

FILIPPO TRENTINI

Lecturer at the department of Decision Sciences, Bocconi University

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EDUCATION

Abilitazione Nazionale Scientifica (ASN)

Since October 2022, I achieved the National Scientific qualification as Associate Professor for the disciplinary field of Medical Statistics.

PhD, Statistics

01/2008 - 04/2012, Bocconi University, Department of Decision Sciences, Milan

THESIS: Bayesian hierarchical models for the integration of genomic platforms.

The aim of the thesis was to predict the survival outcome of breast cancer patients through the integrated analysis of gene expression and copy number variation data.

Supervisor: Prof. Pietro Muliere

Visiting PhD student

09/2009 - 08/2010, MD Anderson Cancer Center, Houston

I worked under the supervision of Prof. Peter Müller on the design and development of Bayesian hierarchical methods for the integration of -omics data to achieve a better understanding of different breast cancer mechanism and treatment selections.

Master in applied mathematics and statistics

01/2005 - 01/2006, Bicocca University, Department of Mathematics, Milan

THESIS: Scoring methods for the analysis of clients' insolvency. The aim of the thesis was to develop machine learning methods for the prediction of clients' insolvency. Supervision: Prof. F. Ruggeri

Degree in Mathematics

10/1999 - 11/2004, Bicocca University, Department of Mathematics, Milan

THESIS: Cryptography and group theory: the Rijndael protocol and its permutation groups. Grade: 105/110

RESEARCH TOPICS

Mathematical and statistical modeling
Infectious diseases
Socio-economic disparities in health
Health economics
Survey design methodology

TOOLS

Statistical Analysis, R and Python
Mathematical modeling, C
Data mining, R and Python

FILIPPO TRENTINI

Researcher & Data scientist

PROFESSIONAL EXPERIENCE

Lecturer - Bocconi University

09/2023 - current, Department of Decision Sciences

Lecturer at the Department of Decision Sciences

Senior researcher - Bocconi University

06/2021 - 8/2023, Dondena Centre for Research on Social Dynamics and Public Policy

Researcher within the ERC Consolidator Grant IMMUNE - Modelling the Impact of Human Behaviours on Infections Spread

Researcher and data scientist - Fondazione Bruno Kessler

06/2018 - 05/2021, Dynamical Processes in Complex Societies Trento (Italy)

Researcher in mathematical and statistical modeling of infectious diseases. My work in DPCS lab focused on developing quantitative epidemiological models to investigate the spread of infectious diseases in different socio-economic contexts, with a particular interest on measles, seasonal influenza and COVID-19.

Postdoctoral researcher - Bocconi University

04/2014 - 05/2018, Dondena Centre for Research on Social Dynamics and Public Policy

Researcher in mathematical methods for economics and finance (13/D4). I have been working as an expert in statistics and epidemiology on the project LExEM and on the ERC funded project DECIDE.

Postdoctoral researcher - Vita e Salute San Raffaele University

04/2012- 03/2014, University Centre for Statistics in the Biomedical Sciences

Researcher in statistics (SECS-S/01)

Title: Bayesian computational statistics for high dimensional data

OTHER RESEARCH ACTIVITIES

Affiliated Researcher

03/2020 - current

Responsible for the experimental design, data analysis and writing of periodic bulletins and scientific papers within the study group for the Immunological Monitoring post Covid-19 vaccination (Leader: National Institute of Health ISS)

Affiliated Researcher

03/2020 - 03/2023

Responsible for the experimental design, data analysis and writing of periodic bulletins and scientific papers within the study group for the Evaluation of the prevalence of SARS-CoV-2 variants of concerns in Italy (Leader: National Institute of Health ISS)

Affiliated Researcher

01/2020 - 01/2021

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Researcher & Data scientist

Writing of the National Strategic Operational Plan for Pandemic Influenza Preparedness and Response (PanFlu) 2021-2023

Researcher

09/2018 - 01/2020

Responsible for the experimental design, training of data collectors, field data collection, data analysis and writing of scientific papers within the project "SURVETHI - "RAFFORZAMENTO DEL SISTEMA DI SORVEGLIANZA E CONTROLLO DELLE MALATTIE INFETTIVE IN ETIOPIA" financed by the Italian Agency for Cooperation and Development (MAE).

