

# GIORGIA ZACCARIA

## PERSONAL DATA

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🌐 Personal Page ◇ Google Scholar ◇ Research Gate ◇ ORCID ◇ Sapienza University of Rome ◇ LinkedIn

## EMPLOYMENT

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**Postdoctoral Research Fellow** *October 2022 –*  
University of Milano-Bicocca, Rome, Italy  
Department of Statistics and Quantitative Methods  
Supervisor: Prof. Francesca Greselin

**Research Fellow** *July 2021 – June 2022*  
University of Rome Unitelma Sapienza, Rome, Italy  
Department of Law and Economics  
Supervisor: Prof. Pasquale Sarnacchiaro

## EDUCATION

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**Ph.D. in Methodological Statistics** *November 2018 – February 2022*  
University of Rome La Sapienza, Rome, Italy Final evaluation: Excellent  
Department of Statistical Sciences  
Thesis title: *Ultrametric models for hierarchical dimensionality reduction*  
Supervisor: Prof. Maurizio Vichi

**M.Sc. in Statistical and Decision Sciences** *September 2016 – October 2018*  
Curriculum: European Master in Official Statistics (EMOS) Final score: 110/110 cum laude  
University of Rome La Sapienza, Rome, Italy  
Department of Statistical Sciences

**Internship** *July 2018*  
Alleanza per lo Sviluppo Sostenibile (ASviS), Rome, Italy

**B.Sc. in Statistics, Economics and Society** *September 2013 – October 2016*  
University of Rome La Sapienza, Rome, Italy Final score: 110/110 cum laude  
Department of Statistical Sciences

**High School Diploma in Scientific Studies** *September 2008 – July 2013*  
Liceo Scientifico Statale Aristotele, Rome, Italy Final score: 100/100  
Bilingual Diploma: English and French.

## RESEARCH VISITS

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**Tilburg University, Tilburg, The Netherlands** *November 2021 – January 2022*  
Department of Methodology and Statistics  
Supervisor: Prof. Jeroen K. Vermunt

## RESEARCH INTERESTS

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Multivariate Statistics	Ultrametric Models	Model-Based Clustering
Dimensionality Reduction	Hierarchical Models	Latent Variable Models

## AWARDS, GRANTS & SCHOLARSHIP

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### Research Grant for Junior Researcher, "Avvio alla ricerca"

October 2020

University of Rome La Sapienza, Rome, Italy

Principal Investigator

Project title: *Hierarchical latent variable models for studying multidimensional phenomena in heterogeneous populations*

### Research Grant for Medium Projects

October 2019

University of Rome La Sapienza, Rome, Italy

Investigator (Principal Investigator: Prof. Donatella Vicari)

Project title: *Models, methods and classification of transition data: analysis of the students mobility among degree courses of Italian universities*

### Excellent Graduate Award

May 2019

Fondazione Roma Sapienza, Rome, Italy

Excellent Graduate of the Faculty of Information Engineering, Computer Science and Statistics, a.y. 2017/2018

### Scholarship

November 2018

University of Rome La Sapienza, Rome, Italy

Ph.D. School of Statistical Sciences

Three years of Ph.D. scholarship

## PUBLICATIONS

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### UNDER REVIEW

- Cavicchia, C., Sarnacchiaro, P., Vichi, M., **Zaccaria, G.** (2022+) A model-based ultrametric composite indicator for studying waste management in Italian municipalities. *Revision required*.

### REFERRED JOURNAL ARTICLES

3. Cavicchia, C., Vichi, M., **Zaccaria, G.** (2022) Hierarchical Disjoint Principal Component Analysis. *AStA Advances in Statistical Analysis*, doi: 10.1007/s10182-022-00458-4 ([link](#)).

2. Cavicchia, C., Vichi, M., **Zaccaria, G.** (2022) Gaussian mixture model with an extended ultrametric covariance structure. *Advances in Data Analysis and Classification*, 16(2), 399-427 ([link](#)).

1. Cavicchia, C., Vichi, M., **Zaccaria, G.** (2020) The ultrametric correlation matrix for modelling hierarchical latent concepts. *Advances in Data Analysis and Classification*, 14(4), 837-853 ([link](#)).

