Supplementary Material

Part 1

This document includes the supplementary results for the simulation study. We provide the results of:

* Model selection rate (Table S1–S4)
* Convergence rate after model selection (Table S5–S6)
* Power for the fixed effect after model selection (Table S7–S9)
* RBIAS for the fixed effect after model selection (Table S10–S13)
* MSE for the fixed effect after model selection (Table S14–S17)
* CP95 for the fixed effect after model selection (Table S18–S20)
* Width95 for the fixed effect after model selection (Table S21–S23)
* Evaluation measures for the random effects (Table S24–S38)

Table S1 Model Selection Rate when True Model was M1

| I | J | Method | Selected Model | | | | I | J | Method | Selected Model | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| M1 | M2 | M3 | M4 | M1 | M2 | M3 | M4 |
| 10 | 4 | LOO–50%CI | **0.764** | 0.046 | 0.130 | 0.060 | 50 | 4 | LOO–50%CI | **0.838** | 0.040 | 0.096 | 0.026 |
| LOO–70%CI | **0.854** | 0.026 | 0.082 | 0.038 | LOO–70%CI | **0.916** | 0.018 | 0.054 | 0.012 |
| LOO–90%CI | **0.946** | 0.010 | 0.030 | 0.014 | LOO–90%CI | **0.982** | 0.000 | 0.014 | 0.004 |
| LOO–point | **0.552** | 0.100 | 0.218 | 0.130 | LOO–point | **0.590** | 0.098 | 0.204 | 0.108 |
| WAIC–50%CI | **0.542** | 0.082 | 0.226 | 0.150 | WAIC–50%CI | **0.512** | 0.060 | 0.226 | 0.202 |
| WAIC–70%CI | **0.676** | 0.056 | 0.174 | 0.094 | WAIC–70%CI | **0.640** | 0.042 | 0.186 | 0.132 |
| WAIC–90%CI | **0.826** | 0.032 | 0.092 | 0.050 | WAIC–90%CI | **0.822** | 0.024 | 0.104 | 0.050 |
| WAIC–point | **0.310** | 0.116 | 0.260 | 0.314 | WAIC–point | **0.282** | 0.094 | 0.218 | 0.406 |
| 10 | LOO–50%CI | **0.914** | 0.032 | 0.042 | 0.012 | 10 | LOO–50%CI | **0.868** | 0.048 | 0.080 | 0.004 |
| LOO–70%CI | **0.946** | 0.024 | 0.026 | 0.004 | LOO–70%CI | **0.908** | 0.036 | 0.052 | 0.004 |
| LOO–90%CI | **0.982** | 0.008 | 0.010 | 0.000 | LOO–90%CI | **0.946** | 0.024 | 0.030 | 0.000 |
| LOO–point | **0.738** | 0.112 | 0.124 | 0.026 | LOO–point | **0.636** | 0.132 | 0.192 | 0.040 |
| WAIC–50%CI | **0.846** | 0.050 | 0.080 | 0.024 | WAIC–50%CI | **0.800** | 0.070 | 0.116 | 0.014 |
| WAIC–70%CI | **0.900** | 0.036 | 0.046 | 0.018 | WAIC–70%CI | **0.872** | 0.054 | 0.064 | 0.010 |
| WAIC–90%CI | **0.960** | 0.012 | 0.024 | 0.004 | WAIC–90%CI | **0.936** | 0.028 | 0.034 | 0.002 |
| WAIC–point | **0.630** | 0.122 | 0.182 | 0.066 | WAIC–point | **0.530** | 0.146 | 0.244 | 0.080 |
| 30 | LOO–50%CI | **0.906** | 0.052 | 0.040 | 0.002 | 30 | LOO–50%CI | **0.898** | 0.036 | 0.064 | 0.002 |
| LOO–70%CI | **0.940** | 0.038 | 0.022 | 0.000 | LOO–70%CI | **0.940** | 0.022 | 0.038 | 0.000 |
| LOO–90%CI | **0.970** | 0.026 | 0.004 | 0.000 | LOO–90%CI | **0.972** | 0.014 | 0.014 | 0.000 |
| LOO–point | **0.728** | 0.134 | 0.116 | 0.022 | LOO–point | **0.734** | 0.100 | 0.138 | 0.028 |
| WAIC–50%CI | **0.886** | 0.054 | 0.054 | 0.006 | WAIC–50%CI | **0.876** | 0.042 | 0.078 | 0.004 |
| WAIC–70%CI | **0.932** | 0.042 | 0.026 | 0.000 | WAIC–70%CI | **0.932** | 0.024 | 0.044 | 0.000 |
| WAIC–90%CI | **0.968** | 0.026 | 0.006 | 0.000 | WAIC–90%CI | **0.966** | 0.018 | 0.016 | 0.000 |
| WAIC–point | **0.708** | 0.134 | 0.128 | 0.030 | WAIC–point | **0.706** | 0.104 | 0.152 | 0.038 |
| 50 | LOO–50%CI | **0.896** | 0.058 | 0.044 | 0.002 | 50 | LOO–50%CI | **0.894** | 0.046 | 0.054 | 0.006 |
| LOO–70%CI | **0.920** | 0.044 | 0.036 | 0.000 | LOO–70%CI | **0.930** | 0.032 | 0.038 | 0.000 |
| LOO–90%CI | **0.946** | 0.038 | 0.016 | 0.000 | LOO–90%CI | **0.968** | 0.014 | 0.018 | 0.000 |
| LOO–point | **0.752** | 0.132 | 0.094 | 0.022 | LOO–point | **0.692** | 0.156 | 0.120 | 0.032 |
| WAIC–50%CI | **0.894** | 0.058 | 0.046 | 0.002 | WAIC–50%CI | **0.896** | 0.044 | 0.054 | 0.006 |
| WAIC–70%CI | **0.918** | 0.046 | 0.036 | 0.000 | WAIC–70%CI | **0.938** | 0.026 | 0.036 | 0.000 |
| WAIC–90%CI | **0.944** | 0.040 | 0.016 | 0.000 | WAIC–90%CI | **0.968** | 0.014 | 0.018 | 0.000 |
| WAIC–point | **0.744** | 0.134 | 0.098 | 0.024 | WAIC–point | **0.678** | 0.158 | 0.132 | 0.032 |
| 100 | LOO–50%CI | **0.906** | 0.040 | 0.054 | 0.000 | 100 | LOO–50%CI | **0.894** | 0.048 | 0.056 | 0.002 |
| LOO–70%CI | **0.934** | 0.028 | 0.038 | 0.000 | LOO–70%CI | **0.940** | 0.028 | 0.030 | 0.002 |
| LOO–90%CI | **0.966** | 0.012 | 0.022 | 0.000 | LOO–90%CI | **0.964** | 0.014 | 0.022 | 0.000 |
| LOO–point | **0.786** | 0.104 | 0.104 | 0.006 | LOO–point | **0.700** | 0.132 | 0.136 | 0.032 |
| WAIC–50%CI | **0.904** | 0.040 | 0.056 | 0.000 | WAIC–50%CI | **0.892** | 0.048 | 0.058 | 0.002 |
| WAIC–70%CI | **0.934** | 0.028 | 0.038 | 0.000 | WAIC–70%CI | **0.934** | 0.032 | 0.032 | 0.002 |
| WAIC–90%CI | **0.966** | 0.012 | 0.022 | 0.000 | WAIC–90%CI | **0.962** | 0.016 | 0.022 | 0.000 |
| WAIC–point | **0.778** | 0.104 | 0.108 | 0.010 | WAIC–point | **0.682** | 0.130 | 0.148 | 0.040 |
| 30 | 4 | LOO–50%CI | **0.828** | 0.040 | 0.098 | 0.034 | 100 | 4 | LOO–50%CI | **0.828** | 0.046 | 0.112 | 0.014 |
| LOO–70%CI | **0.902** | 0.028 | 0.054 | 0.016 | LOO–70%CI | **0.906** | 0.018 | 0.070 | 0.006 |
| LOO–90%CI | **0.978** | 0.006 | 0.014 | 0.002 | LOO–90%CI | **0.988** | 0.002 | 0.010 | 0.000 |
| LOO–point | **0.658** | 0.076 | 0.158 | 0.108 | LOO–point | **0.576** | 0.120 | 0.208 | 0.096 |
| WAIC–50%CI | **0.594** | 0.048 | 0.166 | 0.192 | WAIC–50%CI | **0.450** | 0.098 | 0.248 | 0.204 |
| WAIC–70%CI | **0.704** | 0.042 | 0.136 | 0.118 | WAIC–70%CI | **0.574** | 0.074 | 0.214 | 0.138 |
| WAIC–90%CI | **0.836** | 0.024 | 0.088 | 0.052 | WAIC–90%CI | **0.778** | 0.036 | 0.130 | 0.056 |
| WAIC–point | **0.364** | 0.072 | 0.216 | 0.348 | WAIC–point | **0.220** | 0.104 | 0.254 | 0.422 |
| 10 | LOO–50%CI | **0.918** | 0.040 | 0.042 | 0.000 | 10 | LOO–50%CI | **0.874** | 0.056 | 0.068 | 0.002 |
| LOO–70%CI | **0.952** | 0.030 | 0.018 | 0.000 | LOO–70%CI | **0.920** | 0.032 | 0.046 | 0.002 |
| LOO–90%CI | **0.970** | 0.018 | 0.012 | 0.000 | LOO–90%CI | **0.960** | 0.014 | 0.026 | 0.000 |
| LOO–point | **0.744** | 0.110 | 0.124 | 0.022 | LOO–point | **0.664** | 0.148 | 0.154 | 0.034 |
| WAIC–50%CI | **0.844** | 0.054 | 0.090 | 0.012 | WAIC–50%CI | **0.806** | 0.070 | 0.106 | 0.018 |
| WAIC–70%CI | **0.918** | 0.028 | 0.054 | 0.000 | WAIC–70%CI | **0.866** | 0.048 | 0.078 | 0.008 |
| WAIC–90%CI | **0.964** | 0.016 | 0.020 | 0.000 | WAIC–90%CI | **0.942** | 0.020 | 0.036 | 0.002 |
| WAIC–point | **0.646** | 0.116 | 0.168 | 0.070 | WAIC–point | **0.512** | 0.166 | 0.206 | 0.116 |
| 30 | LOO–50%CI | **0.914** | 0.050 | 0.034 | 0.002 | 30 | LOO–50%CI | **0.900** | 0.042 | 0.052 | 0.006 |
| LOO–70%CI | **0.934** | 0.038 | 0.028 | 0.000 | LOO–70%CI | **0.936** | 0.022 | 0.042 | 0.000 |
| LOO–90%CI | **0.970** | 0.016 | 0.014 | 0.000 | LOO–90%CI | **0.970** | 0.014 | 0.016 | 0.000 |
| LOO–point | **0.760** | 0.118 | 0.092 | 0.030 | LOO–point | **0.646** | 0.156 | 0.176 | 0.022 |
| WAIC–50%CI | **0.908** | 0.050 | 0.038 | 0.004 | WAIC–50%CI | **0.882** | 0.042 | 0.064 | 0.012 |
| WAIC–70%CI | **0.934** | 0.042 | 0.024 | 0.000 | WAIC–70%CI | **0.924** | 0.028 | 0.048 | 0.000 |
| WAIC–90%CI | **0.970** | 0.016 | 0.014 | 0.000 | WAIC–90%CI | **0.966** | 0.010 | 0.024 | 0.000 |
| WAIC–point | **0.738** | 0.120 | 0.100 | 0.042 | WAIC–point | **0.622** | 0.162 | 0.190 | 0.026 |
| 50 | LOO–50%CI | **0.902** | 0.034 | 0.056 | 0.008 | 50 | LOO–50%CI | **0.910** | 0.040 | 0.050 | 0.000 |
| LOO–70%CI | **0.932** | 0.028 | 0.040 | 0.000 | LOO–70%CI | **0.934** | 0.034 | 0.032 | 0.000 |
| LOO–90%CI | **0.962** | 0.014 | 0.024 | 0.000 | LOO–90%CI | **0.968** | 0.016 | 0.016 | 0.000 |
| LOO–point | **0.740** | 0.112 | 0.122 | 0.026 | LOO–point | **0.704** | 0.144 | 0.126 | 0.026 |
| WAIC–50%CI | **0.904** | 0.028 | 0.060 | 0.008 | WAIC–50%CI | **0.890** | 0.042 | 0.064 | 0.004 |
| WAIC–70%CI | **0.930** | 0.026 | 0.044 | 0.000 | WAIC–70%CI | **0.926** | 0.036 | 0.038 | 0.000 |
| WAIC–90%CI | **0.960** | 0.014 | 0.026 | 0.000 | WAIC–90%CI | **0.966** | 0.016 | 0.018 | 0.000 |
| WAIC–point | **0.732** | 0.110 | 0.128 | 0.030 | WAIC–point | **0.684** | 0.146 | 0.144 | 0.026 |
| 100 | LOO–50%CI | **0.934** | 0.024 | 0.038 | 0.004 | 100 | LOO–50%CI | **0.918** | 0.026 | 0.054 | 0.002 |
| LOO–70%CI | **0.958** | 0.022 | 0.020 | 0.000 | LOO–70%CI | **0.960** | 0.016 | 0.024 | 0.000 |
| LOO–90%CI | **0.974** | 0.012 | 0.014 | 0.000 | LOO–90%CI | **0.980** | 0.012 | 0.008 | 0.000 |
| LOO–point | **0.744** | 0.108 | 0.118 | 0.030 | LOO–point | **0.748** | 0.074 | 0.146 | 0.032 |
| WAIC–50%CI | **0.932** | 0.024 | 0.040 | 0.004 | WAIC–50%CI | **0.916** | 0.024 | 0.058 | 0.002 |
| WAIC–70%CI | **0.958** | 0.022 | 0.020 | 0.000 | WAIC–70%CI | **0.960** | 0.016 | 0.024 | 0.000 |
| WAIC–90%CI | **0.974** | 0.012 | 0.014 | 0.000 | WAIC–90%CI | **0.982** | 0.010 | 0.008 | 0.000 |
| WAIC–point | **0.740** | 0.108 | 0.122 | 0.030 | WAIC–point | **0.742** | 0.070 | 0.148 | 0.040 |

*Note*. Model selection rates for the true model are boldfaced.

Table S2 Model Selection Rate when True Model was M2

| I | J | Method | Selected Model | | | | I | J | Method | Selected Model | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| M1 | M2 | M3 | M4 | M1 | M2 | M3 | M4 |
| 10 | 4 | LOO–50%CI | 0.742 | **0.070** | 0.100 | 0.088 | 50 | 4 | LOO–50%CI | 0.788 | **0.066** | 0.110 | 0.036 |
| LOO–70%CI | 0.824 | **0.048** | 0.076 | 0.052 | LOO–70%CI | 0.872 | **0.040** | 0.072 | 0.016 |
| LOO–90%CI | 0.918 | **0.016** | 0.044 | 0.022 | LOO–90%CI | 0.964 | **0.020** | 0.010 | 0.006 |
| LOO–point | 0.562 | **0.110** | 0.170 | 0.158 | LOO–point | 0.544 | **0.158** | 0.172 | 0.126 |
| WAIC–50%CI | 0.566 | **0.098** | 0.154 | 0.182 | WAIC–50%CI | 0.472 | **0.096** | 0.180 | 0.252 |
| WAIC–70%CI | 0.662 | **0.082** | 0.124 | 0.132 | WAIC–70%CI | 0.592 | **0.070** | 0.150 | 0.188 |
| WAIC–90%CI | 0.788 | **0.054** | 0.082 | 0.076 | WAIC–90%CI | 0.776 | **0.046** | 0.100 | 0.078 |
| WAIC–point | 0.306 | **0.132** | 0.228 | 0.334 | WAIC–point | 0.228 | **0.128** | 0.208 | 0.436 |
| 10 | LOO–50%CI | 0.858 | **0.078** | 0.046 | 0.018 | 10 | LOO–50%CI | 0.704 | **0.202** | 0.070 | 0.024 |
| LOO–70%CI | 0.912 | **0.054** | 0.028 | 0.006 | LOO–70%CI | 0.794 | **0.162** | 0.030 | 0.014 |
| LOO–90%CI | 0.940 | **0.040** | 0.016 | 0.004 | LOO–90%CI | 0.910 | **0.072** | 0.012 | 0.006 |
| LOO–point | 0.638 | **0.180** | 0.130 | 0.052 | LOO–point | 0.464 | **0.302** | 0.142 | 0.092 |
| WAIC–50%CI | 0.798 | **0.100** | 0.078 | 0.024 | WAIC–50%CI | 0.602 | **0.222** | 0.110 | 0.066 |
| WAIC–70%CI | 0.852 | **0.074** | 0.056 | 0.018 | WAIC–70%CI | 0.728 | **0.178** | 0.064 | 0.030 |
| WAIC–90%CI | 0.930 | **0.042** | 0.022 | 0.006 | WAIC–90%CI | 0.878 | **0.090** | 0.020 | 0.012 |
| WAIC–point | 0.540 | **0.204** | 0.154 | 0.102 | WAIC–point | 0.368 | **0.306** | 0.144 | 0.182 |
| 30 | LOO–50%CI | 0.710 | **0.248** | 0.036 | 0.006 | 30 | LOO–50%CI | 0.208 | **0.710** | 0.032 | 0.050 |
| LOO–70%CI | 0.784 | **0.190** | 0.026 | 0.000 | LOO–70%CI | 0.320 | **0.646** | 0.014 | 0.020 |
| LOO–90%CI | 0.872 | **0.116** | 0.012 | 0.000 | LOO–90%CI | 0.494 | **0.488** | 0.012 | 0.006 |
| LOO–point | 0.474 | **0.384** | 0.072 | 0.070 | LOO–point | 0.084 | **0.732** | 0.024 | 0.160 |
| WAIC–50%CI | 0.704 | **0.254** | 0.032 | 0.010 | WAIC–50%CI | 0.212 | **0.694** | 0.038 | 0.056 |
| WAIC–70%CI | 0.774 | **0.196** | 0.030 | 0.000 | WAIC–70%CI | 0.308 | **0.650** | 0.014 | 0.028 |
| WAIC–90%CI | 0.878 | **0.112** | 0.010 | 0.000 | WAIC–90%CI | 0.510 | **0.476** | 0.006 | 0.008 |
| WAIC–point | 0.460 | **0.380** | 0.082 | 0.078 | WAIC–point | 0.080 | **0.708** | 0.024 | 0.188 |
| 50 | LOO–50%CI | 0.512 | **0.438** | 0.024 | 0.026 | 50 | LOO–50%CI | 0.020 | **0.924** | 0.002 | 0.054 |
| LOO–70%CI | 0.616 | **0.358** | 0.022 | 0.004 | LOO–70%CI | 0.034 | **0.948** | 0.004 | 0.014 |
| LOO–90%CI | 0.782 | **0.214** | 0.004 | 0.000 | LOO–90%CI | 0.132 | **0.856** | 0.010 | 0.002 |
| LOO–point | 0.268 | **0.590** | 0.040 | 0.102 | LOO–point | 0.004 | **0.798** | 0.000 | 0.198 |
| WAIC–50%CI | 0.508 | **0.442** | 0.024 | 0.026 | WAIC–50%CI | 0.016 | **0.916** | 0.002 | 0.066 |
| WAIC–70%CI | 0.614 | **0.354** | 0.024 | 0.008 | WAIC–70%CI | 0.036 | **0.942** | 0.002 | 0.020 |
| WAIC–90%CI | 0.786 | **0.210** | 0.004 | 0.000 | WAIC–90%CI | 0.128 | **0.856** | 0.012 | 0.004 |
| WAIC–point | 0.260 | **0.592** | 0.040 | 0.108 | WAIC–point | 0.004 | **0.774** | 0.000 | 0.222 |
| 100 | LOO–50%CI | 0.118 | **0.840** | 0.012 | 0.030 | 100 | LOO–50%CI | 0.000 | **0.946** | 0.000 | 0.054 |
| LOO–70%CI | 0.192 | **0.790** | 0.014 | 0.004 | LOO–70%CI | 0.000 | **0.976** | 0.000 | 0.024 |
| LOO–90%CI | 0.444 | **0.546** | 0.010 | 0.000 | LOO–90%CI | 0.000 | **0.996** | 0.000 | 0.004 |
| LOO–point | 0.040 | **0.816** | 0.008 | 0.136 | LOO–point | 0.000 | **0.812** | 0.000 | 0.188 |
| WAIC–50%CI | 0.118 | **0.842** | 0.010 | 0.030 | WAIC–50%CI | 0.000 | **0.944** | 0.000 | 0.056 |
| WAIC–70%CI | 0.198 | **0.784** | 0.014 | 0.004 | WAIC–70%CI | 0.000 | **0.976** | 0.000 | 0.024 |
| WAIC–90%CI | 0.448 | **0.542** | 0.010 | 0.000 | WAIC–90%CI | 0.000 | **0.996** | 0.000 | 0.004 |
| WAIC–point | 0.040 | **0.810** | 0.008 | 0.142 | WAIC–point | 0.000 | **0.806** | 0.000 | 0.194 |
| 30 | 4 | LOO–50%CI | 0.824 | **0.064** | 0.068 | 0.044 | 100 | 4 | LOO–50%CI | 0.780 | **0.068** | 0.106 | 0.046 |
| LOO–70%CI | 0.888 | **0.038** | 0.050 | 0.024 | LOO–70%CI | 0.884 | **0.042** | 0.060 | 0.014 |
| LOO–90%CI | 0.954 | **0.018** | 0.018 | 0.010 | LOO–90%CI | 0.952 | **0.018** | 0.028 | 0.002 |
| LOO–point | 0.602 | **0.138** | 0.156 | 0.104 | LOO–point | 0.514 | **0.150** | 0.182 | 0.154 |
| WAIC–50%CI | 0.548 | **0.100** | 0.158 | 0.194 | WAIC–50%CI | 0.342 | **0.116** | 0.214 | 0.328 |
| WAIC–70%CI | 0.672 | **0.070** | 0.146 | 0.112 | WAIC–70%CI | 0.488 | **0.100** | 0.184 | 0.228 |
| WAIC–90%CI | 0.836 | **0.050** | 0.066 | 0.048 | WAIC–90%CI | 0.686 | **0.068** | 0.142 | 0.104 |
| WAIC–point | 0.288 | **0.128** | 0.176 | 0.408 | WAIC–point | 0.156 | **0.118** | 0.192 | 0.534 |
| 10 | LOO–50%CI | 0.766 | **0.148** | 0.058 | 0.028 | 10 | LOO–50%CI | 0.624 | **0.306** | 0.038 | 0.032 |
| LOO–70%CI | 0.828 | **0.128** | 0.040 | 0.004 | LOO–70%CI | 0.724 | **0.240** | 0.022 | 0.014 |
| LOO–90%CI | 0.950 | **0.044** | 0.006 | 0.000 | LOO–90%CI | 0.862 | **0.136** | 0.002 | 0.000 |
| LOO–point | 0.570 | **0.250** | 0.086 | 0.094 | LOO–point | 0.402 | **0.394** | 0.078 | 0.126 |
| WAIC–50%CI | 0.678 | **0.190** | 0.070 | 0.062 | WAIC–50%CI | 0.514 | **0.328** | 0.060 | 0.098 |
| WAIC–70%CI | 0.754 | **0.136** | 0.076 | 0.034 | WAIC–70%CI | 0.632 | **0.284** | 0.044 | 0.040 |
| WAIC–90%CI | 0.914 | **0.060** | 0.022 | 0.004 | WAIC–90%CI | 0.820 | **0.146** | 0.024 | 0.010 |
| WAIC–point | 0.474 | **0.242** | 0.126 | 0.158 | WAIC–point | 0.292 | **0.360** | 0.104 | 0.244 |
| 30 | LOO–50%CI | 0.400 | **0.536** | 0.026 | 0.038 | 30 | LOO–50%CI | 0.038 | **0.902** | 0.004 | 0.056 |
| LOO–70%CI | 0.516 | **0.454** | 0.018 | 0.012 | LOO–70%CI | 0.068 | **0.898** | 0.008 | 0.026 |
| LOO–90%CI | 0.714 | **0.270** | 0.016 | 0.000 | LOO–90%CI | 0.196 | **0.794** | 0.004 | 0.006 |
| LOO–point | 0.218 | **0.630** | 0.034 | 0.118 | LOO–point | 0.008 | **0.792** | 0.000 | 0.200 |
| WAIC–50%CI | 0.382 | **0.536** | 0.036 | 0.046 | WAIC–50%CI | 0.030 | **0.886** | 0.006 | 0.078 |
| WAIC–70%CI | 0.498 | **0.466** | 0.022 | 0.014 | WAIC–70%CI | 0.060 | **0.898** | 0.006 | 0.036 |
| WAIC–90%CI | 0.706 | **0.282** | 0.012 | 0.000 | WAIC–90%CI | 0.184 | **0.806** | 0.004 | 0.006 |
| WAIC–point | 0.200 | **0.636** | 0.032 | 0.132 | WAIC–point | 0.006 | **0.748** | 0.000 | 0.246 |
| 50 | LOO–50%CI | 0.124 | **0.836** | 0.018 | 0.022 | 50 | LOO–50%CI | 0.004 | **0.930** | 0.000 | 0.066 |
| LOO–70%CI | 0.200 | **0.776** | 0.014 | 0.010 | LOO–70%CI | 0.004 | **0.966** | 0.000 | 0.030 |
| LOO–90%CI | 0.368 | **0.618** | 0.014 | 0.000 | LOO–90%CI | 0.004 | **0.994** | 0.000 | 0.002 |
| LOO–point | 0.042 | **0.784** | 0.014 | 0.160 | LOO–point | 0.000 | **0.778** | 0.000 | 0.222 |
| WAIC–50%CI | 0.110 | **0.844** | 0.022 | 0.024 | WAIC–50%CI | 0.002 | **0.928** | 0.000 | 0.070 |
| WAIC–70%CI | 0.206 | **0.770** | 0.014 | 0.010 | WAIC–70%CI | 0.004 | **0.962** | 0.000 | 0.034 |
| WAIC–90%CI | 0.370 | **0.614** | 0.016 | 0.000 | WAIC–90%CI | 0.004 | **0.992** | 0.000 | 0.004 |
| WAIC–point | 0.042 | **0.764** | 0.012 | 0.182 | WAIC–point | 0.000 | **0.762** | 0.000 | 0.238 |
| 100 | LOO–50%CI | 0.000 | **0.970** | 0.000 | 0.030 | 100 | LOO–50%CI | 0.000 | **0.950** | 0.000 | 0.050 |
| LOO–70%CI | 0.002 | **0.986** | 0.000 | 0.012 | LOO–70%CI | 0.000 | **0.984** | 0.000 | 0.016 |
| LOO–90%CI | 0.010 | **0.986** | 0.002 | 0.002 | LOO–90%CI | 0.000 | **0.996** | 0.000 | 0.004 |
| LOO–point | 0.000 | **0.834** | 0.000 | 0.166 | LOO–point | 0.000 | **0.802** | 0.000 | 0.198 |
| WAIC–50%CI | 0.000 | **0.968** | 0.000 | 0.032 | WAIC–50%CI | 0.000 | **0.944** | 0.000 | 0.056 |
| WAIC–70%CI | 0.002 | **0.984** | 0.000 | 0.014 | WAIC–70%CI | 0.000 | **0.984** | 0.000 | 0.016 |
| WAIC–90%CI | 0.010 | **0.986** | 0.002 | 0.002 | WAIC–90%CI | 0.000 | **0.996** | 0.000 | 0.004 |
| WAIC–point | 0.000 | **0.826** | 0.000 | 0.174 | WAIC–point | 0.000 | **0.796** | 0.000 | 0.204 |

*Note*. Model selection rates for the true model are boldfaced.

