap to implement blockchain in healthcare systems based on a maturity model. *Journal of Software: Evolution and Process* 34, e2500.
10. Alomari, M.W., Bakherad, M., Hajmohamadi, M., Chesneau, C., **Leiva, V.**, Martin-Barreiro, C. 2023. Improvement of Furuta's inequality with applications to numerical radius. *Mathematics*, 11(1):36.
11. **Leiva, V.**, dos Santos, R.A., Saulo, H., Marchant, C., Lio, Y. 2023. Bootstrap control charts for quantiles based on log-symmetric distributions with applications to monitoring of reliability data. *Quality and Reliability Engineering International* 39, 1.
12. Mazucheli, M., Korkmaz, M.C., Menezes, A.F.B., **Leiva, V.** 2023. The unit generalized half-normal quantile regression model: Formulation, estimation, diagnostics, and numerical applications. *Soft Computing* 27(1).
13. Ortiz, S., Catano-Lopez, A., Velasco, Restrepo, J.P., H., Perez-Coronado, A., Laniado, H., **Leiva, V.** 2023. Identification of hazard and socio-demographic patterns of dengue infections in a Colombian subtropical region from 2015 to 2020: Cox regression models and statistical analysis. *Tropical Medicine and Infectious Disease*, 8(1):30.
14. Rahman, M.Z.U., **Leiva, V.**, Martin-Barreiro, C., Mahmood, I., Usman, M., Rizwan, M. 2023. Fractional transformation-based intelligent H-infinity controller of a direct current servo motor. *Fractal and Fractional*, 7(1), 29.
15. Saulo, H., Vila, R., Cordeiro, S.S., **Leiva, V.** 2023. Bivariate symmetric Heckman models and their characterization. *Journal of Multivariate Analysis* 193, 105097.
16. Alshammari, O., Kchaou, M., Jerbi, H., Aoun, S.B., **Leiva, V.** 2022. A fuzzy design for a sliding mode observer-based control scheme of Takagi-Sugeno Markov jump systems under imperfect premise matching with bio-economic and industrial applications. *Mathematics* 10(18):3309.
17. Alkadya, W., ElBahnasy, K., **Leiva, V.**, Gad, W. 2022. Classifying COVID-19 based on amino acids encoding with machine learning algorithms. *Chemometrics and Intelligent Laboratory Systems* 224:104535.
18. Alomari, M.W., Chesneau, C., **Leiva, V.** 2022. Gruss-type inequalities for vector-valued functions. *Mathematics* 10(9):1535.
19. Alomari, M.W., Chesneau, C., **Leiva, V.**, Martin-Barreiro, C. 2022. Improvement of some Hayashi–Ostrowski type inequalities with applications in a probability setting. *Mathematics* 10(13):2316.
20. Bustos, N., Tello, M., Droppelmann, G., Garcia, N., Feijoo, F., **Leiva, V.** 2022. Machine learning techniques as an efficient alternative diagnostic tool for COVID-19 cases. *Signa Vitae*, 18(1):23–33.
21. Chaouch, H., Charfeddine, S., Aoun, S.B., Jerbi, H., **Leiva, V.** 2022. Multiscale monitoring using machine learning methods: New methodology and an industrial application to a photovoltaic system. *Mathematics* 10(6):890.
22. Charfeddine, S., Alharbi, H., Jerbi, H., Kchaou, M., Abbassi, R., **Leiva, V.** 2022. A stochastic optimization algorithm to enhance controllers of photovoltaic systems. *Mathematics* 10(12), 2128.

23. Couri, L., Ospina, R., da Silva, G., Leiva, V., Figueroa-Zuniga, J. 2022. A study on computational algorithms in the estimation of parameters for a class of beta regression models. *Mathematics* 10(3):299.
24. de Oliveira, H.M., Ospina, R., **Leiva, V.**, Martin-Barreiro, C., Chesneau, C. 2022. A new wavelet-based privatization mechanism for probability distributions. *Sensors* 22(10):3743.
25. Delgado, E., Cabezas, X., Martin-Barreiro, C., **Leiva, V.**, Rojas, F. 2022. An equity-based optimization model to solve the location problem for healthcare centers applied to hospital beds and COVID-19 vaccination. *Mathematics* 10(11):1825.
