

Tables of simulation results

Contents

| | |
|--|----|
| Simple random sampling | 3 |
| Type I errors ($n = 500$) | 3 |
| Type I errors ($n = 1000$) | 4 |
| Type I errors ($n = 2000$) | 5 |
| Type I errors ($n = 3000$) | 6 |
| Power ($n = 500$) | 7 |
| Power ($n = 1000$) | 8 |
| Power ($n = 2000$) | 9 |
| Power ($n = 3000$) | 10 |
| Stratified sampling | 11 |
| Type I errors ($n = 500$) | 11 |
| Type I errors ($n = 1000$) | 12 |
| Type I errors ($n = 2000$) | 13 |
| Type I errors ($n = 3000$) | 14 |
| Power ($n = 500$) | 15 |
| Power ($n = 1000$) | 16 |
| Power ($n = 2000$) | 17 |
| Power ($n = 3000$) | 18 |
| Cluster sampling | 19 |
| Type I errors ($n = 500$) | 19 |
| Type I errors ($n = 1000$) | 20 |
| Type I errors ($n = 2000$) | 21 |
| Type I errors ($n = 3000$) | 22 |
| Power ($n = 500$) | 23 |
| Power ($n = 1000$) | 24 |
| Power ($n = 2000$) | 25 |
| Power ($n = 3000$) | 26 |
| Strat-clust sampling | 27 |
| Type I errors ($n = 500$) | 27 |

| | |
|--|----|
| Type I errors ($n = 1000$) | 28 |
| Type I errors ($n = 2000$) | 29 |
| Type I errors ($n = 3000$) | 30 |
| Power ($n = 500$) | 31 |
| Power ($n = 1000$) | 32 |
| Power ($n = 2000$) | 33 |
| Power ($n = 3000$) | 34 |

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 | 0.087 | 0.046 | 0.010 |
| WaldDiag,MM3 | 1000 | 1000 | 2 | 0.041 | 0.014 | 0.001 |
| WaldVCF | 1000 | 1000 | 2 | 0.083 | 0.046 | 0.010 |
| PearsonRS | 1000 | 1000 | 2 | 0.077 | 0.040 | 0.013 |
| Pearson,MM3 | 1000 | 1000 | 2 | 0.079 | 0.038 | 0.010 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.073 | 0.041 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.078 | 0.042 | 0.008 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.095 | 0.048 | 0.012 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.053 | 0.022 | 0.002 |
| WaldVCF | 1000 | 1000 | 1 | 0.093 | 0.048 | 0.012 |
| PearsonRS | 1000 | 1000 | 1 | 0.096 | 0.043 | 0.012 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.096 | 0.043 | 0.010 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.099 | 0.042 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.092 | 0.045 | 0.012 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 7 | 0.116 | 0.056 | 0.012 |
| WaldDiag,MM3 | 1000 | 1000 | 7 | 0.061 | 0.024 | 0.002 |
| WaldVCF | 1000 | 1000 | 7 | 0.114 | 0.055 | 0.012 |
| PearsonRS | 1000 | 1000 | 7 | 0.098 | 0.050 | 0.016 |
| Pearson,MM3 | 1000 | 1000 | 7 | 0.097 | 0.047 | 0.014 |
| RSS,MM3 | 1000 | 1000 | 7 | 0.099 | 0.044 | 0.012 |
| Multn,MM3 | 1000 | 1000 | 7 | 0.111 | 0.055 | 0.012 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 12 | 0.102 | 0.044 | 0.007 |
| WaldDiag,MM3 | 1000 | 1000 | 12 | 0.026 | 0.008 | 0.001 |
| WaldVCF | 1000 | 1000 | 12 | 0.097 | 0.039 | 0.006 |
| PearsonRS | 1000 | 1000 | 12 | 0.086 | 0.038 | 0.013 |
| Pearson,MM3 | 1000 | 1000 | 12 | 0.085 | 0.035 | 0.011 |
| RSS,MM3 | 1000 | 1000 | 12 | 0.079 | 0.038 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 12 | 0.085 | 0.033 | 0.004 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 33 | 0.114 | 0.066 | 0.014 |
| WaldDiag,MM3 | 1000 | 1000 | 33 | 0.029 | 0.011 | 0.001 |
| WaldVCF | 1000 | 1000 | 33 | 0.108 | 0.056 | 0.012 |
| PearsonRS | 1000 | 1000 | 33 | 0.094 | 0.044 | 0.013 |
| Pearson,MM3 | 1000 | 1000 | 33 | 0.090 | 0.039 | 0.010 |
| RSS,MM3 | 1000 | 1000 | 33 | 0.091 | 0.047 | 0.009 |
| Multn,MM3 | 1000 | 1000 | 33 | 0.102 | 0.046 | 0.009 |

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 | 0.085 | 0.038 | 0.004 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.052 | 0.019 | 0.001 |
| WaldVCF | 1000 | 1000 | 0 | 0.083 | 0.037 | 0.004 |
| PearsonRS | 1000 | 1000 | 0 | 0.077 | 0.030 | 0.006 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.077 | 0.027 | 0.005 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.076 | 0.026 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.077 | 0.037 | 0.002 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.121 | 0.064 | 0.016 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.081 | 0.038 | 0.005 |
| WaldVCF | 1000 | 1000 | 1 | 0.120 | 0.063 | 0.015 |
| PearsonRS | 1000 | 1000 | 1 | 0.107 | 0.047 | 0.008 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.105 | 0.047 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.105 | 0.054 | 0.004 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.119 | 0.061 | 0.015 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 14 | 0.107 | 0.047 | 0.009 |
| WaldDiag,MM3 | 1000 | 1000 | 14 | 0.072 | 0.027 | 0.006 |
| WaldVCF | 1000 | 1000 | 14 | 0.106 | 0.046 | 0.009 |
| PearsonRS | 1000 | 1000 | 14 | 0.108 | 0.064 | 0.013 |
| Pearson,MM3 | 1000 | 1000 | 14 | 0.107 | 0.062 | 0.010 |
| RSS,MM3 | 1000 | 1000 | 14 | 0.112 | 0.057 | 0.011 |
| Multn,MM3 | 1000 | 1000 | 14 | 0.105 | 0.045 | 0.009 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 6 | 0.093 | 0.039 | 0.011 |
| WaldDiag,MM3 | 1000 | 1000 | 6 | 0.051 | 0.016 | 0.001 |
| WaldVCF | 1000 | 1000 | 6 | 0.089 | 0.036 | 0.010 |
| PearsonRS | 1000 | 1000 | 6 | 0.094 | 0.053 | 0.007 |
| Pearson,MM3 | 1000 | 1000 | 6 | 0.094 | 0.047 | 0.005 |
| RSS,MM3 | 1000 | 1000 | 6 | 0.090 | 0.043 | 0.005 |
| Multn,MM3 | 1000 | 1000 | 6 | 0.086 | 0.034 | 0.009 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 21 | 0.092 | 0.046 | 0.008 |
| WaldDiag,MM3 | 1000 | 1000 | 21 | 0.047 | 0.020 | 0.002 |
| WaldVCF | 1000 | 1000 | 21 | 0.083 | 0.042 | 0.008 |
| PearsonRS | 1000 | 1000 | 21 | 0.088 | 0.042 | 0.014 |
| Pearson,MM3 | 1000 | 1000 | 21 | 0.086 | 0.040 | 0.013 |
| RSS,MM3 | 1000 | 1000 | 21 | 0.084 | 0.039 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 21 | 0.079 | 0.041 | 0.007 |

Type I errors ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.089 | 0.042 | 0.010 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.080 | 0.036 | 0.007 |
| WaldVCF | 1000 | 1000 | 1 | 0.089 | 0.041 | 0.009 |
| PearsonRS | 1000 | 1000 | 1 | 0.086 | 0.037 | 0.014 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.088 | 0.035 | 0.011 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.083 | 0.038 | 0.011 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.088 | 0.040 | 0.009 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.091 | 0.051 | 0.009 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.083 | 0.038 | 0.006 |
| WaldVCF | 1000 | 1000 | 1 | 0.089 | 0.048 | 0.009 |
| PearsonRS | 1000 | 1000 | 1 | 0.102 | 0.055 | 0.019 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.102 | 0.054 | 0.013 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.106 | 0.052 | 0.013 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.089 | 0.049 | 0.009 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 22 | 0.100 | 0.060 | 0.013 |
| WaldDiag,MM3 | 1000 | 1000 | 22 | 0.085 | 0.039 | 0.008 |
| WaldVCF | 1000 | 1000 | 22 | 0.097 | 0.058 | 0.013 |
| PearsonRS | 1000 | 1000 | 22 | 0.110 | 0.054 | 0.012 |
| Pearson,MM3 | 1000 | 1000 | 22 | 0.107 | 0.054 | 0.012 |
| RSS,MM3 | 1000 | 1000 | 22 | 0.104 | 0.052 | 0.013 |
| Multn,MM3 | 1000 | 1000 | 22 | 0.096 | 0.058 | 0.013 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 7 | 0.093 | 0.032 | 0.005 |
| WaldDiag,MM3 | 1000 | 1000 | 7 | 0.064 | 0.024 | 0.006 |
| WaldVCF | 1000 | 1000 | 7 | 0.088 | 0.030 | 0.004 |
| PearsonRS | 1000 | 1000 | 7 | 0.075 | 0.036 | 0.009 |
| Pearson,MM3 | 1000 | 1000 | 7 | 0.075 | 0.033 | 0.009 |
| RSS,MM3 | 1000 | 1000 | 7 | 0.073 | 0.038 | 0.009 |
| Multn,MM3 | 1000 | 1000 | 7 | 0.084 | 0.030 | 0.004 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 50 | 0.110 | 0.054 | 0.007 |
| WaldDiag,MM3 | 1000 | 1000 | 50 | 0.069 | 0.033 | 0.003 |
| WaldVCF | 1000 | 1000 | 50 | 0.096 | 0.050 | 0.006 |
| PearsonRS | 1000 | 1000 | 50 | 0.102 | 0.053 | 0.011 |
| Pearson,MM3 | 1000 | 1000 | 50 | 0.100 | 0.050 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 50 | 0.094 | 0.052 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 50 | 0.095 | 0.049 | 0.006 |

