TROY DAY, Queen's University

The Epidemiology and Economics of Physical Distancing during Infectious Disease Outbreaks

People's incentives during an infectious disease outbreak influence their behaviour, and this behaviour can impact how the outbreak unfolds. Early on during an outbreak, people are at little personal risk of infection and hence may be unwilling to change their lifestyle to slow the spread of disease. As the number of cases grows people may then voluntarily take extreme measures to limit their exposure. Political leaders also respond to the welfare and changing desires of their constituents. In this talk I will use ideas from the study of differential games to model how individuals' and politicians' incentives change during an outbreak. Motivated by the COVID-19 pandemic, I focus on physical distancing behaviour and the imposition of stay-at-home orders. I show that the dynamic game being played in the population and its consequences are very different depending on the degree of asymptomatic transmission.

This is joint work with David McAdams, Fuqua School of Business and Economics Department, Duke University.