26. Dhandapani, P.B., Thippan, J., Martin-Barreiro, C., **Leiva, V.**, Chesneau, C. 2022. Numerical solutions of a differential system considering a pure hybrid fuzzy neutral delay theory. *Electronics* 11(9):1478.
27. Figueroa-Zuniga, J.I., Bayes, C.L., **Leiva, V.**, Liu, S. 2022. Robust beta regression modeling with errors-in-variables: A Bayesian approach and numerical applications. *Statistical Papers*, 63:919-942.
28. Figueroa-Zuniga, J.I., Niklitschek, S., **Leiva, V.**, Liu, S. 2022. Modeling heavy-tailed bounded data by the trapezoidal beta distribution with applications. *REVSTAT - Statistical Journal*, 20(3):387–404.
29. Gomez-Deniz, E., **Leiva, V.**, Calderin-Ojeda, E., Chesneau, C. 2022. A novel claim size distribution based on a Birnbaum-Saunders and gamma mixture capturing extreme values in insurance: Estimation, regression, and applications. *Computational and Applied Mathematics* 41:171.
30. Jerez-Lillo, N., Lagos Alvarez, B., Munoz Gutierrez, J., Figueroa-Zuniga, J.I., **Leiva, V.** 2022. A statistical analysis for the epidemiological surveillance of COVID-19 in Chile. *Signa Vitae*, 18(2):19-30.
31. Lagos-Alvarez, B., Jerez-Lillo, N., Navarrete, J.P., Figueroa-Zuniga, J., **Leiva, V.** 2022. A type I generalized logistic distribution: Solving its estimation problems with a Bayesian approach and numerical applications based on simulated and engineering data. *Symmetry* 14(4):655.
32. **Leiva, V.**, Ruggeri, F., Laniado, H. 2022. Bayesian computation in a Birnbaum-Saunders reliability model with applications to fatigue data. In Lio Y, Ng TKH, Tsai T-R, Chen D-G (eds.) *Bayesian Computation in Reliability and Survival Analysis*. Springer, Cham, Switzerland, pp. 41–55.
33. Liu S, **Leiva, V.**, Zhuang D, Ma T, Figueroa-Zuniga JI. 2022. Matrix differential calculus with applications in the multivariate linear model and its diagnostics. *Journal of Multivariate Analysis* 188:104849.
34. Liu, Y., Mao, C., **Leiva, V.**, Liu, S., Silva Neto, W.A. 2022. Asymmetric autoregressive models: Statistical aspects and a financial application under COVID-19 pandemic. *Journal of Applied Statistics*, 49(5):1323–1347.
35. Ma, L., Zhang, Y., **Leiva, V.**, Liu, S., Ma, T. 2022. A new clustering algorithm based on a radar scanning strategy with applications to machine learning data. *Expert Systems With Applications*, 191:116143.
36. Marchant, C., **Leiva, V.**, Saulo, H., Vila, R. 2022. Multivariate methods to monitor the risk of critical episodes of environmental contamination using an asymmetric distribution with data of Santiago, Chile. In Roshni T, Samui P, Tien D, Dookie B, Rahman Khatib K (eds.) *Risk, Reliability and Sustainable Remediation in the Field of Civil and Environmental Engineering*. Elsevier, Amsterdam, Netherlands, Chapter 20, pp. 359–378.
37. Marchant, C., **Leiva, V.** 2022. Chilean Journal of Statistics: Thirty eight years generating quality knowledge. *Chilean Journal of Statistics* 13(1):1-2.
38. Mazucheli, M., Alves, B., Menezes, A.F.B., **Leiva, V.** 2022. An overview on parametric quantile regression models and their computational implementation with applications to biomedical problems including COVID-19 data. *Computer Methods and Programs in Biomedicine* 221:106816.
39. Mazucheli, M., Alves, B., Korkmaz, M.C., **Leiva, V.** 2022. Vasicek quantile and mean regression models for bounded data: New formulation, mathematical derivations, and numerical applications. *Mathematics* 10(9):1389.
40. Nor, A.K.M., Pedapati, S.R., Muhammad, M., **Leiva, V.** 2022. Abnormality detection and failure prediction using explainable Bayesian deep learning: Methodology and case study with industrial data. *Mathematics* 10(4):554.
41. Ospina, R., Leite, A., Ferraz, C., Magalhaes, A., **Leiva, V.** 2022. Data-driven tools for assessing and combating COVID-19 out-breaks based on analytics and statistical methods in Brazil. *Signa Vitae*, 18(3):18–32.