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 | 0.085 | 0.035 | 0.003 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.067 | 0.027 | 0.007 |
| WaldVCF | 1000 | 1000 | 1 | 0.083 | 0.035 | 0.003 |
| PearsonRS | 1000 | 1000 | 1 | 0.086 | 0.040 | 0.005 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.086 | 0.039 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.082 | 0.033 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.082 | 0.035 | 0.002 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 4 | 0.098 | 0.049 | 0.012 |
| WaldDiag,MM3 | 1000 | 1000 | 4 | 0.088 | 0.043 | 0.006 |
| WaldVCF | 1000 | 1000 | 4 | 0.096 | 0.049 | 0.012 |
| PearsonRS | 1000 | 1000 | 4 | 0.095 | 0.047 | 0.012 |
| Pearson,MM3 | 1000 | 1000 | 4 | 0.094 | 0.043 | 0.009 |
| RSS,MM3 | 1000 | 1000 | 4 | 0.101 | 0.044 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 4 | 0.095 | 0.048 | 0.012 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 15 | 0.092 | 0.045 | 0.012 |
| WaldDiag,MM3 | 1000 | 1000 | 15 | 0.082 | 0.038 | 0.011 |
| WaldVCF | 1000 | 1000 | 15 | 0.090 | 0.043 | 0.011 |
| PearsonRS | 1000 | 1000 | 15 | 0.103 | 0.054 | 0.014 |
| Pearson,MM3 | 1000 | 1000 | 15 | 0.102 | 0.052 | 0.013 |
| RSS,MM3 | 1000 | 1000 | 15 | 0.102 | 0.050 | 0.011 |
| Multn,MM3 | 1000 | 1000 | 15 | 0.090 | 0.043 | 0.012 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 14 | 0.111 | 0.049 | 0.009 |
| WaldDiag,MM3 | 1000 | 1000 | 14 | 0.089 | 0.040 | 0.010 |
| WaldVCF | 1000 | 1000 | 14 | 0.106 | 0.045 | 0.009 |
| PearsonRS | 1000 | 1000 | 14 | 0.075 | 0.047 | 0.010 |
| Pearson,MM3 | 1000 | 1000 | 14 | 0.075 | 0.046 | 0.009 |
| RSS,MM3 | 1000 | 1000 | 14 | 0.077 | 0.045 | 0.009 |
| Multn,MM3 | 1000 | 1000 | 14 | 0.105 | 0.043 | 0.009 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 49 | 0.133 | 0.063 | 0.019 |
| WaldDiag,MM3 | 1000 | 1000 | 49 | 0.092 | 0.039 | 0.011 |
| WaldVCF | 1000 | 1000 | 49 | 0.117 | 0.055 | 0.019 |
| PearsonRS | 1000 | 1000 | 49 | 0.096 | 0.055 | 0.016 |
| Pearson,MM3 | 1000 | 1000 | 49 | 0.092 | 0.051 | 0.012 |
| RSS,MM3 | 1000 | 1000 | 49 | 0.107 | 0.054 | 0.009 |
| Multn,MM3 | 1000 | 1000 | 49 | 0.114 | 0.055 | 0.019 |

Power ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.338 | 0.232 | 0.091 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.153 | 0.071 | 0.012 |
| WaldVCF | 1000 | 1000 | 1 | 0.336 | 0.230 | 0.090 |
| PearsonRS | 1000 | 1000 | 1 | 0.346 | 0.242 | 0.100 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.346 | 0.237 | 0.089 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.352 | 0.248 | 0.096 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.315 | 0.204 | 0.076 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.833 | 0.750 | 0.553 |
| WaldDiag,MM3 | 1000 | 1000 | 2 | 0.690 | 0.545 | 0.296 |
| WaldVCF | 1000 | 1000 | 2 | 0.831 | 0.748 | 0.552 |
| PearsonRS | 1000 | 1000 | 2 | 0.657 | 0.543 | 0.325 |
| Pearson,MM3 | 1000 | 1000 | 2 | 0.656 | 0.533 | 0.302 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.722 | 0.600 | 0.365 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.827 | 0.738 | 0.535 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 9 | 0.967 | 0.935 | 0.837 |
| WaldDiag,MM3 | 1000 | 1000 | 9 | 0.919 | 0.878 | 0.738 |
| WaldVCF | 1000 | 1000 | 9 | 0.966 | 0.933 | 0.834 |
| PearsonRS | 1000 | 1000 | 9 | 0.917 | 0.867 | 0.708 |
| Pearson,MM3 | 1000 | 1000 | 9 | 0.916 | 0.860 | 0.697 |
| RSS,MM3 | 1000 | 1000 | 9 | 0.940 | 0.901 | 0.761 |
| Multn,MM3 | 1000 | 1000 | 9 | 0.965 | 0.931 | 0.831 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 9 | 0.224 | 0.148 | 0.034 |
| WaldDiag,MM3 | 1000 | 1000 | 9 | 0.113 | 0.048 | 0.006 |
| WaldVCF | 1000 | 1000 | 9 | 0.209 | 0.139 | 0.031 |
| PearsonRS | 1000 | 1000 | 9 | 0.239 | 0.146 | 0.058 |
| Pearson,MM3 | 1000 | 1000 | 9 | 0.234 | 0.138 | 0.046 |
| RSS,MM3 | 1000 | 1000 | 9 | 0.247 | 0.153 | 0.053 |
| Multn,MM3 | 1000 | 1000 | 9 | 0.193 | 0.122 | 0.027 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 26 | 0.263 | 0.160 | 0.056 |
| WaldDiag,MM3 | 1000 | 1000 | 26 | 0.140 | 0.075 | 0.010 |
| WaldVCF | 1000 | 1000 | 26 | 0.245 | 0.148 | 0.050 |
| PearsonRS | 1000 | 1000 | 26 | 0.258 | 0.173 | 0.080 |
| Pearson,MM3 | 1000 | 1000 | 26 | 0.255 | 0.168 | 0.072 |
| RSS,MM3 | 1000 | 1000 | 26 | 0.276 | 0.181 | 0.073 |
| Multn,MM3 | 1000 | 1000 | 26 | 0.224 | 0.137 | 0.039 |

Power ($n = 1000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.525 | 0.409 | 0.192 |
| WaldDiag,MM3 | 1000 | 1000 | 2 | 0.365 | 0.215 | 0.064 |
| WaldVCF | 1000 | 1000 | 2 | 0.521 | 0.406 | 0.191 |
| PearsonRS | 1000 | 1000 | 2 | 0.546 | 0.436 | 0.241 |
| Pearson,MM3 | 1000 | 1000 | 2 | 0.548 | 0.433 | 0.229 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.562 | 0.444 | 0.250 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.513 | 0.399 | 0.188 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.979 | 0.964 | 0.918 |
| WaldDiag,MM3 | 1000 | 1000 | 2 | 0.965 | 0.928 | 0.808 |
| WaldVCF | 1000 | 1000 | 2 | 0.979 | 0.964 | 0.917 |
| PearsonRS | 1000 | 1000 | 2 | 0.924 | 0.883 | 0.741 |
| Pearson,MM3 | 1000 | 1000 | 2 | 0.924 | 0.881 | 0.718 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.951 | 0.918 | 0.796 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.979 | 0.963 | 0.916 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 9 | 1.000 | 0.998 | 0.994 |
| WaldDiag,MM3 | 1000 | 1000 | 9 | 0.998 | 0.998 | 0.985 |
| WaldVCF | 1000 | 1000 | 9 | 1.000 | 0.998 | 0.994 |
| PearsonRS | 1000 | 1000 | 9 | 0.996 | 0.991 | 0.974 |
| Pearson,MM3 | 1000 | 1000 | 9 | 0.996 | 0.991 | 0.970 |
| RSS,MM3 | 1000 | 1000 | 9 | 0.997 | 0.994 | 0.986 |
| Multn,MM3 | 1000 | 1000 | 9 | 1.000 | 0.998 | 0.994 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 6 | 0.338 | 0.227 | 0.099 |
| WaldDiag,MM3 | 1000 | 1000 | 6 | 0.270 | 0.182 | 0.067 |
| WaldVCF | 1000 | 1000 | 6 | 0.321 | 0.221 | 0.092 |
| PearsonRS | 1000 | 1000 | 6 | 0.397 | 0.301 | 0.163 |
| Pearson,MM3 | 1000 | 1000 | 6 | 0.394 | 0.294 | 0.145 |
| RSS,MM3 | 1000 | 1000 | 6 | 0.420 | 0.314 | 0.161 |
| Multn,MM3 | 1000 | 1000 | 6 | 0.312 | 0.221 | 0.086 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 35 | 0.403 | 0.289 | 0.123 |
| WaldDiag,MM3 | 1000 | 1000 | 35 | 0.356 | 0.250 | 0.105 |
| WaldVCF | 1000 | 1000 | 35 | 0.382 | 0.267 | 0.113 |
| PearsonRS | 1000 | 1000 | 35 | 0.462 | 0.378 | 0.218 |
| Pearson,MM3 | 1000 | 1000 | 35 | 0.461 | 0.373 | 0.205 |
| RSS,MM3 | 1000 | 1000 | 35 | 0.501 | 0.381 | 0.229 |
| Multn,MM3 | 1000 | 1000 | 35 | 0.372 | 0.264 | 0.113 |

Power ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.796 | 0.706 | 0.499 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.682 | 0.542 | 0.281 |
| WaldVCF | 1000 | 1000 | 1 | 0.796 | 0.706 | 0.499 |
| PearsonRS | 1000 | 1000 | 1 | 0.820 | 0.731 | 0.542 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.821 | 0.728 | 0.520 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.829 | 0.746 | 0.555 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.795 | 0.704 | 0.495 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 7 | 1.000 | 1.000 | 0.998 |
| WaldDiag,MM3 | 1000 | 1000 | 7 | 1.000 | 0.999 | 0.997 |
| WaldVCF | 1000 | 1000 | 7 | 1.000 | 1.000 | 0.998 |
| PearsonRS | 1000 | 1000 | 7 | 0.998 | 0.995 | 0.979 |
| Pearson,MM3 | 1000 | 1000 | 7 | 0.998 | 0.995 | 0.971 |
| RSS,MM3 | 1000 | 1000 | 7 | 0.999 | 0.999 | 0.989 |
| Multn,MM3 | 1000 | 1000 | 7 | 1.000 | 1.000 | 0.998 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 14 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 14 | 1.000 | 1.000 | 1.000 |
| WaldVCF | 1000 | 1000 | 14 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 14 | 1.000 | 1.000 | 1.000 |
| Pearson,MM3 | 1000 | 1000 | 14 | 1.000 | 1.000 | 1.000 |
| RSS,MM3 | 1000 | 1000 | 14 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 14 | 1.000 | 1.000 | 1.000 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 6 | 0.526 | 0.416 | 0.252 |
| WaldDiag,MM3 | 1000 | 1000 | 6 | 0.512 | 0.419 | 0.222 |
| WaldVCF | 1000 | 1000 | 6 | 0.503 | 0.403 | 0.243 |
| PearsonRS | 1000 | 1000 | 6 | 0.616 | 0.517 | 0.351 |
| Pearson,MM3 | 1000 | 1000 | 6 | 0.615 | 0.504 | 0.326 |
| RSS,MM3 | 1000 | 1000 | 6 | 0.632 | 0.539 | 0.363 |
| Multn,MM3 | 1000 | 1000 | 6 | 0.507 | 0.405 | 0.247 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 41 | 0.678 | 0.567 | 0.372 |
| WaldDiag,MM3 | 1000 | 1000 | 41 | 0.699 | 0.596 | 0.402 |
| WaldVCF | 1000 | 1000 | 41 | 0.663 | 0.555 | 0.352 |
| PearsonRS | 1000 | 1000 | 41 | 0.774 | 0.678 | 0.535 |
| Pearson,MM3 | 1000 | 1000 | 41 | 0.770 | 0.671 | 0.511 |
| RSS,MM3 | 1000 | 1000 | 41 | 0.787 | 0.720 | 0.546 |
| Multn,MM3 | 1000 | 1000 | 41 | 0.667 | 0.554 | 0.355 |

