

Variance Comparision with High Correlation

Yifei Wang

2023-06-02

This file is to compare the bias and variance from the simulation result when the correlation is 0.5. For the bias, we calucate the three variance:

1. Bias between the true and the estimated value from Bayesian composite likelihood
2. Bias between the true and the estimated value from gemtc
3. Bias between the true and the estimated value from netmeta

| | BA1 | CA1 | BC1 | BA2 | CA2 | BC2 |
|-----------|--------|--------|--------|--------|--------|--------|
| no adjust | 0.0065 | 0.0235 | 0.0300 | 0.0290 | 0.0213 | 0.0076 |
| gemtc | 0.0185 | 0.0228 | 0.0413 | 0.0189 | 0.0219 | 0.0030 |
| netmeta | 0.0106 | 0.0073 | 0.0033 | 0.0177 | 0.0066 | 0.0111 |

For the variance, we calculate three types of variance.

1. Posterior variance: variance estimated from the posterior distribution (unadjusted), take average of 500 samples
2. Sandwich variance: variance estimated by sandwich method, taking average of 500 samples
3. Simulation variance: variances estimated by 500 simulations

| | BA1 | CA1 | BC1 | BA2 | CA2 | BC2 |
|------------|--------|--------|--------|--------|--------|--------|
| Posterior | 0.0198 | 0.0197 | 0.0201 | 0.0198 | 0.0198 | 0.0200 |
| Sandwich | 0.1143 | 0.1236 | 0.1149 | 0.1245 | 0.1057 | 0.1130 |
| Simulation | 0.1291 | 0.1264 | 0.1741 | 0.1331 | 0.1094 | 0.1904 |