Claudia Di Caterina

CURRICULUM VITAE
(Last update: August 2025)

Contact information

University of Verona
Department of Economics
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Current position

Since March 2025
Associate Professor
University of Verona, Department of Economics.

Research interests

- Likelihood and pseudo-likelihood inference
- Likelihood asymptotics
- Anytime-valid inference
- Statistical treatment of nuisance parameters
- Bias reduction techniques

Positions held

October 2021 – February 2025
Assistant Professor (*Ricercatrice a Tempo Determinato di tipo b*)
University of Verona, Department of Economics.

March 2020 – September 2021
Assistant Professor (*Ricercatrice a Tempo Determinato di tipo a*)
Free University of Bozen-Bolzano, Faculty of Economics and Management.

January 2019 – January 2020
Research Assistant (*Assistente di Ricerca*)
Free University of Bozen-Bolzano, Faculty of Economics and Management.
Research project title: *Efficient Measurement of Uncertainty in the Selection of Statistical Models via Resampling (REASSURE)*
Supervisor: Prof. Davide Ferrari

January 2017 – December 2018
Postdoctoral Fellow (*Assegnista di Ricerca*)
University of Padova, Department of Statistical Sciences.
Research project title: *Approximate Likelihood Inference with High-dimensional Models*
Supervisor: Prof. Nicola Sartori

Education

January 2014 – March 2017
PhD in Statistical Sciences
University of Padova, Department of Statistical Sciences.
Thesis title: *Reducing the Impact of Bias in Likelihood Inference for Prominent Model Settings*
Supervisor: Prof. Nicola Sartori
Co-supervisor: Dr. Ioannis Kosmidis

October 2011 – July 2013
Master degree (*Laurea Magistrale*) in Statistical Sciences
University of Padova, Department of Statistical Sciences.
Title of dissertation: *Modified Profile Likelihood in Dynamic Panel Data Models*
Supervisor: Prof. Nicola Sartori
Final mark: 110/110 *cum laude*

October 2008 – July 2011
Bachelor degree (*Laurea Triennale*) in Statistics, Economics and Finance
University of Padova, Faculty of Statistical Sciences.
Title of dissertation: *Bootstrap for Time Series*
Supervisor: Prof. Luisa Bisaglia
Final mark: 110/110 *cum laude*

Visiting periods

April 2019 – June 2019
University of Toronto, Department of Statistical Sciences
Toronto, Canada.
Supervisor: Prof. Nancy Reid

September 2015 – September 2016
University College, Department of Statistical Science
London, United Kingdom.
Supervisor: Dr. Ioannis Kosmidis

Publications

Papers in journals
Di Caterina, C., Reid, N., Sartori, N. (2025). Directional tests in Gaussian graphical models. *Statistica Sinica*, **35**, 361–387. DOI: 10.5705/ss.202022.0394.

Di Caterina, C., Ferrari, D. (2024). Model selection by pathwise marginal likelihood thresholding. *Statistics & Probability Letters*, **214**, 110214. DOI: 10.1016/j.spl.2024.110214.

Roner, C., Di Caterina, C., Ferrari, D. (2024). Exponential tilting for zero-inflated interval regression with applications to cyber security survey data. *Journal of the Royal Statistical Society Series C: Applied Statistics*, **73**, 1065–1081. DOI: 10.1093/jrsssc/qlae026.

Huang, C., Di Caterina, C., Sartori, N. (2022). Directional testing for high dimensional normal distributions. *Electronic Journal of Statistics*, **16**, 6489–6511. DOI: 10.1214/22-EJS2089.

Di Caterina, C., Cortese, G., Sartori, N. (2019). Monte Carlo modified profile likelihood in models for clustered data. *Electronic Journal of Statistics* **13**, 432–464. DOI: 10.1214/19-EJS1532.

Di Caterina, C., Kosmidis, I. (2019). Location-adjusted Wald statistics for scalar parameters. *Computational Statistics and Data Analysis* **138**, 126–142. DOI: 10.1016/j.csda.2019.04.004.