TEACHING EXPERIENCE

AA 2023-2024

Instructor of the courses of Statistics

Bocconi University, Department of Decision Sciences, Milan

Responsible of two classes in the Bachelor of Economics and Management

Instructor of the courses of Data Analytics and Visualization

Bocconi University, Department of Decision Sciences, Milan

Responsible of one class in the Master Degree in Economics and Management of Innovation and Technology

AA 2022-2023

Adjunct professor in the courses of Simulation and Modeling

Bocconi University, Department of Social and Political Sciences, Milan

12 hours of frontal sessions (Python)

Adjunct professor in the courses of Statistics

Bocconi University, Department of Decision Sciences, Milan

20 hours of frontal lectures (English class)

AA 2021-2022

Teaching assistant in the courses of Simulation and Modeling

Bocconi University, Department of Social and Political Sciences, Milan

12 hours of frontal sessions (Python)

AA 2017-2018

Teaching assistant in the course of Statistics

Bocconi University, Department of Decision Sciences, Milan

40 hours of frontal sessions + 40 hours of assistance to students/exams

Teaching assistant in the course of Data Analysis

Bocconi University, Department of Decision Sciences, Milan

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Researcher & Data scientist

10 hours of frontal sessions (software R) + 20 hours of assistance to students/exams

Adjunct professor in the courses of Statistics

Bocconi University, Department of Decision Sciences, Milan

40 hours of frontal lectures (English classes)

AA 2016-2017

Teaching assistant in the course of Statistics

Bocconi University, Department of Decision Sciences, Milan

40 hours of frontal sessions + 40 hours of assistance to students/exams

Teaching assistant in the course of Data Analysis

Bocconi University, Department of Decision Sciences, Milan

10 hours of frontal sessions (software R) + 20 hours of assistance to students/exams

Adjunct professor in the courses of Statistics

Bocconi University, Department of Decision Sciences, Milan

40 hours of frontal lectures (English classes)

AA 2015-2016

Teaching assistant in the course of Statistics

Bocconi University, Department of Decision Sciences, Milan

40 hours of frontal sessions + 50 hours of assistance to students/exams

Teaching assistant in the course of Data Analysis

Bocconi University, Department of Decision Sciences, Milan

10 hours of frontal sessions (software R) + 15 hours of assistance to students/exams

Adjunct professor in the courses of Statistics

Bocconi University, Department of Decision Sciences, Milan

20 hours of frontal lectures (English class)

AA 2014-2015

Teaching assistant in the course of Statistics

Bocconi University, Department of Decision Sciences, Milan

40 hours of frontal sessions + 50 hours of assistance to students/exams

Teaching assistant in the course of Data Analysis

Bocconi University, Department of Decision Sciences, Milan

10 hours of frontal sessions (software R) + 15 hours of assistance to students/exams

Adjunct professor in the courses of Statistics

Bocconi University, Department of Decision Sciences, Milan

20 hours of frontal lectures (English class)

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Researcher & Data scientist

AA 2013-2014

Teaching assistant in the course of Statistics

Bocconi University, Department of Decision Sciences, Milan

40 hours of frontal sessions + 50 hours of assistance to students/exams

Teaching assistant in the course of Data Analysis

Bocconi University, Department of Decision Sciences, Milan

10 hours of frontal sessions (software R) + 15 hours of assistance to students/exams

Adjunct professor in the courses of Statistics

Vita e Salute San Raffaele University, Department of Medicine and Psychology, Milan

10 hours of frontal lectures (software SPSS)

