Francesco Lagona ***Curriculum vitae: November 2024***

Contact Information	Department of Political Sciences University of Roma Tre Via G. Chiabrera 199 00145 Rome - Italy phone (office): +39-0657335321 email: francesco.lagona@uniroma3.it

Current Position	Full Professor of Statistics, University of Roma Tre
Research output	40 papers in journals, 33 chapters in peer-reviewed books, 1150 citations and h-index 20 (google scholar, accessed on November 11th 2024)
Research interests	New statistical methods for the analysis of complex multivariate data that are dependent across time and space. Principal proposals are in the area multivariate latent variable models in the spatial and the temporal setting, with applications in biometrical and enviromental studies, economics and demography.
Editorial activities	Journal of Statistical Computation and Simulation: Associate Editor (since 2019) PLOS journals: Statistical Advisor (since 2017) Journal of Environmental and Ecological Statistics, Guest Editor 2023-2024
Education	1996: Ph.D., Statistics, Department of Statistics, Sapienza University of Rome 1992: M.S., Statistics, Department of Statistics, Sapienza University of Rome
Academic Appointments	1996-1997: Research Associate, Maxwell School of Citizenship and Public Affairs, Syracuse University, Syracuse NY, USA 1997-2003: Assistant Professor of Statistics, Dept. Political Institutions and Social Sciences, University Roma Tre, Rome Italy 2003-2006: Research Scientist, Max Planck Institute for Demographic Research, Rostock Germany 2006-2021: Associate Professor of Statistics, Dept. of Social Sciences, University Roma Tre, Rome Italy 2019-2022: Adjunct Faculty, Dept. Of Mathematics, University of Bergen, Norway
Elected Appointments	2022-today President of GRASPA (www.graspa.org), the Italian environmetricians research group for environmental statistics, sustainability and territorial safety. 2020-2022 Vice-President of GRASPA (www.graspa.org), the Italian environmetricians research group for environmental statistics, sustainability and territorial safety.
Research coordination activities	2007 - 2009 PRIN (Research Project of National Relevance) 2006 'Hierachical models for the analysis of space-time interactions in environmental data' – unit coordinator

2023 - 2025 PRIN (Research Project of National Relevance) 2022 'SMILE: Statistical modeling and inference to live the environment' – unit coordinator

Papers in Journals

Lagona F and Mingione M (2024). Nonhomogeneous hidden semi-Markov models for toroidal data. Journal of the Royal Statistical Society C. In press.

Kalisch H, Lagona F and Roeber V (2024). Sudden wave flooding on steep rock shores: a clear but hidden danger. Natural hazards, 120:3105–3125

Lagona F and Padovano F (2021) How does legislative behavior change when the country becomes democratic? The case of South Korea. European Journal of Political Economy 69, No. 102026

Lagona F, Ranalli M and Barbi E (2020) A model with space-varying regression coefficients for clustering multivariate spatial count data, Biometrical Journal, 62(6): 1508-1524

Lagona F (2019) Copula-based segmentation of cylindrical time series, Statistical and Probability Letters, 144: 16-22

Lagona F and Barbi E (2019) Segmentation of mortality surfaces by hidden Markov models, Statistical Modelling, 19(2): 276–298

Ameijeiras-Alonso J, Lagona F, Ranalli M and Crujeiras, RM (2019) A circular non-homogeneous hidden Markov field for the spatial segmentation of wildfire occurrences, Environmetrics, 30: e2501

Barbi E, Lagona F, Marsili M, Vaupel J and Wachter K (2018) Response to Comment on "The plateau of human mortality: Demography of longevity pioneers". Science, 362: 10.1126/science.aav3229

Auteri M, Lagona F e Padovano F (2018) Il ciclo politico-legislativo italiano dal 1948 ad oggi, Studi parlamentari e di politica costituzionale, 199-200: 57-70 (in Italian)

Barbi E, Lagona F, Marsili M, Vaupel J and Wachter K (2018) The Plateau of Human Mortality: Demography of Longevity Pioneers, Science, 360(6396): 1459-1461

Ranalli M, Lagona F, Picone M and Zambianchi E (2018) Segmentation of sea current fields by cylindrical hidden Markov models: a composite likelihood approach, Journal of the Royal Statistical Society C, 67: 575-598

Raynaud C, Miccoli S and Lagona F (2018) Population ageing in Italy: an empirical analysis of change in the ageing index across space and time, Spatial Demography, 6(3): 235-251

Maruotti A, Bulla J, Lagona F, Picone M, Martella F (2017) Dynamic mixtures of factor analyzers to characterize multivariate air pollutant exposures, Annals of Applied Statistics, 11: 1617-1648

Lagona F (2016) Regression analysis of correlated circular data based on the multivariate von Mises distribution, Environmental and Ecological Statistics, 23: 89-113

