

CURRICULUM VITAE

MICHELE SANTACATTERINA, PhD

180 Madison Avenue, Room 2-24

New York, NY, USA

Edu email: santam13@nyu.edu

Work email: michele.santacatterina@nyulangone.org

Work phone: 646-501-3642

CURRENT ACADEMIC APPOINTMENTS

2021 - Present Assistant Professor, Division of Biostatistics, Department of Population Health (DPH)
New York University Grossman School of Medicine (NYUM)

2022 - Present Visiting Researcher, Google LLC

EDUCATION AND TRAINING

Education

Year	Degree	Field	Institution
2009	B.S.	Statistics	University of Padua, Padua, Italy
2012	M.S.	Biostatistics	University of Milano-Bicocca, Milan, Italy
2018	Ph.D.	Biostatistics	Karolinska Institute, Stockholm, Sweden

Postdoctoral Training

2018-2020 Data Science Dr. Nathan Kallus, Cornell University, New York, NY

PREVIOUS APPOINTMENTS AND LEADERSHIP POSITIONS

2020-2021 Assistant Professor George Washington University (GWU), Washington DC, DC

RESEARCH ACTIVITY

Personal statement Data science methods, such as statistical, machine learning, deep learning, causal inference and optimization techniques, have become a central part of the decision-making process in healthcare. My current and future research revolve around developing and applying robust data science methods to improve healthcare decision-making using real-world data. Application areas include but are not limited to estimating treatment effects from real-world observational studies, generalizing treatment effects from randomized trials to real-world populations, predicting health outcomes and estimating individualized and dynamic treatment regimes for personalized medicine.

Grant History

Current

Funding Agency	Role	Effort	Project Title	Status
NIH Katz/Troxel/Horwitz	Co-I	10%	Post-Acute Sequelae of SARS-CoV-2 Infection Initiative: NYU Langone Health Clinical Science Core, Data Resource Core, and PASC Biorepository Core	Active
NIH Petkova/Troxel	Co-I	20%	EPPIC-NET DCC	Active
NIH ENT	Co-I	46.4%	EHR nudges	Active
NIH Clark/Rook	Co-I	15%	Reversing immune evasion and enhancing immune detection with topical resiquimod	Active
NIH Amin	Co-I	8.6%	Mechanisms Underlying Tongue Muscle Dysfunction and Dysphagia Following Concurrent Chemoradiation Therapy	Active

Pending

Funding Agency	Role	Effort	Project Title	Status
NIH; R21, RFA-AI-21-035	PI	20%	Novel statistical methods to address limitations in the surveillance and monitoring of pandemic dynamics	Pending
NSF 21-530	MPI	20%	SCH: Interpretable survival analysis of complex longitudinal data	Pending
NIH PI: Donald Goff	Co-I	5%	Autoimmune mechanisms and psychiatric complications of post-COVID syndrome	Pending
NIH PI: Donald Goff	Co-I	5%	Suvorexant for insomnia in schizophrenia	Pending
NIH PI: David Charytan	Co-I	5%	Continuing Review for Study Reducing Arrhythmia in Dialysis by Adjusting the Rx Electrolytes/Ultrafiltration- RADAR	Pending
NIH PI: Margareta Cerda	Co-I	5%	A comparative evaluation of overdose prevention programs in New York City and Rhode Island	Pending
NIH PI: Amanda Bunting	Co-I	5%	Adaption of the STAIR-NT Trauma Intervention for Polysubstance Populations	Pending
NIH PI: Aaron Johnson	Co-I	5%	Effect of vocal fold injury on laryngeal muscle dysfunction	Pending
NIH PI: Charles Neighbors	Co-I	5%	Organizational factors associated with quality of care for opioid use disorders among transition-age adults in Medicaid	Pending
NIH PI: Emmanuel Peprah	Co-I	5%	Understanding Syndemic Vulnerabilities in African Populations Living with HIV (INSIGNA) Study	Pending
NIH PI: Andrea Troxel	Co-I	5%	Reversing immune evasion and enhancing immune detection with topical resiquimod - Continuation	Pending
VA José O. Alemán-Díaz	Co-I	5%	Prevention of antipsychotic induced metabolic disease by GLP-1 agonist coprescription	Pending

