

# David Rea

Curriculum Vitae

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3493 Brookline Ave., Apt 3, Cincinnati, OH 45220

## EDUCATION

- Expected 2021 • PhD, Business Administration, University of Cincinnati  
Dept: Operations, Business Analytics, & Information Systems
- 2015 • MS, Mathematical Sciences, Clemson University  
Dept: Mathematical Sciences
- 2012 • BA, Mathematics, Economics, Wittenberg University  
Dept: Mathematics, Economics

## RESEARCH AREA

In my research, I study human-induced variability and uncertainty in service systems. I seek data-driven interventions which mitigate the resulting stress on systems. To date, I have focused on two scenarios:

- (1) Fair task allocation under variable individual needs and preferences
- (2) Real-time analytics for accommodating uncertain customer demand.

I have focused primarily in **healthcare operations** and **food distribution**. My interest in these topics is derived from the benefits to individual well-being.

## PUBLICATIONS & WORKING PAPERS

### Manuscripts Under Review

**Rea, David**, Craig Froehle, Suzzane Masterson, Brian Stettler, Greg Fermann, Arthur Pancioli, "When Equal Isn't Fair: A Case Study of Service Employee Staffing," *3rd Round Review at Production and Operations Management*.

**Rea, David**, Craig Froehle "Real-time Analytics for On-demand Services: A Literature Review and Framework," *Proposal for Special Issue on Business Analytics Under Review at Production and Operations Management*.

### Manuscripts in Preparation

**Rea, David**, Craig Froehle, "Algorithmic Justice: Principled Compromises in Fair Decision Models," Working Paper, target: *Management Science*

Dixon, Mike, **David Rea**, Liana Victorino, Craig Froehle, "Perceived Justice and Fairness in Managing Waiting Lines," Book Chapter, *Research Handbook on Services Management*

**Rea, David**, Craig Froehle, "Before They Wait: Forecasting and Accommodating Demand Uncertainty in the Emergency Department," working paper, target: MSOM

### Ongoing Projects

**Rea, David**, Brittany Green, Charles Hoffman, Carely Riley "Estimating the Hunger Gap"

**Rea, David** , Green, Brittany: "Injection and Redistribution: Coordinating Efforts to Close the Hunger Gap"

**Rea, David**, Rachel Ancova, Chet Zalesky, Curry Woods, Bob Doerning, Caroline Freiermuth, "Where are the overdoses? The effect of COVID-19 on Opioid Presentations in the ED"

**Rea, David**, The value of HIV Screening in the Emergency Department"

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## CONFERENCE ACTIVITY

### Session Chair

- 2019  
● "Managing Uncertain Patient Demand," INFORMS Healthcare, Boston, MA, July 29th.
- 2019  
● "Implementing Data Driven Technology," INFORMS Healthcare, Boston, MA, July 27th.
- 2019  
● "Human-Centric Healthcare Operations," POMS Annual Meeting, Washington, DC, May 4th.
- 2019  
● "Data-Driven Decision-Making," POMS Annual Meeting, Washington, DC, May 4th.

### Invited Talks

- 2020  
● "Designing Fair Allocation Algorithms for Healthcare Gig Work" Decision Sciences Institute Annual Meeting, Virtual November.
- 2020  
● "Adapting Emergency Department Operations In Real-Time" INFORMS Annual Meeting, Washington, DC November.
- 2019  
● "Accommodation of Demand Surges in the Emergency Department via Proactive Staff-Planning," INFORMS Annual Meeting, Seattle, WA, October.
- 2019  
● "Managing Uncertainty via Distributional Demand Forecasting," INFORMS Healthcare, Boston, MA, July 29th.
- 2019  
● "Optimizing Fairness in a Multi-Site Emergency Department Staff Allocation Model," INFORMS Healthcare, Boston, MA, July 27th.
- 2019  
● "Ensuring Fairness in Physician Time Allocation: A Multi-Objective Optimization Approach," POMS Annual Meeting, Washington, DC, May 4th.
- 2019  
● "Probabilistic Forecasting for Online Staffing Decisions in the Emergency Department," POMS Annual Meeting, Washington, DC, May 4th.
- 2018  
● "Allocating Clinical Capacity to Maximize Staff Satisfaction," POMS Annual Meeting, Houston, TX, May 4th.
- 2017  
● "Improving Patient Transport Services through Crew Flexibility," INFORMS Annual Meeting, Houston, TX, November October 22nd.
- 2017  
● "Optimal Staffing, Scheduling and Dispatch Policies for Emergency Transport Services" POMS Annual Meeting, Seattle, WA, May 7th.

