Table: Summary statistics of the exposure-response parameter estimates for each scenario with exposure intensity distribution Normal(25, 64) - Truncated(0, 50)

|  |
| --- |
| **Distribution 1** |
|  |  | ~30 cases |  | ~100 cases |  | ~300 cases |
| True Rate Ratio | Match | Na | Mean | Variance | Mean of Estimated Varianceb |   | Na | Mean | Variance | Mean of Estimated Varianceb |   | Na | Mean | Variance | Mean of Estimated Varianceb |
| 1 | 1:1 | 10000 | -2.01E-05 | 4.66E-06 | 4.23E-06 |   | 3000 | 1.50E-05 | 1.28E-06 | 1.24E-06 |   | 1000 | -1.91E-05 | 4.07E-07 | 4.05E-07 |
|   | 1:5 | 10000 | 8.52E-06 | 2.30E-06 | 2.23E-06 |   | 3000 | -2.84E-06 | 7.26E-07 | 7.17E-07 |   | 1000 | -2.16E-06 | 2.44E-07 | 2.40E-07 |
|   | 1:10 | 10000 | -6.35E-06 | 2.03E-06 | 2.01E-06 |   | 3000 | 5.31E-06 | 6.72E-07 | 6.54E-07 |   | 1000 | -5.46E-06 | 2.30E-07 | 2.20E-07 |
|   | 1:15 | 10000 | 1.83E-06 | 1.95E-06 | 1.94E-06 |   | 3000 | -6.28E-06 | 6.56E-07 | 6.33E-07 |   | 1000 | -5.18E-06 | 2.19E-07 | 2.13E-07 |
|   | 1:20 | 10000 | -3.83E-06 | 1.92E-06 | 1.91E-06 |   | 3000 | 2.85E-06 | 6.53E-07 | 6.23E-07 |   | 1000 | -5.37E-06 | 2.17E-07 | 2.09E-07 |
|   | full |   | -1.75E-06 | 1.80E-06 | 1.81E-06 |   | 3000 | -1.72E-06 | 6.14E-07 | 5.93E-07 |   | 1000 | -5.74E-06 | 2.10E-07 | 1.99E-07 |
| 1.005 | 1:1 | 10000 | 5.57E-03 | 3.37E-05 | 1.02E-04 |  | 3000 | 5.20E-03 | 1.98E-06 | 1.91E-06 |  | 1000 | 5.06E-03 | 6.16E-07 | 5.86E-07 |
|  | 1:5 | 10000 | 5.11E-03 | 2.92E-06 | 2.82E-06 |  | 3000 | 5.03E-03 | 9.20E-07 | 8.93E-07 |  | 1000 | 5.01E-03 | 3.02E-07 | 2.88E-07 |
|  | 1:10 | 10000 | 5.07E-03 | 2.46E-06 | 2.40E-06 |  | 3000 | 5.03E-03 | 7.81E-07 | 7.74E-07 |  | 1000 | 5.00E-03 | 2.56E-07 | 2.50E-07 |
|  | 1:15 | 10000 | 5.04E-03 | 2.31E-06 | 2.25E-06 |  | 3000 | 5.01E-03 | 7.26E-07 | 7.31E-07 |  | 1000 | 4.99E-03 | 2.42E-07 | 2.37E-07 |
|  | 1:20 | 10000 | 5.03E-03 | 2.22E-06 | 2.18E-06 |  | 3000 | 5.01E-03 | 7.37E-07 | 7.12E-07 |  | 1000 | 5.00E-03 | 2.29E-07 | 2.31E-07 |
|  | full | 10000 | 5.00E-03 | 2.00E-06 | 1.98E-06 |  | 3000 | 5.00E-03 | 6.63E-07 | 6.51E-07 |  | 1000 | 4.99E-03 | 2.16E-07 | 2.12E-07 |
| 1.01 | 1:1 | 9993 | 1.14E-02 | 3.21E-05 | 3.93E-05 |   | 3000 | 1.04E-02 | 4.55E-06 | 4.35E-06 |   | 1000 | 1.01E-02 | 1.28E-06 | 1.33E-06 |
|   | 1:5 | 10000 | 1.03E-02 | 4.94E-06 | 4.57E-06 |   | 3000 | 1.01E-02 | 1.55E-06 | 1.49E-06 |   | 1000 | 9.97E-03 | 5.43E-07 | 4.95E-07 |
|   | 1:10 | 10000 | 1.02E-02 | 3.49E-06 | 3.36E-06 |   | 3000 | 1.00E-02 | 1.17E-06 | 1.13E-06 |   | 1000 | 9.97E-03 | 4.13E-07 | 3.85E-07 |
|   | 1:15 | 10000 | 1.01E-02 | 3.03E-06 | 2.96E-06 |   | 3000 | 1.00E-02 | 1.03E-06 | 1.01E-06 |   | 1000 | 9.96E-03 | 3.48E-07 | 3.45E-07 |
|   | 1:20 | 10000 | 1.01E-02 | 2.81E-06 | 2.77E-06 |   | 3000 | 1.00E-02 | 9.68E-07 | 9.52E-07 |   | 1000 | 9.96E-03 | 3.31E-07 | 3.25E-07 |
|   | full | 10000 | 1.00E-02 | 2.12E-06 | 2.12E-06 |   | 3000 | 9.97E-03 | 7.49E-07 | 7.47E-07 |   | 1000 | 9.95E-03 | 2.64E-07 | 2.59E-07 |
| 1.015 | 1:1 | 9782 | 1.88E-02 | 2.24E-04 | 4.39E-04 |  | 3000 | 1.58E-02 | 1.72E-05 | 1.33E-05 |  | 1000 | 1.52E-02 | 3.45E-06 | 3.28E-06 |
|  | 1:5 | 9999 | 1.57E-02 | 1.26E-05 | 1.09E-05 |  | 3000 | 1.51E-02 | 3.28E-06 | 3.03E-06 |  | 1000 | 1.49E-02 | 1.03E-06 | 9.86E-07 |
|  | 1:10 | 10000 | 1.53E-02 | 7.20E-06 | 6.62E-06 |  | 3000 | 1.50E-02 | 2.13E-06 | 2.07E-06 |  | 1000 | 1.49E-02 | 6.75E-07 | 6.97E-07 |
|  | 1:15 | 10000 | 1.52E-02 | 5.74E-06 | 5.30E-06 |  | 3000 | 1.50E-02 | 1.73E-06 | 1.73E-06 |  | 1000 | 1.49E-02 | 5.67E-07 | 5.94E-07 |
|  | 1:20 | 10000 | 1.52E-02 | 5.06E-06 | 4.70E-06 |  | 3000 | 1.50E-02 | 1.55E-06 | 1.56E-06 |  | 1000 | 1.49E-02 | 5.20E-07 | 5.41E-07 |
|   | full | 10000 | 1.50E-02 | 2.74E-06 | 2.66E-06 |   | 3000 | 1.49E-02 | 8.95E-07 | 9.44E-07 |   | 1000 | 1.49E-02 | 3.19E-07 | 3.46E-07 |