Power ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.923 | 0.874 | 0.727 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.860 | 0.751 | 0.526 |
| WaldVCF | 1000 | 1000 | 1 | 0.923 | 0.874 | 0.726 |
| PearsonRS | 1000 | 1000 | 1 | 0.925 | 0.882 | 0.748 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.925 | 0.880 | 0.742 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.937 | 0.898 | 0.768 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.923 | 0.873 | 0.725 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| WaldVCF | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 4 | 1.000 | 1.000 | 0.999 |
| Pearson,MM3 | 1000 | 1000 | 4 | 1.000 | 0.999 | 0.999 |
| RSS,MM3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 0.999 |
| Multn,MM3 | 1000 | 1000 | 4 | 1.000 | 1.000 | 1.000 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 9 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 9 | 1.000 | 1.000 | 1.000 |
| WaldVCF | 1000 | 1000 | 9 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 9 | 1.000 | 1.000 | 1.000 |
| Pearson,MM3 | 1000 | 1000 | 9 | 1.000 | 1.000 | 1.000 |
| RSS,MM3 | 1000 | 1000 | 9 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 9 | 1.000 | 1.000 | 1.000 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 14 | 0.699 | 0.587 | 0.411 |
| WaldDiag,MM3 | 1000 | 1000 | 14 | 0.720 | 0.604 | 0.415 |
| WaldVCF | 1000 | 1000 | 14 | 0.688 | 0.571 | 0.393 |
| PearsonRS | 1000 | 1000 | 14 | 0.770 | 0.688 | 0.541 |
| Pearson,MM3 | 1000 | 1000 | 14 | 0.766 | 0.678 | 0.518 |
| RSS,MM3 | 1000 | 1000 | 14 | 0.794 | 0.716 | 0.561 |
| Multn,MM3 | 1000 | 1000 | 14 | 0.691 | 0.578 | 0.397 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 38 | 0.831 | 0.759 | 0.583 |
| WaldDiag,MM3 | 1000 | 1000 | 38 | 0.861 | 0.800 | 0.633 |
| WaldVCF | 1000 | 1000 | 38 | 0.817 | 0.737 | 0.567 |
| PearsonRS | 1000 | 1000 | 38 | 0.881 | 0.828 | 0.711 |
| Pearson,MM3 | 1000 | 1000 | 38 | 0.879 | 0.822 | 0.696 |
| RSS,MM3 | 1000 | 1000 | 38 | 0.905 | 0.856 | 0.733 |
| Multn,MM3 | 1000 | 1000 | 38 | 0.818 | 0.743 | 0.567 |

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 | 2 | 0.109 | 0.066 | 0.019 |
| WaldDiag,MM3 | 1000 | 1000 | 2 | 0.061 | 0.032 | 0.001 |
| WaldVCF | 1000 | 1000 | 2 | 0.096 | 0.052 | 0.013 |
| PearsonRS | 1000 | 1000 | 2 | 0.093 | 0.051 | 0.008 |
| Pearson,MM3 | 1000 | 1000 | 2 | 0.094 | 0.050 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.093 | 0.049 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.100 | 0.055 | 0.016 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 5 | 0.214 | 0.122 | 0.051 |
| WaldDiag,MM3 | 1000 | 1000 | 5 | 0.080 | 0.028 | 0.003 |
| WaldVCF | 1000 | 1000 | 5 | 0.135 | 0.072 | 0.014 |
| PearsonRS | 1000 | 1000 | 5 | 0.088 | 0.045 | 0.008 |
| Pearson,MM3 | 1000 | 1000 | 5 | 0.088 | 0.043 | 0.006 |
| RSS,MM3 | 1000 | 1000 | 5 | 0.082 | 0.042 | 0.006 |
| Multn,MM3 | 1000 | 1000 | 5 | 0.189 | 0.104 | 0.040 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 12 | 0.714 | 0.604 | 0.384 |
| WaldDiag,MM3 | 1000 | 1000 | 12 | 0.055 | 0.026 | 0.002 |
| WaldVCF | 1000 | 1000 | 12 | 0.471 | 0.354 | 0.165 |
| PearsonRS | 1000 | 1000 | 12 | 0.081 | 0.035 | 0.004 |
| Pearson,MM3 | 1000 | 1000 | 12 | 0.080 | 0.031 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 12 | 0.074 | 0.028 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 12 | 0.727 | 0.603 | 0.413 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 13 | 0.235 | 0.159 | 0.068 |
| WaldDiag,MM3 | 1000 | 1000 | 13 | 0.059 | 0.028 | 0.006 |
| WaldVCF | 1000 | 1000 | 13 | 0.176 | 0.105 | 0.037 |
| PearsonRS | 1000 | 1000 | 13 | 0.083 | 0.039 | 0.015 |
| Pearson,MM3 | 1000 | 1000 | 13 | 0.083 | 0.037 | 0.011 |
| RSS,MM3 | 1000 | 1000 | 13 | 0.088 | 0.035 | 0.013 |
| Multn,MM3 | 1000 | 1000 | 13 | 0.240 | 0.165 | 0.070 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 34 | 0.650 | 0.532 | 0.292 |
| WaldDiag,MM3 | 1000 | 1000 | 34 | 0.068 | 0.024 | 0.003 |
| WaldVCF | 1000 | 1000 | 34 | 0.459 | 0.320 | 0.152 |
| PearsonRS | 1000 | 1000 | 34 | 0.075 | 0.041 | 0.010 |
| Pearson,MM3 | 1000 | 1000 | 34 | 0.074 | 0.038 | 0.008 |
| RSS,MM3 | 1000 | 1000 | 34 | 0.077 | 0.039 | 0.009 |
| Multn,MM3 | 1000 | 1000 | 34 | 0.678 | 0.585 | 0.355 |

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 | 0.138 | 0.066 | 0.020 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.070 | 0.029 | 0.002 |
| WaldVCF | 1000 | 1000 | 1 | 0.115 | 0.055 | 0.014 |
| PearsonRS | 1000 | 1000 | 1 | 0.090 | 0.043 | 0.010 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.091 | 0.042 | 0.009 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.088 | 0.044 | 0.009 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.121 | 0.059 | 0.017 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 7 | 0.196 | 0.128 | 0.042 |
| WaldDiag,MM3 | 1000 | 1000 | 7 | 0.068 | 0.031 | 0.004 |
| WaldVCF | 1000 | 1000 | 7 | 0.140 | 0.076 | 0.015 |
| PearsonRS | 1000 | 1000 | 7 | 0.093 | 0.048 | 0.008 |
| Pearson,MM3 | 1000 | 1000 | 7 | 0.093 | 0.043 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 7 | 0.086 | 0.043 | 0.005 |
| Multn,MM3 | 1000 | 1000 | 7 | 0.183 | 0.114 | 0.031 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 15 | 0.729 | 0.622 | 0.392 |
| WaldDiag,MM3 | 1000 | 1000 | 15 | 0.062 | 0.021 | 0.001 |
| WaldVCF | 1000 | 1000 | 15 | 0.489 | 0.363 | 0.161 |
| PearsonRS | 1000 | 1000 | 15 | 0.082 | 0.039 | 0.007 |
| Pearson,MM3 | 1000 | 1000 | 15 | 0.080 | 0.037 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 15 | 0.073 | 0.032 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 15 | 0.731 | 0.614 | 0.408 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 8 | 0.241 | 0.152 | 0.059 |
| WaldDiag,MM3 | 1000 | 1000 | 8 | 0.054 | 0.028 | 0.001 |
| WaldVCF | 1000 | 1000 | 8 | 0.167 | 0.098 | 0.026 |
| PearsonRS | 1000 | 1000 | 8 | 0.074 | 0.034 | 0.009 |
| Pearson,MM3 | 1000 | 1000 | 8 | 0.073 | 0.032 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 8 | 0.079 | 0.035 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 8 | 0.246 | 0.154 | 0.062 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 42 | 0.615 | 0.506 | 0.276 |
| WaldDiag,MM3 | 1000 | 1000 | 42 | 0.060 | 0.022 | 0.001 |
| WaldVCF | 1000 | 1000 | 42 | 0.435 | 0.300 | 0.141 |
| PearsonRS | 1000 | 1000 | 42 | 0.075 | 0.039 | 0.008 |
| Pearson,MM3 | 1000 | 1000 | 42 | 0.073 | 0.037 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 42 | 0.067 | 0.028 | 0.006 |
| Multn,MM3 | 1000 | 1000 | 42 | 0.646 | 0.543 | 0.326 |

