LUKE HAGAR

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EDUCATION

University of Waterloo (UW)

Candidate for PhD in Statistics   *Sep 2021 – present*
  - ➤ Anticipated completion date: August 2024
  - ➤ Thesis topic: Targeted hypercube exploration for scalable design
  - ➤ Supervisor: Dr. Nathaniel Stevens

MMath in Statistics   *Sep 2020 – Aug 2021*

BMath, Honours Mathematical Optimization & Statistics (Co-op)   *Sep 2015 – Apr 2020*

SCHOLARSHIPS & AWARDS

Funding
  - ➤ NSERC Postgraduate Scholarship – Doctoral: $63,000 *(2021-2024)*
  - ➤ UW President's Graduate Scholarship: $35,000 *(2021-2024)*
  - ➤ UW Statistics and Actuarial Science Chair's Award: $1,000 × 5 *(2021-2023)*
  - ➤ UW Statistics & Actuarial Science Comprehensive Exam Award: $1,000 *(2022)*
  - ➤ Ontario Graduate Scholarship (Declined): $15,000 *(2021-2022)*
  - ➤ UW Statistics & Actuarial Science Doctoral Entrance Award: $5,000 *(2021-2022)*
  - ➤ UW Statistics & Actuarial Science Outstanding Academic Performance Award: $1,000 *(2021)*
  - ➤ NSERC Canada Graduate Scholarship – Master's: $17,500 *(2020-2021)*
  - ➤ UW President's Graduate Scholarship: $10,000 *(2020-2021)*
  - ➤ UW President's Scholarship of Distinction: $5,000 *(2015-2020)*
  - ➤ NSERC Undergraduate Student Research Award: $4,500 *(2019)*
  - ➤ Scott Kelsey Fevreau Memorial Award: $500 (2017)
  - ➤ St. Jerome's University Robert & Margaret Forwell Scholarship: $1,500 (2016)

Recognitions
  - ➤ 2023 Presentation Award (Waterloo Student Conference in Statistics, Actuarial Science & Finance)
    - ➤ This award recognizes the best presentations at the UW Department of Statistics and Actuarial Science's annual regional student conference. The award is for *Presentation #8*.
  - ➤ 2022 Best Presentation Award (UW Statistics & Actuarial Science Research Presentation Day)
  - ➤ 2021 SSC Business and Industrial Statistics Section Presentation Award
    - ➤ This award recognizes the best student presentation related to business and industrial statistics at the Statistical Society of Canada's annual meeting. The award is for *Presentation #2*.

PEER-REVIEWED PUBLICATIONS

Published & Accepted

3. W. Cichocki, S. Kaminskaïa, and **L. Hagar** (2023+). Regional variation in articulation rate in French spoken in Canada. *Journal of the International Phonetics Association*, in press.

2. N.T. Stevens and **L. Hagar** (2022). Comparative probability metrics: Using posterior probabilities to account for practical equivalence in A/B tests. *The American Statistician 76*(3), 224–237.

1. L. Lu, C.M. Anderson-Cook, N.T. Stevens, and **L. Hagar** (2022). Using a baseline with the probability of agreement to compare distribution characteristics. *Quality Engineering 34*(3), 322–343.

Submitted for Publication

4. **L. Hagar** and N.T. Stevens. (2024+). Power analysis without pivotal quantities. Submitted to *Journal of Computational and Graphical Statistics*, January 2024. arXiv.

3. **L. Hagar** and N.T. Stevens. (2024+). Scalable design with posterior-based operating characteristics. Submitted to *Journal of the American Statistical Association*, January 2024. arXiv.

2. **L. Hagar** and N.T. Stevens. (2023+). Posterior ramifications of prior dependence structures. Revision invited at *Statistical Science*, December 2023. arXiv.

1. **L. Hagar** and N.T. Stevens. (2023+). Fast power curve approximation for posterior analyses. Revision submitted to *Bayesian Analysis*, October 2023. arXiv.

OTHER PUBLICATIONS

Conference Proceedings

1. W. Cichocki, **L. Hagar**, and Y. Perreault (2023). Variation in articulation rate in New Brunswick French. *Canadian Acoustics 51*(3), 200–201.