Table S3 Model Selection Rate when True Model was M3

| I | J | Ft index |  | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0.01 | | | | 0.09 | | | | 0.25 | | | |
| M1 | M2 | M3 | M4 | M1 | M2 | M3 | M4 | M1 | M2 | M3 | M4 |
| 10 | 4 | LOO–50%CI | 0.788 | 0.034 | **0.122** | 0.056 | 0.516 | 0.040 | **0.352** | 0.092 | 0.250 | 0.030 | **0.542** | 0.178 |
| LOO–70%CI | 0.868 | 0.022 | **0.082** | 0.028 | 0.650 | 0.024 | **0.270** | 0.056 | 0.358 | 0.018 | **0.504** | 0.120 |
| LOO–90%CI | 0.948 | 0.008 | **0.034** | 0.010 | 0.844 | 0.006 | **0.124** | 0.026 | 0.538 | 0.010 | **0.384** | 0.068 |
| LOO–point | 0.576 | 0.090 | **0.196** | 0.138 | 0.316 | 0.066 | **0.418** | 0.200 | 0.126 | 0.040 | **0.490** | 0.344 |
| WAIC–50%CI | 0.578 | 0.072 | **0.196** | 0.154 | 0.298 | 0.054 | **0.450** | 0.198 | 0.118 | 0.034 | **0.524** | 0.324 |
| WAIC–70%CI | 0.684 | 0.036 | **0.172** | 0.108 | 0.440 | 0.046 | **0.390** | 0.124 | 0.178 | 0.026 | **0.556** | 0.240 |
| WAIC–90%CI | 0.854 | 0.024 | **0.080** | 0.042 | 0.658 | 0.022 | **0.254** | 0.066 | 0.368 | 0.018 | **0.490** | 0.124 |
| WAIC–point | 0.328 | 0.102 | **0.258** | 0.312 | 0.128 | 0.046 | **0.428** | 0.398 | 0.050 | 0.028 | **0.424** | 0.498 |
| 10 | LOO–50%CI | 0.794 | 0.060 | **0.118** | 0.028 | 0.332 | 0.012 | **0.614** | 0.042 | 0.006 | 0.000 | **0.928** | 0.066 |
| LOO–70%CI | 0.854 | 0.042 | **0.090** | 0.014 | 0.412 | 0.012 | **0.556** | 0.020 | 0.012 | 0.000 | **0.948** | 0.040 |
| LOO–90%CI | 0.930 | 0.024 | **0.046** | 0.000 | 0.614 | 0.006 | **0.374** | 0.006 | 0.088 | 0.000 | **0.908** | 0.004 |
| LOO–point | 0.594 | 0.130 | **0.200** | 0.076 | 0.156 | 0.024 | **0.704** | 0.116 | 0.002 | 0.000 | **0.802** | 0.196 |
| WAIC–50%CI | 0.708 | 0.058 | **0.188** | 0.046 | 0.228 | 0.012 | **0.694** | 0.066 | 0.004 | 0.000 | **0.878** | 0.118 |
| WAIC–70%CI | 0.788 | 0.044 | **0.136** | 0.032 | 0.310 | 0.008 | **0.650** | 0.032 | 0.008 | 0.000 | **0.934** | 0.058 |
| WAIC–90%CI | 0.902 | 0.018 | **0.076** | 0.004 | 0.498 | 0.008 | **0.484** | 0.010 | 0.048 | 0.000 | **0.936** | 0.016 |
| WAIC–point | 0.512 | 0.118 | **0.234** | 0.136 | 0.094 | 0.020 | **0.688** | 0.198 | 0.000 | 0.000 | **0.734** | 0.266 |
| 30 | LOO–50%CI | 0.706 | 0.034 | **0.246** | 0.014 | 0.002 | 0.000 | **0.952** | 0.046 | 0.000 | 0.000 | **0.950** | 0.050 |
| LOO–70%CI | 0.768 | 0.024 | **0.202** | 0.006 | 0.006 | 0.000 | **0.966** | 0.028 | 0.000 | 0.000 | **0.980** | 0.020 |
| LOO–90%CI | 0.884 | 0.012 | **0.104** | 0.000 | 0.030 | 0.000 | **0.966** | 0.004 | 0.000 | 0.000 | **0.998** | 0.002 |
| LOO–point | 0.490 | 0.078 | **0.368** | 0.064 | 0.000 | 0.000 | **0.852** | 0.148 | 0.000 | 0.000 | **0.830** | 0.170 |
| WAIC–50%CI | 0.684 | 0.034 | **0.266** | 0.016 | 0.002 | 0.000 | **0.948** | 0.050 | 0.000 | 0.000 | **0.948** | 0.052 |
| WAIC–70%CI | 0.752 | 0.024 | **0.218** | 0.006 | 0.002 | 0.000 | **0.968** | 0.030 | 0.000 | 0.000 | **0.974** | 0.026 |
| WAIC–90%CI | 0.880 | 0.012 | **0.108** | 0.000 | 0.026 | 0.000 | **0.970** | 0.004 | 0.000 | 0.000 | **0.998** | 0.002 |
| WAIC–point | 0.470 | 0.076 | **0.380** | 0.074 | 0.000 | 0.000 | **0.814** | 0.186 | 0.000 | 0.000 | **0.816** | 0.184 |
| 50 | LOO–50%CI | 0.594 | 0.020 | **0.374** | 0.012 | 0.000 | 0.000 | **0.954** | 0.046 | 0.000 | 0.000 | **0.962** | 0.038 |
| LOO–70%CI | 0.684 | 0.010 | **0.304** | 0.002 | 0.000 | 0.000 | **0.978** | 0.022 | 0.000 | 0.000 | **0.986** | 0.014 |
| LOO–90%CI | 0.820 | 0.002 | **0.178** | 0.000 | 0.000 | 0.000 | **0.996** | 0.004 | 0.000 | 0.000 | **0.998** | 0.002 |
| LOO–point | 0.346 | 0.064 | **0.482** | 0.108 | 0.000 | 0.000 | **0.834** | 0.166 | 0.000 | 0.000 | **0.856** | 0.144 |
| WAIC–50%CI | 0.576 | 0.026 | **0.386** | 0.012 | 0.000 | 0.000 | **0.952** | 0.048 | 0.000 | 0.000 | **0.960** | 0.040 |
| WAIC–70%CI | 0.666 | 0.012 | **0.320** | 0.002 | 0.000 | 0.000 | **0.978** | 0.022 | 0.000 | 0.000 | **0.986** | 0.014 |
| WAIC–90%CI | 0.818 | 0.002 | **0.180** | 0.000 | 0.000 | 0.000 | **0.996** | 0.004 | 0.000 | 0.000 | **0.998** | 0.002 |
| WAIC–point | 0.336 | 0.058 | **0.484** | 0.122 | 0.000 | 0.000 | **0.822** | 0.178 | 0.000 | 0.000 | **0.846** | 0.154 |
| 100 | LOO–50%CI | 0.196 | 0.004 | **0.768** | 0.032 | 0.000 | 0.000 | **0.968** | 0.032 | 0.000 | 0.000 | **0.982** | 0.018 |
| LOO–70%CI | 0.274 | 0.004 | **0.712** | 0.010 | 0.000 | 0.000 | **0.988** | 0.012 | 0.000 | 0.000 | **0.988** | 0.012 |
| LOO–90%CI | 0.512 | 0.000 | **0.488** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 |
| LOO–point | 0.070 | 0.016 | **0.780** | 0.134 | 0.000 | 0.000 | **0.828** | 0.172 | 0.000 | 0.000 | **0.888** | 0.112 |
| WAIC–50%CI | 0.192 | 0.004 | **0.772** | 0.032 | 0.000 | 0.000 | **0.966** | 0.034 | 0.000 | 0.000 | **0.982** | 0.018 |
| WAIC–70%CI | 0.268 | 0.004 | **0.718** | 0.010 | 0.000 | 0.000 | **0.988** | 0.012 | 0.000 | 0.000 | **0.988** | 0.012 |
| WAIC–90%CI | 0.508 | 0.000 | **0.492** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 |
| WAIC–point | 0.068 | 0.016 | **0.778** | 0.138 | 0.000 | 0.000 | **0.824** | 0.176 | 0.000 | 0.000 | **0.884** | 0.116 |
| 30 | 4 | LOO–50%CI | 0.778 | 0.050 | **0.112** | 0.060 | 0.386 | 0.028 | **0.430** | 0.156 | 0.032 | 0.008 | **0.658** | 0.302 |
| LOO–70%CI | 0.882 | 0.020 | **0.066** | 0.032 | 0.506 | 0.020 | **0.378** | 0.096 | 0.056 | 0.006 | **0.700** | 0.238 |
| LOO–90%CI | 0.942 | 0.012 | **0.036** | 0.010 | 0.706 | 0.006 | **0.244** | 0.044 | 0.142 | 0.006 | **0.738** | 0.114 |
| LOO–point | 0.554 | 0.118 | **0.198** | 0.130 | 0.190 | 0.032 | **0.430** | 0.348 | 0.008 | 0.010 | **0.482** | 0.500 |
| WAIC–50%CI | 0.486 | 0.088 | **0.210** | 0.216 | 0.134 | 0.022 | **0.438** | 0.406 | 0.006 | 0.010 | **0.462** | 0.522 |
| WAIC–70%CI | 0.610 | 0.068 | **0.170** | 0.152 | 0.210 | 0.022 | **0.454** | 0.314 | 0.012 | 0.008 | **0.532** | 0.448 |
| WAIC–90%CI | 0.810 | 0.028 | **0.096** | 0.066 | 0.424 | 0.020 | **0.392** | 0.164 | 0.040 | 0.004 | **0.648** | 0.308 |
| WAIC–point | 0.264 | 0.096 | **0.224** | 0.416 | 0.058 | 0.014 | **0.344** | 0.584 | 0.002 | 0.002 | **0.324** | 0.672 |
| 10 | LOO–50%CI | 0.816 | 0.036 | **0.132** | 0.016 | 0.034 | 0.002 | **0.878** | 0.086 | 0.000 | 0.000 | **0.908** | 0.092 |
| LOO–70%CI | 0.888 | 0.022 | **0.082** | 0.008 | 0.060 | 0.000 | **0.894** | 0.046 | 0.000 | 0.000 | **0.946** | 0.054 |
| LOO–90%CI | 0.948 | 0.010 | **0.040** | 0.002 | 0.164 | 0.002 | **0.834** | 0.000 | 0.000 | 0.000 | **0.986** | 0.014 |
| LOO–point | 0.596 | 0.098 | **0.214** | 0.092 | 0.012 | 0.002 | **0.770** | 0.216 | 0.000 | 0.000 | **0.754** | 0.246 |
| WAIC–50%CI | 0.716 | 0.042 | **0.190** | 0.052 | 0.016 | 0.002 | **0.830** | 0.152 | 0.000 | 0.000 | **0.846** | 0.154 |
| WAIC–70%CI | 0.802 | 0.038 | **0.140** | 0.020 | 0.022 | 0.000 | **0.898** | 0.080 | 0.000 | 0.000 | **0.898** | 0.102 |
| WAIC–90%CI | 0.916 | 0.010 | **0.066** | 0.008 | 0.084 | 0.000 | **0.888** | 0.028 | 0.000 | 0.000 | **0.964** | 0.036 |
| WAIC–point | 0.474 | 0.100 | **0.264** | 0.162 | 0.004 | 0.002 | **0.692** | 0.302 | 0.000 | 0.000 | **0.674** | 0.326 |
| 30 | LOO–50%CI | 0.492 | 0.018 | **0.462** | 0.028 | 0.000 | 0.000 | **0.942** | 0.058 | 0.000 | 0.000 | **0.946** | 0.054 |
| LOO–70%CI | 0.572 | 0.012 | **0.408** | 0.008 | 0.000 | 0.000 | **0.976** | 0.024 | 0.000 | 0.000 | **0.972** | 0.028 |
| LOO–90%CI | 0.746 | 0.004 | **0.250** | 0.000 | 0.000 | 0.000 | **0.994** | 0.006 | 0.000 | 0.000 | **0.994** | 0.006 |
| LOO–point | 0.272 | 0.036 | **0.592** | 0.100 | 0.000 | 0.000 | **0.810** | 0.190 | 0.000 | 0.000 | **0.818** | 0.182 |
| WAIC–50%CI | 0.464 | 0.012 | **0.488** | 0.036 | 0.000 | 0.000 | **0.936** | 0.064 | 0.000 | 0.000 | **0.932** | 0.068 |
| WAIC–70%CI | 0.542 | 0.010 | **0.438** | 0.010 | 0.000 | 0.000 | **0.968** | 0.032 | 0.000 | 0.000 | **0.966** | 0.034 |
| WAIC–90%CI | 0.732 | 0.004 | **0.264** | 0.000 | 0.000 | 0.000 | **0.992** | 0.008 | 0.000 | 0.000 | **0.992** | 0.008 |
| WAIC–point | 0.250 | 0.032 | **0.608** | 0.110 | 0.000 | 0.000 | **0.788** | 0.212 | 0.000 | 0.000 | **0.772** | 0.228 |
| 50 | LOO–50%CI | 0.154 | 0.008 | **0.788** | 0.050 | 0.000 | 0.000 | **0.956** | 0.044 | 0.000 | 0.000 | **0.954** | 0.046 |
| LOO–70%CI | 0.234 | 0.004 | **0.750** | 0.012 | 0.000 | 0.000 | **0.982** | 0.018 | 0.000 | 0.000 | **0.984** | 0.016 |
| LOO–90%CI | 0.478 | 0.000 | **0.520** | 0.002 | 0.000 | 0.000 | **0.998** | 0.002 | 0.000 | 0.000 | **1.000** | 0.000 |
| LOO–point | 0.064 | 0.016 | **0.748** | 0.172 | 0.000 | 0.000 | **0.830** | 0.170 | 0.000 | 0.000 | **0.850** | 0.150 |
| WAIC–50%CI | 0.146 | 0.010 | **0.786** | 0.058 | 0.000 | 0.000 | **0.948** | 0.052 | 0.000 | 0.000 | **0.954** | 0.046 |
| WAIC–70%CI | 0.222 | 0.004 | **0.760** | 0.014 | 0.000 | 0.000 | **0.980** | 0.020 | 0.000 | 0.000 | **0.982** | 0.018 |
| WAIC–90%CI | 0.466 | 0.000 | **0.532** | 0.002 | 0.000 | 0.000 | **0.998** | 0.002 | 0.000 | 0.000 | **1.000** | 0.000 |
| WAIC–point | 0.058 | 0.016 | **0.742** | 0.184 | 0.000 | 0.000 | **0.822** | 0.178 | 0.000 | 0.000 | **0.840** | 0.160 |
| 100 | LOO–50%CI | 0.006 | 0.000 | **0.936** | 0.058 | 0.000 | 0.000 | **0.946** | 0.054 | 0.000 | 0.000 | **0.958** | 0.042 |
| LOO–70%CI | 0.010 | 0.000 | **0.976** | 0.014 | 0.000 | 0.000 | **0.982** | 0.018 | 0.000 | 0.000 | **0.986** | 0.014 |
| LOO–90%CI | 0.040 | 0.000 | **0.960** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **0.998** | 0.002 |
| LOO–point | 0.002 | 0.000 | **0.794** | 0.204 | 0.000 | 0.000 | **0.810** | 0.190 | 0.000 | 0.000 | **0.818** | 0.182 |
| WAIC–50%CI | 0.006 | 0.000 | **0.936** | 0.058 | 0.000 | 0.000 | **0.946** | 0.054 | 0.000 | 0.000 | **0.954** | 0.046 |
| WAIC–70%CI | 0.010 | 0.000 | **0.976** | 0.014 | 0.000 | 0.000 | **0.982** | 0.018 | 0.000 | 0.000 | **0.984** | 0.016 |
| WAIC–90%CI | 0.040 | 0.000 | **0.960** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **0.998** | 0.002 |
| WAIC–point | 0.000 | 0.000 | **0.790** | 0.210 | 0.000 | 0.000 | **0.808** | 0.192 | 0.000 | 0.000 | **0.818** | 0.182 |
| 50 | 4 | LOO–50%CI | 0.762 | 0.036 | **0.146** | 0.056 | 0.202 | 0.014 | **0.568** | 0.216 | 0.000 | 0.000 | **0.646** | 0.354 |
| LOO–70%CI | 0.870 | 0.026 | **0.076** | 0.028 | 0.304 | 0.012 | **0.538** | 0.146 | 0.002 | 0.000 | **0.730** | 0.268 |
| LOO–90%CI | 0.940 | 0.008 | **0.040** | 0.012 | 0.522 | 0.010 | **0.422** | 0.046 | 0.024 | 0.000 | **0.844** | 0.132 |
| LOO–point | 0.504 | 0.094 | **0.248** | 0.154 | 0.078 | 0.014 | **0.502** | 0.406 | 0.000 | 0.000 | **0.450** | 0.550 |
| WAIC–50%CI | 0.388 | 0.056 | **0.292** | 0.264 | 0.042 | 0.008 | **0.436** | 0.514 | 0.000 | 0.000 | **0.426** | 0.574 |
| WAIC–70%CI | 0.540 | 0.056 | **0.246** | 0.158 | 0.078 | 0.008 | **0.484** | 0.430 | 0.000 | 0.000 | **0.512** | 0.488 |
| WAIC–90%CI | 0.744 | 0.044 | **0.138** | 0.074 | 0.174 | 0.014 | **0.568** | 0.244 | 0.000 | 0.000 | **0.644** | 0.356 |
| WAIC–point | 0.228 | 0.056 | **0.240** | 0.476 | 0.012 | 0.006 | **0.282** | 0.700 | 0.000 | 0.000 | **0.272** | 0.728 |
| 10 | LOO–50%CI | 0.750 | 0.054 | **0.174** | 0.022 | 0.002 | 0.000 | **0.916** | 0.082 | 0.000 | 0.000 | **0.916** | 0.084 |
| LOO–70%CI | 0.826 | 0.032 | **0.130** | 0.012 | 0.002 | 0.000 | **0.950** | 0.048 | 0.000 | 0.000 | **0.962** | 0.038 |
| LOO–90%CI | 0.928 | 0.012 | **0.060** | 0.000 | 0.014 | 0.000 | **0.970** | 0.016 | 0.000 | 0.000 | **0.988** | 0.012 |
| LOO–point | 0.468 | 0.108 | **0.328** | 0.096 | 0.000 | 0.000 | **0.746** | 0.254 | 0.000 | 0.000 | **0.744** | 0.256 |
| WAIC–50%CI | 0.582 | 0.060 | **0.292** | 0.066 | 0.000 | 0.000 | **0.810** | 0.190 | 0.000 | 0.000 | **0.824** | 0.176 |
| WAIC–70%CI | 0.706 | 0.028 | **0.230** | 0.036 | 0.000 | 0.000 | **0.908** | 0.092 | 0.000 | 0.000 | **0.904** | 0.096 |
| WAIC–90%CI | 0.876 | 0.006 | **0.112** | 0.006 | 0.004 | 0.000 | **0.952** | 0.044 | 0.000 | 0.000 | **0.960** | 0.040 |
| WAIC–point | 0.362 | 0.100 | **0.346** | 0.192 | 0.000 | 0.000 | **0.604** | 0.396 | 0.000 | 0.000 | **0.634** | 0.366 |
| 30 | LOO–50%CI | 0.314 | 0.010 | **0.642** | 0.034 | 0.000 | 0.000 | **0.950** | 0.050 | 0.000 | 0.000 | **0.958** | 0.042 |
| LOO–70%CI | 0.414 | 0.010 | **0.564** | 0.012 | 0.000 | 0.000 | **0.982** | 0.018 | 0.000 | 0.000 | **0.990** | 0.010 |
| LOO–90%CI | 0.670 | 0.000 | **0.326** | 0.004 | 0.000 | 0.000 | **0.996** | 0.004 | 0.000 | 0.000 | **0.994** | 0.006 |
| LOO–point | 0.162 | 0.010 | **0.678** | 0.150 | 0.000 | 0.000 | **0.828** | 0.172 | 0.000 | 0.000 | **0.806** | 0.194 |
| WAIC–50%CI | 0.280 | 0.010 | **0.668** | 0.042 | 0.000 | 0.000 | **0.936** | 0.064 | 0.000 | 0.000 | **0.944** | 0.056 |
| WAIC–70%CI | 0.394 | 0.008 | **0.580** | 0.018 | 0.000 | 0.000 | **0.974** | 0.026 | 0.000 | 0.000 | **0.982** | 0.018 |
| WAIC–90%CI | 0.666 | 0.000 | **0.330** | 0.004 | 0.000 | 0.000 | **0.996** | 0.004 | 0.000 | 0.000 | **0.994** | 0.006 |
| WAIC–point | 0.132 | 0.006 | **0.670** | 0.192 | 0.000 | 0.000 | **0.786** | 0.214 | 0.000 | 0.000 | **0.772** | 0.228 |
| 50 | LOO–50%CI | 0.052 | 0.000 | **0.910** | 0.038 | 0.000 | 0.000 | **0.962** | 0.038 | 0.000 | 0.000 | **0.972** | 0.028 |
| LOO–70%CI | 0.098 | 0.000 | **0.886** | 0.016 | 0.000 | 0.000 | **0.988** | 0.012 | 0.000 | 0.000 | **0.998** | 0.002 |
| LOO–90%CI | 0.236 | 0.000 | **0.758** | 0.006 | 0.000 | 0.000 | **0.998** | 0.002 | 0.000 | 0.000 | **1.000** | 0.000 |
| LOO–point | 0.022 | 0.002 | **0.816** | 0.160 | 0.000 | 0.000 | **0.822** | 0.178 | 0.000 | 0.000 | **0.846** | 0.154 |
| WAIC–50%CI | 0.044 | 0.000 | **0.912** | 0.044 | 0.000 | 0.000 | **0.954** | 0.046 | 0.000 | 0.000 | **0.960** | 0.040 |
| WAIC–70%CI | 0.084 | 0.000 | **0.896** | 0.020 | 0.000 | 0.000 | **0.986** | 0.014 | 0.000 | 0.000 | **0.996** | 0.004 |
| WAIC–90%CI | 0.224 | 0.000 | **0.770** | 0.006 | 0.000 | 0.000 | **0.996** | 0.004 | 0.000 | 0.000 | **1.000** | 0.000 |
| WAIC–point | 0.020 | 0.002 | **0.804** | 0.174 | 0.000 | 0.000 | **0.806** | 0.194 | 0.000 | 0.000 | **0.832** | 0.168 |
| 100 | LOO–50%CI | 0.000 | 0.000 | **0.954** | 0.046 | 0.000 | 0.000 | **0.958** | 0.042 | 0.000 | 0.000 | **0.968** | 0.032 |
| LOO–70%CI | 0.000 | 0.000 | **0.988** | 0.012 | 0.000 | 0.000 | **0.988** | 0.012 | 0.000 | 0.000 | **0.988** | 0.012 |
| LOO–90%CI | 0.000 | 0.000 | **0.998** | 0.002 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **0.998** | 0.002 |
| LOO–point | 0.000 | 0.000 | **0.836** | 0.164 | 0.000 | 0.000 | **0.824** | 0.176 | 0.000 | 0.000 | **0.874** | 0.126 |
| WAIC–50%CI | 0.000 | 0.000 | **0.952** | 0.048 | 0.000 | 0.000 | **0.952** | 0.048 | 0.000 | 0.000 | **0.966** | 0.034 |
| WAIC–70%CI | 0.000 | 0.000 | **0.986** | 0.014 | 0.000 | 0.000 | **0.988** | 0.012 | 0.000 | 0.000 | **0.988** | 0.012 |
| WAIC–90%CI | 0.000 | 0.000 | **0.998** | 0.002 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **0.998** | 0.002 |
| WAIC–point | 0.000 | 0.000 | **0.836** | 0.164 | 0.000 | 0.000 | **0.818** | 0.182 | 0.000 | 0.000 | **0.866** | 0.134 |
| 100 | 4 | LOO–50%CI | 0.734 | 0.064 | **0.172** | 0.030 | 0.050 | 0.012 | **0.686** | 0.252 | 0.000 | 0.000 | **0.668** | 0.332 |
| LOO–70%CI | 0.832 | 0.030 | **0.122** | 0.016 | 0.090 | 0.008 | **0.734** | 0.168 | 0.000 | 0.000 | **0.770** | 0.230 |
| LOO–90%CI | 0.934 | 0.016 | **0.046** | 0.004 | 0.220 | 0.004 | **0.708** | 0.068 | 0.002 | 0.000 | **0.882** | 0.116 |
| LOO–point | 0.464 | 0.132 | **0.286** | 0.118 | 0.018 | 0.010 | **0.528** | 0.444 | 0.000 | 0.000 | **0.506** | 0.494 |
| WAIC–50%CI | 0.316 | 0.074 | **0.350** | 0.260 | 0.010 | 0.006 | **0.432** | 0.552 | 0.000 | 0.000 | **0.420** | 0.580 |
| WAIC–70%CI | 0.454 | 0.066 | **0.306** | 0.174 | 0.012 | 0.008 | **0.514** | 0.466 | 0.000 | 0.000 | **0.506** | 0.494 |
| WAIC–90%CI | 0.652 | 0.058 | **0.212** | 0.078 | 0.032 | 0.006 | **0.664** | 0.298 | 0.000 | 0.000 | **0.626** | 0.374 |
| WAIC–point | 0.134 | 0.090 | **0.314** | 0.462 | 0.000 | 0.004 | **0.274** | 0.722 | 0.000 | 0.000 | **0.290** | 0.710 |
| 10 | LOO–50%CI | 0.676 | 0.032 | **0.274** | 0.018 | 0.000 | 0.000 | **0.894** | 0.106 | 0.000 | 0.000 | **0.842** | 0.158 |
| LOO–70%CI | 0.752 | 0.012 | **0.232** | 0.004 | 0.000 | 0.000 | **0.944** | 0.056 | 0.000 | 0.000 | **0.916** | 0.084 |
| LOO–90%CI | 0.860 | 0.002 | **0.138** | 0.000 | 0.000 | 0.000 | **0.974** | 0.026 | 0.000 | 0.000 | **0.984** | 0.016 |
| LOO–point | 0.408 | 0.072 | **0.436** | 0.084 | 0.000 | 0.000 | **0.714** | 0.286 | 0.000 | 0.000 | **0.674** | 0.326 |
| WAIC–50%CI | 0.512 | 0.028 | **0.392** | 0.068 | 0.000 | 0.000 | **0.788** | 0.212 | 0.000 | 0.000 | **0.730** | 0.270 |
| WAIC–70%CI | 0.628 | 0.016 | **0.322** | 0.034 | 0.000 | 0.000 | **0.882** | 0.118 | 0.000 | 0.000 | **0.830** | 0.170 |
| WAIC–90%CI | 0.802 | 0.004 | **0.190** | 0.004 | 0.000 | 0.000 | **0.946** | 0.054 | 0.000 | 0.000 | **0.918** | 0.082 |
| WAIC–point | 0.294 | 0.070 | **0.460** | 0.176 | 0.000 | 0.000 | **0.590** | 0.410 | 0.000 | 0.000 | **0.536** | 0.464 |
| 30 | LOO–50%CI | 0.086 | 0.004 | **0.862** | 0.048 | 0.000 | 0.000 | **0.936** | 0.064 | 0.000 | 0.000 | **0.932** | 0.068 |
| LOO–70%CI | 0.130 | 0.002 | **0.846** | 0.022 | 0.000 | 0.000 | **0.976** | 0.024 | 0.000 | 0.000 | **0.974** | 0.026 |
| LOO–90%CI | 0.294 | 0.000 | **0.704** | 0.002 | 0.000 | 0.000 | **0.994** | 0.006 | 0.000 | 0.000 | **0.994** | 0.006 |
| LOO–point | 0.032 | 0.006 | **0.800** | 0.162 | 0.000 | 0.000 | **0.816** | 0.184 | 0.000 | 0.000 | **0.796** | 0.204 |
| WAIC–50%CI | 0.074 | 0.004 | **0.864** | 0.058 | 0.000 | 0.000 | **0.922** | 0.078 | 0.000 | 0.000 | **0.918** | 0.082 |
| WAIC–70%CI | 0.110 | 0.002 | **0.862** | 0.026 | 0.000 | 0.000 | **0.960** | 0.040 | 0.000 | 0.000 | **0.962** | 0.038 |
| WAIC–90%CI | 0.266 | 0.000 | **0.730** | 0.004 | 0.000 | 0.000 | **0.994** | 0.006 | 0.000 | 0.000 | **0.992** | 0.008 |
| WAIC–point | 0.024 | 0.002 | **0.786** | 0.188 | 0.000 | 0.000 | **0.784** | 0.216 | 0.000 | 0.000 | **0.776** | 0.224 |
| 50 | LOO–50%CI | 0.002 | 0.000 | **0.950** | 0.048 | 0.000 | 0.000 | **0.926** | 0.074 | 0.000 | 0.000 | **0.932** | 0.068 |
| LOO–70%CI | 0.004 | 0.000 | **0.984** | 0.012 | 0.000 | 0.000 | **0.968** | 0.032 | 0.000 | 0.000 | **0.980** | 0.020 |
| LOO–90%CI | 0.024 | 0.000 | **0.976** | 0.000 | 0.000 | 0.000 | **0.998** | 0.002 | 0.000 | 0.000 | **0.996** | 0.004 |
| LOO–point | 0.000 | 0.000 | **0.820** | 0.180 | 0.000 | 0.000 | **0.774** | 0.226 | 0.000 | 0.000 | **0.774** | 0.226 |
| WAIC–50%CI | 0.000 | 0.000 | **0.946** | 0.054 | 0.000 | 0.000 | **0.918** | 0.082 | 0.000 | 0.000 | **0.924** | 0.076 |
| WAIC–70%CI | 0.002 | 0.000 | **0.984** | 0.014 | 0.000 | 0.000 | **0.962** | 0.038 | 0.000 | 0.000 | **0.974** | 0.026 |
| WAIC–90%CI | 0.024 | 0.000 | **0.976** | 0.000 | 0.000 | 0.000 | **0.998** | 0.002 | 0.000 | 0.000 | **0.996** | 0.004 |
| WAIC–point | 0.000 | 0.000 | **0.804** | 0.196 | 0.000 | 0.000 | **0.748** | 0.252 | 0.000 | 0.000 | **0.762** | 0.238 |
| 100 | LOO–50%CI | 0.000 | 0.000 | **0.952** | 0.048 | 0.000 | 0.000 | **0.952** | 0.048 | 0.000 | 0.000 | **0.938** | 0.062 |
| LOO–70%CI | 0.000 | 0.000 | **0.982** | 0.018 | 0.000 | 0.000 | **0.994** | 0.006 | 0.000 | 0.000 | **0.974** | 0.026 |
| LOO–90%CI | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **0.996** | 0.004 |
| LOO–point | 0.000 | 0.000 | **0.800** | 0.200 | 0.000 | 0.000 | **0.806** | 0.194 | 0.000 | 0.000 | **0.764** | 0.236 |
| WAIC–50%CI | 0.000 | 0.000 | **0.946** | 0.054 | 0.000 | 0.000 | **0.950** | 0.050 | 0.000 | 0.000 | **0.938** | 0.062 |
| WAIC–70%CI | 0.000 | 0.000 | **0.980** | 0.020 | 0.000 | 0.000 | **0.992** | 0.008 | 0.000 | 0.000 | **0.972** | 0.028 |
| WAIC–90%CI | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **0.996** | 0.004 |
| WAIC–point | 0.000 | 0.000 | **0.788** | 0.212 | 0.000 | 0.000 | **0.800** | 0.200 | 0.000 | 0.000 | **0.756** | 0.244 |

*Note*. Model selection rates for the true model are boldfaced.