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## OTHER PRESENTATIONS & PANELS

- 2020

Presentation, "Who's Still Showing Up? Changes in Emergency Department Patient Population During the COVID-19 Pandemic," Emergency Medicine Research Interest Group, University of Cincinnati Cincinnati, OH, July 9th.
- 2019

Poster, "Coping with the Business Cycle as a Non-profit Organization" INFORMS Annual Meeting, Seattle, WA, October.
- 2019

Poster, "A Novel Approach to Fair Allocation of Physician Clinical Time Across Multiple Locations," Society for Academic Emergency Medicine, Las Vegas, NV, May 16th.
- 2019

Presentation, "Balancing Equity and Equality in the Allocation of Physician Clinical Time Across Multiple Emergency Department Facilities," Emergency Medicine Research Interest Group, University of Cincinnati Cincinnati, OH, May 8th.
- 2018

Panelist, "What to do with a Degree in Math?", Wittenberg University Springfield, OH, October 5th.
- 2018

Presentation, "Preliminary Results for Physician Clinical Hour Allocation Model," University of Cincinnati Emergency Medicine Research Interest Group, Cincinnati, OH, May 2nd.
- 2018

Presentation, "Balancing Equity and Equality in Time Allocation," Emergency Medicine Research Interest Group, University of Cincinnati Cincinnati, OH, April 10th.
- 2018

Poster, "Allocating Clinical Capacity Across Multiple Hospital Locations to Maximize Staff Satisfaction," Graduate Student Poster Expo, University of Cincinnati Cincinnati, OH, February 15th.
- 2017

Presentation, "Preliminary Results for University of Cincinnati Health Patient Transport System," Emergency Medicine Research Interest Group, University of Cincinnati Cincinnati, OH, May 3rd.
- 2017

Presentation, "Health-care Analytics: Saving Lives and Lowering Costs," Departmental Colloquium Series, Wittenberg University Springfield, OH, April 3rd.
- 2017

Presentation, "University of Cincinnati Health Patient Transport System Simulation," Emergency Medicine Research Interest Group, Cincinnati, OH, University of Cincinnati March 8th.
- 2015

Masters Thesis Defense, "Can a CUSP Catastrophe Model Describe the US Economy?," Department of Mathematics Clemson University Clemson, SC, April 23rd.
- 2014

Presentation, "Dictionary Learning via Alternating Projection," Zentrum für Technomathematik Universität Bremen, Bremen, Germany, July 7th.

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## RESEARCH EXPERIENCE

- 2016-Present

Joint Research Assistant, Departments of Emergency Medicine & Operations, Business Analytics, and Information Systems, University of Cincinnati, Chairs: Craig Froehle, PhD & Arthur Pancioli, MD

2016	Consultant, GE Aviation, "Optimal Inventory Segmentation and Fixed Day Supply," Supervisor: Uday Rao, PhD
2015	Research Assistant, Operations, Business Analytics, and Information Systems, University of Cincinnati, "Identifying the Structure of the Bitcoin Community on Twitter Using a Stochastic Block Model," Supervisors: Yichen Qin, PhD & Zhe Shan PhD
2014	Research Assistant, Zentrum für Technomathematik Universität Bremen, "Dictionary Learning via Alternating Projection," Supervisor: Emily Kang, PhD

## TEACHING EXPERIENCE

### University of Cincinnati

Instructor	Introduction to Business Analytics	(Summer 2019)
Co-Instructor	Services Management	(Fall 2018)
TA	Statistical Methods	(Fall 2015)
TA	Statistical Models	(Spring 2016)

### Clemson University

Instructor	Introduction to Mathematical Analysis	(Fall 2014, Spring 2015)
TA	Precalculus Laboratory	(Fall 2013, Spring 2014)

### Wittenberg University

Co-Instructor	Essential of Calculus	(Spring 2010, Fall 2011)
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### Saint Martin DePorres High School

Co-Instructor	Algebra 1	(2012-2013)
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### Certifications

Ohio-Non Tax Teaching Certificate

## WORK EXPERIENCE

2012-2013	Apprentice Teacher, Saint Martin DePorres High School, Cleveland, OH
2010	Strengthening After Schools Program Summer Intern, Center for Civic and Urban Engagement, Springfield, OH
2009	Freedom School Servant Leader Intern, Children's Defense Fund, Cleveland, OH

## HONORS & MEMBERSHIPS

### Professional Societies

Since 2019	Manufacturing and Service Operations Management
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Since 2019	Decision Science Institute
Since 2017	Institute for Operations Research and the Management Sciences
Since 2017	Production and Operations Management Society
Since 2013	Society for Industrial and Applied Mathematics

### Awards and Honors Societies

2016	Omega Rho, University of Cincinnati
2012	Mortar Board, Wittenberg University
2012	Phi Beta Kappa, Wittenberg University
2012	Departmental Honors in Economics, Wittenberg University
2012	University Honors, Wittenberg University
2012	Phi Eta Sigma, Wittenberg University

### SOFTWARE SKILLS

R, ARENA, Latex, Excel, Open Solver, Matlab, Python, GAMS, Minitab, AnyLogic, SAS