

Rachel Hannah Tao, MPH

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SKILLS

Programming languages: R, SQL, SAS, Python, [Git](#) **Visualization and formatting:** R ggplot2, Tableau, LaTeX

Computing environments: RStudio, AzureML, Jupyter, Snowflake, PL/SQL Developer (Oracle)

Analysis: Regression, non-linear relationships, dimensionality reduction, classification, clustering, NLP

Languages: English (fluent/native), French (intermediate), Slovene (basic), Mandarin (basic)

EDUCATION

Columbia University, Mailman School of Public Health

May 2021

Master of Public Health (MPH), Epidemiology, Certificate in Applied Biostatistics and Data Science

GPA: 4.0 Dean's Scholarship Merit Award Recipient

Thesis: Source-specific effects of PM_{2.5} pollution on emergency-department visits for myocardial infarction

Columbia University, Columbia College

May 2016

Bachelor of Arts (BA), Environmental Biology

GPA: 3.6 **Thesis:** Differences in Water-Use for Plant Species on New York Green Roofs

DATA SCIENCE EXPERIENCE

Imperial Clinical Analytics Research and Evaluation (iCARE), Imperial College London

Data Scientist

June 2023 – Present

- Lead a sustainable healthcare initiative leveraging routinely collected data to minimize medication waste on multiple wards within Imperial College Healthcare NHS Trust
- Collaborate within interdisciplinary teams leveraging real world evidence on projects to prevent inpatient falls, including:
 - 1) Informing study design and conducting statistical analysis to investigate falls risk factors in Northwest London
 - 2) Transforming EHR data into stakeholder insights by developing innovative data visualizations toward the creation of a dashboard interface for use in clinical care
- Curate suite of accessible resources to support new team members with data science skills, focusing on R, SQL, and statistical learning

Fair Health

Healthcare Data Analyst

November 2021 – May 2023

- Developed streamlined analytics strategies using PL/SQL and Tableau to evaluate new methodologies for 4+ of Fair Health's Benchmark Data Products
- Delivered custom analytics to 5+ client groups by extracting relevant data from Fair Health's database—containing more than 36 billion private health care claim records—and transforming it to the desired format for each client's research needs
- Aided in training new employees on statistical methods and processes used for review of Benchmark Data Products

Department of Environmental Health Sciences, Mailman School of Public Health

Research Analyst

June 2020 – November 2021

- Collaborated with diverse 9-person team of epidemiologists, biostatisticians, and computer scientists for development of novel machine learning methods to assess environmental mixtures as health exposures
- Applied PCA and other dimensionality-reduction methods to evaluate novel method, Principal Component Pursuit
- Analysis in R using air quality and emergency department visit data to better understand the relationship between source-specific fine particulate matter and heart attack incidence

RELEVANT EXPERIENCE

Department of Pediatrics, Columbia University Irving Medical Center, New York, NY
Research and Fellowship Coordinator

May 2017-June 2019

- Coordinated study subject visits, data collection, and data management for 3 clinical research studies
- Maintained regulatory information for ongoing research, in accordance with the Institutional Review Board
- Managed fellowship application process and documented research accomplishments of 7 fellows for program reporting

PEER-REVIEWED JOURNAL ARTICLES

Tao R, Chillrud LG, Nunez Y, Rowland S, Boehme AK, Yan J, Goldsmith J, Wright J, Kioumourtzoglou M-A. Applying principal component pursuit to investigate the association between source-specific fine particulate matter and myocardial infarction hospitalizations in New York City. *Environmental Epidemiology*, 2023;[7\(2\)e243](#).

Pereira-Eshraghi CF, **Tao R**, Chiuzan CC, Zhang Y, Shen W, Lerner JP, Oberfield SE, Sopher AB. Ovarian follicle count by magnetic resonance imaging is greater in adolescents and young adults with polycystic ovary syndrome than in controls. *F&S Reports*, 2022;[3\(2\):102-109](#).

Weiner A, Cowell A, McMahon DJ, **Tao R**, Zitsman J, Oberfield SE, Fennoy I. The effects of adolescent laparoscopic adjustable gastric band sleeve gastrectomy on markers of bone health and bone turnover. *Clinical Obesity*, [2020](#).

Pereira-Eshraghi CF, Chiuzan C, Zhang Y, **Tao RH**, McCann M, Neugut D, Printz A, Fennoy I, Cree-Green M, Oberfield SE, Sopher AB. Obesity and insulin resistance, not polycystic ovary syndrome, are independent predictors of bone mineral density in adolescents and young women. *Horm Res Paediatr*, [2020; 1-7](#).

Baer TG, Agarwal S, Chen S, Chiuzan C, Sopher AB, **Tao R**, Hassoun A, Shane E, Fennoy I, Oberfield SE, Vuguin PM. Deficits in bone geometry in growth hormone-deficient prepubertal boys revealed by high-resolution peripheral quantitative computed tomography. *Horm Res Paediatr*, [2019;92\(5\)293-301](#).

Witchel SF, Burghard AC, **Tao RH**, Oberfield SE. The diagnosis and treatment of PCOS in adolescents: an update. *Current Opinion* 2019;[31\(4\):562-569](#).

Oberfield SE, **Tao R**, Witchel SF. Present knowledge on the etiology and treatment of adrenarche. *Pediatric Endocrinol Rev* 2018;[15\(3\):244-254](#).

Ibañez L, Oberfield SE, Witchel S...**Tao R**, ...Lee PA. An International Consortium Update: Pathophysiology, diagnosis, and treatment of polycystic ovarian syndrome in adolescence. *Horm Res Paediatr*, 2017;[88\(6\):371-395](#).

OP-ED

Tao R. Opinion: A side effect of COVID-19 could be weaker civil liberties. [City Limits](#), July 4, 2020.

PRESENTATIONS

Tao RH, Nunez Y, Chillrud LG, Rowland ST, Boehme AK, Kioumourtzoglou M-A. Source-specific fine particulate matter and hospitalization due to myocardial infarction. Oral presentation at the International Society for Environmental Epidemiology. August 2021. New York, NY, USA.

Tao RH. Pie Charts: Friend or Foe? Lightening Talk for R-Ladies NYC Meetup. [October 2021](#). Virtual.