

# BIOSTATISTICS SEMINAR



## Jamie Perin

PhD, James E. Grizzle  
Distinguished Alumni  
Award recipient.  
Associate Scientist,  
Johns Hopkins  
Bloomberg School of  
Public Health.

### **Predicting child mortality by cause in high mortality countries with the Bayesian lasso**

Incomplete information related to causes of mortality is a hindrance to the planning and accountability of national and international agencies, especially relating to young children. We aimed to predict the cause distribution of mortality for children age 1-59 months in 80 countries with high child mortality and inadequate vital registration of cause-specific mortality. A systematic review identified over 200 studies published after 1980 with at least 25 deaths and less than 25% of deaths due to unspecified causes, including nationally representative household surveys with verbal autopsies for child deaths. Together these studies represented over 350,000 deaths in 42 unique countries. Many potential explanatory factors were available for projection to areas where predicted cause distributions were needed, including coverage for interventions related to child health, as well as economic and structural factors such as purchasing power parity and levels of child mortality. We used Markov chain Monte Carlo sampling with a multinomial framework to model the proportions of cause-specific mortality relative to the most common cause. Systematic predictor selection is computationally infeasible due to the large number of predictor by cause combinations. We used the Bayesian lasso to stabilize coefficients for prediction in the multinomial framework, where the degree of shrinkage was identified by ten-fold cross validation.

**Thursday April 25, 2019**

**3:30 pm - 4:30 pm**

**Blue Cross and Blue Shield of North Carolina Foundation Auditorium**



**UNC**  
GILLINGS SCHOOL OF  
GLOBAL PUBLIC HEALTH