Type I errors ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.124 | 0.066 | 0.024 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.061 | 0.031 | 0.006 |
| WaldVCF | 1000 | 1000 | 1 | 0.105 | 0.053 | 0.019 |
| PearsonRS | 1000 | 1000 | 1 | 0.078 | 0.043 | 0.017 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.079 | 0.041 | 0.014 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.082 | 0.043 | 0.013 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.110 | 0.056 | 0.022 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.204 | 0.129 | 0.037 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.065 | 0.027 | 0.003 |
| WaldVCF | 1000 | 1000 | 0 | 0.141 | 0.073 | 0.014 |
| PearsonRS | 1000 | 1000 | 0 | 0.092 | 0.044 | 0.013 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.091 | 0.042 | 0.009 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.091 | 0.045 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.191 | 0.114 | 0.030 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 15 | 0.701 | 0.631 | 0.416 |
| WaldDiag,MM3 | 1000 | 1000 | 15 | 0.074 | 0.026 | 0.002 |
| WaldVCF | 1000 | 1000 | 15 | 0.510 | 0.374 | 0.189 |
| PearsonRS | 1000 | 1000 | 15 | 0.084 | 0.037 | 0.010 |
| Pearson,MM3 | 1000 | 1000 | 15 | 0.081 | 0.036 | 0.010 |
| RSS,MM3 | 1000 | 1000 | 15 | 0.081 | 0.034 | 0.012 |
| Multn,MM3 | 1000 | 1000 | 15 | 0.709 | 0.641 | 0.430 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 12 | 0.221 | 0.147 | 0.050 |
| WaldDiag,MM3 | 1000 | 1000 | 12 | 0.055 | 0.021 | 0.003 |
| WaldVCF | 1000 | 1000 | 12 | 0.152 | 0.088 | 0.033 |
| PearsonRS | 1000 | 1000 | 12 | 0.086 | 0.045 | 0.014 |
| Pearson,MM3 | 1000 | 1000 | 12 | 0.086 | 0.044 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 12 | 0.081 | 0.044 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 12 | 0.228 | 0.150 | 0.057 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 41 | 0.627 | 0.521 | 0.291 |
| WaldDiag,MM3 | 1000 | 1000 | 41 | 0.072 | 0.024 | 0.003 |
| WaldVCF | 1000 | 1000 | 41 | 0.455 | 0.323 | 0.138 |
| PearsonRS | 1000 | 1000 | 41 | 0.082 | 0.040 | 0.006 |
| Pearson,MM3 | 1000 | 1000 | 41 | 0.078 | 0.039 | 0.005 |
| RSS,MM3 | 1000 | 1000 | 41 | 0.077 | 0.032 | 0.004 |
| Multn,MM3 | 1000 | 1000 | 41 | 0.659 | 0.557 | 0.350 |

Type I errors ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.119 | 0.066 | 0.020 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.069 | 0.030 | 0.002 |
| WaldVCF | 1000 | 1000 | 0 | 0.107 | 0.054 | 0.017 |
| PearsonRS | 1000 | 1000 | 0 | 0.097 | 0.053 | 0.011 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.098 | 0.049 | 0.009 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.095 | 0.054 | 0.011 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.111 | 0.057 | 0.017 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 4 | 0.202 | 0.127 | 0.041 |
| WaldDiag,MM3 | 1000 | 1000 | 4 | 0.083 | 0.028 | 0.002 |
| WaldVCF | 1000 | 1000 | 4 | 0.138 | 0.077 | 0.012 |
| PearsonRS | 1000 | 1000 | 4 | 0.081 | 0.038 | 0.010 |
| Pearson,MM3 | 1000 | 1000 | 4 | 0.081 | 0.035 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 4 | 0.081 | 0.034 | 0.005 |
| Multn,MM3 | 1000 | 1000 | 4 | 0.179 | 0.110 | 0.028 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 11 | 0.744 | 0.642 | 0.412 |
| WaldDiag,MM3 | 1000 | 1000 | 11 | 0.073 | 0.024 | 0.003 |
| WaldVCF | 1000 | 1000 | 11 | 0.504 | 0.362 | 0.168 |
| PearsonRS | 1000 | 1000 | 11 | 0.091 | 0.041 | 0.005 |
| Pearson,MM3 | 1000 | 1000 | 11 | 0.090 | 0.038 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 11 | 0.084 | 0.036 | 0.005 |
| Multn,MM3 | 1000 | 1000 | 11 | 0.743 | 0.646 | 0.418 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 16 | 0.256 | 0.167 | 0.058 |
| WaldDiag,MM3 | 1000 | 1000 | 16 | 0.050 | 0.024 | 0.003 |
| WaldVCF | 1000 | 1000 | 16 | 0.175 | 0.101 | 0.028 |
| PearsonRS | 1000 | 1000 | 16 | 0.095 | 0.044 | 0.005 |
| Pearson,MM3 | 1000 | 1000 | 16 | 0.093 | 0.041 | 0.002 |
| RSS,MM3 | 1000 | 1000 | 16 | 0.095 | 0.039 | 0.005 |
| Multn,MM3 | 1000 | 1000 | 16 | 0.256 | 0.168 | 0.067 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 37 | 0.611 | 0.491 | 0.282 |
| WaldDiag,MM3 | 1000 | 1000 | 37 | 0.055 | 0.017 | 0.002 |
| WaldVCF | 1000 | 1000 | 37 | 0.433 | 0.303 | 0.137 |
| PearsonRS | 1000 | 1000 | 37 | 0.080 | 0.038 | 0.006 |
| Pearson,MM3 | 1000 | 1000 | 37 | 0.080 | 0.036 | 0.006 |
| RSS,MM3 | 1000 | 1000 | 37 | 0.068 | 0.028 | 0.006 |
| Multn,MM3 | 1000 | 1000 | 37 | 0.652 | 0.549 | 0.335 |

Power ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.472 | 0.339 | 0.171 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.337 | 0.209 | 0.046 |
| WaldVCF | 1000 | 1000 | 0 | 0.438 | 0.319 | 0.130 |
| PearsonRS | 1000 | 1000 | 0 | 0.465 | 0.340 | 0.169 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.466 | 0.337 | 0.154 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.473 | 0.344 | 0.165 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.432 | 0.312 | 0.130 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 4 | 0.962 | 0.913 | 0.784 |
| WaldDiag,MM3 | 1000 | 1000 | 4 | 0.905 | 0.829 | 0.601 |
| WaldVCF | 1000 | 1000 | 4 | 0.899 | 0.824 | 0.605 |
| PearsonRS | 1000 | 1000 | 4 | 0.759 | 0.646 | 0.410 |
| Pearson,MM3 | 1000 | 1000 | 4 | 0.758 | 0.634 | 0.385 |
| RSS,MM3 | 1000 | 1000 | 4 | 0.825 | 0.722 | 0.462 |
| Multn,MM3 | 1000 | 1000 | 4 | 0.949 | 0.888 | 0.739 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 14 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 14 | 1.000 | 0.994 | 0.983 |
| WaldVCF | 1000 | 1000 | 14 | 0.997 | 0.991 | 0.955 |
| PearsonRS | 1000 | 1000 | 14 | 0.986 | 0.976 | 0.898 |
| Pearson,MM3 | 1000 | 1000 | 14 | 0.986 | 0.975 | 0.885 |
| RSS,MM3 | 1000 | 1000 | 14 | 0.992 | 0.985 | 0.941 |
| Multn,MM3 | 1000 | 1000 | 14 | 1.000 | 1.000 | 0.999 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 7 | 0.763 | 0.663 | 0.456 |
| WaldDiag,MM3 | 1000 | 1000 | 7 | 0.610 | 0.468 | 0.225 |
| WaldVCF | 1000 | 1000 | 7 | 0.647 | 0.522 | 0.297 |
| PearsonRS | 1000 | 1000 | 7 | 0.780 | 0.686 | 0.463 |
| Pearson,MM3 | 1000 | 1000 | 7 | 0.778 | 0.672 | 0.409 |
| RSS,MM3 | 1000 | 1000 | 7 | 0.781 | 0.675 | 0.440 |
| Multn,MM3 | 1000 | 1000 | 7 | 0.744 | 0.628 | 0.416 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 32 | 0.953 | 0.913 | 0.783 |
| WaldDiag,MM3 | 1000 | 1000 | 32 | 0.673 | 0.525 | 0.255 |
| WaldVCF | 1000 | 1000 | 32 | 0.872 | 0.784 | 0.574 |
| PearsonRS | 1000 | 1000 | 32 | 0.792 | 0.678 | 0.462 |
| Pearson,MM3 | 1000 | 1000 | 32 | 0.791 | 0.673 | 0.443 |
| RSS,MM3 | 1000 | 1000 | 32 | 0.807 | 0.699 | 0.468 |
| Multn,MM3 | 1000 | 1000 | 32 | 0.958 | 0.927 | 0.812 |

Power ($n = 1000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.479 | 0.345 | 0.153 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.319 | 0.194 | 0.058 |
| WaldVCF | 1000 | 1000 | 1 | 0.445 | 0.300 | 0.121 |
| PearsonRS | 1000 | 1000 | 1 | 0.473 | 0.343 | 0.156 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.473 | 0.342 | 0.146 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.486 | 0.351 | 0.152 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.443 | 0.302 | 0.118 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.954 | 0.913 | 0.782 |
| WaldDiag,MM3 | 1000 | 1000 | 2 | 0.906 | 0.816 | 0.613 |
| WaldVCF | 1000 | 1000 | 2 | 0.905 | 0.824 | 0.625 |
| PearsonRS | 1000 | 1000 | 2 | 0.772 | 0.670 | 0.405 |
| Pearson,MM3 | 1000 | 1000 | 2 | 0.771 | 0.663 | 0.374 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.824 | 0.732 | 0.473 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.942 | 0.888 | 0.743 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 10 | 1.000 | 1.000 | 0.997 |
| WaldDiag,MM3 | 1000 | 1000 | 10 | 0.998 | 0.997 | 0.983 |
| WaldVCF | 1000 | 1000 | 10 | 0.992 | 0.988 | 0.946 |
| PearsonRS | 1000 | 1000 | 10 | 0.986 | 0.972 | 0.894 |
| Pearson,MM3 | 1000 | 1000 | 10 | 0.986 | 0.969 | 0.879 |
| RSS,MM3 | 1000 | 1000 | 10 | 0.991 | 0.984 | 0.934 |
| Multn,MM3 | 1000 | 1000 | 10 | 1.000 | 1.000 | 0.996 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 11 | 0.769 | 0.648 | 0.477 |
| WaldDiag,MM3 | 1000 | 1000 | 11 | 0.618 | 0.476 | 0.208 |
| WaldVCF | 1000 | 1000 | 11 | 0.640 | 0.537 | 0.314 |
| PearsonRS | 1000 | 1000 | 11 | 0.797 | 0.686 | 0.463 |
| Pearson,MM3 | 1000 | 1000 | 11 | 0.796 | 0.674 | 0.415 |
| RSS,MM3 | 1000 | 1000 | 11 | 0.796 | 0.689 | 0.444 |
| Multn,MM3 | 1000 | 1000 | 11 | 0.740 | 0.623 | 0.429 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 30 | 0.953 | 0.917 | 0.802 |
| WaldDiag,MM3 | 1000 | 1000 | 30 | 0.683 | 0.544 | 0.256 |
| WaldVCF | 1000 | 1000 | 30 | 0.880 | 0.811 | 0.593 |
| PearsonRS | 1000 | 1000 | 30 | 0.791 | 0.688 | 0.469 |
| Pearson,MM3 | 1000 | 1000 | 30 | 0.788 | 0.675 | 0.443 |
| RSS,MM3 | 1000 | 1000 | 30 | 0.812 | 0.701 | 0.482 |
| Multn,MM3 | 1000 | 1000 | 30 | 0.958 | 0.927 | 0.830 |