### ARTICLES EDITED IN VOLUMES AND PH.D. THESIS

3. Mingione, M., Vichi, M., **Zaccaria, G.** (2022) Complex Dimensionality Reduction: Ultrametric Models for Mixed-Type Data. In: L.A. Garcia-Escudero, A. Gordaliza, A. Mayo, M. Asunción Lubiano Gomez, M. Angeles Gil, P. Grzegorzewski, O. Hryniewicz (Eds.) *Building Bridges between Soft and Statistical Methodologies for Data Science. SMPS 2022. Advances in Intelligent Systems and Computing*, vol 1433. Springer, Cham ([link](#)).

2. **Zaccaria, G.** (2022) Ultrametric models for hierarchical dimensionality reduction. *Ph.D. thesis, XXXIV cycle* ([link](#)).

1. Cavicchia, C., Vichi, M., **Zaccaria, G.** (2020) Exploring hierarchical concepts: theoretical and application comparisons. In: T. Imaizumi, A. Nakayama, S. Yokoyama, S. (Eds.). *Advanced Studies in Behaviormetrics and Data Science. Behaviormetrics: Quantitative Approaches to Human Behavior*, vol. 5 (pp. 315-328). Springer, Singapore ([link](#)).

## REFERRED CONFERENCE PROCEEDINGS

9. **Zaccaria, G.**, Sarnacchiaro, P. (2022) An ultrametric model for building a composite indicator system to study climate change in European countries. In: A. Balzanella, M. Bini, C. Cavicchia, R. Verde. (Eds.). *Book of Short Papers SIS 2022* (pp. 970-974). Pearson. ISBN: 9788891932310.
8. Cavicchia, C., Sarnacchiaro, P., Vichi, M., **Zaccaria, G.** (2022) An ultrametric model to build a Composite Indicators system. In: R. Lombardo, I. Camminatiello, V. Simonacci (Eds.). *Book of Short Papers, 10th International Conference IES 2022 Innovation & Society 5.0: Statistical and Economic Methodologies for Quality Assessment, Department of Economics, University of Campania L. Vanvitelli, January 27th - 28th 2022* (pp. 208-211). Sesto San Giovanni: PKE - Professional Knowledge Empowerment s.r.l. ISBN: 978-88-94593-35-8.
7. Cavicchia, C., Vichi, M., **Zaccaria, G.** (2021) A parsimonious parameterization of a nonnegative correlation matrix. In: S. Ingrassia, A. Punzo, R. Rocci (Eds.). *MBC2 2020 Book of Short Papers of the 5th International Workshop on Models and Learning for Clustering and Classification, Catania* (pp. 21-26). Milano: Ledizioni. ISBN: 978-88-5526-539-3.
6. Cavicchia, C., Vichi, M., **Zaccaria, G.** (2021) Model-based clustering with parsimonious covariance structure. In: G. C. Porzio, C. Rampichini, C. Bocci (Eds.). *CLADAG 2021 Book of Abstracts and Short Papers. 13th Scientific Meeting of the Classification and Data Analysis Group, Firenze, September 9-11, 2021* (pp. 296-299). Firenze: Firenze University Press. ISBN: 978-88-5518-340-6.
5. Cavicchia, C., Vichi, M., **Zaccaria, G.** (2021) The ultrametric covariance model for modelling teachers' job satisfaction. In: C. Perna, N. Salvati, F. Schirripa Spagnolo (Eds.). *Book of Short Papers SIS 2021* (pp. 1319-1324). Pearson. ISBN: 978-88-9192-736-1.
4. **Zaccaria, G.**, Vichi, M. (2020) Exploring drug consumption via an ultrametric correlation matrix. In: A. Pollice, N. Salvati, F. Schirripa Spagnolo (Eds.). *Book of Short Papers SIS 2020* (pp. 372-377). Pearson. ISBN: 978-88-9191-077-6.
3. Cavicchia, C., Vichi, M., **Zaccaria, G.** (2019) Dimensionality reduction via hierarchical factorial structure. In G. C. Porzio, F. Greselin, S. Balzano (Eds.). *Book of Short Papers, CLADAG 2019, 11-13 September 2019, Cassino* (pp. 116-119). Cassino: Centro Editoriale di Ateneo Università di Cassino e del Lazio Meridionale. ISBN: 978-88-8317-108-6.
2. Cavicchia, C., Vichi, M., **Zaccaria, G.** (2019) A new hierarchical model-based composite indicator on climate change. In M. Bini, P. Amenta, A. D'Ambra, I. Camminatiello (Eds.). *Statistical Methods for Service Quality Evaluation, Book of Short Papers of IES 2019 in Roma, Italia, 4-5 July* (pp. 346-349). Cuzzolin. ISBN: 978-88-86638-65-4.
1. Cavicchia, C., Vichi, M., **Zaccaria, G.** (2019) Hierarchical Clustering and Dimensionality Reduction for Big Data. In G. Arbia, S. Peluso, A. Pini, G. Rivellini (Eds.). *Smart Statistics for Smart Applications, Book of Short Papers SIS 2019* (pp. 173-180). Pearson. ISBN: 978-88-9191-510-8.