a N is the number of parameter estimates with corresponding standard error calculated by Proc Phreg less than 1

Table: Summary statistics of the exposure-response parameter estimates for each scenario with exposure intensity distribution Log - Normal( 2.5 .5) - Truncated(0, 50)

|  |
| --- |
| **Distribution 2** |
|  |  | ~30 cases |  | ~100 cases |  | ~300 cases |
| True Rate Ratio | Match | N | Mean | Variance | Mean of Estimated Variance |   | N | Mean | Variance | Mean of Estimated Variance |   | N | Mean | Variance | Mean of Estimated Variance |
| 1 | 1:1 | 10000 | -2.2273E-06 | 8.0730E-06 | 7.1690E-06 |   | 3000 | 3.0000E-05 | 2.0240E-06 | 1.9870E-06 |   | 1000 | 3.3800E-05 | 6.4700E-07 | 6.4300E-07 |
|   | 1:5 | 10000 | -1.4450E-04 | 3.7990E-06 | 3.6530E-06 |   | 3000 | -1.4600E-05 | 1.1290E-06 | 1.1360E-06 |   | 1000 | 1.5900E-05 | 3.7600E-07 | 3.7800E-07 |
|   | 1:10 | 10000 | -1.7240E-04 | 3.3760E-06 | 3.2940E-06 |   | 3000 | -2.3000E-05 | 1.0120E-06 | 1.0340E-06 |   | 1000 | -5.3385E-06 | 3.4300E-07 | 3.4600E-07 |
|   | 1:15 | 10000 | -1.8250E-04 | 3.2370E-06 | 3.1730E-06 |   | 3000 | -2.8400E-05 | 9.9200E-07 | 1.0000E-06 |   | 1000 | 2.2159E-06 | 3.1500E-07 | 3.3500E-07 |
|   | 1:20 | 10000 | -1.7510E-04 | 3.1770E-06 | 3.1130E-06 |   | 3000 | -3.4400E-05 | 9.6000E-07 | 9.8100E-07 |   | 1000 | 9.2939E-06 | 3.1600E-07 | 3.3000E-07 |
|   | full | 10000 | -1.8900E-04 | 2.9820E-06 | 2.9380E-06 |   | 3000 | -3.6100E-05 | 9.0500E-07 | 9.3400E-07 |   | 1000 | 3.6442E-06 | 2.9800E-07 | 3.1400E-07 |
| 1.005 | 1:1 | 9999 | 5.8000E-03 | 1.6019E-05 | 1.5753E-05 |  | 3000 | 5.2000E-03 | 2.2550E-06 | 2.1250E-06 |  | 1000 | 5.0500E-03 | 6.9100E-07 | 6.7200E-07 |
|  | 1:5 | 10000 | 5.1300E-03 | 3.4850E-06 | 3.3000E-06 |  | 3000 | 5.0300E-03 | 8.3200E-07 | 8.2400E-07 |  | 1000 | 4.9900E-03 | 3.0100E-07 | 2.7500E-07 |
|  | 1:10 | 10000 | 5.0500E-03 | 2.6960E-06 | 2.5670E-06 |  | 3000 | 5.0100E-03 | 6.6300E-07 | 6.5400E-07 |  | 1000 | 4.9900E-03 | 2.3600E-07 | 2.2000E-07 |
|  | 1:15 | 10000 | 4.9900E-03 | 2.4570E-06 | 2.3030E-06 |  | 3000 | 5.0000E-03 | 5.9800E-07 | 5.9300E-07 |  | 1000 | 4.9700E-03 | 2.1900E-07 | 2.0100E-07 |
