

# Curriculum vitae

Raffaella Piccarreta

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## PERSONAL DATA AND ADDRESS

Raffaella Piccarreta  
Citizenship: Italian

### Address (Office):

Department of Decision Sciences, Bocconi University.  
Via Rontgen 1, 20136 Milan, Italy.  
Email: piccarreta@unibocconi.it

### Current position

Associate Professor of Statistics, Bocconi University, Milan (Italy)

### Degrees

Degree in Economics and Social Sciences (DES) from Bocconi University, Milan (Italy) (110/110 cum laude). Title of the graduation thesis: Resampling procedures and their application (original title, in italian: Procedure di ricampionamento e loro applicazioni). Advisor: Prof. Donato Michele Cifarelli (Bocconi University, Milan, Italy).

Phd in Statistics from University of Trento (Italy). Title of the tesi: Goodman and Kruskal index and Non-symmetric correspondence analysis (original title, in italian: L'indice di Goodman e Kruskal e l'analisi non simmetrica delle corrispondenze). Advisors: Prof. Donato Michele Cifarelli (Bocconi University, Milan, Italy) and Prof. Carlo Natale Lauro (Federico II University, Naples, Italy).

### Journals Articles

**JR2024.** 'Identifying and qualifying deviant cases in clusters of sequences: the why and the how', EUROPEAN JOURNAL OF POPULATION, **2024**, 40,1.

**JR2022A.** 'Sequence analysis: its past, present, and future' (with Liao T.F., Bolano D., Brzinsky-Fay C., Cornwell B., Fasang A.E., Helske S., Raab M., Ritschard G., Struffolino E., and Studer, M.), *SOCIAL SCIENCE RESEARCH*, **2022**, 107,102772

**JR2022B.** "Colombian women's life patterns: a multivariate density regression approach" (with I. Antoniano-Villalobos, A. Cremaschi, S. Wade), *Bayesian Analysis*, **2022**, 17(2), 405-433

JR2021 'A Bayesian approach for model-based clustering of several binary dissimilarity matrices: the dmbc package in R' (with S. Venturini), *JOURNAL OF STATISTICAL SOFTWARE*, 100(16),1-35

**JR2022C.** "The pressure on healthcare system and intensive care utilization during the COVID-19 outbreak in the Lombardy region: a retrospective observational study on 43,538 hospitalized patients", has been accepted for publication in the *American Journal of Epidemiology*" (with Filippo Trentini, Valentina Marziano, Giorgio Guzzetta, Marcello Tirani, Danilo Cereda, Piero Poletti, Antonio Barone MS, Giuseppe Preziosi MS, Fabio Arduini MS, Petra Giulia Della Valle, Alberto Zanella, Francesca Grosso, Gabriele del Castillo, Ambra Castrofino, Giacomo Grasselli, Alessia Melegaro, Alessandra Piatti, Aida Andreassi, Maria Gramegna, Marco Ajelli, Stefano Merler), *American Journal of Epidemiology*, 2022, 191 (1), 137-146