PRESENTATIONS

Invited Seminars and Conference Presentations

3. *A Bayesian Approach to Experimentation*
   ➤ Airbnb Academic Collaborations Seminar, November 2023

2. *Targeted Sampling for Scalable Experimental Design*
   ➤ American Society for Quality (ASQ) CPID Webinar, November 2023

1. *Using a Baseline with the Probability of Agreement to Compare Distribution Characteristics*
   ➤ INFORMS Conference on Quality, Statistics, and Reliability, June 2023

Contributed Conference Presentations

8. *Scalable Power Curve Approximation with Targeted Hypercube Sampling*
   ➤ Waterloo Student Conference in Statistics, Actuarial Science & Finance, October 2023

7. *Fast Sample Size Determination for Bayesian Equivalence Tests*
   ➤ Joint Statistical Meetings, August 2023

6. *Fast Sample Size Determination for Two-Group Equivalence Tests with Unequal Variances*
   ➤ International Society for Business and Industrial Statistics Conference, July 2023

5. *Fast Sample Size Determination for Two-Group Equivalence Tests with Unequal Variances*
   ➤ Statistical Society of Canada Annual Meeting, May 2023

4. *Fast Sample Size Determination for Bayesian Equivalence Tests*
   ➤ University of Toronto's Statistics Graduate Student Research Day, April 2023

3. *A More Computationally Tractable Approach to Bayesian Interval-Based Sample Size Determination*
   ➤ Statistical Society of Canada Annual Meeting, May 2022

2. *A Framework for Sample Size Determination with Comparative Probability Metrics (CPMs)*
   ➤ Statistical Society of Canada Annual Meeting, June 2021

1. *A More Comprehensive Framework for Binary Response Experiments Using CPMs*
   ➤ Ninth Annual Canadian Statistics Student Conference, June 2021

EXPERIENCE

Teaching Experience

Sessional Instructor, University of Waterloo *Jan 2024 – Apr 2024*
  - ➤ Course: STAT 341 (Computational Statistics & Data Analysis) with 125 students

Teaching Assistant, University of Waterloo *Jan 2017 – Aug 2023*
  - ➤ Courses: STAT 938 (Statistical Consulting), STAT 341 (Computational Statistics & Data Analysis), STAT 430 (Experimental Design), STAT 443 (Forecasting), COMM 421 (Financial Statement Analysis), MATH 137 (Calculus I), and MATH 138 (Calculus II)

Professional Development Programs, University of Waterloo
  - ➤ Fundamentals of University Teaching *(2021)*, University Mathematics Teaching Techniques *(2023)*, Certificate in University Teaching *(2022 – 2023)*, New Instructor Foundations Program *(2023)*

Work Experience

TA Workshop Facilitator, UW Centre for Teaching Excellence *Jan 2023 – present*
  - ➤ Facilitating and developing interdisciplinary teaching workshops for graduate students.

TA Coordinator, UW Department of Statistics & Actuarial Science *Sep 2023 – Dec 2023*
  - ➤ Co-developed practicum component for final stage of teaching assistant development program.
  - ➤ Conducted teaching observations to provide TAs with constructive feedback.

Consultant, UW Statistical Consulting & Survey Research Unit *Jan 2022 – Apr 2023*
  - ➤ Guided students and faculty members on how to leverage sound statistical approaches in their analyses, with active research collaboration in enhanced service projects (see e.g., *Paper #3*).

STATISTICAL SERVICE

SSC Student and Recent Graduate Committee
  - ➤ Chair *(July 2023 – present)*
    - ➤ Leading a team of 10 members to host community-building and professional events for statistics students and recent graduates in Canada
  - ➤ Member *(July 2022 – June 2023)*

SSC Canadian Student Statistics Conference
  - ➤ Co-chair *(June 2022 – July 2023)*
    - ➤ Co-supervised a committee of 15 students to organize a national conference at Carleton University with 170 participants
  - ➤ Scientific Program Co-coordinator *(Sep 2021 – May 2022)*

ASQ Chemical and Process Industries Division (CPID) Leadership Team
  - ➤ Secretary/Treasurer *(Jan 2024 – present)*
  - ➤ Fall Technical Conference Publicity Chair *(Jan 2023 – present)*

UW Statistical Workshops and Applications Group
  - ➤ Executive Team Member *(Jun 2022 – Aug 2023)*

UW Math Faculty Graduate Studies Committee
  - ➤ Elected Graduate Student Representative *(May 2021 – Aug 2023)*

UW Math Faculty-Level Student Course Perceptions Working Group
  - ➤ Graduate Student Representative *(Mar 2022 – Mar 2023)*

EDITORIAL ACTIVITIES

Reviewer

➤ *Statistical Methods in Medical Research*