

Supplementary Information, Simulation Study

In order to evaluate the accuracy of the non-centrality parameter approximations, we perform simulations for power curves in Figures 1, 2, 3 and 4 of the paper. To do this, we divide the interval $(0, 0.065)$ (or $(0, 0.045)$) of the linkage disequilibrium measure Δ_{11} of LD uniformly into 20 subintervals for Figures 1 and 2 (or Figures 3 and 4). Correspondingly, the 20 subintervals lead to 21 endpoints. For each endpoint, there is a set of parameters for each power curve. Using the set of parameters, 2,500 datasets are simulated for each endpoint. For each dataset, the empirical statistics T_H, T_G, T_{H1} and T_{G1} are calculated. The simulated power is the proportion of the 2,500 simulated datasets for which the empirical statistic is larger than the cutting point of the corresponding χ^2 -distribution at a 0.05 significance level.

From the four Figures 1, 2, 3 and 4, we can see that the theoretical power curves of T_H, T_G, T_{H1} and T_{G1} are perfectly close to the simulated power curves. Thus, the non-centrality parameter approximations are very accurate.

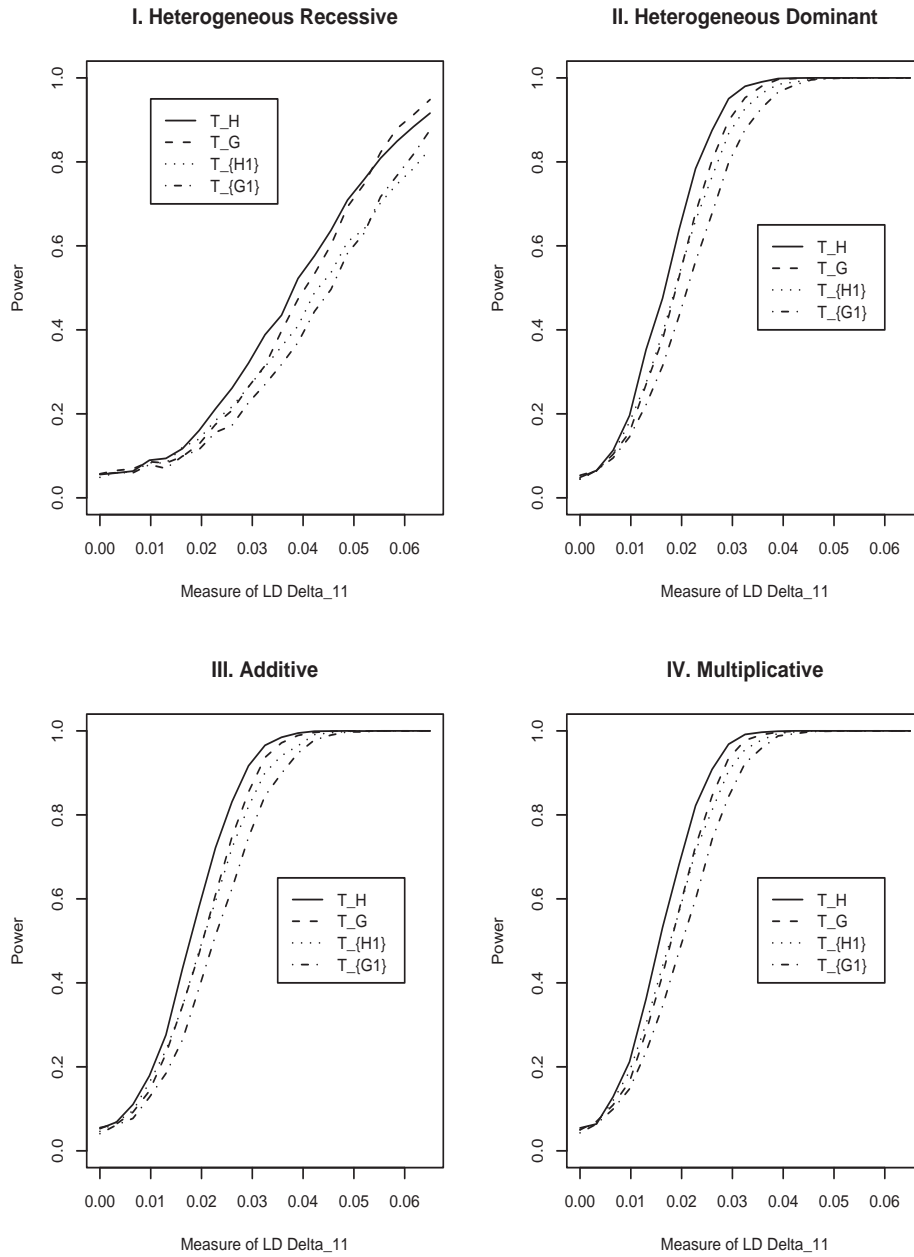


Figure 1: The simulated power curves T_H, T_G, T_{H1} and T_{G1} are plotted. The corresponding parameters are the same as those of Figure 1 of the paper.

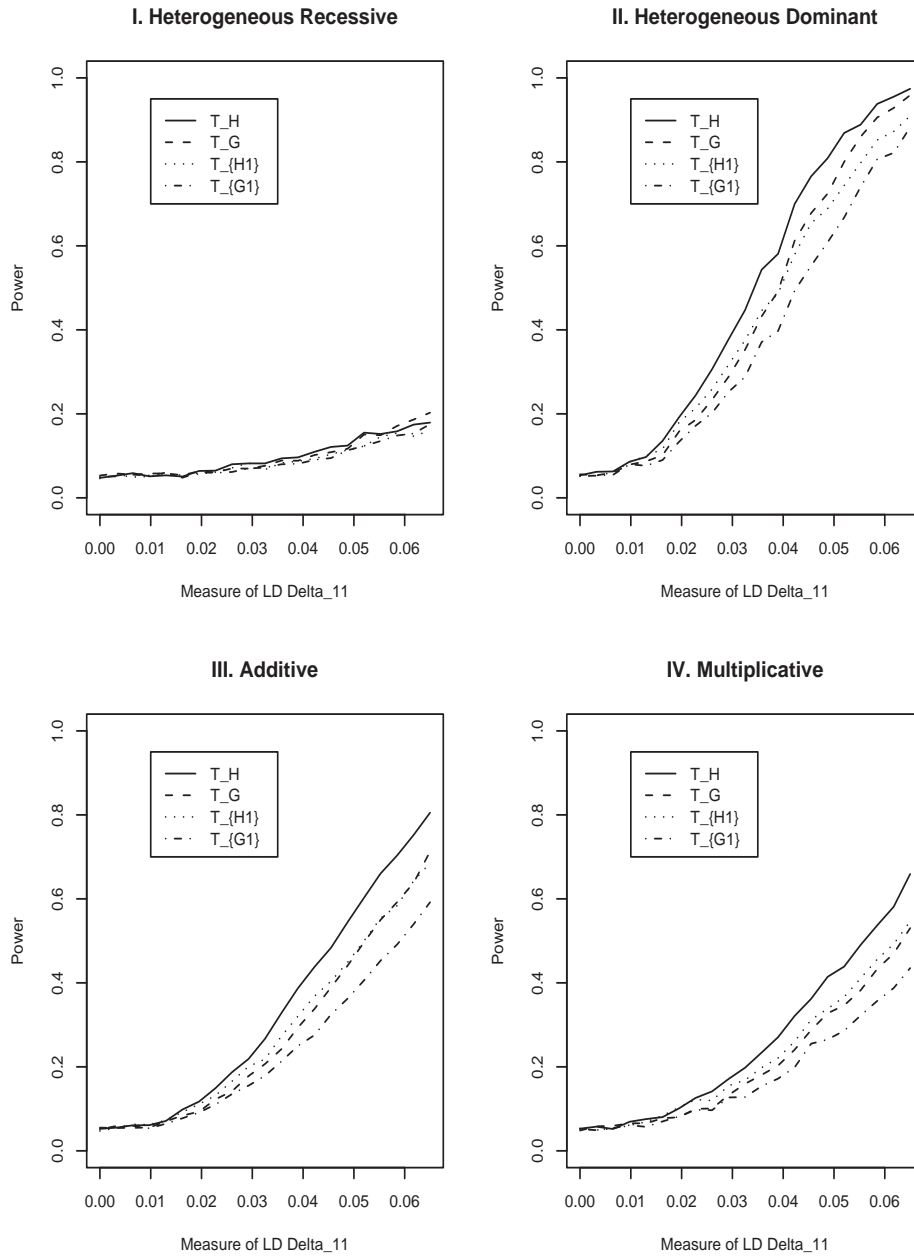


Figure 2: The simulated power curves T_H, T_G, T_{H1} and T_{G1} are plotted. The corresponding parameters are the same as those of Figure 2 of the paper.