Power ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 1 | 0.496 | 0.372 | 0.173 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.364 | 0.230 | 0.069 |
| WaldVCF | 1000 | 1000 | 1 | 0.470 | 0.339 | 0.147 |
| PearsonRS | 1000 | 1000 | 1 | 0.504 | 0.375 | 0.187 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.506 | 0.374 | 0.176 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.518 | 0.374 | 0.179 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.466 | 0.338 | 0.145 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 4 | 0.950 | 0.919 | 0.805 |
| WaldDiag,MM3 | 1000 | 1000 | 4 | 0.908 | 0.834 | 0.630 |
| WaldVCF | 1000 | 1000 | 4 | 0.914 | 0.842 | 0.624 |
| PearsonRS | 1000 | 1000 | 4 | 0.796 | 0.662 | 0.432 |
| Pearson,MM3 | 1000 | 1000 | 4 | 0.794 | 0.652 | 0.396 |
| RSS,MM3 | 1000 | 1000 | 4 | 0.848 | 0.751 | 0.493 |
| Multn,MM3 | 1000 | 1000 | 4 | 0.938 | 0.897 | 0.760 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 11 | 1.000 | 1.000 | 0.998 |
| WaldDiag,MM3 | 1000 | 1000 | 11 | 0.998 | 0.995 | 0.979 |
| WaldVCF | 1000 | 1000 | 11 | 0.996 | 0.988 | 0.951 |
| PearsonRS | 1000 | 1000 | 11 | 0.987 | 0.969 | 0.879 |
| Pearson,MM3 | 1000 | 1000 | 11 | 0.987 | 0.967 | 0.864 |
| RSS,MM3 | 1000 | 1000 | 11 | 0.995 | 0.984 | 0.927 |
| Multn,MM3 | 1000 | 1000 | 11 | 1.000 | 1.000 | 0.996 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 10 | 0.801 | 0.697 | 0.476 |
| WaldDiag,MM3 | 1000 | 1000 | 10 | 0.650 | 0.499 | 0.225 |
| WaldVCF | 1000 | 1000 | 10 | 0.682 | 0.556 | 0.335 |
| PearsonRS | 1000 | 1000 | 10 | 0.793 | 0.691 | 0.495 |
| Pearson,MM3 | 1000 | 1000 | 10 | 0.793 | 0.683 | 0.464 |
| RSS,MM3 | 1000 | 1000 | 10 | 0.803 | 0.706 | 0.487 |
| Multn,MM3 | 1000 | 1000 | 10 | 0.775 | 0.664 | 0.442 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 36 | 0.957 | 0.912 | 0.801 |
| WaldDiag,MM3 | 1000 | 1000 | 36 | 0.692 | 0.544 | 0.254 |
| WaldVCF | 1000 | 1000 | 36 | 0.870 | 0.800 | 0.601 |
| PearsonRS | 1000 | 1000 | 36 | 0.801 | 0.700 | 0.479 |
| Pearson,MM3 | 1000 | 1000 | 36 | 0.798 | 0.690 | 0.449 |
| RSS,MM3 | 1000 | 1000 | 36 | 0.820 | 0.713 | 0.489 |
| Multn,MM3 | 1000 | 1000 | 36 | 0.957 | 0.921 | 0.827 |

Power ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.483 | 0.362 | 0.168 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.331 | 0.204 | 0.056 |
| WaldVCF | 1000 | 1000 | 0 | 0.457 | 0.324 | 0.134 |
| PearsonRS | 1000 | 1000 | 0 | 0.478 | 0.364 | 0.170 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.478 | 0.361 | 0.159 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.484 | 0.365 | 0.166 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.449 | 0.327 | 0.131 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 3 | 0.959 | 0.928 | 0.785 |
| WaldDiag,MM3 | 1000 | 1000 | 3 | 0.915 | 0.838 | 0.613 |
| WaldVCF | 1000 | 1000 | 3 | 0.913 | 0.841 | 0.613 |
| PearsonRS | 1000 | 1000 | 3 | 0.761 | 0.647 | 0.410 |
| Pearson,MM3 | 1000 | 1000 | 3 | 0.759 | 0.641 | 0.381 |
| RSS,MM3 | 1000 | 1000 | 3 | 0.825 | 0.724 | 0.457 |
| Multn,MM3 | 1000 | 1000 | 3 | 0.950 | 0.909 | 0.750 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 7 | 1.000 | 1.000 | 0.997 |
| WaldDiag,MM3 | 1000 | 1000 | 7 | 0.999 | 0.994 | 0.988 |
| WaldVCF | 1000 | 1000 | 7 | 0.997 | 0.993 | 0.964 |
| PearsonRS | 1000 | 1000 | 7 | 0.980 | 0.967 | 0.895 |
| Pearson,MM3 | 1000 | 1000 | 7 | 0.980 | 0.965 | 0.887 |
| RSS,MM3 | 1000 | 1000 | 7 | 0.992 | 0.984 | 0.933 |
| Multn,MM3 | 1000 | 1000 | 7 | 1.000 | 1.000 | 0.997 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 6 | 0.761 | 0.675 | 0.463 |
| WaldDiag,MM3 | 1000 | 1000 | 6 | 0.623 | 0.463 | 0.212 |
| WaldVCF | 1000 | 1000 | 6 | 0.653 | 0.527 | 0.311 |
| PearsonRS | 1000 | 1000 | 6 | 0.773 | 0.668 | 0.463 |
| Pearson,MM3 | 1000 | 1000 | 6 | 0.772 | 0.657 | 0.431 |
| RSS,MM3 | 1000 | 1000 | 6 | 0.781 | 0.681 | 0.449 |
| Multn,MM3 | 1000 | 1000 | 6 | 0.737 | 0.640 | 0.420 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 42 | 0.954 | 0.920 | 0.797 |
| WaldDiag,MM3 | 1000 | 1000 | 42 | 0.674 | 0.526 | 0.269 |
| WaldVCF | 1000 | 1000 | 42 | 0.885 | 0.798 | 0.604 |
| PearsonRS | 1000 | 1000 | 42 | 0.774 | 0.684 | 0.474 |
| Pearson,MM3 | 1000 | 1000 | 42 | 0.772 | 0.678 | 0.450 |
| RSS,MM3 | 1000 | 1000 | 42 | 0.793 | 0.700 | 0.483 |
| Multn,MM3 | 1000 | 1000 | 42 | 0.963 | 0.933 | 0.828 |

Cluster sampling

Type I errors ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 999 | 999 | 7 | 0.715 | 0.651 | 0.533 |
| WaldDiag,MM3 | 999 | 999 | 7 | 0.048 | 0.020 | 0.004 |
| WaldVCF | 999 | 999 | 7 | 0.210 | 0.133 | 0.059 |
| PearsonRS | 999 | 999 | 7 | 0.079 | 0.036 | 0.009 |
| Pearson,MM3 | 999 | 999 | 7 | 0.080 | 0.035 | 0.007 |
| RSS,MM3 | 999 | 999 | 7 | 0.069 | 0.031 | 0.005 |
| Multn,MM3 | 999 | 999 | 7 | 0.167 | 0.087 | 0.027 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.999 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.036 | 0.010 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 0.997 | 0.996 | 0.988 |
| PearsonRS | 1000 | 1000 | 1000 | 0.053 | 0.020 | 0.005 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.053 | 0.019 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.044 | 0.014 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.321 | 0.207 | 0.088 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 0.996 | 0.996 | 0.982 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.007 | 0.001 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 0.022 | 0.017 | 0.014 |
| PearsonRS | 1000 | 1000 | 1000 | 0.003 | 0.000 | 0.000 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.003 | 0.000 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.001 | 0.000 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.011 | 0.003 | 0.000 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.997 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.022 | 0.006 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 0.764 | 0.721 | 0.641 |
| PearsonRS | 1000 | 1000 | 1000 | 0.033 | 0.014 | 0.002 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.033 | 0.012 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.023 | 0.006 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.070 | 0.037 | 0.013 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | | | |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.003 | 0.000 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 0.002 | 0.001 | 0.001 |
| PearsonRS | 1000 | 1000 | 1000 | 0.007 | 0.000 | 0.000 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.007 | 0.000 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.002 | 0.000 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.000 | 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 | 1 | 0.393 | 0.308 | 0.171 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.082 | 0.029 | 0.001 |
| WaldVCF | 1000 | 1000 | 1 | 0.169 | 0.086 | 0.023 |
| PearsonRS | 1000 | 1000 | 1 | 0.107 | 0.047 | 0.007 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.107 | 0.045 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.099 | 0.040 | 0.004 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.178 | 0.103 | 0.031 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 8 | 0.989 | 0.985 | 0.966 |
| WaldDiag,MM3 | 1000 | 1000 | 8 | 0.063 | 0.020 | 0.001 |
| WaldVCF | 1000 | 1000 | 8 | 0.716 | 0.627 | 0.420 |
| PearsonRS | 1000 | 1000 | 8 | 0.067 | 0.027 | 0.008 |
| Pearson,MM3 | 1000 | 1000 | 8 | 0.067 | 0.027 | 0.007 |
| RSS,MM3 | 1000 | 1000 | 8 | 0.058 | 0.022 | 0.002 |
| Multn,MM3 | 1000 | 1000 | 8 | 0.388 | 0.265 | 0.098 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 0.999 | 0.999 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.011 | 0.002 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 0.761 | 0.725 | 0.640 |
| PearsonRS | 1000 | 1000 | 1000 | 0.019 | 0.003 | 0.000 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.018 | 0.003 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.013 | 0.002 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.215 | 0.148 | 0.065 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.036 | 0.010 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 0.996 | 0.993 | 0.978 |
| PearsonRS | 1000 | 1000 | 1000 | 0.065 | 0.030 | 0.001 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.064 | 0.025 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.060 | 0.018 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.523 | 0.398 | 0.182 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.016 | 0.004 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 0.404 | 0.344 | 0.254 |
| PearsonRS | 1000 | 1000 | 1000 | 0.024 | 0.008 | 0.001 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.023 | 0.007 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.014 | 0.003 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.074 | 0.041 | 0.015 |