Table S4 Model Selection Rate when True Model was M4

| I | J | Ft index |  | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0.01 | | | | 0.09 | | | | 0.25 | | | |
| M1 | M2 | M3 | M4 | M1 | M2 | M3 | M4 | M1 | M2 | M3 | M4 |
| 10 | 4 | LOO–50%CI | 0.702 | 0.076 | 0.164 | **0.058** | 0.502 | 0.054 | 0.298 | **0.146** | 0.260 | 0.026 | 0.528 | **0.186** |
| LOO–70%CI | 0.810 | 0.034 | 0.120 | **0.036** | 0.624 | 0.028 | 0.252 | **0.096** | 0.358 | 0.016 | 0.494 | **0.132** |
| LOO–90%CI | 0.934 | 0.014 | 0.046 | **0.006** | 0.842 | 0.014 | 0.114 | **0.030** | 0.556 | 0.018 | 0.360 | **0.066** |
| LOO–point | 0.456 | 0.132 | 0.222 | **0.190** | 0.308 | 0.088 | 0.318 | **0.286** | 0.098 | 0.040 | 0.490 | **0.372** |
| WAIC–50%CI | 0.454 | 0.112 | 0.226 | **0.208** | 0.304 | 0.072 | 0.342 | **0.282** | 0.082 | 0.038 | 0.524 | **0.356** |
| WAIC–70%CI | 0.592 | 0.072 | 0.214 | **0.122** | 0.406 | 0.060 | 0.322 | **0.212** | 0.176 | 0.026 | 0.544 | **0.254** |
| WAIC–90%CI | 0.778 | 0.048 | 0.124 | **0.050** | 0.608 | 0.032 | 0.240 | **0.120** | 0.350 | 0.018 | 0.500 | **0.132** |
| WAIC–point | 0.280 | 0.132 | 0.224 | **0.364** | 0.144 | 0.072 | 0.302 | **0.482** | 0.032 | 0.026 | 0.392 | **0.550** |
| 10 | LOO–50%CI | 0.760 | 0.104 | 0.114 | **0.022** | 0.256 | 0.022 | 0.604 | **0.118** | 0.018 | 0.000 | 0.824 | **0.158** |
| LOO–70%CI | 0.820 | 0.080 | 0.090 | **0.010** | 0.346 | 0.018 | 0.572 | **0.064** | 0.028 | 0.004 | 0.868 | **0.100** |
| LOO–90%CI | 0.916 | 0.036 | 0.048 | **0.000** | 0.608 | 0.012 | 0.360 | **0.020** | 0.090 | 0.000 | 0.876 | **0.034** |
| LOO–point | 0.524 | 0.196 | 0.198 | **0.082** | 0.126 | 0.046 | 0.578 | **0.250** | 0.004 | 0.002 | 0.646 | **0.348** |
| WAIC–50%CI | 0.654 | 0.130 | 0.162 | **0.054** | 0.176 | 0.028 | 0.616 | **0.180** | 0.002 | 0.000 | 0.756 | **0.242** |
| WAIC–70%CI | 0.738 | 0.102 | 0.138 | **0.022** | 0.258 | 0.016 | 0.616 | **0.110** | 0.010 | 0.000 | 0.846 | **0.144** |
| WAIC–90%CI | 0.870 | 0.046 | 0.082 | **0.002** | 0.498 | 0.012 | 0.452 | **0.038** | 0.048 | 0.000 | 0.892 | **0.060** |
| WAIC–point | 0.426 | 0.188 | 0.238 | **0.148** | 0.076 | 0.038 | 0.534 | **0.352** | 0.002 | 0.002 | 0.562 | **0.434** |
| 30 | LOO–50%CI | 0.578 | 0.174 | 0.188 | **0.060** | 0.002 | 0.000 | 0.748 | **0.250** | 0.000 | 0.000 | 0.636 | **0.364** |
| LOO–70%CI | 0.702 | 0.124 | 0.154 | **0.020** | 0.006 | 0.000 | 0.836 | **0.158** | 0.000 | 0.000 | 0.746 | **0.254** |
| LOO–90%CI | 0.878 | 0.056 | 0.058 | **0.008** | 0.026 | 0.002 | 0.932 | **0.040** | 0.000 | 0.000 | 0.892 | **0.108** |
| LOO–point | 0.334 | 0.274 | 0.206 | **0.186** | 0.000 | 0.000 | 0.556 | **0.444** | 0.000 | 0.000 | 0.364 | **0.636** |
| WAIC–50%CI | 0.556 | 0.182 | 0.192 | **0.070** | 0.000 | 0.000 | 0.732 | **0.268** | 0.000 | 0.000 | 0.610 | **0.390** |
| WAIC–70%CI | 0.686 | 0.130 | 0.160 | **0.024** | 0.006 | 0.000 | 0.824 | **0.170** | 0.000 | 0.000 | 0.740 | **0.260** |
| WAIC–90%CI | 0.868 | 0.050 | 0.072 | **0.010** | 0.028 | 0.002 | 0.926 | **0.044** | 0.000 | 0.000 | 0.874 | **0.126** |
| WAIC–point | 0.298 | 0.260 | 0.224 | **0.218** | 0.000 | 0.000 | 0.516 | **0.484** | 0.000 | 0.000 | 0.340 | **0.660** |
| 50 | LOO–50%CI | 0.332 | 0.290 | 0.234 | **0.144** | 0.000 | 0.000 | 0.548 | **0.452** | 0.000 | 0.000 | 0.420 | **0.580** |
| LOO–70%CI | 0.484 | 0.220 | 0.208 | **0.088** | 0.000 | 0.000 | 0.688 | **0.312** | 0.000 | 0.000 | 0.566 | **0.434** |
| LOO–90%CI | 0.758 | 0.114 | 0.116 | **0.012** | 0.000 | 0.000 | 0.852 | **0.148** | 0.000 | 0.000 | 0.750 | **0.250** |
| LOO–point | 0.134 | 0.246 | 0.206 | **0.414** | 0.000 | 0.000 | 0.300 | **0.700** | 0.000 | 0.000 | 0.236 | **0.764** |
| WAIC–50%CI | 0.328 | 0.280 | 0.234 | **0.158** | 0.000 | 0.000 | 0.540 | **0.460** | 0.000 | 0.000 | 0.410 | **0.590** |
| WAIC–70%CI | 0.472 | 0.218 | 0.216 | **0.094** | 0.000 | 0.000 | 0.678 | **0.322** | 0.000 | 0.000 | 0.554 | **0.446** |
| WAIC–90%CI | 0.750 | 0.110 | 0.126 | **0.014** | 0.000 | 0.000 | 0.850 | **0.150** | 0.000 | 0.000 | 0.748 | **0.252** |
| WAIC–point | 0.134 | 0.238 | 0.204 | **0.424** | 0.000 | 0.000 | 0.292 | **0.708** | 0.000 | 0.000 | 0.226 | **0.774** |
| 100 | LOO–50%CI | 0.042 | 0.214 | 0.178 | **0.566** | 0.000 | 0.000 | 0.144 | **0.856** | 0.000 | 0.000 | 0.110 | **0.890** |
| LOO–70%CI | 0.084 | 0.260 | 0.282 | **0.374** | 0.000 | 0.000 | 0.226 | **0.774** | 0.000 | 0.000 | 0.190 | **0.810** |
| LOO–90%CI | 0.284 | 0.260 | 0.336 | **0.120** | 0.000 | 0.000 | 0.470 | **0.530** | 0.000 | 0.000 | 0.368 | **0.632** |
| LOO–point | 0.004 | 0.098 | 0.084 | **0.814** | 0.000 | 0.000 | 0.056 | **0.944** | 0.000 | 0.000 | 0.044 | **0.956** |
| WAIC–50%CI | 0.040 | 0.208 | 0.178 | **0.574** | 0.000 | 0.000 | 0.142 | **0.858** | 0.000 | 0.000 | 0.106 | **0.894** |
| WAIC–70%CI | 0.082 | 0.256 | 0.274 | **0.388** | 0.000 | 0.000 | 0.226 | **0.774** | 0.000 | 0.000 | 0.188 | **0.812** |
| WAIC–90%CI | 0.278 | 0.258 | 0.342 | **0.122** | 0.000 | 0.000 | 0.466 | **0.534** | 0.000 | 0.000 | 0.366 | **0.634** |
| WAIC–point | 0.004 | 0.094 | 0.082 | **0.820** | 0.000 | 0.000 | 0.056 | **0.944** | 0.000 | 0.000 | 0.042 | **0.958** |
| 30 | 4 | LOO–50%CI | 0.740 | 0.072 | 0.112 | **0.076** | 0.354 | 0.032 | 0.410 | **0.204** | 0.042 | 0.008 | 0.588 | **0.362** |
| LOO–70%CI | 0.840 | 0.044 | 0.076 | **0.040** | 0.474 | 0.020 | 0.378 | **0.128** | 0.064 | 0.002 | 0.644 | **0.290** |
| LOO–90%CI | 0.944 | 0.012 | 0.034 | **0.010** | 0.676 | 0.022 | 0.262 | **0.040** | 0.138 | 0.004 | 0.680 | **0.178** |
| LOO–point | 0.514 | 0.100 | 0.206 | **0.180** | 0.188 | 0.044 | 0.402 | **0.366** | 0.016 | 0.006 | 0.438 | **0.540** |
| WAIC–50%CI | 0.436 | 0.084 | 0.216 | **0.264** | 0.138 | 0.028 | 0.354 | **0.480** | 0.010 | 0.006 | 0.376 | **0.608** |
| WAIC–70%CI | 0.564 | 0.056 | 0.174 | **0.206** | 0.208 | 0.030 | 0.386 | **0.376** | 0.016 | 0.010 | 0.468 | **0.506** |
| WAIC–90%CI | 0.730 | 0.048 | 0.112 | **0.110** | 0.352 | 0.026 | 0.382 | **0.240** | 0.046 | 0.008 | 0.580 | **0.366** |
| WAIC–point | 0.238 | 0.072 | 0.214 | **0.476** | 0.064 | 0.022 | 0.272 | **0.642** | 0.002 | 0.004 | 0.218 | **0.776** |
| 10 | LOO–50%CI | 0.724 | 0.114 | 0.138 | **0.024** | 0.040 | 0.010 | 0.774 | **0.176** | 0.000 | 0.000 | 0.704 | **0.296** |
| LOO–70%CI | 0.816 | 0.084 | 0.092 | **0.008** | 0.086 | 0.012 | 0.794 | **0.108** | 0.000 | 0.000 | 0.802 | **0.198** |
| LOO–90%CI | 0.914 | 0.034 | 0.050 | **0.002** | 0.180 | 0.006 | 0.770 | **0.044** | 0.000 | 0.000 | 0.910 | **0.090** |
| LOO–point | 0.500 | 0.172 | 0.196 | **0.132** | 0.006 | 0.016 | 0.628 | **0.350** | 0.000 | 0.000 | 0.508 | **0.492** |
| WAIC–50%CI | 0.630 | 0.112 | 0.164 | **0.094** | 0.020 | 0.010 | 0.684 | **0.286** | 0.000 | 0.000 | 0.566 | **0.434** |
| WAIC–70%CI | 0.734 | 0.092 | 0.134 | **0.040** | 0.036 | 0.010 | 0.762 | **0.192** | 0.000 | 0.000 | 0.658 | **0.342** |
| WAIC–90%CI | 0.878 | 0.042 | 0.072 | **0.008** | 0.118 | 0.006 | 0.784 | **0.092** | 0.000 | 0.000 | 0.836 | **0.164** |
| WAIC–point | 0.382 | 0.152 | 0.226 | **0.240** | 0.002 | 0.012 | 0.464 | **0.522** | 0.000 | 0.000 | 0.386 | **0.614** |
| 30 | LOO–50%CI | 0.270 | 0.324 | 0.222 | **0.184** | 0.000 | 0.000 | 0.444 | **0.556** | 0.000 | 0.000 | 0.240 | **0.760** |
| LOO–70%CI | 0.414 | 0.276 | 0.218 | **0.092** | 0.000 | 0.000 | 0.566 | **0.434** | 0.000 | 0.000 | 0.348 | **0.652** |
| LOO–90%CI | 0.690 | 0.130 | 0.158 | **0.022** | 0.000 | 0.000 | 0.726 | **0.274** | 0.000 | 0.000 | 0.518 | **0.482** |
| LOO–point | 0.090 | 0.278 | 0.190 | **0.442** | 0.000 | 0.000 | 0.258 | **0.742** | 0.000 | 0.000 | 0.118 | **0.882** |
| WAIC–50%CI | 0.240 | 0.304 | 0.242 | **0.214** | 0.000 | 0.000 | 0.412 | **0.588** | 0.000 | 0.000 | 0.218 | **0.782** |
| WAIC–70%CI | 0.386 | 0.266 | 0.228 | **0.120** | 0.000 | 0.000 | 0.518 | **0.482** | 0.000 | 0.000 | 0.330 | **0.670** |
| WAIC–90%CI | 0.666 | 0.128 | 0.174 | **0.032** | 0.000 | 0.000 | 0.704 | **0.296** | 0.000 | 0.000 | 0.482 | **0.518** |
| WAIC–point | 0.084 | 0.242 | 0.168 | **0.506** | 0.000 | 0.000 | 0.220 | **0.780** | 0.000 | 0.000 | 0.098 | **0.902** |
| 50 | LOO–50%CI | 0.038 | 0.238 | 0.160 | **0.564** | 0.000 | 0.000 | 0.136 | **0.864** | 0.000 | 0.000 | 0.034 | **0.966** |
| LOO–70%CI | 0.090 | 0.298 | 0.218 | **0.394** | 0.000 | 0.000 | 0.220 | **0.780** | 0.000 | 0.000 | 0.076 | **0.924** |
| LOO–90%CI | 0.232 | 0.300 | 0.314 | **0.154** | 0.000 | 0.000 | 0.382 | **0.618** | 0.000 | 0.000 | 0.194 | **0.806** |
| LOO–point | 0.006 | 0.132 | 0.058 | **0.804** | 0.000 | 0.000 | 0.044 | **0.956** | 0.000 | 0.000 | 0.014 | **0.986** |
| WAIC–50%CI | 0.038 | 0.228 | 0.158 | **0.576** | 0.000 | 0.000 | 0.122 | **0.878** | 0.000 | 0.000 | 0.034 | **0.966** |
| WAIC–70%CI | 0.090 | 0.280 | 0.210 | **0.420** | 0.000 | 0.000 | 0.198 | **0.802** | 0.000 | 0.000 | 0.068 | **0.932** |
| WAIC–90%CI | 0.222 | 0.310 | 0.296 | **0.172** | 0.000 | 0.000 | 0.362 | **0.638** | 0.000 | 0.000 | 0.182 | **0.818** |
| WAIC–point | 0.006 | 0.112 | 0.056 | **0.826** | 0.000 | 0.000 | 0.042 | **0.958** | 0.000 | 0.000 | 0.014 | **0.986** |
| 100 | LOO–50%CI | 0.000 | 0.008 | 0.006 | **0.986** | 0.000 | 0.000 | 0.002 | **0.998** | 0.000 | 0.000 | 0.000 | **1.000** |
| LOO–70%CI | 0.000 | 0.020 | 0.008 | **0.972** | 0.000 | 0.000 | 0.004 | **0.996** | 0.000 | 0.000 | 0.000 | **1.000** |
| LOO–90%CI | 0.000 | 0.068 | 0.038 | **0.894** | 0.000 | 0.000 | 0.010 | **0.990** | 0.000 | 0.000 | 0.000 | **1.000** |
| LOO–point | 0.000 | 0.002 | 0.000 | **0.998** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–50%CI | 0.000 | 0.008 | 0.006 | **0.986** | 0.000 | 0.000 | 0.002 | **0.998** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–70%CI | 0.000 | 0.020 | 0.006 | **0.974** | 0.000 | 0.000 | 0.004 | **0.996** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–90%CI | 0.000 | 0.068 | 0.036 | **0.896** | 0.000 | 0.000 | 0.010 | **0.990** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–point | 0.000 | 0.002 | 0.000 | **0.998** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| 50 | 4 | LOO–50%CI | 0.722 | 0.064 | 0.132 | **0.082** | 0.208 | 0.024 | 0.514 | **0.254** | 0.006 | 0.002 | 0.556 | **0.436** |
| LOO–70%CI | 0.832 | 0.028 | 0.084 | **0.056** | 0.306 | 0.024 | 0.480 | **0.190** | 0.014 | 0.002 | 0.658 | **0.326** |
| LOO–90%CI | 0.936 | 0.014 | 0.038 | **0.012** | 0.540 | 0.010 | 0.364 | **0.086** | 0.038 | 0.002 | 0.786 | **0.174** |
| LOO–point | 0.468 | 0.128 | 0.210 | **0.194** | 0.100 | 0.024 | 0.418 | **0.458** | 0.002 | 0.000 | 0.358 | **0.640** |
| WAIC–50%CI | 0.374 | 0.098 | 0.216 | **0.312** | 0.070 | 0.016 | 0.340 | **0.574** | 0.000 | 0.000 | 0.324 | **0.676** |
| WAIC–70%CI | 0.496 | 0.078 | 0.204 | **0.222** | 0.102 | 0.016 | 0.424 | **0.458** | 0.000 | 0.000 | 0.416 | **0.584** |
| WAIC–90%CI | 0.704 | 0.050 | 0.132 | **0.114** | 0.186 | 0.020 | 0.478 | **0.316** | 0.008 | 0.006 | 0.520 | **0.466** |
| WAIC–point | 0.184 | 0.090 | 0.218 | **0.508** | 0.022 | 0.014 | 0.224 | **0.740** | 0.000 | 0.000 | 0.180 | **0.820** |
| 10 | LOO–50%CI | 0.632 | 0.166 | 0.152 | **0.050** | 0.002 | 0.002 | 0.772 | **0.224** | 0.000 | 0.000 | 0.604 | **0.396** |
| LOO–70%CI | 0.760 | 0.106 | 0.108 | **0.026** | 0.006 | 0.002 | 0.854 | **0.138** | 0.000 | 0.000 | 0.700 | **0.300** |
| LOO–90%CI | 0.906 | 0.054 | 0.034 | **0.006** | 0.036 | 0.002 | 0.914 | **0.048** | 0.000 | 0.000 | 0.860 | **0.140** |
| LOO–point | 0.364 | 0.240 | 0.182 | **0.214** | 0.000 | 0.000 | 0.540 | **0.460** | 0.000 | 0.000 | 0.378 | **0.622** |
| WAIC–50%CI | 0.492 | 0.158 | 0.186 | **0.164** | 0.002 | 0.000 | 0.586 | **0.412** | 0.000 | 0.000 | 0.418 | **0.582** |
| WAIC–70%CI | 0.632 | 0.128 | 0.158 | **0.082** | 0.002 | 0.000 | 0.722 | **0.276** | 0.000 | 0.000 | 0.528 | **0.472** |
| WAIC–90%CI | 0.828 | 0.066 | 0.086 | **0.020** | 0.008 | 0.000 | 0.866 | **0.126** | 0.000 | 0.000 | 0.672 | **0.328** |
| WAIC–point | 0.228 | 0.192 | 0.194 | **0.386** | 0.000 | 0.000 | 0.362 | **0.638** | 0.000 | 0.000 | 0.236 | **0.764** |
| 30 | LOO–50%CI | 0.098 | 0.286 | 0.238 | **0.378** | 0.000 | 0.000 | 0.240 | **0.760** | 0.000 | 0.000 | 0.094 | **0.906** |
| LOO–70%CI | 0.186 | 0.284 | 0.306 | **0.224** | 0.000 | 0.000 | 0.334 | **0.666** | 0.000 | 0.000 | 0.132 | **0.868** |
| LOO–90%CI | 0.408 | 0.226 | 0.294 | **0.072** | 0.000 | 0.000 | 0.504 | **0.496** | 0.000 | 0.000 | 0.278 | **0.722** |
| LOO–point | 0.020 | 0.198 | 0.126 | **0.656** | 0.000 | 0.000 | 0.080 | **0.920** | 0.000 | 0.000 | 0.032 | **0.968** |
| WAIC–50%CI | 0.086 | 0.250 | 0.226 | **0.438** | 0.000 | 0.000 | 0.206 | **0.794** | 0.000 | 0.000 | 0.068 | **0.932** |
| WAIC–70%CI | 0.172 | 0.282 | 0.284 | **0.262** | 0.000 | 0.000 | 0.282 | **0.718** | 0.000 | 0.000 | 0.112 | **0.888** |
| WAIC–90%CI | 0.382 | 0.216 | 0.300 | **0.102** | 0.000 | 0.000 | 0.470 | **0.530** | 0.000 | 0.000 | 0.230 | **0.770** |
| WAIC–point | 0.016 | 0.162 | 0.098 | **0.724** | 0.000 | 0.000 | 0.072 | **0.928** | 0.000 | 0.000 | 0.024 | **0.976** |
| 50 | LOO–50%CI | 0.000 | 0.094 | 0.062 | **0.844** | 0.000 | 0.000 | 0.036 | **0.964** | 0.000 | 0.000 | 0.002 | **0.998** |
| LOO–70%CI | 0.006 | 0.158 | 0.092 | **0.744** | 0.000 | 0.000 | 0.048 | **0.952** | 0.000 | 0.000 | 0.014 | **0.986** |
| LOO–90%CI | 0.038 | 0.262 | 0.192 | **0.508** | 0.000 | 0.000 | 0.118 | **0.882** | 0.000 | 0.000 | 0.046 | **0.954** |
| LOO–point | 0.000 | 0.040 | 0.024 | **0.936** | 0.000 | 0.000 | 0.006 | **0.994** | 0.000 | 0.000 | 0.002 | **0.998** |
| WAIC–50%CI | 0.000 | 0.080 | 0.060 | **0.860** | 0.000 | 0.000 | 0.032 | **0.968** | 0.000 | 0.000 | 0.002 | **0.998** |
| WAIC–70%CI | 0.004 | 0.140 | 0.088 | **0.768** | 0.000 | 0.000 | 0.044 | **0.956** | 0.000 | 0.000 | 0.010 | **0.990** |
| WAIC–90%CI | 0.034 | 0.238 | 0.176 | **0.552** | 0.000 | 0.000 | 0.102 | **0.898** | 0.000 | 0.000 | 0.040 | **0.960** |
| WAIC–point | 0.000 | 0.034 | 0.024 | **0.942** | 0.000 | 0.000 | 0.004 | **0.996** | 0.000 | 0.000 | 0.002 | **0.998** |
| 100 | LOO–50%CI | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| LOO–70%CI | 0.000 | 0.002 | 0.000 | **0.998** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| LOO–90%CI | 0.000 | 0.004 | 0.000 | **0.996** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| LOO–point | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–50%CI | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–70%CI | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–90%CI | 0.000 | 0.004 | 0.000 | **0.996** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–point | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| 100 | 4 | LOO–50%CI | 0.708 | 0.100 | 0.128 | **0.064** | 0.072 | 0.006 | 0.624 | **0.298** | 0.000 | 0.000 | 0.482 | **0.518** |
| LOO–70%CI | 0.832 | 0.056 | 0.090 | **0.022** | 0.120 | 0.008 | 0.688 | **0.184** | 0.002 | 0.000 | 0.596 | **0.402** |
| LOO–90%CI | 0.942 | 0.016 | 0.036 | **0.006** | 0.268 | 0.006 | 0.648 | **0.078** | 0.002 | 0.000 | 0.736 | **0.262** |
| LOO–point | 0.424 | 0.164 | 0.242 | **0.170** | 0.024 | 0.010 | 0.466 | **0.500** | 0.000 | 0.000 | 0.308 | **0.692** |
| WAIC–50%CI | 0.266 | 0.116 | 0.244 | **0.374** | 0.012 | 0.004 | 0.326 | **0.658** | 0.000 | 0.000 | 0.232 | **0.768** |
| WAIC–70%CI | 0.396 | 0.092 | 0.234 | **0.278** | 0.020 | 0.004 | 0.402 | **0.574** | 0.000 | 0.000 | 0.304 | **0.696** |
| WAIC–90%CI | 0.600 | 0.076 | 0.188 | **0.136** | 0.042 | 0.006 | 0.542 | **0.410** | 0.000 | 0.000 | 0.412 | **0.588** |
| WAIC–point | 0.110 | 0.100 | 0.226 | **0.564** | 0.000 | 0.004 | 0.178 | **0.818** | 0.000 | 0.000 | 0.146 | **0.854** |
| 10 | LOO–50%CI | 0.496 | 0.204 | 0.216 | **0.084** | 0.000 | 0.000 | 0.668 | **0.332** | 0.000 | 0.000 | 0.422 | **0.578** |
| LOO–70%CI | 0.646 | 0.148 | 0.174 | **0.032** | 0.000 | 0.000 | 0.758 | **0.242** | 0.000 | 0.000 | 0.542 | **0.458** |
| LOO–90%CI | 0.842 | 0.066 | 0.086 | **0.006** | 0.000 | 0.000 | 0.902 | **0.098** | 0.000 | 0.000 | 0.718 | **0.282** |
| LOO–point | 0.214 | 0.302 | 0.248 | **0.236** | 0.000 | 0.000 | 0.458 | **0.542** | 0.000 | 0.000 | 0.240 | **0.760** |
| WAIC–50%CI | 0.322 | 0.224 | 0.276 | **0.178** | 0.000 | 0.000 | 0.448 | **0.552** | 0.000 | 0.000 | 0.222 | **0.778** |
| WAIC–70%CI | 0.484 | 0.160 | 0.252 | **0.104** | 0.000 | 0.000 | 0.538 | **0.462** | 0.000 | 0.000 | 0.296 | **0.704** |
| WAIC–90%CI | 0.734 | 0.068 | 0.168 | **0.030** | 0.000 | 0.000 | 0.718 | **0.282** | 0.000 | 0.000 | 0.464 | **0.536** |
| WAIC–point | 0.128 | 0.216 | 0.238 | **0.418** | 0.000 | 0.000 | 0.238 | **0.762** | 0.000 | 0.000 | 0.102 | **0.898** |
| 30 | LOO–50%CI | 0.000 | 0.160 | 0.082 | **0.758** | 0.000 | 0.000 | 0.034 | **0.966** | 0.000 | 0.000 | 0.006 | **0.994** |
| LOO–70%CI | 0.014 | 0.216 | 0.126 | **0.644** | 0.000 | 0.000 | 0.064 | **0.936** | 0.000 | 0.000 | 0.010 | **0.990** |
| LOO–90%CI | 0.056 | 0.328 | 0.216 | **0.400** | 0.000 | 0.000 | 0.156 | **0.844** | 0.000 | 0.000 | 0.024 | **0.976** |
| LOO–point | 0.000 | 0.064 | 0.022 | **0.914** | 0.000 | 0.000 | 0.014 | **0.986** | 0.000 | 0.000 | 0.004 | **0.996** |
| WAIC–50%CI | 0.000 | 0.132 | 0.070 | **0.798** | 0.000 | 0.000 | 0.022 | **0.978** | 0.000 | 0.000 | 0.004 | **0.996** |
| WAIC–70%CI | 0.006 | 0.180 | 0.118 | **0.696** | 0.000 | 0.000 | 0.048 | **0.952** | 0.000 | 0.000 | 0.006 | **0.994** |
| WAIC–90%CI | 0.048 | 0.282 | 0.194 | **0.476** | 0.000 | 0.000 | 0.102 | **0.898** | 0.000 | 0.000 | 0.020 | **0.980** |
| WAIC–point | 0.000 | 0.050 | 0.018 | **0.932** | 0.000 | 0.000 | 0.006 | **0.994** | 0.000 | 0.000 | 0.002 | **0.998** |
| 50 | LOO–50%CI | 0.000 | 0.004 | 0.002 | **0.994** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| LOO–70%CI | 0.000 | 0.006 | 0.004 | **0.990** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| LOO–90%CI | 0.000 | 0.042 | 0.014 | **0.944** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| LOO–point | 0.000 | 0.002 | 0.000 | **0.998** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–50%CI | 0.000 | 0.004 | 0.002 | **0.994** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–70%CI | 0.000 | 0.006 | 0.004 | **0.990** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–90%CI | 0.000 | 0.030 | 0.010 | **0.960** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–point | 0.000 | 0.002 | 0.000 | **0.998** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| 100 | LOO–50%CI | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| LOO–70%CI | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| LOO–90%CI | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| LOO–point | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–50%CI | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–70%CI | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–90%CI | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |
| WAIC–point | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** | 0.000 | 0.000 | 0.000 | **1.000** |

*Note*. Model selection rates for the true model are boldfaced.

