

Emily C. Hector

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RESEARCH INTERESTS

Methods

Estimating equations, Composite likelihood, Generalized method of moments, Divide-and-conquer, Heterogeneous data integration, High-Dimensional data, Correlated data, Parallel computing.

Applications

Brain imaging analysis, Environmental health science, Obesity, Metabolomics, Epigenetics, Children's health.

EDUCATION

PhD, Biostatistics, University of Michigan	2020 (expected)
MSc, Biostatistics, University of Michigan	2016
BSc, Honors Probability and Statistics, McGill University	2014
Baccalauréat français, Lycée Claudel	2011

EXPERIENCE

University of Michigan, School of Public Health

Graduate Student Research Assistant (2018-present)
Analysis of high-dimensional networked data: exploratory analyses of associations between genetic SNP data and metabolite measurements in two different datasets.
Supervisor: Jian Kang, PhD

Graduate Student Research Assistant (2015-2018)
Analyst in the Data Management and Modeling Core of the Children's Environmental Health and Disease Prevention Center of the University of Michigan. Analysis of metabolomic, epigenetic, anthropometric and exposure data.

Supervisors: Peter XK Song, PhD, and Karen E Peterson, DSc

Graduate Student Instructor (2014)
BIOSTAT 503: Introduction to Biostatistics
Supervisor: Thomas Braun, PhD

McGill University, Department of Mathematics and Statistics

Honors Research Project (Thesis) (2013)
Statistical Brain Imaging: Examination of different statistical and computational brain image analysis techniques.
Supervisors: Masoud Asgharian, PhD, Amir Shmuel, PhD, Montreal Neurological Institute

Observations of the NTU Multi-flow Coalition Game (2013)
Natural Sciences and Engineering Research Council of Canada (NSERC) Undergraduate Student Research Award (USRA)
Supervisor: F. Bruce Shepherd, PhD

Canadian Medical Association, Health Policy and Research Directorate

Summer intern (2011, 2012)
Investigations into cardiovascular disease symptoms and medical outcomes from cancer treatments. A comparative analysis of various national health care systems.

AWARDS & HONORS

- **John Van Ryzin Award** for most outstanding paper submitted to the International Biometric Society (IBS) Eastern North American Region's (ENAR) Distinguished Student Paper Award Competition (2018)
- **Rackham Conference Travel Grant**, University of Michigan (2016, 2017, 2018)
- **Best First-Year Masters Student**, Department of Biostatistics, University of Michigan (2015)
- **First Class Honors**, McGill University (2014)
- **Natural Sciences and Engineering Research Council of Canada (NSERC) Undergraduate Student Research Award (USRA)**, McGill University (2013)
- **J W McConnell Scholarship** (major award), McGill University (2011-2013)
- **Mention Très Bien** (Summa cum Laude, less than 10% of students world-wide), Lycée Claudel (2011)

PUBLICATIONS

Peer-reviewed journal articles

1. Perng W, **Hector EC**, Song P XK, Tellez Rojo MM, Raskind S, Kachman M, Cantoral A, Burant BF, Peterson KE. Metabolomic determinants of metabolic risk in Mexican adolescents. *Obesity (Silver Spring)* 2017. doi:10.1002/oby.21926

Journal articles under revision

1. **Hector EC**, Song P XK. A distributed and integrated method of moments for high-dimensional correlated data analysis. Under revision.

Articles under preparation

1. **Hector EC**, Song P XK. Unifying estimation and inference procedures for high-dimensional correlated outcomes under the divide-and-conquer paradigm.

CONFERENCE PRESENTATIONS

Oral

1. **Hector EC**, Song P XK. A distributed and integrated method of moments for high-dimensional correlated data analysis (invited). Workshop on *Recent Developments in Statistical Theory and Methods Based on Distributed Computing* (2018). Casa Matemática Oaxaca (CMO), Banff International Research Station for Mathematical Innovation and Discovery. Oaxaca, Mexico.

2. **Hector EC**, Song P XK. A distributed and integrated method of moments for high-dimensional correlated data analysis. *ENAR Spring Meeting* (2018). John Van Ryzin Award winner. Atlanta, Georgia.

3. **Hector EC**, Song P XK. A distributed and integrated method of moments for high-dimensional correlated data analysis. *University of Michigan Data Science Research Forum* (2017). Michigan Institute for Data Science (MIDAS). Ann Arbor, Michigan.

4. **Hector EC**, Song P XK. Regression analysis for high-dimensional correlated outcomes. *Joint meeting* (2017). University of Notre Dame. South Bend, Indiana.

5. **Hector EC**, Shepherd FB. An Introduction to Linear Programming and Applications to Research. *Student Summer Colloquium* (2013). McGill University. Montreal, Canada.

Poster

1. **Hector EC**, Song PXX. A Doubly Distributed and Integrated Method of Moments for High-Dimensional Correlated Data Analysis. *Joint Statistical Meetings (JSM)* (2018). Vancouver, Canada.
2. **Hector EC**, Song PXX. Regression analysis for high-dimensional correlated outcomes. *Spatial Statistics Conference* (2017). University of Lancaster. Lancaster, England.
3. **Hector EC**, Goodrich JM, Tang L, Perng W, Dolinoy DC, Mercado-Garcia A, Hu H, Tellez-Rojo MM, Peterson KE, Song PXX. Change in variance of IGF2 gene methylation associated with three metabolites. *ENAR Spring Meeting* (2016). Austin, Texas.

Other

1. **Hector EC**. Panel Discussant. *Fifth Bayesian, Fiducial and Frequentist (BFF5) Conference: Foundations of Data Science* (2018). Ann Arbor, Michigan.

SERVICE

University of Michigan, School of Public Health

- Biostatistics Computing, Social Media and Website Reform Committee, Student representative (2018)
- Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS), Lead member, Planning Committee (2017-2018).
- Fifth Bayesian, Fiducial, and Frequentist (BFF5) Conference, Member, Planning Committee (2017-2018).
- Biostatistics Brown Bag Seminar, Member (2014-present), President (2016-2018).
- STATCOM (Statistics in the Community at Michigan) (2015-2016).

PROGRAMMING SKILLS

Statistics: R, SAS, Python, Rcpp.

LANGUAGES

- English (native speaker)
- French (native speaker)
- Spanish (professional proficiency)
- Latin