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Date: Friday, Nov. 12, 2021

Time: 1 - 1:50 pm

Zoom Meeting ID: 970 7656 5407

Password: 477211

Challenges in Providing Prompt and Definitive Care to Trauma Patients

Abstract: Trauma injury (due to motor vehicle crash, falls, and gunshots) is the #1 cause of death among US citizens <45 years old and #3 overall across all ages, with an economic burden of \$671 billion annually. Recent literature suggests that geographical maldistribution of Trauma Centers (TCs), and the resultant increase in the access time to the nearest TC, could impact patient safety and increase disability or mortality. In this talk we will discuss our collaboration with the Trauma Division at a Midwestern US state. Starting with the typical process of how care is provided to a trauma victim at the scene, we will briefly discuss key strategic and operational challenges. One of the strategic challenges is to determine the number and location of TCs to improve patient safety, for which we introduce the Trauma Center Location Problem. We will share insights derived from testing our approach on real data from a midwestern US state. We strongly believe that our proposed approach can help state trauma decision makers in (i) benchmarking their current network against our optimal solution and (ii) conducting ‘what-if’ analysis to evaluate the viability of a proposal (from a local health system) to upgrade an NTC to a TC.

Biography: Dr. Pratik J. Parikh is a Professor and Chair of the Department of Industrial Engineering at the University of Louisville. He holds a Ph.D. in Industrial and Systems Engineering from Virginia Tech (2006). Dr. Parikh’s research in data analytics and optimization with applications in supply chain, retail, and healthcare has been supported by grants from the National Science Foundation, the Veterans Affairs, state of OH, and industry. For his contributions towards research, teaching, and service, he was honored with the IISE-LSC Division Teaching Award, IISE Global Outstanding Faculty Advisor Award, INFORMS Volunteer Service Award, several university awards, and the Dayton Forty Under 40 Award. He currently serves as the Technical VP for the Technical Operations Board at IISE.