PROVIDING BETTER HEALTHCARE THROUGH SYSTEMS ENGINEERING:

Public Health Screening: Models, Algorithms, and Policies

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4:30 PM EST, Monday 10/5 (RSVP for Zoom Link)

Screening for diseases is an important, and extensively used, public health tool. Early detection can improve clinical outcomes and reduce the spread of infectious diseases, and is especially beneficial for diseases that have slow to develop and/or initially non-specific symptoms (e.g., Babesiosis, Zika, hepatitis, cystic fibrosis). A major challenge is to design public health screening policies that can classify a large number of subjects, having different risk factors, in an accurate and equitable manner, with limited resources and imperfect tests. My talk will draw upon the body of research that I have conducted over the years within a variety of screening contexts, ranging from donated blood screening for transfusion transmissible infections, to newborn screening for genetic diseases, to population-level infectious disease screening, including COVID-19. I will present an overview of this research area, discuss open research questions, provide several key models to optimize resource allocation in public health screening, and highlight the challenges and opportunities.

Dr. Ebru Bish is a Professor in the Department of Information Systems, Statistics, and Management Science at the Culverhouse College of Business at the University of Alabama. Prior to this appointment, she was a faculty member in the Department of Industrial and Systems Engineering at Virginia Tech for many years. Dr. Bish received her BS and MS in industrial engineering from Bogazici University, and her PhD in industrial engineering and management sciences from Northwestern University. Dr. Bish's research focus is on stochastic modeling,optimization, and decision making under uncertainty, with applications to public health policy and health implementation science. Her research has been recognized through various awards, including the INFORMS Pierskalla Award for the Best Paper in Healthcare, INFORMS JFIG Best Paper Award, IIE Transactions Best Applications Paper Award, and her PhD students have received the INFORMS Bonder Scholarship. Dr. Bish has published extensively in leading operations research, biostatistics, and medical journals, and has graduated thirteen PhD students, many of whom hold academic positions. Dr. Bish served as the 2019 President of the INFORMS Health Applications Society, and is currently serving on their board.