Articles in proceedings

Di Caterina, C. (2023). Detecting the positions of nonconsensus amino acids in HIV patients by marginal likelihood thresholding. *Book of Abstracts and Short Papers CLADAG 2023 (Coretto, P., Giordano, G., La Rocca, M., Parrella, M.L., and Rampichini, C., editors)*, 419–422. ISBN: 978-88-919-3563-2.

Santelli, F., Di Credico, G., Di Caterina, C. (2023). High school proficiency of future university students: an analysis based on INVALSI data. *Book of Short Papers IES 2023 (Bucci, A., Cartone, A., Evangelista, A., and Marletta, A., editors)*, 560–565. ISBN: 979-12-803-3369-8.

Di Caterina, C., Salvan, A., Sartori, N. (2023). Mixture confidence sequences for regression coefficients in generalized linear models. *Proceedings of the 37th International Workshop on Statistical Modelling (Bergherr, E., Groll, A., and Mayr, A., editors)* **3**, 420–423. ISBN: 978-3-947323-42-5.

Huang, C., Du, J., Di Caterina, C. (2023). Rate of return to education of compliers: estimation based on Rubin causal models. *Proceedings of the 37th International Workshop on Statistical Modelling (Bergherr, E., Groll, A., and Mayr, A., editors)* **3**, 467–471. ISBN: 978-3-947323-42-5.

Di Caterina, C., Ferrari, D. (2023). Sequential marginal likelihood selection for the estimation of sparse correlation matrices. *Book of Short Papers SIS 2023 (Chelli, F. M., Ciommi, M., Ingrassia, S., Mariani, F., and Recchioni, M.C., editors)*, 1246–1251. ISBN: 978-88-9193-561-8.

Di Caterina, C., Zanotto, L. (2023). Parameter orthogonalization for Siler mortality model. *Book of Short Papers SIS 2023 (Chelli, F. M., Ciommi, M., Ingrassia, S., Mariani, F., and Recchioni, M.C., editors)*, 584–589. ISBN: 978-88-9193-561-8.

Di Credico, G., Di Caterina, C., Santelli, F. (2023). Streamlined variational inference for modeling Italian educational data. *Proceedings of the Statistics and Data Science Conference (Cerchiello, P., Agosto, A., Osmetti, S., and Spelta, A., editors)*, 102–107. ISBN: 978-88-6952-170-6.

Di Caterina, C., Reid, N., Sartori, N. (2022). Accurate directional inference for Gaussian graphical models. *Book of Short Papers SIS 2022 (Balzanella, A., Bini, M., Cavicchia, C., and Verdi, R., editors)* **4**, 1637–1642. ISBN: 978-88-9193-231-0.

Di Caterina, C., Ferrari, D. (2022). Sparse composite likelihood selection. *Proceedings of the 36th International Workshop on Statistical Modelling (Torelli, N., Bellio, R., and Muggeo, V., editors)* **3**, 423–426. ISBN: 978-88-5511-309-0.

Roner, C., Di Caterina, C., Ferrari, D. (2022). Robust zero-inflated interval regression for cyber security survey data. *Proceedings of the 36th International Workshop on Statistical Modelling (Torelli, N., Bellio, R., and Muggeo, V., editors)* **3**, 563–566. ISBN: 978-88-5511-309-0.

Di Caterina, C., Ferrari, D., La Vecchia, D. (2019). Inference on high-dimensional graphical models via pairwise likelihood truncation. *Proceedings of the 21st European Young Statisticians Meeting (Milošević, B., and Obradović, M., editors)*, 20–24. ISBN: 978-86-7589-137-6.

Di Caterina, C., Sartori, N. (2018). Modified profile likelihood in models for clustered data with missing values. *Book of Short Papers SIS 2018 (Abbruzzo, A., Piacentino, D., Chiodi, M., and Brentari, E., editors)* **5**, 1401–1406. ISBN: 978-88-9191-023-3.

Di Caterina, C., Cortese, G., Sartori, N. (2017). Monte Carlo modified profile likelihood in survival models for clustered censored data. *Proceedings of the 32nd International Workshop on Statistical Modelling (Grzegorczyk, M., and Ceoldo, G., editors)* **2**, 193–196.

