# Roberto Di Mari, Ph.D.

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**Nationality**: Italian
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## Current Position

*Assistant Professor* of Statistics at the Department of Economics and Business, University of Catania (Italy), since May, 2018.

## Past Positions

- *Postdoctoral researcher* in Statistics at the Department of Economics and Business, University of Catania (Italy), from November, 2016 to May, 2018.
  Lecturer (Cultore della Materia) since September, 2017.

## Education

- *Ph.D.* (with distinction) in Economics and Finance, 2017, University of Rome Tor Vergata, Italy; Ph.D. thesis on *Finite Mixture Models*, supervised by Prof. R. Rocci (University of Rome Tor Vergata) and co-supervised by Prof. J. K. Vermunt (Tilburg University).

- One-year graduate program at the Einaudi Institute for Economics and Finance (EIEF), Bank of Italy, academic year 2013-2014.

- *Visiting PhD student*, 2015, at the Department of Methodology and Statistics of Tilburg University (Tilburg, Netherlands).

- *Master of Science* in Economics, 2011-2013, University of Rome Tor Vergata, Rome, Italy; final dissertation in Statistics, on *Finite Mixtures of Linear Models: Numerical Evidences and Application to SHIW Data*, supervised by Prof. R.Rocci (University of Rome Tor Vergata) with final grade: 110/110.

- *Bachelor Degree* in Economics, 2011, University of Catania, Italy; final dissertation in Statistics, *Peer effects on academic outcome* supervised by Prof. S.Ingrassia (University of Catania).

- *Erasmus Exchange Student*, 2009 - 2010, University of Lille 1, France.

## Research Interests

Model-Based Clustering; Finite Mixture models; Latent Variable models; Latent Class analysis; Latent (Hidden) Markov models.

[1] Last update: June 5, 2021.

# Membership in Professional Societies

- Italian Statistical Society (SIS), Psychometric Society, Classification and Data Analysis Group of the Italian Statistical Society (CLADAG).

# Editorial Services

## Editorial Board Memberships

- *Behavior Research Methods*: Consulting Editor, 2020 to present.

## Refereeing Activities

- *Advances in Data Analysis and Classification*, *Artificial Intelligence in Medicine*, *Behavior Research Methods*, *Biometrical Journal*, *Computational Statistics and Data Analysis*, *Econometrics and Statistics*, *Emerging Markets Finance and Trade*, *European Journal of Operational Research*, *Health Economics*, *Journal of Statistical Computation and Simulation*, *Statistical Modelling*, *Statistical Methods and Applications*, *Structural Equation Modeling*.

# Scientific and Organizing Committee Activities

- Talk Session on *Dynamic models for discrete time series and longitudinal data* at the 24th International Conference on Computational Statistics, Bologna (Italy), 2021.
- 5th International Workshop on *Model-Based Clustering and Classification (MBC$^2$)*, Catania (Italy), September, 2020 (Local Organizer).
- 4th International Workshop on *Model-Based Clustering and Classification (MBC$^2$)*, Catania (Italy), September 5–7, 2018 (Local Organizer).
- 3rd International Workshop on *Model-Based Clustering and Classification (MBC$^2$)*, Catania (Italy), September 5–7, 2016 (Local Organizer).
- 2nd International Workshop on *Model-Based Clustering and Classification (MBC$^2$)*, Catania (Italy), September 3–5, 2014 (Local Organizer).
- International Workshop on *Model-Based Clustering and Classification (MBC$^2$)*, September 5–7, 2012 (Local Organizer).

# Funded Research Projects

- Member of the research project “PIA.CE.RI. 2020/2022" (Università di Catania):
  *Sostenibilità sociale: GENEre, governance e contesto Istituzionale (GENE.SI)* (Principal Investigator: Dr. L. Bonaventura).
- Principal investigator of the research project “PTR 2016 – 2018 II Annualità" (Università di Catania):
  *Analisi multidimensionale della corruzione percepita*.
- Member of the research project “PTR 2016 – 2018 I Annualità" (Università di Catania):
  *Academic Analytics per la costruzione di indicatori di performance* (Principal Investigator: Prof. A. Mazza).

