Aldo Corbellini

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Personal

Born on August 5, 1969.

Italian citizen.

Education

Ph.D. *Economics*, Thesis Title: *A Bayesian Approach to the Forward Search*, Department of Economics, University of Parma, Italy, 2013.

Certified Professional Business Accountant (CPBA), Italian Accounting Order of Piacenza, Italy, 2001.

B.Sc. *Economics*, Thesis Title: *Bivariate Boxplot: Theory and Economic Applications*, Department of Economics, University of Parma, Italy 1997.

Previous positions

2021- **Associate Professor** in Economic Statistics, Department of Economics and Management, University of Parma.

2018-2021 **Researcher type B** in Economic Statistics, Department of Economics and Management, University of Parma.

2015-2018 **Researcher type A** in Statistics, Department of Economics and Management, University of Parma.

2014-2015 **Research Fellow in Economic Statistics**, Department of Economics and Management, University of Parma.

2004-2009 **Research Fellow in Statistics**, Department of Economics, Catholic University of Sacred Hearth of Piacenza.

2001-2004 **Research Fellow in Statistics**, Department of Economics, University of Parma.

Visiting Periods

JRC, *Visiting Scientist* since February 1, 2019, at the 'Joint Research Centre' of the European Commission, Ispra, Italy. This collaboration led to the creation of several projects 9n the form of scientific, technical, and academic publications, e.g. the scientific article entitled 'fsdaSAS: A Package for Robust Regression for Very Large Datasets Including the Batch Forward Search,' published in the journal Stats.

JRC, *Invited Expert* since 2013 at the 'Joint Research Centre' of the European Commission, Ispra, Italy.

Funded Research

Research Projects and International Collaborations

2025- Principal Investigator of the project in collaboration with the Joint Research Centre of the European Community and the University of Valladolid (ES): *Robust statistical tools for the analysis of large and heterogeneous customs data*.

2022- Member of the research unit of the University of Parma, project: *Robust statistical methods for the detection of frauds and anomalies in complex and heterogeneous data*.

2022- PRIN: member of the research unit of Parma of the Italian Ministry of Education and Research, project: *Innovative statistical tools for the analysis of large and heterogeneous customs data*.

2017-2019 Member of the research unit of the Univ. di Parma of the INAIL project: *Development of activities for the management of first help activities inside work environments*.

2016-2017 Member of the research unit of the Univ. di Parma of the INAIL project: *Development of a portal for the evaluation of the risks in restricted or polluted work environments*.

2013-2016 PRIN: member of the research unit of Parma of the Italian Ministry of Education and Research, project: *Multivariate Analysis of Risk Assessment*.

2009-2012 PRIN: member of the research unit of Parma of the Italian Ministry of Education and Research, project: *New Robust Methods for the Analysis of Complex Data*.

2008-2011 member of the joint bilateral project Italy-Spain, project: *Robust methods for the classification and forecasts of multivariate data*, principal investigator Prof. Daniel Pena, University Carlo III of Madrid.

2004-2006 PRIN: member of the research unit of Parma of the Italian Ministry of Education and Research, project: *Parametric and non parametric forecasts of economic time series*.

Honours

FIL 2016 winner with project: *Porting and migration of the FSDA toolbox from MATLAB to open source: statistical application for linear and nonlinear models*.

Best MATLAB contribution (co-author) at *MATLAB Expo 2016* with MATLAB toolbox: *Flexible Statistics Data Analysis (FSDA)* based on robust statistic analysis.

Advanced & Specialized Training

2015 *SIS School: Teoria e pratica dei modelli ad effetti casuali per dati multilivello e longitudinali*, University of Florence, Italy, Feb., 23-27.

2015 *Bayesian Statistics: Modelling, Computation and Testing*, Ioannis Ntzoufras, Valen Johnson, University Milano Bicocca, Italy, May, 18-29.

2015 *ABS15 Applied Bayesian Statistics School: Modern Bayesian Methods And Computing For The Social Sciences*, Villa del Grumello, Como, Italy Jun., 8-12.

2006 *Metodi robusti di classificazione*, Cerioli, Chiodi, Riani and Zani, Parma, Sept. 11-15, Department of Economics and Management of Parma.

Teaching Activities

Undergraduate Courses

2015- *Statistica*, Department of Economics and Management of Parma, (9 CFU), *lecturer*.

2016- *Metodi statistici*, Department of Economics and Management of Parma, (8 CFU), *lecturer*.

2008-2010 *Metodi Quantitativi per la Politica Economica* (5 CFU), Department of Economics, Catholic University of Sacred Hearth of Piacenza, *lecturer*.

