



**Del Valle University** Bolivia 2000-2004



University of Alcalá Spain, 2009-2010



Universitetet i Agder Norway. 2018-2020



Helmholtz-Zentrum **Dresden-Rossendorf** (HZDR)

Germany, 2020-2021

Statistical analysis

& data science



NIDI Royal Academy of Science of the **Netherlands** 

Netherlands, 2022-2023



**University of Groningen** (Riiksuniversiteit Groningen, RUG) Netherlands, 2023-

### OTHER EDUCATION

Evaluation of Social Programs (J-PAL) Massachusetts Institute of Technology (MIT) Oxford University (UK)

Theorizing and Theory Building Halmstad University (HH, Sweden)

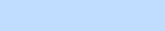
Macro-prudential Policies International Monetary Fund (IMF) Advanced Research Methods

Multidimensional poverty **OPHI. Oxford University** 

Bayesian modeling University of Reading (UK)

### JOB EXPERIENCE & AWARDS

2023



Events Awards

01/2023 Marie Skłodowska-Curie Postdoctoral Fellow University of Groningen - Faculty of Spatial Sciences

04/2022 Postdoctoral researcher
NIDI - Royal Netherlands Academy of Sciences 10/2021 Postdoctoral consultant Agenzia Italiana per la Cooperazione allo Sviluppo

Jobs

4/2021 Postdoctoral consultant University of Groningen

10/2020 Postdoctoral data scientist

01/2020 First prize - TFI award

5/2019 Visiting Scholar
KU Leuven University (Belgium)

1/2018 Ph.D scholarship (Norway)

7/2017 International Consultant, OPHI

11/2016 First prize, International Young

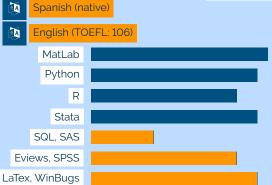
5/2016 Deputy manager, BCP bank (CrediCorp)

### SKILLS AND TECHNOLOGIES

18 years of experience in data science, mathematical modeling, health, social and statistical and econometric analysis for the government, academics in universities, private organizations and non-profit organizations (NGOs).

Financial & Risk analysis Academic Research & publishing Mathematical LANGUAGES

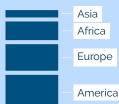
Postdoctoral consulting modeling

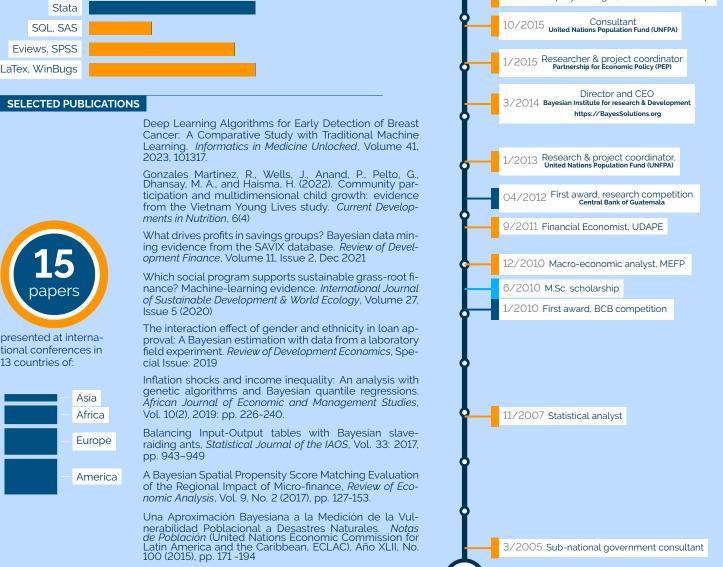


I mainly work with Python/Spyder♣, MatLab♠, Stata⊞ and R.



tional conferences in 13 countries of:





2005

### Forecasts of stock prices

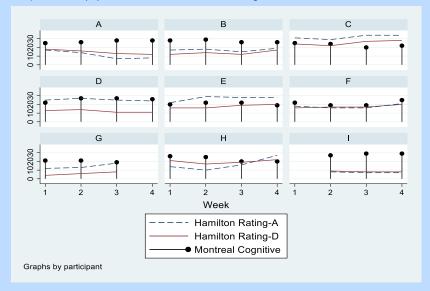
Recent portfolio of data-science projects

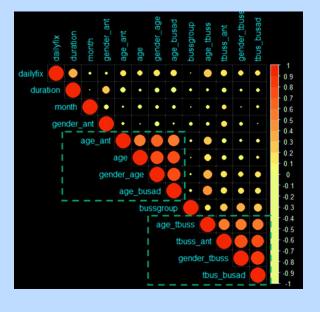
Econometric methods were applied to forecast stock prices



### Physical activity and mental status

The relationship between physical activity and mental status was evaluated using longitudinal models with random effects. Mental status was evaluated with the Hamilton rating, for Anxiety (A) and Depression (D), and with the Montreal cognitive scale.