- JR2022D.** 'Life-course perspective on personality traits and fertility with sequence analysis' (with L. Mencarini e M. Le Moglie), *JOURNAL OF THE ROYAL STATISTICAL SOCIETY. SERIES A. STATISTICS IN SOCIETY*, **2022**, 185(3),1344-1369
- JR2021A.** 'A quantitative assessment of epidemiological parameters required to investigate COVID-19 burden' (with Zardini, Agnese and Galli, Margherita and Tirani, Marcello and Cereda, Danilo and Manica, Mattia and Trentini, Filippo and Guzzetta, Giorgio and Marziano, Valentina and Piccarreta, Raffaella and Melegaro, Alessia and Ajelli, Marco and Poletti, Piero and Merler, Stefano), **2021**, *EPIDEMICS*, 37,100530
- JR2021B.** 'The early phase of the COVID-19 epidemic in Lombardy, Italy' (Cereda, Danilo and Manica, Mattia and Tirani, Marcello and Rovida, Francesca and Demicheli, Vittorio and Ajelli, Marco and Poletti, Piero and Trentini, Filippo and Guzzetta, Giorgio and Marziano, Valentina and Piccarreta, Raffaella and Barone, Antonio and Magoni, Michele and Deandrea, Silvia and Diurno, Giulio and Lombardo, Massimo and Faccini, Marino and Pan, Angelo and Bruno, Raffaele and Pariani, Elena and Grasselli, Giacomo and Piatti, Alessandra and Gramegna, Maria and Baldanti, Fausto and Melegaro, Alessia and Merler, Stefano), *EPIDEMICS*, **2021**, 37,100528
- JR2021C.** "Seroprevalence of and Risk Factors Associated With SARS-CoV-2 Infection in Health CareWorkers During the Early COVID-19 Pandemic in Italy" (with Stefano Merler, Marco Ajelli, Giorgio Guzzetta, Filippo Trentini, Valentina Marziano, Alessia Melegaro, Marcello Tirani, Danilo Cereda), *JAMA network Open*, **2021**, 4(7), e2115699.
- JR2021D.** "Clustering Longitudinal Life-Course Sequences using Mixtures of Exponential-Distance Models" (with K. Murphy, B. Murphy, and C. Gormley, UCD, Dublin), *Journal of the Royal Statistical Society, Series A*, **2021**, 184(4), 1414-1451.
- JR2021E.** "Households' changing structure and consumption: the effect of the economic crisis during the period 2008-2013" (con C. Maccheroni), *Rivista di Statistica Ufficiale*, **2018**, 2-3, 37-76.
- JR2021F.** "Association of Age With Likelihood of Developing Symptoms and Critical Disease Among Close Contacts Exposed to Patients With Confirmed SARS-CoV-2 Infection in Italy" (with Poletti, Piero; Tirani, Marcello; Cereda, Danilo; Trentini, Filippo; Guzzetta, Giorgio; Sabatino, Giuliana; Marziano, Valentina; Castrofino, Ambra; Grosso, Francesca; Del Castillo, Gabriele; Andreassi, Aida; Melegaro, Alessia; Gramegna, Maria; Ajelli, Marco; Merler, Stefano), *JAMA Network Open*, **2021**, 4(3), 1-10.
- JR2020C.** "Age-specific SARS-CoV-2 infection fatality ratio and associated risk factors, Italy, February to April 2020" (with Poletti, Piero; Tirani, Marcello; Cereda, Danilo; Trentini, Filippo; Guzzetta, Giorgio; Marziano, Valentina; Buoro, Sabrina; Riboli, Simona; Crottogini, Lucia; Piatti, Alessandra; Grasselli, Giacomo; Melegaro, Alessia; Gramegna, Maria; Ajelli, Marco; Merler, Stefano). *Eurosurveillance*, **2020**, 25(31), 2001383.
- JR2019.** "Holistic Analysis of the Life Course: Methodological Challenges and New Perspectives" (with M. Studer), *invited paper* for a special Issue of *Advances in Life Course Research*, **2019**, 41, 100251.
- JR2017.** "Joint sequence analysis: association and clustering", (**2017**) *Sociological Methods and Research*, 46(2): 252-287
- JR2016B.** "Transition to Parenthood and HIV Infection in Rural Zimbabwe" (with E. Del Fava, C. A. S. Gregson, A. Melegaro), (**2016**), *PLOS One*, 11: e0163730- e0163731
- JR2016A.** "The relationship between clinical instability and endurance tests, pain and disability in non-specific low back pain" (with C. Vanti, C. Conti, F. Faresin, and S. Ferrari), (**2016**). *Journal of Manipulative and Physiological Therapeutics*, 39(5):359-68
- JR2015B.** "Implying sequences using scores. Some considerations" (**2015**) Invited commentary to the paper "Like mother, like daughter? A dyadic sequence analysis approach to uncover patterns of mothers and daughters careers", *Sociological Methodology*, 45: 76-81.
- JR2014B.** "Clinical tests, pain and disability in subjects with lumbar SPL. A cross-sectional diagnostic test study" (**2014**) (with Silvano Ferrari, Carla Vanti, and M. Monticone), *Journal of Manipulative and Physiological Therapeutics*, 37(9):647-659.

