# Tables of simulation results

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## Simple random sampling

### Type I errors ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.096 | 0.051 | 0.008 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.036 | 0.014 | 0.001 |
| WaldV3 | 1000 | 1000 | 2 | 0.096 | 0.050 | 0.008 |
| Pearson | 1000 | 1000 | 2 | 0.084 | 0.041 | 0.008 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.084 | 0.040 | 0.008 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.081 | 0.039 | 0.009 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.082 | 0.045 | 0.006 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.104 | 0.047 | 0.012 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.039 | 0.014 | 0.003 |
| WaldV3 | 1000 | 1000 | 2 | 0.104 | 0.047 | 0.011 |
| Pearson | 1000 | 1000 | 2 | 0.098 | 0.052 | 0.010 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.098 | 0.051 | 0.008 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.105 | 0.046 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.100 | 0.043 | 0.011 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 10 | 0.118 | 0.055 | 0.009 |
| WaldV2,MM3 | 1000 | 1000 | 10 | 0.050 | 0.018 | 0.005 |
| WaldV3 | 1000 | 1000 | 10 | 0.117 | 0.053 | 0.009 |
| Pearson | 1000 | 1000 | 10 | 0.100 | 0.055 | 0.013 |
| PearsonV2,MM3 | 1000 | 1000 | 10 | 0.100 | 0.053 | 0.012 |
| RSS,MM3 | 1000 | 1000 | 10 | 0.104 | 0.052 | 0.009 |
| Multn,MM3 | 1000 | 1000 | 10 | 0.115 | 0.053 | 0.009 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 16 | 0.112 | 0.065 | 0.013 |
| WaldV2,MM3 | 1000 | 1000 | 16 | 0.038 | 0.016 | 0.002 |
| WaldV3 | 1000 | 1000 | 16 | 0.105 | 0.061 | 0.013 |
| Pearson | 1000 | 1000 | 16 | 0.099 | 0.043 | 0.013 |
| PearsonV2,MM3 | 1000 | 1000 | 16 | 0.099 | 0.037 | 0.012 |
| RSS,MM3 | 1000 | 1000 | 16 | 0.094 | 0.044 | 0.011 |
| Multn,MM3 | 1000 | 1000 | 16 | 0.095 | 0.053 | 0.011 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 28 | 0.107 | 0.061 | 0.011 |
| WaldV2,MM3 | 1000 | 1000 | 28 | 0.032 | 0.013 | 0.002 |
| WaldV3 | 1000 | 1000 | 28 | 0.094 | 0.050 | 0.011 |
| Pearson | 1000 | 1000 | 28 | 0.098 | 0.052 | 0.010 |
| PearsonV2,MM3 | 1000 | 1000 | 28 | 0.096 | 0.051 | 0.008 |
| RSS,MM3 | 1000 | 1000 | 28 | 0.099 | 0.040 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 28 | 0.087 | 0.042 | 0.010 |

**Type I errors** ($n = 1000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.079 | 0.040 | 0.005 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.048 | 0.019 | 0.003 |
| WaldV3 | 1000 | 1000 | 1 | 0.077 | 0.040 | 0.005 |
| Pearson | 1000 | 1000 | 1 | 0.076 | 0.032 | 0.005 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.078 | 0.030 | 0.005 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.074 | 0.033 | 0.004 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.071 | 0.038 | 0.005 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 4 | 0.095 | 0.051 | 0.007 |
| WaldV2,MM3 | 1000 | 1000 | 4 | 0.064 | 0.030 | 0.002 |
| WaldV3 | 1000 | 1000 | 4 | 0.094 | 0.050 | 0.007 |
| Pearson | 1000 | 1000 | 4 | 0.088 | 0.046 | 0.009 |
| PearsonV2,MM3 | 1000 | 1000 | 4 | 0.088 | 0.043 | 0.008 |
| RSS,MM3 | 1000 | 1000 | 4 | 0.093 | 0.038 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 4 | 0.092 | 0.048 | 0.007 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 12 | 0.118 | 0.054 | 0.016 |
| WaldV2,MM3 | 1000 | 1000 | 12 | 0.085 | 0.039 | 0.006 |
| WaldV3 | 1000 | 1000 | 12 | 0.115 | 0.052 | 0.016 |
| Pearson | 1000 | 1000 | 12 | 0.111 | 0.058 | 0.016 |
| PearsonV2,MM3 | 1000 | 1000 | 12 | 0.110 | 0.053 | 0.015 |
| RSS,MM3 | 1000 | 1000 | 12 | 0.113 | 0.057 | 0.018 |
| Multn,MM3 | 1000 | 1000 | 12 | 0.115 | 0.052 | 0.016 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 8 | 0.105 | 0.049 | 0.011 |
| WaldV2,MM3 | 1000 | 1000 | 8 | 0.052 | 0.021 | 0.003 |
| WaldV3 | 1000 | 1000 | 8 | 0.097 | 0.046 | 0.011 |
| Pearson | 1000 | 1000 | 8 | 0.085 | 0.049 | 0.011 |
| PearsonV2,MM3 | 1000 | 1000 | 8 | 0.083 | 0.045 | 0.010 |
| RSS,MM3 | 1000 | 1000 | 8 | 0.090 | 0.047 | 0.011 |
| Multn,MM3 | 1000 | 1000 | 8 | 0.092 | 0.045 | 0.010 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 28 | 0.096 | 0.056 | 0.015 |
| WaldV2,MM3 | 1000 | 1000 | 28 | 0.058 | 0.026 | 0.000 |
| WaldV3 | 1000 | 1000 | 28 | 0.085 | 0.054 | 0.013 |
| Pearson | 1000 | 1000 | 28 | 0.089 | 0.048 | 0.007 |
| PearsonV2,MM3 | 1000 | 1000 | 28 | 0.089 | 0.047 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 28 | 0.085 | 0.046 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 28 | 0.084 | 0.051 | 0.011 |

**Type I errors** ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.086 | 0.042 | 0.006 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.068 | 0.031 | 0.007 |
| WaldV3 | 1000 | 1000 | 2 | 0.084 | 0.042 | 0.006 |
| Pearson | 1000 | 1000 | 2 | 0.080 | 0.041 | 0.013 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.080 | 0.041 | 0.011 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.082 | 0.039 | 0.011 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.084 | 0.041 | 0.005 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.103 | 0.052 | 0.016 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.083 | 0.035 | 0.007 |
| WaldV3 | 1000 | 1000 | 1 | 0.103 | 0.050 | 0.016 |
| Pearson | 1000 | 1000 | 1 | 0.112 | 0.057 | 0.011 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.110 | 0.052 | 0.009 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.104 | 0.057 | 0.009 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.103 | 0.049 | 0.016 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 16 | 0.115 | 0.065 | 0.015 |
| WaldV2,MM3 | 1000 | 1000 | 16 | 0.093 | 0.049 | 0.008 |
| WaldV3 | 1000 | 1000 | 16 | 0.115 | 0.063 | 0.015 |
| Pearson | 1000 | 1000 | 16 | 0.107 | 0.062 | 0.016 |
| PearsonV2,MM3 | 1000 | 1000 | 16 | 0.106 | 0.062 | 0.015 |
| RSS,MM3 | 1000 | 1000 | 16 | 0.108 | 0.057 | 0.013 |
| Multn,MM3 | 1000 | 1000 | 16 | 0.115 | 0.063 | 0.015 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 14 | 0.105 | 0.050 | 0.008 |
| WaldV2,MM3 | 1000 | 1000 | 14 | 0.067 | 0.032 | 0.004 |
| WaldV3 | 1000 | 1000 | 14 | 0.099 | 0.045 | 0.008 |
| Pearson | 1000 | 1000 | 14 | 0.093 | 0.040 | 0.013 |
| PearsonV2,MM3 | 1000 | 1000 | 14 | 0.093 | 0.036 | 0.010 |
| RSS,MM3 | 1000 | 1000 | 14 | 0.093 | 0.036 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 14 | 0.097 | 0.045 | 0.008 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 38 | 0.124 | 0.060 | 0.011 |
| WaldV2,MM3 | 1000 | 1000 | 38 | 0.082 | 0.031 | 0.005 |
| WaldV3 | 1000 | 1000 | 38 | 0.113 | 0.056 | 0.010 |
| Pearson | 1000 | 1000 | 38 | 0.096 | 0.059 | 0.015 |
| PearsonV2,MM3 | 1000 | 1000 | 38 | 0.096 | 0.056 | 0.014 |
| RSS,MM3 | 1000 | 1000 | 38 | 0.096 | 0.058 | 0.015 |
| Multn,MM3 | 1000 | 1000 | 38 | 0.107 | 0.053 | 0.009 |

**Type I errors** ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.099 | 0.048 | 0.007 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.086 | 0.036 | 0.006 |
| WaldV3 | 1000 | 1000 | 2 | 0.099 | 0.048 | 0.007 |
| Pearson | 1000 | 1000 | 2 | 0.095 | 0.043 | 0.008 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.095 | 0.041 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.094 | 0.047 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.099 | 0.047 | 0.007 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.111 | 0.052 | 0.018 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.094 | 0.047 | 0.010 |
| WaldV3 | 1000 | 1000 | 1 | 0.108 | 0.052 | 0.016 |
| Pearson | 1000 | 1000 | 1 | 0.105 | 0.053 | 0.019 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.102 | 0.046 | 0.016 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.106 | 0.052 | 0.017 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.107 | 0.052 | 0.016 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 20 | 0.109 | 0.050 | 0.003 |
| WaldV2,MM3 | 1000 | 1000 | 20 | 0.088 | 0.039 | 0.007 |
| WaldV3 | 1000 | 1000 | 20 | 0.108 | 0.048 | 0.003 |
| Pearson | 1000 | 1000 | 20 | 0.093 | 0.047 | 0.013 |
| PearsonV2,MM3 | 1000 | 1000 | 20 | 0.092 | 0.044 | 0.011 |
| RSS,MM3 | 1000 | 1000 | 20 | 0.099 | 0.043 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 20 | 0.108 | 0.048 | 0.003 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 15 | 0.111 | 0.051 | 0.012 |
| WaldV2,MM3 | 1000 | 1000 | 15 | 0.082 | 0.037 | 0.005 |
| WaldV3 | 1000 | 1000 | 15 | 0.108 | 0.046 | 0.012 |
| Pearson | 1000 | 1000 | 15 | 0.094 | 0.050 | 0.016 |
| PearsonV2,MM3 | 1000 | 1000 | 15 | 0.094 | 0.046 | 0.011 |
| RSS,MM3 | 1000 | 1000 | 15 | 0.092 | 0.051 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 15 | 0.109 | 0.045 | 0.012 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 57 | 0.104 | 0.051 | 0.009 |
| WaldV2,MM3 | 1000 | 1000 | 57 | 0.074 | 0.037 | 0.008 |
| WaldV3 | 1000 | 1000 | 57 | 0.095 | 0.047 | 0.009 |
| Pearson | 1000 | 1000 | 57 | 0.094 | 0.045 | 0.011 |
| PearsonV2,MM3 | 1000 | 1000 | 57 | 0.093 | 0.042 | 0.009 |
| RSS,MM3 | 1000 | 1000 | 57 | 0.087 | 0.044 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 57 | 0.094 | 0.046 | 0.009 |

