



JOHNS HOPKINS  
BLOOMBERG  
SCHOOL of PUBLIC HEALTH

*Department of Biostatistics*

# BIOSTATISTICS SEMINAR

## Expectation and Quantile Estimation via Markov Chain Monte Carlo

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### ABSTRACT

Abstract. Calculating a Monte Carlo standard error (MCSE) is an important step in the statistical analysis of the simulation output obtained from a Markov chain Monte Carlo experiment. For example, it can be used to provide a rigorous method for terminating the simulation. An MCSE is usually based on an estimate of the variance of the asymptotic normal distribution. We consider spectral, batch means, and subsampling bootstrap methods for estimating this variance. In the case of expectations, we establish conditions which guarantee that these estimators are strongly consistent as the simulation effort increases. Finally, we investigate the finite sample properties of these methods through two examples and provide recommendations to practitioners.

**The Johns Hopkins Bloomberg School of Public Health**  
**Department of Biostatistics, Wednesday, October 5, 2011**  
**Room W2030 School of Public Health, 4:00-5:00pm (Refreshments: 3:30)**

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