- JR2014A.** "The Italian version of the Physical Therapy Patient Questionnaire (PTPSQ-I(15). Psychometric properties in a sample of inpatients" (2014) (with C. Vanti, P. Pillastrini, M. Monticone, D. Ceron, F. Bonetti, F.S. Violante, A. Guccione), *BMC Musculoskeletal Disorders* 15:135
- JR2013A.** "Parametric and Nonparametric Analysis of Life Courses: An Application to Family Formation Patterns" (2013) (with Marco Bonetti and Gaia Salford) *Demography*, 50:881–902
- JR2013B.** "Cross-cultural adaptation and validation of the Physical Therapy Outpatient Satisfaction Survey in an Italian musculoskeletal population" (2013) (with C. Vanti, F. Bonetti, D. Ceron, F.S. Violante, A. Guccione, and P. Pillastrini), *BMC Musculoskeletal Disorders*, 14:125 (<http://www.biomedcentral.com/1471-2474/14/125>)
- JR2013C.** "Italian Version of the Physical Therapy Patient Satisfaction Questionnaire: Cross-Cultural Cross-Cultural Adaptation and Psychometric Properties" (2013) (with C. Vanti, M. Monticone, D. Ceron, F. Bonetti, A. Guccione, and P. Pillastrini), *Physical Therapy*, 93:911-922. (Impact Factor: 2.778, C according to last evaluation)
- JR2013D.** "Mining for Association between life courses" (2013) (with C. Elzinga), in *Contemporary Issues in Exploratory Data Mining in the Behavioral Sciences (Quantitative Methodology Series)*, John McArdle and Gilbert Ritschard (Editors) Routledge (2013)
- JR2012A.** "Graphical and smoothing techniques for sequence analysis" (2012) *Sociological Methods & Research*, 41(2) 362–380
- JR2012B.** "Faster Route to the CEO Suite: Nepotism or Managerial Proficiency?" (2012) (with Carlo Salvato and Alessandro Minichilli), *Family Business Review*, 25(2) 206–224
- JR2010A.** "Exploring sequences: A graphical tool based upon Multidimensional Scaling" (with Orna Lior), 2010, *JRSS Series A*, 173, pp. 165-184
- JR2010B.** "Binary trees for dissimilarity data", 2010, *Computational Statistics and Data Analysis*, 54, pp. 1516-1524
- JR2008A.** "Classification Trees for Ordinal Variables", *Computational Statistics*, 2008, 23, pp. 407-427.
- JR2008B.** "Dynamics in Family and Non-Family Firms: An Optimal Matching Analysis" (with Carlo Salvato and Alessandro Minichilli), *Frontiers of Entrepreneurship Research* 2008. Available at SSRN: <http://ssrn.com/abstract=1348212>
- JR2007A.** "Clustering Work and Family Trajectories using a Divisive Algorithm", (with Francesco Billari), *JRSS Series A*, 2007, 170, pp. 1061-1078.
- JR2007B.** "Strings of Adulthood: A Sequence Analysis of Young Women's Work-family Trajectories" (with Arnstein Aassve and Francesco Billari), on *European Journal of Population*, 2007, vol. 23, pp. 369-388
- JR2005.** "Analysing Demographic Life Courses through Sequence Analysis", (with Francesco Billari), *Mathematical Population Studies*, 12, 2005, pp. 1-27
- JR2004A.** "Ordinal classification trees based on impurity measures", in *Advances in Multivariate Data Analysis*, Bock-Chiodi-Mineo, eds., pp. 39-51, Springer-Verlag, Heidelberg 2004.
- JR2004B.** "Sequence Analysis of BHPS Life Courses Data", (with Arnstein Aassve and Francesco Billari) in *New Developments in Classification and Data Analysis.*, M. Vichi, P. Monari, S. Mignani, A. Montanari, eds., pp. 275-284, Springer-Verlag, Heidelberg 2004.
- JR2001A.** "Life Courses as Sequences: An Experiment in Clustering via Monothetic Divisive Algorithms" (with Francesco Billari) in *Studies in Classification, Data Analysis and Knowledge Organization*, S. Borra, R. Rocci, M. Vichi e M. Schader, eds., Springer, 2001, pp. 351-358.
- JR2001B.** "'Stable clusters': a new approach for clustering binary variables", in *Studies in Classification, Data Analysis and Knowledge Organization*, S. Borra, R. Rocci, M. Vichi e M. Schader, eds., Springer, 2001, pp. 35-42.
- JR2001C.** "Genetic Algorithms for the Analysis of Bayesian hierarchical partition models" (with Claudio Borroni), *Statist. Meth. Appl.* 10, 2001, pp. 113-121.

