

# CARLO CAVICCHIA

## PERSONAL DATA

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## CURRENT POSITION

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**Assistant Professor of Statistics**

*May 2020 - Present*

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

## EDUCATION

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**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 2019 – December 2019*

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

Supervisor: 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>ESE Starter grant</b> (300000.- e)<br>Erasmus School of Economics, Erasmus Rotterdam University, Rotterdam | September 2023 |
| <b>Research Grant for Junior Researchers</b> (1270.- e)<br>University of Rome La Sapienza, Rome               | August 2017    |
| <b>Best report of Stats under the stars</b> <sup>3</sup><br>Italian Statistical Society (SIS)                 | June 2017      |
| <b>Ph.D. scholarship</b> (3 years)<br>University of Rome La Sapienza, Rome                                    | August 2016    |

## FEATURED PUBLICATIONS

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- 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* (Accepted for publication, 2024+).
- Cavicchia, C., M. Vichi, and G. Zaccaria: *Parsimonious Ultrametric Gaussian Mixture Models*. In: *Statistics and Computing* (Accepted for publication, 2024+).
- Cavicchia, C. and P. Sarnacchiaro: *A new hierarchical composite indicator model for ranking the top 20 European football teams*. In: *Quality and Quantity* (Accepted for publication, 2024+). 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>Workshop on “Statistical Computing and Robust Inference for High Dimensional Data”</b><br>Taipei, Taiwan  | <i>December 2023</i>  |
| <b>ISI 2023 - 64<sup>th</sup> International Statistical Institute World Statistics Congress</b><br>Ottawa, Canada  | <i>July 2023</i>      |
| <b>DSSV-ECDA 2023 - Joint conference of Data Science, Statistics &amp; Visualisation and the European Conference on Data Analysis</b><br>Antwerp, Belgium              | <i>July 2023</i>      |
| <b>SIS 2023 - Statistical Learning, Sustainability and Impact Evaluation</b><br>Ancona, Italy  | <i>June 2023</i>      |
| <b>Seminar “Convex clustering of mixed numerical and categorical data”</b><br>Statistical Sciences Department - Sapienza University (Virtual)                          | <i>April 2023</i>     |
| <b>CMStatistics 2022 - 15<sup>th</sup> International Conference of the ERCIM WG on Computational and Methodological Statistics</b><br>London, UK (Virtual)             | <i>December 2022</i>  |
| <b>IFCS 2022 - 17<sup>th</sup> Conference of the IFCS</b><br>Porto, Portugal   | <i>July 2022</i>      |
| <b>EcoSta 2022 - 5th International Conference on Econometrics and Statistics</b><br>Kyoto, Japan (Virtual)   | <i>June 2022</i>      |
| <b>Seminar series “Introduction to Statistics”</b><br>Hospitality Management - Federico II University of Naples (Virtual)  | <i>February 2022</i>  |
| <b>CLADAG 2021 - 13<sup>th</sup> Scientific Meeting of Classification and Data Analysis Group</b><br>Florence, Italy (Virtual)   | <i>September 2021</i> |
| <b>ISI 2021 - 63<sup>rd</sup> International Statistical Institute World Statistics Congress “Statistics and Data Science for a Better World”</b><br>Virtual conference | <i>July 2021</i>      |
| <b>EconJobMarket</b><br>Rotterdam, Netherlands   | <i>December 2019</i>  |
| <b>ASA 2019 Scientific Conference on Statistics for Health and Well-Being</b><br>Brescia, Italy  | <i>September 2019</i> |
| <b>CLADAG 2019 - 12<sup>th</sup> Scientific Meeting of Classification and Data Analysis Group</b><br>Cassino, Italy  | <i>September 2019</i> |
| <b>SIS 2018 - 49<sup>th</sup> Scientific meeting of the Italian Statistical Society</b><br>Palermo, Italy  | <i>June 2018</i>      |
| <b>Workshop on “Selection and Synthesis of Indicators for Sustainable Development Goals: Methodologies and Applications”</b><br>Rome, Italy                            | <i>October 2017</i>   |

## SUPERVISION

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|   |                       |
|---|-----------------------|
| <b>MSc theses (2)</b><br>Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam<br>MSc Econometrics and Management Science, Econometrics                                  | <i>2021 - Present</i> |
| <b>MSc theses (8)</b><br>Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam<br>MSc Econometrics and Management Science, Business Analytics and Quantitative Marketing | <i>2021 - Present</i> |
| <b>MSc theses (12)</b><br>Erasmus School of Economics, Erasmus University Rotterdam, Rotterdam<br>MSc Economics and Business, Data Science and Marketing Analytics                      | <i>2021 - Present</i> |

**BSc theses (24)***2020 - Present*

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

**TEACHING AS COORDINATOR OR LECTURER****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

**Seminar Data Science for Marketing Analytics***2020 - 2022*

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

**Statistics***2019*

School of Economics, Tor Vergata University of Rome, Rome  
 Master of Science in European Economy and Business Law

**ACADEMIC AND EDITORIAL SERVICES****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; 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

## 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>   | October - December 2019 |
| Project: <i>Survey in Zanzibar on community socio-economic conditions</i> , ARS Progetti S.P.A., Rome  |                         |
| <b>Consultant as Supervisor</b>  | July - October 2019     |
| 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>   | June - August 2018      |
| 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)