Table S5 Convergence Rate after Model Selection when True Model was M3

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 0.996 | 0.998 | 0.998 | 0.996 | 0.996 | 0.996 | 0.998 | 0.996 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 0.09 | 10 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 0.998 | 1.000 | 1.000 | 1.000 | 0.998 |
| 30 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 |
| 50 | 0.988 | 0.992 | 0.998 | 0.984 | 0.988 | 0.994 | 0.998 | 0.982 |
| 100 | 0.990 | 1.000 | 1.000 | 0.970 | 0.990 | 1.000 | 1.000 | 0.970 |
| 0.25 | 10 | 4 | 0.994 | 0.996 | 0.998 | 0.994 | 0.994 | 0.994 | 0.996 | 0.994 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 0.998 | 1.000 | 1.000 | 0.998 | 0.998 | 1.000 | 1.000 | 0.998 |
| 100 | 1.000 | 1.000 | 1.000 | 0.998 | 1.000 | 1.000 | 1.000 | 0.996 |
| 30 | 4 | 1.000 | 1.000 | 1.000 | 0.998 | 0.998 | 0.998 | 1.000 | 0.998 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 0.998 | 0.998 | 1.000 | 0.994 | 0.998 | 0.998 | 1.000 | 0.994 |
| 100 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 0.996 | 0.998 | 0.998 | 1.000 | 0.994 |
| 30 | 0.990 | 0.996 | 0.998 | 0.964 | 0.988 | 0.996 | 0.998 | 0.962 |
| 50 | 0.984 | 0.992 | 0.996 | 0.956 | 0.986 | 0.994 | 0.996 | 0.956 |
| 100 | 0.972 | 0.986 | 0.996 | 0.940 | 0.972 | 0.984 | 0.996 | 0.940 |

Table S6 Convergence Rate after Model Selection when True Model was M4

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 0.09 | 10 | 4 | 1.000 | 1.000 | 1.000 | 0.998 | 1.000 | 1.000 | 1.000 | 0.998 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 0.998 | 0.998 | 1.000 | 0.998 | 0.998 | 0.998 | 1.000 | 0.998 |
| 30 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 1.000 | 1.000 | 0.998 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 0.25 | 10 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 4 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 0.998 | 1.000 | 1.000 | 0.998 | 1.000 | 1.000 | 1.000 | 0.998 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Table S7 Power for the Fixed Effect after Model Selection when True Model was M2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 10 | 4 | **0.300** | **0.311** | **0.327** | **0.286** | **0.286** | **0.294** | **0.310** | **0.266** |
| 10 | **0.642** | **0.654** | **0.662** | **0.602** | **0.628** | **0.644** | **0.656** | **0.576** |
| 30 | 0.922 | 0.940 | 0.948 | 0.892 | 0.918 | 0.938 | 0.948 | 0.892 |
| 50 | 0.968 | 0.970 | 0.982 | 0.966 | 0.968 | 0.970 | 0.982 | 0.966 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 4 | **0.714** | **0.720** | **0.724** | **0.704** | **0.704** | **0.714** | **0.714** | **0.686** |
| 10 | 0.994 | 0.994 | 0.994 | 0.994 | 0.994 | 0.994 | 0.994 | 0.994 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 0.906 | 0.906 | 0.912 | 0.904 | 0.904 | 0.904 | 0.906 | 0.902 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 4 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

*Note*. Power below 0.8 are boldfaced.

Table S8 Power for the Fixed Effect after Model Selection when True Model was M3

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | **0.317** | **0.325** | **0.325** | **0.309** | **0.297** | **0.315** | **0.317** | **0.269** |
| 10 | **0.658** | **0.674** | **0.686** | **0.630** | **0.656** | **0.664** | **0.692** | **0.616** |
| 30 | 0.984 | 0.986 | 0.996 | 0.966 | 0.984 | 0.986 | 0.996 | 0.966 |
| 50 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 4 | **0.748** | **0.754** | **0.750** | **0.732** | **0.724** | **0.732** | **0.750** | **0.716** |
| 10 | 0.980 | 0.980 | 0.978 | 0.978 | 0.978 | 0.980 | 0.980 | 0.978 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 0.952 | 0.952 | 0.952 | 0.946 | 0.946 | 0.946 | 0.950 | 0.940 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 4 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 0.09 | 10 | 4 | **0.318** | **0.320** | **0.320** | **0.296** | **0.308** | **0.312** | **0.314** | **0.274** |
| 10 | **0.694** | **0.700** | **0.686** | **0.680** | **0.694** | **0.706** | **0.706** | **0.662** |
| 30 | 0.978 | 0.982 | 0.990 | 0.958 | 0.974 | 0.980 | 0.990 | 0.954 |
| 50 | 0.996 | 0.996 | 1.000 | 0.992 | 0.996 | 0.996 | 1.000 | 0.992 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 4 | **0.738** | **0.752** | **0.742** | **0.718** | **0.718** | **0.728** | **0.748** | **0.710** |
| 10 | 0.980 | 0.984 | 0.986 | 0.976 | 0.980 | 0.982 | 0.986 | 0.972 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 0.900 | 0.902 | 0.898 | 0.892 | 0.892 | 0.896 | 0.900 | 0.890 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 0.25 | 10 | 4 | **0.292** | **0.305** | **0.297** | **0.258** | **0.264** | **0.280** | **0.303** | **0.241** |
| 10 | **0.758** | **0.764** | **0.764** | **0.700** | **0.732** | **0.758** | **0.762** | **0.676** |
| 30 | 0.984 | 0.996 | 1.000 | 0.964 | 0.984 | 0.990 | 1.000 | 0.962 |
| 50 | 0.996 | 1.000 | 1.000 | 0.992 | 0.996 | 1.000 | 1.000 | 0.992 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 4 | **0.738** | **0.742** | **0.750** | **0.713** | **0.721** | **0.729** | **0.732** | **0.695** |
| 10 | 0.988 | 0.990 | 0.994 | 0.986 | 0.986 | 0.988 | 0.994 | 0.986 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 0.934 | 0.936 | 0.954 | 0.926 | 0.918 | 0.926 | 0.934 | 0.912 |
| 10 | 1.000 | 1.000 | 1.000 | 0.998 | 0.998 | 1.000 | 1.000 | 0.998 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 4 | 0.996 | 0.996 | 0.998 | 0.996 | 0.994 | 0.994 | 0.996 | 0.994 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

*Note*. Power below 0.8 are boldfaced.

Table S9 Power for the Fixed Effect after Model Selection when True Model was M4

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | **0.344** | **0.350** | **0.356** | **0.304** | **0.304** | **0.324** | **0.344** | **0.270** |
| 10 | **0.638** | **0.642** | **0.668** | **0.578** | **0.618** | **0.632** | **0.666** | **0.556** |
| 30 | 0.920 | 0.942 | 0.966 | 0.888 | 0.914 | 0.940 | 0.966 | 0.890 |
| 50 | 0.956 | 0.958 | 0.978 | 0.954 | 0.956 | 0.958 | 0.978 | 0.954 |
| 100 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 |
| 30 | 4 | **0.738** | **0.748** | **0.758** | **0.726** | **0.718** | **0.724** | **0.738** | **0.696** |
| 10 | 0.976 | 0.976 | 0.978 | 0.972 | 0.974 | 0.974 | 0.976 | 0.972 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 0.944 | 0.948 | 0.946 | 0.938 | 0.938 | 0.938 | 0.942 | 0.930 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 0.09 | 10 | 4 | **0.296** | **0.304** | **0.308** | **0.277** | **0.274** | **0.282** | **0.294** | **0.257** |
| 10 | **0.652** | **0.672** | **0.678** | **0.594** | **0.622** | **0.662** | **0.682** | **0.562** |
| 30 | 0.900 | 0.924 | 0.958 | 0.880 | 0.898 | 0.920 | 0.958 | 0.874 |
| 50 | 0.940 | 0.952 | 0.970 | 0.934 | 0.940 | 0.952 | 0.970 | 0.934 |
| 100 | 0.986 | 0.986 | 0.986 | 0.986 | 0.986 | 0.986 | 0.986 | 0.986 |
| 30 | 4 | **0.690** | **0.700** | **0.698** | **0.678** | **0.672** | **0.680** | **0.686** | **0.664** |
| 10 | 0.980 | 0.980 | 0.982 | 0.974 | 0.974 | 0.980 | 0.982 | 0.968 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 0.896 | 0.900 | 0.906 | 0.890 | 0.880 | 0.886 | 0.894 | 0.874 |
| 10 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 0.25 | 10 | 4 | **0.272** | **0.286** | **0.288** | **0.246** | **0.244** | **0.272** | **0.286** | **0.232** |
| 10 | **0.688** | **0.706** | **0.728** | **0.600** | **0.660** | **0.690** | **0.718** | **0.560** |
| 30 | 0.872 | 0.902 | 0.950 | 0.846 | 0.868 | 0.902 | 0.946 | 0.842 |
| 50 | 0.926 | 0.934 | 0.948 | 0.920 | 0.926 | 0.934 | 0.946 | 0.920 |
| 100 | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 |
| 30 | 4 | **0.669** | **0.683** | **0.693** | **0.641** | **0.625** | **0.643** | **0.669** | **0.613** |
| 10 | 0.964 | 0.970 | 0.982 | 0.954 | 0.956 | 0.960 | 0.974 | 0.950 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 4 | 0.880 | 0.896 | 0.912 | 0.870 | 0.868 | 0.876 | 0.878 | 0.862 |
| 10 | 1.000 | 1.000 | 1.000 | 0.998 | 0.998 | 0.998 | 0.998 | 0.998 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 4 | 0.996 | 0.996 | 0.996 | 0.996 | 0.996 | 0.996 | 0.996 | 0.996 |
| 10 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 100 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

*Note*. Power below 0.8 are boldfaced.

Table S10 RBIAS for the Fixed Effect after Model Selection when True Model was M1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 10 | 4 | –0.006 | –0.004 | –0.006 | –0.004 | –0.005 | –0.008 | –0.009 | –0.001 |
| 10 | 0.010 | 0.010 | 0.011 | 0.012 | 0.012 | 0.011 | 0.011 | 0.010 |
| 30 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 50 | 0.016 | 0.016 | 0.017 | 0.016 | 0.017 | 0.016 | 0.017 | 0.016 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 30 | 4 | 0.001 | 0.001 | 0.002 | 0.000 | 0.000 | 0.000 | 0.002 | 0.001 |
| 10 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 |
| 30 | 0.003 | 0.004 | 0.004 | 0.003 | 0.004 | 0.004 | 0.004 | 0.003 |
| 50 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 100 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 4 | –0.008 | –0.007 | –0.006 | –0.008 | –0.007 | –0.008 | –0.007 | –0.007 |
| 10 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 |
| 30 | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.001 | 0.001 | 0.002 |
| 50 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | –0.004 | –0.004 | –0.004 | –0.003 | –0.004 | –0.003 | –0.003 | –0.003 |
| 10 | –0.009 | –0.010 | –0.010 | –0.010 | –0.009 | –0.009 | –0.009 | –0.009 |
| 30 | 0.003 | 0.004 | 0.004 | 0.003 | 0.003 | 0.004 | 0.004 | 0.003 |
| 50 | –0.006 | –0.006 | –0.006 | –0.007 | –0.006 | –0.006 | –0.006 | –0.007 |
| 100 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 |

Note. Results with RBIAS outside [-0.1, 0.1] are boldfaced.

Table S11 RBIAS for the Fixed Effect after Model Selection when True Model was M2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 10 | 4 | 0.032 | 0.029 | 0.032 | 0.034 | 0.036 | 0.032 | 0.033 | 0.036 |
| 10 | –0.004 | –0.005 | –0.004 | –0.004 | –0.005 | –0.005 | –0.005 | –0.005 |
| 30 | –0.002 | –0.002 | –0.003 | –0.002 | –0.002 | –0.003 | –0.003 | –0.002 |
| 50 | –0.007 | –0.007 | –0.007 | –0.007 | –0.007 | –0.007 | –0.007 | –0.007 |
| 100 | –0.006 | –0.006 | –0.007 | –0.006 | –0.006 | –0.006 | –0.007 | –0.006 |
| 30 | 4 | –0.039 | –0.038 | –0.039 | –0.040 | –0.040 | –0.040 | –0.040 | –0.040 |
| 10 | 0.024 | 0.024 | 0.023 | 0.024 | 0.024 | 0.024 | 0.023 | 0.024 |
| 30 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
| 50 | –0.004 | –0.004 | –0.004 | –0.004 | –0.004 | –0.004 | –0.004 | –0.004 |
| 100 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 50 | 4 | –0.010 | –0.010 | –0.010 | –0.011 | –0.011 | –0.011 | –0.010 | –0.011 |
| 10 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 30 | –0.006 | –0.006 | –0.006 | –0.006 | –0.006 | –0.006 | –0.006 | –0.007 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 4 | –0.003 | –0.003 | –0.003 | –0.003 | –0.003 | –0.003 | –0.003 | –0.002 |
| 10 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 |
| 30 | –0.003 | –0.003 | –0.003 | –0.003 | –0.003 | –0.003 | –0.003 | –0.003 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 |

Note. Results with RBIAS outside [-0.1, 0.1] are boldfaced.

Table S12 RBIAS for the Fixed Effect after Model Selection when True Model was M3

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | –0.002 | –0.002 | –0.006 | –0.003 | –0.002 | –0.004 | –0.003 | –0.001 |
| 10 | –0.005 | –0.004 | –0.005 | –0.006 | –0.005 | –0.005 | –0.003 | –0.007 |
| 30 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 |
| 50 | 0.005 | 0.005 | 0.004 | 0.005 | 0.005 | 0.004 | 0.004 | 0.005 |
| 100 | –0.012 | –0.012 | –0.013 | –0.012 | –0.012 | –0.012 | –0.013 | –0.012 |
| 30 | 4 | –0.008 | –0.007 | –0.005 | –0.008 | –0.009 | –0.008 | –0.007 | –0.009 |
| 10 | –0.016 | –0.015 | –0.016 | –0.016 | –0.016 | –0.016 | –0.015 | –0.016 |
| 30 | –0.008 | –0.008 | –0.008 | –0.008 | –0.008 | –0.008 | –0.008 | –0.008 |
| 50 | 0.005 | 0.004 | 0.004 | 0.005 | 0.005 | 0.004 | 0.004 | 0.005 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 50 | 4 | 0.007 | 0.006 | 0.006 | 0.006 | 0.006 | 0.007 | 0.007 | 0.007 |
| 10 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.001 |
| 30 | 0.002 | 0.002 | 0.001 | 0.001 | 0.002 | 0.002 | 0.001 | 0.001 |
| 50 | –0.001 | –0.001 | 0.000 | –0.001 | –0.001 | –0.001 | 0.000 | –0.001 |
| 100 | –0.005 | –0.005 | –0.005 | –0.005 | –0.006 | –0.005 | –0.005 | –0.005 |
| 100 | 4 | 0.011 | 0.011 | 0.011 | 0.011 | 0.010 | 0.011 | 0.011 | 0.011 |
| 10 | 0.016 | 0.016 | 0.015 | 0.016 | 0.015 | 0.016 | 0.015 | 0.016 |
| 30 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 |
| 50 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 |
| 100 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 |
| 0.09 | 10 | 4 | 0.020 | 0.020 | 0.029 | 0.021 | 0.021 | 0.019 | 0.021 | 0.024 |
| 10 | 0.007 | 0.007 | 0.003 | 0.012 | 0.011 | 0.009 | 0.008 | 0.012 |
| 30 | –0.014 | –0.015 | –0.015 | –0.014 | –0.014 | –0.015 | –0.015 | –0.014 |
| 50 | –0.013 | –0.013 | –0.012 | –0.014 | –0.013 | –0.013 | –0.012 | –0.014 |
| 100 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 |
| 30 | 4 | 0.028 | 0.026 | 0.025 | 0.025 | 0.025 | 0.024 | 0.026 | 0.025 |
| 10 | –0.008 | –0.010 | –0.009 | –0.008 | –0.008 | –0.008 | –0.009 | –0.008 |
| 30 | 0.000 | 0.000 | –0.001 | –0.001 | 0.000 | –0.001 | –0.001 | –0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | –0.005 | –0.005 | –0.005 | –0.005 | –0.005 | –0.005 | –0.005 | –0.005 |
| 50 | 4 | –0.017 | –0.016 | –0.019 | –0.017 | –0.017 | –0.017 | –0.017 | –0.017 |
| 10 | 0.020 | 0.020 | 0.019 | 0.019 | 0.018 | 0.020 | 0.020 | 0.019 |
| 30 | –0.003 | –0.003 | –0.003 | –0.003 | –0.003 | –0.003 | –0.003 | –0.003 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.003 | 0.003 | 0.003 | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 |
| 100 | 4 | 0.009 | 0.008 | 0.009 | 0.009 | 0.008 | 0.009 | 0.009 | 0.008 |
| 10 | 0.001 | 0.002 | 0.002 | 0.001 | 0.001 | 0.002 | 0.001 | 0.001 |
| 30 | –0.002 | –0.001 | –0.001 | –0.002 | –0.002 | –0.002 | –0.001 | –0.002 |
| 50 | –0.002 | –0.003 | –0.002 | –0.003 | –0.003 | –0.003 | –0.002 | –0.003 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 0.25 | 10 | 4 | –0.032 | –0.032 | –0.045 | –0.041 | –0.036 | –0.029 | –0.040 | –0.040 |
| 10 | –0.024 | –0.024 | –0.025 | –0.027 | –0.026 | –0.024 | –0.025 | –0.028 |
| 30 | 0.002 | 0.002 | 0.000 | 0.001 | 0.003 | 0.001 | 0.000 | 0.001 |
| 50 | –0.002 | 0.000 | 0.000 | –0.004 | –0.002 | 0.000 | 0.000 | –0.005 |
| 100 | 0.001 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 |
| 30 | 4 | 0.003 | 0.001 | –0.002 | 0.001 | 0.002 | 0.004 | 0.003 | 0.003 |
| 10 | 0.003 | 0.002 | 0.003 | 0.007 | 0.004 | 0.003 | 0.005 | 0.007 |
| 30 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.002 | 0.003 | 0.002 |
| 50 | 0.000 | 0.000 | 0.000 | –0.002 | 0.000 | 0.000 | 0.000 | –0.002 |
| 100 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | 0.000 | –0.001 | –0.001 |
| 50 | 4 | –0.002 | –0.003 | –0.003 | 0.003 | 0.001 | 0.001 | –0.002 | 0.002 |
| 10 | –0.003 | –0.004 | –0.003 | –0.003 | –0.002 | –0.002 | –0.003 | –0.002 |
| 30 | –0.004 | –0.004 | –0.004 | –0.004 | –0.004 | –0.004 | –0.004 | –0.004 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | –0.002 | –0.003 | –0.003 | –0.001 | –0.002 | –0.003 | –0.003 | –0.001 |
| 100 | 4 | 0.008 | 0.009 | 0.008 | 0.011 | 0.012 | 0.011 | 0.010 | 0.012 |
| 10 | –0.002 | –0.001 | 0.000 | –0.004 | –0.003 | –0.002 | –0.001 | –0.006 |
| 30 | –0.001 | –0.001 | 0.000 | –0.002 | 0.000 | –0.001 | 0.000 | –0.002 |
| 50 | –0.002 | –0.001 | –0.002 | –0.001 | –0.001 | –0.002 | –0.002 | 0.000 |
| 100 | 0.002 | 0.002 | 0.001 | 0.003 | 0.002 | 0.002 | 0.001 | 0.003 |

Note. Results with RBIAS outside [-0.1, 0.1] are boldfaced.

Table S13 RBIAS for the Fixed Effect after Model Selection when True Model was M4

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 0.021 | 0.020 | 0.017 | 0.013 | 0.014 | 0.016 | 0.023 | 0.016 |
| 10 | 0.007 | 0.008 | 0.008 | 0.007 | 0.006 | 0.006 | 0.008 | 0.007 |
| 30 | –0.001 | –0.003 | 0.000 | –0.002 | –0.001 | –0.002 | –0.001 | –0.002 |
| 50 | –0.014 | –0.013 | –0.013 | –0.013 | –0.013 | –0.013 | –0.013 | –0.013 |
| 100 | 0.011 | 0.012 | 0.012 | 0.010 | 0.011 | 0.012 | 0.012 | 0.010 |
| 30 | 4 | 0.009 | 0.009 | 0.008 | 0.010 | 0.010 | 0.009 | 0.010 | 0.009 |
| 10 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 |
| 30 | –0.003 | –0.002 | –0.004 | –0.003 | –0.003 | –0.003 | –0.003 | –0.003 |
| 50 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 |
| 50 | 4 | 0.005 | 0.006 | 0.005 | 0.004 | 0.004 | 0.004 | 0.005 | 0.003 |
| 10 | –0.005 | –0.005 | –0.005 | –0.006 | –0.006 | –0.005 | –0.005 | –0.006 |
| 30 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.003 | –0.002 | –0.003 |
| 50 | –0.005 | –0.005 | –0.005 | –0.005 | –0.005 | –0.005 | –0.005 | –0.005 |
| 100 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 100 | 4 | 0.005 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 10 | –0.001 | –0.001 | 0.000 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 |
| 30 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | –0.004 | –0.004 | –0.004 | –0.004 | –0.004 | –0.004 | –0.004 | –0.004 |
| 0.09 | 10 | 4 | –0.019 | –0.012 | –0.019 | –0.026 | –0.024 | –0.022 | –0.016 | –0.023 |
| 10 | 0.041 | 0.038 | 0.051 | 0.039 | 0.040 | 0.041 | 0.040 | 0.039 |
| 30 | –0.016 | –0.018 | –0.022 | –0.013 | –0.016 | –0.017 | –0.021 | –0.012 |
| 50 | –0.009 | –0.011 | –0.011 | –0.007 | –0.008 | –0.010 | –0.011 | –0.007 |
| 100 | –0.005 | –0.004 | –0.001 | –0.006 | –0.005 | –0.004 | –0.002 | –0.006 |
| 30 | 4 | –0.013 | –0.010 | –0.011 | –0.013 | –0.013 | –0.013 | –0.014 | –0.011 |
| 10 | 0.012 | 0.011 | 0.010 | 0.013 | 0.012 | 0.011 | 0.012 | 0.011 |
| 30 | –0.009 | –0.008 | –0.008 | –0.008 | –0.008 | –0.009 | –0.007 | –0.008 |
| 50 | –0.001 | –0.001 | –0.001 | 0.000 | –0.001 | –0.001 | –0.001 | 0.000 |
| 100 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 | –0.002 |
| 50 | 4 | –0.002 | –0.003 | –0.001 | –0.003 | –0.002 | –0.002 | –0.001 | –0.001 |
| 10 | –0.001 | –0.001 | –0.001 | –0.002 | –0.002 | –0.002 | –0.001 | 0.000 |
| 30 | –0.007 | –0.007 | –0.006 | –0.007 | –0.007 | –0.007 | –0.006 | –0.007 |
| 50 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 4 | 0.014 | 0.015 | 0.013 | 0.013 | 0.014 | 0.014 | 0.014 | 0.014 |
| 10 | –0.006 | –0.006 | –0.005 | –0.005 | –0.005 | –0.005 | –0.006 | –0.005 |
| 30 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 50 | –0.007 | –0.007 | –0.007 | –0.007 | –0.007 | –0.007 | –0.007 | –0.007 |
| 100 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 |
| 0.25 | 10 | 4 | 0.022 | 0.013 | 0.015 | 0.028 | 0.022 | 0.019 | 0.029 | 0.027 |
| 10 | –0.018 | –0.016 | –0.013 | –0.012 | –0.013 | –0.021 | –0.016 | –0.013 |
| 30 | 0.012 | 0.011 | 0.010 | 0.014 | 0.012 | 0.012 | 0.009 | 0.014 |
| 50 | 0.015 | 0.013 | 0.011 | 0.012 | 0.014 | 0.014 | 0.011 | 0.011 |
| 100 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 |
| 30 | 4 | –0.026 | –0.027 | –0.028 | –0.028 | –0.025 | –0.024 | –0.025 | –0.026 |
| 10 | 0.006 | 0.007 | 0.006 | 0.006 | 0.006 | 0.007 | 0.006 | 0.007 |
| 30 | 0.000 | –0.001 | –0.001 | –0.001 | –0.001 | 0.000 | 0.000 | –0.001 |
| 50 | –0.005 | –0.005 | –0.005 | –0.005 | –0.005 | –0.004 | –0.005 | –0.005 |
| 100 | –0.006 | –0.006 | –0.006 | –0.006 | –0.006 | –0.006 | –0.006 | –0.006 |
| 50 | 4 | 0.010 | 0.011 | 0.014 | 0.010 | 0.009 | 0.009 | 0.008 | 0.010 |
| 10 | 0.008 | 0.007 | 0.007 | 0.009 | 0.007 | 0.007 | 0.008 | 0.009 |
| 30 | 0.004 | 0.003 | 0.000 | 0.004 | 0.004 | 0.004 | 0.001 | 0.004 |
| 50 | –0.001 | 0.000 | –0.001 | –0.001 | –0.001 | 0.000 | –0.001 | –0.001 |
| 100 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 100 | 4 | 0.011 | 0.012 | 0.016 | 0.012 | 0.013 | 0.013 | 0.013 | 0.013 |
| 10 | –0.003 | –0.001 | –0.002 | –0.001 | –0.001 | 0.000 | –0.003 | 0.000 |
| 30 | 0.002 | 0.002 | 0.001 | 0.002 | 0.002 | 0.002 | 0.001 | 0.002 |
| 50 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 | –0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |

Note. Results with RBIAS outside [-0.1, 0.1] are boldfaced.