2005-2007 *Statistica Descrittiva* (2 CFU), *Statistica Inferenziale* (2 CFU), and *Statistica Economica* (1 CFU) Department of Economics, Catholic University of Sacred Hearth of Piacenza, *lecturer*.

2000-2004 *Costruzioni di Siti Internet* (5 CFU), Department of Economics and Management of Parma, *lecturer*.

1998-2000 *Statistica Computazionale*, Department of Economics and Management of Parma, (5 CFU), *lecturer*.

Ph.D. and Master Courses

2016- *Statistical Methods in Python*, (16 hours) inside Ph.D. Course: "Economia e Management dell'Innovazione e della Sostenibilità (EMIS)", Department of Economics and Management of Parma, *lecturer*.

Specialized Courses

Assistant professor in the following SIS Courses:

2010, *Robust multivariate methods for the analysis of economic data*, 20-24 Sept. 2010.

2006, *New approaches to the analysis of multidimensional data*, 11-15 Sept. 2006.

2004, *Modern approaches to the robust analysis of multidimensional data*, 20-24 Sept. 2004.

Selected Publications

International Journals

Marco Riani, Anthony C. Atkinson, Aldo Corbellini, and Gianluca Morelli. Robust tobit regression for censored observations using extended box–cox transformations. *Statistical Methods & Applications*, 34(3):385–408, 2025

Marco Riani, Anthony C. Atkinson, Gianluca Morelli, and Aldo Corbellini. The use of modern robust regression analysis with graphics: An example from marketing. *Stats*, 8(1), 2025

Marco Riani, Anthony C. Atkinson, and Aldo Corbellini. Robust transformations for multiple regression via additivity and variance stabilization. *Journal of Computational and Graphical Statistics*, 33(1):85–100, 2024

Marco Riani, Anthony C. Atkinson, Francesca Torti, and Aldo Corbellini. Robust Correspondence Analysis. *Journal of the Royal Statistical Society Series C: Applied Statistics*, 71(5):1381–1401, 07 2022

Marco Riani, Anthony C. Atkinson, and Aldo Corbellini. Automatic robust box-cox and extended yeo-johnson transformations in regression. *Statistical Methods & Applications*, June 2022

Marco Riani, Anthony Curtis Atkinson, Aldo Corbellini, Alessio Farcomeni, and Fabrizio Laurini. Information criteria for outlier detection avoiding arbitrary significance levels. *Econometrics and Statistics*, 2022

Francesca Torti, Aldo Corbellini, and Anthony C. Atkinson. fsdaSAS: A package for robust regression for very large datasets including the batch forward search. *Stats*, (4):327—347, 2021

Anthony C. Atkinson, Marco Riani, and Aldo Corbellini. The analysis of transformations for profit-and-loss data. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, 69(2):251–275, April 2020

Aldo Corbellini, Marco Magnani, and Gianluca Morelli. Labor market analysis through transformations and robust multivariate models. *Socio-Economic Planning Sciences*, page 100826, March 2020

Marco Riani, Anthony C. Atkinson, and Aldo Corbellini. The box-cox transformation: Review and extensions. *Statistical Science*, accepted for publication

Marco Riani, Anthony C. Atkinson, Aldo Corbellini, and Domenico Perrotta. Robust Regression with Density Power Divergence: Theory, Comparisons, and Data Analysis. *Entropy*, 22(4):399, March 2020

Marco Riani, Anthony C. Atkinson, Andrea Cerioli, and Aldo Corbellini. Comments on: Data science, big data and statistics. *TEST*, 28(2):349–352, June 2019

Anthony C. Atkinson, Aldo Corbellini, and Gianluca Morelli. Discussion on the meeting on 'Data visualization'. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 182(2):419–441, February 2019

Marco Riani, Anthony C. Atkinson, Andrea Cerioli, and Aldo Corbellini. Efficient Robust Methods via Monitoring for Clustering and Multivariate Data Analysis. *Pattern Recognition*, 88:246—-260, 2019

Andrea Cerioli, Marco Riani, Anthony C. Atkinson, and Aldo Corbellini. Rejoinder to the discussion of "The power of monitoring: how to make the most of a contaminated multivariate sample". *Statistical Methods & Applications*, pages 1–6, 2018

Marco Riani, Aldo Corbellini, and Anthony C. Atkinson. The Use of Prior Information in Very Robust Regression for Fraud Detection. *International Statistical Review*, pages 205–218, 2018

Andrea Cerioli, Marco Riani, Anthony C. Atkinson, and Corbellini Aldo. The power of monitoring: How to make the most of a contaminated multivariate sample. *Statistical Methods & Applications*, pages 1–29, 2018