**Power** ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.299 | 0.200 | 0.069 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.117 | 0.053 | 0.005 |
| WaldV3 | 1000 | 1000 | 1 | 0.297 | 0.199 | 0.069 |
| Pearson | 1000 | 1000 | 1 | 0.307 | 0.204 | 0.086 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.307 | 0.201 | 0.078 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.320 | 0.216 | 0.084 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.277 | 0.172 | 0.053 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.828 | 0.744 | 0.555 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.679 | 0.560 | 0.307 |
| WaldV3 | 1000 | 1000 | 1 | 0.827 | 0.741 | 0.553 |
| Pearson | 1000 | 1000 | 1 | 0.681 | 0.573 | 0.349 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.679 | 0.565 | 0.332 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.734 | 0.628 | 0.390 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.818 | 0.733 | 0.543 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 4 | 0.967 | 0.944 | 0.866 |
| WaldV2,MM3 | 1000 | 1000 | 4 | 0.937 | 0.891 | 0.762 |
| WaldV3 | 1000 | 1000 | 4 | 0.967 | 0.938 | 0.864 |
| Pearson | 1000 | 1000 | 4 | 0.926 | 0.873 | 0.747 |
| PearsonV2,MM3 | 1000 | 1000 | 4 | 0.926 | 0.871 | 0.737 |
| RSS,MM3 | 1000 | 1000 | 4 | 0.943 | 0.911 | 0.801 |
| Multn,MM3 | 1000 | 1000 | 4 | 0.965 | 0.937 | 0.860 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 998 | 7 | 0.227 | 0.146 | 0.049 |
| WaldV2,MM3 | 1000 | 998 | 7 | 0.118 | 0.053 | 0.016 |
| WaldV3 | 1000 | 998 | 7 | 0.216 | 0.133 | 0.045 |
| Pearson | 1000 | 998 | 7 | 0.236 | 0.161 | 0.060 |
| PearsonV2,MM3 | 1000 | 998 | 7 | 0.235 | 0.151 | 0.044 |
| RSS,MM3 | 1000 | 998 | 7 | 0.243 | 0.161 | 0.056 |
| Multn,MM3 | 1000 | 998 | 7 | 0.193 | 0.119 | 0.032 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 27 | 0.247 | 0.154 | 0.055 |
| WaldV2,MM3 | 1000 | 1000 | 27 | 0.133 | 0.084 | 0.024 |
| WaldV3 | 1000 | 1000 | 27 | 0.225 | 0.142 | 0.048 |
| Pearson | 1000 | 1000 | 27 | 0.287 | 0.197 | 0.085 |
| PearsonV2,MM3 | 1000 | 1000 | 27 | 0.283 | 0.190 | 0.077 |
| RSS,MM3 | 1000 | 1000 | 27 | 0.300 | 0.191 | 0.080 |
| Multn,MM3 | 1000 | 1000 | 27 | 0.204 | 0.133 | 0.045 |

**Power** ($n = 1000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.518 | 0.393 | 0.198 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.344 | 0.229 | 0.063 |
| WaldV3 | 1000 | 1000 | 2 | 0.518 | 0.392 | 0.197 |
| Pearson | 1000 | 1000 | 2 | 0.559 | 0.426 | 0.227 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.561 | 0.419 | 0.212 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.569 | 0.449 | 0.232 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.507 | 0.385 | 0.187 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 3 | 0.984 | 0.972 | 0.917 |
| WaldV2,MM3 | 1000 | 1000 | 3 | 0.962 | 0.926 | 0.816 |
| WaldV3 | 1000 | 1000 | 3 | 0.984 | 0.972 | 0.915 |
| Pearson | 1000 | 1000 | 3 | 0.934 | 0.883 | 0.756 |
| PearsonV2,MM3 | 1000 | 1000 | 3 | 0.934 | 0.877 | 0.738 |
| RSS,MM3 | 1000 | 1000 | 3 | 0.959 | 0.915 | 0.829 |
| Multn,MM3 | 1000 | 1000 | 3 | 0.984 | 0.971 | 0.914 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 11 | 0.999 | 0.999 | 0.997 |
| WaldV2,MM3 | 1000 | 1000 | 11 | 0.998 | 0.997 | 0.991 |
| WaldV3 | 1000 | 1000 | 11 | 0.999 | 0.999 | 0.997 |
| Pearson | 1000 | 1000 | 11 | 0.999 | 0.997 | 0.984 |
| PearsonV2,MM3 | 1000 | 1000 | 11 | 0.999 | 0.997 | 0.980 |
| RSS,MM3 | 1000 | 1000 | 11 | 0.999 | 0.999 | 0.995 |
| Multn,MM3 | 1000 | 1000 | 11 | 0.999 | 0.999 | 0.997 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 5 | 0.323 | 0.230 | 0.101 |
| WaldV2,MM3 | 1000 | 1000 | 5 | 0.283 | 0.179 | 0.059 |
| WaldV3 | 1000 | 1000 | 5 | 0.309 | 0.216 | 0.085 |
| Pearson | 1000 | 1000 | 5 | 0.384 | 0.279 | 0.146 |
| PearsonV2,MM3 | 1000 | 1000 | 5 | 0.383 | 0.269 | 0.139 |
| RSS,MM3 | 1000 | 1000 | 5 | 0.405 | 0.294 | 0.151 |
| Multn,MM3 | 1000 | 1000 | 5 | 0.305 | 0.215 | 0.080 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 23 | 0.392 | 0.280 | 0.124 |
| WaldV2,MM3 | 1000 | 1000 | 23 | 0.369 | 0.246 | 0.103 |
| WaldV3 | 1000 | 1000 | 23 | 0.367 | 0.266 | 0.119 |
| Pearson | 1000 | 1000 | 23 | 0.480 | 0.381 | 0.226 |
| PearsonV2,MM3 | 1000 | 1000 | 23 | 0.477 | 0.373 | 0.211 |
| RSS,MM3 | 1000 | 1000 | 23 | 0.502 | 0.403 | 0.226 |
| Multn,MM3 | 1000 | 1000 | 23 | 0.364 | 0.262 | 0.116 |

**Power** ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.788 | 0.696 | 0.499 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.640 | 0.528 | 0.272 |
| WaldV3 | 1000 | 1000 | 2 | 0.788 | 0.696 | 0.498 |
| Pearson | 1000 | 1000 | 2 | 0.801 | 0.732 | 0.546 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.802 | 0.730 | 0.533 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.822 | 0.739 | 0.567 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.784 | 0.692 | 0.492 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 5 | 1.000 | 1.000 | 0.997 |
| WaldV2,MM3 | 1000 | 1000 | 5 | 1.000 | 0.999 | 0.992 |
| WaldV3 | 1000 | 1000 | 5 | 1.000 | 1.000 | 0.997 |
| Pearson | 1000 | 1000 | 5 | 0.996 | 0.992 | 0.984 |
| PearsonV2,MM3 | 1000 | 1000 | 5 | 0.996 | 0.991 | 0.982 |
| RSS,MM3 | 1000 | 1000 | 5 | 0.997 | 0.995 | 0.988 |
| Multn,MM3 | 1000 | 1000 | 5 | 1.000 | 1.000 | 0.997 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 15 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 15 | 1.000 | 1.000 | 1.000 |
| WaldV3 | 1000 | 1000 | 15 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 15 | 1.000 | 1.000 | 1.000 |
| PearsonV2,MM3 | 1000 | 1000 | 15 | 1.000 | 1.000 | 1.000 |
| RSS,MM3 | 1000 | 1000 | 15 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 15 | 1.000 | 1.000 | 1.000 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 12 | 0.515 | 0.413 | 0.242 |
| WaldV2,MM3 | 1000 | 1000 | 12 | 0.500 | 0.401 | 0.224 |
| WaldV3 | 1000 | 1000 | 12 | 0.496 | 0.397 | 0.225 |
| Pearson | 1000 | 1000 | 12 | 0.579 | 0.503 | 0.346 |
| PearsonV2,MM3 | 1000 | 1000 | 12 | 0.577 | 0.494 | 0.319 |
| RSS,MM3 | 1000 | 1000 | 12 | 0.604 | 0.525 | 0.367 |
| Multn,MM3 | 1000 | 1000 | 12 | 0.500 | 0.400 | 0.231 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 30 | 0.666 | 0.562 | 0.386 |
| WaldV2,MM3 | 1000 | 1000 | 30 | 0.699 | 0.587 | 0.409 |
| WaldV3 | 1000 | 1000 | 30 | 0.639 | 0.549 | 0.371 |
| Pearson | 1000 | 1000 | 30 | 0.745 | 0.665 | 0.518 |
| PearsonV2,MM3 | 1000 | 1000 | 30 | 0.745 | 0.659 | 0.500 |
| RSS,MM3 | 1000 | 1000 | 30 | 0.779 | 0.695 | 0.546 |
| Multn,MM3 | 1000 | 1000 | 30 | 0.641 | 0.549 | 0.372 |