Table S14 MSE for the Fixed Effect after Model Selection when True Model was M1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 10 | 4 | 0.110 | 0.110 | 0.108 | 0.112 | 0.112 | 0.112 | 0.110 | 0.111 |
| 10 | 0.040 | 0.040 | 0.041 | 0.041 | 0.041 | 0.040 | 0.041 | 0.041 |
| 30 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 |
| 50 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 100 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 30 | 4 | 0.034 | 0.034 | 0.034 | 0.034 | 0.034 | 0.034 | 0.034 | 0.034 |
| 10 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 |
| 30 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 50 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 4 | 0.019 | 0.020 | 0.019 | 0.019 | 0.019 | 0.019 | 0.020 | 0.020 |
| 10 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 30 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 |
| 10 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Table S15 MSE for the Fixed Effect after Model Selection when True Model was M2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 10 | 4 | 0.096 | 0.097 | 0.096 | 0.096 | 0.096 | 0.096 | 0.095 | 0.096 |
| 10 | 0.042 | 0.041 | 0.041 | 0.042 | 0.042 | 0.042 | 0.041 | 0.042 |
| 30 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |
| 50 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 100 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 30 | 4 | 0.034 | 0.034 | 0.033 | 0.034 | 0.034 | 0.034 | 0.034 | 0.033 |
| 10 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 |
| 30 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 50 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 4 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 |
| 10 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 30 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 |
| 10 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Table S16 MSE for the Fixed Effect after Model Selection when True Model was M3

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 0.093 | 0.095 | 0.095 | 0.095 | 0.095 | 0.094 | 0.095 | 0.096 |
| 10 | 0.044 | 0.043 | 0.043 | 0.043 | 0.043 | 0.043 | 0.043 | 0.043 |
| 30 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 |
| 50 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 100 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 30 | 4 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 | 0.036 |
| 10 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |
| 30 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 50 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 4 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 |
| 10 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 30 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 |
| 10 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.09 | 10 | 4 | 0.110 | 0.113 | 0.117 | 0.108 | 0.107 | 0.110 | 0.115 | 0.108 |
| 10 | 0.045 | 0.046 | 0.047 | 0.044 | 0.045 | 0.045 | 0.046 | 0.044 |
| 30 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 |
| 50 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
| 100 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 30 | 4 | 0.035 | 0.036 | 0.036 | 0.034 | 0.034 | 0.034 | 0.035 | 0.034 |
| 10 | 0.014 | 0.014 | 0.014 | 0.015 | 0.014 | 0.014 | 0.014 | 0.015 |
| 30 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 4 | 0.022 | 0.023 | 0.023 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 |
| 10 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.008 |
| 30 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 |
| 10 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.25 | 10 | 4 | 0.108 | 0.111 | 0.119 | 0.108 | 0.107 | 0.107 | 0.113 | 0.108 |
| 10 | 0.031 | 0.031 | 0.032 | 0.032 | 0.031 | 0.031 | 0.031 | 0.033 |
| 30 | 0.009 | 0.008 | 0.008 | 0.010 | 0.009 | 0.009 | 0.008 | 0.010 |
| 50 | 0.006 | 0.005 | 0.005 | 0.006 | 0.006 | 0.005 | 0.005 | 0.006 |
| 100 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 30 | 4 | 0.034 | 0.036 | 0.036 | 0.035 | 0.035 | 0.035 | 0.035 | 0.035 |
| 10 | 0.011 | 0.011 | 0.010 | 0.012 | 0.012 | 0.011 | 0.010 | 0.012 |
| 30 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 4 | 0.018 | 0.018 | 0.017 | 0.019 | 0.019 | 0.019 | 0.018 | 0.019 |
| 10 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
| 30 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 |
| 10 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.004 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Table S17 MSE for the Fixed Effect after Model Selection when True Model was M4

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 0.114 | 0.115 | 0.113 | 0.115 | 0.115 | 0.115 | 0.114 | 0.115 |
| 10 | 0.040 | 0.041 | 0.040 | 0.041 | 0.041 | 0.041 | 0.041 | 0.040 |
| 30 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 |
| 50 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 100 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 30 | 4 | 0.039 | 0.039 | 0.038 | 0.039 | 0.039 | 0.039 | 0.039 | 0.038 |
| 10 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 |
| 30 | 0.005 | 0.004 | 0.005 | 0.005 | 0.004 | 0.004 | 0.004 | 0.005 |
| 50 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 4 | 0.019 | 0.020 | 0.019 | 0.019 | 0.019 | 0.019 | 0.020 | 0.019 |
| 10 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 30 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 |
| 10 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.09 | 10 | 4 | 0.122 | 0.125 | 0.132 | 0.122 | 0.120 | 0.121 | 0.123 | 0.121 |
| 10 | 0.042 | 0.043 | 0.045 | 0.042 | 0.042 | 0.042 | 0.043 | 0.042 |
| 30 | 0.014 | 0.013 | 0.013 | 0.014 | 0.014 | 0.013 | 0.013 | 0.014 |
| 50 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 100 | 0.005 | 0.004 | 0.004 | 0.005 | 0.005 | 0.004 | 0.004 | 0.005 |
| 30 | 4 | 0.033 | 0.034 | 0.034 | 0.033 | 0.033 | 0.033 | 0.033 | 0.033 |
| 10 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |
| 30 | 0.004 | 0.004 | 0.004 | 0.005 | 0.005 | 0.004 | 0.004 | 0.005 |
| 50 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 4 | 0.022 | 0.022 | 0.022 | 0.021 | 0.021 | 0.021 | 0.021 | 0.021 |
| 10 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 30 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.011 | 0.010 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 |
| 10 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 30 | 0.002 | 0.002 | 0.001 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.25 | 10 | 4 | 0.111 | 0.117 | 0.129 | 0.111 | 0.111 | 0.113 | 0.117 | 0.113 |
| 10 | 0.039 | 0.038 | 0.037 | 0.040 | 0.040 | 0.039 | 0.037 | 0.041 |
| 30 | 0.014 | 0.014 | 0.013 | 0.014 | 0.014 | 0.014 | 0.013 | 0.014 |
| 50 | 0.008 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 |
| 100 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 30 | 4 | 0.037 | 0.037 | 0.039 | 0.038 | 0.038 | 0.037 | 0.038 | 0.039 |
| 10 | 0.013 | 0.013 | 0.012 | 0.014 | 0.014 | 0.014 | 0.013 | 0.014 |
| 30 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 50 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 100 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 4 | 0.024 | 0.024 | 0.023 | 0.024 | 0.024 | 0.024 | 0.024 | 0.024 |
| 10 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 30 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.011 | 0.011 | 0.011 | 0.012 | 0.012 | 0.012 | 0.011 | 0.012 |
| 10 | 0.004 | 0.004 | 0.004 | 0.005 | 0.005 | 0.005 | 0.004 | 0.005 |
| 30 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |

Table S18 CP95 for the Fixed Effect after Model Selection when True Model was M2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 10 | 4 | 0.964 | 0.960 | 0.962 | 0.966 | 0.966 | 0.962 | 0.962 | 0.968 |
| 10 | 0.962 | 0.958 | 0.954 | 0.966 | 0.960 | 0.960 | 0.954 | 0.968 |
| 30 | 0.962 | 0.960 | 0.960 | 0.974 | 0.962 | 0.960 | 0.960 | 0.974 |
| 50 | 0.970 | 0.966 | 0.958 | 0.974 | 0.970 | 0.966 | 0.960 | **0.976** |
| 100 | **0.992** | **0.988** | **0.976** | **1.000** | **0.994** | **0.988** | **0.976** | **1.000** |
| 30 | 4 | 0.958 | 0.958 | 0.962 | 0.958 | 0.958 | 0.958 | 0.958 | 0.962 |
| 10 | 0.964 | 0.962 | 0.960 | 0.966 | 0.964 | 0.962 | 0.960 | 0.966 |
| 30 | 0.974 | 0.968 | 0.960 | **0.982** | **0.976** | 0.970 | 0.960 | **0.982** |
| 50 | **0.982** | **0.982** | **0.978** | **0.988** | **0.984** | **0.982** | **0.978** | **0.988** |
| 100 | **1.000** | **0.998** | **0.998** | **1.000** | **1.000** | **0.998** | **0.998** | **1.000** |
| 50 | 4 | 0.946 | 0.946 | 0.950 | 0.952 | 0.952 | 0.950 | 0.946 | 0.956 |
| 10 | 0.956 | 0.956 | 0.956 | 0.960 | 0.958 | 0.958 | 0.958 | 0.960 |
| 30 | **0.980** | **0.978** | 0.962 | **0.984** | **0.980** | **0.978** | 0.960 | **0.984** |
| 50 | **0.994** | **0.994** | **0.992** | **0.994** | **0.994** | **0.992** | **0.992** | **0.994** |
| 100 | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** |
| 100 | 4 | 0.956 | 0.956 | 0.958 | 0.958 | 0.954 | 0.954 | 0.956 | 0.962 |
| 10 | 0.966 | 0.966 | 0.964 | 0.972 | 0.968 | 0.968 | 0.962 | 0.974 |
| 30 | **0.982** | **0.982** | **0.980** | **0.982** | **0.982** | **0.982** | **0.980** | **0.982** |
| 50 | **0.998** | **0.998** | **0.998** | **0.998** | **0.998** | **0.998** | **0.998** | **0.998** |
| 100 | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** |

*Note*. CP95 below 0.925 or above 0.975 are boldfaced.

Table S19 CP95 for the Fixed Effect after Model Selection when True Model was M3

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 0.952 | 0.948 | 0.950 | 0.960 | 0.956 | 0.956 | 0.950 | 0.960 |
| 10 | 0.934 | 0.936 | 0.936 | 0.952 | 0.938 | 0.934 | 0.938 | 0.954 |
| 30 | 0.962 | 0.962 | 0.960 | 0.966 | 0.962 | 0.960 | 0.960 | 0.968 |
| 50 | 0.962 | 0.962 | 0.962 | 0.962 | 0.962 | 0.962 | 0.962 | 0.964 |
| 100 | 0.956 | 0.954 | 0.950 | 0.956 | 0.956 | 0.954 | 0.950 | 0.956 |
| 30 | 4 | 0.946 | 0.944 | 0.946 | 0.948 | 0.948 | 0.948 | 0.946 | 0.950 |
| 10 | 0.940 | 0.938 | 0.936 | 0.942 | 0.942 | 0.940 | 0.938 | 0.942 |
| 30 | 0.948 | 0.948 | 0.944 | 0.946 | 0.948 | 0.948 | 0.942 | 0.946 |
| 50 | 0.950 | 0.948 | 0.946 | 0.950 | 0.950 | 0.948 | 0.946 | 0.950 |
| 100 | 0.952 | 0.952 | 0.952 | 0.952 | 0.952 | 0.952 | 0.952 | 0.954 |
| 50 | 4 | 0.960 | 0.958 | 0.960 | 0.966 | 0.968 | 0.962 | 0.960 | 0.974 |
| 10 | 0.952 | 0.954 | 0.952 | 0.956 | 0.954 | 0.952 | 0.952 | 0.956 |
| 30 | 0.946 | 0.946 | 0.946 | 0.950 | 0.948 | 0.946 | 0.946 | 0.950 |
| 50 | 0.960 | 0.958 | 0.960 | 0.962 | 0.962 | 0.958 | 0.960 | 0.964 |
| 100 | 0.952 | 0.952 | 0.952 | 0.954 | 0.952 | 0.952 | 0.952 | 0.954 |
| 100 | 4 | 0.942 | 0.940 | 0.942 | 0.948 | 0.950 | 0.946 | 0.942 | 0.952 |
| 10 | 0.946 | 0.944 | 0.944 | 0.944 | 0.942 | 0.944 | 0.944 | 0.946 |
| 30 | 0.946 | 0.944 | 0.946 | 0.954 | 0.946 | 0.944 | 0.946 | 0.954 |
| 50 | 0.946 | 0.946 | 0.946 | 0.948 | 0.946 | 0.946 | 0.946 | 0.948 |
| 100 | 0.956 | 0.954 | 0.954 | 0.958 | 0.956 | 0.954 | 0.954 | 0.958 |
| 0.09 | 10 | 4 | 0.932 | 0.928 | 0.932 | 0.938 | 0.940 | 0.930 | 0.926 | 0.944 |
| 10 | 0.930 | 0.930 | 0.924 | 0.944 | 0.934 | 0.930 | 0.926 | 0.950 |
| 30 | 0.960 | 0.960 | 0.960 | 0.962 | 0.960 | 0.960 | 0.960 | 0.962 |
| 50 | 0.954 | 0.954 | 0.952 | 0.958 | 0.954 | 0.954 | 0.952 | 0.958 |
| 100 | 0.944 | 0.942 | 0.942 | 0.946 | 0.944 | 0.942 | 0.942 | 0.946 |
| 30 | 4 | 0.950 | 0.948 | 0.954 | 0.954 | 0.956 | 0.954 | 0.954 | 0.958 |
| 10 | 0.938 | 0.938 | 0.932 | 0.946 | 0.944 | 0.940 | 0.936 | 0.948 |
| 30 | 0.944 | 0.944 | 0.944 | 0.948 | 0.942 | 0.944 | 0.944 | 0.948 |
| 50 | 0.952 | 0.950 | 0.952 | 0.952 | 0.952 | 0.950 | 0.952 | 0.954 |
| 100 | 0.956 | 0.958 | 0.958 | 0.962 | 0.956 | 0.958 | 0.958 | 0.962 |
| 50 | 4 | 0.946 | 0.944 | 0.944 | 0.950 | 0.954 | 0.950 | 0.944 | 0.958 |
| 10 | 0.960 | 0.960 | 0.954 | 0.966 | 0.962 | 0.960 | 0.960 | 0.968 |
| 30 | 0.936 | 0.930 | 0.928 | 0.936 | 0.936 | 0.932 | 0.928 | 0.938 |
| 50 | 0.958 | 0.956 | 0.956 | 0.960 | 0.958 | 0.958 | 0.956 | 0.960 |
| 100 | 0.938 | 0.938 | 0.938 | 0.944 | 0.938 | 0.938 | 0.938 | 0.944 |
| 100 | 4 | 0.952 | 0.952 | 0.956 | 0.954 | 0.956 | 0.956 | 0.954 | 0.960 |
| 10 | 0.932 | 0.932 | 0.930 | 0.930 | 0.932 | 0.930 | 0.932 | 0.934 |
| 30 | 0.936 | 0.936 | 0.940 | 0.936 | 0.936 | 0.936 | 0.940 | 0.936 |
| 50 | 0.953 | 0.952 | 0.950 | 0.951 | 0.953 | 0.954 | 0.950 | 0.951 |
| 100 | 0.949 | 0.950 | 0.950 | 0.951 | 0.949 | 0.950 | 0.950 | 0.951 |
| 0.25 | 10 | 4 | 0.942 | 0.940 | 0.936 | 0.954 | 0.952 | 0.950 | 0.940 | 0.962 |
| 10 | 0.968 | 0.966 | 0.960 | 0.970 | 0.970 | 0.968 | 0.964 | 0.972 |
| 30 | 0.960 | 0.960 | 0.958 | 0.960 | 0.960 | 0.960 | 0.958 | 0.964 |
| 50 | 0.956 | 0.956 | 0.956 | 0.962 | 0.956 | 0.956 | 0.956 | 0.964 |
| 100 | 0.958 | 0.958 | 0.956 | 0.956 | 0.958 | 0.958 | 0.956 | 0.956 |
| 30 | 4 | 0.936 | 0.930 | 0.928 | 0.942 | 0.946 | 0.940 | 0.936 | 0.954 |
| 10 | 0.952 | 0.952 | 0.956 | 0.954 | 0.954 | 0.952 | 0.956 | 0.958 |
| 30 | 0.960 | 0.958 | 0.958 | 0.956 | 0.960 | 0.958 | 0.958 | 0.956 |
| 50 | 0.958 | 0.958 | 0.958 | 0.958 | 0.958 | 0.958 | 0.958 | 0.958 |
| 100 | 0.930 | 0.932 | 0.934 | 0.938 | 0.930 | 0.932 | 0.934 | 0.938 |
| 50 | 4 | 0.962 | 0.962 | 0.960 | 0.962 | 0.968 | 0.964 | 0.960 | 0.966 |
| 10 | 0.940 | 0.942 | 0.942 | 0.940 | 0.938 | 0.940 | 0.942 | 0.944 |
| 30 | 0.962 | 0.960 | 0.960 | 0.956 | 0.962 | 0.960 | 0.960 | 0.958 |
| 50 | 0.944 | 0.942 | 0.942 | 0.944 | 0.944 | 0.942 | 0.942 | 0.944 |
| 100 | 0.948 | 0.952 | 0.954 | 0.948 | 0.948 | 0.952 | 0.954 | 0.948 |
| 100 | 4 | 0.960 | 0.960 | 0.958 | 0.960 | 0.964 | 0.966 | 0.964 | 0.964 |
| 10 | 0.960 | 0.958 | 0.960 | 0.964 | 0.964 | 0.962 | 0.958 | 0.964 |
| 30 | 0.943 | 0.946 | 0.948 | 0.944 | 0.943 | 0.946 | 0.950 | 0.948 |
| 50 | 0.945 | 0.946 | 0.946 | 0.948 | 0.943 | 0.946 | 0.946 | 0.948 |
| 100 | 0.944 | 0.943 | 0.946 | 0.953 | 0.944 | 0.943 | 0.946 | 0.953 |

*Note*. CP95 below 0.925 or above 0.975 were boldfaced.

Table S20 CP95 for the Fixed Effect after Model Selection when True Model was M4

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 0.956 | 0.954 | 0.954 | 0.958 | 0.956 | 0.954 | 0.954 | 0.962 |
| 10 | 0.954 | 0.954 | 0.950 | 0.958 | 0.954 | 0.954 | 0.954 | 0.964 |
| 30 | 0.966 | 0.968 | 0.964 | **0.980** | 0.966 | 0.968 | 0.964 | **0.980** |
| 50 | 0.966 | 0.964 | 0.960 | **0.978** | 0.968 | 0.964 | 0.960 | **0.978** |
| 100 | **0.988** | **0.980** | 0.970 | **0.996** | **0.990** | **0.980** | 0.970 | **0.996** |
| 30 | 4 | 0.926 | **0.924** | 0.926 | 0.930 | 0.934 | 0.928 | 0.926 | 0.944 |
| 10 | 0.946 | 0.948 | 0.948 | 0.954 | 0.948 | 0.950 | 0.948 | 0.956 |
| 30 | 0.962 | 0.958 | 0.946 | **0.978** | 0.964 | 0.958 | 0.948 | **0.978** |
| 50 | **0.992** | **0.980** | 0.962 | **0.994** | **0.990** | **0.982** | 0.966 | **0.994** |
| 100 | **0.998** | **0.998** | **0.996** | **1.000** | **0.998** | **0.998** | **0.996** | **1.000** |
| 50 | 4 | 0.946 | 0.946 | 0.948 | 0.950 | 0.956 | 0.952 | 0.952 | 0.954 |
| 10 | 0.962 | 0.952 | 0.952 | 0.966 | 0.958 | 0.956 | 0.950 | 0.966 |
| 30 | **0.980** | 0.972 | 0.964 | **0.982** | **0.980** | **0.976** | 0.964 | **0.982** |
| 50 | **0.996** | **0.996** | **0.984** | **0.996** | **0.996** | **0.996** | **0.986** | **0.996** |
| 100 | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** |
| 100 | 4 | 0.972 | 0.970 | 0.968 | 0.974 | 0.974 | 0.974 | 0.974 | 0.972 |
| 10 | 0.954 | 0.950 | 0.950 | 0.954 | 0.952 | 0.952 | 0.952 | 0.956 |
| 30 | **0.988** | **0.984** | **0.978** | **0.988** | **0.988** | **0.984** | **0.978** | **0.988** |
| 50 | **0.992** | **0.992** | **0.992** | **0.992** | **0.992** | **0.992** | **0.992** | **0.992** |
| 100 | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** |
|  | 10 | 4 | 0.952 | 0.942 | 0.936 | 0.962 | 0.962 | 0.954 | 0.946 | 0.968 |
| 0.09 | 10 | 0.948 | 0.946 | 0.946 | 0.958 | 0.954 | 0.948 | 0.940 | 0.964 |
| 30 | 0.954 | 0.948 | 0.944 | 0.964 | 0.954 | 0.950 | 0.944 | 0.968 |
| 50 | 0.968 | 0.956 | 0.952 | 0.974 | 0.968 | 0.956 | 0.952 | 0.974 |
| 100 | **0.990** | **0.986** | **0.978** | **0.996** | **0.990** | **0.986** | **0.978** | **0.996** |
| 30 | 4 | 0.966 | 0.962 | 0.962 | 0.970 | **0.976** | 0.972 | 0.968 | **0.978** |
| 10 | 0.942 | 0.944 | 0.942 | 0.956 | 0.954 | 0.942 | 0.944 | 0.964 |
| 30 | 0.970 | 0.970 | 0.960 | **0.976** | 0.970 | 0.970 | 0.960 | **0.976** |
| 50 | **0.984** | **0.982** | **0.976** | **0.986** | **0.984** | **0.984** | **0.976** | **0.986** |
| 100 | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** |
| 50 | 4 | 0.962 | 0.962 | 0.958 | 0.962 | 0.966 | 0.964 | 0.962 | 0.970 |
| 10 | 0.964 | 0.960 | 0.956 | 0.968 | 0.968 | 0.964 | 0.956 | 0.970 |
| 30 | **0.988** | **0.986** | **0.976** | **0.990** | **0.988** | **0.986** | **0.978** | **0.990** |
| 50 | **0.990** | **0.990** | **0.984** | **0.990** | **0.990** | **0.990** | **0.990** | **0.990** |
| 100 | **0.998** | **0.998** | **0.998** | **0.998** | **0.998** | **0.998** | **0.998** | **0.998** |
| 100 | 4 | 0.954 | 0.954 | 0.948 | 0.954 | 0.958 | 0.956 | 0.952 | 0.960 |
| 10 | 0.934 | 0.934 | 0.932 | 0.938 | 0.938 | 0.936 | 0.936 | 0.952 |
| 30 | **0.992** | **0.992** | **0.992** | **0.992** | **0.992** | **0.992** | **0.992** | **0.992** |
| 50 | **0.996** | **0.996** | **0.996** | **0.996** | **0.996** | **0.996** | **0.996** | **0.996** |
| 0.25 | 10 | 100 | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** |
| 4 | 0.954 | 0.948 | 0.938 | 0.964 | 0.964 | 0.958 | 0.948 | 0.964 |
| 10 | 0.960 | 0.954 | 0.952 | 0.972 | 0.968 | 0.958 | 0.952 | 0.972 |
| 30 | 0.948 | 0.944 | 0.936 | 0.964 | 0.950 | 0.944 | 0.936 | 0.968 |
| 50 | 0.972 | 0.960 | 0.946 | **0.988** | 0.972 | 0.960 | 0.946 | **0.988** |
| 30 | 100 | **0.990** | **0.980** | 0.966 | **0.994** | **0.990** | **0.980** | 0.966 | **0.994** |
| 4 | 0.962 | 0.960 | 0.956 | 0.958 | 0.962 | 0.960 | 0.958 | 0.964 |
| 10 | 0.942 | 0.938 | 0.936 | 0.948 | 0.946 | 0.942 | 0.936 | 0.954 |
| 30 | **0.976** | 0.974 | 0.968 | **0.980** | **0.976** | 0.974 | 0.968 | **0.982** |
| 50 | **0.990** | **0.990** | **0.984** | **0.990** | **0.990** | **0.990** | **0.984** | **0.990** |
| 50 | 100 | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** |
| 4 | 0.954 | 0.948 | 0.946 | 0.958 | 0.960 | 0.960 | 0.958 | 0.962 |
| 10 | 0.952 | 0.956 | 0.950 | 0.960 | 0.958 | 0.954 | 0.954 | 0.968 |
| 30 | **0.990** | **0.988** | **0.986** | **0.996** | **0.992** | **0.990** | **0.988** | **0.996** |
| 50 | **0.996** | **0.996** | **0.992** | **0.996** | **0.996** | **0.996** | **0.992** | **0.996** |
| 100 | 100 | **0.998** | **0.998** | **0.998** | **0.998** | **0.998** | **0.998** | **0.998** | **0.998** |
| 4 | 0.950 | 0.948 | 0.950 | 0.956 | 0.962 | 0.958 | 0.952 | 0.962 |
| 10 | 0.970 | 0.966 | 0.964 | 0.970 | 0.968 | 0.970 | 0.968 | 0.968 |
| 30 | **0.980** | **0.980** | **0.980** | **0.980** | **0.980** | **0.980** | **0.980** | **0.980** |
| 50 | **0.988** | **0.988** | **0.988** | **0.988** | **0.988** | **0.988** | **0.988** | **0.988** |
|  |  | 100 | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** | **1.000** |

*Note*. CP95 below 0.925 or above 0.975 are boldfaced.