## List of Publications

### A. Peer-Reviewed Articles

1. Catania, L., Di Mari, R., and Santucci de Magistris, P. (2020). Dynamic Discrete Mixtures for High Frequency Prices*. *Journal of Business & Economic Statistics. In press.*
2. Catania, L. and Di Mari, R. (2020). Hierarchical Hidden Markov Models for Multivariate Integer-Valued Time-Series. *Journal of Econometrics. In press.*
3. Di Mari, R., Bakk, Z., and Punzo A. (2019). A random-covariate approach for distal outcome prediction with latent class analysis. *Structural Equation Modeling: A Multidisciplinary Journal, 27(3), 351-368.*
4. Di Mari, R., Rocci, R., and Gattone, G. A. (2019). *Scale-constrained approaches for maximum likelihood estimation and model selection of clusterwise linear regression models. Statistical Methods and Applications. 29, 49-78.*
5. Di Mari, R., and Bakk, Z. (2018). Mostly harmless direct effects: a comparison of different latent markov modeling approaches. *Structural Equation Modeling: A Multidisciplinary Journal*, 25(3), 467-483.
6. Rocci, R., Gattone, S. A., and Di Mari, R. (2018). A data driven equivariant approach to constrained Gaussian mixture modeling. *Advances in Data Analysis and Classification, 12(2), 235-260.*
7. Di Mari, R., Rocci, R., and Gattone, G. A. (2017). Clusterwise linear regression modeling with soft scale constraints. *International Journal of Approximate Reasoning, 91, 160-178.*
8. Di Mari, R., Oberski, D.L, and Vermunt, J.K. (2016). Bias-adjusted three-step latent Markov modeling with covariates. *Structural Equation Modeling: A Multidisciplinary Journal, 23(5), 649-660.*

### B. Book chapters

9. Di Mari, R., Ingrassia, S., and Punzo, P. (2020). A generalized coefficient of determination for mixtures of regressions. In: “Chadjipadelis T. et al (Eds), *Data Analysis and Rationality in a Complex World*", Springer, ISBN 978-3-030-60103-4
10. Di Mari R., Gattone, S.A., and Rocci R. (2020) Penalized vs. contrained approaches for clusterwise linear regression modeling. In: “Balzano S. et al. (Eds.), *Statistical Learning and Modeling in Data Analysis – Methods and Applications*", Springer, *in press*.
11. Di Mari, R., Rocci, R., and Gattone, S.A. (2017). Finite Mixture of Linear Regression Models: An Adaptive Constrained Approach to Maximum Likelihood Estimation. In: “Ferraro M. et al. (Eds.), *Soft Methods for Data Science. Advances in Intelligent Systems and Computing*", vol. 456. Springer, ISBN 978-3-319-42971-7.

### C. Short papers in conference proceedings

12. Di Mari, R., Ingrassia, S., and Punzo, A. (2020). Local and overall coefficients of determination for mixtures of generalized linear models. In: “Pollice A. et al. (Eds.), *Book of short papers SIS 2020*", Pearson, ISBN 9788891910776.
13. Di Mari R., Bakk, Z. (2017). Stepwise latent Markov modeling with covariates in the presence of direct effects. In: “Greselin F. et al. (Eds.), *Book of Short Papers CLADAG 2017*", ISBN 978-88-99459-71-0.
14. Di Mari, R., Maruotti, A. and Punzo, A. (2018). Covariate measurement error in generalized linear models for longitudinal data: a latent Markov approach. In: “Greselin F. et al. (Eds.), *Book of Short Papers SIS 2018*", Pearson, ISBN 978-88-919102-33-0.
15. Di Mari, R., Rocci, R., and Gattone, S.A. (2019). Penalized vs. constrained maximum likelihood approaches for clusterwise linear regression modeling. In: “Porzio, G.C.. et al. (Eds.), *Book of Short Papers CLADAG 2019*", ISBN 978-88-8317-108-6.

**D. Submitted Articles**

1. Di Mari, R., Rocci, R., and Gattone, S.A. (2021). LASSO-penalized clusterwise linear regression modelling with Local Least Angle Regression (L-LARS).
2. Oser, J., Hooghe, M., and Di Mari, R. (2021). Engagement, Stability, or Erosion? Changing Citizenship Norms among Adolescents, 1999-2009-2016.
3. Di Mari, R., Dotto, F., Farcomeni, A., and Punzo, A. (2020). Assessing measurement invariance for longitudinal data through latent Markov models.
4. Di Mari, R., Ingrassia, S., and Punzo, A. (2020). Local and overall deviance R-squared measures for mixtures of generalized linear models.
5. Bakk, Z., Di Mari, R., and Oser, J. (2020). Two-stage multilevel latent class analysis with covariates in the presence of direct effects.
6. Di Mari, R., Bakk, Z., and Oser, J. (2020). Multilevel LCA with covariates: Analysis of cross-national citizenship norms with a two-stage approach.
7. Di Mari, R., and Maruotti, A. (2020). Time-varying measurement error in generalized linear models for longitudinal data: A two-step latent Markov approach for the analysis of the Chinese longitudinal healthy longevity survey.
8. Di Mari, R., Punzo, A., and Bakk, Z. (2020). Cluster-weighted latent class modeling.

# Presentations and Posters

## In Seminars

- Seminar on *LASSO-penalized clusterwise linear regression modelling with Local Least Angle Regression (L-LARS).* Department of Statistical Sciences, University of Rome la Sapienza (IT) - January 2020.