EDUCATION ACTIVITY

Teaching Activities

Fall 2022 — Statistical Learning, Graduate Level Course for PhD students in Biostatistics, *Course Co-Director*, NYUM

Spring 2023 — Statistical Inference I, Graduate Level Course for PhD students in Biostatistics, *Course Co-Director*, NYUM

Invited Talks and Teaching of Peers

Internal

Sponsored by NYU Langone Health

09/2021 — Invited Talk, Real-World SARS-CoV-2 Vaccine Effectiveness in North Carolina: The COVID-19 Community Research Partnership., Division of Biostatistics Seminar, DPH, NYUM

External to NYU

09/2014 — Poster, Antiretroviral therapy among HIV-infected people who inject drugs in Sweden: access and treatment response. HIV Nordic conference.

09/2015 — Invited Talk, Weight watchers: How to optimize your weight. Nordic and Baltic Stata Users Group meeting.

09/2016 — Talk, Optimal probability weights for inference with constrained precision. Royal Statistical Society International Conference.

04/2017 — Poster, Estimating treatment effects with optimal inverse probability weighting. UK Causal Inference Meeting.

09/2017 — Talk, Estimating treatment effects with optimal inverse probability weighting. Royal Statistical Society International Conference.

10/2017 — Invited Talk, Optimal probability weights for inference with constrained precision. MELODEM Selection Group Meeting.

04/2018 — Talk, Optimal balancing of time-dependent confounders for marginal structural models Second. EUROCIM Causal Inference 2018.

09/2018 — Invited Talk, Optimal Weighting for Causal Inference. Cornell - AI Seminar.

10/2018 — Talk, Optimal balancing of time-dependent confounders for marginal structural models Second. TRIPODS PI meeting.

05/2019 — Talk and poster, Optimal estimation of generalized average treatment effects using Kernel Optimal Matching. Atlantic Causal Inference Conference 2019.

09/2019 — Invited Talk, Kernel optimal orthogonality weighting: a balancing approach to estimating effects of continuous treatments. Cornell Machine Learning in Medicine.

01/2020 — Invited Talk, Kernel optimal orthogonality weighting: a balancing approach to estimating effects of continuous treatments. McGill Department of Biostatistics - Biostatistics Seminar.

03/2020 — Invited Talk, IMS invited session on challenges for precision medicine. ENAR 2020

08/2020 — Invited Talk, Optimal estimation of generalized average treatment effects using Kernel Optimal Matching., JSM 2020 - Health policy statistics section.

12/2020 – Talk, Optimal Weighting for Estimating Generalized Average Treatment Effects, Harvard - Machine Learning and Causal Inference Reading group.

02/2021 – Invited Talk, Optimal Weighting for Estimating Generalized Average Treatment Effects, GWU - Statistics Seminar Series.

03/2021 – Talk, Robust Weights that Optimally Balance Confounders for Estimating the Effect of Binary and Continuous Treatments with Time-to-event Data., ENAR 2021.

08/2021 – Talk, Optimal Weighting for Estimating Generalized Average Treatment Effects, JSM 2021.

04/2022 – Invited Talk, Optimal Weighting for Causal Inference, Columbia Causal Inference Learning Seminar 2022.

05/2022 – Poster, A double machine learning estimator to generalize survival curves from trials to real-world target populations, American Causal Inference Conference 2022.

05/2022 – Poster, Scalable Bootstrap Algorithms for Causal Inference with Large Real-World Data, American Causal Inference Conference 2022.

12/2022 – Invited Talk, TBA, 14th International Conference of the ERCIM WG on Computational and Methodological Statistics.