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 | 0.243 | 0.158 | 0.062 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.092 | 0.035 | 0.001 |
| WaldVCF | 1000 | 1000 | 0 | 0.142 | 0.065 | 0.021 |
| PearsonRS | 1000 | 1000 | 0 | 0.099 | 0.050 | 0.013 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.099 | 0.049 | 0.011 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.106 | 0.048 | 0.009 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.152 | 0.087 | 0.027 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 5 | 0.820 | 0.756 | 0.614 |
| WaldDiag,MM3 | 1000 | 1000 | 5 | 0.086 | 0.029 | 0.002 |
| WaldVCF | 1000 | 1000 | 5 | 0.352 | 0.249 | 0.119 |
| PearsonRS | 1000 | 1000 | 5 | 0.073 | 0.039 | 0.007 |
| Pearson,MM3 | 1000 | 1000 | 5 | 0.073 | 0.036 | 0.006 |
| RSS,MM3 | 1000 | 1000 | 5 | 0.080 | 0.032 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 5 | 0.466 | 0.356 | 0.161 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.038 | 0.005 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1000 | 0.050 | 0.020 | 0.003 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.047 | 0.019 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.041 | 0.011 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.916 | 0.851 | 0.634 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 28 | 0.970 | 0.958 | 0.903 |
| WaldDiag,MM3 | 1000 | 1000 | 28 | 0.045 | 0.019 | 0.002 |
| WaldVCF | 1000 | 1000 | 28 | 0.747 | 0.637 | 0.428 |
| PearsonRS | 1000 | 1000 | 28 | 0.073 | 0.029 | 0.005 |
| Pearson,MM3 | 1000 | 1000 | 28 | 0.073 | 0.027 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 28 | 0.062 | 0.023 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 28 | 0.702 | 0.567 | 0.306 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.040 | 0.009 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1000 | 0.055 | 0.027 | 0.002 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.052 | 0.025 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.044 | 0.016 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.894 | 0.807 | 0.566 |

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 | 0.181 | 0.111 | 0.028 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 0.079 | 0.032 | 0.006 |
| WaldVCF | 1000 | 1000 | 1 | 0.127 | 0.065 | 0.009 |
| PearsonRS | 1000 | 1000 | 1 | 0.086 | 0.040 | 0.008 |
| Pearson,MM3 | 1000 | 1000 | 1 | 0.088 | 0.039 | 0.008 |
| RSS,MM3 | 1000 | 1000 | 1 | 0.099 | 0.037 | 0.006 |
| Multn,MM3 | 1000 | 1000 | 1 | 0.131 | 0.080 | 0.010 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.556 | 0.452 | 0.282 |
| WaldDiag,MM3 | 1000 | 1000 | 2 | 0.065 | 0.031 | 0.006 |
| WaldVCF | 1000 | 1000 | 2 | 0.231 | 0.134 | 0.044 |
| PearsonRS | 1000 | 1000 | 2 | 0.087 | 0.043 | 0.016 |
| Pearson,MM3 | 1000 | 1000 | 2 | 0.087 | 0.042 | 0.013 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.089 | 0.038 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.319 | 0.226 | 0.087 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 143 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 143 | 0.045 | 0.015 | 0.001 |
| WaldVCF | 1000 | 1000 | 143 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 143 | 0.054 | 0.026 | 0.005 |
| Pearson,MM3 | 1000 | 1000 | 143 | 0.053 | 0.024 | 0.003 |
| RSS,MM3 | 1000 | 1000 | 143 | 0.049 | 0.016 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 143 | 0.916 | 0.817 | 0.570 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 26 | 0.824 | 0.744 | 0.588 |
| WaldDiag,MM3 | 1000 | 1000 | 26 | 0.068 | 0.026 | 0.003 |
| WaldVCF | 1000 | 1000 | 26 | 0.495 | 0.374 | 0.185 |
| PearsonRS | 1000 | 1000 | 26 | 0.074 | 0.032 | 0.006 |
| Pearson,MM3 | 1000 | 1000 | 26 | 0.074 | 0.028 | 0.005 |
| RSS,MM3 | 1000 | 1000 | 26 | 0.067 | 0.025 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 26 | 0.586 | 0.459 | 0.247 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 211 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 211 | 0.058 | 0.020 | 0.001 |
| WaldVCF | 1000 | 1000 | 211 | 1.000 | 1.000 | 0.998 |
| PearsonRS | 1000 | 1000 | 211 | 0.061 | 0.025 | 0.001 |
| Pearson,MM3 | 1000 | 1000 | 211 | 0.059 | 0.022 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 211 | 0.049 | 0.014 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 211 | 0.944 | 0.866 | 0.673 |

Power ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 2 | 0.814 | 0.756 | 0.645 |
| WaldDiag,MM3 | 1000 | 1000 | 2 | 0.157 | 0.069 | 0.006 |
| WaldVCF | 1000 | 1000 | 2 | 0.404 | 0.302 | 0.156 |
| PearsonRS | 1000 | 1000 | 2 | 0.249 | 0.140 | 0.042 |
| Pearson,MM3 | 1000 | 1000 | 2 | 0.253 | 0.135 | 0.036 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.258 | 0.134 | 0.037 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.313 | 0.204 | 0.075 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.999 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.433 | 0.232 | 0.044 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.994 |
| PearsonRS | 1000 | 1000 | 1000 | 0.363 | 0.217 | 0.057 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.364 | 0.205 | 0.045 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.384 | 0.213 | 0.036 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.519 | 0.375 | 0.196 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 0.997 | 0.995 | 0.967 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.596 | 0.298 | 0.031 |
| WaldVCF | 1000 | 1000 | 1000 | 0.051 | 0.046 | 0.037 |
| PearsonRS | 1000 | 1000 | 1000 | 0.481 | 0.235 | 0.043 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.480 | 0.218 | 0.029 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.486 | 0.206 | 0.011 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.044 | 0.024 | 0.006 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.998 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.135 | 0.042 | 0.003 |
| WaldVCF | 1000 | 1000 | 1000 | 0.855 | 0.820 | 0.733 |
| PearsonRS | 1000 | 1000 | 1000 | 0.297 | 0.151 | 0.037 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.298 | 0.141 | 0.024 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.251 | 0.103 | 0.014 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.194 | 0.107 | 0.028 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.081 | 0.017 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 0.001 | 0.001 | 0.001 |
| PearsonRS | 1000 | 1000 | 1000 | 0.175 | 0.070 | 0.004 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.174 | 0.066 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.132 | 0.031 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.010 | 0.001 | 0.001 |

Power ($n = 1000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.730 | 0.632 | 0.448 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.339 | 0.219 | 0.058 |
| WaldVCF | 1000 | 1000 | 0 | 0.497 | 0.371 | 0.191 |
| PearsonRS | 1000 | 1000 | 0 | 0.500 | 0.371 | 0.179 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.501 | 0.366 | 0.165 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.507 | 0.361 | 0.156 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.494 | 0.358 | 0.178 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 8 | 1.000 | 1.000 | 0.999 |
| WaldDiag,MM3 | 1000 | 1000 | 8 | 0.900 | 0.796 | 0.494 |
| WaldVCF | 1000 | 1000 | 8 | 0.988 | 0.972 | 0.914 |
| PearsonRS | 1000 | 1000 | 8 | 0.802 | 0.682 | 0.428 |
| Pearson,MM3 | 1000 | 1000 | 8 | 0.802 | 0.675 | 0.380 |
| RSS,MM3 | 1000 | 1000 | 8 | 0.843 | 0.726 | 0.419 |
| Multn,MM3 | 1000 | 1000 | 8 | 0.881 | 0.800 | 0.562 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.990 | 0.965 | 0.762 |
| WaldVCF | 1000 | 1000 | 1000 | 0.952 | 0.935 | 0.902 |
| PearsonRS | 1000 | 1000 | 1000 | 0.977 | 0.932 | 0.714 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.977 | 0.928 | 0.680 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.981 | 0.944 | 0.703 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.822 | 0.722 | 0.509 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.607 | 0.388 | 0.089 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 0.998 | 0.994 |
| PearsonRS | 1000 | 1000 | 1000 | 0.761 | 0.648 | 0.408 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.759 | 0.634 | 0.361 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.756 | 0.620 | 0.343 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.811 | 0.652 | 0.394 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.561 | 0.313 | 0.044 |
| WaldVCF | 1000 | 1000 | 1000 | 0.713 | 0.656 | 0.561 |
| PearsonRS | 1000 | 1000 | 1000 | 0.728 | 0.570 | 0.236 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.727 | 0.554 | 0.196 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.721 | 0.518 | 0.162 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.450 | 0.314 | 0.143 |

Power ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.854 | 0.783 | 0.605 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.713 | 0.572 | 0.298 |
| WaldVCF | 1000 | 1000 | 0 | 0.773 | 0.686 | 0.433 |
| PearsonRS | 1000 | 1000 | 0 | 0.806 | 0.711 | 0.507 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.810 | 0.709 | 0.484 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.812 | 0.716 | 0.492 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.791 | 0.697 | 0.460 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 5 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 5 | 0.997 | 0.995 | 0.967 |
| WaldVCF | 1000 | 1000 | 5 | 1.000 | 0.998 | 0.985 |
| PearsonRS | 1000 | 1000 | 5 | 0.991 | 0.978 | 0.918 |
| Pearson,MM3 | 1000 | 1000 | 5 | 0.991 | 0.978 | 0.897 |
| RSS,MM3 | 1000 | 1000 | 5 | 0.999 | 0.990 | 0.941 |
| Multn,MM3 | 1000 | 1000 | 5 | 1.000 | 0.999 | 0.992 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Pearson,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 | 1.000 | 1.000 | 0.997 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 21 | 1.000 | 1.000 | 0.999 |
| WaldDiag,MM3 | 1000 | 1000 | 21 | 0.964 | 0.919 | 0.737 |
| WaldVCF | 1000 | 1000 | 21 | 0.996 | 0.991 | 0.967 |
| PearsonRS | 1000 | 1000 | 21 | 0.988 | 0.973 | 0.908 |
| Pearson,MM3 | 1000 | 1000 | 21 | 0.988 | 0.969 | 0.891 |
| RSS,MM3 | 1000 | 1000 | 21 | 0.988 | 0.976 | 0.899 |
| Multn,MM3 | 1000 | 1000 | 21 | 0.989 | 0.973 | 0.917 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.971 | 0.940 | 0.720 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1000 | 0.993 | 0.978 | 0.930 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.992 | 0.978 | 0.909 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.990 | 0.985 | 0.912 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.999 | 0.994 | 0.969 |

