

Research Interests

My research develops statistical methods to optimize decision making in dynamic settings, especially in the context of digital marketing, mobile health technology, and/or customer-adaptive learning algorithms, such as reinforcement learning methods. Past projects include

- Meta-analytic methods for online experimentation (in collaboration with Zillow Group)
- Count-data forecasting models for customer analysis
- Robust causal inference methods for complex dynamic experiments
- A contextual bandit algorithm for optimizing treatment decisions in longitudinal settings (e.g., when to send vs. not send reminders to patients/customers)

In my ongoing work, I am developing machine learning methods to accelerate the estimation of dynamic discrete choice models—a family of models that is often used to describe consumers' decisions among competing alternatives over time. Another project develops robust causal inference methods for estimating moderation effects in dynamic experiments, allowing for complex patterns of cross-participant dependence.

With five years of industry experience in data science and a Ph.D. in Statistics from the University of Michigan, I see a tremendous opportunity to improve the statistical methodology used in quantitative marketing and business analytics, more broadly. Some areas I am interested in pursuing in the next few years include causal analysis of agentic AI systems, semiparametric customer lifetime value prediction, and efficient design & analysis of geographic marketing experiments. I am also actively working on adding application-focused projects to my research portfolio with collaborators at my current institution, the Johns Hopkins Carey Business School.

Education

- 2025 – 2027 📖 **Postdoctoral Fellow**, Johns Hopkins Carey Business School
- Academic Area: Marketing
 - Advisor: Professor Michael Keane
 - Primary Research Project: Computationally efficient estimation of dynamic discrete choice models via machine learning methods
- 2021 – 2025 📖 **Ph.D. in Statistics**, University of Michigan
- Thesis Title: *Robust Methods for Causal Inference and Policy Learning with Applications to Mobile Health*
 - Co-Advisors: Professors Fred Feinberg (Marketing) and Walter Dempsey (Biostatistics)
 - Committee Members: Eric Schwartz, Colin Fogarty, and Johann Gagnon-Bartsch
 - Certificate: Graduate Certificate in Entrepreneurship and Innovation
 - GPA: 4.00
- 2017 – 2019 📖 **M.S. in Statistics**, Brigham Young University
- Thesis Title: *ideq: An R Package for Dynamic Spatio-temporal Models*
 - Professor Robert Richardson
 - GPA: 4.00
- 2012 – 2019 📖 **B.S. in Economics & Statistics**, Brigham Young University
- Minor: Mathematics
 - GPA: 3.97

Research Publications

Accepted

- 1 **Huch, E**, M Ferlic, C Berrett, and K Sellers (2026). Forecasting Count Data with Varying Dispersion: A Latent-Variable Approach. *Journal of Forecasting*. [DOI: 10.1002/for.70119](#).
- 2 **Huch, E**, I Nahum-Shani, L Potter, C Lam, DW Wetter, and W Dempsey (2025). Data Integration Methods for Micro-randomized Trials. *Biometrics* **81**(2), ujafoo2. [DOI: 10.1093/biomtc/ujaf002](#).
- 3 **Huch, E**, J Shi, MR Abbott, JR Golbus, A Moreno, and WH Dempsey (2024). RoME: A Robust Mixed-effects Bandit Algorithm for Optimizing Mobile Health Interventions. In: *Advances in Neural Information Processing Systems*. Vol. 37, pp.128280–128329. <https://arxiv.org/abs/2312.06403>.

Under Review

- 1 *Dempsey, W and **E Huch** (2025). Stable Central Limit Theorems for Discrete-time Lag Martingale Difference Arrays. (Submitted) *Journal of Applied Probability*. <https://arxiv.org/abs/2510.06524>.
- 2 **Huch, E**, S Nail, T Melconian, X Vongsathorn, and F Feinberg (2025). Overall Evaluation Criteria for A/B Tests: A Meta-Analytic Approach. (1st Revision) *Marketing Science*.

For submitted manuscripts not publicly available, a recent draft is available by request.

In Progress

- 1 **Huch, E**, I Nahum-Shani, and W Dempsey (2026). Randomization-based Estimation of Effect Moderation in Panel Experiments.
- 2 **Huch, E**, W Dempsey, and F Feinberg (2025). Robust Bayesian Inference of Causal Effects via Randomization Distributions. <https://arxiv.org/abs/2511.00676>.

I expect to submit these manuscripts in the next 12 months.

Software

- 1 **Huch, E** and R Richardson (2019). ideq: An R Package for Dynamic Spatio-temporal Models. <https://github.com/eastonhuch/ideq>.