42. Rahman, M.Z.U., Liaquat, R., Rizwan, M., Martin-Barreiro, C., **Leiva, V.** 2022. A robust controller of a reactor electromicrobial system based on a structured fractional transformation for renewable energy Fractal and Fractional 6(12), 736.
43. Rangasamy, M., Chesneau, C., Martin-Barreiro, C., **Leiva, V.** 2022. On a novel dynamics of SEIR epidemic models with a potential application to COVID-19. *Symmetry* 14(7):1436.
44. Rojas, F., Wanke, P., **Leiva, V.**, Huerta, M., Martin-Barreiro, C. 2022. Modeling inventory cost savings and supply chain success factors: A hybrid robust compromise multi-criteria approach. *Mathematics* 10(16):2911.
45. Saulo, H., Dasilva, A., **Leiva, V.**, Sanchez, L., de la Fuente-Mella, H. 2022. Log-symmetric quantile regression models. *Statistica Neerlandica*, 76(2):124–163.

46. Sharma P, Singh AK, Leiva, V., Cabezas, X., Martin-Barreiro, C. 2022. Modern multivariate statistical methods for evaluating the impact of WhatsApp on academic performance: Methodology and case study in India. *Applied Sciences* 12(12):6141.
47. Zeidabadi FA, Dehghani M, Trojovsky P, Hublovsky S, Leiva, V., Dhiman G. 2022. Archery algorithm: A novel stochastic approach for solving optimization problems. *Computers, Materials and Continua* 72(1):399-416.
48. Ayala M, de la Fuente-Mella H, **Leiva, V.**, Vallina-Hernandez AM. 2021. Trade gravity models for the factors affecting foreign trade in the political-administrative regions of Chile. In Goonetilleke, RS, Xiong S, Kalkis H, Roja Z, Karwowski W, Murata A (eds.) *Advances in Physical, Social and Occupational Ergonomics*. Springer, Cham, Switzerland, pp. 495-503.
49. Cabezas X, Martin-Barreiro C, Garcia S, Delgado E, **Leiva, V.** 2021. A two-stage location problem with order solved using a Lagrangian algorithm and stochastic programming for a potential use in COVID-19 vaccination based on sensor-related data. *Sensors* 21(16):5352.
50. Calle-Saldarriaga A, Laniado H, Zuluaga F, **Leiva, V.** 2021. Homogeneity tests for functional data based on depth-depth plots with chemical applications. *Chemometrics and Intelligent Laboratory Systems* 219:104420.
51. Cavieres MF, **Leiva, V.**, Marchant C, Rojas F. 2021. A methodology for data-driven decision making in the monitoring of particulate matter environmental contamination in Santiago of Chile. *Reviews of Environmental Contamination and Toxicology* 250:45-67.
52. Chahuan-Jimenez, K., Rubilar, R., de la Fuente-Mella, H., **Leiva, V.** 2021. Breakpoint analysis for the COVID-19 pandemic and its effect on the stock markets. *Entropy* 23(1):100.
53. Costa E, Santos-Neto M, **Leiva, V.** . 2021. Optimal sample size for the Birnbaum-Saunders distribution under decision theory with symmetric and asymmetric loss functions. *Symmetry* 13(6):926.
54. de la Fuente-Mella H, Rubilar R, Chahuan-Jimenez K, **Leiva, V.** . 2021. Modeling COVID-19 cases statistically and evaluating their effect on the economy of countries. *Mathematics* 9(13):1558.
55. Doumari SA, Givi H, Dehghani M, Montazeri Z, **Leiva, V.**, Guerrero JM. 2021. A new two-stage algorithm for solving optimization problems. *Entropy* 23(4):491.
56. **Leiva, V.**, Saulo, H., Souza, R., Aykroyd, R.G., Vila, R. 2021. A new BISARMA time series model for forecasting mortality using weather and particulate matter data. *Journal of Forecasting* 40:346-364.
57. **Leiva, V.**, Marchant C. 2021. *Chilean Journal of Statistics: An open-access, indexed, and free forum for statistical publications from worldwide*. *Chilean Journal of Statistics* 12(2):123-124.
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192. **Leiva, V.**, Soto, G., Cabrera, E., Cabrera, G. 2011. New control charts based on the Birnbaum-Saunders distribution and their implementation in R code. *Colombian Journal of Statistics* 34:147-176.