|  | 1:20 | 10000 | 4.9700E-03 | 2.2700E-06 | 2.1730E-06 |  | 3000 | 4.9800E-03 | 5.6500E-07 | 5.6100E-07 |  | 1000 | 4.9800E-03 | 2.0300E-07 | 1.9100E-07 |
|  | full | 10000 | 4.8900E-03 | 1.8170E-06 | 1.7600E-06 |  | 3000 | 4.9700E-03 | 4.6900E-07 | 4.6400E-07 |  | 1000 | 4.9800E-03 | 1.7400E-07 | 1.5900E-07 |
| 1.01 | 1:1 | 9952 | 1.2320E-02 | 1.2938E-04 | 3.2320E-04 |   | 3000 | 1.0420E-02 | 4.6300E-06 | 4.6090E-06 |   | 1000 | 1.0100E-02 | 1.4240E-06 | 1.3630E-06 |
|   | 1:5 | 10000 | 1.0360E-02 | 4.8840E-06 | 4.5460E-06 |   | 3000 | 1.0080E-02 | 1.2510E-06 | 1.2690E-06 |   | 1000 | 9.9900E-03 | 4.5000E-07 | 4.3500E-07 |
|   | 1:10 | 10000 | 1.0200E-02 | 2.9390E-06 | 2.8010E-06 |   | 3000 | 1.0010E-02 | 8.4000E-07 | 8.4800E-07 |   | 1000 | 9.9800E-03 | 3.1800E-07 | 3.0600E-07 |
|   | 1:15 | 10000 | 1.0140E-02 | 2.3530E-06 | 2.2390E-06 |   | 3000 | 1.0010E-02 | 7.1300E-07 | 7.0100E-07 |   | 1000 | 9.9400E-03 | 2.5500E-07 | 2.5600E-07 |
|   | 1:20 | 10000 | 1.0100E-02 | 1.9800E-06 | 1.9420E-06 |   | 3000 | 1.0010E-02 | 6.1700E-07 | 6.2200E-07 |   | 1000 | 9.9600E-03 | 2.3800E-07 | 2.3100E-07 |
|   | full | 10000 | 9.9600E-03 | 9.1900E-07 | 9.2100E-07 |   | 3000 | 9.9700E-03 | 3.1500E-07 | 3.1800E-07 |   | 1000 | 9.9500E-03 | 1.3200E-07 | 1.3200E-07 |
| 1.015 | 1:1 | 7911 | 2.0390E-02 | 4.8404E-04 | 1.6413E-03 |  | 2992 | 1.6890E-02 | 4.3832E-05 | 4.5192E-05 |  | 1000 | 1.5220E-02 | 3.5320E-06 | 3.5070E-06 |
|  | 1:5 | 9897 | 1.7390E-02 | 1.1898E-04 | 2.7052E-04 |  | 3000 | 1.5300E-02 | 4.2900E-06 | 3.8800E-06 |  | 1000 | 1.4940E-02 | 8.9700E-07 | 9.5500E-07 |
|  | 1:10 | 9987 | 1.6230E-02 | 5.9839E-05 | 8.1995E-05 |  | 3000 | 1.5140E-02 | 2.4100E-06 | 2.3000E-06 |  | 1000 | 1.4920E-02 | 6.1400E-07 | 6.3100E-07 |
|  | 1:15 | 9996 | 1.5800E-02 | 1.4574E-05 | 1.2352E-05 |  | 3000 | 1.5100E-02 | 1.8830E-06 | 1.7860E-06 |  | 1000 | 1.4930E-02 | 5.2100E-07 | 5.1300E-07 |
|  | 1:20 | 9996 | 1.5590E-02 | 1.0503E-05 | 9.5110E-06 |  | 3000 | 1.5040E-02 | 1.5170E-06 | 1.5020E-06 |  | 1000 | 1.4930E-02 | 4.3900E-07 | 4.5000E-07 |
|   | full | 10000 | 1.5040E-02 | 1.5000E-06 | 1.4660E-06 |   | 3000 | 1.4930E-02 | 4.4600E-07 | 4.8200E-07 |   | 1000 | 1.4870E-02 | 1.6300E-07 | 1.9100E-07 |