**Power** ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.927 | 0.876 | 0.753 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.867 | 0.778 | 0.543 |
| WaldV3 | 1000 | 1000 | 1 | 0.927 | 0.875 | 0.751 |
| Pearson | 1000 | 1000 | 1 | 0.933 | 0.886 | 0.781 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.934 | 0.884 | 0.769 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.939 | 0.898 | 0.788 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.927 | 0.874 | 0.744 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 5 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 5 | 1.000 | 1.000 | 1.000 |
| WaldV3 | 1000 | 1000 | 5 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 5 | 1.000 | 1.000 | 0.999 |
| PearsonV2,MM3 | 1000 | 1000 | 5 | 1.000 | 1.000 | 0.998 |
| RSS,MM3 | 1000 | 1000 | 5 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 5 | 1.000 | 1.000 | 1.000 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 13 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 13 | 1.000 | 1.000 | 1.000 |
| WaldV3 | 1000 | 1000 | 13 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 13 | 1.000 | 1.000 | 1.000 |
| PearsonV2,MM3 | 1000 | 1000 | 13 | 1.000 | 1.000 | 1.000 |
| RSS,MM3 | 1000 | 1000 | 13 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 13 | 1.000 | 1.000 | 1.000 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 11 | 0.678 | 0.568 | 0.409 |
| WaldV2,MM3 | 1000 | 1000 | 11 | 0.682 | 0.588 | 0.406 |
| WaldV3 | 1000 | 1000 | 11 | 0.664 | 0.557 | 0.391 |
| Pearson | 1000 | 1000 | 11 | 0.732 | 0.664 | 0.526 |
| PearsonV2,MM3 | 1000 | 1000 | 11 | 0.732 | 0.659 | 0.503 |
| RSS,MM3 | 1000 | 1000 | 11 | 0.756 | 0.694 | 0.543 |
| Multn,MM3 | 1000 | 1000 | 11 | 0.672 | 0.560 | 0.397 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 37 | 0.799 | 0.713 | 0.558 |
| WaldV2,MM3 | 1000 | 1000 | 37 | 0.834 | 0.748 | 0.592 |
| WaldV3 | 1000 | 1000 | 37 | 0.787 | 0.698 | 0.539 |
| Pearson | 1000 | 1000 | 37 | 0.847 | 0.797 | 0.688 |
| PearsonV2,MM3 | 1000 | 1000 | 37 | 0.845 | 0.792 | 0.669 |
| RSS,MM3 | 1000 | 1000 | 37 | 0.876 | 0.831 | 0.711 |
| Multn,MM3 | 1000 | 1000 | 37 | 0.792 | 0.698 | 0.542 |

## Stratified sampling

**Type I errors** ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.144 | 0.078 | 0.025 |
| WaldV2,MM3 | 1000 | 1000 | 0 | 0.042 | 0.015 | 0.003 |
| WaldV3 | 1000 | 1000 | 0 | 0.100 | 0.054 | 0.016 |
| Pearson | 1000 | 1000 | 0 | 0.086 | 0.037 | 0.007 |
| PearsonV2,MM3 | 1000 | 1000 | 0 | 0.087 | 0.034 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.080 | 0.034 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.114 | 0.059 | 0.017 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 3 | 0.332 | 0.222 | 0.098 |
| WaldV2,MM3 | 1000 | 1000 | 3 | 0.049 | 0.026 | 0.007 |
| WaldV3 | 1000 | 1000 | 3 | 0.161 | 0.096 | 0.040 |
| Pearson | 1000 | 1000 | 3 | 0.083 | 0.040 | 0.010 |
| PearsonV2,MM3 | 1000 | 1000 | 3 | 0.083 | 0.038 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 3 | 0.084 | 0.037 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 3 | 0.259 | 0.163 | 0.074 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 14 | 0.988 | 0.972 | 0.937 |
| WaldV2,MM3 | 1000 | 1000 | 14 | 0.046 | 0.013 | 0.002 |
| WaldV3 | 1000 | 1000 | 14 | 0.861 | 0.803 | 0.639 |
| Pearson | 1000 | 1000 | 14 | 0.078 | 0.039 | 0.005 |
| PearsonV2,MM3 | 1000 | 1000 | 14 | 0.076 | 0.038 | 0.002 |
| RSS,MM3 | 1000 | 1000 | 14 | 0.068 | 0.031 | 0.002 |
| Multn,MM3 | 1000 | 1000 | 14 | 0.971 | 0.952 | 0.879 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 22 | 0.450 | 0.336 | 0.157 |
| WaldV2,MM3 | 1000 | 1000 | 22 | 0.033 | 0.013 | 0.000 |
| WaldV3 | 1000 | 1000 | 22 | 0.257 | 0.151 | 0.050 |
| Pearson | 1000 | 1000 | 22 | 0.065 | 0.034 | 0.007 |
| PearsonV2,MM3 | 1000 | 1000 | 22 | 0.064 | 0.032 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 22 | 0.061 | 0.031 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 22 | 0.412 | 0.311 | 0.158 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 66 | 0.957 | 0.922 | 0.827 |
| WaldV2,MM3 | 1000 | 1000 | 66 | 0.029 | 0.013 | 0.002 |
| WaldV3 | 1000 | 1000 | 66 | 0.786 | 0.701 | 0.502 |
| Pearson | 1000 | 1000 | 66 | 0.073 | 0.033 | 0.009 |
| PearsonV2,MM3 | 1000 | 1000 | 66 | 0.072 | 0.033 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 66 | 0.060 | 0.027 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 66 | 0.943 | 0.904 | 0.777 |

**Type I errors** ($n = 1000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.144 | 0.075 | 0.022 |
| WaldV2,MM3 | 1000 | 1000 | 0 | 0.082 | 0.036 | 0.007 |
| WaldV3 | 1000 | 1000 | 0 | 0.130 | 0.061 | 0.017 |
| Pearson | 1000 | 1000 | 0 | 0.098 | 0.056 | 0.013 |
| PearsonV2,MM3 | 1000 | 1000 | 0 | 0.099 | 0.056 | 0.012 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.103 | 0.054 | 0.011 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.134 | 0.066 | 0.021 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.179 | 0.104 | 0.034 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.063 | 0.026 | 0.001 |
| WaldV3 | 1000 | 1000 | 2 | 0.114 | 0.061 | 0.016 |
| Pearson | 1000 | 1000 | 2 | 0.086 | 0.033 | 0.008 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.085 | 0.030 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.077 | 0.035 | 0.004 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.163 | 0.090 | 0.028 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 15 | 0.705 | 0.599 | 0.391 |
| WaldV2,MM3 | 1000 | 1000 | 15 | 0.074 | 0.030 | 0.002 |
| WaldV3 | 1000 | 1000 | 15 | 0.488 | 0.366 | 0.167 |
| Pearson | 1000 | 1000 | 15 | 0.088 | 0.042 | 0.016 |
| PearsonV2,MM3 | 1000 | 1000 | 15 | 0.087 | 0.042 | 0.014 |
| RSS,MM3 | 1000 | 1000 | 15 | 0.085 | 0.043 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 15 | 0.713 | 0.608 | 0.413 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 7 | 0.238 | 0.162 | 0.054 |
| WaldV2,MM3 | 1000 | 1000 | 7 | 0.058 | 0.024 | 0.005 |
| WaldV3 | 1000 | 1000 | 7 | 0.165 | 0.110 | 0.025 |
| Pearson | 1000 | 1000 | 7 | 0.099 | 0.049 | 0.014 |
| PearsonV2,MM3 | 1000 | 1000 | 7 | 0.096 | 0.045 | 0.010 |
| RSS,MM3 | 1000 | 1000 | 7 | 0.091 | 0.048 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 7 | 0.252 | 0.166 | 0.060 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 41 | 0.600 | 0.496 | 0.269 |
| WaldV2,MM3 | 1000 | 1000 | 41 | 0.050 | 0.021 | 0.001 |
| WaldV3 | 1000 | 1000 | 41 | 0.428 | 0.305 | 0.121 |
| Pearson | 1000 | 1000 | 41 | 0.077 | 0.038 | 0.004 |
| PearsonV2,MM3 | 1000 | 1000 | 41 | 0.076 | 0.034 | 0.003 |
| RSS,MM3 | 1000 | 1000 | 41 | 0.075 | 0.027 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 41 | 0.636 | 0.539 | 0.343 |

**Type I errors** ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.104 | 0.040 | 0.008 |
| WaldV2,MM3 | 1000 | 1000 | 0 | 0.068 | 0.025 | 0.005 |
| WaldV3 | 1000 | 1000 | 0 | 0.091 | 0.037 | 0.006 |
| Pearson | 1000 | 1000 | 0 | 0.074 | 0.036 | 0.003 |
| PearsonV2,MM3 | 1000 | 1000 | 0 | 0.075 | 0.036 | 0.002 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.081 | 0.035 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.096 | 0.038 | 0.007 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.173 | 0.101 | 0.030 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.106 | 0.053 | 0.010 |
| WaldV3 | 1000 | 1000 | 2 | 0.138 | 0.077 | 0.019 |
| Pearson | 1000 | 1000 | 2 | 0.112 | 0.057 | 0.016 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.112 | 0.055 | 0.012 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.113 | 0.057 | 0.011 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.162 | 0.093 | 0.027 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 13 | 0.394 | 0.262 | 0.104 |
| WaldV2,MM3 | 1000 | 1000 | 13 | 0.086 | 0.037 | 0.005 |
| WaldV3 | 1000 | 1000 | 13 | 0.276 | 0.166 | 0.051 |
| Pearson | 1000 | 1000 | 13 | 0.095 | 0.049 | 0.012 |
| PearsonV2,MM3 | 1000 | 1000 | 13 | 0.094 | 0.048 | 0.009 |
| RSS,MM3 | 1000 | 1000 | 13 | 0.098 | 0.055 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 13 | 0.415 | 0.289 | 0.117 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 11 | 0.166 | 0.104 | 0.037 |
| WaldV2,MM3 | 1000 | 1000 | 11 | 0.077 | 0.035 | 0.004 |
| WaldV3 | 1000 | 1000 | 11 | 0.140 | 0.086 | 0.022 |
| Pearson | 1000 | 1000 | 11 | 0.095 | 0.040 | 0.011 |
| PearsonV2,MM3 | 1000 | 1000 | 11 | 0.094 | 0.037 | 0.009 |
| RSS,MM3 | 1000 | 1000 | 11 | 0.090 | 0.045 | 0.011 |
| Multn,MM3 | 1000 | 1000 | 11 | 0.166 | 0.105 | 0.039 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 40 | 0.343 | 0.228 | 0.083 |
| WaldV2,MM3 | 1000 | 1000 | 40 | 0.076 | 0.027 | 0.001 |
| WaldV3 | 1000 | 1000 | 40 | 0.252 | 0.167 | 0.043 |
| Pearson | 1000 | 1000 | 40 | 0.090 | 0.048 | 0.012 |
| PearsonV2,MM3 | 1000 | 1000 | 40 | 0.089 | 0.046 | 0.011 |
| RSS,MM3 | 1000 | 1000 | 40 | 0.088 | 0.041 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 40 | 0.379 | 0.266 | 0.111 |

