

Contents

Preface	XIX
1 Plenary Sessions	1
1.1 Citizen data, and citizen science: a challenge for official statistics. <i>Monica Pratesi</i>	2
2 Specialized Sessions	8
2.1 A glimpse of new data and methods for analysing a rapidly changing population	9
2.1.1 The diffusion of new family patterns in Italy: An update. <i>Arnstein Aassve, Letizia Mencarini, Elena Pirani and Daniele Vignoli</i>	10
2.1.2 Causes of death patterns and life expectancy: looking for warning signals. <i>Stefano Mazzucco, Emanuele Aliverti, Daniele Durante and Stefano Campostrini</i>	16
2.2 Advances in ecological modelling	22
2.2.1 A Bayesian joint model for exploring zero-inflated bivariate marine litter data. <i>Sara Martino, Crescenza Calculli and Porzia Maiorano</i>	23
2.3 Advances in environmental statistics	29
2.3.1 Bayesian small area models for investigating spatial heterogeneity and factors affecting the amount of solid waste in Italy. <i>Crescenza Calculli and Serena Arima</i>	30
2.3.2 A spatial regression model for for predicting abundance of lichen functional groups. <i>Pasquale Valentini, Francesca Fortuna, Tonio Di Battista and Paolo Giordani</i>	36
2.4 Advances in preference and ordinal data theoretical improvements and applications	42
2.4.1 Boosting for ranking data: an extension to item weighting. <i>Alessandro Albano, Mariangela Sciandra and Antonella Plaia</i>	43
2.4.2 An Extended Bradley-Terry Model For The Analysis Of Financial Data. <i>Alessio Baldassarre, Elise Dusseldorp and Mark De Rooij</i>	49

2.5	Business system innovation, competitiveness, productivity and internationalization	55
2.5.1	An analysis of the dynamics of the competitiveness for some European Countries. <i>Andrea Marletta, Mauro Mussini and Mariangela Zenga</i>	56
2.5.2	National innovation system and economic performance in EU. An analysis using composite indicators. <i>Alessandro Zeli</i>	62
2.6	Challenges for observational studies in modern biomedicine	68
2.6.1	Data integration: a Statistical view. <i>Pier Luigi Conti</i>	69
2.6.2	Exploring patients' profile from COVID-19 case series data: beyond standard statistical approaches. <i>Chiara Brombin, Federica Cugnata, Pietro E. Cippà, Alessandro Ceschi, Paolo Ferrari and Clelia di Serio</i>	75
2.6.3	On the statistics for some pivotal anti-COVID-19 vaccine trials. <i>Mauro Gasparini</i>	81
2.7	Data Science for Industry 4.0 (ENBIS)	87
2.7.1	Sample selection from a given dataset to validate machine learning models. <i>Bertrand Iooss</i>	88
2.7.2	Reliable data-drive modelling and optimisation of a batch reactor using bootstrap aggregated deep belief networks. <i>Changhao Zhu and Jie Zhang</i>	94
2.8	Integration of survey with alternative sources of data	100
2.8.1	A parametric empirical likelihood approach to data matching under nonignorable sampling and nonresponse. <i>Daniela Marella and Danny Pfeffermann</i>	101
2.8.2	Survey data integration for regression analysis using model calibration.	107
2.8.3	Latent Mixed Markov Models for the Production of Population Census Data on Employment. <i>Daniela Filippini, Ugo Guarnera and Roberta Varriale</i>	112
2.9	Media, social media and demographic behaviours	118
2.9.1	Monitoring the Numbers of European Migrants in the United Kingdom using Facebook Data. <i>Francesco Rampazzo, Jakub Bijak, Agnese Vitali, Ingmar Weber and Emilio Zagheni</i>	119
2.10	New developments in ensemble methods for classification	125
2.10.1	An alternative approach for nowcasting economic activity during COVID-19 times. <i>Alessandro Spelta and Paolo Pagnottoni</i>	126
2.10.2	Assessing the number of groups in consensus clustering by pivotal methods. <i>Roberta Pappadà, Francesco Pauli and Nicola Torelli</i>	132
2.10.3	Clustering of data recorded by Distributed Acoustic Sensors to identify vehicle passage and typology. <i>Antonio Balzanella and Stefania Nacchia</i>	138
2.11	New developments in latent variable models	144
2.11.1	A Hidden Markov Model for Variable Selection with Missing Values. <i>Fulvia Pennoni, Francesco Bartolucci, and Silvia Pandolfi</i>	145
2.11.2	Comparison between Different Likelihood Based Estimation Methods in Latent Variable Models for Categorical Data. <i>Silvia Bianconcini and Silvia Cagnone</i>	151
2.11.3	A Comparison of Estimation Methods for the Rasch Model. <i>Alexander Robitzsch</i>	157

2.12	New issues on multivariate and univariate quantile regression	163
2.12.1	Directional M-quantile regression for multivariate dependent outcomes. <i>Luca Merlo, Lea Petrella and Nikos Tzavidis</i>	164
2.13	Semi-parametric and non-parametric latent class analysis	170
2.13.1	Stepwise Estimation of Multilevel Latent Class Models. <i>Zsuzsa Bakk, Roberto di Mari, Jennifer Oser and Jouni Kuha</i>	171
2.13.2	Distance learning, stress and career-related anxiety during the Covid-19 pandemic: a students perspective analysis. <i>Alfonso Iodice D'Enza, Maria Iannario, Rosaria Romano</i>	177
2.13.3	A Tempered Expectation-Maximization Algorithm for Latent Class Model Estimation. <i>Luca Brusa, Francesco Bartolucci and Fulvia Pennoni</i>	183
2.14	Statistics for finance high frequency data, large dimension and networks	189
2.14.1	The Italian debt not-so-flash crash. <i>Maria Flora and Roberto Reno'</i>	190
3	Solicited Sessions	197
3.1	Advances in social indicators research and latent variables modelling in social sciences	198
3.1.1	A composite indicator to measure frailty using administrative healthcare data. <i>Margherita Silan, Rachele Brocco and Giovanna Boccuzzo</i>	199
3.1.2	Clusters of contracting authorities over time: an analysis of their behaviour based on procurement red flags. <i>Simone Del Sarto, Paolo Coppola and Matteo Troia</i>	205
3.1.3	An Application of Temporal Poset on Human Development Index Data. <i>Leonardo Salvatore Alaimo, Filomena Maggino and Emiliano Seri</i>	211
3.1.4	The SDGs System: a longitudinal analysis through PLS-PM. <i>Rosanna Cataldo, Maria Gabriella Grassia and Laura Antonucci</i>	217
3.2	Changes in the life course and social inequality	223
3.2.1	Heterogeneous Income Dynamics: Unemployment Consequences in Germany and the US. <i>Raffaele Grotti</i>	224
3.2.2	In-work poverty in Germany and in the US: The role of parity progression. <i>Emanuela Struffolino and Zachary Van Winkle Z.</i>	230
3.2.3	Parenthood, education and social stratification. An analysis of female occupational careers in Italy. <i>Gabriele Ballarino and Stefano Cantalini</i>	236
3.3	Composition in the Data Science Era	242
3.3.1	Can we Ignore the Compositional Nature of Compositional Data by using Deep Learning Approaches? <i>Matthias Templ</i>	243
3.3.2	Principal balances for three-way compositions. <i>Violetta Simonacci</i>	249
3.3.3	Robust Regression for Compositional Data and its Application in the Context of SDG. <i>Valentin Todorov and Fatemah Alqallaf</i>	255

