

# 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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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

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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)

**ISI 2021 - 63<sup>rd</sup> International Statistical Institute World Statistics Congress**  
**“Statistics and Data Science for a Better World”**

*July 2021*

Virtual conference

**EconJobMarket**

*December 2019*

Rotterdam, Netherlands **ASA 2019 Scientific Conference on Statistics for Health and Well-Being**

*September 2019*

Brescia, Italy

**CLADAG 2019 - 12th Scientific Meeting of Classification and Data Analysis Group**

*September 2019*

Cassino, Italy

**SIS 2018 - 49th Scientific meeting of the Italian Statistical Society**

*June 2018*

Palermo, Italy

**Workshop on “Selection and Synthesis of Indicators for Sustainable Development Goals: Methodologies and Applications”**

*October 2017*

Rome, Italy

## **SUPERVISION**

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**PhD** (Marten Soer)

*2024 - Present*

Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam  
Econometrics and Operation Research

**Research Internship** (Aleksandr Zhuravlev)

*2024 - Present*

Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam  
Research MSc Business Data Science

**MSc theses** (2)

*2021 - Present*

Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam  
MSc Econometrics and Management Science, Econometrics

**MSc theses** (13)

*2021 - Present*

Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam  
MSc Econometrics and Management Science, Business Analytics and Quantitative Marketing

**MSc theses** (14)

*2021 - Present*

Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam  
MSc Economics and Business, Data Science and Marketing Analytics

**BSc theses** (28)

*2020 - Present*

Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam  
BSc Econometrics and Operational Research

## **TEACHING AS COORDINATOR OR LECTURER**

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**Applied Statistics 2**

*2022 - Present*

Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam  
BSc Economics and Business Economics

**Toegepaste Statistiek 2**

*2022 - Present*

Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam  
BSc Economics and Business Economics

**Seminar Case Studies in Business Analytics and Quantitative Marketing**

*2022 - Present*

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**

*2021*

Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam  
BSc Econometrics and Operational Research

<b>Seminar Data Science for Marketing Analytics</b>	<i>2020 - 2022</i>
Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam	
MSc Economics and Business, Data Science and Marketing Analytics <b>Statistics</b>	<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

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

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<b>Erasmus Research Institute of Management (ERIM - Associate member)</b>	<i>2023</i>
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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)