Di Caterina, C., Kosmidis, I. (2016). Bias corrected z-tests for regression models. *Proceedings of the 31st International Workshop on Statistical Modelling (Dupuy, J.-F., and Josse, J., editors)* **1**, 87–92.

Preprints
Huang, C., Di Caterina, C., Sartori, N. Directional testing for one-way MANOVA in divergent dimensions. arXiv:2403.07679. *Submitted.*

PhD Thesis
Di Caterina, C. (2017). Reducing the impact of bias in likelihood inference for prominent model settings (`http://paduaresearch.cab.unipd.it/10305/`). University of Padova, Department of Statistical Sciences.

Working papers
Di Caterina, C., Salvan, A., Sartori, N. Mixture confidence sequences for regression coefficients in generalized linear models. *In preparation.*

Di Caterina, C., Di Credico, G. Streamlined variational inference for linear mixed models with nested and crossed random effects. *In preparation.*

Software

`waldi`: R package providing methods to compute location-adjusted Wald statistics and confidence intervals for popular model classes (joint with I. Kosmidis).
Available on GitHub: `https://github.com/ikosmidis/waldi`

Conference presentations

Invited talks
Approximate confidence sequences in generalized linear models. Invited talk at the *BIRS-CMI Workshop: Game-theoretic statistical inference: Optional sampling, universal inference, and multiple testing based on e-values*, Chennai, India, June 30–July 4, 2025.

Location-adjusted Wald statistics for scalar parameters. Invited talk at the *ISM 2020 Workshop*, Sestri Levante (GE), Italy, January 27–28, 2020.

Sparse covariance matrix estimation via truncated pairwise likelihood. Invited talk at the *21st European Young Statisticians Meeting (EYSM 2019)*, Belgrade, Serbia, July 29–August 2, 2019.

Location-adjusted Wald statistics for scalar parameters. Invited talk at the *PRIN 2015 Intermediate Workshop*, Padova, Italy, February 19, 2019.

Monte Carlo modified profile likelihood in survival models for clustered censored data. Invited talk at the *11th International Conference of the ERCIM Working Group on Computational and Methodological Statistics (CMStatistics 2018)*, Pisa, Italy, December 14–16, 2018.

Location-adjusted Wald statistic for scalar parameters. Invited talk at the *5th StaTalk Workshop*, Padova, Italy, November 17, 2017.

Contributed talks

Sequential marginal likelihood selection for the estimation of sparse correlation matrices. Talk at the *SIS 2023 International Meeting - Statistical Learning, Sustainability and Impact Evaluation*, Ancona, Italy, June 21–23, 2023.

Accurate directional inference for Gaussian graphical models. Talk at the *51st Scientific Meeting of the Italian Statistical Society*, Caserta, Italy, June 22–24, 2022.

Accurate directional inference in Gaussian graphical models. Talk at the *International Conference of the Royal Statistical Society*, Manchester, United Kingdom, September 6–9, 2021.

Location-adjusted Wald statistics for scalar parameters. Talk at the *International Conference of the Royal Statistical Society*, Cardiff, United Kingdom, September 3–6, 2018.

Modified profile likelihood in models for clustered data with missing values. Talk at the *49th Scientific Meeting of the Italian Statistical Society*, Palermo, Italy, June 20–22, 2018.

Adjusted z-tests for regression models. Talk at the *31st International Workshop on Statistical Modelling*, Rennes, France, July 4–8, 2016.

Posters

Mixture confidence sequences for regression coefficients in generalized linear models. *37th International Workshop on Statistical Modelling*, Dortmund, Germany, July 17–21, 2023.

Sparse composite likelihood selection. *36th International Workshop on Statistical Modelling*, Trieste, Italy, July 18–22, 2022.

Robust zero-inflated interval regression for cyber security survey data. *36th International Workshop on Statistical Modelling*, Trieste, Italy, July 18–22, 2022.