Lagona F and Picone M (2016) Model-based segmentation of spatial cylindrical data, Journal of Statistical Computation and Simulation, 86: 2598-2610

Maruotti A, Punzo A, Mastrantonio G and Lagona F (2016) A time-dependent extension of the projected Normal regression model for longitudinal circular data based on a hidden Markov heterogeneity structure, Stochastic Environmental Research and Risk Assessment, 30: 1725-1740

Maruotti A, Raponi V and Lagona F (2016) Handling endogeneity and non-negativity in correlated random effects models: evidence from ambulatory expenditure, Biometrical Journal, 58: 280-302

Lagona F, Picone M and Maruotti A (2015) A Hidden Markov model for the analysis of cylindrical time series, Environmetrics, 26: 534-544

Lagona F, Maruotti A and Padovano F (2015) Multilevel multivariate modelling of legislative count data, with hidden Markov chain, Journal of the Royal Statistical Society A, 178(3): 705-723

Lagona F, Picone M, Maruotti A and Cosoli S (2015) A hidden Markov approach to the analysis of space-time environmental data with linear and circular components. Stochastic Environmental Research and Risk Assessment, 29: 397-409

Bulla J, Lagona F, Maruotti A and Picone M (2015) Environmental conditions in semi-enclosed basins: A dynamic latent class approach for mixed-type multivariate variables. Journal de la Societè Francaise de Statistique, 156: 114-136

Lagona F, Jdanov D and Shkolnikova M (2014) Latent time-varying factor in longitudinal analysis: a linear mixed hidden Markov model for heart rates. Statistics in Medicine, 33: 4116-4134

Lagona F and Picone M (2013) Maximum likelihood estimation of bivariate circular hidden Markov models from incomplete data. Journal of Statistical Computation and Simulation, 83:7, 1223-1237

Bulla J, Lagona F, Maruotti A and Picone M (2012) A multivariate hidden Markov model for the identification of sea regimes from incomplete skewed and circular time series. Journal of Agricultural, Biological and Environmental Statistics 17(4): 544-567

Lagona F and Picone M (2012) Model-based clustering of multivariate skew data with circular components and missing values. Journal of Applied Statistics 39(5): 927-945.

Basili A, Lagona F, Roberti di Sarsina P, Basili C, Paterna TV (2011). Allopathic versus Homeopathic Strategies and the Recurrence of Prescriptions: Results from a Pharmacoeconomic Study in Italy. Evidence-Based Complementary and Alternative Medicine, Article ID 969343, 6 pages

Lagona F and Picone M (2011) A latent-class model for clustering incomplete linear and circular data in marine studies, Journal of Data Science, 9(4): 585-605.

Lagona F, Zhang Z (2010) A missing composite covariate in survival analysis: A case study of the Chinese Longitudinal Health and Longevity Survey, Statistics in Medicine, 29: 248-261

Picone M, Lagona F, Nardone G and Bencivenga M (2010) A latent-class approach to missing value imputation in incomplete multivariate wave metric datasets. Rapports et Proces-Verbaux des Reunions Commission Internationale pour l'exploration scientifique de la mer Mediterranee, 39, 160

Minois N, Lagona F, Frajnt M, Vaupel J (2009). Plasticity of Death Rates in Stationary Phase in Saccharomyces cerevisiae. Aging Cell, 8: 33-44

Lagona F, Padovano F (2008) The Political Legislation Cycle. Public Choice, 134: 201-229

Klauenberg K, Lagona F (2007) Hidden Markov Random Field Models for TCA Image Analysis. Computational Statistics and Data Analysis, 52: 855-868

Lagona F, Padovano F (2007) A Nonlinear Principal Component Analysis of the Relationship between Budget Rules and Fiscal Performance in the European Union. Public Choice, 130: 401-436

Minois N, Frajnt M, Dolling M, Lagona F, Schmid M, Kuchenhoff H, Gampe J, Vaupel JW (2006) Symmetrically dividing cells of the fission yeast Schizosaccharomyces pombe do age. Biogerontology 7: 261-267

Jona Lasinio G, Lagona F (2003) Selection of the Neighborhood Structure for Space-Time Markov Random Fields. Statistical Methods and Applications 11: 293-311

Lagona F (2002) Adjacency Selection in Markov Random Fields for High Resolution, Hyperspectral Data. Journal of Geographical Systems 4: 53-68

Lagona F (2001) Parametric Restrictions in Random Fields for Binary Space-Time Series. Metron 59: 73-97

Griffith DA and Lagona F (1998) On the Quality of Maximum Likelihood Estimators in Spatial Autoregressive Models when the Data Dependence Structure is Misspecified. Journal of Statistical Planning and Inference 69: 153-174