- JR2001D.** "A New Measure of Nominal–Ordinal Association", *Journal of Applied Statistics*, 28(1), **2001**, pp. 107-120.
- JR2000.** "Genetic Algorithms for Optimal Grouping of Categories in Two-way contingency Tables", (with Claudio Borroni) *Statistica Applicata*, 12(4), **2000**, pp. 435-444.
- JR1999.** "Sharp Bounds for the Maximum of the Goodman-Kruskal  $\tau$  Index in a class of  $I \times J$  Tables with Given Rows and Columns Totals", *Computational Statistics*, 14(3), **1999**, pp. 397-418.

## Conference papers

- CP2023.** *Comparing models for sequence data: prediction and dissimilarities. Presented at the SELECT final workshop*, University Ca'Foscari, Venezia. 13-14 July, 2023. San Servolo Island [Bando MIUR PRIN 2017]
- CP2022.** *Multichannel sequence analysis: new insights. presented at the workshop Climbing Mortality Models*, Misurina (BL) - Italy. August 30 - September 2, 2022. [Bando MIUR PRIN 2017]
- CP2019.** A multivariate density regression approach for mixed responses with censored, constrained and binary traits (with Sara Wade, Isadora Antoniano and Andrea Cremaschi), IISA International Conference on Statistics, Mumbai (India), 26-30 December 2019
- CP2018C.** Sequences, dissimilarities and model based approaches, **invited talk** at the International Symposium on Sequence Analysis (SA) and Related Methods, Monte Verità (Switzerland), October 2018
- CP2018B.** "A Heuristic for validation in Sequence Analysis" (with E. Struffolino, Humboldt University & WZB, Berlin, Germany), **invited talk** at the International Symposium on Sequence Analysis (SA) and Related Methods, Monte Verità (Switzerland), October 2018
- CP2018A.** "Heuristics for validation in Sequence Analysis" (with E. Struffolino), **invited talk** at the Symposium on Sequence Analysis of Life Histories: Models, Methods and Connections, 8th meeting Society for Longitudinal and Life Course Studies, Milan, July 2018.
- CP2017C.** "Comparison of Holistic Models" **invited talk** at the Symposium on Advances in Sequence Analysis and Related Methods for the Holistic Analysis of Trajectories, International conference of the Society for Longitudinal and Life Course Studies, Stirling, October 2017.
- CP2017B.** "Dynamic sequential analysis of careers" (with F. Pennoni), paper presented at 11th Scientific Meeting of the CLAssification and Data Analysis Group (CLADAG), Milano, September 13-15 2017. Book of Short Papers CLADAG2017 (pp.1-6). (\*)
- CP2017A.** Holistic analysis of life courses: is sequence analysis enough?, **invited paper** at the meeting Advancing Life Course Theories and Methods: Key Challenges and Solutions. Bremen, February 9-10, 2017. (\*)
- CP2008A.** "Career Dynamics of CEOs in Family and Non-Family Firms: An Optimal Matching Analysis" (with Carlo Salvato and Alessandro Minichilli), BCERC - Babson College Entrepreneurship Research Conference, University of North Carolina at Chapel Hill, 5-7 June **2008** (paper presentation) (\*)
- CP2008B.** "Career Dynamics of CEOs in Family and Non-Family Firms: An Optimal Matching Analysis" (with Carlo Salvato and Alessandro Minichilli), 6th annual "Theories of Family Enterprise Academic Conference", University of Alberta in Edmonton, Canada, May 14-16, **2008** (paper presentation) (\*)
- CP2007A.** "Clustering-based measurement of dependence" (with Bonetti, M., and Venturini, S.), Book of Short Papers, CLADAG 2007, Macerata: 12-14 Settembre **2007**, Macerata: EUM, Edizioni Università di Macerata, pp. 447-450 (\*)
- CP2005A.** "Grouping and Classifying using CART", Book of Short Papers, CLADAG 2005, Parma: 6-8 Giugno **2005**, Parma: Monte Università Parma Editore, pp. 481-484. (\*)
- CP2005B.** "Life Course Data: A prediction problem" (con Francesco Billari), Book of Short Papers, CLADAG 2005, Parma: 6-8 Giugno **2005**, Parma: Monte Università Parma Editore, pp. 477-480. (\*)
- CP2004A.** "Clustering Life Courses: A New Divisive Approach" (with Francesco Billari), Atti della XLII Riunione Scientifica della Società Italiana di Statistica, Università di Bari 9-10 giugno **2004**, Padova: CLEUP, pp. 639-642. (\*)