Monte Carlo modified profile likelihood in survival models for clustered censored data. *32nd International Workshop on Statistical Modelling*, Groningen, The Netherlands, July 3–7, 2017.

Monte Carlo modified profile likelihood for panel data models. *22nd International Conference on Computational Statistics (COMPSTAT 2016)*, Oviedo, Spain, August 23–26, 2016.

Seminars

May 2020: Internal seminar *Simultaneous model selection and inference by sparse combination of estimating equations* at the Free University of Bozen-Bolzano, Faculty of Economics and Management.

May 2017: Invited seminar *Reducing the Impact of Bias in Likelihood Inference* at the University of Trieste, Department of Economical, Business, Mathematical and Statistical Sciences "Bruno de Finetti".

Research grants

2024–2026: Member of the national research project PRIN2022 PNRR *Climate Change, Uncertainty and Financial Risk: Robust Approaches based on Time-Varying Parameters* (n. P20229CJRS) supported by the Italian Ministry of University and Research (MUR). Budget: 269 315 euros. National Principal Investigator: Dr. P. Mazzarisi. Verona Unit Principal Investigator: Dr. G. Buccheri.

2020–2021: Co-Investigator of the research project *Populism as simplistic commitment* supported by the Free University of Bozen-Bolzano. Budget: 10 000 euros. Principal Investigator: Dr. P. Roberti.

2020–2021: Member of the research project *Detecting and quantifying (side-)effects of recent experimental therapies against Chronic Myeloid Leukemia* supported by the Free University of Bozen-Bolzano. Budget: 82 000 euros. Principal Investigator: Dr. P. Lecca.

2020–2021: Principal Investigator of the research project *Efficient statistical analysis of mixed-type data with applications to business economics and epidemiology* supported by the Free University of Bozen-Bolzano. Budget: 8 000 euros.

April–September 2020: Co-Investigator of the research project *Research training collaboration on time series analysis* supported by European Academy of Bozen/Bolzano (EURAC). Budget: 2 000 euros.

2017–2019: Member of the national research project PRIN *Likelihood-free methods of inference* supported by the Italian Ministry of Instruction, University and Research (MIUR). Budget: 26 000 euros. National Principal Investigator: Prof. B. Liseo. Padova Unit Principal Investigator: Prof. L. Ventura.

2016–2018: Member of the research project *Advances in likelihood-based inference in Biostatistics with application to measurement error problems and meta-analysis* supported by the University of Padova. Budget: 46 873 euros. Principal Investigator: Prof. A. Guolo.

2014–2016: Member of the research project *Neo-Fisherian and Bayesian inference for intractable likelihoods: modern approaches with application in Life Sciences* supported by the University of Padova. Budget: 67 580 euros. Principal Investigator: Prof. N. Sartori.

Industry consulting projects

2020–2021: Member of the research project *Data Normalization Intelligence* supported by Corvallis Spa. Principal Investigator: Prof. D. Ferrari.

Teaching

Academic year 2024/2025

- Lecturer (10 hours) in the PhD course *Mathematical Statistics*. University of Verona, PhD in Economics and Finance.

- Lecturer (60 hours, ongoing) in the undergraduate course *Statistica*. University of Verona, Bachelor's degree in Business Administration and Management.

- Lecturer (36 hours, scheduled) in the graduate course *Machine Learning for Economics*. University of Verona, Master's degree in Economics and Data Analysis.

Academic year 2022/2023

- Lecturer (8 hours) in the PhD course *Introduction to Probability - Module II*. University of Verona, PhD School.

- Lecturer (84 hours) in the undergraduate course *Analisi Statistica per le Decisioni d'Impresa*. University of Verona, Bachelor's degrees in Economics, Firms and International Markets (Vicenza) and Business Innovation and Economics (Vicenza).

- Lecturer (12 hours) in the graduate course *Machine Learning for Economics*. University of Verona, Master's degree in Economics and Data Analysis.

Academic year 2021/2022

- Lecturer (84 hours) in the undergraduate course *Analisi Statistica per le Decisioni d'Impresa*. University of Verona, Bachelor's degrees in Economics, Firms and International Markets (Vicenza) and Business Innovation and Economics (Vicenza).