193. Riquelme, M., **Leiva, V.**, Galea, M., Sanhueza, A. 2011. Influence diagnostics on the coefficient of variation of elliptically contoured distributions. *Journal of Applied Statistics* 38:513-532.
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229. Galea, M., **Leiva, V.**, Paula, G. 2004. Influence diagnostics in log-Birnbaum-Saunders regression models. *Journal of Applied Statistics* 31:1049-1064.
230. Díaz-García, J.A., **Leiva, V.** 2003. Doubly non-central t and F distributions obtained under singular and non-singular elliptic distributions. *Communications in Statistics: Theory and Methods* 32:11-32.
231. Díaz-García, J.A., Galea, M., **Leiva, V.** 2003. Influence diagnostics for multivariate elliptic regression linear models. *Communications in Statistics: Theory and Methods* 32:625-641.
232. Díaz-García, J.A., **Leiva, V.**, Galea, M. 2002. Singular elliptic distribution: density and applications. *Communications in Statistics: Theory and Methods* 31:665-681.
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Appendix III: research projects

1. Title: “Statistical and mathematical aspects of multivariate cumulative damage models, and their application to cancer, earthquakes, economy, neuroscience and pollution in Chile”. Supported by Fondecyt 1200525. During: 2020-2024. Investigator (type): Víctor Leiva (main investigator).
2. Assignable Project Grant 205.752/2020. Supported by the Office of the Vice President for Research and Advanced Studies (VREIA) of the Pontificia Universidad Católica de Valparaíso, Chile. During: 2020-2024. Investigator (type): Víctor Leiva (main investigator).
3. Title: “On new characterizations of cumulative damage models and their applications to contamination, mining and natural catastrophes”. Supported by Fondecyt 1160868. During: 2016-2020. Investigator (type): Víctor Leiva (main investigator).
4. Title: “Modelagem e diagnóstico em regressão”. Supported by CNPq Projeto Universal N. 476781/2013-2, Brazilian government. During: 2013-2014. Investigator (type): Víctor Leiva (co-investigator).
5. Title: “Multivariate and matrix-variate Birnbaum-Saunders distributions: characterization, modeling and diagnostics”. Supported by Fondecyt 1120879, Chilean government. During: 2012-2016. Investigator (type): Víctor Leiva (main investigator).
6. Title: “Statistical modelling based on a reparameterized version of the Birnbaum-Saunders distribution”. Supported by 400034/2013-1-CNPq, Brazilian government. During: 2013. Investigator (type): Víctor Leiva - Francisco Cysneiros (main investigators).
7. Title: “Statistical modelling based on a reparameterized version of the Birnbaum-Saunders distribution”. Supported by FACEPE-APV-0005-1.02/13, Pernambuco, Brazil. During: 2013. Investigators: Víctor Leiva - Francisco Cysneiros (main investigators).
8. Title: “Spatio-temporal models based on random fields evolving on the sphere with applications to contamination, mining and natural catastrophes”. Supported by Fondecyt 1130647, Chilean government. During: 2013-2017. Investigator (type): Víctor Leiva (coinvestigator).
9. Title: “Caracterización de un nuevo modelo de vida acelerada con aplicación a las ciencias agrarias”. Supported by UCM-434153, Universidad Católica del Maule, Chile. During: 2013-2014. Investigator (type): Víctor Leiva (assistant investigator).

10. Title: “Modelagem Mista Elíptica e Semiparamétrica”. Supported by Universal/CNPq 14/2011 - Projeto: 473306/2011-5, CNPq, Brazil. During: 2012-2013. Investigator (type): Víctor Leiva (assistant investigator).
11. Title: “Estudos avançados em modelos de regressão: métodos de diagnóstico e teoria assintótica”. Supported by Prosul 490098 - CNPq, Brazil. During: 2011-2012. Investigator (type): Víctor Leiva (assistant investigator).
12. Title: “Distribuciones asimétricas de matrices aleatorias y aspectos relacionados”. Supported by Universidad de Medellín, Colombia, y Universidad de Valparaíso, Chile. During: 2011-2013. Investigator (type): Víctor Leiva (assistant investigator).