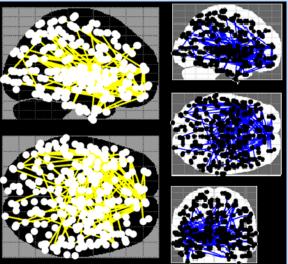




## Credit scoring for digital banking

Machine learning methods -XGBoost, Random Forests (Boruta, XTraTrees, Elastic Nets (LASSO, ridge)- were applied to estimate the relationship between demographic variables and the probability of loan default.

Project: AjoCard (Nigeria)



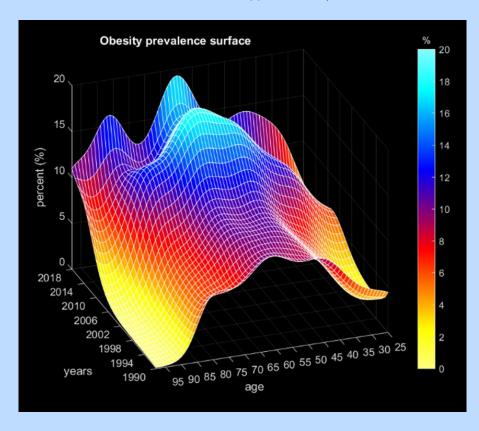
### Effects of ADHD medication

The difference in the effect of ADHD medication methylphenidate (MPH) on children and adults was evaluated with network-based statistics (NBS). NBS measure the connectivity of functional MRI brain signals through connectivity matrices.

**Project: Netherlands** 

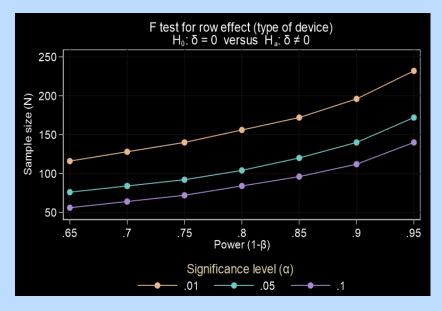
## Prevalence and high BMI & obesity attributable mortality

Excessive weight has been causally linked to multimorbidity due to relation of high-BMI and obesity with diabetes, cardiovascular diseases, and cancer. Prevalence surfaces and high BMI/obesity attributable mortality were calculated for multiple European countries as part of the postdoctoral research at the Netherlands Interdisciplinary Demographic Institute (NIDI) of the Royal Netherlands Academy of Sciences and Arts (Koninklijke Nederlandse Akademie van Wetenschappen, KNAW).



### Sample size and power calculations

Sample size and power calculations were calculated for medical clinical trials. Sample size and power calculations are essential in the design of scientific experiments that are well-powered and capable of providing meaningful results. These calculations are based on the effect size (the magnitude of the effect that the study aims to detect), variability, the significance level  $\alpha$  (Type I error), and the power 1 -  $\beta$  (the probability of correctly rejecting a false null hypothesis, that is detecting a true effect), that aims to minimize the risk of false negatives (Type II errors).



## Replication of empirical results from previous research studies

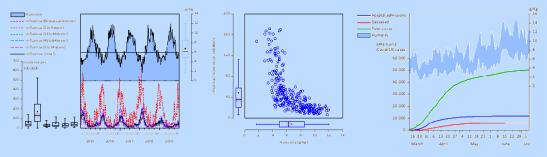
The results of the study of Selb & Munzert (2018) about the effects of Hitler's speech campaign on the rise of the Nazi party were replicated based on R codes\*. Reproducing the findings of a study is a foundation for building on previous research. Researchers can use validated methods as a starting point for their own investigations. Replicating or updating results with new data implies updating the source code, scripts, or algorithms.

