

Eduardo Alarcón Bustamante

Psychometrics | Educational Measurement | Public Policy | Selection Bias | Partial Identification

✉ eduardoalarcon@uchile.cl <https://alarcon-bustamante.cl> [LinkedIn](#)
[ORCID](#) [Google Scholar](#) [ResearchGate](#)

Ph.D. in Statistics specializing in psychometrics, educational measurement, and applied statistical modelling. His research focuses on developing methods to study predictive validity in the presence of selection bias, missing data, and partial observability. His work examines how selection processes shape the relationship between predictors and later outcomes, developing methodological tools to evaluate and interpret these relationships in complex educational and social contexts. He is currently a researcher at DEMRE, Universidad de Chile, and founder of ESIV Analytics®, a consulting firm specializing in social data analytics, quantitative evaluation, and statistical modelling for public and private organizations.

Research Interests

- Predictive validity and educational measurement.
- Psychometrics and applied statistical modelling.
- Selection bias, missing data, and partial identification.
- University admissions and public policy in higher education.

Education

2021	Ph.D. in Statistics Pontificia Universidad Católica de Chile, Santiago, Chile. Santiago, Chile
2012	M.Sc. in Applied Statistics Universidad de Concepción, Concepción Concepción, Chile
2009	Teacher of Mathematics and Computer Science Universidad Católica del Maule Talca, Chile.

Postdoctoral Positions

2022–2025	School of Psychology, Pontificia Universidad Católica de Chile. FONDECYT Postdoctoral Grant No. 3220422 Principal Investigator
2022–2024	Millennium Nucleus on Intergenerational Mobility: From Modelling to Policy (MOVI), Chile. Visiting Position Director: Ernesto San Martín

Current Appointments

Since 2024	Researcher Scientific Modelling and Dissemination Team Department of Educational Assessment, Measurement, and Registration (DEMRE), Universidad de Chile.
Since 2023	Founder and Director ESIV Analytics®. Chile

Previous Academic Appointments

2021–2023	Adjunct Lecturer Department of Statistics, Pontificia Universidad Católica de Chile. Chile
2012–2016	Adjunct Lecturer Institute of Mathematics and Physics, Universidad de Talca. Chile
2011–2016	Adjunct Lecturer Faculty of Basic Sciences, Universidad Católica del Maule. Chile

Research Projects

2026–2029	Who could have succeeded? From observed to plausible inference across University Admission Selection Rules FONDECYT Initiation Grant No. 11260407, Government of Chile. Principal Investigator
2025–2026	Bridging methodological gaps in assessing the social impact of rehabilitation: a multidisciplinary approach to spinal cord injury [RPG25102] Research Partnership Grant 2025, Switzerland. Researcher
2022–2025	Development of Modelling Tools for a Predictive Validity Agenda for University Admissions FONDECYT Postdoctoral Grant No. 3220422, Government of Chile. Principal Investigator
2022–2024	Millennium Nucleus on Intergenerational Mobility: From Modelling to Policy Millennium Science Initiative NCS2021072, Government of Chile. Postdoctoral Researcher
2022–2024	University admission beyond selection FONDEF IDeA R&D ID22I10228, Government of Chile. Researcher
2021–2022	Phase 3, multicentre, double-blind, randomized, placebo-controlled clinical trial to evaluate the efficacy, immunogenicity, and safety of a COVID-19 vaccine in children and adolescents Sinovac Life Sciences Co., Ltd. Data Manager and Statistician