## PRESENTATIONS AND SEMINARS

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### ECDA 2022

European Conference on Data Analysis  
University of Naples, Naples, Italy  
Invited Session

September 2022

### IFCS 2022

17th Conference of the International Federation of Classification Societies  
University of Porto, Porto, Portugal  
Contributed Session

July 2022

### SIS 2022

51st Scientific Meeting of the Italian Statistical Society

June 2022

University of Campania Luigi Vanvitelli, Caserta, Italy  
 Contributed Session  
**IES 2022** *January 2022*  
 Innovation & Society 5.0: Statistical and Economic Methodologies for Quality Assessment  
 University of Campania Luigi Vanvitelli, Capua, Italy  
 Contributed Session  
**Colloquia Department Methodology and Statistics** *December 2021*  
 Tilburg University, Tilburg, The Netherlands  
 Invited Seminar  
**8th Annual Workshop of the Ph.D. School in Statistical Sciences** *July 2021*  
 University of Rome La Sapienza, Rome, Italy  
**DSSV-ECDA 2021** *July 2021*  
 Data Science, Statistics & Visualisation and the European Conference on Data Analysis  
 Erasmus University Rotterdam, Rotterdam, The Netherlands (Virtual)  
 Short Talk Session  
**SIS 2021** *June 2021*  
 50th Scientific Meeting of the Italian Statistical Society  
 University of Pisa, Pisa, Italy (Virtual)  
 Contributed Session  
**7th Annual Workshop of the Ph.D. School in Statistical Sciences** *February 2020*  
 University of Rome La Sapienza, Rome, Italy  
**IFCS 2019** *August 2019*  
 16th Conference of the International Federation of Classification Societies  
 Thessaloniki, Greece  
 Contributed Session  
**IES 2019** *July 2019*  
 Statistical evaluation systems at 360°: techniques, technologies and new frontiers  
 European University of Rome, Rome, Italy  
 Contributed Session  
**6th Annual Workshop of the Ph.D. School in Statistical Sciences** *June 2019*  
 University of Rome La Sapienza, Rome, Italy  
**ECDA 2019** *March 2019*  
 European Conference on Data Analysis  
 University of Bayreuth, Bayreuth, Germany  
 Contributed Session  
**Statistics Beyond 2020: challenges and risks** *October 2017*  
 European Statistics Day 2017, ESAC  
 Lisbon, Portugal  
 Panel Member as European Master in Official Statistics (EMOS) Student

## TEACHING

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**Adjunct Lecturer** *October 2022 –*  
 Department of Psychics, University of Milano-Bicocca, Milan, Italy  
 Advanced Foundations of Statistics for AI (Master, English)  
**Student Tutor** *October 2022 –*  
 Department of Psychics, University of Milano-Bicocca, Milan, Italy  
 Advanced Foundations of Statistics for AI (Master, English)  
**Lecturer** *March 2022 – March 2022*  
 Istituto Nazionale per l'Analisi delle Politiche Pubbliche (INAPP), Rome, Italy  
 Principal Component Analysis with R (Public Administration Training Course, Italian)  
**Adjunct Lecturer** *February 2022 – Present*  
 Department of Law and Economics, University of Rome Unitelma Sapienza, Rome Italy