3.4	Evaluation of undercoverage for censuses and administrative data	261
3.4.1	Spatially balanced indirect sampling to estimate the coverage of the agricultural census. <i>Federica Piersimoni, Francesco Pantalone and Roberto Benedetti</i>	262
3.4.2	Next Census in Israel: Strategy, Estimation and Evaluation. <i>Danny Pfeffermann</i>	268
3.4.3	Administrative data for population counts estimations in Italian Population Census. <i>Antonella Bernadini, Angela Chieppa, Nicola Cibella and Fabrizio Solari</i>	274
3.4.4	LFS non response indicators for population register overcoverage estimation. <i>Lorella Di Consiglio, Stefano Falorsi</i>	279
3.5	Excesses and rare events in complex systems	285
3.5.1	Space-time extreme rainfall simulation under a geostatistical approach. <i>Gianmarco Callegher, Carlo Gaetan, Noemie Le Carrer and Ilaria Prosdocimi</i>	286
3.6	Hierarchical forecasting and forecast combination	292
3.6.1	Density calibration with consistent scoring functions. <i>Roberto Casarin and Francesco Ravazzolo</i>	293
3.6.2	Forecasting combination of hierarchical time series: a novel method with an application to CoVid-19. <i>Livio Fenga</i>	298
3.7	Household surveys for policy analysis	304
3.7.1	Did the policy responses to COVID-19 protect Italian households' incomes? Evidence from survey and administrative data. <i>Maria Teresa Monteduro, Dalila De Rosa and Chiara Subrizi</i>	305
3.8	Learning analytics methods and applications	311
3.8.1	Open-Source Automated Test Assembly: the Challenges of Large-Sized Models. <i>Giada Spaccapanico Proietti</i>	312
3.8.2	How Much Tutoring Activities May Improve Academic Careers of At-Risk Students? An Evaluation Study. <i>Marta Cannistra, Tommaso Agasisti, Anna Maria Paganoni and Chiara Masci</i>	318
3.8.3	Composite-based Segmentation Trees to Model Learners' performance. <i>Cristina Davino and Giuseppe Lamberti</i>	324
3.8.4	Test-taking Effort in INVALSI Assessments. <i>Chiara Sacco</i>	330
3.9	Light methods for hard problems	336
3.9.1	Fast Divide-and-Conquer Strategies to Solve Spatial Big Data Problems. <i>Michele Peruzzi</i>	337
3.9.2	Application of hierarchical matrices in spatial statistics. <i>Anastasiia Gorshechnikova and Carlo Gaetan</i>	343
3.10	Management and statistics in search for a common ground (AIDEA)	349
3.10.1	Customer Segmentation: it's time to make a change. <i>Fabrizio Laurini, Beatrice Luceri and Sabrina Latusi</i>	350
3.10.2	Multivariate prediction models: Altman's ZScore and CNDCEC's sectoral indicators. <i>Alessandro Danovi, Alberto Falini and Massimo Postiglione</i>	356
3.10.3	Comparing Entrepreneurship and Perceived Quality of Life in the European Smart Cities: a "Posetic" Approach. <i>Lara Penco, Enrico Ivaldi and Andrea Ciacci</i>	362

3.10.4	The Relationship between Business Economics and Statistics: Taking Stock and Ways Forward. <i>Amedeo Pugliese</i>	368
3.11	Mathematical methods and tools for finance and insurance (AMASES)	373
3.11.1	On the valuation of the initiation option in a GLWB variable annuity. <i>Anna Rita Bacinello and Pietro Millosovich</i>	374
3.11.2	Modern design of life annuities in view of longevity and pandemics. <i>Annamaria Olivieri</i>	380
3.11.3	Risk Management from Finance to Production Planning: An Assembly-to-Order Case Study. <i>Paolo Brandimarte, Edoardo Fadda and Alberto Gennaro</i>	386
3.11.4	Some probability distortion functions in behavioral portfolio selection. <i>Diana Barro, Marco Corazza and Martina Nardonthors</i>	392
3.12	Multiple system estimation	398
3.12.1	Multiple Systems Estimation in the Presence of Censored Cells. <i>Ruth King, Oscar Rodriguez de Rivera Ortega and Rachel McCrea</i>	399
3.12.2	Bayesian population size estimation by repeated identifications of units. A semi-parametric mixture model approach. <i>Tiziana Tuoto, Davide Di Cecco and Andrea Tancredi</i>	405
3.13	Network sampling and estimation	411
3.13.1	Targeted random walk sampling. <i>Li-Chun Zhang</i>	412
3.13.2	Estimation of poverty measures in Respondent-driven sampling. <i>María del Mar Rueda, Ismael Sánchez-Borrego and Héctor Mullo</i>	418
3.13.3	Sampling Networked Data for Semi-Supervised Learning Algorithms. <i>Simone Di Zio, Lara Fontanella, Francesco Pantalone and Federica Piersimoni</i>	423
3.13.4	A sequential adaptive sampling scheme for rare populations with a network structure. <i>Emilia Rocco</i>	429
3.14	New perspectives on multidimensional child poverty	435
3.14.1	Estimating uncertainty for child poverty indicators: The Case of Mediterranean Countries. <i>Ilaria Benedetti, Federico Crescenzi and Riccardo De Santis</i>	436
3.14.2	Child poverty and government social spending in the European Union during the economic crisis. <i>Angeles Sánchez and María Navarro</i>	442
3.14.3	The Children's Worlds Study: New perspectives on children's deprivation research. <i>Caterina Giusti and Antoanneta Potsi</i>	448
3.14.4	The impact of different definition of "households with children" on deprivation measures: the case of Italy. <i>Laura Neri and Francesca Gagliardi</i>	454
3.15	Perspectives in social network analysis applications	460
3.15.1	A comparison of student mobility flows in Erasmus and Erasmus+ among countries. <i>Kristijan Breznik, Giancarlo Ragozini and Marialuisa Restaino</i>	461
3.15.2	Network-based approach for the analysis of LexisNexis news database. <i>Carla Galluccio and Alessandra Petrucci</i>	467
3.15.3	A multiplex network approach to study Italian Students' Mobility. <i>Ilaria Primerano, Francesco Santelli and Cristian Usala</i>	473
3.15.4	Ego-centered Support Networks:a Cross-national European Comparison. <i>Emanuela Furfaro, Elvira Pelle, Giulia Rivellini and Susanna Zaccarin</i>	479