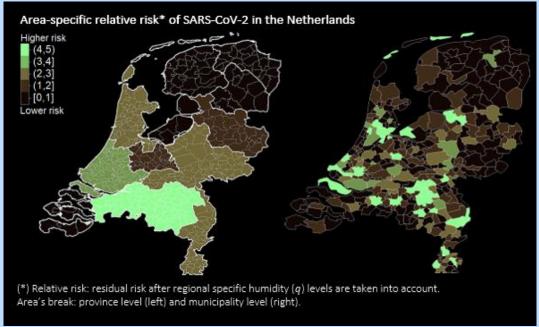


(\*) Selb, P., & Munzert, S. (2018). Examining a most likely case for strong campaign effects: Hitler's speeches and the rise of the Nazi party, 1927–1933. *American Political Science Review*, 112(4), 1050-1066.

## Disease mapping of SARS-CoV-2 in the Netherlands

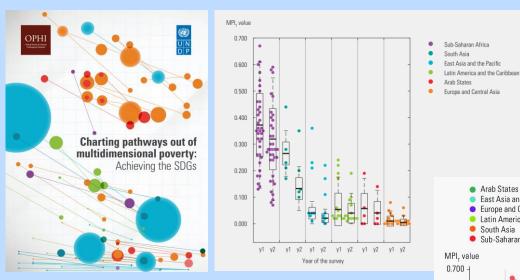
The relationship between specific humidity level and SARS-CoV-2 in the Netherlands was evaluated over time and at regional level with Bayesian spatio-temporal models. Disease-mapping of the relative risks of COVID-19 were created in R.





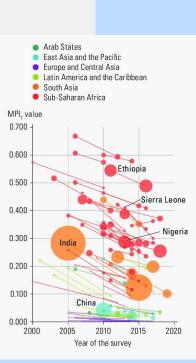
## Data science & visualization

Experience in data visualization with MatLab, R, Stata, Eviews, Excel, LaTeX and Python (MatLab being my favorite one)



## Visualization of indicators of multidimensional poverty

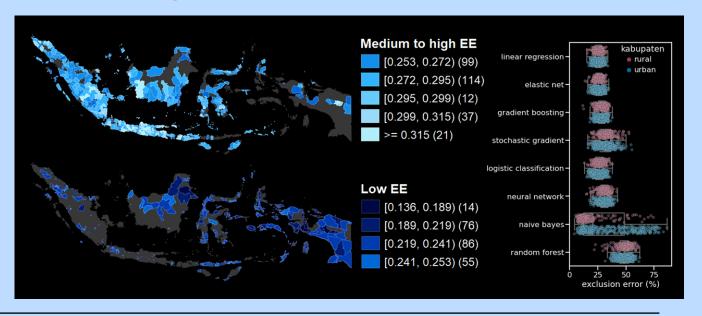
Swarm-plots and bubble-plots were elaborated to illustrate the changes in multidimensional poverty worldwide. The bubble-plot was used as the cover-page for the publication "Charting pathways out of multidimensional poverty: Achieving the SDGs", released on 16 July 2020 by the Oxford Poverty and Human Development Initiative at the University of Oxford and the Human Development Report Office of the United Nations Development Programme.

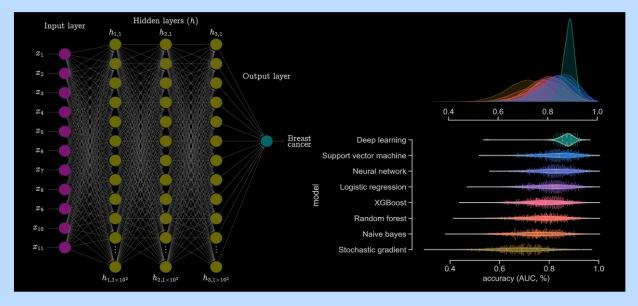


## Machine learning & Deep learning

## Machine-leaning for poverty targeting in Indonesia

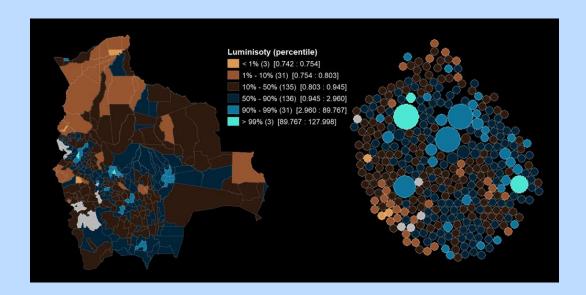
PMT machine learning models were estimated with the national socio-economic survey (SUSENAS) of Indonesia. Proxy-means testing (PMT) was applied with spatial machine learning model to identify poor people that are the target of intervention programs. PMT has been criticized because it excludes many poor people, thus diminishing the impact of intervention programs on poverty. Hence, a special focus was implemented to reduce exclusion errors (EE) through contiguity matrices. EE measure the percentage of poor households mistakenly predicted as not poor.





