

# CARLO CAVICCHIA

## PERSONAL DATA

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## CURRENT POSITION

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

## EDUCATION

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**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

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

## RESEARCH AND TEACHING INTERESTS

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Hierarchical Models

Non-parametric Statistics

Data Science

Latent Variable Models

Composite Indicators

Unsupervised Classification

## RESEARCH EXPERIENCES

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**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

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<b>IFCS Chikio Hayashi Award</b> (1000.- USD)	July 2024
International Federation of Classification Societies, San Jose (Costa Rica)	
<b>ESE Starter grant</b> (300000.- EUR)	September 2023
Erasmus School of Economics, Erasmus Rotterdam University, Rotterdam (The Netherlands)	
<b>Research Grant for Junior Researchers</b> (1270.- EUR)	August 2017
University of Rome La Sapienza, Rome (Italy)	
<b>Best report of Stats under the stars<sup>3</sup></b>	June 2017
Italian Statistical Society (SIS), Florence (Italy)	
<b>Ph.D. scholarship</b> (3 years)	August 2016
University of Rome La Sapienza, Rome (Italy)	

## FEATURED PUBLICATIONS

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Velden, M. van de, A. Iodice D’Enza, A. Markos, and C. Cavicchia: *An Exact Solution Approach for Hierarchical Clustering*. In: *INFORMS Journal on Computing* (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

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<b>Seminar “Distances for mixed data: issues, solutions and a new KNN approach”</b>	<i>November 2024</i>
DISES Department - Federico II University of Naples	
<b>IFCS 2024 - 18th Conference of the IFCS</b>	<i>July 2024</i>
San José, Italy	
<b>SIS 2024 - 52nd Scientific meeting of the Italian Statistical Society</b>	<i>June 2024</i>
Bari, Italy	
<b>Seminar “Convex clustering of mixed numerical and categorical data”</b>	<i>May 2024</i>
DIETI Department - Federico II University of Naples	
<b>Workshop on “Statistical Computing and Robust Inference for High Dimensional Data”</b>	<i>December 2023</i>
Taipei, Taiwan	
<b>ISI 2023 - 64<sup>th</sup> International Statistical Institute World Statistics Congress</b>	<i>July 2023</i>
Ottawa, Canada	
<b>DSSV-ECDA 2023 - Joint conference of Data Science, Statistics &amp; Visualisation and the European Conference on Data Analysis</b>	<i>July 2023</i>
Antwerp, Belgium	
<b>SIS 2023 - Statistical Learning, Sustainability and Impact Evaluation</b>	<i>June 2023</i>
Ancona, Italy	
<b>Seminar “Convex clustering of mixed numerical and categorical data”</b>	<i>April 2023</i>
Statistical Sciences Department - Sapienza University (Virtual)	
<b>CMStatistics 2022 - 15<sup>th</sup> International Conference of the ERCIM WG on Computational and Methodological Statistics</b>	<i>December 2022</i>
London, UK (Virtual)	
<b>IFCS 2022 - 17th Conference of the IFCS</b>	<i>July 2022</i>
Porto, Portugal	
<b>EcoSta 2022 - 5th International Conference on Econometrics and Statistics</b>	<i>June 2022</i>
Kyoto, Japan (Virtual)	
<b>Seminar series “Introduction to Statistics”</b>	<i>February 2022</i>
Hospitality Management - Federico II University of Naples (Virtual)	
<b>CLADAG 2021 - 13<sup>th</sup> Scientific Meeting of Classification and Data Analysis Group</b>	<i>September 2021</i>
Florence, Italy (Virtual)	
<b>ISI 2021 - 63<sup>rd</sup> International Statistical Institute World Statistics Congress “Statistics and Data Science for a Better World”</b>	<i>July 2021</i>
Virtual conference	