3.16	Statistical analysis of energy data	485
3.16.1	Machine learning models for electricity price forecasting. <i>Silvia Golia, Luigi Grossi, Matteo Pelagatti</i>	486
3.16.2	The impact of hydroelectric storage in the Italian power market. <i>Filippo Beltrami</i>	492
3.16.3	Jumps and cojumps in electricity price forecasting. <i>Peru Muniain, Aitor Ciarreta and Ainhoa Zarraga</i>	498
3.17	Statistical methods and models for the analysis of sports data	507
3.17.1	Football analytics: a Higher-Order PLS-SEM approach to evaluate players' performance. <i>Mattia Cefis and Maurizio Carpita</i>	508
3.17.2	Bayesian regularized regression of football tracking data through structured factor models. <i>Lorenzo Schiavon and Antonio Canale</i>	514
3.17.3	A dynamic matrix-variate model for clustering time series with multiple sources of variation. <i>Mattia Stival</i>	520
3.17.4	Evaluating football players' performances using on-the-ball data. <i>David Dandolo</i>	526
3.18	The social and demographic consequences of international migration in Western societies	532
3.18.1	Employment and job satisfaction of immigrants: the case of Campania (Italy). <i>Alessio Buonomo, Stefania Capecchi, Francesca Di Iorio and Salvatore Strozza</i>	533
3.18.2	Social stratification of migrants in Italy: class reproduction and social mobility from origin to destination. <i>Giorgio Piccitto, Maurizio Avola and Nazareno Panichella</i>	539
3.19	Well-being, healthcare, integration measurements and indicators (SIEDS)	545
3.19.1	A Composite Index of Economic Well-being for the European Union Countries. <i>Andrea Cutillo, Matteo Mazziotta and Adriano Pareto</i>	546
3.19.2	Poverty orderings and TIP curves: an application to the Italian regions. <i>Francesco M. Chelli, Mariateresa Ciommi and Chiara Gagliarano</i>	552
4	Contributed Sessions	558
4.1	Advances in clinical trials	559
4.1.1	Quantitative depth-based [18F]FMCH-avid lesion profiling in prostate cancer treatment. <i>Lara Cavinato, Alessandra Ragni, Francesca Ieva, Martina Sollini, Francesco Bartoli and Paola A. Erba</i>	560
4.1.2	Modelling longitudinal latent toxicity profiles evolution in osteosarcoma patients. <i>Marta Spreafico, Francesca Ieva and Marta Fiocco</i>	566
4.1.3	Information borrowing in phase II basket trials: a comparison of different designs. <i>Marco Novelli</i>	572
4.1.4	Q-learning Estimation Techniques for Dynamic Treatment Regime. <i>Simone Bogni, Debora Slanzi and Matteo Borrotti</i>	578
4.1.5	Sample Size Computation for Competing Risks Survival Data in GS-Design. <i>Mohammad Anamul Haque and Giuliana Cortese</i>	584

4.2	Advances in neural networks	590
4.2.1	Linear models vs Neural Network: predicting Italian SMEs default. <i>Lisa Crosato, Caterina Liberati and Marco Repetto</i>	591
4.2.2	Network estimation via elastic net penalty for heavy-tailed data. <i>Davide Bernardini, Sandra Paterlini and Emanuele Taufer</i>	596
4.2.3	Neural Network for statistical process control of a multiple stream process with an application to HVAC systems in passenger rail vehicles. <i>Gianluca Sposito, Antonio Lepore, Biagio Palumbo and Giuseppe Giannini</i>	602
4.2.4	Forecasting air quality by using ANNs. <i>Annalina Sarra, Adelia Evangelista, Tonio Di Battista and Francesco Bucci</i>	608
4.3	Advances in statistical methods	614
4.3.1	Robustness of Fractional Factorial Designs through Circuits. <i>Roberto Fontana and Fabio Rapallo</i>	615
4.3.2	Multi-objective optimal allocations for experimental studies with binary outcome. <i>Alessandro Baldi Antognini, Rosamarie Frieri, Marco Novelli and Maroussa Zagoraiou</i>	621
4.3.3	Analysis of three-way data: an extension of the STATIS method. <i>Laura Bocci and Donatella Vicari</i>	627
4.3.4	KL-optimum designs to discriminate models with different variance function. <i>Alessandro Lanteri, Samantha Leorato and Chiara Tommasi</i>	633
4.3.5	Riemannian optimization on the space of covariance matrices. <i>Jacopo Schiavon, Mauro Bernardi and Antonio Canale</i>	639
4.4	Advances in statistical methods and inference	645
4.4.1	Estimation of Dirichlet Distribution Parameters with Modified Score Functions. <i>Vincenzo Gioia and Euloge Clovis Kenne Pagui</i>	646
4.4.2	Confidence distributions for predictive tail probabilities. <i>Giovanni Fonseca, Federica Giummolè and Paolo Vidoni</i>	652
4.4.3	Impact of sample size on stochastic ordering tests: a simulation study. <i>Rosa Arboretti, Riccardo Ceccato, Luca Pegoraro and Luigi Salmaso</i>	658
4.4.4	On testing the significance of a mode. <i>Federico Ferraccioli and Giovanna Menardi</i>	664
4.4.5	Hommel BH: an adaptive Benjamini-Hochberg procedure using Hommel's estimator for the number of true hypotheses. <i>Chiara G. Magnani and Aldo Solari</i>	670
4.5	Advances in statistical models	676
4.5.1	Specification Curve Analysis: Visualising the risk of model misspecification in COVID-19 data. <i>Venera Tomaselli, Giulio Giacomo Cantone and Vincenzo Miracula</i>	677
4.5.2	Semiparametric Variational Inference for Bayesian Quantile Regression. <i>Cristian Castiglione and Mauro Bernardi</i>	683
4.5.3	Searching for a source of difference in undirected graphical models for count data – an empirical study. <i>Federico Agostinis, Monica Chiogna, Vera Djordjilovic, Luna Pianesi and Chiara Romualdi</i>	689
4.5.4	Snipped robust inference in mixed linear models. <i>Antonio Lucadamo, Luca Greco, Pietro Amenta and Anna Crisci</i>	695