a N is the number of parameter estimates with corresponding standard error calculated by Proc Phreg less than 1

Table: Summary statistics of the exposure-response parameter estimates for each scenario with exposure intensity distribution Log - Normal( .75, 1) - Truncated(0, 50)

|  |
| --- |
| **Distribution 3** |
|  |  | ~30 cases |  | ~100 cases |  | ~300 cases |
| True Rate Ratio | Match | Na | Mean | Variance | Mean of Estimated Variance |   | Na | Mean | Variance | Mean of Estimated Variance |   | Na | Mean | Variance | Mean of Estimated Variance |
| 1 | 1:1 | 10000 | -1.7130E-04 | 4.5599E-05 | 3.6042E-05 |   | 3000 | -1.6100E-04 | 8.9120E-06 | 7.7380E-06 |   | 1000 | 3.6600E-05 | 2.6670E-06 | 2.2470E-06 |
|   | 1:5 | 10000 | -8.5570E-04 | 1.8155E-05 | 1.6083E-05 |   | 3000 | -3.4040E-04 | 4.5860E-06 | 4.2030E-06 |   | 1000 | -5.8500E-05 | 1.3440E-06 | 1.2910E-06 |
|   | 1:10 | 10000 | -9.5090E-04 | 1.5859E-05 | 1.4290E-05 |   | 3000 | -3.8460E-04 | 4.0140E-06 | 3.7920E-06 |   | 1000 | -8.9800E-05 | 1.2000E-06 | 1.1730E-06 |
|   | 1:15 | 10000 | -9.9000E-04 | 1.4938E-05 | 1.3670E-05 |   | 3000 | -4.0070E-04 | 3.8300E-06 | 3.6580E-06 |   | 1000 | -7.9300E-05 | 1.1450E-06 | 1.1350E-06 |
|   | 1:20 | 10000 | -1.0200E-03 | 1.4680E-05 | 1.3378E-05 |   | 3000 | -4.0640E-04 | 3.7700E-06 | 3.5910E-06 |   | 1000 | -9.8700E-05 | 1.1620E-06 | 1.1180E-06 |
|   | full | 10000 | -1.0800E-03 | 1.3498E-05 | 1.2520E-05 |   | 3000 | -4.1340E-04 | 3.5700E-06 | 3.4030E-06 |   | 1000 | -1.0250E-04 | 1.0880E-06 | 1.0610E-06 |
| 1.005 | 1:1 | 10000 | 7.0100E-03 | 7.0671E-05 | 5.1269E-05 |  | 3000 | 5.5100E-03 | 5.9720E-06 | 5.8870E-06 |  | 1000 | 5.1400E-03 | 2.1360E-06 | 1.8880E-06 |
|  | 1:5 | 10000 | 5.1400E-03 | 1.0766E-05 | 9.2000E-06 |  | 3000 | 5.0900E-03 | 2.0170E-06 | 1.9440E-06 |  | 1000 | 4.9800E-03 | 6.7000E-07 | 6.9000E-07 |
|  | 1:10 | 10000 | 4.9000E-03 | 7.9240E-06 | 6.7870E-06 |  | 3000 | 5.0500E-03 | 1.4230E-06 | 1.4510E-06 |  | 1000 | 4.9700E-03 | 5.3500E-07 | 5.2500E-07 |
|  | 1:15 | 10000 | 4.7900E-03 | 6.9420E-06 | 5.9400E-06 |  | 3000 | 5.0000E-03 | 1.2950E-06 | 1.2680E-06 |  | 1000 | 4.9800E-03 | 4.6400E-07 | 4.6500E-07 |
|  | 1:20 | 10000 | 4.7200E-03 | 6.4940E-06 | 5.5040E-06 |  | 3000 | 4.9800E-03 | 1.2200E-06 | 1.1690E-06 |  | 1000 | 4.9600E-03 | 4.4500E-07 | 4.3100E-07 |