<b>EconJobMarket</b> Rotterdam, Netherlands	<i>December 2019</i>
<b>ASA 2019 Scientific Conference on Statistics for Health and Well-Being</b> Brescia, Italy	<i>September 2019</i>
<b>CLADAG 2019 - 12th Scientific Meeting of Classification and Data Analysis Group</b> Cassino, Italy	<i>September 2019</i>
<b>SIS 2018 - 49th Scientific meeting of the Italian Statistical Society</b> Palermo, Italy	<i>June 2018</i>
<b>Workshop on “Selection and Synthesis of Indicators for Sustainable Development Goals: Methodologies and Applications”</b> Rome, Italy	<i>October 2017</i>

## SUPERVISION

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

## TEACHING AS COORDINATOR OR LECTURER

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<b>Applied Statistics 2</b> Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam BSc Economics and Business Economics	<i>2022 - Present</i>
<b>Toegepaste Statistiek 2</b> Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam BSc Economics and Business Economics	<i>2022 - Present</i>
<b>Seminar Case Studies in Business Analytics and Quantitative Marketing</b> Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam MSc Econometrics and Management Science, Business Analytics and Quantitative Marketing	<i>2022 - Present</i>
<b>Seminar in Business Analytics and Quantitative Marketing</b> Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam BSc Econometrics and Operational Research	<i>2021</i>
<b>Seminar Data Science for Marketing Analytics</b> Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam MSc Economics and Business, Data Science and Marketing Analytics	<i>2020 - 2022</i>

## ACADEMIC AND EDITORIAL SERVICES

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Associate editor of “Statistica Applicata – The Italian Journal of Applied Statistics”	2025 - Present
Organizer of an invited session of CLADAG-VOC 2025	2025
Organizer of an invited session of IES 2025	2025
Member of the scientific programme committee of CLADAG-VOC 2025	2025
Member of the scientific programme committee of IES 2025	2025
Article Editor for Sage Open	2024 - Present
IASC data analysis competition officer	2023-2025
Member of the committee of IASC data analysis competition	2023
Organizer of an invited session of CLADAG 2023	2023
Member of the scientific programme committee of CLADAG 2023	2023
Member of the scientific programme committee of IES 2023	2023
Organizer of an invited session of SIS 2023	2023
Responsible for the “Sustainability” topic within SVQS	2022 - Present
Organizer of an invited session of CMStatistics 2022	2022
Co-organizer for the Econometrics internal seminars at Econometric Institute, Erasmus University Rotterdam	2022 - Present
Organizer of an invited session of ECDA 2022	2022
Member of the scientific programme committee of HackTheGene 2022	2022
Co-guest-editor of the special issue “Advances in statistical modelling, methods and applications” in METRON	2022
Member of the committee of the prize “Premio TStat Training”	2022
Co-editor of “Book of Short Papers of SIS 2022”	2022
National coordinator of y-SIS	2022
Member of the scientific programme committee of SIS 2022	2022
Member of the scientific programme committee of IES 2022	2022
Member of the national board of y-SIS	2021 - 2022
Member of the organizing committee of DSSV-ECDA 2021	2021
Member of the organizing committee of DSSV 2020	2020
Member of the admission committee of II level master: “Quantitative methods and models for decision support”, University of Rome UnitelmaSapienza	2020
Organizer of an invited session of SIS 2020	2020
Reviewer for a number of scientific journals in Statistics	2018 - Present
– 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

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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

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<b>Consultant as Lead Statistician</b>	<i>October - December 2019</i>
Project: <i>Survey in Zanzibar on community socio-economic conditions</i> , ARS Progetti S.P.A., Rome	
<b>Consultant as Supervisor</b>	<i>July - October 2019</i>
Project: <i>Survey in Zanzibar on environmental cleanliness, public service perception and tourism competitiveness</i> , NGO Fondazione ACRA, Rome	
<b>Consultant as Lead Statistician</b>	<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

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<b>Italian</b>	Native language
<b>English</b>	Speaking: C1   Writing: C2

## EXTRA-CURRICULAR

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