# Pedro Nascimento de Lima

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## SUMMARY

I am an assistant policy researcher and Ph.D. candidate at RAND, and a visiting graduate student at Argonne National Laboratory. I have 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 early professional trajectory in Brazil included a diverse set of experiences. I led a software development team then migrated to academia to work as a research intern. As an undergraduate student, I also initiated a student-led regional conference. Upon completion of my master's degree, I became a Lecturer at my alma mater University.

Now at RAND and Argonne, I use my prior expertise in software development and modeling and my recent training in Policy analysis on applied policy research projects. I thrive working on research projects that benefit from a mix of software development and simulation modeling skills. My first dissertation paper, titled *Reopening California: Seeking Robust, Non-Dominated COVID-19 Exit Strategies*, uses the Robust Decision Making approach to stress-test reopening strategies in the wake of COVID-19 vaccination roll-out. I am generally interested in work that uses my expertise in R programming to help policymakers make better decisions in complex, deeply uncertain situations.

## EDUCATION

**Pardee RAND Graduate School**, *Santa Monica, CA*

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| Ph.D. in Policy Analysis | *Exp. Jun 2023* |

*Dissertation Tentative Title: Improving Health Policy Under Deep Uncertainty.*
*Advisor: Robert Lempert*

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| M.Phil. in Policy Analysis | *Dec 2020* |

**UNISINOS University**, *São Leopoldo, Brazil*

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|---|---:|
| M.S. in Production Engineering | *Feb 2018* |
| B.S. in Production Engineering | *Dec 2015* |

## EXPERIENCE

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

- 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 (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. The first paper using the visualization tool was nominated h (PIs: Roland Sturm and Patricia Herman).

- Developed an Web App for the Flu Agent-Based Simulation model. (PIs: Raffaelle Vardavas, Andrew Parker).

- Contributed to the development of the gerbil R package. Gerbil (Generalized Efficient Regression-Based Imputation with Latent processes) is an R package for handling missing data. (PI: Michael Robbins).

**Argonne National Laboratory**                                    *Chicago, 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 (HPC) resources to evaluate the robustness of Health policies. HPC resources helps me answer 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 ABE-PRO (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.

- Quality Assured SIGMA's new features.

- Streamlined software development processes implementing and customizing Jira workflows.

## 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**).

**PROSUP M.Sc. Scholarship** *CAPES, 2016*

**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**)

## 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*

## PUBLICATIONS

**Pedro Nascimento de Lima**, Raffaele Vardavas, Lawrence Baker, Jeanne Ringel, Robert Lempert, Carolyn M. Rutter, Jonathan Ozik (2021) **Reopening Under Uncertainty: Stress-Testing California's COVID-19 Exit Strategy.** Santa Monica, CA: RAND Corporation, 2021.

**Pedro Nascimento de Lima**, Robert Lempert, Raffaele Vardavas, Lawrence Baker, Jeanne Ringel, Carolyn M. Rutter, Jonathan Ozik, Nicholson Collier (2021) **Reopening California: Seeking Robust, Non-Dominated COVID-19 Exit Strategies.** Santa Monica, CA: RAND Corporation, 2021.

Raffaele Vardavas, **Pedro Nascimento de Lima**, Lawrence Baker (2021) **Modeling COVID-19 Nonpharmaceutical Interventions: Exploring Periodic Strategies** Santa Monica, CA: RAND Corporation, 2021.

Vardavas, Raffaele, Aaron Strong, Jennifer Bouey, Jonathan William Welburn, **Pedro Nascimento de Lima**, Lawrence Baker, Keren Zhu, Michelle Priest, Lynn Hu, and Jeanne S. Ringel (2020) **The**

**Health and Economic Impacts of Nonpharmaceutical Interventions to Address COVID-19: A Decision Support Tool for State and Local Policymakers.** Santa Monica, CA: RAND Corporation, 2020. https://www.rand.org/pubs/tools/TLA173-1.html.

**Pedro Nascimento de Lima**, PhuongGiang Nguyen, Patricia M. Herman, Roland Sturm. **How Would a Better Diet Affect Health and Economic Outcomes in the United States?**. Santa Monica, CA: RAND Corporation, 2020. https://www.rand.org/pubs/tools/TL363.html.

**Lima, P. N.**, Dresch, A., Larcerda, D. P. (2019). **Do socio-economic contextual factors influence SMEs' service quality? A cross-sector and cross-city SERVPERF analysis**. International Journal of Business Performance Management, 20(3), 195-211.https://doi.org/10.1504/IJBPM.2019.101998

Veit, D. R., Larcerda, D. P., **Lima, P. N.** (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). https://doi.org/10.1007/978-3-319-93488-4

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

## SOFTWARE: R PACKAGES AND TOOLS

I often contribute to research projects by writing code, often in the form of R packages. 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 applicable to solve future problems.

**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.

**oshcba**: Occupational Safety and Health Cost-Benefit Analysis Package        *GMAP/SESI/RS, 2018*
OSHCBA computes the costs and benefits of investing in occupational safety projects, from the firm perspective. The package has been tested and used to support the decision to invest in a safer manufacturing work environment in several companies in Brazil.

**Arena2R**: Plots, Summary Statistics and Tools for Arena Simulation Users        *Personal, 2018*
Arena2R is a personal package I developed while I taught Discrete Event Simulation. The package reads summary data from Arena and displays summary statistics.

## TECHNICAL SKILLS

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| **Programming** | **R** (my primary language), python, STATA, SAS (as needed) |
| **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 |