|  | full | 10000 | 4.4400E-03 | 4.8120E-06 | 4.0650E-06 |  | 3000 | 4.9100E-03 | 8.5900E-07 | 8.4000E-07 |  | 1000 | 4.9500E-03 | 3.2800E-07 | 3.1900E-07 |
| 1.01 | 1:1 | 9999 | 1.3560E-02 | 1.1606E-04 | 1.0126E-04 |   | 3000 | 1.0750E-02 | 8.9690E-06 | 8.8480E-06 |   | 1000 | 1.0220E-02 | 2.9250E-06 | 2.7440E-06 |
|   | 1:5 | 10000 | 1.0730E-02 | 9.7940E-06 | 8.9580E-06 |   | 3000 | 1.0150E-02 | 2.2970E-06 | 2.2600E-06 |   | 1000 | 9.9800E-03 | 7.6400E-07 | 8.3900E-07 |
|   | 1:10 | 10000 | 1.0430E-02 | 5.5430E-06 | 5.1290E-06 |   | 3000 | 1.0050E-02 | 1.4340E-06 | 1.4540E-06 |   | 1000 | 1.0000E-02 | 5.8300E-07 | 5.8000E-07 |
|   | 1:15 | 10000 | 1.0290E-02 | 4.0230E-06 | 3.8620E-06 |   | 3000 | 1.0060E-02 | 1.1440E-06 | 1.1710E-06 |   | 1000 | 1.0000E-02 | 4.7900E-07 | 4.8000E-07 |
|   | 1:20 | 10000 | 1.0230E-02 | 3.2040E-06 | 3.2040E-06 |   | 3000 | 1.0030E-02 | 9.8700E-07 | 1.0100E-06 |   | 1000 | 9.9800E-03 | 3.9500E-07 | 4.2500E-07 |
|   | full | 10000 | 9.9600E-03 | 8.0000E-07 | 7.9100E-07 |   | 3000 | 9.9700E-03 | 3.1400E-07 | 3.3900E-07 |   | 1000 | 9.9700E-03 | 1.7800E-07 | 1.9100E-07 |
| 1.015 | 1:1 | 9791 | 2.5050E-02 | 1.0775E-03 | 1.8179E-03 |  | 3000 | 1.6050E-02 | 1.7697E-05 | 1.6719E-05 |  | 1000 | 1.5220E-02 | 4.3830E-06 | 4.1900E-06 |
|  | 1:5 | 10000 | 1.6740E-02 | 4.4117E-05 | 4.4287E-05 |  | 3000 | 1.5220E-02 | 3.9540E-06 | 3.7200E-06 |  | 1000 | 1.4970E-02 | 1.1970E-06 | 1.2080E-06 |
|  | 1:10 | 9998 | 1.5900E-02 | 1.5294E-05 | 1.4152E-05 |  | 3000 | 1.5080E-02 | 2.3500E-06 | 2.2740E-06 |  | 1000 | 1.4980E-02 | 8.3000E-07 | 8.0500E-07 |
|  | 1:15 | 10000 | 1.5580E-02 | 8.9530E-06 | 8.2510E-06 |  | 3000 | 1.5010E-02 | 1.7430E-06 | 1.7570E-06 |  | 1000 | 1.4940E-02 | 6.2100E-07 | 6.5100E-07 |
|  | 1:20 | 10000 | 1.5430E-02 | 6.9090E-06 | 6.4200E-06 |  | 3000 | 1.5020E-02 | 1.4760E-06 | 1.4990E-06 |  | 1000 | 1.4930E-02 | 5.3100E-07 | 5.6800E-07 |
|   | full | 10000 | 1.4990E-02 | 8.6800E-07 | 8.9600E-07 |   | 3000 | 1.4910E-02 | 3.1400E-07 | 3.7300E-07 |   | 1000 | 1.4890E-02 | 1.8200E-07 | 2.1200E-07 |

a N is the number of parameter estimates with corresponding standard error calculated by Proc Phreg less than 1