- CP2003A.** "Sequence Analysis of BHPS Life Courses Data", (with Arnstein Aassve and Francesco Billari) Book of Short Papers, CLADAG 2003, Bologna: 22-24 Settembre **2003**, pp. 13-16 (\*)
- CP2002A.** "Clustering Large Categorical Data Set via Genetic Algorithms", Proceedings of the XLI Scientific Meeting of the Statistical Italian Society, Milan, 5-7 June **2002**, pp. 277-280.
- CP2001.** "A new splitting criterion for classification trees in the ordinal case", Book of Short Papers, CLADAG 2001, Palermo 5-6 July **2001**, pp. 21-24.
- CP2000.** "Genetic Algorithms for partitional hierarchical models" (original title, in Italian: Algoritmi genetici per i modelli gerarchici partizionali) (with Claudio Borroni), Proceedings of the XL Scientific Meeting of the Statistical Italian Society, Florence 26-28 April **2000**, pp. 587-590.
- CP1999A.** "Stable clusters: a new approach for clustering binary variables", Book of Short Papers, CLADAG '99, Rome, 5-6 July **1999**, pp. 225-228.
- CP1999B.** "Classifying and studying life courses as sequences via monothetic divisive algorithms: an experiment", (with Francesco Billari) Book of Short Papers, CLADAG 1999, Rome, 5-6 July **1999**, pp. 253-256.
- CP1998A.** "Clustering techniques for binary data" (original title, in Italian: Metodi di Raggruppamento per variabili Binarie), Proceedings of the XXXIX Scientific Meeting of the Statistical Italian Society, Sorrento, 14-17 April **1998**, pp. 99-100.
- CP1998B.** "Divisive Monothetic Algorithms for Clustering Binary Data: A Proposal", Pre-Proceedings of the International Seminar on New Techniques & Technologies for Statistics, Sorrento, 4-6 November **1998**, pp. 405-410.
- CP1998C.** "Graphical Models and Evolution of Technology" (with Paolo Giudici), Pre-Proceedings of the International Seminar on New Techniques & Technologies for Statistics, Sorrento, 4-6 November **1998**, pp. 399-404.