13. Title: “Optimización de costos de venta y márgenes de contribución en un servicio de alimentación colectiva mediante diseño de un sistema de abastecimiento y política de inventarios”. Supported by DIPUV 43/2010, Universidad de Valparaíso, Chile. During: 2011-2012. Investigator (type): Víctor Leiva (assistant investigator).
14. Title: “Robust statistical modeling of the failure rate using the Birnbaum-Saunders- t distribution”. Supported Research Centre of Mathematics of the University of Minho through the FCT Pluriannual Funding Program. During: 2010. Investigator (type): Víctor Leiva (investigator).
15. Title: “New families of distributions on the inverse Gaussian model: theory, methodology and application”. Supported by Fondecyt 1090265, Chilean government. During: 2009-2013. Investigator (type): Víctor Leiva (assistant investigator).
16. Title: “Modelos de regressão Birnbaum-Saunders generalizados”. Supported by Edital MCT/CNPq 14/2008, CNPq, Brazil. During: 2009-2011. Investigator (type): Víctor Leiva (assistant investigator).
17. Title: “Desenvolvimento de Métodos de Diagnóstico e Teoria Assintótica em Modelos de Regressão”. Supported by Edital MCT/CNPq /No 011/2008, Prosul, Brazil. During: 2009-2011. Investigator (type): Víctor Leiva (assistant investigator).
18. Title: “Modelos de regresión con respuesta censurada no-normal”. Supported by DIPUV 27/2006, Universidad de Valparaíso, Chile. During: 2008-2009. Investigator (type): Víctor Leiva (main investigator).
19. Title: “Sistemas dinámicos en redes: análisis teórico y aplicaciones en neurociencias”. Supported by DIPUV 50/2007, Universidad de Valparaíso, Chile. During: 2008-2009. Investigator (type): Víctor Leiva (assistant investigator).
20. Title: “Caracterización de una nueva familia de distribuciones de vida del tipo Gaussiana inversa”. Supported by DIUFRO 080061, Universidad de La Frontera, Chile. During: 2008-2009. Investigator (type): Víctor Leiva (assistant investigator).
21. Title: “Diagnóstico de influencia em modelos de regressão de contornos elípticos”. Supported by CNPq 471296/2006-6, Brazil. During: 2006-2008. Investigator (type): Víctor Leiva (assistant investigator).
22. Title: “Multivariate extensions of the generalized Birnbaum-Saunders distribution and their characterization and applicability”. Supported by Fondecyt 1080326, Chilean government. During: 2008-2011. Investigator (type): Víctor Leiva (main investigator).
23. Title: “Characterization and applications of a new family of life distributions based on the elliptically contoured distributions”. Supported by Fondecyt 1050862, Chilean government. During: 2005-2007. Investigator (type): Víctor Leiva (main investigator).
24. Title: “Inferencia sobre el coeficiente de variación de poblaciones elípticas”. Supported by DIPUCM 200601, Universidad Católica del Maule, Chile. During: 2004-2006. Investigator (type): Víctor Leiva (assistant investigator).
25. Title: “Modelos de regresión con respuesta censurada y su diagnóstico”. Supported by DIPUV 42/2004, Universidad de Valparaíso, Chile. During: 2004-2006. Investigator (type): Víctor Leiva (main investigator).
26. Title: “Validação de modelos estatísticos”. Supported by Prosul, Brazil. During: 2004-2004. Investigator (type): Víctor Leiva (assistant investigator).
27. Title: “Toxicología reproductiva y del desarrollo embrionario de una formulación comercial del herbicida ácido 2,4-dicloro fenoxiacético (2,4-d)”. Supported by DIPUV 22/2002, Universidad de Valparaíso, Chile. During: 2002-2003. Investigator (type): Víctor Leiva (co-investigator).
28. Title: “Distribuciones elípticas utilizadas como modelos de vida”. Supported by DIPUV 21/2002, Universidad de Valparaíso, Chile. During: 2002-2003. Investigator (type): Víctor Leiva (main investigator).
29. Title: “Distribuciones elípticas sesgadas: su uso como distribuciones de vida”. Supported by UAAAN 02.03.0308.2627, México. During: 2002-2002. Investigator (type): Víctor Leiva (assistant investigator).
30. Title: “Inferencia sobre el coeficiente de variación en poblaciones elípticas”. Supported by DIPUV 33/2000, Universidad de Valparaíso, Chile. During: 2000-2001. Investigator (type): Víctor Leiva (main investigator).