Table S21 Width95 for the Fixed Effect after Model Selection when True Model was M2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 10 | 4 | **1.384** | **1.354** | **1.322** | **1.429** | **1.431** | **1.408** | **1.370** | **1.499** |
| 10 | **0.852** | **0.835** | **0.826** | **0.901** | **0.863** | **0.848** | **0.827** | **0.923** |
| 30 | 0.564 | 0.541 | 0.511 | **0.617** | 0.567 | 0.543 | 0.510 | **0.617** |
| 50 | 0.519 | 0.491 | 0.440 | 0.566 | 0.520 | 0.491 | 0.438 | 0.568 |
| 100 | 0.525 | 0.508 | 0.444 | 0.538 | 0.525 | 0.507 | 0.442 | 0.538 |
| 30 | 4 | **0.751** | **0.745** | **0.741** | **0.763** | **0.768** | **0.758** | **0.750** | **0.787** |
| 10 | 0.482 | 0.477 | 0.465 | 0.497 | 0.489 | 0.481 | 0.468 | 0.501 |
| 30 | 0.327 | 0.318 | 0.298 | 0.337 | 0.328 | 0.319 | 0.299 | 0.338 |
| 50 | 0.298 | 0.293 | 0.279 | 0.303 | 0.299 | 0.293 | 0.279 | 0.303 |
| 100 | 0.273 | 0.272 | 0.272 | 0.273 | 0.273 | 0.272 | 0.272 | 0.273 |
| 50 | 4 | 0.575 | 0.573 | 0.572 | 0.585 | 0.589 | 0.584 | 0.578 | 0.597 |
| 10 | 0.373 | 0.369 | 0.362 | 0.381 | 0.376 | 0.372 | 0.364 | 0.384 |
| 30 | 0.258 | 0.254 | 0.245 | 0.262 | 0.258 | 0.255 | 0.244 | 0.262 |
| 50 | 0.232 | 0.232 | 0.227 | 0.233 | 0.232 | 0.232 | 0.227 | 0.233 |
| 100 | 0.207 | 0.207 | 0.207 | 0.207 | 0.207 | 0.207 | 0.207 | 0.207 |
| 100 | 4 | 0.404 | 0.402 | 0.401 | 0.409 | 0.412 | 0.409 | 0.406 | 0.415 |
| 10 | 0.263 | 0.261 | 0.256 | 0.267 | 0.265 | 0.263 | 0.257 | 0.269 |
| 30 | 0.185 | 0.184 | 0.181 | 0.186 | 0.185 | 0.185 | 0.181 | 0.185 |
| 50 | 0.163 | 0.163 | 0.163 | 0.163 | 0.163 | 0.163 | 0.163 | 0.163 |
| 100 | 0.145 | 0.145 | 0.145 | 0.145 | 0.145 | 0.145 | 0.145 | 0.145 |

*Note*. Width95 larger than 0.6 are boldfaced.

Table S22 Width95 for the Fixed Effect after Model Selection when True Model was M3

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | **1.325** | **1.312** | **1.300** | **1.377** | **1.375** | **1.346** | **1.319** | **1.441** |
| 10 | **0.831** | **0.818** | **0.804** | **0.871** | **0.837** | **0.825** | **0.802** | **0.886** |
| 30 | 0.468 | 0.463 | 0.458 | 0.491 | 0.469 | 0.463 | 0.458 | 0.492 |
| 50 | 0.360 | 0.355 | 0.352 | 0.385 | 0.361 | 0.355 | 0.352 | 0.386 |
| 100 | 0.255 | 0.251 | 0.248 | 0.269 | 0.255 | 0.251 | 0.248 | 0.270 |
| 30 | 4 | **0.739** | **0.734** | **0.731** | **0.752** | **0.757** | **0.750** | **0.738** | **0.772** |
| 10 | 0.461 | 0.459 | 0.457 | 0.471 | 0.464 | 0.461 | 0.457 | 0.475 |
| 30 | 0.265 | 0.264 | 0.263 | 0.269 | 0.265 | 0.263 | 0.263 | 0.269 |
| 50 | 0.206 | 0.204 | 0.203 | 0.211 | 0.206 | 0.204 | 0.203 | 0.211 |
| 100 | 0.145 | 0.143 | 0.143 | 0.148 | 0.145 | 0.143 | 0.143 | 0.148 |
| 50 | 4 | 0.569 | 0.567 | 0.565 | 0.576 | 0.579 | 0.575 | 0.571 | 0.586 |
| 10 | 0.357 | 0.355 | 0.354 | 0.361 | 0.358 | 0.356 | 0.354 | 0.364 |
| 30 | 0.205 | 0.204 | 0.204 | 0.207 | 0.205 | 0.204 | 0.204 | 0.208 |
| 50 | 0.158 | 0.157 | 0.157 | 0.160 | 0.158 | 0.158 | 0.157 | 0.160 |
| 100 | 0.111 | 0.111 | 0.110 | 0.113 | 0.111 | 0.111 | 0.110 | 0.113 |
| 100 | 4 | 0.399 | 0.398 | 0.397 | 0.402 | 0.404 | 0.402 | 0.400 | 0.406 |
| 10 | 0.251 | 0.250 | 0.250 | 0.253 | 0.252 | 0.251 | 0.250 | 0.254 |
| 30 | 0.144 | 0.144 | 0.144 | 0.145 | 0.144 | 0.144 | 0.144 | 0.145 |
| 50 | 0.112 | 0.111 | 0.111 | 0.113 | 0.112 | 0.111 | 0.111 | 0.113 |
| 100 | 0.079 | 0.079 | 0.078 | 0.080 | 0.079 | 0.079 | 0.078 | 0.080 |
| 0.09 | 10 | 4 | **1.365** | **1.354** | **1.356** | **1.416** | **1.407** | **1.379** | **1.363** | **1.476** |
| 10 | **0.812** | **0.804** | **0.808** | **0.839** | **0.817** | **0.804** | **0.803** | **0.863** |
| 30 | 0.450 | 0.444 | 0.435 | 0.476 | 0.451 | 0.445 | 0.435 | 0.484 |
| 50 | 0.343 | 0.337 | 0.330 | 0.368 | 0.344 | 0.337 | 0.330 | 0.370 |
| 100 | 0.238 | 0.234 | 0.231 | 0.258 | 0.238 | 0.234 | 0.231 | 0.259 |
| 30 | 4 | **0.769** | **0.765** | **0.766** | **0.785** | **0.789** | **0.781** | **0.771** | **0.802** |
| 10 | 0.457 | 0.453 | 0.450 | 0.469 | 0.463 | 0.457 | 0.452 | 0.475 |
| 30 | 0.252 | 0.250 | 0.248 | 0.261 | 0.253 | 0.250 | 0.248 | 0.262 |
| 50 | 0.192 | 0.191 | 0.189 | 0.199 | 0.193 | 0.191 | 0.189 | 0.199 |
| 100 | 0.135 | 0.133 | 0.132 | 0.140 | 0.135 | 0.133 | 0.132 | 0.140 |
| 50 | 4 | 0.594 | 0.591 | 0.590 | 0.603 | 0.608 | 0.604 | 0.596 | **0.616** |
| 10 | 0.348 | 0.346 | 0.344 | 0.357 | 0.355 | 0.349 | 0.346 | 0.364 |
| 30 | 0.193 | 0.192 | 0.191 | 0.198 | 0.194 | 0.192 | 0.191 | 0.200 |
| 50 | 0.148 | 0.147 | 0.146 | 0.152 | 0.148 | 0.147 | 0.146 | 0.152 |
| 100 | 0.104 | 0.103 | 0.102 | 0.107 | 0.104 | 0.103 | 0.102 | 0.107 |
| 100 | 4 | 0.411 | 0.409 | 0.406 | 0.417 | 0.420 | 0.417 | 0.413 | 0.423 |
| 10 | 0.246 | 0.245 | 0.244 | 0.251 | 0.249 | 0.247 | 0.245 | 0.254 |
| 30 | 0.136 | 0.135 | 0.135 | 0.139 | 0.137 | 0.136 | 0.135 | 0.139 |
| 50 | 0.105 | 0.104 | 0.103 | 0.107 | 0.105 | 0.104 | 0.103 | 0.108 |
| 100 | 0.073 | 0.073 | 0.073 | 0.075 | 0.073 | 0.073 | 0.073 | 0.075 |
| 0.25 | 10 | 4 | **1.424** | **1.395** | **1.407** | **1.507** | **1.488** | **1.447** | **1.406** | **1.568** |
| 10 | **0.738** | **0.724** | **0.714** | **0.794** | **0.762** | **0.735** | **0.717** | **0.821** |
| 30 | 0.400 | 0.388 | 0.379 | 0.436 | 0.400 | 0.390 | 0.379 | 0.440 |
| 50 | 0.301 | 0.294 | 0.290 | 0.329 | 0.301 | 0.294 | 0.290 | 0.331 |
| 100 | 0.206 | 0.205 | 0.202 | 0.222 | 0.206 | 0.205 | 0.202 | 0.223 |
| 30 | 4 | **0.767** | **0.757** | **0.740** | **0.796** | **0.797** | **0.786** | **0.768** | **0.818** |
| 10 | 0.410 | 0.404 | 0.398 | 0.430 | 0.420 | 0.412 | 0.402 | 0.441 |
| 30 | 0.220 | 0.217 | 0.215 | 0.233 | 0.222 | 0.218 | 0.215 | 0.237 |
| 50 | 0.167 | 0.164 | 0.163 | 0.175 | 0.167 | 0.165 | 0.163 | 0.176 |
| 100 | 0.118 | 0.116 | 0.115 | 0.126 | 0.118 | 0.116 | 0.115 | 0.126 |
| 50 | 4 | 0.582 | 0.574 | 0.558 | 0.602 | 0.604 | 0.596 | 0.582 | **0.619** |
| 10 | 0.312 | 0.307 | 0.304 | 0.329 | 0.322 | 0.313 | 0.307 | 0.339 |
| 30 | 0.167 | 0.165 | 0.165 | 0.177 | 0.168 | 0.166 | 0.165 | 0.179 |
| 50 | 0.127 | 0.125 | 0.125 | 0.134 | 0.128 | 0.126 | 0.125 | 0.135 |
| 100 | 0.089 | 0.088 | 0.088 | 0.093 | 0.089 | 0.088 | 0.088 | 0.093 |
| 100 | 4 | 0.398 | 0.390 | 0.382 | 0.408 | 0.414 | 0.409 | 0.401 | 0.423 |
| 10 | 0.225 | 0.220 | 0.215 | 0.234 | 0.232 | 0.225 | 0.220 | 0.243 |
| 30 | 0.119 | 0.117 | 0.116 | 0.123 | 0.119 | 0.118 | 0.116 | 0.124 |
| 50 | 0.091 | 0.089 | 0.089 | 0.095 | 0.091 | 0.089 | 0.089 | 0.095 |
| 100 | 0.063 | 0.063 | 0.062 | 0.067 | 0.063 | 0.063 | 0.062 | 0.067 |

*Note*. Width95 larger than 0.6 are boldfaced.

Table S23 Width95 for the Fixed Effect after Model Selection when True Model was M4

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | **1.354** | **1.329** | **1.311** | **1.431** | **1.429** | **1.380** | **1.344** | **1.494** |
| 10 | **0.874** | **0.858** | **0.829** | **0.933** | **0.899** | **0.873** | **0.832** | **0.951** |
| 30 | 0.554 | 0.522 | 0.488 | **0.614** | 0.560 | 0.525 | 0.486 | **0.618** |
| 50 | 0.519 | 0.482 | 0.413 | 0.569 | 0.520 | 0.483 | 0.413 | 0.569 |
| 100 | 0.511 | 0.476 | 0.402 | 0.534 | 0.511 | 0.478 | 0.402 | 0.534 |
| 30 | 4 | **0.755** | **0.748** | **0.739** | **0.767** | **0.772** | **0.765** | **0.756** | **0.788** |
| 10 | 0.481 | 0.476 | 0.467 | 0.496 | 0.487 | 0.480 | 0.470 | 0.502 |
| 30 | 0.322 | 0.310 | 0.288 | 0.336 | 0.323 | 0.312 | 0.289 | 0.337 |
| 50 | 0.295 | 0.287 | 0.265 | 0.302 | 0.295 | 0.288 | 0.268 | 0.302 |
| 100 | 0.274 | 0.274 | 0.272 | 0.274 | 0.274 | 0.274 | 0.272 | 0.274 |
| 50 | 4 | 0.586 | 0.582 | 0.578 | 0.595 | 0.599 | 0.594 | 0.588 | **0.606** |
| 10 | 0.376 | 0.370 | 0.364 | 0.387 | 0.381 | 0.375 | 0.367 | 0.392 |
| 30 | 0.252 | 0.245 | 0.232 | 0.259 | 0.253 | 0.247 | 0.234 | 0.260 |
| 50 | 0.233 | 0.231 | 0.224 | 0.234 | 0.233 | 0.231 | 0.225 | 0.234 |
| 100 | 0.210 | 0.210 | 0.210 | 0.210 | 0.210 | 0.210 | 0.210 | 0.210 |
| 100 | 4 | 0.409 | 0.406 | 0.405 | 0.413 | 0.416 | 0.414 | 0.410 | 0.419 |
| 10 | 0.264 | 0.261 | 0.257 | 0.269 | 0.267 | 0.263 | 0.258 | 0.271 |
| 30 | 0.185 | 0.184 | 0.180 | 0.186 | 0.185 | 0.184 | 0.181 | 0.186 |
| 50 | 0.164 | 0.164 | 0.164 | 0.164 | 0.164 | 0.164 | 0.164 | 0.164 |
| 100 | 0.144 | 0.144 | 0.144 | 0.144 | 0.144 | 0.144 | 0.144 | 0.144 |
| 0.09 | 10 | 4 | **1.455** | **1.423** | **1.405** | **1.539** | **1.531** | **1.491** | **1.442** | **1.607** |
| 10 | **0.882** | **0.859** | **0.849** | **0.946** | **0.911** | **0.875** | **0.851** | **0.977** |
| 30 | 0.555 | 0.518 | 0.468 | **0.609** | 0.561 | 0.524 | 0.470 | **0.619** |
| 50 | 0.519 | 0.474 | 0.415 | 0.579 | 0.522 | 0.477 | 0.416 | 0.580 |
| 100 | 0.551 | 0.531 | 0.457 | 0.568 | 0.551 | 0.531 | 0.459 | 0.568 |
| 30 | 4 | **0.796** | **0.786** | **0.784** | **0.813** | **0.822** | **0.812** | **0.799** | **0.835** |
| 10 | 0.487 | 0.480 | 0.471 | 0.505 | 0.498 | 0.489 | 0.477 | 0.519 |
| 30 | 0.330 | 0.318 | 0.298 | 0.344 | 0.332 | 0.322 | 0.301 | 0.346 |
| 50 | 0.306 | 0.299 | 0.284 | 0.312 | 0.307 | 0.301 | 0.286 | 0.312 |
| 100 | 0.285 | 0.285 | 0.284 | 0.285 | 0.285 | 0.285 | 0.284 | 0.285 |
| 50 | 4 | **0.609** | **0.606** | **0.602** | **0.621** | **0.627** | **0.621** | **0.613** | **0.634** |
| 10 | 0.373 | 0.367 | 0.360 | 0.387 | 0.385 | 0.377 | 0.366 | 0.396 |
| 30 | 0.264 | 0.258 | 0.245 | 0.272 | 0.266 | 0.261 | 0.248 | 0.272 |
| 50 | 0.241 | 0.241 | 0.236 | 0.243 | 0.242 | 0.241 | 0.237 | 0.243 |
| 100 | 0.216 | 0.216 | 0.216 | 0.216 | 0.216 | 0.216 | 0.216 | 0.216 |
| 100 | 4 | 0.425 | 0.421 | 0.418 | 0.431 | 0.435 | 0.433 | 0.428 | 0.438 |
| 10 | 0.265 | 0.262 | 0.256 | 0.272 | 0.273 | 0.270 | 0.264 | 0.278 |
| 30 | 0.193 | 0.192 | 0.189 | 0.194 | 0.194 | 0.193 | 0.191 | 0.194 |
| 50 | 0.170 | 0.170 | 0.170 | 0.170 | 0.170 | 0.170 | 0.170 | 0.170 |
| 100 | 0.147 | 0.147 | 0.147 | 0.147 | 0.147 | 0.147 | 0.147 | 0.147 |
| 0.25 | 10 | 4 | **1.475** | **1.445** | **1.448** | **1.577** | **1.559** | **1.505** | **1.447** | **1.648** |
| 10 | **0.822** | **0.796** | **0.764** | **0.912** | **0.867** | **0.816** | **0.774** | **0.949** |
| 30 | 0.577 | 0.530 | 0.461 | **0.670** | 0.587 | 0.533 | 0.469 | **0.678** |
| 50 | 0.556 | 0.505 | 0.431 | 0.606 | 0.559 | 0.509 | 0.432 | 0.609 |
| 100 | 0.577 | 0.555 | 0.497 | 0.592 | 0.579 | 0.556 | 0.497 | 0.592 |
| 30 | 4 | **0.804** | **0.791** | **0.777** | **0.833** | **0.843** | **0.828** | **0.805** | **0.867** |
| 10 | 0.472 | 0.456 | 0.437 | 0.502 | 0.494 | 0.481 | 0.451 | 0.517 |
| 30 | 0.353 | 0.339 | 0.313 | 0.366 | 0.356 | 0.341 | 0.319 | 0.368 |
| 50 | 0.332 | 0.327 | 0.313 | 0.333 | 0.332 | 0.328 | 0.315 | 0.333 |
| 100 | 0.296 | 0.296 | 0.296 | 0.296 | 0.296 | 0.296 | 0.296 | 0.296 |
| 50 | 4 | **0.612** | **0.601** | 0.583 | **0.632** | **0.635** | **0.626** | **0.615** | **0.649** |
| 10 | 0.373 | 0.362 | 0.343 | 0.396 | 0.393 | 0.382 | 0.367 | 0.409 |
| 30 | 0.286 | 0.283 | 0.269 | 0.291 | 0.288 | 0.285 | 0.274 | 0.292 |
| 50 | 0.257 | 0.256 | 0.254 | 0.257 | 0.257 | 0.257 | 0.254 | 0.257 |
| 100 | 0.222 | 0.222 | 0.222 | 0.222 | 0.222 | 0.222 | 0.222 | 0.222 |
| 100 | 4 | 0.434 | 0.426 | 0.415 | 0.445 | 0.450 | 0.445 | 0.438 | 0.455 |
| 10 | 0.275 | 0.266 | 0.253 | 0.287 | 0.288 | 0.284 | 0.273 | 0.295 |
| 30 | 0.207 | 0.206 | 0.206 | 0.207 | 0.207 | 0.207 | 0.206 | 0.207 |
| 50 | 0.179 | 0.179 | 0.179 | 0.179 | 0.179 | 0.179 | 0.179 | 0.179 |
| 100 | 0.154 | 0.154 | 0.154 | 0.154 | 0.154 | 0.154 | 0.154 | 0.154 |

*Note*. Width95 larger than 0.6 are boldfaced.

Table S24 MSE for after Model Selection when True Model was M1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 10 | 4 | 0.055 | 0.054 | 0.052 | 0.057 | 0.058 | 0.056 | 0.055 | 0.059 |
| 10 | 0.026 | 0.026 | 0.026 | 0.027 | 0.026 | 0.026 | 0.026 | 0.028 |
| 30 | 0.016 | 0.016 | 0.015 | 0.017 | 0.016 | 0.016 | 0.015 | 0.017 |
| 50 | 0.014 | 0.014 | 0.014 | 0.015 | 0.014 | 0.014 | 0.014 | 0.015 |
| 100 | 0.013 | 0.012 | 0.012 | 0.013 | 0.013 | 0.012 | 0.012 | 0.014 |
| 30 | 4 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |
| 10 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 30 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 4 | 0.008 | 0.008 | 0.008 | 0.008 | 0.009 | 0.008 | 0.008 | 0.009 |
| 10 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 4 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 10 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 30 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Table S25 RBIAS for  after Model Selection when True Model was M2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 10 | 4 | 0.092 | 0.083 | 0.071 | 0.098 | 0.100 | 0.098 | 0.088 | **0.110** |
| 10 | **0.116** | **0.113** | **0.111** | **0.125** | **0.118** | **0.114** | **0.112** | **0.129** |
| 30 | **0.170** | **0.165** | **0.161** | **0.184** | **0.171** | **0.165** | **0.161** | **0.184** |
| 50 | **0.182** | **0.175** | **0.164** | **0.198** | **0.182** | **0.175** | **0.165** | **0.198** |
| 100 | **0.206** | **0.199** | **0.182** | **0.214** | **0.206** | **0.199** | **0.182** | **0.214** |
| 30 | 4 | 0.016 | 0.013 | 0.009 | 0.022 | 0.023 | 0.019 | 0.016 | 0.029 |
| 10 | 0.036 | 0.035 | 0.034 | 0.040 | 0.037 | 0.036 | 0.034 | 0.040 |
| 30 | 0.048 | 0.045 | 0.041 | 0.051 | 0.048 | 0.046 | 0.042 | 0.052 |
| 50 | 0.057 | 0.055 | 0.052 | 0.059 | 0.057 | 0.055 | 0.052 | 0.059 |
| 100 | 0.064 | 0.064 | 0.064 | 0.065 | 0.064 | 0.064 | 0.064 | 0.065 |
| 50 | 4 | 0.002 | 0.001 | –0.002 | 0.008 | 0.010 | 0.008 | 0.003 | 0.015 |
| 10 | 0.026 | 0.025 | 0.024 | 0.029 | 0.028 | 0.026 | 0.024 | 0.030 |
| 30 | 0.028 | 0.027 | 0.024 | 0.030 | 0.028 | 0.027 | 0.025 | 0.030 |
| 50 | 0.036 | 0.036 | 0.035 | 0.037 | 0.036 | 0.036 | 0.035 | 0.037 |
| 100 | 0.037 | 0.037 | 0.037 | 0.038 | 0.037 | 0.037 | 0.037 | 0.038 |
| 100 | 4 | 0.000 | –0.002 | –0.003 | 0.004 | 0.006 | 0.004 | 0.001 | 0.008 |
| 10 | 0.013 | 0.012 | 0.011 | 0.015 | 0.014 | 0.013 | 0.011 | 0.015 |
| 30 | 0.014 | 0.014 | 0.013 | 0.015 | 0.014 | 0.014 | 0.013 | 0.015 |
| 50 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 |
| 100 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 |

Note. Results with RBIAS outside [-0.1, 0.1] are boldfaced.

Table S26 MSE for after Model Selection when True Model was M2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 10 | 4 | 0.053 | 0.052 | 0.049 | 0.054 | 0.055 | 0.054 | 0.052 | 0.055 |
| 10 | 0.022 | 0.022 | 0.022 | 0.024 | 0.023 | 0.022 | 0.022 | 0.025 |
| 30 | 0.018 | 0.017 | 0.016 | 0.020 | 0.018 | 0.017 | 0.016 | 0.020 |
| 50 | 0.018 | 0.017 | 0.015 | 0.020 | 0.018 | 0.017 | 0.015 | 0.020 |
| 100 | 0.020 | 0.019 | 0.016 | 0.021 | 0.020 | 0.019 | 0.016 | 0.021 |
| 30 | 4 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 |
| 10 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 30 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 4 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 |
| 10 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 10 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 30 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Table S27 RBIAS for after Model Selection when True Model was M2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 10 | 4 | **1.147** | **1.204** | **1.336** | **1.010** | **0.977** | **1.060** | **1.165** | **0.834** |
| 10 | **0.766** | **0.921** | **0.985** | **0.552** | **0.704** | **0.839** | **0.991** | **0.495** |
| 30 | **0.396** | **0.491** | **0.644** | **0.249** | **0.391** | **0.482** | **0.641** | **0.248** |
| 50 | **0.243** | **0.309** | **0.422** | **0.138** | **0.241** | **0.308** | **0.420** | **0.136** |
| 100 | **0.115** | **0.143** | **0.207** | 0.085 | **0.113** | **0.143** | **0.207** | 0.085 |
| 30 | 4 | **0.647** | **0.730** | **0.877** | **0.475** | **0.446** | **0.539** | **0.659** | **0.330** |
| 10 | **0.356** | **0.431** | **0.600** | **0.217** | **0.296** | **0.365** | **0.551** | **0.192** |
| 30 | 0.086 | **0.124** | **0.201** | 0.030 | 0.082 | **0.115** | **0.194** | 0.025 |
| 50 | 0.030 | 0.054 | 0.090 | 0.006 | 0.028 | 0.054 | 0.090 | 0.006 |
| 100 | 0.023 | 0.023 | 0.026 | 0.022 | 0.022 | 0.023 | 0.026 | 0.022 |
| 50 | 4 | **0.448** | **0.553** | **0.703** | **0.313** | **0.292** | **0.336** | **0.433** | **0.211** |
| 10 | **0.244** | **0.305** | **0.380** | **0.134** | **0.202** | **0.261** | **0.352** | 0.099 |
| 30 | 0.033 | 0.058 | **0.107** | –0.008 | 0.032 | 0.054 | **0.105** | –0.008 |
| 50 | 0.001 | 0.006 | 0.023 | –0.004 | 0.000 | 0.006 | 0.022 | –0.004 |
| 100 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 |
| 100 | 4 | **0.316** | **0.407** | **0.550** | **0.183** | **0.139** | **0.175** | **0.263** | 0.079 |
| 10 | 0.089 | **0.147** | **0.254** | 0.024 | 0.062 | **0.100** | **0.194** | 0.001 |
| 30 | –0.008 | 0.001 | 0.021 | –0.016 | –0.008 | 0.000 | 0.019 | –0.016 |
| 50 | –0.003 | –0.003 | –0.003 | –0.004 | –0.004 | –0.003 | –0.003 | –0.004 |
| 100 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 |

Note. Results with RBIAS outside [-0.1, 0.1] are boldfaced.

