# David Rea

Curriculum Vitae

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

## EDUCATION

Expected 2020 — PhD, Business Administration, University of Cincinnati
Dept: Operations, Business Analytics, & Information Systems
Expected Graduation: May 2020

2015 — MS, Mathematical Sciences, Clemson University
Dept: Mathematical Sciences

2012 — BA, Mathematics, Economics, Wittenberg University
Dept: Mathematics, Economics

## RESEARCH AREA

My research lies at the intersection of operations and analytics. I focus on data-driven solutions which allow service systems to cope with human-induced variability. My 'operational forecasting' work quantifies demand uncertainty resulting from variation in the arrival and duration of service required by individuals. In my 'ethical operations' research I investigate the fairness, both measured and perceived, of operational model output based on individual variation in needs and preferences.

## PUBLICATIONS & WORKING PAPERS

### Manuscripts Under Review

**Rea, David J.**, Craig Froehle, Suzzane Masterson, Brian Stettler, Greg Fermann, Arthur Pancioli, "Operational Justice: Balancing Equity and Equality in Workforce-Allocation Decisions," *Management Science*.

### Manuscripts in Preparation

**Rea, David J.**, Craig Froehle, Yichen Qin, "Before They Wait: Forecasting and Accommodating Demand Uncertainty in the Emergency Department," working paper, target: *Production and Operations Management*

**Rea, David J.**, Craig Froehle, "Operational Demand Forecasting: A Literature Review and Framework," working paper, target: *Manufacturing & Service Operations Management*

Green, Brittany, **David J. Rea**, "Non-Profit Strategies: Maximizing Mission Driven Output Under Economic Uncertainty"

## 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

2019 "Quantifying and Accommodating Demand Uncertainty in the Emergency Department," Decision Sciences Institute Annual Meeting, New Orleans, LA, 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.

## OTHER PRESENTATIONS & PANELS

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.

## 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**

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|---|---|---|
| Instructor | Introduction to Business Analytics | *(Summer 2019)* |
| Co-Instructor | Services Management | *(Fall 2018)* |
| TA | Statistical Methods | *(Fall 2015)* |

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| TA | Statistical Models | *(Spring 2016)* |

**Clemson University**

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

**Wittenberg University**

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| Co-Instructor | Essential of Calculus | *(Spring 2010, Fall 2011)* |

**Saint Martin DePorres High School**

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| Co-Instructor | Algebra 1 | *(2012-2013)* |

**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

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