Appendix IV: refereeing/reviewing work

- Reviewer of manuscripts submitted to the following statistical journals (in alphabetic order):
 1. Advances in Decision Sciences.
 2. Applied Mathematical Modelling.
 3. Applied Stochastic Models in Business and Industry.
 4. Biometrics.
 5. Brazilian Journal of Probability and Statistics (8 times).
 6. Chilean Journal of Statistics (4 times).
 7. Communications in Statistics (26 times).
 8. Computational Statistics and Data Analysis (84 times).
 9. Computational Statistics.
 10. Hacettepe Journal of Mathematics and Statistics.
 11. IEEE Transactions on Reliability (2 times).
 12. International Journal of Mathematics and Mathematical Sciences.
 13. International Journal of Quality, Statistics, and Reliability.
 14. Journal of Applied Statistics (5 times).
 15. Journal of Multivariate Analysis (5 times).
 16. Journal of Commerce and Social Sciences.
 17. Journal of Statistical Computation and Simulation (5 times).
 18. Journal of Statistical Planning and Inference (3 times).
 19. Journal of Statistical Theory and Practice.
 20. Lifetime Data Analysis (2 times).
 21. Pakistan Journal of Statistics (6 times).
 22. Mathematical Problems in Engineering.
 23. Metron.
 24. Reviews of Environmental Contamination and Toxicology.
 25. Revista Colombiana de Estadística.
 26. REVSTAT Statistical Journal.
 27. Risk Analysis (2 times).
 28. Springer Proceedings in Mathematics and Statistics (3 times).
 29. Statistics (4 times).
 30. Statistics and Operations Research Transactions.
 31. Statistics and Probability Letters (4 times).
 32. Statistica Neerlandica (2 times).
 33. Statistical Papers (2 times).
 34. Statistical Modeling.
 35. Statistical Methodology (3 times).
 36. Stochastic Environmental Research and Risk Assessment (21 times).
 37. Among others.
- Reviewer of book proposals submitted to Springer (4 times).
- Reviewer of book proposals submitted to Elsevier (1 time).
- Reviewer of projects for FONDECYT of the Chilean government (10 times).
- Reviewer of projects for the Public Science Program of the Ministry of Science, Technology, Knowledge and Innovation, of the Chilean government (4 times).
- Reviewer of projects for Colciencias of the Colombian government (15 times).
- Reviewer of projects for the Science Fund of the Republic of Serbia (1 time).
- Reviewer of projects for MECESUP (improvement of the quality of the Chilean education) of the Chilean Education Ministry (4 times).
- Reviewer of projects for several Chilean, Colombian, and Mexican universities (over 10 times).

Appendix V: honors and awards

- Recipient of scholarship (statistician, Catholic University of Valparaíso-Chile).
- Recipient of scholarship from the International Cooperation Agency of the Spanish government (doctorate in statistics, University of Granada, Spain).
- Ph.D. thesis with highest honors and with the special distinction “cum laude” for unanimity of the thesis committee.
- Ph.D. thesis postulated to the best doctoral thesis award, University of Granada, Spain.
- 2010: Article awarded by Elsevier Publisher entitled “Influence diagnostics in log-Birnbaum-Saunders regression models with censored data” by Leiva, Barros, Paula and Galea, published in *Computational Statistics and Data Analysis*, Vol. 51, pp. 5694-5707, 2007, to the most cited paper during two consecutive periods: 2005-2010/2006-2011.
- 2008-2014: Awarded as the most productive researcher in the University of Valparaíso, Chile, during seven consecutive periods.
- 2011: Elected member of the International Statistical Institute.
- 2012: Elected senior member of the IEEE Society.
- 2012: Awarded as the educator of the year 2012 in Latin America, Spain and Portugal by the Juárez-Lincoln-Martí Prize.
- 2012: Article awarded by Wiley entitled “Robust statistical modeling using the Birnbaum-Saunders-t distribution applied to insurance” by Paula, Leiva, Barros and Liu, published in *Applied Stochastic Models in Business and Industry* Vol. 28, pp. 16-34, 2012, to the most cited paper during 2012-2013.
- 2013: Article awarded by Taylor & Francis Publisher entitled “Mixture inverse Gaussian distribution and its transformations, moments and applications” by Balakrishnan, Leiva, Sanhueza and Cabrera, published in *Statistics*, Vol. 43, pp. 91-104, 2009, elected among the 25 most important articles of the history of “*Statistics: A Journal of Theoretical and Applied Statistics*” due to the international year of Statistics 2013.