## A comparative study of deep learning algorithms with machine learning

Deep learning algorithms were compared with machine learning algorithms for the prognosis of breast cancer. Feature selection was performed with the SULOV-gradient boosting algorithm applied to data obtained from medical records (demographic and anthropometric information), biological markers from routine blood samples, and relative risks from meta-analysis and publicly available databases. The optimal set of predictors was used in a k-fold Monte Carlo cross-validation experiment that compared deep learning against seven traditional machine learning algorithms: support vector machines, neural networks, logistic regression, XGBoost, random forests, naive Bayes, and stochastic gradient algorithms.



## Indicators of population vulnerability to natural disasters and climate change

Indicators of population vulnerability to natural disasters and biological risks as pandemics were calculated as part of a consultancy for the Bolivian government, with resources of the United Nations Population Fund (UNFPA).

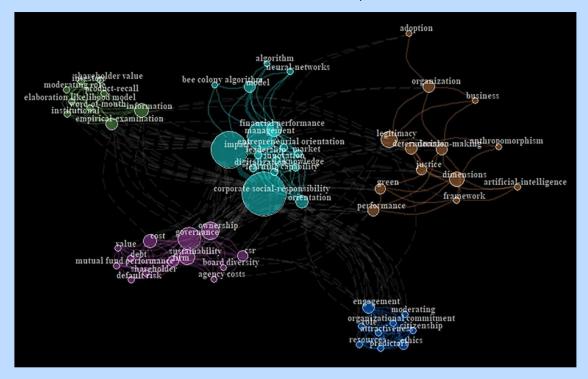
Part of the indicators (such as the luminosity indicator and the Normalized Difference Vegetation Index - NDVI) were calculated with imagery of the Sentinel-2 satellite with VIIRS instruments (suite of visible infrared imaging radiometers in Sentinel-2). Sentinel-2 is part of the Copernicus program of the European Space Agency.

The indicators based on satellite images were combined with demographic indicators, indicators of multidimensional poverty, and indicators of infrastructure —such as the number of hospitals in the sub-national regions analyzed in the study— relevant to measure vulnerability to biological risks like the COVID pandemic and natural disasters related to climate change such as floods, droughts, hailstorms, frosts and forest fires.

# Social science indicators & Scientometrics

### Scientometrics/bibliometrics

Scientometrics is the quantitative analysis of scientific literature. Scientometrics applies statistical and mathematical methods to analyze large sets of bibliographic data, citation patterns, and other relevant metrics with the aim of measuring the productivity of researchers, the impact of publications, and the dynamics of scientific collaboration and communication between researchers. Bibliometric analysis includes mapping and visualization of the connections between researchers, institutions, research topics, and trends over time.



### Curriculum Vitae (in extenso) Rolando Gonzales Martínez

Citizenship: Bolivian – residence permit in the Netherlands (EU)

Address: Landleven 1, Groningen, the Netherlands

: Street 16, 577 Obrajes La Paz - Bolivia

Email : r.m.gonzales.martinez@rug.nl

### **Brief biography**

Postdoctoral Fellow of the Marie Skłodowska-Curie Actions at the University of Groningen (Rijksuniversiteit Groningen, RUG). MSc in Applied Statistics from the University of Alcala (Spain), PhD from the Universitetet i Agder (Norway), with the PhD dissertation framed on the anarchist theory of knowledge of Feyerabend and the differences between theory-driven and data-driven science, with applications to nanofinance groups in Africa. Previous professional experience: postdoctoral researcher at the Netherlands Interdisciplinary Demographic Institute (NIDI) of the Royal Netherlands Academy of Sciences and Arts, postdoctoral data scientist at CASUS (Helmholtz-Zentrum Dresden-Rossendorf, Germany), and postdoctoral consultant for the University of Groningen, for the Centre for Demographic Studies at the Universitat Autònoma de Barcelona, the Italian Agency for Development Cooperation, the United Nations Population Fund (UNFPA), AjoCard (digital finance in Africa) and the Oxford Poverty and Human Development Initiative (OPHI, Oxford University).

