



JOHNS HOPKINS
BLOOMBERG
SCHOOL of PUBLIC HEALTH

Department of Biostatistics

BIostatISTICS SEMINAR

Markov Chain Monte Carlo:
Can We Trust the Third Significant Figure?

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Abstract

Current reporting of results based on Markov chain Monte Carlo computations could be improved. In particular, a measure of the accuracy of the resulting estimates is rarely reported in the literature. Thus the reader has little ability to objectively assess the quality of the reported estimates. I will address this issue by discussing why Monte Carlo standard errors are important, how they can be easily (and rigorously) calculated in Markov chain Monte Carlo and how they can be used to decide when to stop the simulation. A key requirement for theoretically valid estimates of the Monte Carlo error is that the Markov chain converge quickly; that is, be at least geometrically ergodic. I will present two new results which establish this property for Gibbs samplers for Bayesian linear models and a class of variable-at-a-time Metropolis-Hastings samplers. I will then compare the use of Monte Carlo standard errors to a popular alternative in the context of these two examples.

**The Johns Hopkins Bloomberg School of Public Health
Department of Biostatistics
Wednesday, September 10, 2008
Room W2030 School of Public Health
4:00-5:00pm (Refreshments: 3:30)**

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