NORTH CAROLINA STATE UNIVERSITY

OPERATIONS RESEARCH PROGRAM
SEMINAR SERIES

September 25, 2023

4:30PM-5:45PM

In-Person: 4290 Fitts-Woolard Hall
Zoom details – bottom of page

Shakiba Enayati

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Title
Redesigning Global Health Supply Chains with Drone-Enabled Solutions

Abstract

This research centers around the optimization of vaccine distribution for routine childhood vaccinations, particularly those with cold chain requirements, through the utilization of drones. The primary objective is to enhance vaccine delivery operations to challenging, hard-to-reach regions. The presentation initially focuses on an overview of the modeling approach employed to optimize strategic vaccine distribution at the national level, including transportation of vaccines from central depots to local health zone distribution centers. The developed optimization models incorporate a blend of transportation modes, including both large and small drones, in addition to conventional methods such as boats, trucks, and planes. The focus then shifts to the research efforts aimed at refining vaccine delivery within a single health zone, involving the outreach trips from a distribution center to remote aid posts. For outreach trips, small drones are deployed alongside traditional transportation options like walking, boats, and trucks. The findings, based on data collected from the island nation of Vanuatu, underscore the considerable potential of drones in revolutionizing vaccine supply chain. Drones not only emerge as a viable substitute for existing transportation methods but also enable the efficient resupply of fresh vaccines to health workers at remote locations, thereby enhancing the effectiveness of outreach initiatives.

Biography

Shakiba Enayati

Dr. Enayati is an Assistant Professor in Supply Chain and Analytics Department at the University of Missouri, Saint Louis. She earned her Ph.D. in Operations Research Program from North Carolina State University in May 2017. She also holds a Master of Science and a Bachelor in Industrial Engineering. She was previously employed as Assistant Professor of Analytics at State University of New York, Plattsburgh. Her primary research interests are in analytical modeling and optimization of stochastic/dynamic complex systems as applied to healthcare and supply chain systems. Her goal is to address computational and operational aspects of problems arising in public health policy making, health systems management, and medical decision making via incorporating individual patient data. She is also interested in predictive analytics to evaluate, anticipate, and recommend actions for health outcomes at both individual and system levels.

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