

Examining Resiliency in Pharmaceutical Drug Supply Chains Incorporating Stakeholder Behaviors

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Talk will take place from 11:15AM - 12:05PM through Zoom (Zoom link can be found in Denise Lennox's email announcement sent on Monday, September 25) but the talk will also be broadcasted in Freeman Auditorium.

Abstract: The growing epidemic of drug shortages in the United States causes challenges for providers all across the critical health care infrastructure and demonstrates the lack of resiliency within drug delivery supply chains. With many of these drugs having no acceptable substitute, drug shortages directly translate to a public health and safety risk. The underlying causes of shortages include a wide variety of disruptions from manufacturing suspensions due to production challenges to the physical impact of hurricanes on critical manufacturing sites and demand spikes. While some shortages have been linked to large events, this is not the case for all shortages. One of the understudied elements driving this crisis is the role of stakeholder behavior and decision-making practices across the supply chain echelons. We present an integrated simulation framework, which allows for instantiating, testing, and improving supply chains when accounting for behavioral components of the system. We examine how manufacturing disruptions in a pharmaceutical supply chain impact evolving trust dynamics among the stakeholders during and after a disruption and study the implications of these dynamics for the supply chain performance.

Bio: Dr. Ergun's research focuses on design and management of large-scale and decentralized networks. She has applied her work on network design, management, and resilience to problems arising in many critical systems including transportation, pharmaceuticals, and healthcare. She has worked with organizations that respond to emergencies and humanitarian crises around the world, including USAID, UN WFP, UNHCR, IFRC, OXFAM America, CARE USA, FEMA, USACE, CDC, AFCEMA,

and MedShare International. Recently, Dr. Ergun partnered with the Massachusetts' Executive Office of Elder Affairs (EOEA) to help match qualified medical professionals to Long Term Care facilities with open positions around the state as part of the state's response efforts to COVID19. Dr. Ergun also served as a member of the National Academies Committee on Building Adaptable and Resilient Supply Chains after Hurricanes Harvey, Irma, and Maria and the National Academies Committee on Security of America's Medical Supply Chain. She was the President of INFORMS Section on Public Programs, Service and Needs in 2013. She currently serves as the Area Editor at the Operations Research journal for Policy Modeling and the Public Sector Area and a Department co-Editor at MSOM journal for Environment, Health and Society Department.

Prior to joining Northeastern Dr. Ergun was the Coca-Cola Associate Professor in the School of Industrial and Systems Engineering at Georgia Institute of Technology, where she also co-founded and co-directed the Health and Humanitarian Systems Research Center at the Supply Chain and Logistics Institute. She received a B.S. in Operations Research and Industrial Engineering from Cornell University in 1996 and a Ph.D. in Operations Research from the Massachusetts Institute of Technology in 2001.