MARIA NAREKLISHVILI

Citizenships: Georgia and Norway
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INTERESTS

Econometrics and Statistics; Randomized and Natural Experiments; Microeconometrics

CURRENT POSITIONS

(2024–present): Postdoctoral Fellow, Stanford University (GSB), Golub Capital Social Impact Lab
Faculty Supervisor: Susan Athey
(2025–present): Assistant Professor in Econometrics, University of Glasgow, Adam Smith Business School

PUBLIC SERVICE

(2024–present): Committee member, Royal Statistical Society, Emerging Applications Section
(2024–present): External Examiner, Department of Computer Science, Østfold University College

EDUCATION

(2021–2022): Visiting Ph.D. Researcher, University of Chicago
Specialization: Econometrics
(2018–2022): Ph.D. Economics, University of Oslo
Specialization: Econometrics
(2016–2018): M.Phil. Economics, University of Oslo
Major: Mathematical Economics
(2012–2016): B.A. Business Administration, Østfold University College and Tbilisi State University
Major: Quantitative Economics
Summa cum laude; merit scholarship recipient

REFERENCES

Alexander Torgovitsky	Stephane Bonhomme	Edwin Leuven	Nicholas Polson
Professor in Economics	Professor in Economics	Professor in Economics	Professor in Statistics
University of Chicago	University of Chicago	University of Oslo	University of Chicago
Chicago, Illinois, USA	Chicago, Illinois, USA	Oslo, Norway	Chicago, Illinois, USA
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DISSERTATION COMMITTEE MEMBERS

Stephane Bonhomme	Dmitry Arkhangelsky	Jo Thori Lind
Professor in Economics	Assoc. Professor in Econometrics	Professor in Economics
University of Chicago	CEMFI	University of Oslo
Chicago, Illinois, USA	Madrid, Spain	Oslo, Norway

WORKING PAPERS

Inference with Multi-Outcome Random Forest

(2025)

Wald test statistic produces elliptical confidence regions for multi-dimensional parameters. When parameters, such as treatment effects, are correlated, failing to account for these dependencies can lead to misspecified confidence regions, and increased Type 1 and Type 2 error rates. This paper proposes the multi-outcome generalized random forest, an extension of the generalized random forest that enables inference on correlated treatment effects. The method is

designed for settings with multiple correlated outcomes or treatments and explicitly incorporates these dependencies into the estimation process. Simulation results and empirical analysis show that modeling these correlations increases the statistical power of joint hypothesis tests both within and across subsets of covariates.

Generative Modeling: A Review (with Nicholas Polson, Vadim Sokolov)
(2025)

We review generative models that create parameter–data pairs and train deep neural networks to map observed outcomes to latent parameters, reframing posterior prediction as a supervised learning task. These methods replace traditional sampling-based techniques and are well-suited for high-dimensional, nonlinear, or likelihood-intractable settings. We emphasize quantile-based and latent-variable architectures and illustrate the approach with a generative Bayesian computation analysis of the Ebola dataset. Generative methods offer flexible, scalable, and efficient tools for modern likelihood-free inference.

Understanding stellar luminosity with generative deep learning (with Nicholas Polson, Vadim Sokolov)
(2025)

We present a physics-informed generative deep learning framework to empirically validate fundamental laws, focusing on the Stefan–Boltzmann relation between stellar temperature and luminosity. The model simulates counterfactual luminosities under hypothetical temperatures, incorporates variance scaling with temperature, and iteratively refines the temperature–luminosity mapping. Using Gaia DR3 data, we find that the temperature effect on luminosity rises with stellar radius and falls with absolute magnitude, consistent with theory. By framing physical laws as causal problems, the approach offers a data-driven system for validating scientific principles.

