

# Wai Yu Amanda Ng

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## Education

**University of Toronto, ON, Canada**

*MSc in Statistics*

Sep 2025– Apr 2026 (expected)

**University of Toronto, ON, Canada**

*H.B.Sc in Statistical Science (Specialist), Mathematics (Major), Health Studies (Focus)*

Sep 2021– Apr 2025

*cGPA: 3.94/4.00*

**Dalhousie University, NS, Canada**

*Increasing Diversity in Mathematical Sciences 2024: Combinatorial Commutative Algebra (Not for credit)*

Jul 2024 – Aug 2024

Full funding awarded by Fields Institute for Research in Mathematical Sciences

## Academic Honours and Achievements:

Samuel Beatty In-course Scholarship (2025), University of Toronto Excellence Award: Natural Sciences and Engineering (2024), University of Toronto Institute of Medical Science Department of Psychiatry Summer Undergraduate Research Program Award (2024), Eleventh Annual Canadian Statistics Student Conference Undergraduate Level First Prize (2023), Eleventh Annual Canadian Statistics Student Conference Travel Award (2023), University of Toronto Art and Science Students' Union Undergraduate Conference Travel Grant (2023), University of Toronto Dean's List Scholar (2021–2024), University of Toronto Scholar (2021), University of Toronto St. Michael's College Admission Award (2021)

## Research Experience

**Research Student, University of Toronto Department of Statistical Sciences**

May 2024 – Current

- Conducted research on project “Aspects of Robust Regression Analysis” under the supervision of Professor Nancy Reid, resulting in a research day presentation.
- Performed extensive mean squared error evaluation on Frequentist approaches and Bayesian approaches on estimating the degree of freedom parameter in student-t regression using simulated data, which led to a comprehensive prediction performance analysis of estimators and posterior summaries for different models.
- Explored the performance of reference priors and Jeffreys prior in high-dimensional regression scenarios, contributing insights for improving model accuracy in high-dimensional setting.
- Implemented and troubleshot various optimization algorithms to address non-convergence issues and enhance computational efficiency, enhancing proficiency for statistical computing and simulation through utilizing software R and Python.
- Presented research findings in report form, improving skills in concisely documenting methodology and interpretations, strengthening capabilities in creating effective plots and visualizations to communicate complex data and results.

**Student Researcher (STA496), University of Toronto Department of Statistical Sciences**

Sep 2024 – Apr 2025

- Conducted research on project “Fair machine learning with biased label” under the supervision of Professor Jesse Gronsbell, leading to a research day presentation.
- Reviewed statistical literature on fairness in machine learning and machine learning embedding algorithms (e.g. SVD-SPPMI, MIKGI, etc), strengthening research synthesis skills and producing a comprehensive summary of key methods and challenges.
- Simulated embedding-building algorithms, evaluated the embeddings on known pairs and conducted feature selection depression, demonstrating the effectiveness of existing techniques in capturing relationship between medical concepts and uncovering key predictors for downstream modeling.
- Constructed supervised machine learning models (logistic regression and random forest) to predict depression using KESER selected features, developing practical modeling expertise and providing insights into demographic group bias in prediction model.

**Research Student, Centre for Addiction and Mental Health & University of Toronto Institute of Medical Science** Jun 2024 – Aug 2024

- Conducted research on project “Investigating the efficacy of a novel approach to opioid overdose training using virtual reality” under the supervision of Professor Sanjeev Sockalingam and Professor Petal Abdool, resulting in a paper publication and a poster presentation.
- Performed statistical analyses using R to examine the relationship between cybersickness and degree of physical movement in immersive VR simulation-based psychiatric medical educational programs, revealing that higher physical activity in VR training correlates with increased nausea.
- Summarized descriptive statistics and identified trends in participant tolerability and symptom severity across different training scenarios, contributing valuable insights for future research on minimizing cybersickness in VR environments.
- Provided data-driven recommendations for the design of VR training programs that prioritize user comfort, emphasizing the importance of movement considerations while maintaining educational efficacy.

**Research Student, University of Toronto COBWEB lab**

Sep 2023 – Apr 2024

- Initiated research on project “An Agent-Based Simulation Approach to Investigate the Effect of Decreasing Birth Rates and the Efficacy of Potential Solutions” under the supervision of Professor Brad Bass, which led to a poster presentation.
- Conducted comprehensive literature reviews and prepared an annotated bibliography, synthesizing findings from multidisciplinary sources and enhancing critical thinking and organization skills.
- Improved self-learning skills by mastering the simulation software COBWEB, utilizing its various functionalities to simulate population dynamics and policy scenarios.
- Performed time-series and regression analyses to assess the impact of policy interventions on population dynamics and birth rates trends, providing insights for short-term and long-term planning.

