

David Rea, Ph.D.

Curriculum Vitae

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ACADEMIC APPOINTMENTS

2021

Lehigh University

- Assistant Professor, Dept. of Decision and Technology Analytics, College of Business (primary appointment)
- Affiliated Faculty, College of Health

EDUCATION

2021

Ph.D., 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

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

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>,
In Press at Production and Operations Management

Accepted & Under Review

Dixon, Mike, **David Rea**, Liana Victorino, Craig Froehle, "Perceived Justice and Fairness in Managing Waiting Lines," Book Chapter, Set to be published in *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: Forecasting and Accommodating Demand Uncertainty

in the Emergency Department," *Target: Journal of Operations Management*

Rea, David, Craig Froehle, "Real-time Analytics for On-demand Services: A Literature Review and Framework," *Target: Manufacturing & Service Operations Management*.

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

Ongoing Research

Rea, David, Brittany Green, Charles Hoffman, Craig Froehle, Andrew Beck, Carely Riley, "Injection and Redistribution: Coordinating Efforts to Close the Hunger Gap", *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"

ACADEMIC SPEAKING

Recorded Conference Presentations

Click or copy-paste the blue links below for recordings of these presentations

- 2020
● "Designing Fair Allocation Algorithms for Healthcare Gig Work," Decision Sciences Institute Annual Meeting (Virtual), Session HM15
November 23rd 12:00pm EST
<https://davidjrea.github.io/DSI2020-AlgorithmicJustice.html>
- 2020
● "Unequal but Fair: Incorporating Distributive Justice in Operational Allocation Models," Decision Sciences Institute Annual Meeting (Virtual), *Doctoral Research Showcase: Social and Healthcare Issues*, Session DRS5
November 22nd 6:00pm EST
<https://davidjrea.github.io/DSI2020-UnequalButFair.html>
- 2020
● "Adapting Emergency Department Operations in Real-Time," INFORMS Annual Meeting (Virtual), Session SA09
November 8th 1:15pm EST
<https://davidjrea.github.io/INFORMS2020Talk.html>

Invited Talks & Panels

- 2019
● "Accommodation of Demand Surges in the Emergency Department via Proactive Staff-Planning," INFORMS Annual Meeting, Seattle, WA, October.
- 2019
● "Coping with the Business Cycle as a Non-profit Organization" INFORMS Annual Meeting, Poster Session, Seattle, WA, October.
- 2019
● "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
● "Managing Uncertainty via Distributional Demand Forecasting," INFORMS Healthcare, Boston, MA, July 29th.

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| 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 | Panelist, "What to do with a Degree in Math?", Wittenberg University Springfield, OH, October 5th. |
| 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. |
| 2017 | Presentation, "Health-care Analytics: Saving Lives and Lowering Costs," Departmental Colloquium Series, Wittenberg University Springfield, OH, April 3rd. |

Other Speaking Engagements

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

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| 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

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| 2016-Present | 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

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) |
| 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) |
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Saint Martin DePorres High School

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| 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

- 2020
● Conference Paper Reviewer, Decision Sciences Institute Annual Meeting
- 2020
● Organizer, OBAIS PhD Student Research Seminar, University of Cincinnati, Lindner College of Business
- 2019
● Session Chair, "Managing Uncertain Patient Demand," INFORMS Healthcare, Boston, MA, July 29th.
- 2019
● Session Chair, "Implementing Data Driven Technology," INFORMS Healthcare, Boston, MA, July 27th.
- 2019
● Session Chair, "Human-Centric Healthcare Operations," POMS Annual Meeting, Washington, DC, May 4th.
- 2019
● Session 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

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

- 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