Table S28 MSE for after Model Selection when True Model was M2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I | J | Method | | | | | | | |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 10 | 4 | 0.628 | 0.700 | 0.861 | 0.500 | 0.474 | 0.545 | 0.656 | 0.359 |
| 10 | 0.270 | 0.370 | 0.424 | 0.152 | 0.233 | 0.319 | 0.428 | 0.126 |
| 30 | 0.078 | 0.113 | 0.184 | 0.041 | 0.076 | 0.109 | 0.183 | 0.041 |
| 50 | 0.033 | 0.047 | 0.080 | 0.019 | 0.032 | 0.046 | 0.079 | 0.019 |
| 100 | 0.011 | 0.013 | 0.021 | 0.011 | 0.011 | 0.013 | 0.021 | 0.011 |
| 30 | 4 | 0.210 | 0.264 | 0.368 | 0.127 | 0.113 | 0.156 | 0.221 | 0.072 |
| 10 | 0.063 | 0.087 | 0.158 | 0.031 | 0.048 | 0.066 | 0.133 | 0.027 |
| 30 | 0.007 | 0.009 | 0.019 | 0.007 | 0.007 | 0.009 | 0.018 | 0.007 |
| 50 | 0.005 | 0.004 | 0.005 | 0.006 | 0.005 | 0.004 | 0.005 | 0.006 |
| 100 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 4 | 0.107 | 0.150 | 0.223 | 0.058 | 0.053 | 0.065 | 0.101 | 0.035 |
| 10 | 0.031 | 0.044 | 0.065 | 0.017 | 0.024 | 0.034 | 0.056 | 0.014 |
| 30 | 0.004 | 0.004 | 0.007 | 0.006 | 0.004 | 0.004 | 0.006 | 0.006 |
| 50 | 0.003 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.003 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.054 | 0.081 | 0.131 | 0.026 | 0.019 | 0.025 | 0.041 | 0.014 |
| 10 | 0.008 | 0.014 | 0.030 | 0.006 | 0.007 | 0.009 | 0.020 | 0.007 |
| 30 | 0.003 | 0.002 | 0.002 | 0.004 | 0.003 | 0.002 | 0.002 | 0.004 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |

Table S29 RBIAS for after Model Selection when True Model was M3

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | **0.101** | 0.094 | 0.087 | **0.110** | **0.112** | **0.106** | 0.098 | **0.124** |
| 10 | **0.151** | **0.147** | **0.144** | **0.158** | **0.153** | **0.149** | **0.144** | **0.162** |
| 30 | **0.170** | **0.165** | **0.160** | **0.181** | **0.170** | **0.166** | **0.161** | **0.182** |
| 50 | **0.176** | **0.169** | **0.162** | **0.190** | **0.177** | **0.170** | **0.162** | **0.191** |
| 100 | **0.205** | **0.197** | **0.180** | **0.215** | **0.206** | **0.198** | **0.181** | **0.215** |
| 30 | 4 | 0.021 | 0.019 | 0.015 | 0.026 | 0.028 | 0.026 | 0.021 | 0.031 |
| 10 | 0.043 | 0.042 | 0.041 | 0.045 | 0.044 | 0.043 | 0.041 | 0.047 |
| 30 | 0.046 | 0.044 | 0.041 | 0.050 | 0.046 | 0.044 | 0.041 | 0.050 |
| 50 | 0.057 | 0.055 | 0.051 | 0.059 | 0.057 | 0.056 | 0.051 | 0.059 |
| 100 | 0.063 | 0.062 | 0.062 | 0.064 | 0.063 | 0.062 | 0.062 | 0.064 |
| 50 | 4 | 0.014 | 0.012 | 0.010 | 0.019 | 0.022 | 0.019 | 0.015 | 0.025 |
| 10 | 0.029 | 0.028 | 0.027 | 0.032 | 0.031 | 0.029 | 0.028 | 0.033 |
| 30 | 0.031 | 0.029 | 0.027 | 0.033 | 0.031 | 0.030 | 0.027 | 0.033 |
| 50 | 0.032 | 0.032 | 0.030 | 0.033 | 0.032 | 0.032 | 0.030 | 0.033 |
| 100 | 0.037 | 0.036 | 0.036 | 0.037 | 0.037 | 0.036 | 0.036 | 0.037 |
| 100 | 4 | 0.013 | 0.012 | 0.011 | 0.016 | 0.017 | 0.016 | 0.014 | 0.019 |
| 10 | 0.012 | 0.011 | 0.011 | 0.013 | 0.013 | 0.012 | 0.011 | 0.014 |
| 30 | 0.016 | 0.015 | 0.014 | 0.016 | 0.016 | 0.016 | 0.015 | 0.016 |
| 50 | 0.017 | 0.017 | 0.017 | 0.018 | 0.017 | 0.017 | 0.017 | 0.018 |
| 100 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 |
| 0.09 | 10 | 4 | 0.079 | 0.073 | 0.051 | 0.085 | 0.090 | 0.084 | 0.070 | 0.098 |
| 10 | **0.159** | **0.155** | **0.145** | **0.167** | **0.163** | **0.158** | **0.152** | **0.171** |
| 30 | **0.223** | **0.223** | **0.221** | **0.224** | **0.223** | **0.223** | **0.221** | **0.225** |
| 50 | **0.226** | **0.226** | **0.225** | **0.227** | **0.226** | **0.226** | **0.225** | **0.227** |
| 100 | **0.231** | **0.231** | **0.230** | **0.234** | **0.231** | **0.231** | **0.230** | **0.234** |
| 30 | 4 | 0.022 | 0.021 | 0.017 | 0.027 | 0.028 | 0.025 | 0.024 | 0.031 |
| 10 | 0.061 | 0.060 | 0.058 | 0.062 | 0.062 | 0.061 | 0.059 | 0.063 |
| 30 | 0.056 | 0.056 | 0.056 | 0.057 | 0.056 | 0.056 | 0.056 | 0.057 |
| 50 | 0.060 | 0.060 | 0.059 | 0.061 | 0.060 | 0.060 | 0.059 | 0.061 |
| 100 | 0.062 | 0.062 | 0.062 | 0.063 | 0.062 | 0.062 | 0.062 | 0.063 |
| 50 | 4 | 0.007 | 0.006 | 0.005 | 0.011 | 0.013 | 0.011 | 0.008 | 0.015 |
| 10 | 0.033 | 0.033 | 0.032 | 0.034 | 0.034 | 0.033 | 0.033 | 0.035 |
| 30 | 0.033 | 0.033 | 0.033 | 0.034 | 0.034 | 0.033 | 0.033 | 0.034 |
| 50 | 0.037 | 0.037 | 0.037 | 0.038 | 0.037 | 0.037 | 0.037 | 0.038 |
| 100 | 0.035 | 0.035 | 0.035 | 0.036 | 0.035 | 0.035 | 0.035 | 0.036 |
| 100 | 4 | 0.014 | 0.013 | 0.012 | 0.016 | 0.017 | 0.016 | 0.014 | 0.018 |
| 10 | 0.013 | 0.013 | 0.012 | 0.013 | 0.013 | 0.013 | 0.013 | 0.014 |
| 30 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 |
| 50 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 |
| 100 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 |
| 0.25 | 10 | 4 | **0.145** | **0.141** | **0.134** | **0.156** | **0.155** | **0.151** | **0.143** | **0.161** |
| 10 | **0.191** | **0.191** | **0.187** | **0.194** | **0.192** | **0.191** | **0.190** | **0.195** |
| 30 | **0.235** | **0.235** | **0.235** | **0.237** | **0.236** | **0.235** | **0.235** | **0.237** |
| 50 | **0.227** | **0.227** | **0.227** | **0.228** | **0.227** | **0.227** | **0.227** | **0.229** |
| 100 | **0.235** | **0.235** | **0.235** | **0.236** | **0.235** | **0.235** | **0.235** | **0.236** |
| 30 | 4 | 0.044 | 0.042 | 0.038 | 0.049 | 0.051 | 0.049 | 0.046 | 0.053 |
| 10 | 0.057 | 0.056 | 0.056 | 0.058 | 0.057 | 0.057 | 0.056 | 0.059 |
| 30 | 0.065 | 0.064 | 0.064 | 0.066 | 0.065 | 0.065 | 0.064 | 0.066 |
| 50 | 0.064 | 0.064 | 0.064 | 0.065 | 0.064 | 0.064 | 0.064 | 0.065 |
| 100 | 0.066 | 0.066 | 0.066 | 0.067 | 0.066 | 0.066 | 0.066 | 0.067 |
| 50 | 4 | 0.013 | 0.011 | 0.011 | 0.017 | 0.017 | 0.016 | 0.014 | 0.019 |
| 10 | 0.028 | 0.028 | 0.028 | 0.029 | 0.029 | 0.028 | 0.028 | 0.030 |
| 30 | 0.038 | 0.038 | 0.038 | 0.039 | 0.038 | 0.038 | 0.038 | 0.039 |
| 50 | 0.036 | 0.036 | 0.036 | 0.037 | 0.036 | 0.036 | 0.036 | 0.037 |
| 100 | 0.038 | 0.038 | 0.038 | 0.039 | 0.038 | 0.038 | 0.038 | 0.039 |
| 100 | 4 | 0.018 | 0.017 | 0.015 | 0.019 | 0.020 | 0.019 | 0.018 | 0.020 |
| 10 | 0.021 | 0.021 | 0.021 | 0.022 | 0.022 | 0.022 | 0.021 | 0.023 |
| 30 | 0.017 | 0.016 | 0.016 | 0.017 | 0.017 | 0.016 | 0.016 | 0.017 |
| 50 | 0.018 | 0.017 | 0.017 | 0.018 | 0.018 | 0.018 | 0.017 | 0.018 |
| 100 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 |

Note. Results with RBIAS outside [-0.1, 0.1] are boldfaced.

Table S30 MAE for after Model Selection when True Model was M3

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 0.049 | 0.048 | 0.047 | 0.051 | 0.051 | 0.050 | 0.048 | 0.052 |
| 10 | 0.026 | 0.025 | 0.025 | 0.027 | 0.026 | 0.026 | 0.025 | 0.028 |
| 30 | 0.018 | 0.017 | 0.016 | 0.019 | 0.018 | 0.017 | 0.016 | 0.020 |
| 50 | 0.016 | 0.015 | 0.014 | 0.018 | 0.016 | 0.015 | 0.014 | 0.019 |
| 100 | 0.020 | 0.019 | 0.016 | 0.022 | 0.020 | 0.019 | 0.016 | 0.022 |
| 30 | 4 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 |
| 10 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 30 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 4 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.010 |
| 10 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 10 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.09 | 10 | 4 | 0.061 | 0.059 | 0.059 | 0.060 | 0.061 | 0.060 | 0.060 | 0.062 |
| 10 | 0.034 | 0.033 | 0.032 | 0.035 | 0.035 | 0.034 | 0.032 | 0.036 |
| 30 | 0.027 | 0.027 | 0.027 | 0.027 | 0.027 | 0.027 | 0.027 | 0.027 |
| 50 | 0.026 | 0.026 | 0.026 | 0.026 | 0.026 | 0.026 | 0.026 | 0.026 |
| 100 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 |
| 30 | 4 | 0.020 | 0.020 | 0.021 | 0.019 | 0.019 | 0.020 | 0.020 | 0.019 |
| 10 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
| 30 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 |
| 100 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 4 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 |
| 10 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 10 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.25 | 10 | 4 | 0.074 | 0.075 | 0.077 | 0.074 | 0.073 | 0.074 | 0.076 | 0.073 |
| 10 | 0.041 | 0.040 | 0.041 | 0.041 | 0.041 | 0.041 | 0.040 | 0.041 |
| 30 | 0.032 | 0.032 | 0.031 | 0.032 | 0.032 | 0.032 | 0.031 | 0.032 |
| 50 | 0.027 | 0.026 | 0.026 | 0.027 | 0.027 | 0.026 | 0.026 | 0.027 |
| 100 | 0.026 | 0.026 | 0.026 | 0.026 | 0.026 | 0.026 | 0.026 | 0.026 |
| 30 | 4 | 0.026 | 0.027 | 0.027 | 0.025 | 0.025 | 0.025 | 0.026 | 0.025 |
| 10 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.008 |
| 30 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 50 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 100 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 4 | 0.012 | 0.012 | 0.013 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 |
| 10 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 30 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 10 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Table S31 RBIAS for after Model Selection when True Model was M3

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | **3.791** | **4.204** | **5.080** | **3.267** | **3.242** | **3.446** | **4.124** | **2.707** |
| 10 | **2.080** | **2.247** | **3.025** | **1.728** | **1.872** | **2.220** | **2.469** | **1.571** |
| 30 | **0.978** | **1.187** | **1.513** | **0.684** | **0.945** | **1.148** | **1.518** | **0.658** |
| 50 | **0.649** | **0.797** | **1.106** | **0.413** | **0.631** | **0.773** | **1.099** | **0.399** |
| 100 | **0.309** | **0.377** | **0.537** | **0.221** | **0.305** | **0.373** | **0.532** | **0.220** |
| 30 | 4 | **1.739** | **1.986** | **2.320** | **1.394** | **1.271** | **1.398** | **1.780** | **1.030** |
| 10 | **0.875** | **1.109** | **1.270** | **0.594** | **0.716** | **0.889** | **1.197** | **0.470** |
| 30 | **0.242** | **0.341** | **0.564** | 0.085 | **0.218** | **0.314** | **0.513** | 0.071 |
| 50 | 0.087 | **0.131** | **0.228** | 0.041 | 0.086 | **0.124** | **0.223** | 0.038 |
| 100 | 0.051 | 0.053 | 0.068 | 0.049 | 0.051 | 0.053 | 0.068 | 0.048 |
| 50 | 4 | **1.129** | **1.346** | **1.471** | **0.851** | **0.702** | **0.853** | **1.119** | **0.600** |
| 10 | **0.581** | **0.752** | **1.138** | **0.295** | **0.403** | **0.564** | **0.886** | **0.227** |
| 30 | 0.089 | **0.153** | **0.294** | –0.003 | 0.071 | **0.141** | **0.282** | –0.017 |
| 50 | 0.007 | 0.031 | 0.086 | –0.010 | 0.004 | 0.026 | 0.078 | –0.011 |
| 100 | 0.020 | 0.019 | 0.019 | 0.020 | 0.020 | 0.019 | 0.019 | 0.020 |
| 100 | 4 | **0.708** | **0.847** | **1.145** | **0.483** | **0.333** | **0.426** | **0.602** | **0.249** |
| 10 | **0.278** | **0.387** | **0.614** | 0.094 | **0.159** | **0.265** | **0.429** | 0.031 |
| 30 | –0.019 | 0.009 | 0.078 | –0.043 | –0.022 | –0.003 | 0.066 | –0.049 |
| 50 | 0.002 | 0.003 | 0.011 | 0.001 | 0.002 | 0.003 | 0.011 | 0.001 |
| 100 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |
| 0.09 | 10 | 4 | **0.779** | **0.887** | **1.176** | **0.623** | **0.605** | **0.717** | **0.887** | **0.483** |
| 10 | **0.374** | **0.446** | **0.591** | **0.262** | **0.308** | **0.390** | **0.507** | **0.224** |
| 30 | **0.218** | **0.221** | **0.233** | **0.218** | **0.218** | **0.218** | **0.230** | **0.218** |
| 50 | **0.241** | **0.240** | **0.239** | **0.242** | **0.241** | **0.240** | **0.239** | **0.242** |
| 100 | **0.244** | **0.244** | **0.243** | **0.245** | **0.244** | **0.244** | **0.243** | **0.245** |
| 30 | 4 | **0.230** | **0.288** | **0.405** | **0.123** | 0.090 | **0.131** | **0.241** | 0.047 |
| 10 | 0.050 | 0.059 | 0.098 | 0.035 | 0.042 | 0.043 | 0.070 | 0.032 |
| 30 | 0.061 | 0.061 | 0.060 | 0.062 | 0.061 | 0.061 | 0.060 | 0.062 |
| 50 | 0.063 | 0.062 | 0.062 | 0.064 | 0.063 | 0.062 | 0.062 | 0.064 |
| 100 | 0.064 | 0.064 | 0.063 | 0.065 | 0.064 | 0.064 | 0.063 | 0.065 |
| 50 | 4 | 0.062 | **0.100** | **0.170** | 0.011 | –0.004 | 0.015 | 0.047 | –0.019 |
| 10 | 0.027 | 0.027 | 0.033 | 0.029 | 0.028 | 0.028 | 0.028 | 0.031 |
| 30 | 0.040 | 0.039 | 0.039 | 0.041 | 0.040 | 0.039 | 0.039 | 0.041 |
| 50 | 0.040 | 0.038 | 0.030 | 0.041 | 0.040 | 0.036 | 0.031 | 0.042 |
| 100 | 0.037 | 0.037 | 0.037 | 0.038 | 0.037 | 0.037 | 0.037 | 0.038 |
| 100 | 4 | –0.002 | 0.010 | 0.048 | –0.015 | –0.020 | –0.018 | –0.011 | –0.026 |
| 10 | 0.010 | 0.009 | 0.008 | 0.012 | 0.011 | 0.010 | 0.009 | 0.013 |
| 30 | 0.019 | 0.019 | 0.019 | 0.020 | 0.019 | 0.019 | 0.019 | 0.020 |
| 50 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 |
| 100 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 |
| 0.25 | 10 | 4 | **0.338** | **0.397** | **0.494** | **0.267** | **0.263** | **0.290** | **0.395** | **0.215** |
| 10 | **0.210** | **0.213** | **0.241** | **0.207** | **0.209** | **0.210** | **0.224** | **0.208** |
| 30 | **0.227** | **0.226** | **0.226** | **0.229** | **0.227** | **0.226** | **0.226** | **0.229** |
| 50 | **0.231** | **0.230** | **0.230** | **0.232** | **0.231** | **0.230** | **0.230** | **0.232** |
| 100 | **0.229** | **0.229** | **0.229** | **0.231** | **0.229** | **0.229** | **0.229** | **0.231** |
| 30 | 4 | 0.060 | 0.067 | 0.092 | 0.055 | 0.055 | 0.057 | 0.062 | 0.050 |
| 10 | 0.060 | 0.059 | 0.057 | 0.062 | 0.061 | 0.060 | 0.058 | 0.063 |
| 30 | 0.062 | 0.061 | 0.061 | 0.063 | 0.062 | 0.061 | 0.061 | 0.063 |
| 50 | 0.065 | 0.064 | 0.064 | 0.066 | 0.065 | 0.064 | 0.064 | 0.066 |
| 100 | 0.062 | 0.062 | 0.062 | 0.063 | 0.062 | 0.062 | 0.062 | 0.063 |
| 50 | 4 | 0.029 | 0.028 | 0.028 | 0.033 | 0.036 | 0.034 | 0.031 | 0.037 |
| 10 | 0.040 | 0.039 | 0.038 | 0.042 | 0.041 | 0.040 | 0.039 | 0.043 |
| 30 | 0.037 | 0.037 | 0.037 | 0.039 | 0.038 | 0.037 | 0.037 | 0.039 |
| 50 | 0.036 | 0.036 | 0.036 | 0.037 | 0.036 | 0.036 | 0.036 | 0.037 |
| 100 | 0.038 | 0.037 | 0.037 | 0.038 | 0.038 | 0.037 | 0.037 | 0.038 |
| 100 | 4 | 0.025 | 0.023 | 0.021 | 0.027 | 0.029 | 0.028 | 0.027 | 0.030 |
| 10 | 0.020 | 0.019 | 0.017 | 0.021 | 0.021 | 0.019 | 0.019 | 0.021 |
| 30 | 0.017 | 0.017 | 0.017 | 0.018 | 0.018 | 0.017 | 0.017 | 0.018 |
| 50 | 0.020 | 0.020 | 0.019 | 0.020 | 0.020 | 0.020 | 0.019 | 0.020 |
| 100 | 0.017 | 0.017 | 0.017 | 0.019 | 0.017 | 0.017 | 0.017 | 0.019 |

Note. Results with RBIAS outside [-0.1, 0.1] are boldfaced.

Table S32 MSE for after Model Selection when True Model was M3

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 0.166 | 0.201 | 0.289 | 0.126 | 0.124 | 0.138 | 0.194 | 0.090 |
| 10 | 0.048 | 0.055 | 0.094 | 0.035 | 0.040 | 0.054 | 0.067 | 0.030 |
| 30 | 0.011 | 0.015 | 0.024 | 0.007 | 0.010 | 0.014 | 0.024 | 0.006 |
| 50 | 0.005 | 0.007 | 0.013 | 0.003 | 0.005 | 0.007 | 0.013 | 0.003 |
| 100 | 0.002 | 0.002 | 0.003 | 0.001 | 0.002 | 0.002 | 0.003 | 0.001 |
| 30 | 4 | 0.035 | 0.044 | 0.058 | 0.024 | 0.021 | 0.025 | 0.037 | 0.016 |
| 10 | 0.009 | 0.014 | 0.020 | 0.005 | 0.007 | 0.010 | 0.016 | 0.004 |
| 30 | 0.001 | 0.002 | 0.003 | 0.001 | 0.001 | 0.002 | 0.003 | 0.001 |
| 50 | 0.000 | 0.000 | 0.001 | 0.001 | 0.000 | 0.000 | 0.001 | 0.001 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 50 | 4 | 0.016 | 0.022 | 0.025 | 0.011 | 0.008 | 0.011 | 0.016 | 0.007 |
| 10 | 0.005 | 0.007 | 0.013 | 0.002 | 0.003 | 0.004 | 0.009 | 0.002 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 4 | 0.008 | 0.010 | 0.016 | 0.005 | 0.003 | 0.004 | 0.006 | 0.003 |
| 10 | 0.002 | 0.002 | 0.004 | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 |
| 30 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.09 | 10 | 4 | 0.077 | 0.093 | 0.149 | 0.059 | 0.057 | 0.068 | 0.095 | 0.046 |
| 10 | 0.021 | 0.025 | 0.037 | 0.017 | 0.018 | 0.021 | 0.029 | 0.016 |
| 30 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 50 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
| 100 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 |
| 30 | 4 | 0.014 | 0.016 | 0.022 | 0.013 | 0.013 | 0.013 | 0.014 | 0.013 |
| 10 | 0.004 | 0.003 | 0.003 | 0.004 | 0.004 | 0.004 | 0.003 | 0.004 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 4 | 0.006 | 0.006 | 0.007 | 0.007 | 0.008 | 0.007 | 0.007 | 0.008 |
| 10 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 4 | 0.004 | 0.004 | 0.003 | 0.005 | 0.005 | 0.005 | 0.004 | 0.005 |
| 10 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 30 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.25 | 10 | 4 | 0.065 | 0.073 | 0.094 | 0.060 | 0.059 | 0.061 | 0.074 | 0.058 |
| 10 | 0.280 | 0.289 | 0.295 | 0.245 | 0.264 | 0.282 | 0.294 | 0.229 |
| 30 | 0.251 | 0.258 | 0.262 | 0.224 | 0.250 | 0.256 | 0.262 | 0.219 |
| 50 | 0.252 | 0.257 | 0.260 | 0.225 | 0.251 | 0.257 | 0.260 | 0.223 |
| 100 | 0.253 | 0.254 | 0.257 | 0.232 | 0.253 | 0.254 | 0.257 | 0.232 |
| 30 | 4 | 0.016 | 0.015 | 0.014 | 0.017 | 0.017 | 0.017 | 0.016 | 0.018 |
| 10 | 0.240 | 0.249 | 0.261 | 0.199 | 0.225 | 0.238 | 0.255 | 0.180 |
| 30 | 0.243 | 0.249 | 0.254 | 0.209 | 0.238 | 0.247 | 0.253 | 0.196 |
| 50 | 0.246 | 0.253 | 0.257 | 0.219 | 0.246 | 0.253 | 0.257 | 0.216 |
| 100 | 0.242 | 0.250 | 0.252 | 0.206 | 0.241 | 0.249 | 0.252 | 0.206 |
| 50 | 4 | 0.008 | 0.008 | 0.007 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 10 | 0.240 | 0.254 | 0.260 | 0.196 | 0.216 | 0.239 | 0.253 | 0.167 |
| 30 | 0.241 | 0.249 | 0.249 | 0.203 | 0.238 | 0.247 | 0.249 | 0.195 |
| 50 | 0.242 | 0.249 | 0.250 | 0.212 | 0.240 | 0.249 | 0.250 | 0.208 |
| 100 | 0.244 | 0.250 | 0.252 | 0.222 | 0.244 | 0.250 | 0.252 | 0.220 |
| 100 | 4 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 10 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 30 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Table S33 RBIAS for after Model Selection when True Model was M4

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 0.078 | 0.073 | 0.063 | 0.094 | 0.095 | 0.088 | 0.077 | **0.104** |
| 10 | **0.135** | **0.131** | **0.127** | **0.145** | **0.139** | **0.134** | **0.128** | **0.149** |
| 30 | **0.169** | **0.161** | **0.154** | **0.183** | **0.170** | **0.162** | **0.154** | **0.185** |
| 50 | **0.198** | **0.189** | **0.172** | **0.216** | **0.199** | **0.190** | **0.172** | **0.216** |
| 100 | **0.242** | **0.233** | **0.212** | **0.252** | **0.243** | **0.234** | **0.212** | **0.252** |
| 30 | 4 | 0.019 | 0.014 | 0.009 | 0.024 | 0.027 | 0.024 | 0.019 | 0.032 |
| 10 | 0.041 | 0.039 | 0.037 | 0.045 | 0.042 | 0.041 | 0.038 | 0.047 |
| 30 | 0.056 | 0.053 | 0.048 | 0.061 | 0.057 | 0.054 | 0.049 | 0.062 |
| 50 | 0.064 | 0.061 | 0.055 | 0.067 | 0.064 | 0.061 | 0.055 | 0.067 |
| 100 | 0.075 | 0.075 | 0.074 | 0.075 | 0.075 | 0.075 | 0.074 | 0.075 |
| 50 | 4 | –0.013 | –0.015 | –0.019 | –0.006 | –0.004 | –0.006 | –0.012 | –0.001 |
| 10 | 0.027 | 0.025 | 0.023 | 0.030 | 0.029 | 0.027 | 0.024 | 0.032 |
| 30 | 0.036 | 0.035 | 0.031 | 0.039 | 0.037 | 0.035 | 0.032 | 0.040 |
| 50 | 0.044 | 0.043 | 0.041 | 0.045 | 0.044 | 0.044 | 0.041 | 0.045 |
| 100 | 0.047 | 0.047 | 0.047 | 0.047 | 0.047 | 0.047 | 0.047 | 0.047 |
| 100 | 4 | –0.001 | –0.003 | –0.006 | 0.003 | 0.005 | 0.003 | 0.000 | 0.006 |
| 10 | 0.010 | 0.008 | 0.007 | 0.012 | 0.011 | 0.010 | 0.008 | 0.012 |
| 30 | 0.022 | 0.021 | 0.020 | 0.023 | 0.022 | 0.022 | 0.021 | 0.023 |
| 50 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 |
| 100 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 |
| 0.09 | 10 | 4 | 0.084 | 0.075 | 0.051 | 0.097 | 0.098 | 0.092 | 0.078 | **0.107** |
| 10 | **0.171** | **0.164** | **0.150** | **0.180** | **0.176** | **0.171** | **0.156** | **0.184** |
| 30 | **0.222** | **0.220** | **0.214** | **0.227** | **0.223** | **0.220** | **0.215** | **0.228** |
| 50 | **0.249** | **0.244** | **0.238** | **0.255** | **0.249** | **0.245** | **0.239** | **0.255** |
| 100 | **0.265** | **0.262** | **0.252** | **0.267** | **0.265** | **0.262** | **0.252** | **0.267** |
| 30 | 4 | 0.006 | 0.000 | –0.008 | 0.013 | 0.015 | 0.013 | 0.007 | 0.018 |
| 10 | 0.052 | 0.051 | 0.049 | 0.054 | 0.053 | 0.052 | 0.051 | 0.056 |
| 30 | 0.069 | 0.068 | 0.065 | 0.071 | 0.069 | 0.068 | 0.066 | 0.071 |
| 50 | 0.078 | 0.077 | 0.075 | 0.079 | 0.078 | 0.077 | 0.075 | 0.079 |
| 100 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 50 | 4 | 0.009 | 0.007 | 0.002 | 0.013 | 0.015 | 0.013 | 0.011 | 0.017 |
| 10 | 0.024 | 0.024 | 0.022 | 0.027 | 0.026 | 0.025 | 0.024 | 0.028 |
| 30 | 0.041 | 0.040 | 0.038 | 0.042 | 0.041 | 0.040 | 0.039 | 0.042 |
| 50 | 0.046 | 0.046 | 0.045 | 0.046 | 0.046 | 0.046 | 0.045 | 0.046 |
| 100 | 0.047 | 0.047 | 0.047 | 0.047 | 0.047 | 0.047 | 0.047 | 0.047 |
| 100 | 4 | 0.003 | 0.001 | –0.001 | 0.005 | 0.006 | 0.006 | 0.004 | 0.007 |
| 10 | 0.017 | 0.017 | 0.016 | 0.018 | 0.018 | 0.018 | 0.017 | 0.019 |
| 30 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 |
| 50 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 |
| 100 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 |
| 0.25 | 10 | 4 | **0.133** | **0.124** | **0.110** | **0.144** | **0.146** | **0.140** | **0.126** | **0.153** |
| 10 | **0.191** | **0.190** | **0.185** | **0.197** | **0.195** | **0.191** | **0.188** | **0.199** |
| 30 | **0.243** | **0.240** | **0.236** | **0.249** | **0.244** | **0.240** | **0.236** | **0.250** |
| 50 | **0.252** | **0.248** | **0.241** | **0.257** | **0.253** | **0.248** | **0.241** | **0.257** |
| 100 | **0.264** | **0.262** | **0.255** | **0.266** | **0.265** | **0.262** | **0.255** | **0.266** |
| 30 | 4 | 0.043 | 0.040 | 0.039 | 0.046 | 0.049 | 0.046 | 0.045 | 0.053 |
| 10 | 0.068 | 0.067 | 0.065 | 0.070 | 0.070 | 0.069 | 0.067 | 0.072 |
| 30 | 0.077 | 0.075 | 0.073 | 0.078 | 0.077 | 0.076 | 0.074 | 0.078 |
| 50 | 0.077 | 0.077 | 0.075 | 0.078 | 0.077 | 0.077 | 0.075 | 0.078 |
| 100 | 0.081 | 0.081 | 0.081 | 0.081 | 0.081 | 0.081 | 0.081 | 0.081 |
| 50 | 4 | 0.011 | 0.009 | 0.005 | 0.015 | 0.015 | 0.014 | 0.012 | 0.017 |
| 10 | 0.010 | 0.008 | 0.006 | 0.013 | 0.014 | 0.012 | 0.010 | 0.015 |
| 30 | 0.042 | 0.042 | 0.040 | 0.043 | 0.042 | 0.042 | 0.041 | 0.043 |
| 50 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 |
| 100 | 0.046 | 0.046 | 0.046 | 0.046 | 0.046 | 0.046 | 0.046 | 0.046 |
| 100 | 4 | 0.015 | 0.014 | 0.011 | 0.017 | 0.018 | 0.017 | 0.016 | 0.018 |
| 10 | 0.022 | 0.021 | 0.020 | 0.023 | 0.023 | 0.023 | 0.022 | 0.023 |
| 30 | 0.024 | 0.024 | 0.024 | 0.024 | 0.024 | 0.024 | 0.024 | 0.024 |
| 50 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 |
| 100 | 0.024 | 0.024 | 0.024 | 0.024 | 0.024 | 0.024 | 0.024 | 0.024 |

Note. Results with RBIAS outside [-0.1, 0.1] are boldfaced.