Table: Relative Efficiency and Bias of the exposure-response parameter estimate for each scenario with exposure intensity distribution Normal(25, 64) - Truncated(0, 50)

|  |
| --- |
| **Distribution 1** |
|  |  | ~30 cases |  | ~ 100 cases |  | ~ 300 cases |
| True Rate Ratio | Match | Percent Biasa | Relative Efficiencyb | 95% CI Captures True Value |   | Percent Biasa | Relative Efficiencyb | 95% CI Captures True Value |   | Percent Biasa | Relative Efficiencyb | 95% CI Captures True Value |
| 1 | 1:1 |   | 38.68% | 96.41% |   |   | 48.16% | 95.77% |   |   | 51.60% | 95.00% |
|   | 1:5 |   | 78.34% | 95.36% |   |   | 84.57% | 95.23% |   |   | 86.07% | 94.90% |
|   | 1:10 |   | 88.68% | 95.37% |   |   | 91.37% | 94.80% |   |   | 91.30% | 95.30% |
|   | 1:15 |   | 92.60% | 95.33% |   |   | 93.60% | 94.57% |   |   | 95.89% | 95.80% |
|   | 1:20 |   | 94.00% | 95.26% |   |   | 94.03% | 94.77% |   |   | 96.77% | 94.60% |
|   | full |   | 100.00% | 95.16% |   |   | 100.00% | 94.74% |   |   | 100.00% | 95.41% |
|   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1.005 | 1:1 | 11.68% | 5.94% | 96.57% |  | 4.26% | 33.42% | 95.87% |  | 1.45% | 35.06% | 94.60% |
|  | 1:5 | 2.46% | 68.41% | 95.54% |  | 0.85% | 72.07% | 94.93% |  | 0.45% | 71.52% | 95.50% |
|  | 1:10 | 1.65% | 81.43% | 95.18% |  | 0.85% | 84.89% | 95.03% |  | 0.25% | 84.38% | 95.20% |
|  | 1:15 | 1.05% | 86.72% | 94.99% |  | 0.45% | 91.32% | 95.13% |  | 0.05% | 89.26% | 95.40% |
|  | 1:20 | 0.85% | 90.21% | 95.13% |  | 0.45% | 89.96% | 94.83% |  | 0.25% | 94.32% | 94.70% |
|  | full | 0.25% | 100.00% | 94.96% |  | 0.25% | 100.00% | 94.77% |  | 0.05% | 100.00% | 95.31% |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.01 | 1:1 | 14.47% | 6.60% | 96.55% |   | 4.02% | 16.45% | 95.90% |   | 1.20% | 20.56% | 94.00% |
|   | 1:5 | 3.51% | 42.91% | 95.36% |   | 1.40% | 48.39% | 95.63% |   | 0.20% | 48.62% | 95.50% |
|   | 1:10 | 2.11% | 60.78% | 95.60% |   | 0.80% | 64.02% | 95.07% |   | 0.20% | 63.92% | 94.70% |
|   | 1:15 | 1.71% | 69.99% | 95.49% |   | 0.50% | 73.07% | 95.40% |   | 0.10% | 75.86% | 95.20% |
|   | 1:20 | 1.60% | 75.55% | 95.47% |   | 0.70% | 77.38% | 94.87% |   | 0.10% | 79.76% | 94.60% |
|   | full | 0.70% | 100.00% | 95.07% |   | 0.20% | 100.00% | 95.04% |   | 0.00% | 100.00% | 95.31% |
|   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1.015 | 1:1 | 26.07% | 1.22% | 95.60% |  | 6.32% | 5.19% | 96.07% |  | 2.02% | 9.26% | 95.40% |
|  | 1:5 | 5.32% | 21.64% | 96.15% |  | 1.35% | 27.33% | 94.87% |  | 0.28% | 31.00% | 95.10% |
|  | 1:10 | 2.90% | 37.97% | 95.67% |  | 1.02% | 42.06% | 94.90% |  | 0.14% | 47.26% | 96.20% |
|  | 1:15 | 2.16% | 47.61% | 95.31% |  | 0.61% | 51.82% | 95.03% |  | 0.14% | 56.26% | 95.30% |
|  | 1:20 | 2.02% | 54.08% | 95.17% |  | 0.75% | 57.78% | 95.67% |  | 0.28% | 61.35% | 95.70% |
|  | full | 0.48% | 100.00% | 94.79% |  | 0.21% | 100.00% | 95.77% |  | 0.14% | 100.00% | 95.60% |
|   |   |   |   |   |   |   |   |   |   |   |   |   |

a Percent bias between the true exposure-response relationship (log of the true rate ratio) and the mean of the exposure-response parameter estimates

bRelative efficiency is estimated by the sample variance of the exposure-response parameter estimates for the full cohort divided by the sample variance of the exposure-response parameter estimates for the sampled cohort times 100%