Griffith DA and Lagona F (1997) Specification Errors in Spatial Models: Impacts on Modeling and Estimation. Discussion Paper Series 108, Dept. of Geography, Syracuse University ISSN: 0363-6038, 1-43

Lagona F (1994) Interaction Levels in an Autoregressive Graphical Model. Metron 52: 113-141

Selected Book Chapters

Lagona F (2022) Spatial Autoregressive Models for Circular Data. In: Ashis SenGupta and Barry C. Arnold (Eds), Forum for Interdisciplinary Mathematics. 297-313, Springer, ISBN: 978-981-19-1043-2

Lagona F and Maruotti A (2020) A hidden semi-Markov model for segmenting environmental toroidal data, in: Book of short papers SIS 2020, Pearson, 810 - 815 ISBN 9788891910776

Lagona, F. (2019) Cylindrical hidden Markov fields. In GC Porzio F Greselin and S Balzano (Eds), Proceedings CLADAG 2019. Cassino : Edizioni Universita' di Cassino, 288-291, ISBN 978-88-8317-108-6

Lagona F (2019) A Copula-Based Hidden Markov Model for Toroidal Time Series, in A. Petrucci et al (Eds.) New Statistical Developments in Data Science, Springer Proceedings in Mathematics & Statistics 288, 435-446, ISBN 978-3-030-21157-8

Lagona f and Ranalli M (2018) A multilevel hidden Markov model for space-time cylindrical data. In: A. Abbruzzo, E. Brentari, M. Chiodi, D. Piacentino (Eds.) Proceedings SIS 2018, Pearson, 367-372 ISBN 9788891910233

Lagona F (2018) A hidden Markov random field with copula-based emission distributions for the analysis of spatial cylindrical data. In: M. Cameletti and F. Finazzi (Eds) Quantitative Methods in Environmental and Climate Research, Springer Nature Switzerland, 111-125 ISBN 978-3-030-01584-8

Lagona F (2018) Correlated cylindrical data. In: C. Ley and T. Verdebout (Eds) Applied Directional Statistics: Modern Methods and Case Studies, Chapman and Hall/CRC, 45-59 ISBN 9781138626430

Lagona F (2017) Copula-based segmentation of environmental time series with linear and circular components. In: A. Petrucci and R. Verde (Eds) SIS 2017. Statistics and Data Science: new challenges, new generations. 28-30 June 2017 Florence (Italy) : Proceedings of the Conference of the Italian Statistical Society, Firenze University Press, 569-574 ISBN 978-88-6453-521-0

Lagona F (2016) A hidden Markov approach to the analysis of incomplete multivariate longitudinal data. In: F. Mola and C. Conversano (Eds.) CLADAG 2015 10th Scientific Meeting of the Classification and Data Analysis Group of the Italian Statistical Society, CUEC, 243-248 ISBN 9788884679499

Bencivenga M, Lagona F, Maruotti A, Nardone G and Picone M (2014) Unsupervised classification of multivariate time series data for the identification of sea regimes. In: A. Giommi and G. Alleva (Eds) Studies of Theoretical and Applied Statistics, Springer, 61-71 ISBN 978-3-319-27272-6

Lagona F (2014). Regression analysis of correlated circular data based on the multivariate von Mises distribution. In Cabras S, Di Battista T, Racugno W (a cura di), 47th SIS Scientific Meeting of the Italian Statistica Society. CAGLIARI : CUEC - Cooperativa Universitaria Editrice Cagliaritana. ISBN 978-88-8467-874-4

Lagona F and Picone M (2013) A Gaussian – Von Mises Hidden Markov model for clustering multivariate linear-circular data. In: P. Giudici, S. Ingrassia and M. Vichi (Eds.) Statistical Models for Data Analysis, Springer, 171-179 ISBN 978-3-319-00031-2

Lagona F (2013) Model-based classification of clustered binary data with nonignorable missing values. In: N Torelli, F. Pesarin and A. Bar-Hen (Eds.) Advances in Theoretical and Applied Statistics. Studies of Theoretical and Applied Statistics, Springer, 155-165 ISBN 978-3-642-35587-5

Lagona F and Picone M (2013) Classification of multivariate linear-circular data with nonignorable missing values, In: M. Grigoletto, F. Lisi and S. Petrone (Eds.) Complex Models and Computational Methods in Statistics, Springer, 161-173 ISBN 978-88-470-2870-8

Lagona F (2012) A multivariate hidden Markov model for the analysis of space-time circular data. In PROOCEEDINGS OF THE 5th International Conference of the ERCIM (European Research Consortium for Informatics and Mathematics) Working Group on Computing & Statistics (ERCIM 2012), ISBN 978-84-937822-2-1

Lagona F (2012) A von Mises Markov random field model for the analysis of spatial circular data. In Proceedings of the XLVI Scientific Meeting of the Italian Statistical Society, PADOVA : CLEUP, 1-4 ISBN 978-88-6129-882-8

