Pedro Nascimento de Lima

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SUMMARY

I am an assistant policy researcher at RAND, a Ph.D. Candidate at Pardee RAND Graduate School, an Adjunct Instructor at USC, and a Visiting Graduate Student at the Argonne National Laboratory. I hold a B.S. and an M.S. in Production Engineering from UNISINOS University in Brazil and an M.Phil. in Policy Analysis from Pardee RAND Graduate School.

My research uses simulation modeling and high-performance computing to inform pressing public health policy questions. My work generated recommendations for crafting COVID-19 reopening plans, based on a stress-test of COVID-19 reopening strategies. I also helped build RAND's COVID-19 Policy Tool, which became RAND's most popular research of 2020. I am passionate about tackling complex and deeply uncertain policy questions with simulation modeling and high-performance computing.

EDUCATION

Pardee RAND Graduate School, *Santa Monica, CA*
Ph.D. in Policy Analysis — *Exp. Jun 2023*
Dissertation Tentative Title: Improving Health Policy Under Deep Uncertainty.
Advisor: Robert Lempert
M.Phil. in Policy Analysis — *Dec 2020*

UNISINOS University, *São Leopoldo, Brazil*
M.S. in Production Engineering — *Feb 2018*
B.S. in Production Engineering — *Dec 2015*

EXPERIENCE

RAND Corporation — *Santa Monica, CA*
Assistant Policy Researcher — *Sep. 2019 - Present*

- I am a CISNET junior investigator working with the Colorectal Cancer group. CISNET is a consortium of NCI-sponsored investigators who use simulation modeling to improve our understanding of cancer control interventions. My current CISNET-funded research is evaluating the robustness of cancer screening policies with the Robust Decision Making approach (PI: Carolyn Rutter).
- I developed the R package containing the epidemiological model and the analytic data pipeline underlying RAND's COVID-19 State Policy Tool. The modules implemented are responsible for calibrating and running the model for all US states, and integrating results from the economic model. The tool ultimately became RAND's most popular research of 2020 and was honored with a RAND Silver Medal Award. (PIs: Jeanne Ringel, Raffaelle Vardavas).
- Developed the famexplorer R package - an **R/Shiny**-based visualization web app allowing researchers to create interactive visualization tools for their microsimulation analyses. (PIs: Roland Sturm and Patricia Herman).

University of Southern California — *Los Angeles, CA*
Adjunct Instructor - *USC Sol Price School of Public Policy* — *Aug. 2021 - Present*

- I teach Essential Statistics at Price's MPA program.

Argonne National Laboratory — *Lemont, IL*
Visiting Graduate Student - *Decision and Infrastructure Sciences Division* — *Dec. 2020 - Present*

- The visiting student appointment allows me to collaborate with Argonne researchers and use its High-Performance Computing resources to perform large-scale experiments in my simulation-based research. Argonne-developed scientific computing languages and frameworks (Swift/T and EMEWS) are key resources that allow me to work on cancer prevention policy questions that would be too intractable with limited computing power. (PI: Jonathan Ozik).

UNISINOS University *São Leopoldo, Brazil*
Lecturer - Polytechnic School *Feb. 2018 - Jun. 2019*

- Taught the following disciplines in undergraduate and MBA classes: Operations Research - Linear Programming; Simulation Modeling (Discrete Event Simulation); System Dynamics Simulation; Operations Management; Information Systems Management.
- Advised undergraduate and MBA students in their capstone research projects, one of which received the Best Brazilian Production Engineering Undergraduate Dissertation Award from ABEPRO (2019).

Master Research Assistant - GMAP | UNISINOS Research Group *Feb. 2016 - Feb. 2018*

- Developed a Monte Carlo Simulation package in R for cost-benefit analysis of Organizational Safety and Health Initiatives.
- Developed algorithms for exploratory modeling and analysis of system dynamics models in R.
- Developed a competition dynamics model for the Professional Additive Manufacturing Industry.

Undergraduate Research Intern - GMAP | UNISINOS Research Group *Jun. 2013 - Feb. 2016*

- Developed a model of global competition between iron ore producers, taking into account regional comparative advantages and detailed substitution dynamics among different iron ore types.
- Developed a VBA tool to run simulations, aggregate and summarize simulation results.
- Conducted Business Process Modeling of productivity and innovation induction programs for government agencies in Southern Brazil (AGDI and SEBRAE/RS).

Rede Industrial *Presidente Lucena, Brazil*
Chief Analyst *Jan. 2012 - Jun. 2013*

- Oversaw SIGMA's (a CMMS) software development and support teams.
- Conceptualized most of the new features included in the 2012 release, including the SIGMA's interagration module, Sigma SMS module and SIGMA's Android App.

Business Analyst *Jan. 2009 - Jan. 2012*

- Conducted software requirements analysis for internal and external clients.
- Developed SQL queries for database reporting and bug troubleshooting.
- Streamlined software development processes implementing and customizing Jira workflows.

PUBLICATIONS

This list of publications include peer-reviewed journal publications and peer-reviewed RAND publications and one commentary.

