Dafne Zorzetto

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RESEARCH INTERESTS

Causal Inference: Heterogeneity of Causal Effects, Principal Stratification, and Negative Controls for Unmeasured Confounding.
Bayesian Nonparametrics: Models and Computational Aspects, Dependent Dirichlet Mixture Models.
Bayesian Factor Analysis: Computational Aspects, Regression Factor Model.

CURRENT POSITION

Postdoctoral Research Associate in Data Science *at Brown University* working with Roberta De Vito on Bayesian Factor Analysis in the context of Causal Inference.

EDUCATION

Ph.D. in Statistics *2020-2023*
Department of Statistical Science, Università degli Studi di Padova.
Thesis title: *Bayesian Nonparametric Dependent Mixtures for Causal Inference with Applications to Air Pollution Epidemiology*
Supervisor: Antonio Canale (Università degli Studi di Padova)
Co-supervisor: Francesca Dominici (Harvard University).

Visiting Ph.D. Scholar (2 years) *2022 - 2023*
Department of Biostatistics, Harvard T.H. Chan School of Public Health.
Supervisors: Francesca Dominici and Falco J. Bargagli Stoffi

M.Sc. in Statistical Sciences *2018 - 2020*
Department of Statistical Science, Università degli Studi di Padova.
Thesis title: *Hierarchical Bayesian models for extreme values in the cylinder.*
Supervisor: Antonio Canale.
Honors: 110/110 cum laude.

B.Sc. in Statistics for Economics and Business *2015 - 2018*
Department of Statistical Science, Università degli Studi di Padova.
Thesis title: *Inflation forecasting with GARCH models.*
Supervisor: Luisa Bisaglia.

PUBLICATIONS

Publications & Preprint

- **Zorzetto D.**, Bargagli-Stoffi F.J., Canale A., Dominici F. *Confounder-Dependent Bayesian Mixture Model: Characterizing Heterogeneity of Causal Effects in Air Pollution Epidemiology.* Biometrics, 80(2), ujae025. [pdf]
- **Zorzetto D.**, Canale A., Mealli F., Dominici F., Bargagli-Stoffi F.J. *Bayesian Nonparametrics for Principal Stratification with Continuous Post-Treatment Variables.*
`https://arxiv.org/abs/2405.17669`[pdf]

- Hu J.*,**Zorzetto D.***, Dominici F. *A Bayesian Nonparametric Method to Adjust for Unmeasured Confounding with Negative Controls.* `https://arxiv.org/abs/2309.02631`[pdf]
- **Zorzetto D.**, Bargagli-Stoffi F.J., Canale A., Dominici F. (2022). *Dependent Dirichlet Mixture Processes for Causal Inference.* Proceedings of the 36th International Workshop on Statistical Modelling. (pp. 618 - 623)

* the authors contributed equally to the work, alphabetically ordered by surnames.

Manuscripts in preparation

- Alfonzetti G.*, Rossi L.*, **Zorzetto D.***, Mealli F., *Model-free estimation of causal effects of different stimuli on neuron activities.*
- **Zorzetto D.**, Zigler C., Landy J., De Vito R. *Multivariate Treatment Effect Estimation through Bayesian Factor Regression Model*
- **Zorzetto D.**, Canale A., Marani M. *Intensity of extreme epidemics.*
- Vanciu L., **Zorzetto D.**, Dominici F. *Bayesian Spatial Analysis of Mortality Disparities across the United States*
- Della Torre P.*, **Zorzetto D.***, Bargagli-Stoffi F.J., petrone S., Dominici F. *Disentangling the Effects of Air Pollution on Social Mobility Through Bayesian Causal Inference*
- **Zorzetto D.**, Canale A. *Causal STAR BART for discrete outcome*

* the authors contributed equally to the work, alphabetically ordered by surnames.

AWARDS

- Young researcher travel award, the 2022 ISBA world meeting.