4.6	Advances in time series	701
4.6.1	A spatio-temporal model for events on road networks: an application to ambulance interventions in Milan. <i>Andrea Gilardi and Riccardo Borgoni and Jorge Mateu</i>	702
4.6.2	Forecasting electricity demand of individual customers via additive stacking. <i>Christian Capezza, Biagio Palumbo, Yannig Goude, Simon N. Wood and Matteo Fasiolo</i>	708
4.6.3	Hierarchical Forecast Reconciliation on Italian Covid-19 data. <i>Andrea Marcocchia, Serena Arima and Pierpaolo Brutti</i>	714
4.6.4	Link between Threshold ARMA and tdARMA models. <i>Guy M�elard and Marcella Niglio</i>	720
4.7	Bayesian nonparametrics	726
4.7.1	Bayesian nonparametric prediction: from species to features. <i>Lorenzo Masoero, Federico Camerlenghi, Stefano Favaro and Tamara Broderick</i>	727
4.7.2	A framework for filtering in hidden Markov models with normalized random measures. <i>Filippo Ascolani, Antonio Lijoi, Igor Pr�unster and Matteo Ruggiero</i>	733
4.7.3	On the convex combination of a Dirichlet process with a diffuse probability measure. <i>Federico Camerlenghi, Riccardo Corradin and Andrea Ongaro</i>	739
4.7.4	Detection of neural activity in calcium imaging data via Bayesian mixture models. <i>Laura D'Angelo, Antonio Canale, Zhaoxia Yu and Michele Guindani</i>	745
4.8	Clustering for complex data	751
4.8.1	Clustering categorical data via Hamming distance. <i>Edoardo Filippi-Mazzola, Raffaele Argiento and Lucia Paci</i>	752
4.8.2	Penalized model-based clustering for three-way data structures. <i>Andrea Cappelozzo, Alessandro Casa, and Michael Fop</i>	758
4.8.3	Does Milan have a smart mobility? A clustering analysis approach. <i>Nicola Cornali, Matteo Seminati, Paolo Maranzano and Paola M. Chiodini</i>	764
4.8.4	A Fuzzy clustering approach for textual data. <i>Irene Cozzolino, Maria Brigida Ferraro and Peter Winker</i>	770
4.8.5	Valid Double-Dipping via Permutation-Based Closed Testing. <i>Anna Vesely, Livio Finos, Jelle J. Goeman and Angela Andreella</i>	776
4.9	Data science for complex data	782
4.9.1	Text mining on large corpora using Taltac4: An explorative analysis of the USPTO patents database. <i>Pasquale Pavone, Arianna Martinelli and Federico Tamagni</i>	783
4.9.2	Emotion pattern detection on facial videos using functional statistics. <i>Rongjiao Ji, Alessandra Micheletti, Natasa Krklec Jerinkic and Zoranka Desnica</i>	789
4.9.3	The spread of contagion on Twitter: identification of communities analysing data from the first wave of the COVID-19 epidemic. <i>Gianni Andreatozzi, Salvatore Pirri, Giuseppe Turchetti and Valentina Lorenzoni</i>	795
4.9.4	Composition-on-Function Regression Model for the Remote Analysis of Near-Earth Asteroids. <i>Mara S. Bernardi, Matteo Fontana, Alessandra Menafoglio, Alessandro Pisello, Massimiliano Porreca, Diego Perugini and Simone Vantini</i>	801
4.9.5	Determinants of football coach dismissal in Italian League Serie A. <i>Francesco Porro, Marialisa Restaino, Juan Eloy Ruiz-Castro and Mariangela Zenga</i>	805
4.10	Data science for unstructured data	810
4.10.1	Identification and modeling of stop activities at the destination from GPS tracking data. <i>Nicoletta D'Angelo, Giada Adelfio, Antonino Abbruzzo and Mauro Ferrante</i>	811

4.10.2	A generalization of derangement. <i>Maurizio Maravalle and Ciro Marziliano</i>	817
4.10.3	Analysis of clickstream data with mixture hidden markov models. <i>Furio Urso, Antonino Abbruzzo and Maria Francesca Cracolici</i>	823
4.10.4	Using Google Scholar to measure the credibility of preprints in the COVID-19 Open Research Dataset (CORD-19). <i>Manlio Migliorati, Maurizio Carpita, Eugenio Brentari</i>	829
4.10.5	Mobile phone use while driving: a Structural Equation Model to analyze the Behavior behind the wheel. <i>Carlo Cavicchia and Pasquale Samacchiaro</i>	835
4.11	Demographic analysis	841
4.11.1	Life expectancy in the districts of Taranto. <i>Stefano Cervellera, Carlo Cusatelli and Massimiliano Giacalone</i>	842
4.11.2	Family size and Human Capital in Italy: a micro-territorial analysis. <i>Gabriele Ruii, Marco Breschi and Alessio Fornasin</i>	848
4.11.3	Estimate age-specific fertility rates from summary demographic measures. An Indirect Model Levering on Deep Neural Network. <i>Andrea Nigri</i>	854
4.11.4	Patterns in the relation between causes of death and gross domestic product. <i>Andrea Nigri and Federico Crescenzi</i>	860
4.11.5	Locally sparse functional regression with an application to mortality data. <i>Mauro Bernardi, Antonio Canale, Marco Stefanucci</i>	866
4.12	Environmental statistics	871
4.12.1	A Distribution-Free Approach for Detecting Radioxenon Anomalous Concentrations. <i>Michele Scagliarini, Rosanna Gualdi, Giuseppe Ottaviano, Antonietta Rizzo and Franca Padoani</i>	872
4.12.2	Ecosud Car, a novel approach for the predictive control of the territory. <i>Giacomo Iula, Massimo Dimo, Saverio Gianluca Crisafulli, Marco Vito Calciano, Vito Santarcangelo and Massimiliano Giacalone</i>	878
4.12.3	Effect of ties on the empirical copula methods for weather forecasting. <i>Elisa Perrone, Fabrizio Durante and Irene Schicker</i>	884
4.12.4	Spatio-temporal regression with differential penalization for the reconstruction of partially observed signals. <i>Eleonora Amone and Laura M. Sangalli</i>	890
4.12.5	Sea Surface Temperature Effects on the Mediterranean Marine Ecosystem: a Semiparametric Model Approach. <i>Claudio Rubino, Giacomo Milisenda, Antonino Abbruzzo, Giada Adelfio, Mar Bosch-Belmar, Francesco Colloca, Manfredi Di Lorenzo and Vita Gancitano</i>	895
4.13	Functional data analysis	901
4.13.1	Remote Analysis of Chapas Stops in Maputo from GPS data: a Functional Data Analysis Approach. <i>Agostino Torti, Davide Ranieri and Simone Vantini</i>	902
4.13.2	A Conformal approach for functional data prediction. <i>Jacopo Diquigiovanni, Matteo Fontana and Simone Vantini</i>	907
4.13.3	Block testing in covariance and precision matrices for functional data analysis. <i>Marie Morvan, Alessia Pini, Madison Giacomci and Valerie Monbet</i>	911
4.13.4	Analysing contributions of ages and causes of death to gender gap in life expectancy using functional data analysis. <i>Alessandro Feraldi, Virginia Zarulli, Stefano Mazzuco and Cristina Giudici</i>	917
4.13.5	Supervised classification of ECG curves via a combined use of functional data analysis and random forest to identify patients affected by heart disease. <i>Fabrizio Maturo and Rosanna Verde</i>	923

