

CARLO CAVICCHIA

PERSONAL DATA

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CURRENT POSITION

Assistant Professor (Universitair Docent 1, UD1) of Statistics *December 2024 - Present*
Econometric Institute, Erasmus School of Economics, Erasmus Rotterdam University, Rotterdam

EDUCATION

Masterclass Supervising PhD Research *December 2024*

Erasmus University Rotterdam, Rotterdam

Dutch University Teaching Qualification UTQ-BKO *January 2022 - June 2022*

Risbo, Erasmus University Rotterdam, Rotterdam

Ph.D. in Statistics *November 2016 - February 2020*

Department of Statistical Sciences, University of Rome La Sapienza, Rome

Thesis title: *Hierarchical latent variable models for dimensionality reduction: an application on composite indicators*; Supervisor: Prof. M. Vichi

MSc Degree in Statistics and Decision Science *November 2013 - January 2016*

University of Rome La Sapienza, Rome

110/110 with honors

BSc Degree in Statistics

November 2009 - July 2013

University of Rome La Sapienza, Rome

105/110

QUALIFICATIONS

National Qualification for Associate Professor (Italy, ASN II fascia), Statistics (SC 13/D1)

RESEARCH AND TEACHING INTERESTS

Hierarchical Models

Non-parametric Statistics

Data Science

Latent Variable Models

Composite Indicators

Unsupervised Classification

RESEARCH EXPERIENCES

Research visit

November 2024

Department of Economics, Management and Institutions, Federico II University of Naples, Naples

Guest of Prof. P. Sarnacchiaro

Research visit

November 2019 – December 2019

Econometric Institute, Erasmus School of Economics, Erasmus Rotterdam University, Rotterdam

Guest of Prof. P.J.F. Groenen

Research fellowship

May 2019 – April 2020

Department of Law and Economics, University of Rome UnitelmaSapienza, Rome

Supervisor: Prof. P. Sarnacchiaro

Researcher on a project

March 2016 – November 2018

Department of Statistical Sciences, University of Rome La Sapienza, Rome

Title: *Development of a procedure to detect and manage outliers for big data*

Supervisor: Prof. M. Vichi and ENEA

Researcher on a project

March 2016 – January 2017

Department of Statistical Sciences, University of Rome La Sapienza, Rome

Title: *Construction of a hierarchical non-negative and disjoint composite indicator for a set of quantitative variables*

Supervisor: Prof. M. Vichi

AWARDS AND GRANTS

IFCS Chikio Hayashi Award (1000.- USD)

July 2024

International Federation of Classification Societies, San Jose (Costa Rica)

ESE Starter grant (300000.- EUR)

September 2023

Erasmus School of Economics, Erasmus Rotterdam University, Rotterdam (The Netherlands)

Research Grant for Junior Researchers (1270.- EUR)

August 2017

University of Rome La Sapienza, Rome (Italy)

Best report of Stats under the stars³

June 2017

Italian Statistical Society (SIS), Florence (Italy)

Ph.D. scholarship (3 years)

August 2016

University of Rome La Sapienza, Rome (Italy)

FEATURED PUBLICATIONS

Willemsen, R., C. Cavicchia, W. van den Heuvel, and M. van de Velden: *An Exact Solution Approach for Hierarchical Clustering*. In: *INFORMS Journal on Computing* (2025+). Accepted for publication.

Bottazzi Schenone, M., C. Cavicchia, M. Vichi, and G. Zaccaria: *Ultrametric Factor Analysis for building hierarchies of reliable and unidimensional latent concepts*. In: *Psychometrika* (2025+). Accepted for publication.

Velden, M. van de, A. Iodice D'Enza, A. Markos, and C. Cavicchia: *A general framework for implementing distances for categorical variables*. In: *Pattern Recognition* 153 (2024), p. 110547. DOI: <https://doi.org/10.1016/j.patcog.2024.110547>.

Cavicchia, C., M. Vichi, and G. Zaccaria: *Parsimonious Ultrametric Gaussian Mixture Models*. In: *Statistics and Computing* 34 (2024), p. 108. DOI: [10.1007/s11222-024-10405-9](https://doi.org/10.1007/s11222-024-10405-9).