Table: Relative Efficiency and Bias of the exposure-response parameter estimate for each scenario with exposure intensity distribution Log - Normal( 2.5, .5) - Truncated(0, 50)

|  |
| --- |
| **Distribution 2** |
|  |  | ~30 cases |  | ~ 100 cases |  | ~ 300 cases |
| True Rate Ratio | Match | Percent Bias | Relative Efficiency | 95% CI Captures True Value |   | Percent Bias | Relative Efficiency | 95% CI Captures True Value |   | Percent Bias | Relative Efficiency | 95% CI Captures True Value |
| 1 | 1:1 |   | 36.94% | 97.09% |   |   | 44.71% | 95.83% |   |   | 46.06% | 95.40% |
|   | 1:5 |   | 78.49% | 95.61% |   |   | 80.16% | 95.50% |   |   | 79.26% | 95.60% |
|   | 1:10 |   | 88.33% | 95.27% |   |   | 89.43% | 95.63% |   |   | 86.88% | 94.40% |
|   | 1:15 |   | 92.12% | 95.34% |   |   | 91.23% | 95.43% |   |   | 94.60% | 96.10% |
|   | 1:20 |   | 93.86% | 95.20% |   |   | 94.27% | 95.47% |   |   | 94.30% | 95.50% |
|   | full |   | 100.00% | 95.09% |   |   | 100.00% | 95.84% |   |   | 100.00% | 95.70% |
|   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1.005 | 1:1 | 16.29% | 11.34% | 96.64% |  | 4.26% | 20.80% | 95.13% |  | 1.25% | 25.18% | 94.50% |
|  | 1:5 | 2.86% | 52.14% | 95.91% |  | 0.85% | 56.37% | 95.23% |  | 0.05% | 57.81% | 93.70% |
|  | 1:10 | 1.25% | 67.40% | 95.84% |  | 0.45% | 70.74% | 95.57% |  | 0.05% | 73.73% | 95.10% |
|  | 1:15 | 0.05% | 73.95% | 95.26% |  | 0.25% | 78.43% | 95.60% |  | -0.35% | 79.45% | 93.60% |
|  | 1:20 | -0.35% | 80.04% | 95.72% |  | -0.15% | 83.01% | 95.27% |  | -0.15% | 85.71% | 94.40% |
|  | full | -1.96% | 100.00% | 95.16% |  | -0.35% | 100.00% | 94.84% |  | -0.15% | 100.00% | 93.81% |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.01 | 1:1 | 23.81% | 0.71% | 96.24% |   | 4.72% | 6.80% | 96.57% |   | 1.50% | 9.27% | 94.90% |
|   | 1:5 | 4.12% | 18.82% | 96.28% |   | 1.30% | 25.18% | 96.10% |   | 0.40% | 29.33% | 94.90% |
|   | 1:10 | 2.51% | 31.27% | 95.82% |   | 0.60% | 37.50% | 95.27% |   | 0.30% | 41.51% | 94.80% |
|   | 1:15 | 1.91% | 39.06% | 95.88% |   | 0.60% | 44.18% | 95.10% |   | -0.10% | 51.76% | 95.80% |
|   | 1:20 | 1.50% | 46.41% | 95.53% |   | 0.60% | 51.05% | 95.47% |   | 0.10% | 55.46% | 95.40% |
|   | full | 0.10% | 100.00% | 95.41% |   | 0.20% | 100.00% | 95.14% |   | 0.00% | 100.00% | 94.91% |
|   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1.015 | 1:1 | 36.95% | 0.31% | 94.57% |  | 13.44% | 1.02% | 96.52% |  | 2.23% | 4.61% | 95.50% |
|  | 1:5 | 16.80% | 1.26% | 96.27% |  | 2.76% | 10.40% | 95.47% |  | 0.35% | 18.17% | 95.70% |
|  | 1:10 | 9.01% | 2.51% | 96.41% |  | 1.69% | 18.51% | 95.17% |  | 0.21% | 26.55% | 96.60% |
|  | 1:15 | 6.12% | 10.29% | 96.57% |  | 1.42% | 23.69% | 94.90% |  | 0.28% | 31.29% | 94.50% |
|  | 1:20 | 4.71% | 14.28% | 96.08% |  | 1.02% | 29.40% | 95.43% |  | 0.28% | 37.13% | 96.40% |
|  | full | 1.02% | 100.00% | 95.56% |  | 0.28% | 100.00% | 95.54% |  | -0.13% | 100.00% | 96.60% |
|   |   |   |   |   |   |   |   |   |   |   |   |   |

a Bias is the true exposure-response relationship (log of the true rate ratio) minus the mean of the exposure-response parameter estimates

bRelative efficiency is the variance of the exposure-response parameter estimates for the full cohort divided by the variance of the exposure-response parameter estimates for the sampled cohort times 100%