- 2013: Member of the Award Selection Committee (formed besides by Professors from Australia, Korea, Norway, UK and USA) for The Karl Pearson Prize for Contemporary Research Contribution awarded by The International Statistical Institute.
- 2013: Article awarded as the Best (first place, outstanding research) in Session Award Winners, among 600 participants, by the Institute for Business and Finance Research entitled “A methodology for supply logistics based on random inventory management models applied to food services” by Rojas, Leiva, Fuentes and Quijada, presented in the Global Conference on Business and Finance, Costa Rica, 2013.
- 2014: Article awarded by Sage Publisher entitled “Birnbaum-Saunders statistical modelling: a new approach” by Leiva, Santos-Neto, Cysneiros and Barros, published in *Statistical Modelling*, Vol. 14(1), pp. 21-48, 2014, to the most cited read during the month of February.
- 2015: Article awarded as the “Best Paper” the track “Operations Management and Value Chain” during the 50th. Annual Assembly of the Latin American Council of Management Schools (CLADEA) 2015.
- 2015: Awarded as the “Best Researcher 2015” by the he Adolfo Ibáñez University, Chile.
- 2015: Awarded as the “Outstanding Contribution in Research” of the Faculty of Engineering and Sciences of the Adolfo Ibáñez University, Chile.
- 2016: Article awarded by Wiley entitled “Diagnostics in Birnbaum-Saunders accelerated life models with an application to fatigue data” by Leiva, Rojas, Galea and Sanhueza, published in *Applied Stochastic Models in Business and Industry*; Vol. 28, pp. 16-34, 2015, to the most downloaded/read paper during 2017.
- 2018: Article awarded by Elsevier entitled “Connection between the Hadamard and matrix products with an application to a matrix-variate Birnbaum-Saunders distribution” by Caro-Lopera, Leiva and Balakrishnan, N. published in *Journal of Multivariate Analysis*; Vol. 104, pp. 126-139, 2012, to the most downloaded/read paper during 2017.
- 2019: Article awarded by Wiley entitled “A beta partial least squares regression model: Diagnostics and application to mining industry data” by Huerta, Leiva, Lillo, and Rodriguez, published in *Applied Stochastic Models in Business and Industry*; Vol. 34, pp. 305-321, 2018, to the most downloaded/read paper in 2017-2018.
- 2020: Article awarded by the Statistical Institute of Catalonia, Spain, entitled “Estimation in the Birnbaum-Saunders distribution based on scale-mixture of normals and the EM-algorithm” by Balakrishnan, Leiva, Sanhueza, and Vilca, published in *Statistics and Operations Research Transaction*; Vol. 33, pp.171-192, 2009, to the last year’s top ten most cited papers in 2019-2020.
- 2020: Article awarded by Wiley entitled “Log-symmetric regression models: information criteria, application to movie business and industry data with economic implications” by Ventura, Saulo, Leiva, and Monsueto, published in *Applied Stochastic Models in Business and Industry*; Vol. 35, pp. 963-977, 2019, to the most downloaded/read paper during 2018-2019.

- 2020: Article awarded by Taylor & Francis entitled “Mixture inverse Gaussian distribution and its transformations, moments and applications” by Balakrishnan, Leiva, Sanhueza and Cabrera, published in *Statistics: A Journal of Theoretical and Applied Statistics*, Vol. 43, pp. 91-104, 2009, o the most downloaded/read paper in 2019-2020.
- 2021: Article awarded by Wiley entitled “Log-symmetric regression models: information criteria, application to movie business and industry data with economic implications” by Ventura, Saulo, Leiva, and Monsueto, published in *Applied Stochastic Models in Business and Industry*; Vol. 35, pp. 963-977, 2019, to the most downloaded/read paper during 2019-2020.
- 2021: Article awarded by Wiley entitled “Monitoring urban environmental pollution by bivariate control charts: new methodology and case study in Santiago, Chile” by Marchant, Leiva, Christakos, and Cavieres, published in *Environmetrics*, Vol. 30, article e2551, 2018. Article awarded by Wiley to the most cited paper in 2019-2020.
- 2020-2021: Awarded to the excellence in research by the Pontificia Universidad Católica de Valparaíso, Chile, during two consecutive periods.

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