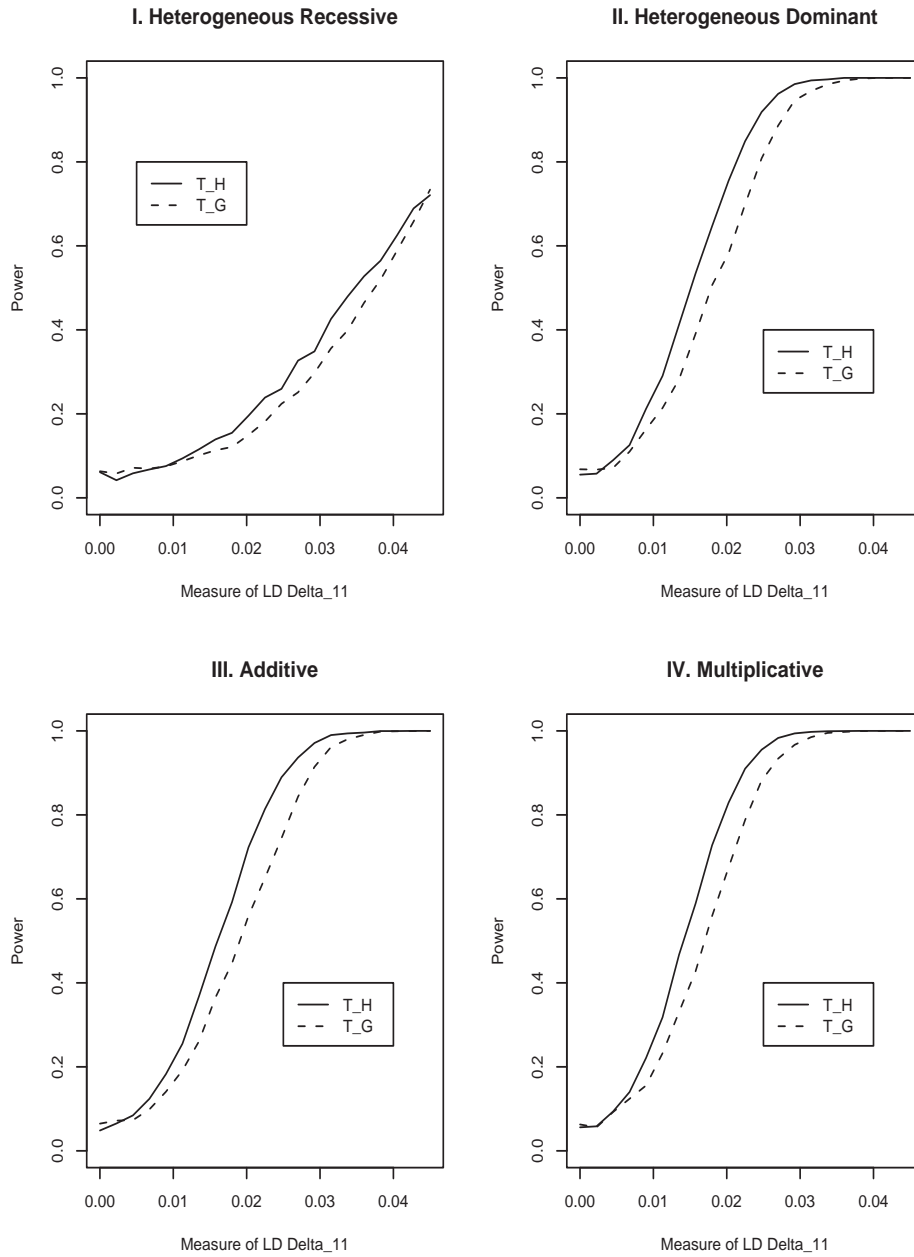


Figure 3: The simulated power curves T_H and T_G are plotted. The corresponding parameters are the same as those of Figure 3 of the paper.