Lagona F, Maruotti A and Picone M (2011) A Non-Homogeneous Hidden Markov Model for the Analysis of Multi-Pollutant Exceedances Data, In: P Dymarski (Ed.) Hidden Markov Models: Theory and Applications, Intech, 207-222, ISBN 978-953-307-208-1

Lagona F and Picone M (2011) Unsupervised classification of multivariate data with circular components and missing values. In Proceedings of SCO 2011, 1-6, ISBN 978-88-6129-753-1

Lagona F and Picone M (2011) Using Hidden Markov Models for Clustering Multivariate Linear-Circular Time Series. In Cerchiello P and Tarantola C (a cura di), Prooceedings of CLADAG 2011 Pavia : Pavia University Press, 1-9, ISBN 9788896764220

Lagona F (2010) Model Selection in Markov Random Fields for High Spatial Resolution Hyperspectral Data. In: Fisher MM and Getis A (Eds) Handbook of Applied Spatial Analysis, Springer, 549-567m ISBN 978-3-642-03646-0

Picone M, Lagona F and Nardone G (2009). Missing value imputation in buoy networks for validation purposes. In: European Commission Joint Research Centre, Proceedings, 33rd International Symposium on Remote Sensing of Environment: sustaining the millenium development goals. TCSON : ISRSE. ISBN 9780932913135

Streso K and Lagona F (2006) Hidden Markov Random Field and Frame Modelling for TCA Image Analysis. In: M.H. Hamza (Ed.) Proceedings of the Third IASTED International Conference on Signal Processing, Pattern Recognition, and Applications, ACTA Press, 310-315 ISBN 0-88986-580-9

Lagona F (2005) Air Quality Indices via Non Homogeneous Hidden Markov Models. In: Atti del Convegno Intermedio della Società Italiana di Statistica. Messina. June 2005, CLEUP, 91-94 ISBN 88-7178-531-2

Lagona F (2004) Local Likelihood Methods to Smooth Hazard Rates from Grouped Data. In: Atti della XLII Riunione Scientifica della Società Italiana di Statistica. Bari. June 2004, CLEUP, 361-364, ISBN 88-7178-034-5

Barbi E and Lagona F (2002) Modelling Human Mortality Trajectories via an Accelerated-Ageing Hazard Function. In: Atti della XLI Riunione Scientifica della Societa' Italiana di Statistica, Milano-Bicocca, June 2002, CLEUP, 313-316 ISBN 88-7178-589-4

Lagona F and Padovano F (1999). Budget Rules and Fiscal Performance in the European Union: A Nonmetric Principal Component Analysis. In Istituzioni Politiche e Finanza Pubblica, MILANO : FrancoAngeli, 147-176, ISBN 9788846423887

Lagona F (1996) Linear Structural Dependence of Degree One among Data: a

Statistical Model. In: Camiz S and Stefani S (Eds) Matrices and Graphs: Theory and Applications, World Publishing, 223-232, ISBN 978-9810230388

Selected Teaching

Maxwell School of Citizenship and Public Affairs, Syracuse University, Syracuse NY, USA: Introductory Statistics (40 hours, 1996); Spatial Statistics (40 hours, 1996)

Department of Statistics, University of Messina, Master GEAT: Statistical Modelling (20 hours, 2001); Spatial Statistics (20 hours, 2002)

Max Planck Institute for Demographic Research, Rostock Germany: Survival Analysis (40 hours, 3 editions, 2004-2006); Spatial Demography (40 hours, 3 editions, period 2007-2010)

Social Science Data and Research Center, Fudan University, Shanghai, China: Spatial Statistics (20 hours, 2014)

Department of Political Sciences, University Roma Tre, Rome Italy: Introductory Statistics (64 hours, 10 editions, period 2008-present); Statistical Modelling (64 hours, 8 editions, 2011-present); Econometrics (64 hours, 2011); Survey Sampling (64 hours, 2010)

Department of Economics, University Roma Tre: Mixture Models (20 hours, 3 editions, 2008-2010); Statistical Modelling with Missing Values (18 hours, 2011)

Department of Engineering, University
Roma Tre, Master IEAT, Introductory Statistics (20 hours, 4 editions, 2004-2008); Environmental Statistics (20 hours, 4 editions, 2004-2008)

School of Economics and Business Administration, Chongqing University, Chongqing China, Doctorate of Business Administration; Quantitative data collection (18 hours, 2015)

Department of Mathematics, University of Bergen: Introduction to Survival Analysis (28 hours; 2020); Advanced Survival analysis (28 hours; 2021); Generalized Linear models (72 hours; 2021)

LUISS Business School, Rome, Italy: Statistics for Data Science (28 hours, 2020-2024)