

# Cassidy K. Buhler

*Ph.D. Student in Business Analytics*

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📄 <https://cassiebuhler.github.io/>

## Education

2019-2024 **Ph.D. Business Administration – Operations & Business Analytics Concentration,**  
(expected) **Graduate Minor: Computational Data Science,**  
*Drexel University, Philadelphia, PA.*

Advisor: Hande Y. Benson

2015–2019 **B.S. Mathematics – Statistics Emphasis,**  
*University of Utah, Salt Lake City, UT.*

## Research

Nonlinear optimization, machine learning, computational optimization, operations research

## Papers

### Publication in peer-reviewed journal

**Cassidy K. Buhler**, Rebecca S. Terry, Kathryn G. Link, Frederick R. Adler. “Do mechanisms matter? Comparing cancer treatment strategies across mathematical models and outcome objectives”. *Mathematical Biosciences and Engineering*, 2021, 18(5): 6305-6327. doi: 10.3934/mbe.2021315.

### In preparation

**Buhler C. K.**, Benson H. Y., Shanno D. F. (2021). “Regularized step directions in conjugate gradient minimization for machine learning”. In preparation for submission to *INFORMS Journal on Optimization*.

**Buhler C. K.**, Benson H. Y. (2020). “Efficient solution of portfolio optimization problems via dimension reduction and sparsification”. Technical Report. Drexel University, Philadelphia PA, USA.

### Publication in non peer-reviewed journal

**Buhler C. K.**, Terry R. S., Link K. G., Adler F. R. (2019). “Mathematical modeling of adaptive therapy in prostate cancer”. *Undergraduate Research Journal*.

## Presentations

2021 INFORMS Annual Meeting. **Buhler C. K.**, Benson H. Y. Shanno D. F. *Regularized step directions in conjugate gradient minimization for machine learning*.

- 2021 SIAM Conference on Optimization. **Buhler C. K.**, Benson H. Y. *Conjugate gradient methods for machine learning*. Presenting in the *Computational Optimization Methods for Machine Learning and Global Optimization* minisymposium (MS108).
- 2020 INFORMS Annual Meeting. **Buhler C. K.**, Benson H. Y. *Efficient solution of portfolio optimization problems via dimension reduction and sparsification*. Presented in the *Nonlinear Optimization Methods and Software* session (WC34).
- 2020 Drexel Computer Science Theory Reading Group. **Buhler C. K.** *Portfolio optimization*.
- 2019 Undergraduate Research Symposium. **Buhler C. K.**, Terry R. S., Link K. G., Adler F. R. *Mathematical modeling of adaptive therapy in prostate cancer*.

## Teaching

- 2019-Present Recitation Instructor, *Drexel University*  
Responsible for delivering a weekly 2-hour lecture, preparing lecture material, and grading. Similar to a lab section, the recitation section is focused on learning technical skills in the computer lab.
  - MIS 200: Management Information Systems
- 2019-Present Teaching Assistant, *Drexel University*  
Assists primary instructor with duties such as holding office hours, prepping assignments, and grading.
  - BSAN 360: Programming for Data Analytics
  - OPM 200: Operations Management
  - OPM 341: Supply Chain Management
  - OPR 320: Linear Models for Decision Making
  - STAT 201: Intro to Business Statistics
  - STAT 202: Business Statistics II
  - STAT 205: Statistical Inference I
  - STAT 206: Statistical Inference II
- 2018-2019 Computer Lab & Mathematics Teaching Assistant, *University of Utah*  
Tutored students at the T. Benny Rushing Mathematics Student Center in a variety of undergraduate mathematics courses.
  - MATH 1010: Intermediate Algebra
  - MATH 1050: College Algebra
  - MATH 1210: Calculus I
  - MATH 1220: Calculus II
  - MATH 2210: Calculus III
  - MATH 3070: Applied Statistics I
  - MATH 3080: Applied Statistics II

## Outreach & Service

- 2019 Utah Prison Education Project Tutor, *Timpanogos Women's Correctional Facility*  
Tutored students who are incarcerated in a Salt Lake Community College math course.
  - MATH 1030: Intro to Quantitative Reasoning

## Grants & Awards

- 2021 Student Travel Award, *SIAM Conference on Optimization (OP21)*  
Funding is provided by National Science Foundation (NSF) for graduate students to participate at a Society of Industrial and Applied Mathematics (SIAM) conference.
- 2021 Teaching Assistant Excellence Award (Highly Commended), *Drexel University*  
For graduate students who “exhibit exemplary commitment to student learning”. There were over 50 nominations and highly commended is an award finalist.
- 2019-2021 Modeling the Dynamics of Life Fund, *University of Utah*  
Research support provided by Professor Frederick R. Adler.
- 2019 Undergraduate Research Scholar Designation, *University of Utah*  
For undergraduate students who have completed two semesters of research, have presented in the Undergraduate Research Symposium, and published research in the Undergraduate Research Journal.
- 2019 Research Experience for Undergraduates (REU), *University of Utah*  
This grant was for undergraduate students conducting research with a faculty member from the mathematics department.
- 2015-2018 Honors at Entrance Scholarship, *University of Utah*  
Full tuition scholarship awarded to the top scholar at each Utah high school, based on GPA and ACT score.
- 2015 Utah Centennial Scholarship for Early High School Graduation, *State of Utah*  
Scholarship awarded to Utah residents who have graduated high school early.

## Work Experience

- 2018 Computer Scientist Intern, *United States Air Force*
- Conducted research related to improving software for US Air Force aircraft
  - Hired under the Premier College Intern Program (PCIP) and earned a position in the PALACE Acquire (PAQ) program.

## Organizations

- 2018-2019 Member of Association for Women in Mathematics (AWM)  
*University of Utah*
- 2018-Present Member of Society for Industrial and Applied Mathematics (SIAM)  
*Drexel University, University of Utah*

## Extracurricular

- 2019 Captain of Intramural Indoor Volleyball Team "No Games Scheduled" (Ranked 1st),  
*University of Utah*  
The team name could have impacted our rankings, due to opposing teams not showing up for games. Although, this only happened twice.
- 2018 Captain of Intramural Indoor Volleyball Team "Algebros" (Ranked 3rd), *University of Utah*
- 2018 Captain of Intramural Sand Volleyball Team "Mathletes" (Ranked 2nd), *University of Utah*