Table S34 MAE for after Model Selection when True Model was M4

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 0.051 | 0.050 | 0.048 | 0.051 | 0.052 | 0.051 | 0.051 | 0.053 |
| 10 | 0.028 | 0.027 | 0.026 | 0.029 | 0.028 | 0.027 | 0.026 | 0.029 |
| 30 | 0.018 | 0.017 | 0.016 | 0.021 | 0.019 | 0.017 | 0.016 | 0.021 |
| 50 | 0.021 | 0.019 | 0.016 | 0.024 | 0.021 | 0.019 | 0.016 | 0.024 |
| 100 | 0.027 | 0.025 | 0.021 | 0.029 | 0.027 | 0.026 | 0.021 | 0.029 |
| 30 | 4 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 |
| 10 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 |
| 30 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 |
| 50 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 |
| 100 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 4 | 0.010 | 0.010 | 0.011 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 |
| 10 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 10 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.09 | 10 | 4 | 0.056 | 0.056 | 0.053 | 0.056 | 0.056 | 0.056 | 0.056 | 0.057 |
| 10 | 0.035 | 0.033 | 0.031 | 0.037 | 0.036 | 0.035 | 0.033 | 0.038 |
| 30 | 0.028 | 0.027 | 0.026 | 0.029 | 0.028 | 0.027 | 0.026 | 0.029 |
| 50 | 0.031 | 0.030 | 0.028 | 0.032 | 0.031 | 0.030 | 0.028 | 0.032 |
| 100 | 0.032 | 0.032 | 0.029 | 0.033 | 0.032 | 0.032 | 0.029 | 0.033 |
| 30 | 4 | 0.022 | 0.022 | 0.023 | 0.022 | 0.021 | 0.022 | 0.022 | 0.021 |
| 10 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 |
| 30 | 0.004 | 0.004 | 0.003 | 0.004 | 0.004 | 0.004 | 0.003 | 0.004 |
| 50 | 0.004 | 0.003 | 0.003 | 0.004 | 0.004 | 0.003 | 0.003 | 0.004 |
| 100 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 4 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 |
| 10 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 30 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 10 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.25 | 10 | 4 | 0.073 | 0.074 | 0.076 | 0.073 | 0.074 | 0.073 | 0.074 | 0.073 |
| 10 | 0.040 | 0.040 | 0.039 | 0.042 | 0.041 | 0.041 | 0.040 | 0.042 |
| 30 | 0.034 | 0.034 | 0.033 | 0.036 | 0.034 | 0.034 | 0.033 | 0.036 |
| 50 | 0.032 | 0.031 | 0.030 | 0.033 | 0.032 | 0.031 | 0.030 | 0.033 |
| 100 | 0.033 | 0.032 | 0.031 | 0.033 | 0.033 | 0.032 | 0.031 | 0.033 |
| 30 | 4 | 0.028 | 0.029 | 0.029 | 0.028 | 0.028 | 0.028 | 0.029 | 0.028 |
| 10 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 30 | 0.004 | 0.004 | 0.004 | 0.005 | 0.005 | 0.004 | 0.004 | 0.005 |
| 50 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 100 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 4 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 |
| 10 | 0.005 | 0.005 | 0.004 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 30 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 10 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Table S35 RBIAS for after Model Selection when True Model was M4

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | **1.048** | **1.232** | **1.472** | **0.904** | **0.897** | **1.000** | **1.154** | **0.802** |
| 10 | **0.788** | **0.890** | **1.145** | **0.611** | **0.732** | **0.829** | **0.978** | **0.564** |
| 30 | **0.364** | **0.451** | **0.536** | **0.235** | **0.357** | **0.436** | **0.544** | **0.227** |
| 50 | **0.256** | **0.310** | **0.392** | **0.163** | **0.251** | **0.308** | **0.392** | **0.163** |
| 100 | **0.128** | **0.161** | **0.218** | 0.094 | **0.127** | **0.159** | **0.218** | 0.093 |
| 30 | 4 | **0.633** | **0.742** | **0.985** | **0.500** | **0.450** | **0.508** | **0.607** | **0.356** |
| 10 | **0.347** | **0.443** | **0.548** | **0.211** | **0.283** | **0.360** | **0.546** | **0.174** |
| 30 | 0.082 | **0.122** | **0.205** | 0.026 | 0.078 | **0.116** | **0.197** | 0.019 |
| 50 | 0.030 | 0.052 | 0.090 | 0.003 | 0.030 | 0.050 | 0.085 | 0.002 |
| 100 | 0.026 | 0.027 | 0.031 | 0.024 | 0.026 | 0.026 | 0.031 | 0.024 |
| 50 | 4 | **0.450** | **0.523** | **0.620** | **0.345** | **0.299** | **0.354** | **0.441** | **0.229** |
| 10 | **0.241** | **0.298** | **0.409** | **0.109** | **0.174** | **0.245** | **0.370** | 0.075 |
| 30 | 0.024 | 0.056 | **0.106** | –0.015 | 0.019 | 0.049 | 0.097 | –0.022 |
| 50 | 0.009 | 0.016 | 0.036 | 0.001 | 0.009 | 0.015 | 0.033 | 0.001 |
| 100 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 | 0.019 |
| 100 | 4 | **0.302** | **0.399** | **0.594** | **0.189** | **0.134** | **0.180** | **0.269** | 0.085 |
| 10 | 0.092 | **0.147** | **0.234** | 0.007 | 0.049 | 0.098 | **0.171** | –0.017 |
| 30 | 0.000 | 0.010 | 0.029 | –0.013 | –0.002 | 0.008 | 0.024 | –0.013 |
| 50 | 0.002 | 0.002 | 0.004 | 0.001 | 0.002 | 0.002 | 0.003 | 0.001 |
| 100 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 0.09 | 10 | 4 | **1.136** | **1.269** | **1.406** | **1.037** | **1.057** | **1.104** | **1.218** | **0.901** |
| 10 | **0.718** | **0.829** | **1.020** | **0.590** | **0.655** | **0.716** | **0.895** | **0.528** |
| 30 | **0.359** | **0.405** | **0.524** | **0.249** | **0.347** | **0.404** | **0.520** | **0.232** |
| 50 | **0.234** | **0.282** | **0.377** | **0.150** | **0.232** | **0.278** | **0.377** | **0.148** |
| 100 | **0.146** | **0.165** | **0.216** | **0.121** | **0.145** | **0.165** | **0.215** | **0.121** |
| 30 | 4 | **0.529** | **0.562** | **0.755** | **0.438** | **0.394** | **0.434** | **0.497** | **0.340** |
| 10 | **0.295** | **0.368** | **0.452** | **0.191** | **0.228** | **0.287** | **0.387** | **0.131** |
| 30 | 0.085 | **0.120** | **0.164** | 0.033 | 0.076 | **0.105** | **0.159** | 0.023 |
| 50 | 0.026 | 0.043 | 0.072 | 0.005 | 0.023 | 0.039 | 0.069 | 0.004 |
| 100 | 0.038 | 0.039 | 0.040 | 0.038 | 0.038 | 0.039 | 0.040 | 0.038 |
| 50 | 4 | **0.382** | **0.424** | **0.503** | **0.285** | **0.248** | **0.291** | **0.358** | **0.199** |
| 10 | **0.129** | **0.183** | **0.320** | 0.051 | 0.073 | **0.118** | **0.208** | 0.009 |
| 30 | 0.023 | 0.043 | 0.073 | –0.013 | 0.015 | 0.032 | 0.068 | –0.015 |
| 50 | 0.011 | 0.014 | 0.025 | 0.004 | 0.010 | 0.013 | 0.022 | 0.003 |
| 100 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 |
| 100 | 4 | **0.148** | **0.178** | **0.277** | 0.095 | 0.068 | 0.086 | **0.121** | 0.040 |
| 10 | 0.022 | 0.049 | **0.124** | –0.027 | –0.024 | –0.002 | 0.052 | –0.068 |
| 30 | –0.004 | 0.002 | 0.016 | –0.008 | –0.006 | –0.001 | 0.008 | –0.010 |
| 50 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 |
| 100 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
| 0.25 | 10 | 4 | **1.144** | **1.207** | **1.388** | **1.000** | **1.002** | **1.083** | **1.207** | **0.908** |
| 10 | **0.646** | **0.722** | **0.885** | **0.516** | **0.597** | **0.678** | **0.836** | **0.474** |
| 30 | **0.338** | **0.391** | **0.480** | **0.230** | **0.327** | **0.390** | **0.460** | **0.223** |
| 50 | **0.222** | **0.271** | **0.344** | **0.160** | **0.218** | **0.266** | **0.344** | **0.157** |
| 100 | **0.156** | **0.176** | **0.215** | **0.136** | **0.155** | **0.176** | **0.215** | **0.135** |
| 30 | 4 | **0.452** | **0.498** | **0.554** | **0.383** | **0.362** | **0.409** | **0.463** | **0.313** |
| 10 | **0.201** | **0.247** | **0.335** | **0.132** | **0.161** | **0.196** | **0.283** | 0.093 |
| 30 | 0.048 | 0.071 | 0.100 | 0.018 | 0.044 | 0.066 | 0.096 | 0.013 |
| 50 | 0.028 | 0.037 | 0.060 | 0.023 | 0.028 | 0.036 | 0.058 | 0.023 |
| 100 | 0.041 | 0.041 | 0.041 | 0.041 | 0.041 | 0.041 | 0.041 | 0.041 |
| 50 | 4 | **0.227** | **0.271** | **0.339** | **0.173** | **0.170** | **0.197** | **0.231** | **0.136** |
| 10 | 0.096 | **0.127** | **0.203** | 0.032 | 0.047 | 0.081 | **0.136** | 0.004 |
| 30 | 0.022 | 0.030 | 0.056 | 0.008 | 0.016 | 0.026 | 0.049 | 0.005 |
| 50 | 0.020 | 0.023 | 0.029 | 0.020 | 0.020 | 0.022 | 0.028 | 0.020 |
| 100 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 |
| 100 | 4 | 0.091 | **0.127** | **0.182** | 0.046 | 0.036 | 0.052 | 0.079 | 0.017 |
| 10 | –0.001 | 0.025 | 0.068 | –0.038 | –0.039 | –0.024 | 0.015 | –0.064 |
| 30 | 0.005 | 0.006 | 0.009 | 0.005 | 0.005 | 0.005 | 0.008 | 0.004 |
| 50 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 |
| 100 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 |

Note. Results with RBIAS outside [-0.1, 0.1] are boldfaced.

Table S36 MAE for after Model Selection when True Model was M4

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 0.527 | 0.692 | 0.951 | 0.398 | 0.391 | 0.479 | 0.612 | 0.320 |
| 10 | 0.286 | 0.364 | 0.570 | 0.184 | 0.253 | 0.316 | 0.428 | 0.162 |
| 30 | 0.066 | 0.094 | 0.131 | 0.035 | 0.063 | 0.089 | 0.133 | 0.034 |
| 50 | 0.035 | 0.046 | 0.071 | 0.023 | 0.034 | 0.046 | 0.072 | 0.023 |
| 100 | 0.013 | 0.016 | 0.023 | 0.012 | 0.013 | 0.016 | 0.023 | 0.012 |
| 30 | 4 | 0.206 | 0.271 | 0.433 | 0.141 | 0.120 | 0.146 | 0.199 | 0.084 |
| 10 | 0.064 | 0.096 | 0.154 | 0.031 | 0.046 | 0.068 | 0.140 | 0.025 |
| 30 | 0.007 | 0.010 | 0.020 | 0.007 | 0.007 | 0.010 | 0.019 | 0.007 |
| 50 | 0.004 | 0.004 | 0.005 | 0.005 | 0.004 | 0.004 | 0.005 | 0.005 |
| 100 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 |
| 50 | 4 | 0.113 | 0.149 | 0.192 | 0.072 | 0.060 | 0.075 | 0.107 | 0.043 |
| 10 | 0.032 | 0.045 | 0.076 | 0.016 | 0.022 | 0.033 | 0.064 | 0.013 |
| 30 | 0.005 | 0.005 | 0.007 | 0.006 | 0.005 | 0.005 | 0.007 | 0.006 |
| 50 | 0.003 | 0.003 | 0.002 | 0.004 | 0.003 | 0.003 | 0.002 | 0.004 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.056 | 0.087 | 0.176 | 0.032 | 0.023 | 0.030 | 0.048 | 0.018 |
| 10 | 0.008 | 0.012 | 0.026 | 0.007 | 0.007 | 0.009 | 0.016 | 0.007 |
| 30 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.003 |
| 50 | 0.002 | 0.002 | 0.001 | 0.002 | 0.002 | 0.002 | 0.001 | 0.002 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 0.09 | 10 | 4 | 0.696 | 0.856 | 0.980 | 0.569 | 0.587 | 0.641 | 0.765 | 0.443 |
| 10 | 0.272 | 0.341 | 0.498 | 0.191 | 0.228 | 0.269 | 0.391 | 0.160 |
| 30 | 0.067 | 0.082 | 0.133 | 0.042 | 0.063 | 0.081 | 0.131 | 0.038 |
| 50 | 0.033 | 0.043 | 0.067 | 0.022 | 0.032 | 0.042 | 0.067 | 0.022 |
| 100 | 0.016 | 0.017 | 0.024 | 0.015 | 0.016 | 0.017 | 0.024 | 0.015 |
| 30 | 4 | 0.171 | 0.181 | 0.289 | 0.124 | 0.104 | 0.122 | 0.145 | 0.083 |
| 10 | 0.057 | 0.077 | 0.106 | 0.033 | 0.040 | 0.054 | 0.082 | 0.024 |
| 30 | 0.009 | 0.010 | 0.015 | 0.008 | 0.008 | 0.010 | 0.014 | 0.009 |
| 50 | 0.005 | 0.005 | 0.005 | 0.006 | 0.005 | 0.005 | 0.005 | 0.006 |
| 100 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 4 | 0.095 | 0.112 | 0.151 | 0.065 | 0.054 | 0.065 | 0.087 | 0.043 |
| 10 | 0.020 | 0.029 | 0.055 | 0.012 | 0.013 | 0.017 | 0.030 | 0.011 |
| 30 | 0.005 | 0.004 | 0.005 | 0.006 | 0.005 | 0.004 | 0.005 | 0.007 |
| 50 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.028 | 0.036 | 0.057 | 0.019 | 0.015 | 0.017 | 0.021 | 0.013 |
| 10 | 0.006 | 0.007 | 0.011 | 0.007 | 0.006 | 0.006 | 0.006 | 0.009 |
| 30 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.004 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 0.25 | 10 | 4 | 0.720 | 0.786 | 1.084 | 0.574 | 0.552 | 0.636 | 0.793 | 0.473 |
| 10 | 0.220 | 0.267 | 0.374 | 0.157 | 0.193 | 0.237 | 0.340 | 0.136 |
| 30 | 0.062 | 0.078 | 0.113 | 0.039 | 0.059 | 0.077 | 0.104 | 0.037 |
| 50 | 0.031 | 0.040 | 0.057 | 0.024 | 0.031 | 0.039 | 0.057 | 0.024 |
| 100 | 0.019 | 0.021 | 0.026 | 0.018 | 0.019 | 0.021 | 0.026 | 0.018 |
| 30 | 4 | 0.132 | 0.151 | 0.185 | 0.105 | 0.096 | 0.112 | 0.133 | 0.079 |
| 10 | 0.033 | 0.041 | 0.064 | 0.023 | 0.025 | 0.031 | 0.049 | 0.019 |
| 30 | 0.006 | 0.007 | 0.008 | 0.007 | 0.006 | 0.007 | 0.008 | 0.008 |
| 50 | 0.005 | 0.005 | 0.005 | 0.006 | 0.005 | 0.005 | 0.005 | 0.006 |
| 100 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 50 | 4 | 0.043 | 0.053 | 0.069 | 0.032 | 0.030 | 0.035 | 0.043 | 0.026 |
| 10 | 0.014 | 0.017 | 0.028 | 0.011 | 0.011 | 0.012 | 0.016 | 0.011 |
| 30 | 0.005 | 0.004 | 0.004 | 0.006 | 0.005 | 0.005 | 0.004 | 0.006 |
| 50 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.019 | 0.023 | 0.031 | 0.016 | 0.015 | 0.015 | 0.017 | 0.014 |
| 10 | 0.006 | 0.006 | 0.006 | 0.007 | 0.007 | 0.006 | 0.005 | 0.009 |
| 30 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |

Table S37 RBIAS for after Model Selection when True Model was M4

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | **3.937** | **4.362** | **4.999** | **3.338** | **3.301** | **3.504** | **4.215** | **2.954** |
| 10 | **2.207** | **2.606** | **3.084** | **1.740** | **1.953** | **2.187** | **2.812** | **1.523** |
| 30 | **0.936** | **1.073** | **1.276** | **0.703** | **0.919** | **1.081** | **1.287** | **0.647** |
| 50 | **0.592** | **0.679** | **0.837** | **0.382** | **0.576** | **0.659** | **0.808** | **0.377** |
| 100 | **0.331** | **0.370** | **0.451** | **0.242** | **0.326** | **0.368** | **0.444** | **0.240** |
| 30 | 4 | **1.638** | **1.847** | **2.423** | **1.310** | **1.213** | **1.331** | **1.581** | **0.997** |
| 10 | **0.854** | **1.021** | **1.360** | **0.546** | **0.704** | **0.861** | **1.176** | **0.417** |
| 30 | **0.252** | **0.326** | **0.419** | 0.086 | **0.214** | **0.295** | **0.397** | 0.062 |
| 50 | 0.096 | **0.150** | **0.203** | 0.026 | 0.091 | **0.141** | **0.212** | 0.016 |
| 100 | 0.049 | 0.055 | 0.072 | 0.046 | 0.049 | 0.055 | 0.072 | 0.046 |
| 50 | 4 | **1.070** | **1.224** | **1.509** | **0.840** | **0.741** | **0.826** | **1.036** | **0.596** |
| 10 | **0.566** | **0.677** | **0.828** | **0.337** | **0.385** | **0.529** | **0.706** | **0.203** |
| 30 | 0.090 | **0.130** | **0.208** | 0.005 | 0.068 | **0.124** | **0.193** | –0.014 |
| 50 | 0.007 | 0.033 | 0.074 | –0.016 | 0.002 | 0.026 | 0.067 | –0.019 |
| 100 | 0.031 | 0.032 | 0.032 | 0.031 | 0.031 | 0.031 | 0.032 | 0.031 |
| 100 | 4 | **0.597** | **0.785** | **0.938** | **0.364** | **0.262** | **0.326** | **0.459** | **0.172** |
| 10 | **0.228** | **0.347** | **0.488** | 0.088 | **0.124** | **0.201** | **0.355** | –0.001 |
| 30 | –0.005 | 0.021 | 0.063 | –0.049 | –0.016 | 0.005 | 0.049 | –0.055 |
| 50 | –0.011 | –0.010 | 0.001 | –0.012 | –0.011 | –0.010 | –0.002 | –0.012 |
| 100 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 |
| 0.09 | 10 | 4 | **0.866** | **0.943** | **1.287** | **0.708** | **0.690** | **0.774** | **0.928** | **0.554** |
| 10 | **0.352** | **0.410** | **0.561** | **0.279** | **0.313** | **0.357** | **0.491** | **0.248** |
| 30 | **0.229** | **0.227** | **0.231** | **0.234** | **0.229** | **0.228** | **0.230** | **0.234** |
| 50 | **0.224** | **0.218** | **0.208** | **0.233** | **0.225** | **0.219** | **0.208** | **0.233** |
| 100 | **0.286** | **0.283** | **0.271** | **0.288** | **0.286** | **0.283** | **0.271** | **0.288** |
| 30 | 4 | **0.186** | **0.247** | **0.354** | **0.105** | 0.077 | **0.112** | **0.190** | 0.034 |
| 10 | 0.025 | 0.044 | 0.072 | 0.013 | 0.019 | 0.024 | 0.052 | 0.012 |
| 30 | 0.064 | 0.061 | 0.057 | 0.067 | 0.064 | 0.062 | 0.057 | 0.067 |
| 50 | 0.073 | 0.071 | 0.067 | 0.074 | 0.073 | 0.072 | 0.068 | 0.074 |
| 100 | 0.079 | 0.079 | 0.079 | 0.079 | 0.079 | 0.079 | 0.079 | 0.079 |
| 50 | 4 | 0.067 | **0.108** | **0.188** | 0.022 | 0.006 | 0.020 | 0.052 | –0.021 |
| 10 | 0.003 | 0.002 | 0.008 | 0.006 | 0.007 | 0.004 | 0.002 | 0.009 |
| 30 | 0.044 | 0.042 | 0.038 | 0.045 | 0.044 | 0.043 | 0.039 | 0.045 |
| 50 | 0.047 | 0.047 | 0.046 | 0.048 | 0.047 | 0.047 | 0.046 | 0.048 |
| 100 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 |
| 100 | 4 | –0.032 | –0.016 | 0.026 | –0.049 | –0.055 | –0.050 | –0.041 | –0.062 |
| 10 | –0.001 | –0.003 | –0.008 | 0.002 | 0.003 | 0.002 | –0.001 | 0.005 |
| 30 | 0.020 | 0.020 | 0.018 | 0.020 | 0.020 | 0.020 | 0.019 | 0.020 |
| 50 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 |
| 100 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 | 0.023 |
| 0.25 | 10 | 4 | **0.306** | **0.356** | **0.469** | **0.224** | **0.219** | **0.262** | **0.343** | **0.182** |
| 10 | **0.199** | **0.202** | **0.222** | **0.196** | **0.192** | **0.195** | **0.211** | **0.198** |
| 30 | **0.229** | **0.224** | **0.215** | **0.236** | **0.230** | **0.224** | **0.216** | **0.236** |
| 50 | **0.252** | **0.247** | **0.237** | **0.258** | **0.253** | **0.247** | **0.237** | **0.258** |
| 100 | **0.270** | **0.267** | **0.259** | **0.272** | **0.270** | **0.267** | **0.259** | **0.272** |
| 30 | 4 | 0.052 | 0.056 | 0.071 | 0.043 | 0.042 | 0.046 | 0.055 | 0.038 |
| 10 | 0.041 | 0.038 | 0.032 | 0.046 | 0.045 | 0.043 | 0.037 | 0.048 |
| 30 | 0.068 | 0.066 | 0.062 | 0.070 | 0.069 | 0.066 | 0.063 | 0.070 |
| 50 | 0.075 | 0.074 | 0.071 | 0.075 | 0.075 | 0.074 | 0.072 | 0.075 |
| 100 | 0.080 | 0.080 | 0.080 | 0.080 | 0.080 | 0.080 | 0.080 | 0.080 |
| 50 | 4 | 0.006 | 0.005 | 0.006 | 0.007 | 0.008 | 0.006 | 0.010 | 0.009 |
| 10 | 0.025 | 0.022 | 0.015 | 0.029 | 0.029 | 0.027 | 0.023 | 0.031 |
| 30 | 0.041 | 0.041 | 0.038 | 0.042 | 0.042 | 0.041 | 0.039 | 0.042 |
| 50 | 0.045 | 0.045 | 0.044 | 0.045 | 0.045 | 0.045 | 0.044 | 0.045 |
| 100 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 | 0.048 |
| 100 | 4 | –0.002 | –0.004 | –0.009 | 0.001 | 0.002 | 0.002 | 0.000 | 0.003 |
| 10 | 0.006 | 0.004 | –0.001 | 0.009 | 0.009 | 0.008 | 0.006 | 0.010 |
| 30 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 |
| 50 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 |
| 100 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 | 0.022 |

Note. Results with RBIAS outside [-0.1, 0.1] are boldfaced.

Table S38 MAE for after Model Selection when True Model was M4

|  | I | J | Method | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOO–50%CI | LOO–70%CI | LOO–90%CI | LOO–point | WAIC–50%CI | WAIC–70%CI | WAIC–90%CI | WAIC–point |
| 0.01 | 10 | 4 | 0.173 | 0.207 | 0.269 | 0.129 | 0.126 | 0.140 | 0.195 | 0.105 |
| 10 | 0.055 | 0.076 | 0.100 | 0.036 | 0.045 | 0.055 | 0.084 | 0.029 |
| 30 | 0.010 | 0.013 | 0.018 | 0.007 | 0.010 | 0.013 | 0.018 | 0.006 |
| 50 | 0.004 | 0.006 | 0.008 | 0.003 | 0.004 | 0.005 | 0.008 | 0.003 |
| 100 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 |
| 30 | 4 | 0.033 | 0.040 | 0.065 | 0.023 | 0.020 | 0.023 | 0.031 | 0.015 |
| 10 | 0.009 | 0.012 | 0.020 | 0.005 | 0.007 | 0.010 | 0.015 | 0.004 |
| 30 | 0.001 | 0.002 | 0.002 | 0.001 | 0.001 | 0.002 | 0.002 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 50 | 4 | 0.014 | 0.018 | 0.026 | 0.010 | 0.008 | 0.009 | 0.014 | 0.006 |
| 10 | 0.004 | 0.005 | 0.007 | 0.002 | 0.003 | 0.004 | 0.006 | 0.002 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 4 | 0.006 | 0.008 | 0.011 | 0.003 | 0.003 | 0.003 | 0.004 | 0.002 |
| 10 | 0.001 | 0.002 | 0.003 | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 |
| 30 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.09 | 10 | 4 | 0.094 | 0.108 | 0.183 | 0.074 | 0.071 | 0.082 | 0.107 | 0.058 |
| 10 | 0.020 | 0.023 | 0.035 | 0.017 | 0.018 | 0.020 | 0.029 | 0.017 |
| 30 | 0.008 | 0.008 | 0.008 | 0.009 | 0.008 | 0.008 | 0.008 | 0.009 |
| 50 | 0.007 | 0.007 | 0.006 | 0.007 | 0.007 | 0.007 | 0.006 | 0.007 |
| 100 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| 30 | 4 | 0.013 | 0.014 | 0.020 | 0.013 | 0.012 | 0.012 | 0.013 | 0.013 |
| 10 | 0.004 | 0.003 | 0.003 | 0.004 | 0.004 | 0.004 | 0.003 | 0.004 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 4 | 0.007 | 0.007 | 0.008 | 0.007 | 0.008 | 0.008 | 0.007 | 0.009 |
| 10 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 4 | 0.004 | 0.004 | 0.003 | 0.005 | 0.005 | 0.005 | 0.005 | 0.006 |
| 10 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 30 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 0.25 | 10 | 4 | 0.064 | 0.070 | 0.092 | 0.057 | 0.055 | 0.059 | 0.068 | 0.054 |
| 10 | 0.023 | 0.023 | 0.024 | 0.024 | 0.024 | 0.023 | 0.023 | 0.024 |
| 30 | 0.016 | 0.016 | 0.015 | 0.017 | 0.016 | 0.016 | 0.015 | 0.017 |
| 50 | 0.018 | 0.017 | 0.016 | 0.019 | 0.018 | 0.017 | 0.016 | 0.019 |
| 100 | 0.019 | 0.019 | 0.018 | 0.020 | 0.019 | 0.019 | 0.018 | 0.020 |
| 30 | 4 | 0.013 | 0.012 | 0.011 | 0.014 | 0.015 | 0.014 | 0.013 | 0.016 |
| 10 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 30 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 100 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 50 | 4 | 0.008 | 0.008 | 0.007 | 0.009 | 0.009 | 0.009 | 0.008 | 0.009 |
| 10 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| 30 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 50 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 100 | 4 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| 10 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 30 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |