Assignement 4

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Abstract

In the following analysis I have shown the relation of the variance of the equilibriated population ratio with that of the total population size .
A few graphs of the evolution of the population for different population size has also been shown.

Theory

Equation for Variation and Mean are:

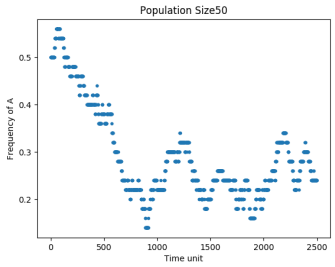
$$< (\delta f)^2 >_{trials} = < (f^2) >_{trials} - (< f >_{trials})^2 \tag{1}$$

where,

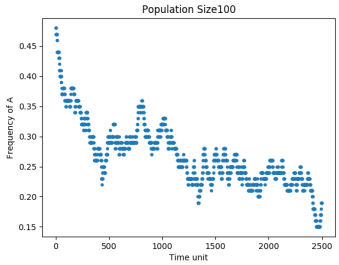
$$< f >_{trials} = \frac{1}{N_T} \Sigma_{i=1}^{N_T} f \tag{2}$$

0.1 Simulation

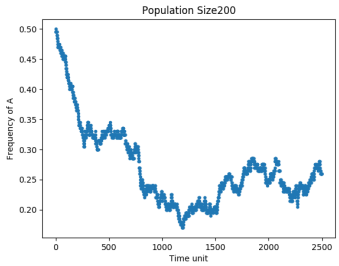
Answers]
The population evolution for different population size AND the plot of Variance and Population size inverse are below :
It can be clearly seen that there is a straight line trend.



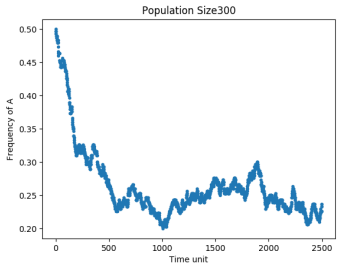
(a) Population size=50



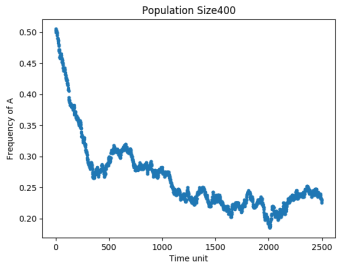
(a) Population size=100



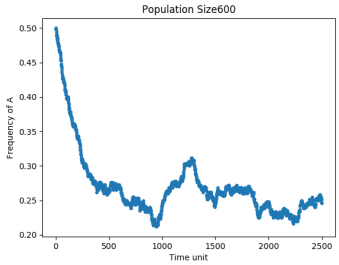
(a) Population size=200



(a) Population size=300

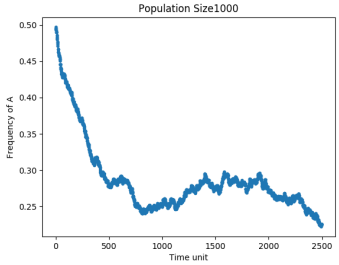


(a) Population size=400

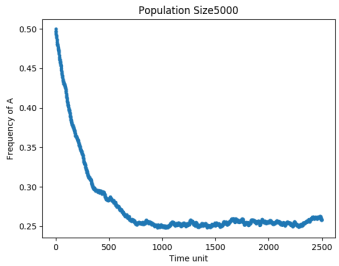


(a) Population size=600

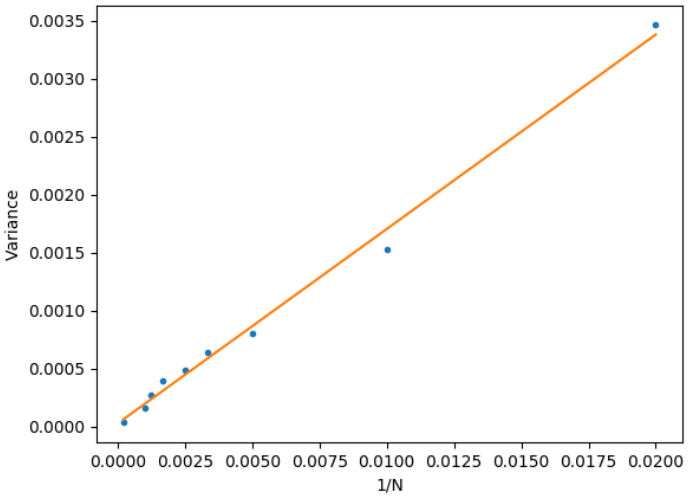
(a) Population size=800



(a) Population size=1000



(a) Population size=5000



(a) Var VS Popsize^{-1}