



Channing Network Science Seminar

May 8, 2015, 11am @ 5th floor conference room



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Incorporating contact network structure in cluster randomized trials

Abstract: Cluster randomized trials have become increasingly popular recently, and they have been used to study such diverse topics as x-ray imaging, nutrition, and HIV/AIDS. As with other types of trials, it is critical to estimate study power before proceeding, but unfortunately the standard approach to power calculations does not always capture the variabilities inherent in this complex design. We propose an alternative approach by incorporating contact network structure directly in the problem. This enables us to investigate the impact of within-cluster homogeneity, between-structure variability, and disease infectivity on statistical power and, furthermore, uncovers a natural connection between network communities and contact network structure in cluster randomized trials. Our network based approach also makes it possible to leverage available network data to improve the accuracy of the estimates. Finally, we demonstrate how mobile phone communication metadata may be used to estimate inter-cluster mixing and expected power in a hypothetical cluster-randomized trial.

Bio: <http://www.jponnela.com/about/>

hosted by Yang-Yu Liu