Adjunct professor in the courses of Statistics

Bocconi University, Department of Decision Sciences, Milan

20 hours of frontal lectures (English class)

AA 2012-2013

Teaching assistant in the course of Statistics

Bocconi University, Department of Decision Sciences, Milan

20 hours of frontal sessions + 25 hours of assistance to students/exams

Teaching assistant in the course of Data Analysis

Bocconi University, Department of Decision Sciences, Milan

10 hours of frontal sessions (software R) + 15 hours of assistance to students/exams

Adjunct professor in the courses of Statistics

Vita e Salute San Raffaele University, Department of Medicine and Psychology, Milan

10 hours of frontal sessions (software SPSS)

AA 2011-2012

Teaching assistant in the course of Statistics

Bocconi University, Department of Decision Sciences, Milan

20 hours of frontal sessions + 25 hours of assistance to students/exams

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PEER-REVIEWED PUBLICATIONS

D'Andrea V., Trentini F. et al., "Spatial spread of COVID-19 during the early pandemic phase in Italy". *BMC Infectious Diseases*, 2024.

Zardini A. et al., " Estimating the potential risk of transmission of arboviruses in the Americas and Europe: a modelling study". *The Lancet Planetary Health*, 2024.

Marziano V., et al., " Estimating SARS-CoV-2 infections and associated changes in COVID-19 severity and fatality". *Influenza and Other Respiratory Viruses*, 2023.

Fedele G., Trentini F., et al., " A 12-month follow-up of the immune response to SARS-CoV-2 primary vaccination: evidence from a real-world study". *Frontiers in Immunology*, 2023.

Granè CM., et al., " SARS-CoV-2 transmission patterns in educational settings during the Alpha wave in Reggio-Emilia, Italy". *Epidemics*, 2023.

Trentini F., et al., " A repeated cross-sectional analysis on the economic impact of SARS-CoV-2 pandemic at the hospital level in Italy". *Scientific Reports*, 2023.

Menegale F., et al., "Evaluation of Waning of SARS-CoV-2 Vaccine-Induced Immunity: A Systematic Review and Meta-analysis". *JAMA Network Open*, 2023.

Galli M., et al., "Priority age targets for COVID-19 vaccination in ethiopia under limited vaccine supply". *Scientific Reports*, 2023.

Manica M., et al., "Estimating SARS-CoV-2 transmission in educational settings: A retrospective cohort study". *Influenza and other respiratory viruses*, 2023.

Wang Q., et al., " Long-term measles antibody profiles following different vaccine schedules in China, a longitudinal study". *Nature Communications*, 2023.

Manica M., et al., "Estimation of the incubation period and generation time of SARS-CoV-2 Alpha and Delta variants from contact tracing data". *Epidemiology and Infection*, 2023.

Liu Q.H., et al., "Model-based evaluation of alternative reactive class closure strategies against COVID-19". *Nature Communications*, 2022.

Trentini F., et al., " Characterizing the transmission patterns of seasonal influenza in Italy: lessons from the last decade". *BMC Public Health*, 2022.

Stefanelli P., Trentini F., et al., " Tracking the progressive spread of the SARS-CoV-2 Omicron variant in Italy, December 2021 to January 2022". *Eurosurveillance*, 2022.

Fedele G., Trentini F., et al., " Evaluation of humoral and cellular response to four vaccines against COVID-19 in different age groups: A longitudinal study". *Frontiers in Immunology*, 2022.

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Trentini F., et al., "Investigating the relationship between interventions, contact patterns, and SARS-CoV-2 transmissibility". *Epidemics*, 2022.

Manica M., et al., "Intrinsic generation time of the SARS-CoV-2 Omicron variant: An observational study of household transmission". *The Lancet Regional Health - Europe*, 2022.

Calabrò G.E., et al., "The New Quadrivalent Adjuvanted Influenza Vaccine for the Italian Elderly: A Health Technology Assessment". *International Journal of Environmental Research and Public Health*, 2022.

