

**Department of Epidemiology and Biostatistics
Biostatistics Seminar**

Thursday, September 18, 2014
12:00pm - 1:00pm -- WG73

“Practical Bayesian Finite Population Inference for Small Geographical Areas and Subpopulations Using Unit Level Models for Binary Outcomes”

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Abstract: While most sample surveys are designed to provide reliable inferences for large geographical areas and subpopulations, there is increasing interest in obtaining good inferences for small domains. While it is natural to use Bayesian predictive inference for such applications their use has been limited, likely due, primarily, to the need to develop and check appropriate models for many variables in a single survey. In this case study our objective is to provide a template to carry out such studies, thus facilitating such analyses. We use data from the 2010 Behavioral Risk Factor Surveillance System, BRFSS, to make inference for the proportions of individuals in Florida counties and subpopulations who do not have health insurance. We are concerned about concordance of the observed data with our postulated models, but also about assessing the quality of the predictions for the nonsampled units. (Is there selection bias?) We take advantage of the set of MCMC replicates to assess variation in, for example, Q-Q plots. We emphasize the presentation of results in maps, presenting both "mean maps" and ones that display map variation, again using the MCMC replicates. This is joint work with Neung Soo Ha (SAMSI and NISS).