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DEPARTMENT OF INDUSTRIAL AND
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Operations Research Colloquium

Andrew Trapp
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Operations and Industrial Engineering
Worcester Polytechnic Institute

Tuesday
March 29, 2022

4:50 - 5:50 p.m.
102 Leonhard Building

Risk Averse Placement Optimization in Refugee Resettlement

Recent developments in refugee resettlement are increasingly informed by the intentional use of analytical approaches. The refugee placement optimization software Annie™ MOORE uses predictive modeling of past refugee placement and outcomes data to generate likelihoods of employment for incoming refugees. These likelihoods are used as estimates for refugee-community match quality scores in the many-to-one matching problem solved to assign refugees to communities. While these likelihoods are used for offline matching of arriving refugees to maximize total expected employment, inherent uncertainty exists with respect to their estimation. This uncertainty can lead to variation in optimized outcomes that may adversely affect refugee welfare. We investigate risk from the perspective of the family level, rather than the more traditional collective risk, and embed this risk into the optimization of refugee outcomes. We discuss computational experiments that reveal family-level risk can be mitigated while maintaining high levels of total expected employment.

About the Speaker

Andrew C. Trapp, Associate Professor of Operations and Industrial Engineering at Worcester Polytechnic Institute, with joint appointments in Mathematical Sciences and Data Science. He is currently President-Elect of the INFORMS Section on Public Sector Operations Research. He researches the use of prescriptive (integer optimization) and predictive (machine learning) analytics, together with algorithms, to effectively allocate scarce resources for systems that serve vulnerable peoples. He creates novel analytical technologies and open-source software to improve quality of life, increase fairness, restore dignity, and generate significant societal impact. His work has been featured in The Atlantic, Forbes, and Financial Times. He publishes in top operations research outlets such as Operations Research, Production and Operations Management, European Journal of Operational Research, INFORMS Journal on Computing, IISE Transactions, and Discrete Optimization.