Power ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.953 | 0.903 | 0.764 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.895 | 0.797 | 0.534 |
| WaldVCF | 1000 | 1000 | 0 | 0.922 | 0.870 | 0.672 |
| PearsonRS | 1000 | 1000 | 0 | 0.947 | 0.894 | 0.773 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.948 | 0.893 | 0.757 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.947 | 0.894 | 0.770 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.931 | 0.871 | 0.684 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 1 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 1.000 | 1.000 | 1.000 |
| WaldVCF | 1000 | 1000 | 1 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1 | 1.000 | 1.000 | 1.000 |
| Pearson,MM3 | 1000 | 1000 | 1 | 1.000 | 1.000 | 0.998 |
| RSS,MM3 | 1000 | 1000 | 1 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 1 | 1.000 | 1.000 | 1.000 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 70 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 70 | 1.000 | 1.000 | 1.000 |
| WaldVCF | 1000 | 1000 | 70 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 70 | 1.000 | 1.000 | 1.000 |
| Pearson,MM3 | 1000 | 1000 | 70 | 1.000 | 1.000 | 1.000 |
| RSS,MM3 | 1000 | 1000 | 70 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 70 | 1.000 | 1.000 | 1.000 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 18 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 18 | 1.000 | 0.997 | 0.973 |
| WaldVCF | 1000 | 1000 | 18 | 1.000 | 0.999 | 0.992 |
| PearsonRS | 1000 | 1000 | 18 | 1.000 | 1.000 | 0.998 |
| Pearson,MM3 | 1000 | 1000 | 18 | 1.000 | 1.000 | 0.994 |
| RSS,MM3 | 1000 | 1000 | 18 | 1.000 | 1.000 | 0.998 |
| Multn,MM3 | 1000 | 1000 | 18 | 1.000 | 0.998 | 0.995 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 160 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 160 | 1.000 | 1.000 | 0.988 |
| WaldVCF | 1000 | 1000 | 160 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 160 | 1.000 | 1.000 | 0.996 |
| Pearson,MM3 | 1000 | 1000 | 160 | 1.000 | 1.000 | 0.996 |
| RSS,MM3 | 1000 | 1000 | 160 | 1.000 | 1.000 | 0.998 |
| Multn,MM3 | 1000 | 1000 | 160 | 1.000 | 0.999 | 0.982 |

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 | 6 | 0.775 | 0.705 | 0.591 |
| WaldDiag,MM3 | 1000 | 1000 | 6 | 0.065 | 0.019 | 0.003 |
| WaldVCF | 1000 | 1000 | 6 | 0.301 | 0.217 | 0.124 |
| PearsonRS | 1000 | 1000 | 6 | 0.071 | 0.024 | 0.002 |
| Pearson,MM3 | 1000 | 1000 | 6 | 0.072 | 0.023 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 6 | 0.071 | 0.019 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 6 | 0.166 | 0.096 | 0.035 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.080 | 0.033 | 0.003 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1000 | 0.049 | 0.018 | 0.000 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.051 | 0.016 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.044 | 0.011 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.245 | 0.163 | 0.078 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | | | |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.028 | 0.005 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 0.129 | 0.115 | 0.091 |
| PearsonRS | 1000 | 1000 | 1000 | 0.009 | 0.000 | 0.000 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.009 | 0.000 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.005 | 0.000 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.015 | 0.005 | 0.001 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.037 | 0.006 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 0.965 | 0.958 | 0.938 |
| PearsonRS | 1000 | 1000 | 1000 | 0.027 | 0.011 | 0.001 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.027 | 0.010 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.019 | 0.006 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.118 | 0.065 | 0.019 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | | | |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.011 | 0.001 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 0.016 | 0.009 | 0.006 |
| PearsonRS | 1000 | 1000 | 1000 | 0.008 | 0.002 | 0.000 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.008 | 0.002 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.005 | 0.001 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.007 | 0.001 | 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 | 0.377 | 0.290 | 0.162 |
| WaldDiag,MM3 | 1000 | 1000 | 2 | 0.091 | 0.042 | 0.004 |
| WaldVCF | 1000 | 1000 | 2 | 0.196 | 0.127 | 0.039 |
| PearsonRS | 1000 | 1000 | 2 | 0.099 | 0.047 | 0.012 |
| Pearson,MM3 | 1000 | 1000 | 2 | 0.100 | 0.044 | 0.011 |
| RSS,MM3 | 1000 | 1000 | 2 | 0.105 | 0.040 | 0.008 |
| Multn,MM3 | 1000 | 1000 | 2 | 0.179 | 0.109 | 0.039 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 12 | 0.995 | 0.995 | 0.992 |
| WaldDiag,MM3 | 1000 | 1000 | 12 | 0.077 | 0.033 | 0.003 |
| WaldVCF | 1000 | 1000 | 12 | 0.863 | 0.808 | 0.685 |
| PearsonRS | 1000 | 1000 | 12 | 0.058 | 0.029 | 0.007 |
| Pearson,MM3 | 1000 | 1000 | 12 | 0.058 | 0.027 | 0.006 |
| RSS,MM3 | 1000 | 1000 | 12 | 0.048 | 0.021 | 0.005 |
| Multn,MM3 | 1000 | 1000 | 12 | 0.388 | 0.272 | 0.119 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.033 | 0.008 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.998 |
| PearsonRS | 1000 | 1000 | 1000 | 0.014 | 0.004 | 0.000 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.014 | 0.004 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.012 | 0.002 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.338 | 0.212 | 0.080 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.050 | 0.012 | 0.001 |
| WaldVCF | 1000 | 1000 | 1000 | 0.999 | 0.999 | 0.998 |
| PearsonRS | 1000 | 1000 | 1000 | 0.059 | 0.019 | 0.001 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.058 | 0.018 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.050 | 0.014 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.458 | 0.320 | 0.161 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.027 | 0.000 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 0.983 | 0.978 | 0.956 |
| PearsonRS | 1000 | 1000 | 1000 | 0.018 | 0.005 | 0.000 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.017 | 0.004 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.009 | 0.003 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.208 | 0.122 | 0.042 |

Type I errors ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 3 | 0.221 | 0.142 | 0.053 |
| WaldDiag,MM3 | 1000 | 1000 | 3 | 0.087 | 0.042 | 0.012 |
| WaldVCF | 1000 | 1000 | 3 | 0.140 | 0.078 | 0.025 |
| PearsonRS | 1000 | 1000 | 3 | 0.091 | 0.051 | 0.012 |
| Pearson,MM3 | 1000 | 1000 | 3 | 0.093 | 0.050 | 0.011 |
| RSS,MM3 | 1000 | 1000 | 3 | 0.091 | 0.045 | 0.011 |
| Multn,MM3 | 1000 | 1000 | 3 | 0.139 | 0.072 | 0.026 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.782 | 0.710 | 0.556 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.078 | 0.031 | 0.004 |
| WaldVCF | 1000 | 1000 | 0 | 0.485 | 0.405 | 0.220 |
| PearsonRS | 1000 | 1000 | 0 | 0.083 | 0.034 | 0.007 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.083 | 0.030 | 0.006 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.081 | 0.029 | 0.004 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.426 | 0.309 | 0.135 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.030 | 0.010 | 0.000 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1000 | 0.043 | 0.009 | 0.001 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.041 | 0.008 | 0.000 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.031 | 0.006 | 0.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.852 | 0.747 | 0.492 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 28 | 0.988 | 0.974 | 0.941 |
| WaldDiag,MM3 | 1000 | 1000 | 28 | 0.053 | 0.014 | 0.000 |
| WaldVCF | 1000 | 1000 | 28 | 0.871 | 0.820 | 0.665 |
| PearsonRS | 1000 | 1000 | 28 | 0.065 | 0.029 | 0.005 |
| Pearson,MM3 | 1000 | 1000 | 28 | 0.064 | 0.026 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 28 | 0.057 | 0.021 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 28 | 0.675 | 0.539 | 0.317 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.042 | 0.012 | 0.001 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1000 | 0.051 | 0.015 | 0.001 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.048 | 0.014 | 0.001 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.036 | 0.009 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.842 | 0.733 | 0.461 |

Type I errors ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.178 | 0.106 | 0.024 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.096 | 0.044 | 0.005 |
| WaldVCF | 1000 | 1000 | 0 | 0.122 | 0.069 | 0.013 |
| PearsonRS | 1000 | 1000 | 0 | 0.098 | 0.050 | 0.009 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.100 | 0.049 | 0.008 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.099 | 0.046 | 0.007 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.122 | 0.067 | 0.012 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 5 | 0.540 | 0.427 | 0.237 |
| WaldDiag,MM3 | 1000 | 1000 | 5 | 0.079 | 0.036 | 0.005 |
| WaldVCF | 1000 | 1000 | 5 | 0.322 | 0.224 | 0.079 |
| PearsonRS | 1000 | 1000 | 5 | 0.064 | 0.030 | 0.005 |
| Pearson,MM3 | 1000 | 1000 | 5 | 0.064 | 0.026 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 5 | 0.059 | 0.024 | 0.004 |
| Multn,MM3 | 1000 | 1000 | 5 | 0.319 | 0.198 | 0.072 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 162 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 162 | 0.067 | 0.022 | 0.000 |
| WaldVCF | 1000 | 1000 | 162 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 162 | 0.063 | 0.024 | 0.003 |
| Pearson,MM3 | 1000 | 1000 | 162 | 0.061 | 0.022 | 0.002 |
| RSS,MM3 | 1000 | 1000 | 162 | 0.056 | 0.016 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 162 | 0.914 | 0.829 | 0.601 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 33 | 0.836 | 0.765 | 0.585 |
| WaldDiag,MM3 | 1000 | 1000 | 33 | 0.079 | 0.030 | 0.002 |
| WaldVCF | 1000 | 1000 | 33 | 0.607 | 0.496 | 0.298 |
| PearsonRS | 1000 | 1000 | 33 | 0.089 | 0.045 | 0.006 |
| Pearson,MM3 | 1000 | 1000 | 33 | 0.089 | 0.040 | 0.004 |
| RSS,MM3 | 1000 | 1000 | 33 | 0.086 | 0.040 | 0.003 |
| Multn,MM3 | 1000 | 1000 | 33 | 0.552 | 0.422 | 0.206 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 298 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 298 | 0.045 | 0.019 | 0.001 |
| WaldVCF | 1000 | 1000 | 298 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 298 | 0.061 | 0.029 | 0.003 |
| Pearson,MM3 | 1000 | 1000 | 298 | 0.060 | 0.026 | 0.003 |
| RSS,MM3 | 1000 | 1000 | 298 | 0.049 | 0.019 | 0.002 |
| Multn,MM3 | 1000 | 1000 | 298 | 0.927 | 0.852 | 0.643 |

