LUKE HAGAR

🌐 lmhagar.github.io ✉ lmhagar@uwaterloo.ca

EDUCATION

University of Waterloo

Candidate for PhD in Statistics   *Sep 2021 – Jul 2024 (expected)*
  - Thesis topic: Design with sampling distribution segments
  - Supervisor: Nathaniel Stevens

MMath in Statistics   *Sep 2020 – Aug 2021*

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

PEER-REVIEWED PUBLICATIONS

Published & Accepted

4. A. Deng, **L. Hagar**, N.T. Stevens, T. Xifara, A.K. Gandhi. (2024+). Metric decomposition in A/B tests. Accepted to *Proceedings of the 30th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining.*

3. W. Cichocki, S. Kaminskaïa, and **L. Hagar**. (2024). Regional variation in articulation rate in French spoken in Canada. *Journal of the International Phonetics Association 54*(1), 126–145.

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+). Scalable design with posterior-based operating characteristics. Revision invited by *Journal of the American Statistical Association*, May 2024. arXiv.

3. **L. Hagar** and N.T. Stevens. (2024+). Fast power curve approximation for posterior analyses. Revision submitted to *Bayesian Analysis*, May 2024. arXiv.

2. **L. Hagar** and N.T. Stevens. (2024+). Bioequivalence design with sampling distribution segments. Submitted to *Statistics in Medicine*, April 2024. arXiv.

1. **L. Hagar** and N.T. Stevens. (2024+). Posterior ramifications of prior dependence structures. Revision submitted to *Statistical Science*, March 2024. 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.

SCHOLARSHIPS & AWARDS

Funding

  - NSERC Postdoctoral Fellowship: $90,000 *(2024-2026)*
  - [CRM](CRM) StatLab - CANSSI Postdoctoral Fellowship: $42,000 (Declined) *(2024-2025)*
  - [ASA](ASA) Mary G. and Joseph Natrella Scholarship: $3,500 *(2024)*

- NSERC Postgraduate Scholarship – Doctoral: $63,000 *(2021-2024)*
- UW President's Graduate Scholarship: $35,000 *(2021-2024)*
- UW Statistics & Actuarial Science Chair's Award: $1,000 × 7 *(2021-2024)*
- UW Statistics & Actuarial Science Sprott Scholarship: $1,000 *(2023)*
- UW Statistics & Actuarial Science Teaching Assistant Award: $500 *(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)*

PRESENTATIONS

Invited Seminars and Conference Presentations

6. [Upcoming] *Design of Posterior Analyses with Sampling Distribution Segments.* Computational and Methodological (CM)Statistics, December 2024.

5. [Upcoming] *Scalable Bayesian Design for Business Innovation.* HEC Montréal, November 2024.

4. *Scalable Design with Posterior-Based Operating Characteristics.* Joint Research Conference, June 2024.

3. *A Bayesian Approach to Experimentation.* Airbnb AirAcademy Webinar Series, November 2023.

2. *Targeted Sampling for Scalable Experimental Design.* 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

10. *Quantile Estimation for Sampling Distributions of Posterior Probabilities.* SSC Annual Meeting, June 2024.
    - Biostatistics Section Student Presentation Award Winner

9. *Engaging Assessments with Real Data Analysis in Undergraduate Statistics Courses.* UW Teaching and Learning Conference, May 2024.

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

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.* ISBIS Conference, July 2023.

5. *Fast Sample Size Determination for Two-Group Equivalence Tests with Unequal Variances.* SSC Annual Meeting, May 2023.

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

3. *A More Computationally Tractable Approach to Bayesian Interval-Based Sample Size Determination.* SSC Annual Meeting, May 2022.

2. *A Framework for Sample Size Determination with Comparative Probability Metrics.* SSC Annual Meeting, June 2021.
   └ Business and Industrial Statistics Section Student Presentation Award Winner

1. *A More Comprehensive Framework for Binary Response Experiments Using Comparative Probability Metrics.* Canadian Statistics Student Conference, June 2021.

EXPERIENCE

Teaching Experience

Sessional Lecturer, University of Waterloo   *Jan 2024 – Apr 2024*
  — Course: STAT 341 (Computational Statistics & Data Analysis) with 125 undergraduate students
  — Coordinated two sections with 250 total students and managed 6 teaching assistants.

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 – Apr 2024*
  — 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 clients 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
  — Past Chair *(July 2024 – present)*
  — Chair *(July 2023 – June 2024)*
      └ Led 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
  — Judge *(Mar 2024 – June 2024)*
  — Co-chair *(July 2022 – June 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 – June 2022)*

ASQ 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
- *Computational Statistics, Statistical Methods in Medical Research*

ACRONYMS

ASA	American Statistical Association
ASQ	American Society for Quality
CANSSI	Canadian Statistical Sciences Institute
CPID	Chemical and Process Industries Division
CRM	Centre de recherches mathématiques
INFORMS	Institute for Operations Research and the Management Sciences
ISBIS	International Society for Business and Industrial Statistics
NSERC	Natural Sciences and Engineering Research Council
SSC	Statistical Society of Canada
UW	University of Waterloo