

# GIORGIA ZACCARIA

## PERSONAL DATA

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**Date and Place of Birth** July 6, 1994, Rome, Italy

**Nationality** Italian

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[Research Gate](#) ◇ [ORCID](#) ◇ [LinkedIn](#)

## CURRENT POSITION

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**Research Fellow**

*July 2021 – Present*

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. J. K. Vermunt

## RESEARCH INTERESTS

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Multivariate Statistics

Ultrametric Models

Model-Based Clustering

Dimensionality Reduction

Hierarchical Models

Latent Variable Models

## AWARDS, GRANTS & FELLOWSHIPS

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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 Ingegneria dell'Informazione, Informatica e Statistica, 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., Vichi, M., **Zaccaria, G.** (2022+)\* Hierarchical Disjoint Principal Component Analysis. *Under second revision in Advances in Statistical Analysis.*
- Cavicchia, C., Sarnacchiaro, P., Vichi, M., **Zaccaria, G.** (2022+)\* A model-based ultrametric composite indicator for studying waste management in Italian municipalities. *Under review in Computational Statistics.*

### REFERRED JOURNAL ARTICLES

1. Cavicchia, C., Vichi, M., **Zaccaria, G.** (2022)\* Gaussian mixture model with an extended ultrametric covariance structure. *Advances in Data Analysis and Classification*, doi: 10.1007/s11634-021-00488-x ([link](#)).
2. 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 MONOGRAPHS

3. **Zaccaria, G.** (2022) Ultrametric models for hierarchical dimensionality reduction. *Ph.D. thesis, XXXIV cycle* ([link](#)).
4. 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

5. **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*. Pearson. (*Forthcoming*).
6. 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.

8. 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.

9. 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.

10. **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.

11. 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.

12. 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.

13. 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.

\* Alphabetical order.

## PRESENTATIONS AND SEMINARS

<b>IES 2022</b>	<i>January 2022</i>
Innovation & Society 5.0: Statistical and Economic Methodologies for Quality Assessment	
University of Campania Luigi Vanvitelli, Capua, Italy	
Contributed Session	
<b>Colloquia Department Methodology and Statistics</b>	<i>November 2021</i>
Tilburg University, Tilburg, The Netherlands	
Invited Seminar	
<b>8th Annual Workshop of the Ph.D. School in Statistical Sciences</b>	<i>July 2021</i>
University of Rome La Sapienza, Rome, Italy	
<b>DSSV-ECDA 2021</b>	<i>July 2021</i>
Data Science, Statistics & Visualisation and the European Conference on Data Analysis	
Erasmus University Rotterdam, Rotterdam, The Netherlands (Virtual)	
Short Talk Session Session	
<b>SIS 2021</b>	<i>June 2021</i>
50th Edition of the 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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**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)  
**Lecturer** *February 2022 – Present*  
Department of Law and Economics, University of Rome Unitelma Sapienza, Rome Italy  
Regression Models (Master, Italian)  
**Lecturer** *February 2022 – Present*  
Department of Law and Economics, University of Rome Unitelma Sapienza, Rome Italy  
Statistical Models for Social and Economic Analyses (Master, Italian)  
**Teaching Assistant** *February 2022 – Present*  
Department of Economics and Finance, LUISS Guido Carli, Rome Italy  
Statistics, Prof. Marco Perone Pacifico (Bachelor, English)  
**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 – Present*  
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 – Present*  
 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 – Present*  
 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 – Present*  
 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*  
 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), Book of Short Papers SIS 2022.

**Member of the Local Organizing Committee of CESS 2022**  
 Conference of European Statistics Stakeholders 2022 ([link](#))  
 October 2022, Rome, Italy

**Organizer of the Solicited Session "Advances in Clustering" of SIS 2022**  
 51st Scientific Meeting of the Italian Statistical Society ([link](#))  
 June 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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<b>Italian</b>	Mother tongue
<b>English</b>	Fluent
<b>French</b>	Good

## COMPUTER SKILLS

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<b>Languages</b>	MATLAB, R, R Studio, SAS, SAS Enterprise Miner 14, SPSS, LaTeX
<b>Software</b>	Microsoft Office
<b>Certifications</b>	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

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