Table: Relative Efficiency and Bias of the exposure-response parameter estimate for each scenario with exposure intensity distribution Log - Normal( .75, 1) - Truncated(0, 50)

|  |
| --- |
| **Distribution 3** |
|  |  | ~30 cases |  | ~ 100 cases |  | ~ 300 cases |
| True Rate Ratio | Match | Percent Bias | Relative Efficiency | 95% CI Captures True Value |   | Percent Bias | Relative Efficiency | 95% CI Captures True Value |   | Percent Bias | Relative Efficiency | 95% CI Captures True Value |
| 1 | 1:1 |   | 29.60% |   |   |   | 40.06% |   |   |   | 40.79% |   |
|   | 1:5 |   | 74.35% |   |   |   | 77.85% |   |   |   | 80.95% |   |
|   | 1:10 |   | 85.11% |   |   |   | 88.94% |   |   |   | 90.67% |   |
|   | 1:15 |   | 90.36% |   |   |   | 93.21% |   |   |   | 95.02% |   |
|   | 1:20 |   | 91.95% |   |   |   | 94.69% |   |   |   | 93.63% |   |
|   | full |   | 100.00% |   |   |   | 100.00% |   |   |   | 100.00% |   |
|   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1.005 | 1:1 | 40.55% | 6.81% |  |  | 10.48% | 14.38% |  |  | 3.06% | 15.36% |  |
|  | 1:5 | 3.06% | 44.70% |  |  | 2.05% | 42.59% |  |  | -0.15% | 48.96% |  |
|  | 1:10 | -1.76% | 60.73% |  |  | 1.25% | 60.37% |  |  | -0.35% | 61.31% |  |
|  | 1:15 | -3.96% | 69.32% |  |  | 0.25% | 66.33% |  |  | -0.15% | 70.69% |  |
|  | 1:20 | -5.36% | 74.10% |  |  | -0.15% | 70.41% |  |  | -0.55% | 73.71% |  |
|  | full | -10.98% | 100.00% |  |  | -1.55% | 100.00% |  |  | -0.75% | 100.00% |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.01 | 1:1 | 36.28% | 0.69% |   |   | 8.04% | 3.50% |   |   | 2.71% | 6.09% |   |
|   | 1:5 | 7.84% | 8.17% |   |   | 2.01% | 13.67% |   |   | 0.30% | 23.30% |   |
|   | 1:10 | 4.82% | 14.43% |   |   | 1.00% | 21.90% |   |   | 0.50% | 30.53% |   |
|   | 1:15 | 3.41% | 19.89% |   |   | 1.10% | 27.45% |   |   | 0.50% | 37.16% |   |
|   | 1:20 | 2.81% | 24.97% |   |   | 0.80% | 31.81% |   |   | 0.30% | 45.06% |   |
|   | full | 0.10% | 100.00% |   |   | 0.20% | 100.00% |   |   | 0.20% | 100.00% |   |
|   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1.015 | 1:1 | 68.25% | 0.08% |  |  | 7.80% | 1.77% |  |  | 2.23% | 4.15% |  |
|  | 1:5 | 12.43% | 1.97% |  |  | 2.23% | 7.94% |  |  | 0.55% | 15.20% |  |
|  | 1:10 | 6.79% | 5.68% |  |  | 1.29% | 13.36% |  |  | 0.61% | 21.93% |  |
|  | 1:15 | 4.64% | 9.70% |  |  | 0.82% | 18.01% |  |  | 0.35% | 29.31% |  |
|  | 1:20 | 3.64% | 12.56% |  |  | 0.88% | 21.27% |  |  | 0.28% | 34.27% |  |
|  | full | 0.68% | 100.00% |  |  | 0.14% | 100.00% |  |  | 0.01% | 100.00% |  |
|   |   |   |   |   |   |   |   |   |   |   |   |   |

a Bias is the true exposure-response relationship (log of the true rate ratio) minus the mean of the exposure-response parameter estimates

bRelative efficiency is the variance of the exposure-response parameter estimates for the full cohort divided by the variance of the exposure-response parameter estimates for the sampled cohort times 100%

Figures: Relative Efficiency vs. Number of matched controls

Figures: Percent Bias vs. Number of matched controls