

Iván Mauricio Vidal Romero

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EDUCATION

University of Chile

2021 – Present

M.Sc. in Operations Management; Industrial Engineering, Minor in Data Science

GPA: 6.2/7.0

M.Sc. thesis (in progress): “Thompson Sampling for Multinomial Logit Bandits: Learning in Monopolistic and Competitive Markets.” **Advisor:** Prof. Denis Sauré.

Studies assortment learning under multinomial logit (MNL) demand with a single seller and with several decentralized sellers, where a rival’s assortment changes both a seller’s revenue and what a no-purchase reveals. Develops policies based on independent filtering, exact posterior sampling, and denominator approximations; establishes regret guarantees in the monopolistic setting and shows that the expected number of periods spent outside a selected equilibrium set is sublinear under full and partial feedback.

HONORS AND AWARDS

- ANID National Master’s Scholarship, 2026 academic year (Chilean National Agency for Research and Development)
- Best Teaching Assistant Award, Department of Industrial Engineering, 2024
- Academic Excellence Scholarship, M.Sc. in Operations Management
- Outstanding Student, Faculty of Physical and Mathematical Sciences
- Outstanding Student, Department of Industrial Engineering
- Ranked in the top 1% of the class

RESEARCH INTERESTS

Operations research; sequential decision-making under uncertainty; online learning and bandit algorithms; Bayesian inference and simulation-based methods (MCMC, sequential Monte Carlo, EM); choice modeling and demand estimation; network interdiction; health policy evaluation.

RESEARCH PAPERS

Manuscript Under Review

Juan Borrero, Denis Sauré, and **Iván Vidal-Romero**. “Stochastic Shortest Path Interdiction with Path-Only Feedback.” Under review at *Operations Research*. [SSRN preprint]

Focus: Repeated network interdiction in which arc costs are drawn from an unknown distribution and the interdictor observes only the path the evader takes, never the costs behind it. *Contribution:* Shows that this censoring makes distinct environments observationally equivalent under precisely the actions that are worth playing, so posterior sampling and value-optimistic rules can incur linear regret; derives an instance-dependent logarithmic regret lower bound admitting an exact exponential-cone reformulation, and gives identifying-exploration policies that deliberately buy the missing information and attain logarithmic regret.

Working Papers

Charles Thraves, **Iván Vidal-Romero**, and Gustavo Vulcano. “On the Estimation of a Markov Chain Choice Model from Period-Level Inventory Observations.” Working paper.

Focus: Estimating Markov chain choice models when the data record only arrivals and beginning- and end-of-period inventories—no individual purchases, no assortments, and no ordering of sales and no-purchases. *Contribution:* Casts the unobserved purchase sequence as a latent path and extends the EM framework to this regime; shows that uniform path sampling misweights the arrival orders that determine when stockouts occur, and develops Metropolis–Hastings and sequential Monte Carlo posterior samplers that correct the resulting bias, with an identifiability result and an exact-EM convergence guarantee.

Denis Sauré and **Iván Vidal-Romero**. “Avoiding Exponential Dependence in Thompson Sampling for Multinomial Logit Bandits.” Working paper.

Focus: Thompson sampling for dynamic assortment planning under MNL demand, where a shared choice denominator couples revenue, information, and posterior dependence. *Contribution:* Replaces the coordinated draws used in existing worst-case analyses with independent BetaPrime draws, turning assortment optimism into a single signed inequality and yielding gap-free regret without an exponential penalty in display capacity; further establishes, to our knowledge, the first capacity-uniform Bayesian regret bound for Thompson sampling from the full item-level MNL posterior.

Denis Sauré, Juan Pablo Torres, Marcel Goic, Charles Thraves, Jorge Pacheco, Javiera Burgos, Felipe Del Solar, Ignasi Neira, **Iván Vidal-Romero**, Amal Zgheib, Miguel O’Ryan, and Leonardo J. Basso. “Effectiveness of a Second Dose of Nirsevimab against RSV Hospitalisation: A Two-Cohort Natural Experiment in Chile.” Working paper.

Focus: Whether a second nirsevimab dose protects infants entering a second RSV season—observed because discretionary second doses go to the frailest infants, so naive comparisons suggest that re-dosing is harmful.

Contribution: Uses a one-month extension of Chile’s 2024 campaign as a natural experiment yielding two national cohorts whose selection runs in opposite directions; matched-cohort landmark and nested case-control analyses of linked national registries (165,831 infants) converge on an approximately halved risk of RSV hospitalization.

CONFERENCE PRESENTATIONS

Charles Thraves, **Iván Vidal-Romero**, and Gustavo Vulcano. “On the Estimation of a Markov Choice Model from Partial Inventory Data.”

