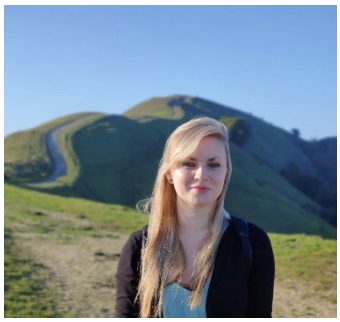
BIOSTATISTICS SEMINAR

Personalized Decision-Making in Highly Dependent Settings



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Effective management of emerging and existing epidemics requires strategic decisions on where, when, and to whom interventions should be applied. However, personalized decision-making in infectious disease applications introduces new and unique statistical challenges. For instance, the individuals at risk of infection are unknown, the true outcome of interest (positive infection status) is often a latent variable, and the presence of complex dependence reduces data to a single observation. In this work, we investigate an adaptive sequential design under latent outcome structures and unspecified dependence through space and time. The statistical problem is addressed within a nonparametric model that respects the unknown dependence structure. Dr. Malenica will begin by formalizing a treatment allocation strategy that utilizes up-to-date data to inform who is at risk of infection in real-time, with favorable theoretical properties. The optimal allocation strategy, or optimal policy, maximizes the mean latent outcome under a resource constraint. The proposed estimator learns the optimal policy over time and exploits the double-robust structure of the efficient influence function of the target parameters of interest. In the second part of the talk, she will present the study of data-adaptive inference on the mean under the optimal policy, where the target parameter adapts over time in response to the observed data (state of the epidemic). Lastly, she presents a novel paradigm in nonparametric efficient estimation particularly suited for target parameters with complex dependence.

Tuesday, March 05, 2024, 3:30-4:30PM Eastern

2308 McGavran-Greenberg Hall

Zoom Link:
https://unc.zoom.us/j/94304183888?pwd=SW5kQmJ1bkVVOFN5U2ZiQzR0MThnQT09

Meeting ID: 943 0418 3888

Passcode: 050276

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