Nascimento de Lima, P., Lempert, R., Vardavas, R., Baker, L., Ringel, J., Rutter, C. M., ... Collier, N. (2021). Reopening California: Seeking robust, non-dominated COVID-19 exit strategies. *PLOS ONE*, *16*(10), e0259166. doi:10.1371/journal.pone.0259166

Nascimento de Lima, P., Vardavas, R., Baker, L., Ringel, J., Lempert, R. J., Rutter, C. M., & Ozik, J. (2021). *Reopening Under Uncertainty: Stress-Testing California's COVID-19 Exit Strategy* (tech. rep. No. May). RAND Corporation. Santa Monica, CA. doi:10.7249/PEA1080-1

Vardavas, R., **Nascimento de Lima**, P., & Baker, L. (2021). Could periodic nonpharmaceutical intervention strategies produce better COVID-19 health and economic outcomes? *Journal on Policy and Complex Systems*, *7*(1). doi:10.18278/jpcs.7.1.8

Vardavas, R., **Nascimento de Lima**, P., Davis, P. K., Parker, A. M., & Baker, L. (2021). Modeling Infectious Behaviors: The Need to Account for Behavioral Adaptation in COVID-19 Models. *Journal on Policy and Complex Systems*, *7*(1), 21–32. doi:10.18278/jpcs.7.1.3

Vardavas, R., Strong, A., Bouey, J., Welburn, J., **Nascimento de Lima**, P., Baker, L., . . . Ringel, J. (2020). *The Health and Economic Impacts of Nonpharmaceutical Interventions to Address COVID-19: A Decision Support Tool for State and Local Policymakers*. RAND Corporation. doi:10.7249/tla173-1

Dresch, A., Veit, D. R., **Nascimento de Lima**, P., Lacerda, D. P., & Collatto, D. C. (2019, January). Inducing Brazilian manufacturing SMEs productivity with Lean tools. *International Journal of Productivity and Performance Management*, *68*(1), 69–87. doi:10.1108/IJPPM-10-2017-0248

Nascimento de Lima, P., Dresch, A., & Lacerda, D. P. (2019). Do Socioeconomic Contextual Factors Influence SMEs Service Quality? A cross-sector and cross-city SERVPERF analysis. *International Journal of Business Performance Management*.

Veit, D. R., Larcerda, D. P., Morandi, M. I. W. M., Dresch, A., & **Nascimento de Lima**, P. (2019). The impacts of Additive Manufacturing on production systems. In J. Mula, R. Barbastefano, M. Díaz-Madroñero, & Raúl Poler (Eds.), *Lecture notes in management and industrial engineering* (pp. 187–194). Springer. doi:10.1007/978-3-319-93488-4

DISTINCTIONS AND AWARDS

RAND Silver Medal Award *RAND Corporation, 2021*
Alongside Lawrence Baker, Raffaele Vardavas, Alyson Youngblood and Heather Mackracken, for deveoping RAND's COVID-19 State policy tool.

Innovation Spotlight Award *RAND Corporation, 2020*
For developing the FAM Explorer R package - An interactive visualization tool for FAM-based dynamic microsimulation models.

Best Brazilian Production Engineering Undergrad Dissertation (Advisor) *ABEPRO, 2019*
Title: Process Mining and SLA violation prediction at a multinational software company. Student: Eduardo Mazzuco.

Best Brazilian Production Engineering Masters Dissertation (Author) *ABEPRO, 2018*
Title: Strategic Decision Making Under Deep Uncertainty in the 3D Printing Industry: A Robust Decision Making Analysis. (**full text**).

Best Brazilian Production Engineering Undergrad Dissertation (Author) *ABEPRO, 2016*
Title: Problem Structuring Methods: A Review of Methods to address Complex Problems. (**full text**).

Inovapps 2015 Prize *Brazilian Communications Ministry, 2015*
For proposing and developing the open-source Avalia Brasil Android App. Collaborators: Nataniel Schling and Klaus Klein. (**github repository**)

SOFTWARE: R PACKAGES AND TOOLS

I often contribute to research projects by developing software. I find it helpful to build internal R packages, not only to facilitate reproducibility but to build models and tools in a way that makes them reliable and useful to solve future problems. These packages include:

randcast.wtchp: Cost Forecasts for CDC's WTC Health Program *RAND, 2021*
This package creates ensembles of forecasting models for CDC's World Trade Center Health Program. Under active development.

crcrdm: Robust Decision Making Tools for Colorectal Cancer models *RAND, 2021*
This package is a tool to facilitate the use of RDM methods with CRC models.

c19randepimod: RAND's COVID-19 Epidemiological Models *RAND, 2020*
The c19randepimod package is the R package behind RAND's COVID-19 State Decision Support Tool.

gerbil: Generalized Efficient Regression-Based Imputation with Latent Processes *RAND, 2021*
I made minor contributions to Michael Robbins' imputation package.

famexplorer: A Visualization tool for the FAM Microsimulation Model *RAND, 2019*
The famexplorer package reads data from the creates a shiny app on-the fly for the FAM Model. The package is flexible enough to be reused across projections.

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

MIDAS Network

MIDAS Student Committee volunteer *2020 - Present*

Society for Decision Making Under Deep Uncertainty

Communications and Outreach Chair *2019 - 2020*

Member, Communications Team Volunteer *2017 - 2018*

NUGEEP - Rio Grande do Sul State Student Chapter - ABEPRO

President *2015 - 2016*

TECHNICAL SKILLS

Programming	**R** (my primary language), python, STATA, SAS (as needed)
High-Performance Computing	slurm, Swift/T, EMEWS with R and python
Web Apps Development	R's Shiny Package
Relational Databases	mySQL, MS SQL Server
Modeling and Simulation	iThink, Arena, deSolve R package
Other Tools	Tableau, Wordpress, Git
Github profile	github.com/pedroliman
Blog with R-related posts	www.pedronl.com