### **Education**

Postdoctoral Fellow - Marie Skłodowska-Curie Actions University of Groningen The Netherlands

Postdoctoral researcher NIDI - Royal Netherlands Academy of Arts and Sciences The Netherlands

Postdoctoral data scientist Center for Advanced Systems Understanding (CASUS) Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Germany.

Ph.D. in International Business Universitetet i Agder (Norway)

Master in applied Statistics and Statistics for the Public Sector Alcalá University (Madrid, Spain)

BA Economics
Del Valle Private University (Bolivia)

Post-graduate Diploma on Applied Quantitative Economics Military School of Engineering (Bolivia)

Post-graduate Diploma on Diploma Applied Research Statistical Methods Mayor University of San Andres (Bolivia)

### Awards, Scholarships and Recognitions

- 2023: Marie Skłodowska-Curie Fellowship.
- 2023: Invited reviewer, Nature Precision Oncology
- 2022: Seal of Excellence of the European Commission to the project proposal machinelearning analysis of spatial child indicators, submitted under the Horizon Europe Marie Skłodowska-Curie Actions call.
- 2022: Accredited researcher, UK Office of National Statistics (ONS)
- 2021: Team of Economic Experts Fundação Getulio Vargas
- 2020: First prize Think Forward Initiative (TFI) Essay Award https://www.thinkforwardinitiative.com/stories/new-entry-l
- 2019: Invited reviewer: Journal of Business Research, African Journal of Economic and Management Studies.
- 2018: PhD scholarship FAHU foundation (Denmark).
- 2017: Mention of honor. Central Bank of Nicaragua Research Award.
- 2016: First prize, International Young Statistician Prize IAOS.
- 2016: Invited reviewer, Economic Inquiry Journal of the Western Economic Association International.
- 2016: Invited referee, Cuadernos de Investigación Económica Boliviana, Ministry of Economics and Public Finance of Bolivia
- 2015: Invited referee, Cuadernos de Investigación Económica Boliviana, Ministry of Economics and Public Finance of Bolivia
- 2013: Jury, XIV National Economic Research Award, Central Bank of Bolivia
- 2012: Mention of Honor, Manuel Noriega International Research Award
- 2011: First Award, Manuel Noriega International Research Award
- 2011: First Award, Sergio Almaraz Paz research award (Central Bank of Bolivia research competition)
- 2010: First Award, Sergio Almaraz Paz research award (Central Bank of Bolivia research competition)
- 2009: First Award, Sergio Almaraz Paz research award (Central Bank of Bolivia research competition)
- 2009: Statistics Scholarship Fundación Carolina
- 2009: Third place, XIX Permanent Research Competition Dr. Manuel Noriega Morales, Central Bank of Guatemala
- 2008: Special distinction, X National Economic Research Award, Central Bank of Bolivia
- 2005: Second prize, Academic Category, VII National Economic Research Award, Central Bank of Bolivia
- 2005: Distinction between the first 20 essays, World Bank International Essay Competition
- 2002-2003: Best student of the BA in economics

### Courses

2024: Advanced Research Methods
Oxford University (UK)

2024: Deep learning for computer vision
University of Groningen (the Netherlands)

2023: Deep learning

University of Tromsø and Arctic University of Norway

2018: Theorizing and Theory Building

Halmstad University (Sweden)

Systematic Literature Reviews and Meta-analysis Campbell foundation - Vrije Universiteit (Netherlands)

2017: Multidimensional Poverty Analysis

Oxford University,

Oxford Poverty & Human Development Initiative (OPHI)

Basic and Advanced Security in the Field United Nations Department of Safety and Security

2016: Economic Capital Modeling

SAS (Statistical Analysis System) BCP Bank – Credicorp (Lima, Perú)

2015: Computable General Equilibrium Modelling

United Nations Department of Social and Economic Affairs (UN DESA)

2014: Bayesian Modeling, Inference and Prediction

Bayesian Hierarchical Modeling

**Bayesian Model Specification** 

Practical Bayesian Nonparametric Analysis

University of Reading

(Reading, Berkshire, United Kingdom)

J-PAL Course on Evaluating Social Programs.

Abdul Latif Jameel Poverty Action Lab (J-PAL)

Massachusetts Institute of Technology - MIT (Cambridge MA, USA)

Macro-prudential Policies.

International Monetary Fund (Washington, USA)

2013: Twenty-sixth Regional Course on key issues on the International Economic Agenda United Nations Conference on Trade and Development (UNCTAD)

EAFIT University (Medellin, Colombia)

Sequential Monte Carlo and Bayesian Methods in Finance, Business and Economics. Duke Fuqua School of Business (Duke University, Durham NC, USA).

