

# Eduardo Alarcón Bustamante

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## Education

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- 2021 PhD in Statistics, Pontificia Universidad Católica de Chile, Santiago, Chile.
- 2012 MSc in Applied Statistics, Universidad de Concepción, Concepción, Chile.
- 2009 Teaching degree in Math and Computer Sciences, Universidad Católica del Maule, Talca, Chile.

## Postdoctoral positions

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- 22/04 - 25/04 School of Psychology, Pontificia Universidad Católica de Chile.
- 22/01 - 24/12 Millennium Nucleus on Intergenerational Mobility: From Modelling to Policy (MOVI), Chile.

## Appointments

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### Professional

- Since 2024 Researcher, Departamento de Evaluación, Medición y Registro Educacional (DEMRE), Chile.
- Since 2023 CEO and Founder, [ESIV Analytics](#)<sup>®</sup>.

### Academic

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

## Fellowships and awards

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- 2024 Best Scientific Work: the best oral presentation. *Efecto de los puntajes PAES sobre el rendimiento universitario: Un análisis global*. in II Interdisciplinary Postdoctoral Research Symposium. Universidad del Desarrollo, Chile.
- 2023 Best Scientific Work: the best oral presentation. *Ignorabilidad: UN supuesto para la toma de decisiones en salud pública y en investigación científica* in I Interdisciplinary Postdoctoral Research Symposium. Universidad del Desarrollo, Chile.
- 2018 CONICYT, *Beca Doctorado Nacional, año 2018*. Chilean Government, PhD Scholarship.
- 2010 Graduate School, Universidad de Concepción. *Beca de estipendio y Beca de exención de matrícula*. MSC Scholarship.

## Publications

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- [15] San Martín, E., Petricarà, 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 contex*. 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, IM., 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 Bioestadística* 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, JS. (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, JS. (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](#)]

## Papers in the peer review process

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- [1] *Can standardized assessments foster equity while preserving predictive power? Evidence from Chile's Higher Education Admission System.* With Victoria Florenzano, Inés M. Varas, Jorge González, and Daniela Jiménez .
- [2] *Beyond a single coefficient: A Model-Based framework for local predictive validity along the score scale.* With Victoria Florenzano, Inés M. Varas, and María Inés Godoy.

## Research projects

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- 26/04 - 29/04 *Who could have succeeded? From observed to plausible inference across University Admission Selection Rules.* FONDECYT 11260407, Chilean Government. Principal Investigator.
- 25/12 - 26/12 *Bridging methodological gaps in assessing the social impact of rehabilitation: a multidisciplinary approach to spinal cord injury [RPG25102].* Research partnership grant 2025, Switzerland. Researcher.
- 22/04 - 25/04 *Development of Modelling Tools for a Predictive Validity Agenda for University Admissions.* Postdoctoral FONDECYT 3220422, Chilean Government. Principal Investigator.
- 22/01 - 24/12 *Millenium Nucleus on Intergenerational Mobility: From modelling to Policy.* Iniciativa Milenio NCS2021072, Chilean Government. Postdoctoral researcher.
- 2022–2024 *Admisión universitaria más allá de la selección.* FONDEF IDeA I+D ID22110228, Chilean Government. Researcher.
- 2021–2022 *Estudio clínico multicéntrico de fase 3, doble ciego, aleatorizado, controlado con placebo, para evaluar la eficacia, inmunogenicidad y seguridad de una vacuna contra COVID19 (células Vero), inactivada (CoronaVac®), en niños y adolescentes de 6 meses a 17 años (PedCoronaVac03CL).* Sinovac Life Sciences Co., Ltd. Data Manager and Statistician.

## Selected presentations (last three years)

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- *Historia del sistema de admisión, desde el Bachillerato hasta la actual PAES.* Segundo Congreso ACMME. January, 2026. La Serena, Chile. Oral Presentation.
- *Decomposing the predictive capacity of a selection test.* International Meeting of the Psychometric Society (IMPS). July, 2025. Minneapolis, Minnesota, United States. Oral Presentation.
- *Characterizing heterogeneity in predictive relationships using a Beta Mixture Regression approach.* National Council on Measurement in Education (NCME). April, 2025. Denver, Colorado, United States. Oral Presentation.
- *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. Oral Presentation.
- *Efecto de los puntajes PAES sobre la TAVCE: Análisis a lo largo de la escala.* Sexto congreso interdisciplinario de investigación en educación. October, 2024. Santiago, Chile. Poster presentation.
- *Marginal effects of selection test scores on GPA: tackling the selection bias.* XLVII Jornadas Nacionales de Estadística. October, 2024. Valdivia, Chile. Oral Presentation.
- *Efecto de los puntajes PAES sobre el rendimiento universitario: Un análisis global.* II Simposio Interdisciplinario de Investigación Postdoctoral. August, 2024. Universidad del Desarrollo, Chile. Oral Presentation.

- *New Insights for Assessing the Predictive Capacity of Selection Tests in a Heterogeneous University System.* ITC Conference 2024. July 2024, Granada, Spain. Oral presentation
- *Assessing the marginal effect under partial observability in a selection context.* International Meeting of the Psychometric Society 2024. July 2024, Prague, Czechia. Oral presentation
- *Ignorabilidad: UN supuesto para la toma de decisiones en salud pública y en investigación científica.* I Simposio Interdisciplinario de Investigación Postdoctoral. August, 2023. Universidad del Desarrollo, Chile. Oral Presentation.
- *Measuring the effect of an explanatory random variable in partitioned populations.* Jornadas de Matemática de la Zona Sur. April 2023. Universidad de Concepción, Concepción, Chile. Oral Presentation.

