Northwestern | McCORMICK SCHOOL OF ENGINEERING
Center for Engineering and Health

CEH SEMINAR: DR. SAIT TUNC

Gaming the Heart Allocation System to Jump the Queue

HOST: DR. SANJAY MEHROTRA

Heart transplantation remains the standard treatment option for patients with advanced heart failure. However, the success of this life-saving therapy is limited by the scarcity of donor hearts. Whereas organ scarcity is a pervasive problem for all major organ transplant systems, the US heart transplantation system has the following important distinctive feature: Transplant candidates are prioritized according to the severity of their pre-transplant medical therapy – the more severe the therapy, the higher the priority. The underlying premise for this rule is that the severity of a patient's therapy accurately reflects her medical urgency for receiving a heart transplant. However, it is widely suggested that this rule opens up room to game the system. Although the existence of this gaming phenomenon is widely recognized, the specific conditions that produce this behavior are not well understood; missing in the literature is a systematic analysis of this problem. This talk will focus on addressing this shortcoming. We will discuss our novel model studying the gaming decisions of transplant centers and the underlying trade-offs, and try to address the questions: Under what conditions does gaming occur, i.e., do transplant center doctors have an incentive to assign high-severity therapies to low-urgency patients, and to what extent? And how can it be prevented within the confines of the current system?

BIOGRAPHY

Sait Tunc is an Assistant Professor of Industrial and Systems Engineering at Virginia Tech. He earned his Ph.D. in industrial engineering from the University of Wisconsin-Madison in 2017. He then spent two years as a postdoctoral researcher at the University of Chicago Booth School of Business before joining Virginia Tech in 2019. Tunc's research focuses on application-driven theoretical problems and utilizes large-scale real-world databases, with particular emphasis on medical decision making and operational efficiency in health care delivery systems. Some of his recent research has focused on operational problems in organ transplantation including developing risk prediction and intervention frameworks to identify and save organs at high risk of discard, designing patient- and center-level nudge mechanisms to decrease organ wastage, studying the problem of systematic gaming in heart transplantation, and analyzing the strategic decisions of transplant centers under competition. He is also interested in identifying disparities in COVID-19 spread-, hospitalization- and mortality-rates as well as to determine the geographical and racial inequalities in the outcomes, and using these in determining the optimal allocation and delivery of mitigation resources.

Sait Tunc

Assistant Professor
Dept. of Industrial and Systems Engineering
Virginia Tech

11 a.m. - 12 p.m. CST

Monday,
November 14th, 2022

Virtual
RSVP