Feature Selection for Personalized Policy Analysis (with Nicholas Polson and Vadim Sokolov)
(2025)

We propose Forest-PLS, a feature selection method for analyzing policy effect heterogeneity more flexibly than conventional approaches. The method combines partial least squares to identify key population components with the generalized random forest to estimate personalized policy effects, capturing heterogeneity both within and across subgroups. We illustrate the approach using data from the 1988–1989 Pennsylvania Reemployment Bonus Experiments. Results show that financial incentives encouraged some young non-white individuals to enter the labor market, while for others they acted as a temporary cushion, reducing job search. These findings underscore the importance of targeted, personalized policy design.

Labor Market Impacts of the Green Transition: Evidence from a Contraction in the Oil Industry (with Cloe Garnache and Elisabeth Isaksen)
(2025)

The transition to a low-carbon economy requires contraction of fossil fuel sectors, raising concerns about labor market costs. We study the 2014 oil price shock in Norway as a natural experiment using matched employer–employee data. A difference-in-differences design shows moderate long-run earnings and employment losses for oil workers, while event studies reveal larger and persistent losses for displaced workers—up to 10% in earnings and 5% in employment nine years after displacement, particularly among the less educated. Few displaced workers move into green jobs, though their likelihood of entering green versus brown (non-oil) sectors matches the relative size of each. Earnings losses are greater for green-job entrants than for brown-job entrants, but smaller than for other transitions. Decomposition results suggest that differences in establishment wage premiums, rather than skill mismatch, explain most gaps.

PUBLICATIONS

(2024): **Overeducation and economic mobility** (with Knut Røed and Simen Markussen)
Economics of Education Review

(2024): **Deep ensemble transformers for dimensionality reduction** (with Marius Geitle)
IEEE Transactions on Neural Networks and Learning Systems

(2023): **Partial least squares for instrumental variable regression** (with Nicholas Polson and Vadim Sokolov) *Applied Stochastic Models in Business and Industry*

WORK IN PROGRESS

Generative Causal Inference (with Nicholas Polson and Vadim Sokolov)

Voluntary Schooling and the Distribution of Economic Returns (with Knut Røed and Simen Markussen)

TEACHING

(2025): Econometrics 2 (graduate), University of Glasgow

(2022 - 2023): Data Science for Economists (graduate), University of Oslo

(2017 - 2018): Calculus and Linear Algebra 2 (graduate), University of Oslo

OTHER PROFESSIONAL EXPERIENCE

(2022 - 2023): Research Scientist, Schibsted Norway As, Distribution Innovation

(2015 - 2016): Research Assistant, Applied Econometrics, Østfold University College

SCHOLARSHIPS AND GRANTS

(£3000): ASBS Esteem Building Grant

(200,000 NOK): Overseas Research Grant for Young Researchers Abroad, Research Council of Norway

(120,000 NOK): UNIFOR Scholarships for the Research Stay Abroad

(50,000 NOK): Frisch Scholarship, Scholarship for Advanced Research Methods

PRESENTATIONS AND TALKS

(2025): Stanford Metrics Lunch; International Conference on Computational Social Science (IC2S2); RSS International Conference

(2024): Federal Reserve Bank of Philadelphia, Stanford University, Dalhousie University; University of Cambridge, University of Glasgow; University of Leicester, University of Birmingham, University of Liverpool, University of Innsbruck, University of Amsterdam, Erasmus University Rotterdam, Monash University, University of Melbourne

(2023): University of Southern Denmark, University of Aarhus, The University of Oslo

(2022): International Society of Georgian Scientists, SIMULA@BI

(2021): Statistics Norway, Ragnar Frisch Centre of Economic Research

REFEREE

IEEE Transactions on Neural Networks and Learning Systems; International Journal of Forecasting

SOFTWARE AND SERVICES

AWS Cloud Services (sagemaker, step functions, s3, dynamodb, glue jobs, redshift, lambda, ssm)
R (data cleaning, analysis, machine learning libraries),
Python (pyspark, boto3, tensorflow, pytorch, ML libraries),
SQL (aggregate functions, joins, basic SQL engineering),
LaTeX,
Tableau,
C (basics, learning)

LANGUAGES

English (Proficient); Norwegian (Proficient, Bergenstesten Bestått); Russian (Proficient); Georgian (Native)

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