Manica M., et al., "Risk of Symptomatic Infection During a Second Coronavirus Disease 2019 Wave in Severe Acute Respiratory Syndrome Coronavirus 2-Seropositive Individuals". *Clinical Infectious Diseases*, 2022.

Stefanelli P., Trentini F., et al. "Co-circulation of SARS-CoV-2 Alpha and Gamma variants in Italy, February and March 2021". *Eurosurveillance*, 2022.

Manica M., et al., "Estimating SARS-CoV-2 transmission in educational settings: A retrospective cohort study". *Influenza and other Respiratory Viruses*, 2022.

Trentini F., et al., "Pressure on the Health-Care System and Intensive Care Utilization During the COVID-19 Outbreak in the Lombardy Region of Italy: A Retrospective Observational Study in 43,538 Hospitalized Patients". *American Journal of Epidemiology*, 2022.

Marziano V., et al., "The effect of COVID-19 vaccination in Italy and perspectives for living with the virus". *Nature Communications*, 2021.

Zardini A., et al. "A quantitative assessment of epidemiological parameters to model COVID-19 burden". *Epidemics*, 2021.

Cereda D., et al. "The early phase of the COVID-19 outbreak in Lombardy, Italy". *Epidemics*, 2021.

Manica M., et al. "Impact of tiered restrictions on human activities and the epidemiology of the second wave of COVID-19 in Italy". *Nature Communications*, 2021.

Yang J., et al. "Despite vaccination, China needs non-pharmaceutical interventions to prevent widespread outbreaks of COVID-19 in 2021". *Nature Human Behaviour*, 2021.

Trentini F., et al., "Modeling the interplay between demography, social contact patterns, and SARS-CoV-2 transmission in the South West Shewa Zone of Oromia Region, Ethiopia". *BMC Medicine*, 2021.

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Poletti P., et al., "Seroprevalence of and Risk Factors Associated With SARS-CoV-2 Infection in Health Care Workers During the Early COVID-19 Pandemic in Italy". JAMA Network Open, 2021.

Poletti P., et al., " Association of Age With Likelihood of Developing Symptoms and Critical Disease Among Close Contacts Exposed to Patients With Confirmed SARS-CoV-2 Infection in Italy". JAMA Network Open, 2021.

Marziano V., et al., " Retrospective analysis of the Italian exit strategy from COVID-19 lockdown". PNAS, 2021.

Guzzetta G., et al. "Impact of a nationwide lockdown on SARS-CoV-2 transmissibility, Italy". Emerging Infectious Diseases, 2021.

Riccardo F., et al. " Epidemiological characteristics of COVID-19 cases and estimates of the reproductive numbers 1 month into the epidemic, Italy, 28 January to 31 March 2020". Eurosurveillance, 2020.

Poletti P., et al. "Age-specific SARS-CoV-2 infection fatality ratio and associated risk factors, Italy, February to April 2020". Eurosurveillance, 2020.

Guzzetta G., et al " Potential short-term outcome of an uncontrolled COVID-19 epidemic in Lombardy, Italy, February to March 2020" Eurosurveillance, 2020.

Trentini F., et al., "The introduction of No jab, No school policy and the refinement of measles immunisation strategies in high-income countries". BMC Medicine, 2019.

Marziano V., et al., " Parental vaccination to reduce measles immunity gaps in Italy". eLife, 2019.

Trentini F., et al. "The containment of potential outbreaks triggered by imported Chikungunya cases in Italy: a cost utility epidemiological assessment of vector control measures". Scientific Reports, 2018.

Trentini F., et al. "Measles immunity gaps and the progress towards elimination: a multi-country modelling analysis". The Lancet Infectious Diseases, 2017.

Guzzetta G., et al. " Effectiveness and economic assessment of routine larviciding for prevention of chikungunya and dengue in temperate urban settings in Europe". Plos Neglected Tropical Diseases, 2017.

