

Discrete Mathematics Seminar

Time: Friday, 3 October 2014, 2:00-3:00 PM
Room: 237 Derrick Hall
Title: Optimizing Vaccine Allocation for Pandemic Influenza
Speaker: Bismark Singh, Operations Research & Industrial Engineering, University of Austin at Austin

Abstract:

Vaccines are arguably the most important tool for mitigating pandemic influenza. However, as during the 2009 H1N1 pandemic, mass immunization with an effective vaccine may not begin until a pandemic is well underway. In the United States, state public health agencies are responsible for quickly and fairly allocating vaccines as they become available to priority populations. Allocation decisions can be ethically and logistically complex, given that there may be several vaccine types in limited and uncertain supply and competing priority groups with distinct risk profiles and vaccine acceptabilities. Here, we introduce a framework for optimizing statewide allocations of multiple vaccine types to multiple priority groups. We have applied our modeling framework to the state of Texas, and incorporated it into a web-based decision-support tool for the Texas Department of State Health Services. Based on vaccine quantities delivered to registered providers during the 2009 H1N1 pandemic, we find that a relatively small cache of discretionary doses (on par with the 6.8% actually reserved in 2009) suffices to achieve proportional fairness across all counties in Texas.

Bio:

Bismark Singh is a PhD student at The University of Texas at Austin. He received his Bachelors of Technology in Chemical Engineering from IIT Delhi in 2011, and his Masters in Operations Research from UT Austin in 2013. His research interests include optimization and its applications to public policy and decision making.