4.14	Mixture models	929
4.14.1	Alternative parameterizations for regression models with constrained multivariate responses. <i>Roberto Ascari, Agnese Maria Di Brisco, Sonia Migliorati and Andrea Ongaro</i>	930
4.14.2	Spatially dependent mixture models with a random number of components. <i>Matteo Gianella, Mario Beraha and Alessandra Guglielmi</i>	936
4.14.3	Finite mixtures of regression models for longitudinal data. <i>Marco Alfò and Roberto Rocci</i>	942
4.14.4	Mixtures of regressions for size estimation of heterogeneous populations. <i>Gianmarco Caruso</i>	948
4.14.5	Finite mixtures of regressions with random covariates using multivariate skewed distributions. <i>Salvatore D. Tomarchio, Michael P.B. Gallagher, Antonio Punzo and Paul D. McNicholas</i>	954
4.15	New applications of regression models	960
4.15.1	The Shapley-Lorenz decomposition approach to mitigate cyber risks. <i>Paolo Giudici and Emanuela Raffinetti</i>	960
4.15.2	A spatially adaptive estimator for the function-on-function linear regression model with application to the Swedish Mortality dataset. <i>Fabio Centofanti, Antonio Lepore, Alessandra Menafoglio, Biagio Palumbo and Simone Vantini</i>	967
4.15.3	POSetR: a new computationally efficient R package for partially ordered data. <i>Alberto Arcagni, Alessandro Avellone and Marco Fattore</i>	972
4.15.4	Multi Split Conformal Prediction. <i>Aldo Solari and Vera Djordjilović</i>	978
4.15.5	Changes in the consumption of fruits and vegetables among university students during master courses: an analysis of data automatically collected from cashier transactions. <i>Valentina Lorenzoni, Giuseppe Turchetti and Lucio Masserini</i>	984
4.16	New challenges in clustering and classification techniques	990
4.16.1	A Dynamic Stochastic Block Model with infinite communities. <i>Roberto Casarin and Ovielt Baltodano López</i>	991
4.16.2	Cross-Subject EEG Channel Selection for the Detection of Predisposition to Alcoholism. <i>Michela Carlotta Massi and Francesca Ieva</i>	997
4.16.3	Some Issues on the Parameter Selection in the Spectral Methods for Clustering. <i>Cinzia Di Nuzzo and Salvatore Ingrassia</i>	1003
4.16.4	The link-match tale: new microdata from unit level association. <i>Riccardo D'Alberto, Meri Raggi and Daniela Cocchi</i>	1009
4.17	New developments in Bayesian methods	1015
4.17.1	Spatio-temporal analysis of the Covid-19 spread in Italy by Bayesian hierarchical models. <i>Nicoletta D'Angelo, Giada Adelfio and Antonino Abbruzzo</i>	1016
4.17.2	Modelling of accumulation curves through Weibull survival functions. <i>Alessandro Zito, Tommaso Rigon and David B. Dunson</i>	1021
4.17.3	Model fitting and Bayesian inference via power expectation propagation. <i>Emanuele Degani, Luca Maestrini and Mauro Bernardi</i>	1026
4.17.4	Bayesian quantile estimation in deconvolution. <i>Catia Scricciolo</i>	1032
4.17.5	Bayesian inference for discretely observed non-homogeneous Markov processes. <i>Rosario Barone and Andrea Tancredi</i>	1038

4.18	New developments in composite indicators applications	1044
4.18.1	Building composite indicators in the functional domain: a suggestion for an evolutionary HDI. <i>Francesca Fortuna, Alessia Naccarato and Silvia Terzi</i>	1045
4.18.2	Small Area Estimation of Inequality Measures via Simplex Regression. <i>Silvia De Nicolò, Maria Rosaria Ferrante and Silvia Pacei</i>	1051
4.18.3	Relational Well-Being and Poverty in Italy Benessere relazionale e povertà in Italia. <i>Elena Dalla Chiara and Federico Perali</i>	1057
4.18.4	A composite indicator to assess sustainability of agriculture in European Union countries. <i>Alessandro Magrini and Francesca Giambona</i>	1063
4.18.5	Interval-Based Composite Indicators with a Triplex Representation: A Measure of the Potential Demand for the “Ristori” Decree in Italy. <i>Carlo Drago</i>	1069
4.19	New developments in GLM theory and applications	1075
4.19.1	Variational inference for the smoothing distribution in dynamic probit models. <i>Augusto Fasano and Giovanni Rebaudo</i>	1076
4.19.2	Interpretability and interaction learning for logistic regression models. <i>Nicola Rares Franco, Michela Carliotta Massi, Francesca Ieva and Anna Maria Paganoni</i>	1082
4.19.3	Entropy estimation for binary data with dependence structures. <i>Linda Altieri and Daniela Cocchi</i>	1088
4.19.4	A Comparison of Some Estimation Methods for the Three-Parameter Logistic Model. <i>Michela Battauz and Ruggero Bellio</i>	1094
4.19.5	A statistical model to identify the price determinations: the case of Airbnb. <i>Giulia Contu, Luca Frigau, Gian Paolo Zammarchi and Francesco Mola</i>	1100
4.20	New developments in social statistics analysis	1106
4.20.1	Data-based Evaluation of Political Agents Against Goals Scheduling. <i>Giulio D'Epifanio</i>	1107
4.20.2	Local heterogeneities in population growth and decline. A spatial analysis for Italian municipalities. <i>Federico Benassi, Annalisa Busetta, Gerardo Gallo and Manuela Stranges</i>	1113
4.20.3	The assessment of environmental and income inequalities. <i>Michele Costa</i>	1119
4.20.4	Household financial fragility across Europe. <i>Marianna Brunetti, Elena Giarda and Costanza Torricelli</i>	1125
4.20.5	Refugees' perception of their new life in Germany. <i>Daria Mendola and Anna Maria Parroco</i>	1131
4.21	New perspectives in clinical trials	1137
4.21.1	Improved maximum likelihood estimator in relative risk regression. <i>Euloge C. Kenne Pagui, Francesco Pozza and Alessandra Salvan</i>	1138
4.21.2	Development and validation of a clinical risk score to predict the risk of SARS-CoV-2 infection. <i>Laura Savaré, Valentina Orlando and Giovanni Corrao</i>	1144
4.21.3	Functional representation of potassium trajectories for dynamic monitoring of Heart Failure patients. <i>Caterina Gregorio, Giulia Barbatì and Francesca Ieva</i>	1150
4.21.4	Effect of lung transplantation on the survival of patients with cystic fibrosis: IMaCh contribution to registry data. <i>Cristina Giudici, Nicolas Brouard and Gil Bellis</i>	1156
4.21.5	Categories and Clusters to investigate Similarities in Diabetic Kidney Disease Patients. <i>Veronica Distefano, Maria Mannone, Claudio Silvestri and Irene Poli</i>	1162

