

Empirical Performance of Bias-reducing Estimators for Regenerative Steady-State Simulations

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When simulating a stochastic system, simulationists often are interested in estimating various steady-state performance measures. The classical point estimator for such a measure involves simply taking the time average of an appropriate function of the process being simulated. Since the simulation can not be initiated with the (unknown) steady-state distribution, the classical point estimator is generally biased. In the context of regenerative steady-state simulation, a variety of other point estimators have been developed in an attempt to minimize the bias. In this paper, we provide an empirical comparison of these estimators in the context of four different continuous-time Markov chain models. The bias of the point estimators and the coverage probabilities of the associated confidence intervals are reported for the four models. Conclusions are drawn from this experimental work as to which methods are most effective in reducing bias.