Regression Models (II Level Master Course, Italian)  
**Adjunct Lecturer** *February 2022 – Present*  
 Department of Law and Economics, University of Rome Unitelma Sapienza, Rome Italy  
 Statistical Models for Social and Economic Analyses (II Level Master Course, Italian)  
**Teaching Assistant** *February 2022 – September 2022*  
 Department of Economics and Finance, LUISS Guido Carli, Rome Italy  
 Statistics, Prof. Marco Perone Pacifico (Bachelor, English)  
**Adjunct Lecturer** *November 2021 – Present*  
 Department of Law and Economics, University of Rome Unitelma Sapienza, Rome Italy  
 Basic Statistics and Mathematics (Master, English)  
**Teaching Assistant** *March 2021 – July 2022*  
 Department of Medicine and Pharmacy, University of Rome La Sapienza, Rome Italy  
 Medical Statistics, Prof. Maurizio Vichi (Master, Italian)  
**Student Tutor** *January 2021 – Present*  
 Department of Law and Economics, University of Rome Unitelma Sapienza, Rome Italy  
 Statistics and Mathematics (Bachelor and Master, Italian and English)  
**Subject Expert** *October 2020 – Present*  
 Department of Law and Economics, University of Rome Unitelma Sapienza, Rome Italy  
 Statistics and Mathematics  
**Teaching Assistant** *March 2020 – September 2020*  
 Department of Political Sciences, University of Roma Tre, Rome Italy  
 Statistics, Dr. Domenico Cucina (Bachelor, Italian)  
**Teaching Assistant** *September 2019 – June 2022*  
 Department of Statistical Sciences, University of Rome La Sapienza, Rome Italy  
 Advances in Data Analysis and Statistical Modelling, Prof. Maurizio Vichi (Master, English)  
**Teaching Assistant** *September 2019 – June 2022*  
 Department of Statistical Sciences, University of Rome La Sapienza, Rome Italy  
 Multivariate Statistics, Prof. Maurizio Vichi (Bachelor, Italian)  
**Teaching Assistant** *September 2019 – December 2019*  
 Department of Statistical Sciences, University of Rome La Sapienza, Rome Italy  
 Statistics, Prof. Maria Brigida Ferraro, Prof. Stefania Gubbiotti, Prof. Valeria Sambucini (Bachelor, Italian)  
**Teaching Assistant** *March 2019 – July 2022*  
 Department of Medicine and Pharmacy, University of Rome La Sapienza, Rome Italy  
 Statistics for Research and Technology, Prof. Maurizio Vichi (Master, Italian)  
**Teaching Assistant** *February 2019 – September 2019*  
 Department of Statistical Sciences, University of Rome La Sapienza, Rome Italy  
 Statistical Inference, Prof. Fulvio De Santis (Bachelor, Italian)

## ACADEMIC SERVICES

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### Referee

Advances in Data Analysis and Classification (ADAC), SN Business & Economics (SNBE), Metron, Computational Statistics (COST), Annals of Operations Research (ANOR), Book of Short Papers SIS 2022.

### Member of the Local Organizing Committee of CESS 2022

Conference of European Statistics Stakeholders 2022 ([link](#))  
 October 20-21, 2022, Rome, Italy

### Chair of the y-SIS Invited Session "Advances in Dimensionality Reduction" of ECDA 2022

European Conference on Data Analysis ([link](#))  
 September 14-16, 2022, Naples, Italy

**Organizer and chair of the y-SIS Solicited Session "Advances in Clustering" of SIS 2022**

51st Scientific Meeting of the Italian Statistical Society ([link](#))

June 22-24, 2022, Caserta, Italy

**Organizer of the 8th Annual Workshop of the Ph.D. School in Statistical Sciences**

June 2021, University of Rome La Sapienza, Rome, Italy

**SOCIETY MEMBERSHIPS**

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**SIS, y-SIS and CLADAG-SIS Member**

*July 2019 – Present*

Member of the Italian Statistical Society (Società Italiana di Statistica, SIS), Young SIS and CLAssification and Data Analysis Group (CLADAG)

**IAOS Member**

*January 2018 – December 2018*

Member of the International Statistical Society

**LANGUAGES**

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**Italian** Mother tongue

**English** Fluent

**French** Good

**COMPUTER SKILLS**

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**Languages** MATLAB, R, R Studio, SAS, SAS Enterprise Miner 14, SPSS, LaTeX

**Software** Microsoft Office

**Certifications** SAS Predictive Modeler Using SAS Enterprise Miner 14 (October 8, 2018)

**OTHER EXPERIENCES**

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**IELTS Invigilator**

*December 2015 – March 2019*

British Council

Rome, Italy

**INCREASE Delegate**

*June 2012*

XII International Human Right Council, OLMUN

Oldenburg, Germany

Le dichiarazioni rese nel presente curriculum sono da ritenersi rilasciate ai sensi degli artt. 46 e 47 del D.P.R. 445/2000.

Milan, October 7th, 2022