**Type I errors** ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 4 | 0.097 | 0.044 | 0.006 |
| WaldV2,MM3 | 1000 | 1000 | 4 | 0.072 | 0.037 | 0.006 |
| WaldV3 | 1000 | 1000 | 4 | 0.090 | 0.042 | 0.006 |
| Pearson | 1000 | 1000 | 4 | 0.077 | 0.032 | 0.006 |
| PearsonV2,MM3 | 1000 | 1000 | 4 | 0.078 | 0.030 | 0.005 |
| RSS,MM3 | 1000 | 1000 | 4 | 0.082 | 0.030 | 0.004 |
| Multn,MM3 | 1000 | 1000 | 4 | 0.092 | 0.042 | 0.006 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 5 | 0.131 | 0.073 | 0.012 |
| WaldV2,MM3 | 1000 | 1000 | 5 | 0.095 | 0.040 | 0.005 |
| WaldV3 | 1000 | 1000 | 5 | 0.116 | 0.058 | 0.007 |
| Pearson | 1000 | 1000 | 5 | 0.094 | 0.059 | 0.009 |
| PearsonV2,MM3 | 1000 | 1000 | 5 | 0.093 | 0.055 | 0.005 |
| RSS,MM3 | 1000 | 1000 | 5 | 0.103 | 0.053 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 5 | 0.125 | 0.073 | 0.011 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 29 | 0.279 | 0.177 | 0.073 |
| WaldV2,MM3 | 1000 | 1000 | 29 | 0.100 | 0.053 | 0.011 |
| WaldV3 | 1000 | 1000 | 29 | 0.211 | 0.129 | 0.047 |
| Pearson | 1000 | 1000 | 29 | 0.113 | 0.049 | 0.011 |
| PearsonV2,MM3 | 1000 | 1000 | 29 | 0.112 | 0.047 | 0.010 |
| RSS,MM3 | 1000 | 1000 | 29 | 0.106 | 0.052 | 0.009 |
| Multn,MM3 | 1000 | 1000 | 29 | 0.290 | 0.196 | 0.075 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 19 | 0.139 | 0.088 | 0.024 |
| WaldV2,MM3 | 1000 | 1000 | 19 | 0.088 | 0.034 | 0.010 |
| WaldV3 | 1000 | 1000 | 19 | 0.118 | 0.078 | 0.019 |
| Pearson | 1000 | 1000 | 19 | 0.090 | 0.047 | 0.009 |
| PearsonV2,MM3 | 1000 | 1000 | 19 | 0.087 | 0.046 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 19 | 0.094 | 0.043 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 19 | 0.142 | 0.087 | 0.023 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 52 | 0.241 | 0.155 | 0.051 |
| WaldV2,MM3 | 1000 | 1000 | 52 | 0.078 | 0.040 | 0.006 |
| WaldV3 | 1000 | 1000 | 52 | 0.187 | 0.106 | 0.035 |
| Pearson | 1000 | 1000 | 52 | 0.097 | 0.046 | 0.011 |
| PearsonV2,MM3 | 1000 | 1000 | 52 | 0.096 | 0.044 | 0.011 |
| RSS,MM3 | 1000 | 1000 | 52 | 0.093 | 0.045 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 52 | 0.259 | 0.166 | 0.054 |

**Power** ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 5 | 0.347 | 0.252 | 0.118 |
| WaldV2,MM3 | 1000 | 1000 | 5 | 0.119 | 0.055 | 0.003 |
| WaldV3 | 1000 | 1000 | 5 | 0.297 | 0.193 | 0.066 |
| Pearson | 1000 | 1000 | 5 | 0.258 | 0.166 | 0.062 |
| PearsonV2,MM3 | 1000 | 1000 | 5 | 0.258 | 0.164 | 0.052 |
| RSS,MM3 | 1000 | 1000 | 5 | 0.266 | 0.166 | 0.057 |
| Multn,MM3 | 1000 | 1000 | 5 | 0.282 | 0.171 | 0.056 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 10 | 0.825 | 0.757 | 0.595 |
| WaldV2,MM3 | 1000 | 1000 | 10 | 0.547 | 0.372 | 0.148 |
| WaldV3 | 1000 | 1000 | 10 | 0.624 | 0.495 | 0.267 |
| Pearson | 1000 | 1000 | 10 | 0.441 | 0.307 | 0.131 |
| PearsonV2,MM3 | 1000 | 1000 | 10 | 0.440 | 0.297 | 0.113 |
| RSS,MM3 | 1000 | 1000 | 10 | 0.482 | 0.339 | 0.141 |
| Multn,MM3 | 1000 | 1000 | 10 | 0.764 | 0.667 | 0.456 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 27 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 27 | 0.850 | 0.755 | 0.459 |
| WaldV3 | 1000 | 1000 | 27 | 0.991 | 0.977 | 0.918 |
| Pearson | 1000 | 1000 | 27 | 0.741 | 0.612 | 0.350 |
| PearsonV2,MM3 | 1000 | 1000 | 27 | 0.736 | 0.601 | 0.318 |
| RSS,MM3 | 1000 | 1000 | 27 | 0.792 | 0.664 | 0.381 |
| Multn,MM3 | 1000 | 1000 | 27 | 1.000 | 1.000 | 0.990 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 27 | 0.754 | 0.654 | 0.460 |
| WaldV2,MM3 | 1000 | 1000 | 27 | 0.215 | 0.102 | 0.015 |
| WaldV3 | 1000 | 1000 | 27 | 0.521 | 0.401 | 0.184 |
| Pearson | 1000 | 1000 | 27 | 0.421 | 0.289 | 0.121 |
| PearsonV2,MM3 | 1000 | 1000 | 27 | 0.417 | 0.272 | 0.101 |
| RSS,MM3 | 1000 | 1000 | 27 | 0.410 | 0.263 | 0.098 |
| Multn,MM3 | 1000 | 1000 | 27 | 0.658 | 0.523 | 0.320 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 64 | 0.990 | 0.980 | 0.944 |
| WaldV2,MM3 | 1000 | 1000 | 64 | 0.202 | 0.110 | 0.018 |
| WaldV3 | 1000 | 1000 | 64 | 0.916 | 0.855 | 0.695 |
| Pearson | 1000 | 1000 | 64 | 0.362 | 0.255 | 0.094 |
| PearsonV2,MM3 | 1000 | 1000 | 64 | 0.360 | 0.239 | 0.083 |
| RSS,MM3 | 1000 | 1000 | 64 | 0.373 | 0.235 | 0.077 |
| Multn,MM3 | 1000 | 1000 | 64 | 0.977 | 0.960 | 0.869 |

**Power** ($n = 1000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.465 | 0.326 | 0.181 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.328 | 0.208 | 0.062 |
| WaldV3 | 1000 | 1000 | 1 | 0.430 | 0.302 | 0.145 |
| Pearson | 1000 | 1000 | 1 | 0.475 | 0.348 | 0.159 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.475 | 0.346 | 0.146 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.475 | 0.350 | 0.157 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.431 | 0.301 | 0.141 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.953 | 0.916 | 0.792 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.902 | 0.817 | 0.611 |
| WaldV3 | 1000 | 1000 | 2 | 0.901 | 0.833 | 0.626 |
| Pearson | 1000 | 1000 | 2 | 0.747 | 0.635 | 0.412 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.744 | 0.629 | 0.380 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.814 | 0.700 | 0.465 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.940 | 0.893 | 0.747 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 19 | 1.000 | 0.999 | 0.995 |
| WaldV2,MM3 | 1000 | 1000 | 19 | 0.999 | 0.996 | 0.976 |
| WaldV3 | 1000 | 1000 | 19 | 0.991 | 0.982 | 0.944 |
| Pearson | 1000 | 1000 | 19 | 0.983 | 0.957 | 0.884 |
| PearsonV2,MM3 | 1000 | 1000 | 19 | 0.982 | 0.954 | 0.864 |
| RSS,MM3 | 1000 | 1000 | 19 | 0.993 | 0.977 | 0.916 |
| Multn,MM3 | 1000 | 1000 | 19 | 1.000 | 1.000 | 0.995 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 12 | 0.756 | 0.665 | 0.439 |
| WaldV2,MM3 | 1000 | 1000 | 12 | 0.601 | 0.448 | 0.195 |
| WaldV3 | 1000 | 1000 | 12 | 0.651 | 0.507 | 0.282 |
| Pearson | 1000 | 1000 | 12 | 0.770 | 0.655 | 0.447 |
| PearsonV2,MM3 | 1000 | 1000 | 12 | 0.768 | 0.641 | 0.406 |
| RSS,MM3 | 1000 | 1000 | 12 | 0.775 | 0.659 | 0.434 |
| Multn,MM3 | 1000 | 1000 | 12 | 0.732 | 0.635 | 0.392 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 27 | 0.939 | 0.917 | 0.791 |
| WaldV2,MM3 | 1000 | 1000 | 27 | 0.679 | 0.532 | 0.259 |
| WaldV3 | 1000 | 1000 | 27 | 0.872 | 0.791 | 0.604 |
| Pearson | 1000 | 1000 | 27 | 0.801 | 0.697 | 0.488 |
| PearsonV2,MM3 | 1000 | 1000 | 27 | 0.799 | 0.684 | 0.455 |
| RSS,MM3 | 1000 | 1000 | 27 | 0.832 | 0.726 | 0.480 |
| Multn,MM3 | 1000 | 1000 | 27 | 0.956 | 0.923 | 0.808 |

**Power** ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.758 | 0.630 | 0.393 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.649 | 0.516 | 0.248 |
| WaldV3 | 1000 | 1000 | 1 | 0.746 | 0.615 | 0.372 |
| Pearson | 1000 | 1000 | 1 | 0.786 | 0.689 | 0.459 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.789 | 0.688 | 0.442 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.791 | 0.695 | 0.460 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.745 | 0.616 | 0.372 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.999 | 0.997 | 0.994 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.999 | 0.997 | 0.983 |
| WaldV3 | 1000 | 1000 | 2 | 0.999 | 0.997 | 0.977 |
| Pearson | 1000 | 1000 | 2 | 0.989 | 0.972 | 0.893 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.989 | 0.970 | 0.877 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.995 | 0.985 | 0.937 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.999 | 0.997 | 0.988 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 17 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 17 | 1.000 | 1.000 | 1.000 |
| WaldV3 | 1000 | 1000 | 17 | 1.000 | 1.000 | 0.999 |
| Pearson | 1000 | 1000 | 17 | 1.000 | 1.000 | 1.000 |
| PearsonV2,MM3 | 1000 | 1000 | 17 | 1.000 | 1.000 | 1.000 |
| RSS,MM3 | 1000 | 1000 | 17 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 17 | 1.000 | 1.000 | 1.000 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 6 | 0.958 | 0.925 | 0.792 |
| WaldV2,MM3 | 1000 | 1000 | 6 | 0.967 | 0.933 | 0.771 |
| WaldV3 | 1000 | 1000 | 6 | 0.941 | 0.882 | 0.704 |
| Pearson | 1000 | 1000 | 6 | 0.986 | 0.973 | 0.912 |
| PearsonV2,MM3 | 1000 | 1000 | 6 | 0.985 | 0.970 | 0.893 |
| RSS,MM3 | 1000 | 1000 | 6 | 0.989 | 0.976 | 0.917 |
| Multn,MM3 | 1000 | 1000 | 6 | 0.956 | 0.923 | 0.775 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 37 | 0.991 | 0.978 | 0.925 |
| WaldV2,MM3 | 1000 | 1000 | 37 | 0.987 | 0.960 | 0.868 |
| WaldV3 | 1000 | 1000 | 37 | 0.981 | 0.963 | 0.856 |
| Pearson | 1000 | 1000 | 37 | 0.993 | 0.986 | 0.948 |
| PearsonV2,MM3 | 1000 | 1000 | 37 | 0.993 | 0.983 | 0.941 |
| RSS,MM3 | 1000 | 1000 | 37 | 0.996 | 0.988 | 0.964 |
| Multn,MM3 | 1000 | 1000 | 37 | 0.995 | 0.987 | 0.942 |

**Power** ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.884 | 0.802 | 0.612 |
| WaldV2,MM3 | 1000 | 1000 | 0 | 0.839 | 0.730 | 0.479 |
| WaldV3 | 1000 | 1000 | 0 | 0.877 | 0.795 | 0.594 |
| Pearson | 1000 | 1000 | 0 | 0.895 | 0.831 | 0.664 |
| PearsonV2,MM3 | 1000 | 1000 | 0 | 0.897 | 0.830 | 0.650 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.897 | 0.841 | 0.670 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.875 | 0.796 | 0.594 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| WaldV3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 4 | 1.000 | 1.000 | 0.993 |
| PearsonV2,MM3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 0.991 |
| RSS,MM3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 10 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 10 | 1.000 | 1.000 | 1.000 |
| WaldV3 | 1000 | 1000 | 10 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 10 | 1.000 | 1.000 | 1.000 |
| PearsonV2,MM3 | 1000 | 1000 | 10 | 1.000 | 1.000 | 1.000 |
| RSS,MM3 | 1000 | 1000 | 10 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 10 | 1.000 | 1.000 | 1.000 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 10 | 0.998 | 0.992 | 0.963 |
| WaldV2,MM3 | 1000 | 1000 | 10 | 0.999 | 0.994 | 0.974 |
| WaldV3 | 1000 | 1000 | 10 | 0.998 | 0.988 | 0.944 |
| Pearson | 1000 | 1000 | 10 | 1.000 | 0.998 | 0.992 |
| PearsonV2,MM3 | 1000 | 1000 | 10 | 1.000 | 0.998 | 0.989 |
| RSS,MM3 | 1000 | 1000 | 10 | 1.000 | 0.998 | 0.994 |
| Multn,MM3 | 1000 | 1000 | 10 | 0.998 | 0.990 | 0.965 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 52 | 0.998 | 0.996 | 0.988 |
| WaldV2,MM3 | 1000 | 1000 | 52 | 0.999 | 0.997 | 0.994 |
| WaldV3 | 1000 | 1000 | 52 | 0.997 | 0.996 | 0.980 |
| Pearson | 1000 | 1000 | 52 | 1.000 | 0.999 | 0.996 |
| PearsonV2,MM3 | 1000 | 1000 | 52 | 1.000 | 0.999 | 0.996 |
| RSS,MM3 | 1000 | 1000 | 52 | 1.000 | 1.000 | 0.997 |
| Multn,MM3 | 1000 | 1000 | 52 | 0.999 | 0.997 | 0.993 |

## Cluster sampling

**Type I errors** ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 8 | 0.698 | 0.627 | 0.484 |
| WaldV2,MM3 | 1000 | 1000 | 8 | 0.054 | 0.017 | 0.001 |
| WaldV3 | 1000 | 1000 | 8 | 0.209 | 0.139 | 0.058 |
| Pearson | 1000 | 1000 | 8 | 0.067 | 0.035 | 0.007 |
| PearsonV2,MM3 | 1000 | 1000 | 8 | 0.070 | 0.034 | 0.006 |
| RSS,MM3 | 1000 | 1000 | 8 | 0.068 | 0.033 | 0.004 |
| Multn,MM3 | 1000 | 1000 | 8 | 0.152 | 0.090 | 0.028 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.048 | 0.013 | 0.001 |
| WaldV3 | 1000 | 1000 | 1000 | 0.997 | 0.996 | 0.988 |
| Pearson | 1000 | 1000 | 1000 | 0.052 | 0.023 | 0.003 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.052 | 0.021 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.050 | 0.016 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.313 | 0.213 | 0.076 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 0.997 | 0.993 | 0.980 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.004 | 0.000 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.027 | 0.023 | 0.018 |
| Pearson | 1000 | 1000 | 1000 | 0.006 | 0.000 | 0.000 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.006 | 0.000 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.003 | 0.000 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.005 | 0.004 | 0.001 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 0.999 | 0.999 | 0.997 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.010 | 0.002 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.784 | 0.735 | 0.649 |
| Pearson | 1000 | 1000 | 1000 | 0.034 | 0.011 | 0.000 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.034 | 0.011 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.026 | 0.005 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.081 | 0.040 | 0.012 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | | | |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.005 | 0.000 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.005 | 0.003 | 0.002 |
| Pearson | 1000 | 1000 | 1000 | 0.010 | 0.000 | 0.000 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.010 | 0.000 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.005 | 0.000 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.001 | 0.000 | 0.000 |

**Type I errors** ($n = 1000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 3 | 0.369 | 0.282 | 0.156 |
| WaldV2,MM3 | 1000 | 1000 | 3 | 0.065 | 0.021 | 0.002 |
| WaldV3 | 1000 | 1000 | 3 | 0.150 | 0.096 | 0.018 |
| Pearson | 1000 | 1000 | 3 | 0.083 | 0.044 | 0.008 |
| PearsonV2,MM3 | 1000 | 1000 | 3 | 0.084 | 0.041 | 0.008 |
| RSS,MM3 | 1000 | 1000 | 3 | 0.078 | 0.040 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 3 | 0.167 | 0.095 | 0.024 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 15 | 0.994 | 0.991 | 0.983 |
| WaldV2,MM3 | 1000 | 1000 | 15 | 0.066 | 0.018 | 0.002 |
| WaldV3 | 1000 | 1000 | 15 | 0.712 | 0.615 | 0.415 |
| Pearson | 1000 | 1000 | 15 | 0.069 | 0.029 | 0.008 |
| PearsonV2,MM3 | 1000 | 1000 | 15 | 0.069 | 0.026 | 0.006 |
| RSS,MM3 | 1000 | 1000 | 15 | 0.067 | 0.023 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 15 | 0.401 | 0.260 | 0.107 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.996 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.010 | 0.002 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.759 | 0.720 | 0.637 |
| Pearson | 1000 | 1000 | 1000 | 0.024 | 0.008 | 0.001 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.024 | 0.005 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.014 | 0.002 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.222 | 0.161 | 0.070 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.049 | 0.006 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.994 | 0.986 | 0.963 |
| Pearson | 1000 | 1000 | 1000 | 0.052 | 0.023 | 0.001 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.051 | 0.021 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.041 | 0.017 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.526 | 0.403 | 0.203 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.015 | 0.001 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.431 | 0.381 | 0.285 |
| Pearson | 1000 | 1000 | 1000 | 0.029 | 0.006 | 0.001 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.027 | 0.003 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.011 | 0.003 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.089 | 0.047 | 0.013 |