Mentoring and Advising

Predoctoral students supervised and/or mentored

Master students

07/2015 - 11/2017	Chiara Chiavenna	Biostatistics	Karolinska Institutet	Mentor
08/2017 - 12/2017	Claudia Carlucci	Biostatistics	Karolinska Institutet	Mentor
10/2019 - 06/2020	Yaniv Ravid	ORIE	Cornell	Research advisor
10/2020 - 08/2021	Nolan Kuenster	Epidemiology	GWU	Research advisor

Doctoral students

01/2022 - 04/2022	Axel Martin	Biostatistics	NYUM	Rotation advisor
05/2022 - Present	Axel Martin	Biostatistics	NYUM	Research advisor

Dissertation committee

10/2021 - Present,	Juan Gago	Epidemiology	NYUM	Dissertation Committee
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INSTITUTIONAL, LOCAL/NATIONAL SERVICE AND RELATED ACTIVITY

Organizing Roles in Scientific Meetings

2019	Organizer of the symposium: Optimization methods for causal inference Atlantic Causal Inference Conference 2019
2019	Organizer of the workshop: “Do the right thing”: machine learning and causal inference for improved decision making, NeurIPS, 2019
2021	Organizer and chair of the invited paper session: Leveraging real-world data for improved medical decision-making: challenges, opportunities, and recent developments ENAR 2021

Editorial and Journal Positions

Ad Hoc Reviewer

Journal of the Royal Statistical Society - Series A,

Biometrical Journal

Computational Statistics and Data Analysis

NeurIPS,

ICML,

AISTAT,

Nature Machine Intelligence,

BMC Medical Research Methodology,

Epidemiological methods,

Journal of the American Statistical Association,

Statistics in Biopharmaceutical Research,

Clinical Infectious Diseases,

Annals of Applied Statistics.

BIBLIOGRAPHY

Peer-reviewed Publications

1. Chan, A. K., Santacatterina, M., Pennicooke, B., Shahrestani, S., Ballatori, A. M., Orrico, K. O., Burke, J. F., Manley, G. T., Tarapore, P. E., Huang, M. C. et al. (2020), 'Does state malpractice environment affect outcomes following spinal fusions? a robust statistical and machine learning analysis of 549,775 discharges following spinal fusion surgery in the united states', *Neurosurgical focus* **49**(5), E18.
2. Cuong, D. D., Agneskog, E., Chuc, N. T. K., Santacatterina, M., Sönnernborg, A. & Larsson, M. (2012), 'Monitoring the efficacy of antiretroviral therapy by a simple reverse transcriptase assay in hiv-infected adults in rural vietnam', *Future Virology* **7**(9), 923–931.
3. Cuong, D. D., Sönnernborg, A., Van Tam, V., El-Khatib, Z., Santacatterina, M., Marrone, G., Chuc, N. T. K., Diwan, V., Thorson, A., Le, N. K. et al. (2016), 'Impact of peer support on virologic failure in hiv-infected patients on antiretroviral therapy-a cluster randomized controlled trial in vietnam', *BMC infectious diseases* **16**(1), 1–14.
4. De Costa, A., Vora, K. S., Ryan, K., Sankara Raman, P., Santacatterina, M. & Mavalankar, D. (2014), 'The state-led large scale public private partnership 'chiranjeevi program'to increase access to institutional delivery among poor women in gujarat, india: How has it done? what can we learn?', *PLoS One* **9**(5), e95704.
5. *Duration of SARS-CoV-2 sero-positivity in a large longitudinal sero-surveillance cohort: the COVID-19 Community Research Partnership* (2021), *BMC infectious diseases* **21**, 1–11.
6. Frontera, J. A., Tamborska, A. A., Doheim, M. F., Garcia-Azorin, D., Gezegen, H., Guekht, A., Yusof Khan, A. H. K., Santacatterina, M., Sejvar, J., Thakur, K. T. et al. (2022), 'Neurological events reported after covid-19 vaccines: An analysis of vaccine adverse event reporting system', *Annals of neurology* .
7. Garcia-Azorin, D., Baykan, B., Beghi, E., Doheim, M. F., Fernandez-de Las-Penas, C., Gezegen, H., Guekht, A., Hoo, F. K., Santacatterina, M., Sejvar, J. et al. (2022), 'Timing of headache after covid-19 vaccines and its association with cerebrovascular events: An analysis of 41,700 vaers reports', *Cephalalgia* p. 03331024221099231.

8. Häggblom, A., Santacatterina, M., Neogi, U., Gisslen, M., Hejdeman, B., Flamholz, L. & Sönnernborg, A. (2017), 'Effect of therapy switch on time to second-line antiretroviral treatment failure in hiv-infected patients', *PloS one* **12**(7), e0180140.
9. Kallus, N., Pennicooke, B. & Santacatterina, M. (2021), 'More robust estimation of average treatment effects using kernel optimal matching in an observational study of spine surgical interventions', *Statistics in medicine* **40**(10), 2305–2320.
10. Kallus, N. & Santacatterina, M. (2021), 'Optimal balancing of time-dependent confounders for marginal structural models', *Journal of Causal Inference* **9**(1), 345–369.
11. Karlsson, N., Santacatterina, M., Käll, K., Hägerstrand, M., Wallin, S., Berglund, T. & Ekström, A. M. (2017), 'Risk behaviour determinants among people who inject drugs in stockholm, sweden over a 10-year period, from 2002 to 2012', *Harm reduction journal* **14**(1), 1–11.
12. Longinetti, E., Santacatterina, M. & El-Khatib, Z. (2014), 'Gender perspective of risk factors associated with disclosure of hiv status, a cross-sectional study in soweto, south africa', *PLoS One* **9**(4), e95440.
13. Madhvani, N., Longinetti, E., Santacatterina, M., Forsberg, B. C. & El-Khatib, Z. (2015), 'Correlates of mobile phone use in hiv care: Results from a cross-sectional study in south africa', *Preventive medicine reports* **2**, 512–516.
14. Neogi, U., Häggblom, A., Santacatterina, M., Bratt, G., Gisslén, M., Albert, J. & Sonnerborg, A. (2014), 'Temporal trends in the swedish hiv-1 epidemic: increase in non-b subtypes and recombinant forms over three decades', *PloS one* **9**(6), e99390.
15. Ojo, T., Ruan, C., Hameed, T., Malburg, C., Thunga, S., Smith, J., Vieira, D., Snyder, A., Tampubolon, S. J., Gyamfi, J. et al. (2022), 'Hiv, tuberculosis, and food insecurity in africa—a syndemics-based scoping review', *International Journal of Environmental Research and Public Health* **19**(3), 1101.
16. Peacock, J. E., Herrington, D. M., Edelstein, S. L., Seals, A. L., Plumb, I. D., Saydah, S., Lagarde, W. H., Runyon, M. S., Maguire, P. D., Correa, A. et al. (2022), 'Survey of adherence with covid-19 prevention behaviors during the 2020 thanksgiving and winter holidays among members of the covid-19 community research partnership', *Journal of community health* **47**(1), 71–78.
17. Pennicooke, B., Santacatterina, M., Lee, J., Elowitz, E. & Kallus, N. (2021), 'The effect of patient age on discharge destination and complications after lumbar spinal fusion', *Journal of Clinical Neuroscience* **91**, 319–326.
18. Santacatterina, M. & Bottai, M. (2016), 'Inferences and conjectures in clinical trials: a systematic review of generalizability of study findings', *Journal of Internal Medicine* **279**(1), 123–126.
19. Santacatterina, M. & Bottai, M. (2018), 'Optimal probability weights for inference with constrained precision', *Journal of the American Statistical Association* **113**(523), 983–991.
20. Santacatterina, M., García-Pareja, C., Bellocco, R., Sönnernborg, A., Ekström, A. M. & Bottai, M. (2019), 'Optimal probability weights for estimating causal effects of time-varying treatments with marginal structural cox models', *Statistics in medicine* **38**(10), 1891–1902.
21. Santacatterina, M., Sanders, W., J. & Weintraub, S., W. (2021), 'Prevention of covid-19 with the bnt162b2 and mrna-1273 vaccines', *New England Journal of Medicine* **385**(19), 1817–1821.
22. Sharma, M., Sanneving, L., Mahadik, K., Santacatterina, M., Dhaneria, S. & Stålsby Lundborg, C. (2013), 'Antibiotic prescribing in women during and after delivery in a non-teaching, tertiary care hospital in ujjain, india: a prospective cross-sectional study', *Journal of pharmaceutical policy and practice* **6**(1), 1–7.
23. Shu, M., Bowen, R. S., Herrmann, C., Qi, G., Santacatterina, M. & Zabih, R. (2021), Deep survival analysis with longitudinal x-rays for covid-19, in 'Proceedings of the IEEE/CVF International Conference on Computer Vision', pp. 4046–4055.

24. Su, Y., Wang, L., Santacatterina, M. & Joachims, T. (2019), Cab: Continuous adaptive blending for policy evaluation and learning, *in* ‘International Conference on Machine Learning’, PMLR, pp. 6005–6014.

Pre-prints and Non peer-reviewed publications

1. Calamari, L. E., Tjaden, A. H., Edelstein, S. L., Weintraub, W. S., Santos, R., Gibbs, M., Ward, J., Santacatterina, M., Bertoni, A. G., Ward, L. M. et al. (2022), ‘Self-reported mask use in sars-cov-2 vaccinated and unvaccinated populations’, *medRxiv* .
2. Kallus, N. & Santacatterina, M. (2019a), ‘Kernel optimal orthogonality weighting: A balancing approach to estimating effects of continuous treatments’, *arXiv preprint arXiv:1910.11972* .
3. Kallus, N. & Santacatterina, M. (2019b), ‘Optimal estimation of generalized average treatment effects using kernel optimal matching’, *arXiv preprint arXiv:1908.04748* .
4. Santacatterina, M. (2020), ‘Robust weights that optimally balance confounders for estimating marginal hazard ratios’, *arXiv preprint arXiv:2010.07695* .
5. Uschner, D., Bott, M., Santacatterina, M., Gunaratne, M. P., Fette, L., Burke, B. K., Strylewicz, G., Edelstein, S. L., Lagarde, W. H., Miller, K. E. et al. (2021), ‘Breakthrough sars-cov-2 infections after vaccination in north carolina’, *medRxiv* .
6. Williamson, J. C., Wierzba, T. F., Santacatterina, M., Munawar, I., Seals, A. L., Pittman Ballard, C. A., Alexander-Miller, M., Runyon, M. S., McCurdy, L. H., Gibbs, M. A. et al. (2022), ‘Analysis of accumulated sars-cov-2 seroconversion in north carolina: The covid-19 community research partnership’, *Plos one* **17**(3), e0260574.

Abstracts

1. Carrasquilla, G. D., Chiavenna, C., Bottai, M., Magnusson, P. K., Santacatterina, M., Wolk, A., Hallmans, G., Jansson, J.-H., Engstrom, G., Borgfeldt, C. et al. (2015), The association between menopausal hormone therapy and coronary heart disease depends on timing of initiation in relation to menopause onset. results based on pooled individual participant data from the combined cohorts of menopausal women-studies of register based health outcomes in relation to hormonal drugs (comprehend) study, *in* ‘Menopause: The Journal of the North American Menopause’, Vol. 22, pp. 1373–1373.
2. Friedman-Klabanoff, D. J., Tjaden, A., Santacatterina, M., Munawar, I., Sanders, J. W., Herrington, D. M., Wierzba, T. F. & Berry, A. (2021), 588. seroconversion among adults after receiving at least one dose of a covid-19 vaccine: Covid-19 community research partnership, mid-atlantic, southeast and southern united states, december 2020-may 2021, *in* ‘Open Forum Infectious Diseases’, Vol. 8, Oxford University Press US, pp. S396–S397.
3. Saevarsdottir, S., Santacatterina, M., Stawiarz, L., Turesson, C., Forsblad-d’Elia, H., Jacobsson, L. & Lindblad, S. (2014), Drug survival in patients receiving golimumab treatment 2010-2013: results from the swedish rheumatology quality register, *in* ‘SCANDINAVIAN JOURNAL OF RHEUMATOLOGY’, Vol. 43, INFORMA HEALTHCARE TELEPHONE HOUSE, 69-77 PAUL STREET, LONDON EC2A 4LQ, ENGLAND, pp. 64–64.
4. Saevarsdottir, S., Santacatterina, M., Stawiarz, L., Turesson, C., Forsblad, H., Jacobsson, L. T. & Lindblad, S. (2013), Drug survival in patients receiving golimumab treatment 2010-2013. results from the swedish rheumatology quality register, *in* ‘ARTHRITIS AND RHEUMATISM’, Vol. 65, WILEY-BLACKWELL 111 RIVER ST, HOBOKEN 07030-5774, NJ USA, pp. S641–S642.