CONFERENCES PRESENTATIONS

Invited talks

- Causal STAR BART for discrete outcome.
  SIS 2024 - The 52nd Scientific Meeting of the Italian Statistical Society
  Bari (Italy), June 2024
- Confounder Dependent Bayesian Mixture Model: Application in Environmental Epidemiology.
  GRASPA 2023.
  Palermo (Italy), July 2023.
- Dependent nonparametric priors for causal inference problems.
  BNP-ISBA webseminar. Joint presentation with Antonio Canale.
  Online, June 2023
- Confounder Dependent Bayesian Mixture Model: Application in Environmental Epidemiology.
  NESS - 36th New England Statistics Symposium: Statistics and Data science.
  Boston (Massachusetts, USA), June 2023.

Contributed talks

- Multivariate Causal Effects: A Bayesian Regression Factor Model
  The 2024 ISBA World Meeting.
  Venice (Italy), July 2024.
- Confounders-Aware Shared-Atoms Bayesian Hierarchical Mixture Model for Principal Stratification
  BaYSM:O
  Online, November 2023
- Characterizing Heterogeneity of Causal Effects in Air Pollution in Florida
  SIS 2023 - Statistical Learning, Sustainability and Impact Evaluation.
  Ancona (Italy), June 2023
- Bayesian Nonparametric for Causal Inference.
  BNP13 - 13th International Conference on Bayesian Nonparametrics.
  Puerto Varas (Chile), October 2022.
- Dependent Dirichlet mixture processes for Causal Inference.
  BaYSM 2022. Centre de recherches mathématiques at Université de Montréal.
  Montréal (Canada). June 2022

Poster presentations

- Multivariate Causal Effects: A Bayesian Regression Factor Model
  BaYSM 2024
  Venice (Italy), June 2024.
- Bayesian Nonparametrics for Principal Stratification: an Application on Environmental Policies Effects on Health
  Bayesian Causal Inference Summer school.
  Firenze (Italy), July 2023.
- Bayesian Nonparametric for Heterogeneity in Treatment Effect.
  Atlantic Causal Inference Conference
  Austin (Texas, USA), May 2023
- Probit Stick-Breaking Process for Causal Inference.
  36th International Workshop on Statistical Modelling.
  Trieste (Italy), July 2022.
- Probit Stick-Breaking Process for Causal Inference.
  The 2022 ISBA World Meeting.
  Montréal (Canada), July 2022.

WORKSHOPS & SUMMERSCHOOL

- Data Research Camp
  San Servolo island, Venice, Italy. July 2022.
  4-day meeting where small research groups of young scholars, advised by senior researchers with a well-established experience in different areas of Statistics. We developed innovative methods and models to analyze a dataset—recorder neuron activities—, with the goal of answering scientific questions.
- Bayesian Causal Inference
  Florence Center for Data Science, University of Florence, Italy. June 2023.
  A week summer school about the fundamental concepts and the state-of-the-art methods for causal inference under the potential outcomes framework, with an emphasis on the Bayesian inferential paradigm.

MENTORING EXPERIENCES

- *Statistics.* Academic Tutor, Department of Biology. Università degli Studi di Padova, 2020.

CO-ADVISING

- Leo Vanciu — *Summer 2023*
  Bachelor's Student, Harvard College
- Francesco Martella — *a.y. 2023-2024*
  Master's student, University of Padova
- Paolo Dalla Torre — *Spring 2024*
  Master's student, Bocconi Univerity
- Yingjie Huang — *Summer 2024*
  Master's student, Brown Univerity

SERVICES TO PROFESSION

- Organizer of *Explain like I'm an Undergrad*
  Padova, Italy. Spring 2023
  Weekly seminars that want to foster connections among PhD students and postdocs in the statistics department at Padova, as well as beyond, and provide with the opportunity to deliver engaging talks using a lighthearted, concise, and accessible presentation style, like to explaining complex concepts to undergraduate students in Statistics.
- Volunteer for *StatisticAll*
  Treviso, Italy. 2016
  Statistical games and activities to show the magic of statistics to kids and adults, in collaboration with ISTAT (Italian Statistics Institute)

SKILLS

Programming
Programming languages: R ; Python; Matlab.
Other statistical Software: Excel; SAS; MySQL.
Markup Languages: HTML; LaTex; Markdown.
Other Software: Git/GitHub; Windows and relative software.

Languages
Italian: native;
English: full professional proficiency.