Cavicchia, C. and P. Sarnacchiaro: *A new hierarchical composite indicator model for ranking the top 20 European football teams*. In: *Quality and Quantity* 58.5 (2024), pp. 4033–4051. DOI: [10.1007/s11135-024-01842-9](https://doi.org/10.1007/s11135-024-01842-9).

Cavicchia, C., P. Sarnacchiaro, M. Vichi, and G. Zaccaria: *A model-based ultrametric composite indicator for studying waste management in Italian municipalities*. In: *Computational Statistics* 39.1 (2024), pp. 21–50. DOI: [10.1007/s00180-023-01333-9](https://doi.org/10.1007/s00180-023-01333-9).

Cavicchia, C., M. Vichi, and G. Zaccaria: *Hierarchical Disjoint Principal Component Analysis*. In: *Advances in Statistical Analysis* 107.3 (2023), pp. 537–574. DOI: [10.1007/s10182-022-00458-4](https://doi.org/10.1007/s10182-022-00458-4).

Vichi, M., C. Cavicchia, and P.J.F. Groenen: *Hierarchical Means Clustering*. In: *Journal of Classification* 39.3 (2022), pp. 553–577. DOI: [10.1007/s00357-022-09419-7](https://doi.org/10.1007/s00357-022-09419-7).

Cavicchia, C., M. Vichi, and G. Zaccaria: *Gaussian Mixture Model with an extended ultrametric covariance structure*. In: *Advances in Data Analysis and Classification* 16.2 (2022), pp. 399–427. DOI: [10.1007/s11634-021-00488-x](https://doi.org/10.1007/s11634-021-00488-x).

Cavicchia, C. and M. Vichi: *Second-order disjoint factor analysis*. In: *Psychometrika* 87.1 (2022), pp. 289–309. DOI: [10.1007/s11336-021-09799-6](https://doi.org/10.1007/s11336-021-09799-6).

Cavicchia, C. and P. Sarnacchiaro: *A multi-group higher-order factor analysis for studying the gender-effect in teacher job satisfaction*. In: *METRON* 80.1 (2022), pp. 23–38. DOI: [10.1007/s40300-021-00204-x](https://doi.org/10.1007/s40300-021-00204-x).

Cavicchia, C. and P. Sarnacchiaro: *The effect of a new e-tivity on students' performance and satisfaction in an online course*. In: *Statistica Applicata - Italian Journal of Applied Statistics* 33.2 (2021), pp. 163–175. DOI: [10.26398/IJAS.0033-009](https://doi.org/10.26398/IJAS.0033-009).

Cavicchia, C., P. Sarnacchiaro, and M. Vichi: *A composite indicator for the waste management in the EU via hierarchical disjoint non-negative factor analysis*. In: *Socio-Economic Planning Sciences* 73 (2021), p. 100832. DOI: [10.1016/j.seps.2020.100832](https://doi.org/10.1016/j.seps.2020.100832).

Cavicchia, C. and M. Vichi: *Statistical model-based composite indicators for tracking coherent policy conclusions*. In: *Social Indicators Research* 156.2 (2021), pp. 449–479. DOI: [10.1007/s11205-020-02318-7](https://doi.org/10.1007/s11205-020-02318-7).

Cavicchia, C., M. Vichi, and G. Zaccaria: *The ultrametric correlation matrix for modelling hierarchical latent concepts*. In: *Advances in Data Analysis and Classification* 14.4 (2020), pp. 837–853. DOI: [10.1007/s11634-020-00400-z](https://doi.org/10.1007/s11634-020-00400-z).