Power ($n = 500$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 5 | 0.875 | 0.829 | 0.746 |
| WaldDiag,MM3 | 1000 | 1000 | 5 | 0.204 | 0.109 | 0.016 |
| WaldVCF | 1000 | 1000 | 5 | 0.508 | 0.426 | 0.264 |
| PearsonRS | 1000 | 1000 | 5 | 0.255 | 0.156 | 0.046 |
| Pearson,MM3 | 1000 | 1000 | 5 | 0.262 | 0.144 | 0.039 |
| RSS,MM3 | 1000 | 1000 | 5 | 0.260 | 0.149 | 0.041 |
| Multn,MM3 | 1000 | 1000 | 5 | 0.307 | 0.214 | 0.093 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.543 | 0.324 | 0.105 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1000 | 0.334 | 0.203 | 0.054 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.335 | 0.191 | 0.042 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.355 | 0.193 | 0.035 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.415 | 0.290 | 0.130 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | | | |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.736 | 0.461 | 0.077 |
| WaldVCF | 1000 | 1000 | 1000 | 0.257 | 0.226 | 0.184 |
| PearsonRS | 1000 | 1000 | 1000 | 0.378 | 0.178 | 0.018 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.377 | 0.165 | 0.014 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.383 | 0.140 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.084 | 0.034 | 0.007 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.195 | 0.065 | 0.008 |
| WaldVCF | 1000 | 1000 | 1000 | 0.979 | 0.967 | 0.955 |
| PearsonRS | 1000 | 1000 | 1000 | 0.247 | 0.128 | 0.017 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.247 | 0.114 | 0.012 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.214 | 0.088 | 0.010 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.226 | 0.133 | 0.040 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | | | |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.117 | 0.026 | 0.002 |
| WaldVCF | 1000 | 1000 | 1000 | 0.023 | 0.018 | 0.012 |
| PearsonRS | 1000 | 1000 | 1000 | 0.124 | 0.036 | 0.002 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.123 | 0.032 | 0.002 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.092 | 0.020 | 0.001 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.034 | 0.017 | 0.003 |

Power ($n = 1000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.732 | 0.654 | 0.467 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.374 | 0.229 | 0.078 |
| WaldVCF | 1000 | 1000 | 0 | 0.559 | 0.436 | 0.232 |
| PearsonRS | 1000 | 1000 | 0 | 0.470 | 0.356 | 0.164 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.472 | 0.353 | 0.146 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.478 | 0.354 | 0.151 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.502 | 0.377 | 0.187 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 8 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 8 | 0.910 | 0.828 | 0.565 |
| WaldVCF | 1000 | 1000 | 8 | 0.997 | 0.995 | 0.984 |
| PearsonRS | 1000 | 1000 | 8 | 0.785 | 0.649 | 0.373 |
| Pearson,MM3 | 1000 | 1000 | 8 | 0.785 | 0.634 | 0.327 |
| RSS,MM3 | 1000 | 1000 | 8 | 0.823 | 0.706 | 0.383 |
| Multn,MM3 | 1000 | 1000 | 8 | 0.814 | 0.732 | 0.521 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.997 | 0.988 | 0.885 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1000 | 0.961 | 0.896 | 0.623 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.961 | 0.890 | 0.572 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.981 | 0.909 | 0.640 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.780 | 0.668 | 0.449 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.641 | 0.448 | 0.156 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1000 | 0.743 | 0.601 | 0.351 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.743 | 0.583 | 0.304 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.739 | 0.575 | 0.288 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.656 | 0.510 | 0.288 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.580 | 0.349 | 0.068 |
| WaldVCF | 1000 | 1000 | 1000 | 0.997 | 0.996 | 0.991 |
| PearsonRS | 1000 | 1000 | 1000 | 0.693 | 0.499 | 0.186 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.686 | 0.487 | 0.148 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.679 | 0.463 | 0.118 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.600 | 0.477 | 0.245 |

Power ($n = 2000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 3 | 0.829 | 0.750 | 0.563 |
| WaldDiag,MM3 | 1000 | 1000 | 3 | 0.677 | 0.538 | 0.270 |
| WaldVCF | 1000 | 1000 | 3 | 0.751 | 0.660 | 0.443 |
| PearsonRS | 1000 | 1000 | 3 | 0.767 | 0.666 | 0.442 |
| Pearson,MM3 | 1000 | 1000 | 3 | 0.768 | 0.658 | 0.417 |
| RSS,MM3 | 1000 | 1000 | 3 | 0.775 | 0.671 | 0.429 |
| Multn,MM3 | 1000 | 1000 | 3 | 0.749 | 0.644 | 0.424 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 4 | 1.000 | 1.000 | 0.999 |
| WaldDiag,MM3 | 1000 | 1000 | 4 | 0.998 | 0.997 | 0.983 |
| WaldVCF | 1000 | 1000 | 4 | 1.000 | 0.999 | 0.998 |
| PearsonRS | 1000 | 1000 | 4 | 0.989 | 0.968 | 0.877 |
| Pearson,MM3 | 1000 | 1000 | 4 | 0.989 | 0.964 | 0.859 |
| RSS,MM3 | 1000 | 1000 | 4 | 0.993 | 0.985 | 0.921 |
| Multn,MM3 | 1000 | 1000 | 4 | 1.000 | 0.999 | 0.989 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.999 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 0.998 |
| RSS,MM3 | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 1000 | 1.000 | 0.995 | 0.958 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 15 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 15 | 0.960 | 0.913 | 0.717 |
| WaldVCF | 1000 | 1000 | 15 | 1.000 | 1.000 | 0.995 |
| PearsonRS | 1000 | 1000 | 15 | 0.985 | 0.963 | 0.883 |
| Pearson,MM3 | 1000 | 1000 | 15 | 0.985 | 0.960 | 0.858 |
| RSS,MM3 | 1000 | 1000 | 15 | 0.987 | 0.966 | 0.865 |
| Multn,MM3 | 1000 | 1000 | 15 | 0.984 | 0.966 | 0.864 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1000 | 0.978 | 0.929 | 0.721 |
| WaldVCF | 1000 | 1000 | 1000 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1000 | 0.993 | 0.967 | 0.881 |
| Pearson,MM3 | 1000 | 1000 | 1000 | 0.992 | 0.965 | 0.857 |
| RSS,MM3 | 1000 | 1000 | 1000 | 0.993 | 0.971 | 0.866 |
| Multn,MM3 | 1000 | 1000 | 1000 | 0.987 | 0.960 | 0.836 |

Power ($n = 3000$)

| name | n_sims | n_converged | n_rank_def | rej_rate10 | rej_rate5 | rej_rate1 |
|---------------|--------|-------------|------------|------------|-----------|-----------|
| 1F 5V | | | | | | |
| Wald | 1000 | 1000 | 0 | 0.953 | 0.899 | 0.750 |
| WaldDiag,MM3 | 1000 | 1000 | 0 | 0.878 | 0.779 | 0.537 |
| WaldVCF | 1000 | 1000 | 0 | 0.929 | 0.855 | 0.672 |
| PearsonRS | 1000 | 1000 | 0 | 0.942 | 0.900 | 0.730 |
| Pearson,MM3 | 1000 | 1000 | 0 | 0.943 | 0.897 | 0.706 |
| RSS,MM3 | 1000 | 1000 | 0 | 0.948 | 0.900 | 0.721 |
| Multn,MM3 | 1000 | 1000 | 0 | 0.934 | 0.849 | 0.668 |
| 1F 8V | | | | | | |
| Wald | 1000 | 1000 | 1 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 1 | 1.000 | 1.000 | 1.000 |
| WaldVCF | 1000 | 1000 | 1 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 1 | 1.000 | 0.999 | 0.995 |
| Pearson,MM3 | 1000 | 1000 | 1 | 1.000 | 0.999 | 0.992 |
| RSS,MM3 | 1000 | 1000 | 1 | 1.000 | 1.000 | 0.999 |
| Multn,MM3 | 1000 | 1000 | 1 | 1.000 | 1.000 | 1.000 |
| 1F 15V | | | | | | |
| Wald | 1000 | 1000 | 98 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 98 | 1.000 | 1.000 | 1.000 |
| WaldVCF | 1000 | 1000 | 98 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 98 | 1.000 | 1.000 | 1.000 |
| Pearson,MM3 | 1000 | 1000 | 98 | 1.000 | 1.000 | 1.000 |
| RSS,MM3 | 1000 | 1000 | 98 | 1.000 | 1.000 | 1.000 |
| Multn,MM3 | 1000 | 1000 | 98 | 1.000 | 1.000 | 1.000 |
| 2F 10V | | | | | | |
| Wald | 1000 | 1000 | 7 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 7 | 0.997 | 0.994 | 0.976 |
| WaldVCF | 1000 | 1000 | 7 | 1.000 | 1.000 | 0.994 |
| PearsonRS | 1000 | 1000 | 7 | 1.000 | 1.000 | 0.994 |
| Pearson,MM3 | 1000 | 1000 | 7 | 1.000 | 1.000 | 0.993 |
| RSS,MM3 | 1000 | 1000 | 7 | 1.000 | 1.000 | 0.994 |
| Multn,MM3 | 1000 | 1000 | 7 | 1.000 | 0.998 | 0.986 |
| 3F 15V | | | | | | |
| Wald | 1000 | 1000 | 194 | 1.000 | 1.000 | 1.000 |
| WaldDiag,MM3 | 1000 | 1000 | 194 | 1.000 | 0.999 | 0.982 |
| WaldVCF | 1000 | 1000 | 194 | 1.000 | 1.000 | 1.000 |
| PearsonRS | 1000 | 1000 | 194 | 1.000 | 1.000 | 0.995 |
| Pearson,MM3 | 1000 | 1000 | 194 | 1.000 | 1.000 | 0.995 |
| RSS,MM3 | 1000 | 1000 | 194 | 1.000 | 1.000 | 0.996 |
| Multn,MM3 | 1000 | 1000 | 194 | 1.000 | 0.996 | 0.977 |