Anthony C. Atkinson, Aldo Corbellini, and Marco Riani. Robust Bayesian regression with the forward search: theory and data analysis. *TEST*, 26:869–886, 2017

Aldo Corbellini, Marco Riani, and Anthony C. Atkinson. Hubert, Rousseeuw and Segaert: multivariate functional outlier detection. *Statistical Methods & Applications*, 24:257–261, 2015

Aldo Corbellini, Marco Riani, and Andrea Donatini. Multivariate Data Analysis Techniques to Detect Early Warnings of Elderly Frailty. *Statistica Applicata*, 20:159–178, 2008

Sergio Zani, Marco Riani, and Aldo Corbellini. New Methods for Ordering Multivariate Data: an Application to the Performance of Investment Funds. *Applied Stochastic Model in Business and Industry*, 15:485–493, 1999

Sergio Zani, Marco Riani, and Aldo Corbellini. Robust Bivariate Boxplots and Multiple Outlier Detection. *Computational Statistics and Data Analysis*, 28:257–270, 1998

Chapters in books of international publishers

Anthony C. Atkinson, Marco Riani, and Aldo Corbellini. Robust response transformations for generalized additive models via additivity and variance stabilisation. In *Studies in Classification, Data Analysis, and Knowledge Organization*. Springer, Heidelberg, 2022

Aldo Corbellini, Marco Magnani, and Gianluca Morelli. Robust analysis of the labor market. In *Statistical Methods for Service Quality Evaluation*. Pearson, Roma, 2020

Anthony C. Atkinson, Marco Riani, Aldo Corbellini, and Gianluca Morelli. Ace, avas and robust data transformations: Performance of investment funds. In *Studies in Classification, Data Analysis, and Knowledge Organization*. Springer, 2020

Anthony C. Atkinson, Aldo Corbellini, and Marco Riani. Introducing Prior Information into the Forward Search for Regression. In T. Di Battista, E. Moreno, and Racugno W., editors, *Topics on Methodological and Applied Statistical Inference. Studies in Theoretical and Applied Statistics*, pages 1–8. Springer, Cham, 2016

Aldo Corbellini, Luigi Grossi, and Fabrizio Laurini. Robustness for multilevel models with the Forward Search. In *COMPSTAT 2016, Proceedings*, pages 13–23, 2016

Maurizio Baussola, Eleonora Bartoloni, and Aldo Corbellini. Business failure prediction in manufacturing: a robust bayesian approach to discriminant scoring. In M. Carpita, E. Brentari, and E.M. Qannari, editors, *Advances in Latent Variables - Part of the series Studies in Theoretical and Applied Statistics*, pages 277–285. Springer Verlag, 2014

Aldo Corbellini and Lisa Crosato. Robust Tests for Pareto Density Estimation. In B. Fichet, D. Piccolo, R. Verde, and M. Vichi, editors, *Classification and Multivariate Analysis for Complex Data Structures*, pages 193–201. Springer, 2011

Aldo Corbellini, Lisa Crosato, Piero Ganugi, and Marco Mazzoli. Fitting pareto II distributions on firm size: Statistical methodology and economic puzzles. In Christos H. Skiadas, editor, *Advances in Data Analysis*, pages 101–104. Springer/Birkhauser, 2010

Aldo Corbellini and Kjell Konis. An R Package for the Forward Analysis of Multivariate Data. In S. Zani, A. Cerioli, M. Riani, and M. Vichi, editors, *Data Analysis, Classification and the Forward Search*, pages 189–197. Springer, 2006

Fabrizio Laurini and Aldo Corbellini. The Forward Search for Generalized Extreme Value Distributions. In *Proceedings of the 19^{th} International Workshop on Statistical Modelling*, pages 376–380. Springer, 2006

Andrea Cerioli, Fabrizio Laurini, and Aldo Corbellini. Functional Cluster Analysis of Financial Time Series. In M. Vichi, P. Monari, S. Mignani, and A. Montanari, editors, *Studies in Classification, Data Analysis, and Knowledge Organization*, pages 333–341. Springer-Verlag, 2005

Salvatore Ingrassia, Andrea Cerioli, and Aldo Corbellini. Some issues on Clustering of Functional Data. In M. Schader, M. Gaul, and M. Vichi, editors, *Studies in Classification, Data Analysis and Knowledge Organization*, pages 49–56. Springer Verlag: Berlin, 2003