**Type I errors** ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.224 | 0.144 | 0.056 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.081 | 0.036 | 0.005 |
| WaldV3 | 1000 | 1000 | 2 | 0.138 | 0.070 | 0.014 |
| Pearson | 1000 | 1000 | 2 | 0.097 | 0.041 | 0.008 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.098 | 0.041 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.090 | 0.045 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.138 | 0.086 | 0.020 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 4 | 0.822 | 0.761 | 0.595 |
| WaldV2,MM3 | 1000 | 1000 | 4 | 0.072 | 0.029 | 0.001 |
| WaldV3 | 1000 | 1000 | 4 | 0.345 | 0.228 | 0.096 |
| Pearson | 1000 | 1000 | 4 | 0.087 | 0.040 | 0.008 |
| PearsonV2,MM3 | 1000 | 1000 | 4 | 0.087 | 0.037 | 0.006 |
| RSS,MM3 | 1000 | 1000 | 4 | 0.080 | 0.035 | 0.004 |
| Multn,MM3 | 1000 | 1000 | 4 | 0.459 | 0.337 | 0.134 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.021 | 0.006 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 1000 | 0.043 | 0.015 | 0.000 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.042 | 0.012 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.029 | 0.007 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.936 | 0.872 | 0.666 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 26 | 0.965 | 0.954 | 0.904 |
| WaldV2,MM3 | 1000 | 1000 | 26 | 0.068 | 0.033 | 0.000 |
| WaldV3 | 1000 | 1000 | 26 | 0.729 | 0.640 | 0.448 |
| Pearson | 1000 | 1000 | 26 | 0.078 | 0.034 | 0.004 |
| PearsonV2,MM3 | 1000 | 1000 | 26 | 0.078 | 0.034 | 0.003 |
| RSS,MM3 | 1000 | 1000 | 26 | 0.070 | 0.029 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 26 | 0.710 | 0.565 | 0.329 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.034 | 0.012 | 0.002 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 1000 | 0.050 | 0.019 | 0.003 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.049 | 0.018 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.044 | 0.012 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.891 | 0.813 | 0.569 |

**Type I errors** ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.175 | 0.117 | 0.029 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.072 | 0.030 | 0.003 |
| WaldV3 | 1000 | 1000 | 2 | 0.128 | 0.061 | 0.010 |
| Pearson | 1000 | 1000 | 2 | 0.094 | 0.046 | 0.009 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.095 | 0.044 | 0.006 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.094 | 0.041 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.137 | 0.074 | 0.016 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.583 | 0.484 | 0.301 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.078 | 0.039 | 0.003 |
| WaldV3 | 1000 | 1000 | 1 | 0.248 | 0.156 | 0.051 |
| Pearson | 1000 | 1000 | 1 | 0.085 | 0.039 | 0.004 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.085 | 0.033 | 0.003 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.082 | 0.029 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.343 | 0.252 | 0.106 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 119 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 119 | 0.033 | 0.007 | 0.000 |
| WaldV3 | 1000 | 1000 | 119 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 119 | 0.054 | 0.017 | 0.004 |
| PearsonV2,MM3 | 1000 | 1000 | 119 | 0.054 | 0.016 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 119 | 0.040 | 0.015 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 119 | 0.909 | 0.811 | 0.561 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 22 | 0.815 | 0.745 | 0.568 |
| WaldV2,MM3 | 1000 | 1000 | 22 | 0.064 | 0.028 | 0.002 |
| WaldV3 | 1000 | 1000 | 22 | 0.486 | 0.370 | 0.205 |
| Pearson | 1000 | 1000 | 22 | 0.096 | 0.043 | 0.005 |
| PearsonV2,MM3 | 1000 | 1000 | 22 | 0.095 | 0.040 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 22 | 0.092 | 0.034 | 0.004 |
| Multn,MM3 | 1000 | 1000 | 22 | 0.577 | 0.450 | 0.260 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 196 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 196 | 0.041 | 0.011 | 0.000 |
| WaldV3 | 1000 | 1000 | 196 | 1.000 | 0.999 | 0.995 |
| Pearson | 1000 | 1000 | 196 | 0.063 | 0.023 | 0.004 |
| PearsonV2,MM3 | 1000 | 1000 | 196 | 0.062 | 0.021 | 0.003 |
| RSS,MM3 | 1000 | 1000 | 196 | 0.050 | 0.017 | 0.002 |
| Multn,MM3 | 1000 | 1000 | 196 | 0.961 | 0.886 | 0.686 |

**Power** ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 3 | 0.784 | 0.730 | 0.597 |
| WaldV2,MM3 | 1000 | 1000 | 3 | 0.131 | 0.056 | 0.006 |
| WaldV3 | 1000 | 1000 | 3 | 0.385 | 0.283 | 0.131 |
| Pearson | 1000 | 1000 | 3 | 0.224 | 0.130 | 0.025 |
| PearsonV2,MM3 | 1000 | 1000 | 3 | 0.230 | 0.127 | 0.022 |
| RSS,MM3 | 1000 | 1000 | 3 | 0.222 | 0.119 | 0.020 |
| Multn,MM3 | 1000 | 1000 | 3 | 0.293 | 0.179 | 0.066 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.497 | 0.285 | 0.062 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.998 |
| Pearson | 1000 | 1000 | 1000 | 0.456 | 0.292 | 0.088 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.458 | 0.274 | 0.072 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.482 | 0.281 | 0.062 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.566 | 0.412 | 0.216 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 0.992 | 0.990 | 0.970 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.422 | 0.174 | 0.011 |
| WaldV3 | 1000 | 1000 | 1000 | 0.055 | 0.051 | 0.032 |
| Pearson | 1000 | 1000 | 1000 | 0.431 | 0.225 | 0.029 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.430 | 0.202 | 0.023 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.426 | 0.180 | 0.016 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.038 | 0.024 | 0.007 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 999 | 1000 | 0.999 | 0.999 | 0.994 |
| WaldV2,MM3 | 1000 | 999 | 1000 | 0.057 | 0.019 | 0.002 |
| WaldV3 | 1000 | 999 | 1000 | 0.797 | 0.760 | 0.673 |
| Pearson | 1000 | 999 | 1000 | 0.101 | 0.046 | 0.005 |
| PearsonV2,MM3 | 1000 | 999 | 1000 | 0.100 | 0.040 | 0.003 |
| RSS,MM3 | 1000 | 999 | 1000 | 0.091 | 0.029 | 0.002 |
| Multn,MM3 | 1000 | 999 | 1000 | 0.110 | 0.058 | 0.009 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.017 | 0.002 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.000 | 0.000 | 0.000 |
| Pearson | 1000 | 1000 | 1000 | 0.033 | 0.008 | 0.000 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.033 | 0.005 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.022 | 0.001 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.002 | 0.002 | 0.000 |

**Power** ($n = 1000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.730 | 0.644 | 0.469 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.356 | 0.225 | 0.062 |
| WaldV3 | 1000 | 1000 | 1 | 0.525 | 0.383 | 0.192 |
| Pearson | 1000 | 1000 | 1 | 0.482 | 0.350 | 0.145 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.485 | 0.347 | 0.127 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.489 | 0.350 | 0.130 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.502 | 0.369 | 0.170 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 6 | 1.000 | 1.000 | 0.999 |
| WaldV2,MM3 | 1000 | 1000 | 6 | 0.920 | 0.835 | 0.574 |
| WaldV3 | 1000 | 1000 | 6 | 0.986 | 0.978 | 0.938 |
| Pearson | 1000 | 1000 | 6 | 0.881 | 0.792 | 0.568 |
| PearsonV2,MM3 | 1000 | 1000 | 6 | 0.881 | 0.782 | 0.517 |
| RSS,MM3 | 1000 | 1000 | 6 | 0.893 | 0.816 | 0.558 |
| Multn,MM3 | 1000 | 1000 | 6 | 0.870 | 0.776 | 0.574 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.999 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.964 | 0.887 | 0.528 |
| WaldV3 | 1000 | 1000 | 1000 | 0.962 | 0.947 | 0.907 |
| Pearson | 1000 | 1000 | 1000 | 0.968 | 0.920 | 0.705 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.967 | 0.910 | 0.669 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.973 | 0.921 | 0.666 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.807 | 0.714 | 0.513 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.162 | 0.068 | 0.011 |
| WaldV3 | 1000 | 1000 | 1000 | 0.997 | 0.991 | 0.986 |
| Pearson | 1000 | 1000 | 1000 | 0.310 | 0.189 | 0.063 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.310 | 0.173 | 0.048 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.310 | 0.175 | 0.039 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.619 | 0.467 | 0.259 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.999 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.127 | 0.035 | 0.004 |
| WaldV3 | 1000 | 1000 | 1000 | 0.501 | 0.451 | 0.348 |
| Pearson | 1000 | 1000 | 1000 | 0.207 | 0.094 | 0.015 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.203 | 0.085 | 0.011 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.191 | 0.070 | 0.006 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.186 | 0.108 | 0.048 |

**Power** ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.837 | 0.749 | 0.565 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.685 | 0.556 | 0.274 |
| WaldV3 | 1000 | 1000 | 2 | 0.757 | 0.634 | 0.382 |
| Pearson | 1000 | 1000 | 2 | 0.766 | 0.657 | 0.423 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.767 | 0.653 | 0.404 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.767 | 0.658 | 0.413 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.760 | 0.644 | 0.405 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 5 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 5 | 0.999 | 0.998 | 0.986 |
| WaldV3 | 1000 | 1000 | 5 | 1.000 | 0.998 | 0.992 |
| Pearson | 1000 | 1000 | 5 | 0.999 | 0.996 | 0.975 |
| PearsonV2,MM3 | 1000 | 1000 | 5 | 0.999 | 0.995 | 0.966 |
| RSS,MM3 | 1000 | 1000 | 5 | 0.999 | 0.998 | 0.981 |
| Multn,MM3 | 1000 | 1000 | 5 | 1.000 | 0.999 | 0.996 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.999 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.999 |
| RSS,MM3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.999 |
| Multn,MM3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.994 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 23 | 0.993 | 0.990 | 0.972 |
| WaldV2,MM3 | 1000 | 1000 | 23 | 0.318 | 0.186 | 0.043 |
| WaldV3 | 1000 | 1000 | 23 | 0.917 | 0.859 | 0.726 |
| Pearson | 1000 | 1000 | 23 | 0.592 | 0.455 | 0.238 |
| PearsonV2,MM3 | 1000 | 1000 | 23 | 0.591 | 0.445 | 0.200 |
| RSS,MM3 | 1000 | 1000 | 23 | 0.597 | 0.457 | 0.210 |
| Multn,MM3 | 1000 | 1000 | 23 | 0.864 | 0.788 | 0.591 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.471 | 0.271 | 0.067 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 1000 | 0.556 | 0.425 | 0.175 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.555 | 0.408 | 0.146 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.574 | 0.426 | 0.143 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.969 | 0.932 | 0.801 |

**Power** ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.936 | 0.882 | 0.712 |
| WaldV2,MM3 | 1000 | 1000 | 0 | 0.859 | 0.778 | 0.481 |
| WaldV3 | 1000 | 1000 | 0 | 0.899 | 0.824 | 0.601 |
| Pearson | 1000 | 1000 | 0 | 0.916 | 0.862 | 0.665 |
| PearsonV2,MM3 | 1000 | 1000 | 0 | 0.917 | 0.861 | 0.650 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.922 | 0.865 | 0.662 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.904 | 0.836 | 0.616 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| WaldV3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 4 | 1.000 | 1.000 | 0.999 |
| PearsonV2,MM3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 0.998 |
| RSS,MM3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 85 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 85 | 1.000 | 1.000 | 1.000 |
| WaldV3 | 1000 | 1000 | 85 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 85 | 1.000 | 1.000 | 1.000 |
| PearsonV2,MM3 | 1000 | 1000 | 85 | 1.000 | 1.000 | 1.000 |
| RSS,MM3 | 1000 | 1000 | 85 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 85 | 1.000 | 1.000 | 0.999 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 11 | 0.978 | 0.964 | 0.905 |
| WaldV2,MM3 | 1000 | 1000 | 11 | 0.558 | 0.398 | 0.155 |
| WaldV3 | 1000 | 1000 | 11 | 0.893 | 0.826 | 0.647 |
| Pearson | 1000 | 1000 | 11 | 0.807 | 0.720 | 0.505 |
| PearsonV2,MM3 | 1000 | 1000 | 11 | 0.807 | 0.706 | 0.459 |
| RSS,MM3 | 1000 | 1000 | 11 | 0.822 | 0.725 | 0.492 |
| Multn,MM3 | 1000 | 1000 | 11 | 0.906 | 0.853 | 0.679 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 180 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 180 | 0.763 | 0.608 | 0.271 |
| WaldV3 | 1000 | 1000 | 180 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 180 | 0.833 | 0.707 | 0.435 |
| PearsonV2,MM3 | 1000 | 1000 | 180 | 0.832 | 0.694 | 0.405 |
| RSS,MM3 | 1000 | 1000 | 180 | 0.872 | 0.746 | 0.449 |
| Multn,MM3 | 1000 | 1000 | 180 | 0.994 | 0.975 | 0.885 |

## Strat-clust sampling

**Type I errors** ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 4 | 0.747 | 0.682 | 0.565 |
| WaldV2,MM3 | 1000 | 1000 | 4 | 0.072 | 0.035 | 0.007 |
| WaldV3 | 1000 | 1000 | 4 | 0.307 | 0.222 | 0.122 |
| Pearson | 1000 | 1000 | 4 | 0.076 | 0.038 | 0.003 |
| PearsonV2,MM3 | 1000 | 1000 | 4 | 0.078 | 0.036 | 0.003 |
| RSS,MM3 | 1000 | 1000 | 4 | 0.070 | 0.034 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 4 | 0.208 | 0.131 | 0.039 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.069 | 0.022 | 0.002 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 1000 | 0.068 | 0.025 | 0.001 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.068 | 0.022 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.049 | 0.015 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.262 | 0.174 | 0.068 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | | | |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.024 | 0.003 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.132 | 0.114 | 0.095 |
| Pearson | 1000 | 1000 | 1000 | 0.001 | 0.000 | 0.000 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.001 | 0.000 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.000 | 0.000 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.014 | 0.004 | 0.000 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.039 | 0.010 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.975 | 0.959 | 0.937 |
| Pearson | 1000 | 1000 | 1000 | 0.032 | 0.012 | 0.000 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.032 | 0.012 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.023 | 0.006 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.111 | 0.064 | 0.010 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | | | |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.020 | 0.003 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.013 | 0.011 | 0.009 |
| Pearson | 1000 | 1000 | 1000 | 0.006 | 0.001 | 0.000 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.005 | 0.001 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.004 | 0.000 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.015 | 0.004 | 0.000 |

**Type I errors ($n = 1000$)**

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.360 | 0.267 | 0.125 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 0.066 | 0.033 | 0.005 |
| WaldV3 | 1000 | 1000 | 2 | 0.166 | 0.095 | 0.038 |
| Pearson | 1000 | 1000 | 2 | 0.074 | 0.044 | 0.007 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 0.075 | 0.043 | 0.006 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.073 | 0.039 | 0.005 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.147 | 0.085 | 0.030 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 8 | 0.996 | 0.995 | 0.984 |
| WaldV2,MM3 | 1000 | 1000 | 8 | 0.068 | 0.019 | 0.002 |
| WaldV3 | 1000 | 1000 | 8 | 0.865 | 0.816 | 0.693 |
| Pearson | 1000 | 1000 | 8 | 0.067 | 0.029 | 0.004 |
| PearsonV2,MM3 | 1000 | 1000 | 8 | 0.068 | 0.027 | 0.002 |
| RSS,MM3 | 1000 | 1000 | 8 | 0.059 | 0.021 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 8 | 0.388 | 0.264 | 0.109 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.022 | 0.003 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.999 | 0.999 | 0.998 |
| Pearson | 1000 | 1000 | 1000 | 0.013 | 0.001 | 0.000 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.012 | 0.000 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.007 | 0.000 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.326 | 0.211 | 0.086 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.047 | 0.014 | 0.003 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.995 |
| Pearson | 1000 | 1000 | 1000 | 0.049 | 0.020 | 0.004 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.049 | 0.017 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.039 | 0.015 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.417 | 0.309 | 0.150 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.028 | 0.006 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.985 | 0.981 | 0.968 |
| Pearson | 1000 | 1000 | 1000 | 0.025 | 0.005 | 0.000 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.025 | 0.005 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.017 | 0.000 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.242 | 0.155 | 0.046 |

**Type I errors** ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.208 | 0.148 | 0.055 |
| WaldV2,MM3 | 1000 | 1000 | 0 | 0.098 | 0.044 | 0.014 |
| WaldV3 | 1000 | 1000 | 0 | 0.140 | 0.082 | 0.026 |
| Pearson | 1000 | 1000 | 0 | 0.103 | 0.043 | 0.014 |
| PearsonV2,MM3 | 1000 | 1000 | 0 | 0.103 | 0.041 | 0.012 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.105 | 0.046 | 0.012 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.142 | 0.083 | 0.021 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 4 | 0.777 | 0.691 | 0.544 |
| WaldV2,MM3 | 1000 | 1000 | 4 | 0.089 | 0.039 | 0.003 |
| WaldV3 | 1000 | 1000 | 4 | 0.493 | 0.384 | 0.230 |
| Pearson | 1000 | 1000 | 4 | 0.089 | 0.046 | 0.011 |
| PearsonV2,MM3 | 1000 | 1000 | 4 | 0.089 | 0.045 | 0.008 |
| RSS,MM3 | 1000 | 1000 | 4 | 0.083 | 0.039 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 4 | 0.415 | 0.312 | 0.136 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.041 | 0.009 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 1000 | 0.037 | 0.014 | 0.000 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.037 | 0.012 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.026 | 0.007 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.820 | 0.719 | 0.479 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 37 | 0.987 | 0.971 | 0.933 |
| WaldV2,MM3 | 1000 | 1000 | 37 | 0.080 | 0.038 | 0.000 |
| WaldV3 | 1000 | 1000 | 37 | 0.867 | 0.814 | 0.661 |
| Pearson | 1000 | 1000 | 37 | 0.076 | 0.029 | 0.004 |
| PearsonV2,MM3 | 1000 | 1000 | 37 | 0.076 | 0.026 | 0.002 |
| RSS,MM3 | 1000 | 1000 | 37 | 0.069 | 0.029 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 37 | 0.676 | 0.530 | 0.286 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.034 | 0.012 | 0.001 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 1000 | 0.044 | 0.024 | 0.002 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.044 | 0.021 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.033 | 0.014 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.801 | 0.702 | 0.444 |

**Type I errors** ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.176 | 0.114 | 0.038 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.091 | 0.048 | 0.009 |
| WaldV3 | 1000 | 1000 | 1 | 0.138 | 0.081 | 0.021 |
| Pearson | 1000 | 1000 | 1 | 0.099 | 0.054 | 0.011 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.100 | 0.052 | 0.009 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.100 | 0.052 | 0.014 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.133 | 0.079 | 0.023 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 8 | 0.537 | 0.430 | 0.243 |
| WaldV2,MM3 | 1000 | 1000 | 8 | 0.078 | 0.035 | 0.003 |
| WaldV3 | 1000 | 1000 | 8 | 0.320 | 0.224 | 0.078 |
| Pearson | 1000 | 1000 | 8 | 0.082 | 0.034 | 0.009 |
| PearsonV2,MM3 | 1000 | 1000 | 8 | 0.081 | 0.032 | 0.006 |
| RSS,MM3 | 1000 | 1000 | 8 | 0.088 | 0.032 | 0.005 |
| Multn,MM3 | 1000 | 1000 | 8 | 0.306 | 0.211 | 0.078 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 195 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 195 | 0.045 | 0.018 | 0.001 |
| WaldV3 | 1000 | 1000 | 195 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 195 | 0.054 | 0.022 | 0.007 |
| PearsonV2,MM3 | 1000 | 1000 | 195 | 0.052 | 0.021 | 0.005 |
| RSS,MM3 | 1000 | 1000 | 195 | 0.051 | 0.018 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 195 | 0.904 | 0.808 | 0.589 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 26 | 0.822 | 0.765 | 0.605 |
| WaldV2,MM3 | 1000 | 1000 | 26 | 0.075 | 0.029 | 0.002 |
| WaldV3 | 1000 | 1000 | 26 | 0.630 | 0.516 | 0.322 |
| Pearson | 1000 | 1000 | 26 | 0.083 | 0.036 | 0.004 |
| PearsonV2,MM3 | 1000 | 1000 | 26 | 0.082 | 0.035 | 0.003 |
| RSS,MM3 | 1000 | 1000 | 26 | 0.073 | 0.030 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 26 | 0.556 | 0.439 | 0.239 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 256 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 256 | 0.047 | 0.017 | 0.002 |
| WaldV3 | 1000 | 1000 | 256 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 256 | 0.058 | 0.019 | 0.001 |
| PearsonV2,MM3 | 1000 | 1000 | 256 | 0.057 | 0.019 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 256 | 0.041 | 0.012 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 256 | 0.946 | 0.856 | 0.659 |