- 2026 INFORMS Annual Meeting, San Francisco, CA, USA, November 2026 (accepted).
- XXIII Latin-Iberoamerican Conference on Operations Research (CLAIO 2026), Bogotá, Colombia, November 2026 (accepted).
- XV Chilean Conference on Operations Research (OPTIMA 2025), Coquimbo, Chile, December 2025.

G. Izquierdo, **Iván Vidal-Romero**, Denis Sauré, Leonardo J. Basso, and Juan Pablo Torres. “Economic Evaluation of a Universal Screening Policy for Congenital Cytomegalovirus (cCMV) in Chile: A Decision-Analytic Model.” Poster, 44th Annual Meeting of the European Society for Paediatric Infectious Diseases (ESPID 2026), Bologna, Italy, June 2026.

Focus: Economic and clinical evaluation of universal newborn cCMV screening in Chile by pooled saliva testing, against the current no-screening status quo. *Contribution:* Builds a lifetime decision-analytic model of screening, confirmation, treatment, and long-term sequelae over an annual cohort of 150,000 newborns; pooling five saliva samples reduces program cost by 64–67% relative to universal urine screening and yields positive net benefit through avoided sequelae.

RESEARCH EXPERIENCE

University of Chile | Graduate Researcher, Department of Industrial Engineering

December 2024 – Present

Research assistant to Profs. Denis Sauré, Charles Thraves, and Fernando Ordóñez on the three operations research projects above. Implemented identifying-exploration policies and exponential-cone programs for network interdiction; built posterior-sampling, Gibbs, and mean-field solvers for MNL bandits; and developed the EM algorithm, Metropolis–Hastings and sequential Monte Carlo samplers, and simulation studies for inventory estimation.

Complex Engineering Systems Institute (ISCI) | *Research Assistant* March 2025 – July 2025
Developed a compartmental (SEIR) model of infectious-disease dynamics, such as influenza, to support the Chilean Ministry of Health’s winter campaign. Assessed alternative epidemiological models to improve predictions of the impact of public health interventions, under the supervision of Prof. Denis Sauré.

Northwestern University | *Research Assistant* December 2023 – August 2024
Implemented a stochastic optimization model and developed the proposed solution methods for *Tax Evasion*, *Heterogeneous Rates of Return*, and *Wealth Inequality*, a Ph.D. dissertation in Economics by José Alvarado Onell.

TEACHING EXPERIENCE

University of Chile | *Teaching Assistant* March 2023 – December 2025
Led weekly problem-solving sessions across doctoral, master’s, and undergraduate courses, contributed to grading and to the design of course assessments, and monitored student progress. Recipient of the departmental Best Teaching Assistant award (2024).

Graduate courses — *Ph.D. in Engineering Systems and M.Sc. in Operations Management*: Models and Algorithms for Optimization; Stochastic Models in Engineering Systems.

Undergraduate courses — *Industrial Engineering*: Decision-Making under Uncertainty; Probability; Modeling and Optimization; Economics; Computational Tools.

Course material — Authored course notes now used by students in the undergraduate Probability course.

APPLIED RESEARCH AND INDUSTRY EXPERIENCE

LATAM Airlines | *Applied Data Scientist* June 2026 – Present
External consulting project, in collaboration with academic researchers, on the optimization of aircraft component removal campaigns. Analyzed failure data and estimated the effect of operational covariates on component lifetime, in order to replace uniform maintenance policies with segmented, data-driven ones and improve operational reliability and resource allocation.

Complex Engineering Systems Institute (ISCI) | *Data Scientist* December 2025 – Present
Develop quantitative models and simulations to evaluate the population-level impact of public policies, combining counterfactual methods, cost analysis, probabilistic modeling, and large-scale registry data to support evidence-based decision-making. Work in this role underlies the nirsevimab and cCMV studies listed above.

Azul Azul S.A. | *Data Analyst* January 2024 – December 2024
Improved and optimized data generation and visualization processes for the men’s first team, the youth academy, and the women’s team.

LocalShop | *Data Scientist* December 2024 – February 2025
Collected, processed, and analyzed data and built models to identify the patterns and trends supporting strategic decision-making.

TECHNICAL SKILLS

Programming: Python, R, MATLAB, SQL, $\text{\LaTeX}$, HTML/CSS/JavaScript

Methods: Bayesian inference and MCMC, sequential Monte Carlo, expectation-maximization, stochastic and integer optimization, discrete-event simulation, causal inference, machine learning, natural language processing, deep generative models

Tools: Gurobi, Git/GitHub, Power BI, RStudio, Jupyter/Google Colab, VS Code