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Title: Using mechanistic models to advance theory in opioid addiction epidemiology

Abstract:

Opioid addiction has become a national health crisis in recent years, with involvement in 66% of all drug overdose deaths in 2016 and high economic costs. In contrast to the dynamics of a classic disease or illicit drug epidemic, opioid addiction has its roots in prescription medication – a fact which greatly increases the exposed population and mathematically suggests non-contact based routes of addiction. In this talk, I will present recent work on epidemic models for opioid addiction and treatment, including dynamics involving heroin and fentanyl and projections based on data from the state of Tennessee. I will then describe an undergraduate project that utilizes an agent-based approach to examine the well-mixedness assumption of these models in the presence of network structure.