

# David Rea, Ph.D.

Curriculum Vitae

Updated January 14, 2022

dar421@lehigh.edu · <https://davidjrea.github.io>

## ACADEMIC APPOINTMENTS

2021

Lehigh University

Assistant Professor, Dept. of Decision and Technology Analytics,  
College of Business (Primary Appointment)

College of Health (Affiliated Faculty)

## EDUCATION

2021

Ph.D., Business Administration, University of Cincinnati

Dept: Operations, Business Analytics, & Information Systems

*Recipient of Lindner College of Business Outstanding Doctoral Student Research Award*

2015

MS, Mathematical Sciences, Clemson University

Dept: Mathematical Sciences

2012

BA, Mathematics, Economics, Wittenberg University

Dept: Mathematics, Economics

## RESEARCH AREA

My research focuses on translating data into decisions, including research questions on

- (1) the fair allocation of scarce resources
- (2) capacity allocation under uncertain customer demand.

Motivated by organizational partnerships, I have primarily focused on problems in health-care and social welfare service systems.

## PUBLICATIONS & WORKING PAPERS

### Published & In Press

**Rea, David**, Craig Froehle, Suzanne Masterson, Brian Stettler, Greg Fermann, Arthur Pancioli, "Unequal but Fair: Incorporating Distributive Justice in Operational Allocation Models," <https://onlinelibrary.wiley.com/doi/abs/10.1111/poms.13369>,  
*Published at Production and Operations Management*

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

### Manuscripts in Preparation

**Rea, David**, Leonardo Lozano, Craig Froehle, "Algorithmic Justice: Fair Compensation through Principled Compromises"

**Rea, David**, "Before They Wait: Quantifying Risk During Demand Surges in the Emergency Department," *Target: Health Care Management Science*

Bennett Lane, **Rea, David**, Craig Froehle, "Association of geographic distance and hospital characteristics with use of interhospital transfer by air: A multi-center retrospective study", *Target: Society for Academic Emergency Medicine*

### Ongoing Research

**Rea, David**, Brittany Green, Charles Hoffman, Craig Froehle, Andrew Beck, Carely Riley, "Proportional to NA: The Consequences of Allocating Resources Based on Flawed Data", *Food Insecurity Working Group*

Mike Lyons, **Rea, David**, Parastu Kasaie, Mike Ward, Rachel Ancova, David Kelton, "The Opportunity Costs of HIV Screening in the Emergency Department"

**Rea, David**, Saif Mir, Zach Zacharia, "What kind of fairness do supply managers prefer?"

### ACADEMIC SPEAKING

[Click or copy-paste the blue links below for recordings of available presentations](#)

#### Conference Presentations

- 2022  
● **Rea, David**, Leonardo Lozano, Craig Froehle, "The Equity-Equality Tradeoff in Multi-Stakeholder Routing Problems", POMS Annual Meeting, Orlando, FL, April 21st - 25th
- 2021  
● **Rea, David** "Can You Automate 'Fair'," Center for Supply Chain Research at Lehigh Fall Forum, Lehigh University, Bethlehem, PA, November 5th  
[https://youtu.be/-126gg\\_9bv4](https://youtu.be/-126gg_9bv4)
- 2021  
● **Rea, David**, Leonardo Lozano, Craig Froehle, "Fair Allocation Decisions in Multi-stakeholder Healthcare Scenarios", INFORMS Annual meeting (Virtual), October 27th  
<https://youtu.be/EFEhG7Ca6AA>
- 2020  
● **Rea, David**, Leonardo Lozano, Craig Froehle, "Designing Fair Allocation Algorithms for Healthcare Gig Work," Decision Sciences Institute Annual Meeting (Virtual), November 23rd  
<https://davidjrea.github.io/DSI2020-AlgorithmicJustice.html>
- 2020  
● **Rea, David**, Craig Froehle, Suzanne Masterson, Brian Stettler, Greg Fermann, Arthur Pancioli, "Unequal but Fair: Incorporating Distributive Justice in Operational Allocation Models," Decision Sciences Institute Annual Meeting (Virtual), *Doctoral Research Showcase: Social and Healthcare Issues*, November 22nd  
<https://davidjrea.github.io/DSI2020-UnequalButFair.html>
- 2020  
● **Rea, David**, Craig Froehle, "Adapting Emergency Department Operations in Real-Time," INFORMS Annual Meeting (Virtual), November 8th  
<https://davidjrea.github.io/INFORMS2020Talk.html>