Publications

17. Alarcón-Bustamante, E., Florenzano, V., Varas, I.M., González, J., Jiménez, D. (2026) *Expanding equity in access without losing predictive power? Evidence from Chile's Higher Education Admission System*. Assessment In Education: Principles, Policy & Practice , 1–22. [\[Article\]](#)
16. Florenzano, V., Alarcón-Bustamante, E., Varas, I.M., Godoy, M.I. (2026) *Beyond a single coefficient: A Model-Based framework for local predictive validity along the score scale*. Journal of Educational Measurement 63(3), e70052 [\[Article\]](#)
15. San Martín, E., Petricará, M., Varas, I.M., and Alarcón-Bustamante, E (2025). *Income Inequality under Partial Observability: What Can We Learn from Incomplete Survey Data?*. Annals of Operations Research. [\[Article\]](#)
14. Alarcón-Bustamante, E., Espinoza, P., Torres Iribarra, D., and Godoy, M.I. (2025). *Assessing the marginal effect under partial observability in a selection context*. In Proceedings of the 89th Annual International Meeting of the Psychometric Society, Prague, Czech Republic, 2024. [\[Article\]](#)
13. Varas, I.M., Alarcón-Bustamante, E., González, J. (2025). *Better information on regression coefficients in predictive capacity studies with missing outcomes*. In Proceedings of the 89th Annual International Meeting of the Psychometric Society, Prague, Czech Republic, 2024. [\[Article\]](#)
12. Alarcón-Bustamante, E., González, J., Torres Iribarra, D., San Martín, E. (2025). *From Missing Data to Informative GPA Predictions: Navigating Selection Process Beliefs with the Partial Identifiability Approach*. British Journal of Mathematical and Statistical Psychology, 78(2), 647–671. [\[Article\]](#)
11. Bustamante-Valdés, M., Díaz-Levicoy, D., Alarcón-Bustamante, E. (2024). *Analysis of formative and evaluative activities on statistical graphs in textbooks for Chilean rural multigrade education*. European Journal of Investigation in Health, Psychology and Education, 14(5), 1396–1412. [\[Article\]](#)
10. Le Corre, N., Abarca, K., Astudillo, P., Valenzuela, V., Schilling, A., Gaete, V., Rubio, L., Calvo, M., Twele, L., González, M., et al. (2023). *Different Safety Pattern of an Inactivated SARS-CoV-2 Vaccine (CoronaVac®) According to Age Group in a Pediatric Population from 3 to 17 Years Old, in an Open-Label Study in Chile*. Vaccines, 11(10), 1526. [\[Article\]](#)
9. Alarcón-Bustamante, E., Varas, I.M., San Martín, E. (2023). *On the impact of missing outcomes in linear regression*. Chilean Journal of Statistics, 14(1), 26–36. [\[Article\]](#)
8. Alarcón-Bustamante, E. (2023). *Ignorabilidad: un supuesto clave en la dinámica de la inferencia estadística en Ciencias de la Salud*. Inferencias: Boletín de Biostatistics, 7, 11–13. [\[Article\]](#)
7. Soto, J., Melo-González, F., Gutiérrez-Vera, C., et al. (2022). *Inactivated Vaccine-Induced SARS-CoV-2 Variant-Specific Immunity in Children*. mBio, 13(6), e01311-22. [\[Article\]](#)
6. Alarcón-Bustamante, E. (2022). *Ignorar o no ignorar, esa es la cuestión*. Cuadernos de Beauchef. Ciencia, tecnología y cultura, 6(1), 15–33. [\[Article\]](#)
5. San Martín, E., Alarcón-Bustamante, E. (2022). *Dissecting Chilean surveys: the case of missing outcomes*. Chilean Journal of Statistics, 13(1), 17–46. [\[Article\]](#)
4. Alarcón-Bustamante, E., San Martín, E. & González, J. (2021). *On the marginal effect under partitioned populations: Definition and Interpretation*. In Wiberg, M., Molenaar, M., González, J., Böckenholt, U., and Kim, J.S. (Eds.), Quantitative Psychology: The 85th Annual Meeting of the Psychometric Society, Virtual. Springer Proceedings in Mathematics & Statistics. [\[Article\]](#)

3. Alarcón-Bustamante, E., San Martín, E. & González, J. (2020). *Predictive validity under partial observability*. In Wiberg, M., Molenaar, M., González, J., Böckenholt, U., and Kim, J.S. (Eds.), *Quantitative Psychology. IMPS2019. Springer Proceedings in Mathematics & Statistics*, vol. 322. Springer, Cham. [\[Article\]](#)
2. Cornejo, J., Tapia, J., Guerra, F., Yáñez, M., Baettig, R., Guajardo, J., Alarcón, E. & Vidal, G. (2017). *Variation in Copper Accumulation at the Tissue Level of Five Hybrid Poplars Subjected to Copper Stress*. *Water, Air, and Soil Pollution*, 228, 212. [\[Article\]](#)
1. Vásquez, B. & Alarcón, E. (2016). *Inclusión en universidades chilenas: del discurso a interacciones prácticas, políticas y culturales*. *Pensamiento Educativo. Revista de Investigación Educativa Latinoamericana*, 53(2), 1–19. [\[Article\]](#)

Selected Presentations (Last 3 Years)

- *The role of selection weights in shaping equity and predictive validity in University Admissions*. International Meeting of the Psychometric Society. July, 2026. Seoul, South Korea.
- *Rethinking selection weights: From observed to plausible outcomes*. International Test Commission Biennial Conference. June, 2026. Auckland, New Zealand.
- *History of the admission system, from the Bachillerato to the current PAES*. Second ACMME Congress. January, 2026. La Serena, Chile.
- *Decomposing the predictive capacity of a selection test*. International Meeting of the Psychometric Society (IMPS). July, 2025. Minneapolis, Minnesota, United States.
- *Characterizing heterogeneity in predictive relationships using a Beta Mixture Regression approach*. National Council on Measurement in Education (NCME). April, 2025. Denver, Colorado, United States.
- *Measuring predictive validity across the scale: A Marginal Effects approach using PAES data in Chile*. International Objective Measurement Workshop (IOMW). April, 2025. Boulder, Colorado, United States.
- *Marginal effects of selection test scores on GPA: tackling the selection bias*. XLVII National Statistics Conference. October, 2024. Valdivia, Chile.
- *Effect of PAES scores on university performance: A global analysis*. II Interdisciplinary Postdoctoral Research Symposium. August, 2024. Universidad del Desarrollo, Chile.
- *New Insights for Assessing the Predictive Capacity of Selection Tests in a Heterogeneous University System*. ITC Conference 2024. July, 2024. Granada, Spain.
- *Assessing the marginal effect under partial observability in a selection context*. International Meeting of the Psychometric Society 2024. July, 2024. Prague, Czechia.