**Undergraduate Research Assistant, University of Toronto Population Well-being Lab**

Oct 2022 – May 2023

- Conducted research on project “Life Satisfaction Outcomes for Domain Satisfied Individuals: Clustering Domain Satisfaction” under the supervision of Professor Felix Cheung, resulting in three conference presentations and a first prize undergraduate level conference poster award.
- Co-drafted the research plan, demonstrating competency in strategic planning by outlining clear objectives, methodologies, and timelines.
- Performed data analysis using unsupervised clustering methods, including multivariate gaussian mixture model, k-means and hierarchical clustering, improving technical proficiency and R programming skills.
- Evaluated effectiveness and appropriateness of different statistical methods, created detailed tip-sheets on algorithms such as expectation-maximization and the elbow method, enhancing understanding and application of these algorithms.
- Developed strong statistical communication skills, effectively designed and delivered presentations that discussed the suitability and implications of different clustering methods used, honing knowledge translation abilities.

**Student Statistics Consultant, University of Toronto Data Sciences Café**

Sep 2022 – Dec 2023

- Conducted research on project “Building a statistical communication and consulting community across disciplines” under the supervision of Professor Samantha-Jo Caetano, contributing to the development of a supportive and collaborative consulting community, fostering an environment where interdisciplinary research and statistical analysis could thrive.
- Interpreted guest speakers’ sample data, cultivating skills in analyzing multidisciplinary datasets and tailoring analysis to diverse fields.
- Acquired expertise in recommending appropriate statistical methodologies to guest speakers based on their specific needs and research objectives, resulting in more accurate and reliable data interpretations.
- Identified potential biases and limitations in current research methods, providing actionable insights for improvement in study method design.
- Prepared and presented monthly reports on various statistical topics, demonstrating statistical approaches and coding methods in an accessible manner to enhance statistical literacy among non-statistician researchers.

**Professional Experience****Data Analyst Intern, Canadian Urban Institute**

May 2023 – Aug 2023

- Developed multivariate linear regression models to evaluate nationwide carbon emissions at household and business levels, incorporating factors such as location, local socio-economic conditions, transportation, and community assets, resulting in data-driven policy recommendations.
- Constructed a multinomial logistic regression model to analyze the relationships between social connection variables and demographic variables, providing insights for urban planning strategies.
- Created an interactive situational tool to demonstrate the effects of urbanization and housing composition on greenhouse gas emissions, enhancing public engagement and awareness.
- Produced over 300 detailed maps using QGIS, significantly improving spatial analysis and visualization capabilities.

**First-year Learning Community Assistant Peer Mentor, University of Toronto**

Sep 2022 – Apr 2023

- Facilitated the planning and implementation of all FLC sessions, coordinated discussions with professors from the Department of Mathematics and library staff, guided lower-year students in academic matters, fostering skills to overcome challenges and manage transition anxiety to university life.
- Established a rapport and inclusive community among first-year students, promoting a supportive learning environment.

## Teaching Experience

**Teaching Assistant, University of Toronto Department of Statistical Sciences**

Sep 2023 – Current

Courses and events: STA130, STA238, 2024 Florence Nightingale Day

**Learning Support, University of Toronto Data Sciences Institute**

Feb 2024 – Dec 2024

Data Sciences & Machine Learning Certificates Modules: SQL, Applying Statistical Concepts, Sampling, Visualization

## Publications

**Ng, A.**, Inagaki M, Antinucci R, Sockalingam S & Abdool PS. (2025) *Determining the Severity and Prevalence of Cybersickness in Virtual Reality Simulations in Psychiatry* [Manuscript submitted for publication]. Department of Psychiatry, University of Toronto.

## Conference Presentations

Abdool P, **Ng, A.**, Inagaki M, Antinucci R, Sockalingam S. (2025, Jan 30) *Determining the Severity and Prevalence of Cybersickness in Virtual Reality Simulations* [Poster Presentation]. Donald Wasylenki Education Day, Toronto ON, Canada.

Wu, X. & **Ng, A.** (2023, May 28-31) *Statistical Methods of Variant Calling in Next-Generation Sequence Data Analysis* [Poster presentation]. 2023 Statistical Society of Canada SSC Annual Meeting, Ottawa, ON, Canada.

**Ng, A.**, Panasiuk S. & Cheung, F. (2023, May 28-31) *Predicting Life Satisfaction from Life Domain Satisfaction: A Clustering Approach to Bottom-up Theories of Subjective Well-being* [Poster presentation]. 2023 Statistical Society of Canada SSC Annual Meeting, Ottawa, ON, Canada.

**Ng, A.**, Panasiuk S. & Cheung, F. (2023, May 27) *Predicting Life Satisfaction from Life Domain Satisfaction: A Clustering Approach to Bottom-up Theories of Subjective Well-being* [Poster presentation]. Eleventh Annual Canadian Statistics Student Conference CSSC, Ottawa, ON, Canada.

Panasiuk S., **Ng, A.** & Cheung, F. (2023, February 23-25) *Predicting Life Satisfaction from Life Domain Satisfaction: A Clustering Approach to Bottom-up Theories of Subjective Well-being* [Conference session]. Society for Personality and Social Psychology Annual Convention, Atlanta, GA, United States.

## Skills

**Programming:** R, Python, SQL | **Tools:** QGIS, GitHub, Tableau, Microsoft office software | **Languages:** English, Cantonese, Mandarin