

# David Rea, Ph.D.

Curriculum Vitae

Updated March 2, 2022

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## 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 & Under Review

Lane, Bennett, **David Rea**, Adam Gottula, Andrew Cathers, Ryan Ziegler, Andrew Latimer, Kyle Danielson, Brent Theiling, Craig Froehle, William Hinckley, "Association of geographic distance and hospital characteristics with use of interhospital transfer by air:

A multi-center retrospective study", *Under Review at Academic Emergency Medicine*

**Rea, David**, Leonardo Lozano, Craig Froehle, "Algorithmic Justice: Fair Compensation through Principled Compromises" *Target: Manufacturing & Service Operations Management*

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

### 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<br>● | <b>Rea, David</b> , Leonardo Lozano, Craig Froehle, "The Equity-Equality Tradeoff in Multi-Stakeholder Routing Problems", POMS Annual Meeting, Orlando, FL, April 21st - 25th  |
| 2021<br>● | <b>Rea, David</b> "Can You Automate 'Fair'," Center for Supply Chain Research at Lehigh Fall Forum, Lehigh University, Bethlehem, PA, November 5th<br><a href="https://youtu.be/-126gg_9bv4">https://youtu.be/-126gg_9bv4</a>  |
| 2021<br>● | <b>Rea, David</b> , Leonardo Lozano, Craig Froehle, "Fair Allocation Decisions in Multi-stakeholder Healthcare Scenarios", INFORMS Annual meeting (Virtual), October 27th<br><a href="https://youtu.be/EFEhG7Ca6AA">https://youtu.be/EFEhG7Ca6AA</a>   |
| 2020<br>● | <b>Rea, David</b> , Leonardo Lozano, Craig Froehle, "Designing Fair Allocation Algorithms for Healthcare Gig Work," Decision Sciences Institute Annual Meeting (Virtual), November 23rd<br><a href="https://davidjrea.github.io/DSI2020-AlgorithmicJustice.html">https://davidjrea.github.io/DSI2020-AlgorithmicJustice.html</a>   |
| 2020<br>● | <b>Rea, David</b> , 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), <i>Doctoral Research Showcase: Social and Healthcare Issues</i> , November 22nd<br><a href="https://davidjrea.github.io/DSI2020-UnequalButFair.html">https://davidjrea.github.io/DSI2020-UnequalButFair.html</a> |
| 2020<br>● | <b>Rea, David</b> , Craig Froehle, "Adapting Emergency Department Operations in Real-Time," INFORMS Annual Meeting (Virtual), November 8th<br><a href="https://davidjrea.github.io/INFORMS2020Talk.html">https://davidjrea.github.io/INFORMS2020Talk.html</a>  |

- 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.

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| 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

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|------|------|--|
| 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  |

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| 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

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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

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| 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**

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| <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