IDB monitoring and evaluation workshop on SMART indicators and impact evaluation methods. Inter-American Development Bank (IDB).

### **Teaching Experience**

Quantitative statistical analysis: University of Groningen (2024)

Methods for Academic Research: University of Groningen (2024)

Artificial intelligence applied to economics and business: San Simón Major university (Universidad Mayor de San Simón, UMSS, 2023).

Statistical methods: Military School of Engineering, Master level.

Applied statistics: NUR University, PhD level and bachelor level.

Financial risk management: Private University of Bolivia.

Applied statistics for engineering: San Cristobal Mining Company.

### **Affiliations**

International Society for Bayesian Analysis (ISBA).

Econometric Society.

International Union for Nutrition Science (IUNS)

Task Force on Multidimensional Child Growth

https://www.rug.nl/research/ursi/prc/multidimensional-child-growth/team

### **Research interests**

Sustainable socio-economic development, nonlinear dynamics, complexity science, econometrics, finance, applied statistics, Bayesian methods, machine learning/AI, data intensive science, health and inequality, epistemology.

### **Employment & Professional Experience**

- 2023-: Postdoctoral Fellow of the Marie Skłodowska-Curie Actions at the University of Groningen (Rijksuniversiteit Groningen, RUG), The Netherlands.
- 2022-2023: Postdoctoral researcher. NIDI Royal Netherlands Academy of Arts and Sciences of the Netherlands.
- 2020-2021: Postdoctoral researcher. Center for Advanced Systems Understanding (CASUS) Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Germany.
- 2020-2021: Consultant: Bayesian index of vulnerability to natural and biological population threats United Nations Population Fund (UNFPA)
- 2020-2021: Consultant: econometric analysis of multi-dimensional index for child growth.
  University of Groningen (Netherlands)
- 2016-2021: Deputy Manager, Risk Division BCP Bank (Credicorp).
- 2017- : Consultant. Oxford Poverty & Human Development Initiative (OPHI), Oxford University.
- 2017- : International freelancer at UpWork:
  - https://www.upwork.com/o/profiles/users/ ~01f24abe7be5e1eb91/
- 2016-2017: United Nations consultant for the project Population Situation Analysis.
- 2014- : Director/Senior researcher Bayesian Institute for Research Development (BayesGroup.org)
- 2014-2017: Data analyst, Senior Researcher: Project "Ethnic and Gender Barriers for Credit Access: A Lab-field experiment", funded by the Partnership of Economic Policy (PEP, http://www.pep-net.org/)
- 2014-2015: Project coordinator, Senior Researcher: Project "The Impact of Financial Access in the Regional Economic Development of Bolivia", funded by the Partnership of Economic Policy (PEP, http://www.pep-net.org/)

- 2013-2015: Researcher and project coordinator, United Nations Population Fund (UNFPA)
  Project on "Population Vulnerability and Disaster Risk in Bolivia".
- 2011-2016: Economist Analysis Unit of Social and Economic Policy Ministry of Development Planning of Bolivia
- 2010 -2011: Professional III-Ministry of Economics and Finance of Bolivia.
- 2007-2009: Statistical Analyst Supervisory Authority of the Financial System in Bolivia.
- 2005-2007: Consultant Sub-national government of La Paz

