DEPARTMENT of INDUSTRIAL ENGINEERING
UNIVERSITY of HOUSTON

FRIDAY SEMINAR SERIES
BROADEN HORIZONS | EXTEND MINDS

Dr. Justin J. Boutilier
Dept. of Industrial and Systems Engineering
University of Wisconsin – Madison

Date: Friday, April 30, 2021

Time: 1 - 1:50 pm

Zoom Meeting ID: 970 7656 5407

Password: 477211

Improving Tuberculosis Treatment Adherence Support: The Case for Targeted Behavioral Interventions

Abstract: Tuberculosis (TB) is a global health priority and ending the TB pandemic is part of the United Nations Sustainable Development Goals. Lack of patient adherence to treatment protocols is a main barrier to reducing the global disease burden of tuberculosis. In this talk, we will study the operational design of a treatment adherence support (TAS) platform that requires patients to verify their treatment adherence on a daily basis. We partner with a TB TAS provider in Kenya and use data from a completed randomized controlled trial to evaluate the impact of personal messages on subsequent patient verification behavior. We then develop a rolling-horizon machine learning framework to generate dynamic risk predictions for patients enrolled on the platform. Our analysis establishes that patient engagement can be increased by personal sponsor outreach and that patient behavior data can be used to identify at-risk patients for targeted outreach. These results allow TAS providers to target and implement behavioral interventions to at-risk patients, substantially improving the cost-effectiveness of TAS programs.

Biography: Justin J. Boutilier is the Charles Ringrose Assistant Professor in Industrial and Systems Engineering and an Honorary Fellow in Emergency Medicine at the University of Wisconsin – Madison. His research focuses on combining optimization and machine learning to improve the quality, access, and delivery of healthcare in a variety of settings. He is particularly interested in global health projects involving emergency response or digital health technologies, and he has ongoing projects in India, Kenya, and Indonesia. Justin received his B.Sc. in Mathematics and Statistics from Acadia University, and his Ph.D. in Operations Research from the University of Toronto. Prior to joining the University of Wisconsin, he was a postdoctoral associate with the Humanitarian Supply Chain Lab and the Center for Transportation and Logistics at MIT.