Academic Service

- Guest Editor *Special Issue: Celebrating 140 Years of the International Statistical Institute – Advances in Theory and Applications*. *Revista Colombiana de Estadística* ([Web page](#)).
- Member of the Scientific Committee, CLATSE 2025 ([Web page](#)).
- Vice President of the Chilean Statistical Society (SOCHE), 2024–2025.
- Secretary of the Chilean Statistical Society (SOCHE), 2020–2021.

- Visiting Researcher at the Research Group of Quantitative Psychology and Individual Differences, KU Leuven, Belgium. November 2022 and February 2024.
- Visiting Researcher at the Center for Operations Research and Econometrics (CORE), UC Louvain, Belgium. November 2022 and February 2024.
- Associate Researcher at the [Interdisciplinary Laboratory of Social Statistics \(LIES\)](#), since 2018.

Organization of Academic Events

- *Transformations in the university admission process in Chile: history, changes, and current challenges*. Symposium at the Second ACMME Congress. January, 2026. La Serena, Chile.
- *National Statistics Conference 2024*, Valdivia, Chile. Member of the Organizing Committee.
- *Beyond ignorability: Advancing with Partial Identifiability in Psychometrics*. Symposium at the International Meeting of the Psychometric Society, 2024. July, 2024. Prague, Czechia.
- *Recent advances in psychometrics*. Invited Session at the National Statistics Conference. October, 2022. San Pedro de Atacama, Chile.
- *Identification Problems in Empirical Research*. Symposium at the International Meeting of the Psychometric Society, 2021. Virtual meeting.
- *Advanced topics in admission university tests*. Symposium at the International Meeting of the Psychometric Society 2019. July, 2019. Santiago, Chile.

Scholarships, Awards, and Honors

2024	Best scientific work: best oral presentation. <i>Effect of PAES scores on university performance: A global analysis</i> . II Interdisciplinary Postdoctoral Research Symposium. Universidad del Desarrollo, Chile.
2023	Best scientific work: best oral presentation. <i>Ignorability: An assumption for decision-making in public health and scientific research</i> . I Interdisciplinary Postdoctoral Research Symposium. Universidad del Desarrollo, Chile.
2018	CONICYT, <i>National Doctoral Scholarship 2018</i> . Government of Chile.
2010	Graduate School, Universidad de Concepción. <i>Stipend and tuition-waiver scholarship</i> . Master's program.

University Teaching

Graduate

- **Universidad Católica del Maule**. Data processing and random games (2014, 2015, 2016), Probability models (2015, 2016) in the *Master's Program in Mathematics Education*; Biostatistics (II-2015), Advanced Biostatistics (I-2016) in the *Master's Program in Nursing*; Fundamentals of Statistics (II-2014, 2015) in the *Master's Program in Education*.

Undergraduate

- **Pontificia Universidad Católica de Chile**. Introduction to Statistics (I-2023), Psychometrics (II-2021), Statistical Software (I-2021), Introduction to Data Management and Exploration – Computer Lab (I-2021)

in the *Statistics Program*; Statistics and Probability (II-2021, I-2023) in *Political Science*; Statistics for Chemistry and Pharmacy (I-2021) in *Chemistry and Pharmacy*.

- **Universidad de Talca.** Statistics and Probability (I-2012 to II-2016) in *Civil Engineering*; Statistical Analysis (I-2016) in *Psychology*; Statistical Quality Control (II-2015, I-2016) in *Industrial Civil Engineering*; Statistics I (I-2014) and Statistics II (I-2014) in *Accounting and Auditing*.
- **Universidad Católica del Maule.** Statistics Education (II-2016) and Statistics I (II-2016) in *Teacher Education in Mathematics and Computer Science*; Biostatistics (II-2011, I-2012) in *Nutrition and Dietetics*; Linear Regression (I-2011) and Statistics and Experimental Designs (II-2011) in *Forestry Engineering*.

Skills

- **Software:** R, SQL, SAS, SPSS, Minitab, Excel, $\text{\LaTeX}$.
- **Languages:** Native Spanish; Advanced English.