**Power** ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 5 | 0.872 | 0.834 | 0.734 |
| WaldV2,MM3 | 1000 | 1000 | 5 | 0.186 | 0.103 | 0.012 |
| WaldV3 | 1000 | 1000 | 5 | 0.474 | 0.379 | 0.234 |
| Pearson | 1000 | 1000 | 5 | 0.234 | 0.136 | 0.036 |
| PearsonV2,MM3 | 1000 | 1000 | 5 | 0.236 | 0.133 | 0.026 |
| RSS,MM3 | 1000 | 1000 | 5 | 0.234 | 0.124 | 0.025 |
| Multn,MM3 | 1000 | 1000 | 5 | 0.300 | 0.197 | 0.088 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.574 | 0.358 | 0.109 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 1000 | 0.372 | 0.234 | 0.069 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.374 | 0.221 | 0.053 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.382 | 0.224 | 0.051 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.432 | 0.321 | 0.157 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | | | |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.716 | 0.441 | 0.079 |
| WaldV3 | 1000 | 1000 | 1000 | 0.224 | 0.200 | 0.152 |
| Pearson | 1000 | 1000 | 1000 | 0.373 | 0.162 | 0.015 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.371 | 0.144 | 0.013 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.374 | 0.137 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.085 | 0.038 | 0.008 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.210 | 0.080 | 0.009 |
| WaldV3 | 1000 | 1000 | 1000 | 0.976 | 0.968 | 0.939 |
| Pearson | 1000 | 1000 | 1000 | 0.265 | 0.152 | 0.022 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.267 | 0.140 | 0.017 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.237 | 0.106 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.219 | 0.129 | 0.035 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | | | |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.127 | 0.024 | 0.000 |
| WaldV3 | 1000 | 1000 | 1000 | 0.020 | 0.018 | 0.012 |
| Pearson | 1000 | 1000 | 1000 | 0.114 | 0.037 | 0.002 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.114 | 0.033 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.090 | 0.023 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.032 | 0.013 | 0.000 |

**Power** ($n = 1000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.747 | 0.662 | 0.486 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.387 | 0.253 | 0.071 |
| WaldV3 | 1000 | 1000 | 1 | 0.573 | 0.444 | 0.239 |
| Pearson | 1000 | 1000 | 1 | 0.516 | 0.378 | 0.158 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.517 | 0.367 | 0.150 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.518 | 0.374 | 0.151 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.522 | 0.386 | 0.181 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 21 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 21 | 0.905 | 0.838 | 0.577 |
| WaldV3 | 1000 | 1000 | 21 | 0.999 | 0.996 | 0.984 |
| Pearson | 1000 | 1000 | 21 | 0.770 | 0.652 | 0.374 |
| PearsonV2,MM3 | 1000 | 1000 | 21 | 0.770 | 0.641 | 0.322 |
| RSS,MM3 | 1000 | 1000 | 21 | 0.819 | 0.691 | 0.385 |
| Multn,MM3 | 1000 | 1000 | 21 | 0.830 | 0.729 | 0.504 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.996 | 0.985 | 0.886 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 1000 | 0.967 | 0.890 | 0.651 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.966 | 0.881 | 0.602 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.975 | 0.912 | 0.665 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.799 | 0.692 | 0.461 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.650 | 0.459 | 0.147 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.999 |
| Pearson | 1000 | 1000 | 1000 | 0.761 | 0.645 | 0.396 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.760 | 0.636 | 0.351 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.767 | 0.617 | 0.315 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.653 | 0.501 | 0.289 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.569 | 0.326 | 0.057 |
| WaldV3 | 1000 | 1000 | 1000 | 0.997 | 0.994 | 0.990 |
| Pearson | 1000 | 1000 | 1000 | 0.671 | 0.487 | 0.182 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.670 | 0.455 | 0.146 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.669 | 0.443 | 0.122 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.606 | 0.484 | 0.235 |

**Power** ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.865 | 0.794 | 0.622 |
| WaldV2,MM3 | 1000 | 1000 | 0 | 0.724 | 0.582 | 0.303 |
| WaldV3 | 1000 | 1000 | 0 | 0.803 | 0.714 | 0.471 |
| Pearson | 1000 | 1000 | 0 | 0.813 | 0.717 | 0.488 |
| PearsonV2,MM3 | 1000 | 1000 | 0 | 0.814 | 0.715 | 0.470 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.816 | 0.723 | 0.482 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.796 | 0.703 | 0.449 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 6 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 6 | 1.000 | 1.000 | 0.989 |
| WaldV3 | 1000 | 1000 | 6 | 1.000 | 0.999 | 0.996 |
| Pearson | 1000 | 1000 | 6 | 0.987 | 0.974 | 0.889 |
| PearsonV2,MM3 | 1000 | 1000 | 6 | 0.987 | 0.969 | 0.866 |
| RSS,MM3 | 1000 | 1000 | 6 | 0.995 | 0.984 | 0.923 |
| Multn,MM3 | 1000 | 1000 | 6 | 1.000 | 0.998 | 0.993 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.999 | 0.990 | 0.951 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 23 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 23 | 0.971 | 0.920 | 0.738 |
| WaldV3 | 1000 | 1000 | 23 | 0.999 | 0.999 | 0.993 |
| Pearson | 1000 | 1000 | 23 | 0.985 | 0.974 | 0.896 |
| PearsonV2,MM3 | 1000 | 1000 | 23 | 0.985 | 0.972 | 0.867 |
| RSS,MM3 | 1000 | 1000 | 23 | 0.989 | 0.978 | 0.877 |
| Multn,MM3 | 1000 | 1000 | 23 | 0.991 | 0.970 | 0.884 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 1000 | 0.972 | 0.924 | 0.710 |
| WaldV3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 1000 | 0.989 | 0.965 | 0.859 |
| PearsonV2,MM3 | 1000 | 1000 | 1000 | 0.989 | 0.959 | 0.837 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.994 | 0.970 | 0.842 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.981 | 0.953 | 0.842 |

**Power** ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---|---|---|---|---|---|---|
| **1F 5V** | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.962 | 0.906 | 0.772 |
| WaldV2,MM3 | 1000 | 1000 | 1 | 0.899 | 0.807 | 0.541 |
| WaldV3 | 1000 | 1000 | 1 | 0.939 | 0.867 | 0.701 |
| Pearson | 1000 | 1000 | 1 | 0.944 | 0.889 | 0.745 |
| PearsonV2,MM3 | 1000 | 1000 | 1 | 0.944 | 0.886 | 0.731 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.943 | 0.895 | 0.751 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.931 | 0.869 | 0.703 |
| **1F 8V** | | | | | | |
| Wald | 1000 | 1000 | 2 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 2 | 1.000 | 1.000 | 1.000 |
| WaldV3 | 1000 | 1000 | 2 | 1.000 | 1.000 | 0.999 |
| Pearson | 1000 | 1000 | 2 | 1.000 | 0.999 | 0.995 |
| PearsonV2,MM3 | 1000 | 1000 | 2 | 1.000 | 0.999 | 0.993 |
| RSS,MM3 | 1000 | 1000 | 2 | 1.000 | 0.999 | 0.998 |
| Multn,MM3 | 1000 | 1000 | 2 | 1.000 | 1.000 | 1.000 |
| **1F 15V** | | | | | | |
| Wald | 1000 | 1000 | 95 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 95 | 1.000 | 1.000 | 1.000 |
| WaldV3 | 1000 | 1000 | 95 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 95 | 1.000 | 1.000 | 1.000 |
| PearsonV2,MM3 | 1000 | 1000 | 95 | 1.000 | 1.000 | 1.000 |
| RSS,MM3 | 1000 | 1000 | 95 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 95 | 1.000 | 1.000 | 0.997 |
| **2F 10V** | | | | | | |
| Wald | 1000 | 1000 | 15 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 15 | 0.999 | 0.998 | 0.977 |
| WaldV3 | 1000 | 1000 | 15 | 1.000 | 1.000 | 0.995 |
| Pearson | 1000 | 1000 | 15 | 1.000 | 1.000 | 0.991 |
| PearsonV2,MM3 | 1000 | 1000 | 15 | 1.000 | 0.999 | 0.989 |
| RSS,MM3 | 1000 | 1000 | 15 | 1.000 | 0.999 | 0.992 |
| Multn,MM3 | 1000 | 1000 | 15 | 1.000 | 0.999 | 0.988 |
| **3F 15V** | | | | | | |
| Wald | 1000 | 1000 | 194 | 1.000 | 1.000 | 1.000 |
| WaldV2,MM3 | 1000 | 1000 | 194 | 1.000 | 0.999 | 0.989 |
| WaldV3 | 1000 | 1000 | 194 | 1.000 | 1.000 | 1.000 |
| Pearson | 1000 | 1000 | 194 | 1.000 | 1.000 | 0.997 |
| PearsonV2,MM3 | 1000 | 1000 | 194 | 1.000 | 1.000 | 0.996 |
| RSS,MM3 | 1000 | 1000 | 194 | 1.000 | 1.000 | 0.996 |
| Multn,MM3 | 1000 | 1000 | 194 | 0.999 | 0.998 | 0.980 |