4.22	New perspectives in models for multivariate dependency	1168
4.22.1	Parsimonious modelling of spectroscopy data via a Bayesian latent variables approach. <i>Alessandro Casa, Tom F. O'Callaghan and Thomas Brendan Mur</i>	1169
4.22.2	Bias reduction in the equicorrelated multivariate normal. <i>Elena Bortolato and Euloge Clovis Kenne Pagui</i>	1175
4.22.3	Some results on identifiable parameters that cannot be identified from data. <i>Christian Hennig</i>	1181
4.23	Novel approaches for official statistics	1187
4.23.1	Web data collection: profiles of respondents to the Italian Population Census. <i>Elena Grimaccia, Gerardo Gallo, Alessia Naccarato, Novella Cecconi and Alessandro Fratoni</i>	1188
4.23.2	Trusted Smart Surveys: architectural and methodological challenges at a glance. <i>Mauro Bruno, Francesca Inglese and Giuseppina Ruocco</i>	1194
4.23.3	On bias correction in small area estimation: An M-quantile approach. <i>Gaia Bertarelli, Francesco Schirripa Spagnolo, Raymond Chambers and David Haziza</i>	1200
4.23.4	The address component of the Statistical Base Register of Territorial Entities. <i>Davide Fardelli, Enrico Orsini and Andrea Pagano</i>	1206
4.23.5	A well-being municipal indicator using census data: first results. <i>Massimo Esposito</i>	1212
4.24	Prior distribution for Bayesian analysis	1218
4.24.1	On the dependence structure in Bayesian nonparametric priors. <i>Filippo Ascolani, Beatrice Franzolini, Antonio Lijoi, and Igor Prünster</i>	1219
4.24.2	Anisotropic determinantal point processes and their application in Bayesian mixtures. <i>Lorenzo Ghilotti, Mario Beraha and Alessandra Guglielmi</i>	1226
4.24.3	Bayesian Screening of Covariates in Linear Regression Models Using Correlation Thresholds. <i>Ioannis Ntzoufras and Roberta Paroli</i>	1232
4.25	Recent advances in clustering methods	1238
4.25.1	Biclustering longitudinal trajectories through a model-based approach. <i>Francesca Martella, Marco Alfò and Maria Francesca Marino</i>	1239
4.25.2	Monitoring tools for robust estimation of Cluster Weighted models. <i>Andrea Cappozzo and Francesca Greselin</i>	1245
4.25.3	Co-clustering Models for Spatial Transcriptomics: Analysis of a Human Brain Tissue Sample. <i>Andrea Sottosanti and Davide Risso</i>	1251
4.25.4	Graph nodes clustering: a comparison between algorithms. <i>Ilaria Bombelli</i>	1257
4.26	Social demography	1263
4.26.1	Childcare among migrants: a comparison between Italy and France. <i>Eleonora Trappolini, Elisa Barbiano di Belgiojoso, Stefania Maria Lorenza Rimoldi and Laura Terzera</i>	1264
4.26.2	Employment Uncertainty and Fertility in Italy: The Role of Union Formation. <i>Giammarco Alderotti, Valentina Tocchioni and Alessandra De Rose</i>	1270
4.26.3	Determinants of union dissolution in Italy: Do children matter? <i>Valentina Tocchioni, Daniele Vignoli, Eleonora Meli and Bruno Arpino</i>	1276
4.26.4	Working schedules and fathers' time with children: A Sequence Analysis. <i>Annalisa Donno and Maria Letizia Tanturri</i>	1282
4.26.5	Correlates of the non-use of contraception among female university students in Italy. <i>Annalisa Busetta, Alessandra De Rose and Daniele Vignoli</i>	1288