Trentini F., et al. " Multivariate determinants of self-management in Health Care: Assessing Health Empowerment Model by comparison between structural equation and graphical models approaches". Epidemiology Biostatistics and Public Health, 2015.

Bagaglio S., et al. " Dynamic of mixed HCV infection in plasma and PBMC of HIV/HCV patients under treatment with Peg-IFN/ribavirin". Medicine, 2015.

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Salvo F., et al. "Survey of tuberculosis drug resistance among Tibetan refugees in India". International Journal of Tuberculosis and Infectious Diseases, 2014.

Trentini F., et al. " Bayesian Mixture Models for Assessment of Gene Differential Behaviour and Prediction of pCR through the Integration of Copy Number and Gene Expression Data". PlosONE, 2013.

Gagliani N., et al "Co-expression of CD49b and LAG-3 identifies human and murine Tr1 cells" Nature Medicine, 2013

CHAPTER IN BOOKS

Ji Y., Trentini F. and Mueller P.. "A Bayesian framework for integrating copy number and gene expression data" in Advances in Statistical Bioinformatics: Models and Integrative Inference for High-Throughput Data. Cambridge University Press, 2013.

SELECTED CONFERENCES

15th IHEA World Congress on Health Economics, 2023.

Title: "Impact of the Sars-Cov-2 Pandemic on Hospital Costs: Evidence from Three Cohorts of Patients Hospitalized in Milan Area before and during the Pandemic"

Eighth International Meeting on Emerging Diseases and Surveillance, IMED 2022.
Title: "Co-circulation of SARS-CoV-2 Variants of Concern Alpha and Gamma in Italy"

Covid Crisis Lab seminar series, 2021, Bocconi University, Italy. "The impact of non-pharmaceutical interventions on social contact patterns during COVID-19 pandemic: the MixMi study in the metropolitan city of Milan"

Epidemics, 2021, Virtual. Title: "Investigating the relationship between interventions, contact patterns, and SARS-CoV-2 transmissibility"

Epidemics, 2021, Virtual. Title: "Healthcare strain and intensive care during the COVID-19 outbreak in the Lombardy region"

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International Population Conference 2021 of IUSSP "International Union for the Scientific Study of Population". Title: "Demography, social contact patterns, and SARS-CoV-2 transmission in the South West Shewa Zone of Oromia Region, Ethiopia"

Population Association of America Meeting 2021. Title: "Changes in contact patterns associated to increasing restrictions and the impact on Covid-19 transmissibility: a case study in the metropolitan city of Milan"

Dynamical Systems applied to Biology and Natural Sciences conference, Trento, 2020
Organizing committee member

Epidemics, 2019, Charleston, South Carolina. Title: "No jab, no school" policy and the enhancement of routine vaccination uptake: The perspective of measles elimination in high-income countries"

Italian Statistical Society (SIS) conference, 2018, Palermo. Title: " The contribution of local demographic conditions and vaccination policies to measles elimination"

Epidemics, 2017, Sitges, Spain. Title: Cost-effectiveness of vector control strategies: the case of Chikungunya in Italy

American Mosquito Control Association Conference, 2017, San Diego, California
Title: "The containment of potential outbreaks triggered by imported Chikungunya cases in Italy: a cost utility epidemiological assessment of vector control measures"

Epidemics, 2015, Tampa, Florida. Title: "The role of demography in shaping inter-country differences in epidemiological patterns of measles"

Italian Health Economic Association Conference, 2015, Alghero, Italy. Title: "Preventing the risk of Chikungunya outbreaks through vector control programs in temperate climate countries: a cost-utility analysis in the epidemic scenario of Emilia Romagna"

Erice MathEpi Conference, 2015, Erice, Italy. Title: "The role of demography in shaping inter-country differences in epidemiological patterns of measles"

Joint Statistical Meeting (JSM), 2012, Miami, Florida. Title: "A Bayesian Mixture Model for the Integration of Multiple High-Throughput Genomic Platforms"