Aldo Corbellini. Clockwise Bivariate Boxplot. In W. Hardle and B. Ronz, editors, *15th conference of Computational Statistics, Berlin*, pages 231–236. Physica-Verlag: Berlin, 2002

Marco Riani, Sergio Zani, and Aldo Corbellini. Robust Bivariate Boxplots and Visualization of Multivariate Data. In Balderjahn I., Mathar R., and Shader M., editors, *Classification Data Analysis and Data Highways*, volume 28, pages 93–100. Springer: Berlin, 1998

International Books

Marco Riani, Anthony C. Atkinson, Aldo Corbellini, Domenico Perrotta, and Valentin Todorov. *Applied Robust Statistics through the Monitoring Approach, Applications in Regression*. Springer Cham, UK, 2025

Books

Marco Riani, Aldo Corbellini, Fabrizio Laurini, Morelli Gianluca, Proietti Tommaso, Domenico Perrotta, and Francesca Torti. *Data Science con MATLAB*. Giappichelli, IT, 2025

Andrea Cerioli, Maria Adele Milioli, Aldo Corbellini, and Gianluca Morelli. *Un'introduzione elementare all'inferenza statistica per le discipline aziendali*. UniNova, IT, 2022

Peer–reviewed Conference Proceedings with ISBN

Anthony C. Atkinson, Aldo Corbellini, and Marco Riani. Introducing Prior Information into the Forward Search for Regression. In T. Di Battista, E. Moreno, and Racugno W., editors, *Topics on Methodological and Applied Statistical Inference. Studies in Theoretical and Applied Statistics*, pages 1–8. Springer, Cham, 2016

Maurizio Baussola, Eleonora Bartoloni, and Aldo Corbellini. Business failure prediction in manufacturing: a robust bayesian approach to discriminant scoring. In M. Carpita, E. Brentari, and E.M. Qannari, editors, *Advances in Latent Variables - Part of the series Studies in Theoretical and Applied Statistics*, pages 277–285. Springer Verlag, 2014

Aldo Corbellini and Lisa Crosato. Robust Tests for Pareto Density Estimation. In B. Fichet, D. Piccolo, R. Verde, and M. Vichi, editors, *Classification and Multivariate Analysis for Complex Data Structures*, pages 193–201. Springer, 2011 ok

Aldo Corbellini and Kjell Konis. An R Package for the Forward Analysis of Multivariate Data. In S. Zani, A. Cerioli, M. Riani, and M. Vichi, editors, *Data Analysis, Classification and the Forward Search*, pages 189–197. Springer, 2006 ok

Fabrizio Laurini and Aldo Corbellini. The Forward Search for Generalized Extreme Value Distributions. In *Proceedings of the* 19^{th} *International Workshop on Statistical Modelling*, pages 376–380. Springer, 2006 ok

Salvatore Ingrassia, Andrea Cerioli, and Aldo Corbellini. Some issues on Clustering of Functional Data. In M. Schader, M. Gaul, and M. Vichi, editors, *Studies in Classification, Data Analysis and Knowledge Organization*, pages 49–56. Springer Verlag: Berlin, 2003

Andrea Cerioli, Fabrizio Laurini, and Aldo Corbellini. Functional Cluster Analysis of Financial Time Series. In M. Vichi, P. Monari, S. Mignani, and A. Montanari, editors, *Studies in Classification, Data Analysis, and Knowledge Organization*, pages 333–341. Springer-Verlag, 2005

Aldo Corbellini. Clockwise Bivariate Boxplot. In W. Hardle and B. Ronz, editors, *15th conference of Computational Statistics, Berlin*, pages 231–236. Physica-Verlag: Berlin, 2002

Marco Riani, Sergio Zani, and Aldo Corbellini. Robust Bivariate Boxplots and Visualization of Multivariate Data. In Balderjahn I., Mathar R., and Shader M., editors, *Classification Data Analysis and Data Highways*, volume 28, pages 93–100. Springer: Berlin, 1998

Invited Talks, Seminars & Other Presentations

2025 Invited session speaker at the conference "15-th Scientific Meeting Classification and Data Analysis Group", CLADAG 2025, University of Naples Federico II, Italy, with the talk: *The use of Modern Robust Regression Analysis with Graphics: An Example from Marketing*.

2025 Invited session speaker at the conference "International Conference on Robust Statistics 2025", ICORS2025, Stresa, (VA), Italy, with the talk: *The Use of Modern Robust Regression Analysis with Graphics: An Example from Marketing*.

2023 Invited session speaker at the conference "Statistical Methods For Evaluation And Quality: Techniques, Technologies and Trends", IES2023, University G.d'Annunzio of Chieti-Pescara, Italy, with the talk: *Robust diagnostics for Linear Mixed Models with the Forward Search*.