### Presentations at conferences

- Bayesian estimations of capabilities for multidimensional child growth. 22<sup>nd</sup> International Union of Nutritional Sciences. December 2022 (Tokyo, Japan).
- An extension of the Alkire-Foster methods for the Bayesian estimation of multidimensional child growth and a comparison with dimensionality reduction methods. NIDI workshops. May 2022 (Den Haag, The Netherlands).
- Biologically inspired algorithms of data-intensive science. Aalborg University. May 2018 (Aalborg, Denmark).
- Balancing Input-Output tables with Bayesian Slave-raiding ants, IAOS International Association for Official Statistics Conference, December 2016 (Abu Dhabi, United Arab Emirates).
- Population Vulnerability to Natural Disasters, UNFPA workshop on georeferenced humanitarian assistance, January 2016 (Panamá).
- Women's empowerment and the social impact of micro-finance in Bolivia, 2015 UNCTAD Expert Meeting "Microfinance, Development and Debt" (Lima, Perú)
- Bayesian Spatial-Propensity Score Matching Evaluation of Spatial Average Treatment Effects. Global Evaluation Conclave 2015 (Katmandú, Nepal)
- Is Microfinance Truly Useless for Poverty Reduction and Women Empowerment? A Bayesian Spatial-Propensity Score Matching Evaluation in Bolivia. 2015 PEP Annual Conference (Nairobi, Kenia)
- Balancing Social Accounting Matrices with Artificial Polymorphus Ants. 5th Regional Meeting of Public Policy Analysis with Computable General Equilibrium Models, Inter-American Development Bank, Colombia, 2014.
- Nicaragua: Inflación de Umbral, Crecimiento Económico y la Nueva Política Económica después de la Crisis Económica Internacional. XI Seminar of the Journal Ensayos sobre Política Económica on the Changes of Monetary Policy and Central Banking over the Past Two Decades, Central Bank of Colombia, 2014.
- Bayesian Estimation of threshold Inflation under Uncertainty about Growth Determinants. 2nd
  Bayesian Young Statistical Meeting, Wien University of Business and Economics, Austria,
  2014.
- $\Delta^9$ -Tetrahydrocannabinol and the Economic Development of Bolivia: A General Equilibrium Study. Bolivian Conference on Development Economics, 2014.
- Modeling Hyperinflation Phenomena: A Bayesian Approach, EFaB@ Bayes 250 Workshop, Duke University, December 2013
- The Wage Curve, Once More with Feeling, EFaB@ Bayes 250 Workshop, Duke University, December 2013
- Balancing Social Accounting Matrices with Artificial Polymorphous Ants. 21st IIOA conference, Kitakyushu, Japan, July 2013
- Bayesian MC<sup>2</sup> estimation of the capital-labor substitution in developing countries. 4<sup>th</sup> regional meeting of Computable General Equilibrium Models. Ecuador, April 2012.

### Other Skills:

- Software handling: MatLab, R (RStudio IDE/RAnalyticFlow IDE), Stata, SQL, Python (Spyder IDE/Jupyter IDE), EViews, SPSS, Smarth-PLS, Oxmetrics, XLStat, WinBugs, Crystal-Ball, SAS foundation/SAS Enterprise Guide, RATS, Mathematica, Gretl, Clementine, Gauss, Scientific Workplace, Mathtype, LaTeX, Word, Power Point and advanced knowledge of Microsoft Excel with VBA programming.
- Languages: Spanish (native language). Fluent in English (TOEFL = 106) and scientific English writing (EFL Certificate). Portuguese: Basic.

### **Publications:**

- "Apocalypse unleashed: a critical perspective on complexity science, catastrophes, and black swan events in international business". *Critical Perspectives on International Business*, 20(1), 2024, 118-144.
  - https://www.emerald.com/insight/content/doi/10.1108/cpoib-03-2022-0014/full/html
- "Deep Learning Algorithms for Early Detection of Breast Cancer: A Comparative Study with Traditional Machine Learning". *Informatics in Medicine Unlocked*, Volume 41, 2023, 101317.
  - https://www.sciencedirect.com/science/article/pii/S2352914823001636
- "How good is good? Bayesian machine-learning estimation of probabilistic benchmarks in noisy datasets and an application to nanofinance+". Systems and Soft Computing 4: 200036.
  - https://www.sciencedirect.com/science/article/pii/S2772941922000023?via%3Dihub
- "Community participation and multidimensional child growth: evidence from the Vietnam Young Lives study". Current Developments in Nutrition, 6(4)

  https://academic.oup.com/cdn/article/6/4/nzac022/6550016?login=true
- "What drives profits in savings groups? Bayesian data mining evidence from the SAVIX database". Volume 11, Issue 2, Dec 2021 https://journals.co.za/doi/abs/10.10520/ejc-rdfin v11 n2 a3
- "Environmental risk factors of airborne viral transmission: Humidity, Influenza and SARS-CoV-2 in the Netherlands". Spatial and Spatio-temporal Epidemiology, 2021. ISSN 1877-5845. https://doi.org/10.1016/j.sste.2021.100432. https://www.sciencedirect.com/science/article/pii/S1877584521000319
- "Bifurcations in business profitability: An agent-based simulation of homophily in self-financing groups". In press: Journal of Business Research (Special Issue).

  https://www.sciencedirect.com/science/article/pii/S0148296320304227
- "A population level analysis of mental health and noncommunicable disease (NCD) in the Philippines using predictive modelling analysis". International Journal of Psychosocial Rehabilitation.
- "Which social program supports sustainable grass-root finance? Machinelearning evidence".