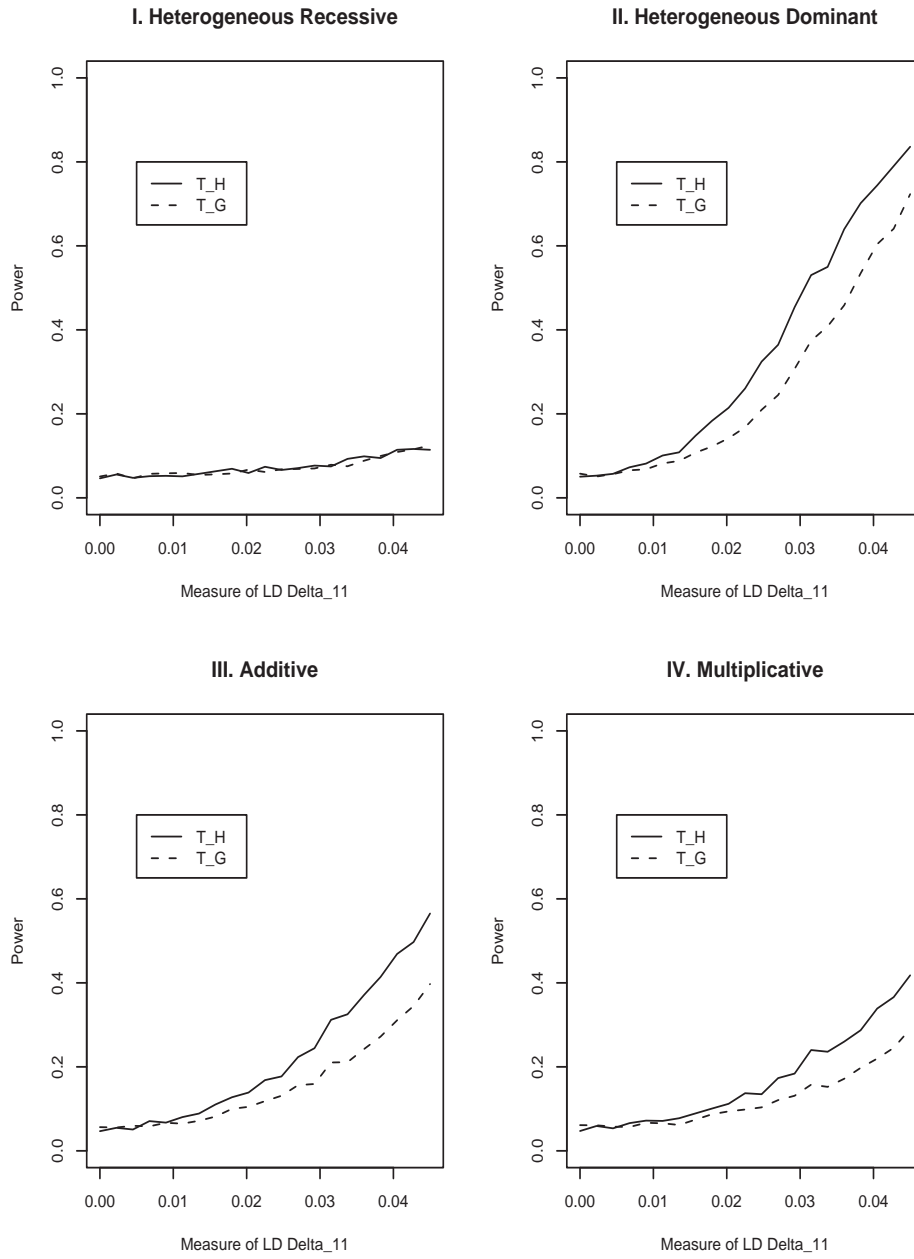


Figure 4: The simulated power curves T_H and T_G are plotted. The corresponding parameters are the same as those of Figure 4 of the paper.