- 2019 ● Rea, David, Craig Froehle, "Accommodating Demand Surges via Proactive Staff-Planning in the Emergency Department," INFORMS Annual Meeting, Seattle, WA, October 20th.
- 2019 ● Green, Brittany, David Rea, "Coping with the Business Cycle as a Non-profit Organization", INFORMS Annual Meeting, Poster Session, Seattle, WA, October 22nd.
- 2019 ● Rea, David, Craig Froehle, Suzanne Masterson, Brian Stettler, Arthur Pancioli, "A Novel Approach to Fair Allocation of Physician Clinical Time Across Multiple Locations," Society for Academic Emergency Medicine, Poster Session, Las Vegas, NV, May 16th.
- 2019 ● Rea, David, Craig Froehle, Yichen Qin, "Managing Uncertainty via Distributional Demand Forecasting," INFORMS Healthcare, Boston, MA, July 29th.
- 2019 ● Rea, David, Craig Froehle, Suzanne Masterson, Brian Stettler, Greg Fermann, Arthur Pancioli, "Optimizing Fairness in a Multi-Site Emergency Department Staff Allocation Model," INFORMS Healthcare, Boston, MA, July 27th.
- 2019 ● Rea, David, Craig Froehle, Suzanne Masterson, Brian Stettler, Greg Fermann, Arthur Pancioli, "Ensuring Fairness in Physician Time Allocation: A Multi-Objective Optimization Approach," POMS Annual Meeting, Washington, DC, May 4th.
- 2019 ● Rea, David, Craig Froehle "Probabilistic Forecasting for Online Staffing Decisions in the Emergency Department," POMS Annual Meeting, Washington, DC, May 4th.
- 2018 ● Rea, David, Amir Babar, Craig Froehle "Allocating Clinical Capacity to Maximize Staff Satisfaction," POMS Annual Meeting, Houston, TX, May 4th.
- 2017 ● Rea, David, Craig Froehle "Improving Patient Transport Services through Crew Flexibility," INFORMS Annual Meeting, Houston, TX, October 22nd.
- 2017 ● Rea, David, Craig Froehle, Elizabeth Powell "Optimal Staffing, Scheduling and Dispatch Policies for Emergency Transport Services" POMS Annual Meeting, Seattle, WA, May 7th.

### Media & Other Speaking Engagements

- 2021 ● Podcast, "Healthcare, Food and Fairness" ilLuminate Podcast, Lehigh University Business Blog Bethlehem, PA December 1st.  
<https://business.lehigh.edu/blog/2021/david-rea-health-care-food-and-fairness>
- 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	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, "Healthcare Analytics: Saving Lives and Lowering Costs," Departmental Colloquium Series, Wittenberg University Springfield, OH, April 3rd.
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, "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.
2012	"The Effect of Climate Change and Climate Change Policy on Ohio's Economy," Wittenberg University Honors Thesis Defense, Springfield, OH, April 21st.
2010	"Tracking Student Improvement for On-the-Rise," Center for Civic and Urban Engagement Internship Presentation, Springfield, OH, August.

## RESEARCH APPOINTMENTS

2016	2021	Doctoral Researcher, Departments of Emergency Medicine & Operations, Business Analytics, and Information Systems, University of Cincinnati, Chairs: Arthur Pancioli, MD & Craig Froehle, PhD
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

### Lehigh University

Instructor	Supply, Cost, and Risk Management	(Fall 2021)
Instructor	Supply Chain Operations Management	(2x Spring 2022)

### 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, 2x 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

## PROFESSIONAL SERVICE

2022	Ad-hoc reviewer: International Journal of Production and Operations Management, Annals of Operations Research
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2022	Session Organizer & Chair, "Designing Patient-Centric Systems", Production and Operations Management Society 2022 Annual Conference
2022	Session Organizer & Chair, "Designing Fair Service Systems", Production and Operations Management Society 2022 Annual Conference
2020	Conference Paper Reviewer, Decision Sciences Institute 2020 Annual Meeting (Virtual)
2020	Organizer, OBAIS PhD Student Research Seminar, University of Cincinnati, Lindner College of Business
2019	Session Organizer & Chair, "Managing Uncertain Patient Demand," INFORMS Healthcare, Boston, MA, July 29th.
2019	Session Organizer & Chair, "Implementing Data Driven Technology," INFORMS Healthcare, Boston, MA, July 27th.
2019	Session Organizer & Chair, "Human-Centric Healthcare Operations," POMS Annual Meeting, Washington, DC, May 4th.
2019	Session Organizer & Chair, "Data-Driven Decision-Making," POMS Annual Meeting, Washington, DC, May 4th.
2019	Mentor, "Grad-Undergrad Research Connections Program" University of Cincinnati, Cincinnati, OH,

## **HONORS & MEMBERSHIPS**

<b>Professional Societies</b>	
2019	Manufacturing and Service Operations Management
2019	Decision Science Institute
2017	Institute for Operations Research and the Management Sciences
2017	Production and Operations Management Society
2013 – 2021	Society for Industrial and Applied Mathematics
<b>Awards and Honors Societies</b>	
2021	Lindner College of Business Outstanding Doctoral Student Research Award, University of Cincinnati
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, STAN, Latex, Excel, Open Solver, Matlab, Python, GAMS,  
Minitab, AnyLogic, SAS