

# Jessica Kristen Rapson

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## EDUCATION

### Department of Statistics, University of Oxford

Master of Science in Statistical Science (Merit)

Oxford, UK

October 2023

Thesis: Improving Spatio-Temporal Forecasting by Extracting Indicators Based on Past Observations

### Munk School of Global Affairs and Public Policy, University of Toronto

Master of Public Policy (3.98/4.00 CGPA)

Toronto, CA

September 2021

Thesis: Forecasting the Post-Pandemic Public Transit Recovery in Toronto

### University of Toronto

Honours Bachelor of Science, High Distinction (3.86/4.00 CGPA)

Toronto, CA

June 2019

**Relevant Coursework** Statistical Machine Learning (SB2.2), Advanced Topics in Statistical Machine Learning (SC4), Advanced Simulation Methods (SC5), Applied and Computational Statistics (SB1), Statistical Programming (SB2.0), Panel Data Methods (PPG2010), Forecasting Models and Econometric Methods (RSM2129), Program Evaluation (PPG1008), Network Analysis (SC2), Comparative Policy (PPG2003), Ethics and Public Interest (PPG2001), Governance and Institutions (PPG1000)

## PROFESSIONAL EXPERIENCE

### Future Impact Group

Research Lead

Oxford, UK

September 2023 - Present

- Lead 21 students to complete research projects in machine learning and open source mapping for global development
- Produced novel machine learning models to predict crop yield in Bihar and forecast water supply in the Western U.S.

### Government of Canada (Infrastructure Canada)

Analyst, Data and Analytics

Ottawa, CA

May 2020 - May 2021; September 2021 - Present

- Developed forecasting model of post-pandemic public transit ridership, supporting permanent transit funding
- Produced nation-wide map of geospatial public transit data for use in analysis and consumer navigation tools
- Conducted analysis of potable water infrastructure in Indigenous areas using data from 3,000+ municipalities
- Provided input resulting in department-wide investments to collect data on lead contamination and flood plains

### Government of Canada (Canada Border Services Agency)

Economic Analyst, Data Science and Advanced Analytics

Ottawa, CA

May 2021 - September 2021

- Worked on a large data science team to improve predictive machine learning model for border crossings

### G7/20 Research Group

Senior Researcher/Statistician

Toronto, CA

August 2019 - Present

- Uses machine learning models to predict and understand G7/G20 compliance with commitments made at summits
- Built accessible prediction tool used by Sherpas at the 2023 Delhi Summit; invited to attend summit to promote tool

### PEARL Research Group

Researcher

Toronto, CA

October 2019 - July 2020

- Developed models to determine whether individuals can successfully predict their job automation likelihood

### BFO Toronto

Data Management Specialist

Toronto, CA

July 2019 - August 2019

- Used Python (NumPy, Pandas, Matplotlib, Statsmodels) to conduct financial analysis on donor contributions
- Developed predictive models (Scikit-Learn) to predict donor behaviour and identify financial opportunities

## 180 Degrees Consulting

Director

Toronto, CA

June 2018 - May 2019

- Director at the Toronto branch of the largest student-run consultancy in the world, serving non-profit clients
- Managed four projects with a large governing body (60,000+ fee-paying members) and a smaller non-profit

Toronto, CA

Team Lead

August 2017 - June 2018

- Led a team to conduct extensive stakeholder analysis and provide recommendations for a \$4.6 million project

Johannesburg, ZA

Impact Fellow

May 2017 - August 2017

- Provided consulting services for an award-winning non-profit organization located in Soweto, Johannesburg
- Evaluated long-term sustainability, analyzed cost reduction strategies, and built a custom budgeting tool

## Collaborative Replication and Education Project

Toronto, CA

Researcher

January 2019 - April 2019

- Worked with team to replicate economic research, performed statistical analysis on novel data using SPSS

## BMO Wealth Management

Toronto, CA

Management Consulting Intern

May 2018 - August 2018

- Worked for the client, the Bank of Montreal, to assist in testing wealth management automations and macros
- Wrote a briefing on the new Basel Committee margin requirements for non-centrally cleared derivatives

## SOCIETIES & ACTIVITIES

### Statistics Without Borders

Various

Statistical Analyst/Client Acquisition Support

May 2021 - Present

- Conducted geospatial analysis of food pantry database to improve data quality and identify program gaps
- Built a predictive model of sex trafficking incidence using geospatial Bayesian networks and causal graphs
- Procured new projects with high-impact non-profits to increase the impact of Statistics Without Borders

### Public Good Initiative

Toronto, CA

Consultant and Data Analyst

December 2019 - July 2020

- Worked with CNIB to research impact of assistive technology on the education of visually-impaired students

## TECHNICAL PROFICIENCIES

Data Modeling & Analysis

Python (Pandas, Scikit-Learn) • R • QGIS • Remote Sensing

Data Visualization & Reports

Python (Matplotlib, Plotly, Dash) • R Shiny • Tableau •  $\LaTeX$

Statistical Programming

Machine Learning • Feature Engineering • Web Scraping • Git

Generative AI & Computing

LLaMA/Alpaca • Hugging Face • LoRA • HPC/SLURM

## SELECT AWARDS & ACHIEVEMENTS

- University of Toronto Entrance Scholarship (\$2,000), September 2015
- Jackman Scholars-in-Residence Scholarship (\$1,000 + Research Fellowship), May 2019
- Ontario Graduate Scholarship (\$10,000), June 2020
- Munk School TAsip Merit Award (~\$3,000 + TAsip), July 2020
- First Place, SHIFT Public Sector Case Competition (KPMG Job Offer), October 2019

## SELECT PUBLICATIONS

Rapson, J. & Kirton, J. (2020). Raising Compliance with G20 Commitments. *Global Solutions*, 5(1).

Rapson, J. (2023). Can predictive AI improve the efficacy of the G20? *The Global Governance Project*.

Rapson, J. & Asrani, A. (2020). Ontario's tax system hurts marginal earnings of low-income individuals. *Public Policy and Governance Review*.

Palider, K., Patton, P., Barseghyan, H., [et al, including Rapson, J.]. (2021). A Diagrammatic Notation for Visualizing Epistemic Entities and Relations. *Scientonomy*, Vol. 4.