INVITED TALKS AND SEMINARS

Seminar “Distances for mixed data: issues, solutions and a new KNN approach”	<i>November 2024</i>
DISES Department - Federico II University of Naples	
IFCS 2024 - 18th Conference of the IFCS	<i>July 2024</i>
San José, Italy	
SIS 2024 - 52nd Scientific meeting of the Italian Statistical Society	<i>June 2024</i>
Bari, Italy	
Seminar “Convex clustering of mixed numerical and categorical data”	<i>May 2024</i>
DIETI Department - Federico II University of Naples	
Workshop on “Statistical Computing and Robust Inference for High Dimensional Data”	<i>December 2023</i>
Taipei, Taiwan	
ISI 2023 - 64th International Statistical Institute World Statistics Congress	<i>July 2023</i>
Ottawa, Canada	
DSSV-ECDA 2023 - Joint conference of Data Science, Statistics & Visualisation and the European Conference on Data Analysis	<i>July 2023</i>
Antwerp, Belgium	
SIS 2023 - Statistical Learning, Sustainability and Impact Evaluation	<i>June 2023</i>
Ancona, Italy	
Seminar “Convex clustering of mixed numerical and categorical data”	<i>April 2023</i>
Statistical Sciences Department - Sapienza University (Virtual)	
CMStatistics 2022 - 15th International Conference of the ERCIM WG on Computational and Methodological Statistics	<i>December 2022</i>
London, UK (Virtual)	
IFCS 2022 - 17th Conference of the IFCS	<i>July 2022</i>
Porto, Portugal	
EcoSta 2022 - 5th International Conference on Econometrics and Statistics	<i>June 2022</i>
Kyoto, Japan (Virtual)	
Seminar series “Introduction to Statistics”	<i>February 2022</i>
Hospitality Management - Federico II University of Naples (Virtual)	
CLADAG 2021 - 13th Scientific Meeting of Classification and Data Analysis Group	<i>September 2021</i>

Florence, Italy (Virtual)	
ISI 2021 - 63rd International Statistical Institute World Statistics Congress	
“Statistics and Data Science for a Better World”	<i>July 2021</i>
Virtual conference	
EconJobMarket	<i>December 2019</i>
Rotterdam, Netherlands	
ASA 2019 Scientific Conference on Statistics for Health and Well-Being	<i>September 2019</i>
Brescia, Italy	
CLADAG 2019 - 12th Scientific Meeting of Classification and Data Analysis Group	<i>September 2019</i>
Cassino, Italy	
SIS 2018 - 49th Scientific meeting of the Italian Statistical Society	<i>June 2018</i>
Palermo, Italy	
Workshop on “Selection and Synthesis of Indicators for Sustainable Development Goals: Methodologies and Applications”	<i>October 2017</i>
Rome, Italy	

SUPERVISION

PhD (Marten Soer)	<i>2024 - Present</i>
Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam	
Econometrics and Operation Research	
Research Internship (Aleksandr Zhuravlev)	<i>2024 - Present</i>
Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam	
Research MSc Business Data Science	
MSc theses (2)	<i>2021 - Present</i>
Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam	
MSc Econometrics and Management Science, Econometrics	
MSc theses (13)	<i>2021 - Present</i>
Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam	
MSc Econometrics and Management Science, Business Analytics and Quantitative Marketing	
MSc theses (14)	<i>2021 - Present</i>
Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam	
MSc Economics and Business, Data Science and Marketing Analytics	
BSc theses (28)	<i>2020 - Present</i>
Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam	
BSc Econometrics and Operational Research	

TEACHING AS COORDINATOR OR LECTURER

Applied Statistics 2	<i>2022 - Present</i>
Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam	
BSc Economics and Business Economics	
Toegepaste Statistiek 2	<i>2022 - Present</i>
Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam	
BSc Economics and Business Economics	
Seminar Case Studies in Business Analytics and Quantitative Marketing	<i>2022 - Present</i>
Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam	
MSc Econometrics and Management Science, Business Analytics and Quantitative Marketing	
Seminar in Business Analytics and Quantitative Marketing	<i>2021</i>
Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam	
BSc Econometrics and Operational Research	

Seminar Data Science for Marketing Analytics	<i>2020 - 2022</i>
Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam	
MSc Economics and Business, Data Science and Marketing Analytics Statistics	<i>2019</i>
School of Economics, Tor Vergata University of Rome, Rome	
Master of Science in European Economy and Business Law	