4.27	Social indicators applications and methods	1294
4.27.1	A logistic regression model for predicting child language performance. <i>Andrea Briglia, Massimo Mucciardi and Giovanni Pirrotta</i>	1295
4.27.2	Subject-specific measures of interrater agreement for ordinal scales. <i>Giuseppe Bove</i>	1301
4.27.3	A Tucker3 method application on adjusted-PMRs for the study of work-related mortality. <i>Vittoria Carolina Malpassuti, Vittoria La Serra and Stefania Massari</i>	1307
4.27.4	Two case-mix adjusted indices for nursing home performance evaluation. <i>Giorgio E. Montanari and Marco Doretti</i>	1313
4.27.5	The ultrametric covariance model for modelling teachers' job satisfaction. <i>Carlo Cavicchia, Maurizio Vichi and Giorgia Zaccaria</i>	1319
4.28	Some recent developments in compositional data analysis	1325
4.28.1	A Robust Approach to Microbiome-Based Classification Problems. <i>Gianna Serafina Monti and Peter Filzmoser</i>	1326
4.28.2	What is a convex set in compositional data analysis? <i>Jordi Saperas i Riera, Josep Antoni Martín Fernández</i>	1332
4.28.3	Compositional Analysis on the Functional Distribution of Extended Income. <i>Elena Dalla Chiara and Federico Perali</i>	1338
4.28.4	Evaluating seasonal-induced changes in river chemistry using Principal Balances. <i>Caterina Gozzi and Antonella Buccianti</i>	1344
4.28.5	Compositional Data Techniques for the Analysis of the Ragweed Allergy. <i>Gianna S. Monti, Maira Bonini, Valentina Ceriotti, Matteo Pelagatti and Claudio M. Ortolani</i>	1350
4.29	Spatial data analysis	1356
4.29.1	Spatial multilevel mixed effects modeling for earthquake insurance losses in New Zealand. <i>F. Marta L. Di Lascio and Selene Perazzini</i>	1357
4.29.2	Weighted distances for spatially dependent functional data. <i>Andrea Diana, Elvira Romano, Claire Miller and Ruth O'Donnell</i>	1363
4.29.3	Spatial modeling of childcare services in Lombardia. <i>Emanuele Aliverti, Stefano Campostrini, Federico Caldura and Lucia Zanotto</i>	1369
4.29.4	On the use of a composite attractiveness index for the development of sustainable tourist routes. <i>Claudia Cappello, Sandra De Iaco, Sabrina Maggio and Monica Palma</i>	1375
4.30	Statistical applications in education	1381
4.30.1	Does self-efficacy influence academic results? A separable-effect mediation analysis. <i>Chiara Di Maria</i>	1382
4.30.2	Statistics Knowledge assessment: an archetypal analysis approach. <i>Bruno Adabbo, Rosa Fabbricatore, Alfonso Iodice D'Enza and Francesco Palumbo</i>	1388
4.30.3	Exploring drivers for Italian university students' mobility: first evidence from AlmaLaurea data. <i>Giovanni Boscaino and Vincenzo Giuseppe Genova</i>	1394
4.30.4	Can Grading Policies influence the competition among Universities of different sizes? <i>Gabriele Lombardi and Antonio Pio Distaso</i>	1400
4.30.5	The class A journals and the Italian academic research outcomes in Statistical Sciences. <i>Maria Maddalena Barbieri, Francesca Bassi, Antonio Irpino and Rosanna Verde</i>	1406
4.31	Statistical methods for finance	1412
4.31.1	Hypotheses testing in mixed-frequency volatility models: a bootstrap approach. <i>Vincenzo Candila and Lea Petrella</i>	1413

4.31.2	Quantile Regression Forest with mixed frequency Data. <i>Mila Andreani, Vincenzo Candila and Lea Petrella</i>	1419
4.31.3	Higher order moments in Capital Asset Pricing Model betas. <i>Giuseppe Arbia, Riccardo Bramante and Silvia Facchinetti</i>	1425
4.31.4	When Does Sentiment Matter in Predicting Cryptocurrency Bubbles? <i>Arianna Agosto and Paolo Pagnottoni</i>	1431
4.32	Statistical methods for high dimensional data	1437
4.32.1	Virtual biopsy in action: a radiomic-based model for CALI prediction. <i>Francesca Ieva, Giulia Baroni, Lara Cavinato, Chiara Masci, Guido Costa, Francesco Fiz, Arturo Chiti and Luca Viganò</i>	1438
4.32.2	Functional alignment by the “light” approach of the von Mises-Fisher-Procrustes model. <i>Angela Andreella and Livio Finos</i>	1444
4.32.3	A screening procedure for high-dimensional autologistic models. <i>Rodolfo Metulini and Francesco Giordano</i>	1450
4.32.4	Covariate adjusted censored gaussian lasso estimator. <i>Luigi Augugliaro, Gianluca Sottile and Veronica Vinciotti</i>	1456
4.32.5	Ranking-Based Variable Selection for ultra-high dimensional data in GLM framework. <i>Francesco Giordano, Marcella Niglio and Marialuisa Restaino</i>	1462
4.33	Statistical methods in higher education	1468
4.33.1	Effects of remote teaching on students' motivation and engagement: the case of the University of Modena & Reggio Emilia. <i>Isabella Morlini and Laura Sartori</i>	1469
4.33.2	A random effects model for the impact of remote teaching on university students' performance. <i>Silvia Bacci, Bruno Bertaccini, Simone Del Sarto, Leonardo Grilli and Carla Rampichini</i>	1475
4.33.3	Multinomial semiparametric mixed-effects model for profiling engineering university students. <i>Chiara Masci, Francesca Ieva and Anna Maria Paganoni</i>	1481
4.33.4	Evaluating Italian universities: ANVUR periodic accreditation judgment versus international rankings. <i>Angela Maria D'Uggento, Nunziata Ribecco and Vito Ricci</i>	1487
4.33.5	Women's career discrimination in the Italian Academia in the last 20. <i>Daniele Cuntrera, Vincenzo Falco and Massimo Attanasio</i>	1493
4.34	Statistical methods with Bayesian networks	1499
4.34.1	Statistical Micro Matching Using Bayesian Networks. <i>Pier Luigi Conti, Daniela Marella, Paola Vicard and Vincenzina Vitale</i>	1500
4.34.2	Modeling school managers challenges in the pandemic era with Bayesian networks. <i>Maria Chiara De Angelis and Flaminia Musella and Paola Vicard</i>	1506
4.34.3	Structural learning of mixed directed acyclic graphs: a copula-based approach. <i>Federico Castelletti</i>	1512
4.34.4	Inference on Markov chains parameters via Large Deviations ABC. <i>Cecilia Viscardi, Fabio Corradi, Michele Boreale and Antonietta Mira</i>	1518
4.34.5	A propensity score approach for treatment evaluation based on Bayesian Networks. <i>Federica Cugnata, Paola M.V. Rancoita, Pier Luigi Conti, Alberto Briganti, Clelia Di Serio, Fulvia Mecatti and Paola Vicard</i>	1524
4.35	Statistical modelling for the analysis of contemporary societies	1530
4.35.1	Social Network Analysis to analyse the relationship between 'victim-author' and 'motivation' of violence against women in Italy. <i>Alessia Forciniti</i>	1531
4.35.2	Satisfaction and sustainability propensity among elderly bike-sharing users. <i>Paolo Maranzano, Roberto Ascari, Paola Maddalena Chiodini and Giancarlo Manzi</i>	1537