2023 Invited Session speaker at the conference: "CARME 2023 - Correspondence Analysis and Related Methods", University of Bonn, Germany, with the talk: *Robust Correspondence Analysis and its applications*.

2022 Invited Session at "SMPS 2022", 10th International Conference on Soft Methods in Probability and Statistics, Valldolid, Spain, with the talk: *Labour Market Analysis through Transformations and Robust Multilevel Models*, 14–16 Sept. 2022.

2019 Invited Session at "CLADAG 2019", Cassino, Italy, with the talk: *Labour Market Analysis through Transformations and Robust Multilevel Models*, 11–13 Sept. 2019.

2019 Invited Session at "IES 2019, Statistical evaluation systems at 360°: techniques, technologies and new frontiers", Università Europea di Roma, Italy, with the talk: *Robust analysis of the labor market*, 4–5 July 2019.

2019 Invited Session at "Statistical Methods and Models for Complex Data". Benevento, Italy with the talk: *Robust Estimation of a Multivariate Model: a Forward Search Approach*, 5–7 Jun 2019.

2018 contribution at "49th Scientific meeting of the Italian Statistical Society', Palermo, Italy, with the talk: *Robust statistical methods for credit risk*. In Book of short Papers SIS 2018 - ISBN:9788891910233. pp 1055–1060, 20-22 Jun 2018.

2018 contribution at "S&DS 2018 Statistics and Data Science new Developments for Business and Industrial Applications", Collegio Carlo Alberto, Torino, Italy, with the talk: *SVM Robustification by Means of the Forward Search*, 24–25 May 2018.

2018 Invited Session at "COMPSTAT 2018, The 23rd International Conference on Computational Statistics", Iasi, Romania, with the talk: *The use of Prior Information in Very Robust Regression for the Monitoring of EU Sensitive Products*, 28–31 Aug. 2018.

2018 contribution at 49th Scientific meeting of the Italian Statistical Society", University of Palermo, Italy, with the talk: *Robust statistical methods for credit risk*, Jun. 20–22, 2018.

2018 Invited Session at "Mathworks Research Summit & Matlab Advisory Board", Boston MA, USA, with the talk: *A MATLAB toolbox for Robust Statistics: use in policy research*, 2–8 Jun. 2018.

2017 Invited Session at "10th International Conference of the ERCIM WG on Computational and Methodological Statistics – CMStatistics 2017", London, United Kingdom, with the talk: *The power of monitoring: How to make the most of a contaminated multivariate sample*,16-18 December 2017.

2014 Solicited Session at "47th Scientific Meeting of the Italian Statistical Society", Cagliari, Italy with the talk: *Introducing Prior Information into the Forward Search for Regression*, 11–13 Jun. 2014.

2013 Invited session at “6th International Conference of the ERCIM Working Group on Computing & Statistics”, London, UK, with the talk: *The extremal index for stochastic volatility models with state space representation*.

2013 Solicited Session at “SIS 2013 statistical conference - Advances in Latent Variables”, Brescia, Italy, with the talk: *Business failure prediction in manufacturing: a robust Bayesian approach to discriminant scoring*, 19–21 Jun. 2013.

2011 Invited session at “4th International Conference of the ERCIM Working Group on Computing & Statistics”, London, UK, with the talk *Bayesian Aspects of the Forward Search*,17–19 December 2011.

Released software

2012- Co-author of the *MATLAB toolbox FSDA* Software owned jointly by the University of Parma and the Joint Research Centre of the European Commission. This new software library, which extends MATLAB and statistics toolbox to support a robust and efficient analysis of complex datasets, affected by different sources of heterogeneity.
Open Source and downloadble from Github https://github.com/UniprJRC/FSDA and from MATLAB File Exchange https://it.mathworks.com/matlabcentral/fileexchange/72999-fsda The FSDA toolbox is protected by a European Union Public Licence (EUPL).

2016- Co-author of *fsdaR* R Package. This new R software library provides an interface to the MATLAB toolbox ’Flexible Statistical Data Analysis(FSDA)’ which is a comprehensive and computationally efficient software package for robust statistics in regression, multivariate and categorical data analysis. Software owned jointly by the University of Parma and the Joint Research Centre of the European Commission.

2001–2010 Co-author of the *Fwd library*, (with Kjell Konis from Insightful). SPLUS Gui software which implements the routines described in the book: Robust Diagnostic Regression Analysis, by Anthony C. Atkinson and Marco Riani. The software can be downloaded from the following web address: http://www.riani.it/ar.