**Supplementary Table 5.** Average DIC scores and simplified BPIC scores over 100 replications in the simulation study for sample size, number of SNPs, proportion of causal SNPs and heritability

| # Sample | Avg DIC  | Avg Sim BPIC | # SNP  | Avg DIC  | Avg Sim BPIC |
|----------|----------|---------------|--------|----------|---------------|
| 100      | 1,763.80 | 1,686.58      | 1000   | 6,578.43 | 6,654.97      |
| 200      | 3,429.21 | 3,395.12      | 2000   | 6,757.20 | 6,754.54      |
| 300      | 4,981.30 | 5,018.65      | 3000   | 6,866.37 | 6,792.60      |
| 400      | 6,578.43 | 6,654.97      | 5000   | 7,114.50 | 6,853.29      |

| % Causal | Avg DIC  | Avg Sim BPIC | h²    | Avg DIC  | Avg Sim BPIC |
|----------|----------|---------------|-------|----------|---------------|
| 1        | 6,578.426| 6,654.97      | 0.1   | 6,510.98 | 6,564.37      |
| 2        | 6,687.484| 6,713.82      | 0.2   | 6,595.90 | 6,628.10      |
| 3        | 6,787.85 | 6,754.39      | 0.3   | 6,602.50 | 6,648.34      |
| 5        | 7,030.012| 6,836.91      | 0.4   | 6,578.43 | 6,654.97      |

Avg DIC, averaged DIC scores over 100 replications; Avg Sim BPIC, averaged simplified BPIC scores over 100 replications.