4.35.3	Media and Investors' Attention. Estimating analysts' ratings and sentiment of a financial column to predict abnormal returns. <i>Riccardo Ferretti and Andrea Sciandra</i>	1543
4.35.4	Predictions of regional HCE: spatial and time patterns in an ageing population framework. <i>Laura Rizzi, Luca Grassetti, Divya Brundavanam, Alvisa Palese and Alessio Fornasin</i>	1549
4.36	Surveillance methods and statistical models in the Covid-19 crisis	1555
4.36.1	The Italian Social Mood on Economy Index during the Covid-19 Crisis. <i>Alessandra Righi and Diego Zardetto</i>	1556
4.36.2	Modeling the first wave of the COVID-19 pandemic in the Lombardy region, Italy, by using the daily number of swabs. <i>Claudia Furlan and Cinzia Mortarino</i>	1562
4.36.3	Analysing the Covid-19 pandemic in Italy with the SIPRO model. <i>Martina Amongero, Enrico Bibbona and Gianluca Mastrantonio</i>	1568
4.36.4	Intentions of union formation and dissolution during the COVID-19 pandemic. <i>Bruno Arpino and Daniela Bellani</i>	1574
4.37	Time series methods	1580
4.37.1	Bootstrap-based score test for INAR effect. <i>Riccardo Ievoli and Lucio Palazzo</i>	1581
4.37.2	Evaluating the performance of a new picking algorithm based on the variance piecewise constant models. <i>Nicoletta D'Angelo, Giada Adelfio, Antonino D'Alessandro and Marcello Chiodi</i>	1587
4.37.3	Conditional moments based time series cluster analysis. <i>Raffaele Mattera and Germana Scepti</i>	1593
4.37.4	On the asymptotic mean-squared prediction error for multivariate time series. <i>Gery Andrés Díaz Rubio, Simone Giannerini, and Greta Goracci</i>	1599
4.37.5	Spherical autoregressive change-point detection with applications. <i>Federica Spoto, Alessia Caponera and Pierpaolo Brutti</i>	1605
5	Posters	1611
5.1	A method for incorporating historical information in non-inferiority trials. <i>Fulvio De Santis and Stefania Gubbiotti</i>	1612
5.2	Optimal credible intervals under alternative loss functions. <i>Fulvio De Santis and Stefania Gubbiotti</i>	1618
5.3	Statistical learning for credit risk modelling. <i>Veronica Bacino, Alessio Zoccarato, Caterina Liberati and Matteo Borrotti</i>	1624
5.4	Evaluating heterogeneity of agreement with strong prior information. <i>Federico M. Stefanini</i>	1630
5.5	Analysis of the spatial interdependence of the size of endoreduplicated nuclei observed in confocal microscopy. <i>Ivan Sciascia, Andrea Crosino, Gennaro Carotenuto and Andrea Genre</i>	1636
5.6	A Density-Peak Approach to Clustering Graph-Structured Data. <i>Riccardo Giubilei</i>	1642
5.7	The employment situation of people with disabilities in Tuscany, A Survey on the workplace. <i>Paolo Addis, Alessandra Coli and Gianfranco Francese</i>	1648
5.8	Robustness of statistical methods for modeling paired count data using bivariate discrete distributions with general dependence structures. <i>Marta Nai Ruscone and Dimitris Karlis</i>	1654

6	Satellite events	1660
6.1	Measuring uncertainty in key official economic statistics	1661
6.1.1	Uncertainty in production and communication of statistics: challenges in the new data ecosystem. <i>Giorgio Alleva and Piero Demetrio Falorsi</i>	1662
6.1.2	Uncertainty and variance estimation techniques for poverty and inequality measures from complex surveys: a simulation study. <i>Riccardo De Santis, Lucio Barabesi and Gianni Betti</i>	1668
6.1.3	Pandemics and uncertainty in business cycle analysis. <i>Jacques Anas, Monica Billio, Leonardo Carati, Gian Luigi Mazzi and Hionia Vlachou</i>	1674
6.2	Covid-19: the urgent call for a unified statistical and demographic challenge	1680
6.2.1	Environmental epidemiology and the Covid-19 pandemics	1681
6.2.1.1	The Covid-19 outbreaks and their environment: The Valencian human behaviour. <i>Xavier Barber, Elisa Espín, Lucía Guevara, Aurora Mula, Kristina Polotskaya and Alejandro Rabasa</i>	1682
6.2.2	Estimation of Covid 19 prevalence	1686
6.2.2.1	Optimal spatial sampling for estimating the SARS-Cov-2 crucial parameters. <i>Piero Demetrio Falorsi and Vincenzo Nardelli</i>	1687
6.2.2.2	Survey aimed to estimate the seroprevalence of SARS-CoV-2 infection in Italian population at national and regional level. <i>Stefano Falorsi, Michele D'Alò, Claudia De Vitiis, Andrea Fasulo, Danila Filippini, Alessio Guandalini, Francesca Inglese, Orietta Luzi, Enrico Orsini and Roberta Radini</i>	1693
6.2.3	Measuring and modeling inequalities following the Covid-19 crisis	1699
6.2.3.1	COVID-19 impacts on young people's life courses: first results. <i>Antonietta Bisceglia, Concetta Scolorato and Giancarlo Ragozini</i>	1700
6.2.3.2	Exploring Students' Profile and Performance Before and After Covid-19 Lock-down. <i>Cristina Davino and Marco Gherghi</i>	1705
6.2.4	Nowcasting the Covid-19 outbreaks methods and applications	1711
6.2.4.1	Modeling subsequent waves of COVID-19 outbreak: A change point growth model. <i>Luca Greco, Paolo Girardi and Laura Ventura</i>	1712
6.2.4.2	The second wave of SARS-CoV-2 epidemic in Italy through a SIRD model. <i>Michela Baccini and Giulia Cereda</i>	1718
6.2.5	The impact of Covid-19 on survey methods	1724
6.2.5.1	Collecting cross-national survey data during the COVID-19 pandemic: Challenges and implications of data collection for the 50+ population in the Survey of Health, Ageing and Retirement in Europe (SHARE). <i>Michael Bergmann, Arne Bethmann, Yuri Pettinicchi and Borsch-Supan</i>	1725
6.2.5.2	Adapting a Long-Term Panel Survey to Pandemic Conditions. <i>Peter Lynn</i>	1731
6.2.6	Young contributions in Covid-19 statistical modelling	1737
6.2.6.1	Statistical communication of COVID-19 epidemic using widely accessible interactive tools. <i>Marco Mingione and Pierfrancesco Alaimo Di Loro</i>	1738
6.2.6.2	Modelling COVID-19 evolution in Italy with an augmented SIRD model using open data. <i>Vincenzo Nardelli, Giuseppe Arbia, Andrea Palladino and Luigi Giuseppe Atzeni</i>	1744