ACADEMIC AND EDITORIAL SERVICES

Associate editor of “Statistica Applicata – The Italian Journal of Applied Statistics”	<i>2025 - Present</i>
Organizer of an invited session of CLADAG-VOC 2025	<i>2025</i>
Organizer of an invited session of IES 2025	<i>2025</i>
Member of the scientific programme committee of CLADAG-VOC 2025	<i>2025</i>
Member of the scientific programme committee of IES 2025	<i>2025</i>
Article Editor for Sage Open	<i>2024 - Present</i>
IASC data analysis competition officer	<i>2023-2025</i>
Member of the committee of IASC data analysis competition	<i>2023</i>
Organizer of an invited session of CLADAG 2023	<i>2023</i>
Member of the scientific programme committee of CLADAG 2023	<i>2023</i>
Member of the scientific programme committee of IES 2023	<i>2023</i>
Organizer of an invited session of SIS 2023	<i>2023</i>
Responsible for the “Sustainability” topic within SVQS	<i>2022 - Present</i>
Organizer of an invited session of CMStatistics 2022	<i>2022</i>
Co-organizer for the Econometrics internal seminars at Econometric Institute, Erasmus University Rotterdam	<i>2022 - Present</i>
Organizer of an invited session of ECDA 2022	<i>2022</i>
Member of the scientific programme committee of HackTheGene 2022	<i>2022</i>
Co-guest-editor of the special issue “Advances in statistical modelling, methods and applications” in METRON	<i>2022</i>
Member of the committee of the prize “Premio TStat Training”	<i>2022</i>
Co-editor of "Book of Short Papers of SIS 2022"	<i>2022</i>
National coordinator of y-SIS	<i>2022</i>
Member of the scientific programme committee of SIS 2022	<i>2022</i>
Member of the scientific programme committee of IES 2022	<i>2022</i>
Member of the national board of y-SIS	<i>2021 - 2022</i>
Member of the organizing committee of DSSV-ECDA 2021	<i>2021</i>
Member of the organizing committee of DSSV 2020	<i>2020</i>
Member of the admission committee of II level master: “Quantitative methods and models for decision support”, University of Rome UnitelmaSapienza	<i>2020</i>
Organizer of an invited session of SIS 2020	<i>2020</i>
Reviewer for a number of scientific journals in Statistics	<i>2018 - Present</i>
– in alphabetic order – Advances in Data Analysis and Classification; Annals of Operations Research; Behaviormetrika; BMC Psychology; Computational Statistics; Computational Statistics and Data Analysis; International Journal of Data Science and Analytics; Journal of Classification; Journal of Computational Social Science; Journal of Data Science, Statistics and Visualisation; Journal of Infrastructure, Policy and Development; Journal of Statistical Computation and Simulation; Journal of the Royal Statistical Society Series B; METRON; Operational Research; PLOS ONE; SAGE Open; SN Business & Economics; SoftwareX; Statistical Methods and Applications; Socio-Economic Planning Sciences; Statistica; Statistics and Computing	

MEMBERSHIPS

MuViSU - Multi-dimensional Data Visualisation	2025
Erasmus Research Institute of Management (ERIM - Associate member)	2023
Vereniging voor Ordinatie en Classificatie (VOC)	2022
International Association Statistical Computing (IASC)	2020
Statistica per la Valutazione e la Qualità nei Servizi (SVQS)	2019
Classification and Data Analysis Group (CLADAG)	2019
young SIS (y-SIS)	2016
Società Italiana di Statistica - Italian Statistical Society (SIS)	2016

WORK EXPERIENCES

Consultant as Lead Statistician	<i>October - December 2019</i>
Project: <i>Survey in Zanzibar on community socio-economic conditions</i> , ARS Progetti S.P.A., Rome	
Consultant as Supervisor	<i>July - October 2019</i>
Project: <i>Survey in Zanzibar on environmental cleanliness, public service perception and tourism competitiveness</i> , NGO Fondazione ACRA, Rome	
Consultant as Lead Statistician	<i>June - August 2018</i>
Project: <i>Survey within the framework of the “Consultancy Services to support community engagement and awareness within the Urban Municipal Council”</i> , NGO Fondazione ACRA, Zanzibar, Tanzania	

LANGUAGES

Italian	Native language
English	Speaking: C1 Writing: C2

EXTRA-CURRICULAR

- President and Co-Founder “ASD Valcanneto Futsal” (Cerveteri, 2018 - 2021)
- Attended the 1st International Summer School on Classification and Data Analysis (Rimini, 2017)
- Attended a Erasmus semester at University College of Dublin (Dublin, 2012)