### *Working papers*

- WP2018** "Comparing models for sequence data: prediction and dissimilarities", (with M. Bonetti and S. Lombardi) Working Paper No: 113, Unit: Population Dynamics and Health
- WP2003.** "CART for Distance or Dissimilarity Matrices", Studi Statistici, 80, Institute of Quantitative Methods, Bocconi University, **2003**.
- WP1999A.** "A New Measure of Nominal–Ordinal Association", Studi Statistici 55, Institute of Quantitative Methods, Bocconi University, **1999**.
- WP1999B.** "On Rational Credit Sizing" (con Lorenzo Peccati e Gianluca Bonaldo), Studi di Matematica Finanziaria ed Attuariale 22, Institute of Quantitative Methods, Bocconi University, **1999**.
- WP1998A.** "A New Look to Divisive Monothetic Algorithms", Studi Statistici 53, Institute of Quantitative Methods, Bocconi University, **1998**.
- WP1998B.** "Divisive and agglomerative clustering algorithms: a unified approach for binary variables", Studi Statistici 54, Institute of Quantitative Methods, Bocconi University, **1998**.
- WP1997.** "Sharp Bounds for the Maximum of the Goodman-Kruskal  $\tau$  Index in a class of  $I \times J$  Tables with Given Rows and Columns Totals", Studi Statistici 52, Institute of Quantitative Methods, Bocconi University, **1997**.
- WP1996.** "Multivariate Data Analysis", Quaderni del corso estivo di Statistica e Calcolo delle Probabilità, 6, Institute of Quantitative Methods, Bocconi University, **1996**.
- WP1994.** "Categorical Data Analysis", Quaderni del corso estivo di Statistica e Calcolo delle Probabilità, 4, Institute of Quantitative Methods, Bocconi University, **1994**.
- WP1992.** "The Bootstrap Methods and its Applications", (with Paolo Giudici), Quaderni del corso estivo di Statistica e Calcolo delle Probabilità, 1, Institute of Quantitative Methods, Bocconi University, **1992**.

## Books

**Descriptive statistics: applications and solutions using Excel** (with Maura Mezzetti; in Italian: “Statistica Descrittiva: Esercizi risolti e guida alla soluzione usando Excel”), Milano: EGEA, **2002**.

**Statistical Inferences** (with Piero Veronese; in Italian: “Lezioni di inferenza statistica”), Milano: Spiegel, **2002**.

**Descriptive Statistics** (with Luca Molteni; in Italian: “Note di statistica descrittiva”), Milano: Egea, **2001**.

**Linear Model: theory and applications** (in Italian: “Modello Lineare: Aspetti Metodologici e Applicazioni”), Milano: Datanova, **1996**.

**Introduction to Programming** (in Italian: “Introduzione alla logica di Programmazione”), Milano: Datanova, **1996**.

### **I was the editor of the Italian Translation of the following texts:**

**Business Statistics: A First Course**, 4<sup>th</sup> ed., Levine, Krehbiel e Berenson (Italian Version: *Statistica* Seconda Edizione, Milano: Apogeo, **2006**).

**Business Statistics: A First Course**, 2<sup>nd</sup> ed., Levine, Krehbiel e Berenson (Italian version: *Statistica*, Milano: Apogeo, **2002**).

(with Claudio Borroni) **Statistics** 3<sup>rd</sup> ed., Freedman Pisani e Purvues (Italian version: *Statistica*, Milano: McGraw-Hill, **1998**).

## Scientific Committee membership

Member of the Italian Statistical Society (SIS).

Fellow of the DONDENA Centre for Research on Social Dynamics (since foundation, 2006)

Fellow of BIDS (Bocconi Institute for Data Science and Analytics) (since foundation, 2016)

Fellow of CovidCrisisLab (since foundation, **2020**)

Member of the Executive Committee of the Sequence Analysis Association (since foundation, October **2018**)

## Editorial membership

Referee for a number of scientific journals, including: *Journal of the Royal Statistical Society, Series A, Statistics and Computing, Computational Statistics, Journal of Applied Statistics, Statistical Papers, Sociological Methods and Research, Statistics in Medicine, Statistical Methods and Applications, Advances in Life Course Research, Advances in Data Analysis and Classification, Journal of Statistical Software, Statistical Methods and Applications, European Journal of Operational Research*