- Lecturer (12 hours) in the graduate course *Machine Learning for Economics*. University of Verona, Master's degree in Economics and Data Analysis.

Academic year 2020/2021

- Lecturer (18 hours) in the undergraduate course *Econometrics of Financial Markets*. Free University of Bozen-Bolzano, Faculty of Economics and Management.

- Lecturer (36 hours) in the graduate course *Statistical Methods for Business Analysis*. Free University of Bozen-Bolzano, Faculty of Economics and Management.

- Lecturer (36 hours) in the graduate course *Applied Statistics for Accounting and Finance*. Free University of Bozen-Bolzano, Faculty of Economics and Management.

Academic year 2019/2020

- Lecturer (39 hours) in the undergraduate course *Econometrics of Financial Markets*. Free University of Bozen-Bolzano, Faculty of Economics and Management.

- Teaching assistant (18 hours) in the undergraduate course *Statistica*. Free University of Bozen-Bolzano, Faculty of Economics and Management.

- Teaching assistant (24 hours) in the undergraduate course *Statistica per SES*. University of Bozen, Faculty of Economics and Management.

- Teaching assistant (10 hours) in the graduate course *Applied Statistics*. Free University of Bozen-Bolzano, Faculty of Science and Technology.

- Teaching assistant (6 hours) in the graduate course *Statistics for the Public Sector, M-2 Economic Statistics*. Free University of Bozen-Bolzano, Faculty of Economics and Management.

Academic year 2017/2018

- Teaching assistant (26 hours) in the graduate course *Statistica Progredito*. University of Padova, Department of Statistical Sciences.

- Teaching assistant (21 hours) in the graduate course *Statistica Applicata*. University of Padova, Department of Biology.

Academic year 2016/2017

Teaching assistant (12 hours) in the graduate course *Statistica Progredito*. University of Padova, Department of Statistical Sciences.

Supervision of students

September 2025: Supervisor of the Master's thesis *Investigating the Financial Effects of Twitter Sentiment Through Machine Learning and Transformers: Evidence from Elon Musk's Tweets*. Student: Helena Oprandi. University of Verona, Master's degree in Economics and Data Analysis.

September 2025: Supervisor of the Master's thesis *From Risk to Resilience: Intelligent Fraud Detection in Credit Management*. Student: Giacomo Fantato. University of Verona, Master's degree in Economics and Data Analysis.

December 2023: Supervisor of the Master's thesis *Social Media Reddit's Influence on Credit Suisse collapse: a Natural Language Processing Analysis*. Student: Andrea Cuoghi. University of Verona, Master's degree in Economics and Data Analysis.

Organization of scientific events

2023: Organizer of the scientific session "Safe, anytime-valid inference" at the *16th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2023)*. Berlin, Germany, December 16–18, 2023.

2020: Member of the scientific and organizing committee for the workshop *Learning Tools and Applied Quantitative Methods for Decision Making*. Free University of Bozen-Bolzano, Faculty of Economics and Management, December 9–11, 2020.

2017: Member of the scientific and organizing committee for the *5th StaTalk Workshop*. University of Padova, Department of Statistical Sciences, November 17, 2017.

Peer review activity

Reviewer for international scientific journals, among which *Annals of Applied Statistics*, *BMC Bioinformatics*, *Computational Statistics*, *International Journal of Forecasting*, *Journal of Statistical Computation and Simulation*, *Journal of Statistical Planning and Inference*, *Statistical Methods and Applications*.

Awards

Teaching award based on student evaluations for the graduate course *Machine Learning for Economics* in the a.y. 2021/2022 in the Master's degree in Economics and Data Analysis. University of Verona, Department of Economics.

Computer skills

- Programming languages: R, C, Java (basic).
- Scripting languages: PHP (basic).
- Databases: SQL (basic).
- OS environments: Mac OS X, Linux, Windows.

Language skills

Italian: native; English: fluent; French: basic; Spanish: basic.