- Seminar on *Three-step approach in the context of latent Markov modeling with covariates.* Department of Economics and Finance, University of Rome Tor Vergata (IT) - December 2015.

- Seminar on *Three-step approach in the context of latent Markov modeling with covariates.* Department of Economics and Business, University of Catania (IT) - June 2015.

- Seminar on *Finite mixture of linear regression models: an adaptive constrained approach to maximum likelihood estimation.* Department of Economics and Finance, University of Rome Tor Vergata (IT) - November 2014.

## In Invited Sessions

- Talk on *LASSO-penalized clusterwise linear regression modelling with Local Least Angle Regression (L-LARS).* Session's title: *New proposals for clustering complex data structures* in the "4th International Conference on Econometrics and Statistics (EcoSta 2021)" virtual conference, HKUST (Honh Kong), June 24-26, 2021.

- Talk on *Penalized vs constrained maximum likelihood approaches for clusterwise linear regression modeling,* in the "CLAssification and Data Analysis Group (CLADAG) 2019" conference, Cassino (Italy), September 11-13, 2019.

- Talk on *Time-varying measurement error in generalized linear models for longitudinal data: A two-step latent Markov approach.* Session's title: *Advances in mixtures with covariates*, in the "The 11th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2018)", 14-16 December 2018, Pisa, Italy.

- Talk on *Generalized linear models with measurement error in the covariates: a latent Markov approach.* Session's title: *Recent Advances on Clustering and Classification*, in the "49th Meeting of the Italian Statistical Society", 20-22 June 2018, Palermo, Italy.

- Talk on *Handling missing data with multiple imputation using LC models to investigate predictors of HPV infection*. Session's title: *Recent developments in latent class analysis and its applications*, in "The 22nd International Conference on Computational Statistics (COMPSTAT 2016)", 23-26 August 2016, Auditorium Principe Felipe, Oviedo, Spain.

### In Contributed Sessions

- Talk on *Latent Markov Modeling With Covariates in the Presence of Direct Effects,* in the "CLAssification and Data Analysis Group (CLADAG) 2017" conference, Milan (Italy), September 13-15, 2017.

- Talk on *Latent Markov Modeling With Covariates in the Presence of Direct Effects,* in the "International Meeting of the Psychometric Society (IMPS) 2017" conference, Zurich (Switzerland), July 18-21, 2017.

- Talk on *Finite mixture of linear regression models: an adaptive constrained approach to maximum likelihood estimation,* in the "Soft Methods in Probability and Statistics" conference, Rome (Italy), September 12-14, 2016.

- Talk on *Three-step approach in the context of latent Markov modeling with covariates,* in the "Flemish Dutch Classification Society Meeting", Nijmegen (Netherlands), May 29, 2015.

### Posters

- Poster on *Finite mixture of linear regression models: an adaptive constrained approach to maximum likelihood estimation,* in the "MBC2 Model-Based Clustering and Classification" workshop, Catania, September 5-7, 2016.

## Teaching Activities

### Lectureship

- *Lecturer* of the course *Statistical Models for Economics and Finance* (60 hours) for the Master (*Laurea Magistrale*) in Corporate Finance at the Department of Economics and Business of the University of Catania. Since the academic year 2018/2019.

- *Lecturer* of the course *Statistics* (60 hours) for the Bachelor (*Laurea Triennale*) in Business Economics at the Department of Economics and Business of the University of Catania. Since the academic year 2020/2021.

### Tutorials

- *Tutorial instructor*, May 2018. R tutorial for clustering and visualization of complex data at the Summer School on Clustering, Data Analysis and Visualization of Complex data in Catania (Italy), jointly organized by the International Association for Statistical Computing (IASC), European Courses in Advanced Statistics (ECAS), and the classification group of the Italian Statistical Society (CLADAG).

- *Tutorial instructor*, May 2017. R tutorial for clustering methods at the Summer School on Clustering and Classification, organized in Rimini (Italy) by the classification group of the Italian Statistical Society (CLADAG).

- *Tutorial instructor*, September - October 2014. Tutorials for the course in Statistics of Prof. M. Mezzetti for Master MEI at University of Rome Tor Vergata, consisting of 12-hour teaching duties and office hours.
- *Tutorial instructor*, September - October 2014 Teaching assistance for the course in Statistical Computing (Matlab) of Dr. A. Ramponi for Master MEI at University of Rome Tor Vergata.

## Languages

- Italian (mother tongue), English and French (fluent), Spanish (Basic).

## Computer Skills

R, Matlab, SPSS, Stata, Latent GOLD, LateX, Ms Office Suite, Unix-based distributions (Mac OsX and Linux), Windows.

## Interests

Family, Computers, Books, Comics, Martial Arts, Outdoor Activities.