## Events Organiser

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- *Transformaciones en el proceso de admisión universitaria en Chile: historia, cambios y desafíos actuales.* Segundo Congreso ACMME. January, 2026, La Serena, Chile.
- *Beyond ignorability: Advancing with Partial Identifiability in Psychometrics.* Symposium in the International Meeting of the Psychometric Society, 2024. July 2024, Prague, Czechia.
- *Avances recientes en psicometría.* Invited session in Jornadas Nacionales de Estadística. October, 2022. San Pedro de Atacama, Chile.
- *Identification Problems in Empirical Research.* Symposium in the International Meeting of the Psychometric Society, 2021 (Virtual meeting).
- *Advanced topics in admission university tests.* Symposium in the International Meeting of the Psychometric Society 2019, Santiago, Chile.

## Academic Relevant Information

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- Vicepresident of the [Chilean Society of Statistics](#), SOCHE in the 2024-2025 period.
- Secretary of the [Chilean Society of Statistics](#) SOCHE in the 2020-2021 period.
- Visitant Researcher at the Research Group of Quantitative Psychology and Individual Differences, KU Leuven, Belgium. November 2022 and February 2024.
- Visitant Researcher at the Center for Operations Research and Econometrics (CORE), UC Louvain, Belgium. November 2022 and February 2024.
- Associate Researcher to the [Interdisciplinary Laboratory of Social Statistics](#) (LIES), since 2018.

## Teaching

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### Graduate level

- **Pontificia Universidad Católica de Chile (Teaching assistant):** Multivariate Analysis (II-2022) in *Mater degree in Statistics*; Probabilistic methods for machine learning (II-2022) in *Mater degree in Artificial Intelligence*; Exploratory and Computational Methods for Statistics (I-2019, I-2021), Advanced Statistical Methods III (I-2019), Advanced Statistical Methods II (II-2018). In *PhD degree, Statistics*.
- **Universidad Católica del Maule (Teacher):** Data processing and random games (2014, 2015, 2016), Probability Models (2015, 2016) in *MSc degree, Didactic of Mathematics*. Biostatistics (II-2015), Ad-

vanced Biostatistics (I-2016) in *MSc degree, Nursing*. Fundamentals of Statistics (II-2014, 2015) in *MSc degree, Education*.

### Undergraduate level

- **Pontificia Universidad Católica de Chile**

- **Teacher:** Introduction to statistics (I-2023), Psychometric (II-2021), Statistical Software (I-2021), Introduction to Data Management and Exploration - Computational Laboratory (I-2021) in *Statistics Program*; Statistics and Probability (II-2021, I-2023) in *Political Science Program*; Statistics for Chemistry and Pharmacy (I-2021) *In Pharmaceutical Chemistry program*.

- **Teaching assistant:** Probability Models (II-2022), Biostatistics (I-2020), Statistical Methods (II-2019). In *Statistics program*.

- **Universidad de Talca (Teacher):** Statistics and probability (I-2012 to II-2016) in *Civil Engineering program*; Statistical Analysis (I-2016) in *Psychology program*; Statistical quality control (II-2015, I-2016) in *Industrial Civil Engineering program*; Statistics I (I-2014), Statistics II (I-2014) in *Public Accountant and Auditor program*.

- **Universidad Católica del Maule (Teacher):** Didactic of Statistics (II-2016), Statistics I (II-2016) in *Teaching in Maths and Computer Sciences program*; Biostatistics (II-2011, I-2012) in *Nutritionist program*; Linear regression analysis (I-2011), Statistics and experimental designs (II-2011) in *Forest Engineering program*.

### Students

- Javiera Bustos and Felipe Sotomayor (Graduated, December 2023): *Probabilidad condicional: una propuesta didáctico-tecnológica basada en las experiencias docentes*. Seminario de título; Pedagogía Media en Ciencias y Matemática, Pontificia Universidad Católica de Chile (supervised with Monika Dockendorff).
- Francisco Ramírez and Sebastián Castillo (Graduated, June 2023): *Habilidades superiores estadísticas en la representación gráfica de datos: Una propuesta didáctica para octavo básico*. Seminario de título; Pedagogía Media en Ciencias y Matemática, Pontificia Universidad Católica de Chile (supervised with Monika Dockendorff).
- Sigrid Villegas and Nicolás Julio (Graduated, December 2022): *La enseñanza de probabilidades por parte de un docente chileno en educación media*. Seminario de título; Pedagogía Media en Ciencias y Matemática, Pontificia Universidad Católica de Chile (supervised with Karina Álvarez).
- Bastián Sánchez (Graduated, December 2022): *Desarrollo del pensamiento geométrico por medio de las PG bajo el Modelo de Van Hiele*. Seminario de título; Pedagogía Media en Ciencias y Matemática, Pontificia Universidad Católica de Chile (supervised with Patricio Rodríguez).

### Skills

- **Softwares:** R, SQL, SAS, SPSS, Minitab, Excel,  $\text{\LaTeX}$ .
- **Languages:** Spanish (native), English (advanced).

Last updated: March, 2026.