Teaching

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|-------------|---|
| 2023 |  Data Science Mentor , Veritas AI <ul style="list-style-type: none">– Mentor high-school students taking an online AI course– Help students with practice programming problems and final project |
| 2023 – 2024 |  Data Science Mentor , Great Learning <ul style="list-style-type: none">– Mentored working professionals taking an online course in data science and business analytics– Maintained an overall rating of 4.89/5.00 |

*Alphabetical ordering and/or equal contribution

Teaching (continued)

- 2021 – 2022  **Graduate Student Instructor**, Department of Statistics, University of Michigan
- Led labs, created course content, and assisted with grading
 - Courses: Statistics and Artificial Intelligence (STATS 315), Data Mining and Statistical Learning (STATS 415), & Intro to Statistics and Data Analysis (STATS 250)
- 2017 – 2018  **Teaching Assistant**, Department of Statistics, Brigham Young University
- Assisted students with data analysis projects
 - Course: Applied SAS Programming (Stat 224)

Professional Experience

- 2024  **Applied Scientist Intern**, Zillow Group (3 mos)
- Summer intern on the experimentation platform team
 - Led a methodological research project in the area of A/B testing (currently under review at Marketing Science)
- 2023 – 2025  **Freelance Applied Scientist**, Self-employed (2 yrs 5 mos)
- Worked with various clients on applied data science problems in the technology, education, and advertising industries
 - Maintained 100% job success and 4.9/5.0 rating on completed projects
 - Previous projects include measuring the effectiveness of promotions, regression analysis on sales call data, clustering job applicants, and data analytics infrastructure improvements
 - Public profile: [upwork.com/freelancers/~015bb6b43d3d54fff4](https://www.upwork.com/freelancers/~015bb6b43d3d54fff4)
- 2022  **Data Science Intern**, Recursion Pharmaceuticals (4 mos)
- Worked on the drug discovery inference team
 - Analyzed effectiveness of RNA guide design
 - Quantified uncertainty in AI-derived biological metrics
- 2017 – 2021  **Data Scientist**, Lucid Software (3 yrs 8 mos)
- Forecasted account growth to optimize sales quotas and territories for 200+ reps
 - Implemented customer lifetime value models, resulting in \$1M+ in savings annually
 - Advised on online experimentation (A/B testing) and developed Bayesian testing framework

Awards

- 2024  **Best Poster Presentation**, MSSISS 2024, University of Michigan
For presenting *Data Integration Methods for Micro-randomized Trials*
- 2019  **Magna Cum Laude**, Brigham Young University
Awarded to top-5% of undergraduates at graduation
- 2018 – 2019  **Department Scholarship**, Statistics Department, Brigham Young University
Full-tuition academic scholarship for M.S. in Statistics
- 2015 – 2018  **Dean's List**, College of FHSS, Brigham Young University
Awarded to top-5% of students within the College of Family, Home and Social Sciences (FHSS)

Awards (continued)

- 2012 – 2018  **Heritage Scholarship**, Brigham Young University
Full-tuition academic scholarship for B.S. in Economics & Statistics
- 2010  **Eagle Scout**, Boy Scouts of America

Presentations

- 2025  **Dissertation Defense**, University of Michigan
Successfully defended dissertation: *Robust Methods for Causal Inference and Policy Learning with Applications to Mobile Health*
-  **CATIE 2025**, University of Michigan
Presented module titled *Intervention Analyses using SMART Data Part II: Comparing Adaptive Interventions* to education researchers
- 2024  **Carey Business School Marketing Seminar**, Baltimore, Maryland
Presented *Robust Bayesian Inference of Causal Effects via Randomization Distributions* at the marketing seminar for the Carey Business School at Johns Hopkins University (90 minutes)
-  **INFORMS 2024**, Seattle, Washington
Presented *Robust Bayesian Inference of Causal Effects via Randomization Distributions* (12 minutes)
-  **JSM 2024**, Portland, Oregon
Presented *Data Integration Methods for Micro-randomized Trials* (15 minutes)
-  **MSSISS 2024**, University of Michigan
Presented poster titled *Data Integration Methods for Micro-randomized Trials*
-  **CATIE 2024**, University of Michigan
Presented module titled *SMARTs with Repeated Outcome Measurements* to education researchers
- 2023  **MSSISS 2023**, University of Michigan
Presented *Bayesian Randomization Inference: A Distribution-free Approach to Causal Inference* (15 minutes)
- 2019  **Master's Thesis Defense**, Brigham Young University
Successfully defended master's thesis: *ideq: An R Package for Dynamic Spatio-temporal Models*

Volunteer Experience

- 2025  **Scientific Reviewer**: Marketing Science
- 2024  **Volunteer for CATIE 2024**, d3 Center, University of Michigan
Assist in planning and executing CATIE 2024, a conference to train education researchers in the use of adaptive interventions
- 2023 – 2025  **Executive Chair**, PhD Council, Statistics Department, University of Michigan
Lead student-run PhD council, which assists the department with recruiting, computing resources, social event planning, and office-space logistics
- 2013 – 2015  **Volunteer Representative**, Nonprofit Organization in São Paulo, Brazil
Participated in service projects, managed finances for volunteer organization, trained and led other volunteers, and learned Brazilian Portuguese
- 2012 – 2013  **NCAA Division 1 Athlete**, Brigham Young University
Walk-on athlete for the cross country and track teams, specializing in the 1500m/mile run

Skills

Languages	📖	Native English, advanced Portuguese, intermediate Spanish
Programming	📖	Python, TensorFlow, Pytorch, R, Bash, SQL, Scala, C++, $\text{\LaTeX}$
Software Tools	📖	Unix, git, Docker, make, Apache Spark, and various database/BI tools

References

Available upon request