  International Journal of Sustainable Development & World Ecology, 1-7.

  <a href="https://www.tandfonline.com/toc/tsdw20/current">https://www.tandfonline.com/toc/tsdw20/current</a>
- "The interaction effect of gender and ethnicity in loan approval: A Bayesian estimation with data from a laboratory field experiment". Special Issue, Review of Development Economics, 2019.
  - https://onlinelibrary.wiley.com/doi/full/10.1111/rode.12607
- "Inflation shocks and income inequality: An analysis with genetic algorithms and Bayesian quantile regressions". African Journal of Economic and Management Studies, Vol. 10(2), 2019: pp. 226-240 <a href="https://www.emeraldinsight.com/doi/full/10.1108/AJEMS-10-2018-0299">https://www.emeraldinsight.com/doi/full/10.1108/AJEMS-10-2018-0299</a>
- "The Wage Curve, Once More with Feeling: Bayesian Model Averaging of Heckit Models." Econometric Research in Finance, Vol 3 (2), pages 79 92.

### https://erfin.org/journal/index.php/erfin/article/view/40

- "Disyuntiva entre universalidad y focalización de las políticas sociales: Oportunidades demográficas para el desarrollo despolarizado en Paraguay". Revista MERCOSUR de políticas sociales, Vol 1: 2017: pp. 269294.
  - http://revista.ismercosur.org/index.php/revista/article/view/21/20
- "Balancing Input-Output tables with Bayesian slave-raiding ants", Statistical Journal of the IAOS, Vol. 33, Issue 4, pp. 943–949 <a href="https://content.iospress.com/articles/statistical-journal-of-the-iaos/sji170363">https://content.iospress.com/articles/statistical-journal-of-the-iaos/sji170363</a>
- "A Bayesian Spatial Propensity Score Matching Evaluation of the Regional Impact of Microfinance", Review of Economic Analysis, Vol. 9, No. 2 (2017), pp. 127-153.

  <a href="http://www.rofea.org/index.php?journal=journal&page=article&op=view&path%5B%5">http://www.rofea.org/index.php?journal=journal&page=article&op=view&path%5B%5</a>
  D=330
- "Preference for women but less preference for indigenous women: A lab-field experiment of loan discrimination in a developing economy", Partnership for Economic Policy (PEP) working paper 2016-24.
  - https://portal.pep-net.org/document/download/29843
- "Una Aproximación Bayesiana a la Medición de la Vulnerabilidad Poblacional a Desastres Naturales", Notas de Población, United Nations Economic Commission for Latin America and the Caribbean ECLAC (Comisión Económica para Latino-América y el Caribe CEPAL), Año XLII, N° 100 (Enero-Junio 2015), pp. 171 194.
  - https://www.cepal.org/es/publicaciones/38527-aproximacion-bayesiana-la-medicion-lavulnerabilidad-poblacional-desastres
- "Balancing Social Accounting Matrices with Artificial Polymorphus Ants".

  Journal of Computational Economics, November 2014, pp. 1-13.

  https://link.springer.com/article/10.1007%2Fs10614-014-9476-1
- "Is microfinance truly useless for poverty reduction and women empowerment? A Bayesian spatial-propensity score matching evaluation in Bolivia" Partnership for Economic Policy (PEP) working paper 2016-06.
  - https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3167321
- "Nicaragua: Inflación de Umbral, Crecimiento Económico y la Nueva Política Económica después de la Crisis Económica Internacional". Ensayos sobre Política Económica (Banco Central de Colombia) Vol. 33. Núm. 76. Abril 2015

 $\underline{http://www.elsevier.es/es-revista-ensayos-sobre-politica-economica-387-}$ 

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economicoS0120448315000056?redirectNew=true

- "Modeling Hyperinflation Phenomenon: A Bayesian Approach," Research Papers 8, Center for Latin American Monetary Studies (CEMLA)
  - http://www.cemla.org/PDF/investigacion/inv-2013-04-08.pdf
- "How plural is the plural economy of Bolivia? Constructing a plural economy indicator with fuzzy sets," Analysis Review of the Central Bank of Bolivia, vol. 16(1), pages 9-29, June. <a href="https://www.bcb.gob.bo/webdocs/publicacionesbcb/revista">https://www.bcb.gob.bo/webdocs/publicacionesbcb/revista</a> analisis/ra vol16/Articulo
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