

# ACMS Statistics Seminar

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**UIUC**

**Tues, March 20**  
**154 Hurley Hall**  
**3:30– 4:30 PM**



## **Spatially Varying Autoregressive Models for Prediction of New HIV Diagnoses**

In demand of predicting new HIV diagnosis rates based on publicly available HIV data that is abundant in space but has few points in time, we propose a class of spatially varying autoregressive (SVAR) models compounded with conditional autoregressive (CAR) spatial correlation structures. We then propose to use the copula approach and a flexible CAR formulation to model the dependence between adjacent counties. These models allow for spatial and temporal correlation as well as space-time interactions and are naturally suitable for predicting HIV cases and other spatio-temporal disease data that feature a similar data structure. We apply the proposed models to HIV data over Florida, California and New England states and compare them to a range of linear mixed models that have been recently popular for modeling spatio-temporal disease data. The results show that for such data our proposed models outperform the others in terms of prediction.

The Department of Applied and Computational  
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