**Simulation Study 1**

**Specificity**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Sample size | min | q1 | median | q3 | max |
| Cut-off | 0 | 500 | 0.918 | 0.959 | 0.973 | 0.986 | 1.000 |
|  |  | 1000 | 0.932 | 0.973 | 0.986 | 0.010 | 1.000 |
|  |  | 2500 | 0.932 | 0.986 | 1.000 | 1.000 | 1.000 |
|  |  | 5000 | 0.959 | 0.986 | 1.000 | 1.000 | 1.000 |
|  | 8 | 500 | 0.932 | 0.973 | 0.986 | 0.986 | 1.000 |
|  |  | 1000 | 0.945 | 0.986 | 0.986 | 1.000 | 1.000 |
|  |  | 2500 | 0.959 | 0.983 | 0.986 | 1.000 | 1.000 |
|  |  | 5000 | 0.918 | 0.973 | 0.986 | 0.986 | 1.000 |
|  | 14 | 500 | 0.918 | 0.973 | 0.986 | 1.000 | 1.000 |
|  |  | 1000 | 0.945 | 0.973 | 0.986 | 1.000 | 1.000 |
|  |  | 2500 | 0.932 | 0.959 | 0.973 | 0.986 | 1.000 |
|  |  | 5000 | 0.863 | 0.918 | 0.932 | 0.945 | 0.986 |
|  | 19 | 500 | 0.890 | 0.959 | 0.973 | 0.986 | 1.000 |
|  |  | 1000 | 0.904 | 0.945 | 0.959 | 0.973 | 1.000 |
|  |  | 2500 | 0.863 | 0.901 | 0.918 | 0.932 | 0.959 |
|  |  | 5000 | 0.740 | 0.822 | 0.836 | 0.863 | 0.890 |
|  | 28 | 500 | 0.781 | 0.877 | 0.890 | 0.918 | 0.973 |
|  |  | 1000 | 0.699 | 0.808 | 0.822 | 0.836 | 0.918 |
|  |  | 2500 | 0.589 | 0.630 | 0.671 | 0.685 | 0.740 |
|  |  | 5000 | 0.411 | 0.452 | 0.479 | 0.493 | 0.562 |

**Sensitivity**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Sample size | min | q1 | median | q3 | max |
| Cut-off | 0 | 500 | 0.491 | 0.545 | 0.564 | 0.600 | 0.673 |
|  |  | 1000 | 0.618 | 0.673 | 0.691 | 0.709 | 0.764 |
|  |  | 2500 | 0.782 | 0.836 | 0.873 | 0.891 | 0.927 |
|  |  | 5000 | 0.909 | 0.945 | 0.964 | 0.982 | 1.000 |
|  | 8 | 500 | 0.436 | 0.491 | 0.509 | 0.527 | 0.600 |
|  |  | 1000 | 0.545 | 0.595 | 0.618 | 0.636 | 0.745 |
|  |  | 2500 | 0.709 | 0.745 | 0.764 | 0.800 | 0.836 |
|  |  | 5000 | 0.836 | 0.873 | 0.891 | 0.909 | 0.964 |
|  | 14 | 500 | 0.345 | 0.400 | 0.436 | 0.455 | 0.527 |
|  |  | 1000 | 0.455 | 0.491 | 0.527 | 0.545 | 0.618 |
|  |  | 2500 | 0.582 | 0.636 | 0.655 | 0.655 | 0.727 |
|  |  | 5000 | 0.673 | 0.764 | 0.782 | 0.800 | 0.873 |
|  | 19 | 500 | 0.291 | 0.345 | 0.364 | 0.382 | 0.473 |
|  |  | 1000 | 0.345 | 0.400 | 0.436 | 0.455 | 0.491 |
|  |  | 2500 | 0.473 | 0.509 | 0.545 | 0.564 | 0.618 |
|  |  | 5000 | 0.564 | 0.618 | 0.636 | 0.673 | 0.764 |
|  | 28 | 500 | 0.200 | 0.255 | 0.273 | 0.291 | 0.345 |
|  |  | 1000 | 0.255 | 0.291 | 0.327 | 0.345 | 0.382 |
|  |  | 2500 | 0.309 | 0.364 | 0.382 | 0.382 | 0.436 |
|  |  | 5000 | 0.382 | 0.400 | 0.418 | 0.436 | 0.491 |

**Correlation**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Sample size | min | q1 | median | q3 | max |
| Cut-off | 0 | 500 | 0.832 | 0.868 | 0.880 | 0.894 | 0.921 |
|  |  | 1000 | 0.898 | 0.925 | 0.931 | 0.937 | 0.956 |
|  |  | 2500 | 0.959 | 0.970 | 0.973 | 0.977 | 0.984 |
|  |  | 5000 | 0.983 | 0.989 | 0.991 | 0.993 | 0.996 |
|  | 8 | 500 | 0.815 | 0.866 | 0.879 | 0.892 | 0.920 |
|  |  | 1000 | 0.902 | 0.920 | 0.926 | 0.933 | 0.943 |
|  |  | 2500 | 0.947 | 0.960 | 0.964 | 0.966 | 0.974 |
|  |  | 5000 | 0.973 | 0.980 | 0.981 | 0.984 | 0.989 |
|  | 14 | 500 | 0.824 | 0.869 | 0.881 | 0.891 | 0.916 |
|  |  | 1000 | 0.892 | 0.914 | 0.919 | 0.923 | 0.938 |
|  |  | 2500 | 0.938 | 0.947 | 0.949 | 0.952 | 0.960 |
|  |  | 5000 | 0.953 | 0.965 | 0.967 | 0.969 | 0.975 |
|  | 19 | 500 | 0.818 | 0.862 | 0.870 | 0.881 | 0.907 |
|  |  | 1000 | 0.885 | 0.901 | 0.906 | 0.914 | 0.926 |
|  |  | 2500 | 0.918 | 0.931 | 0.934 | 0.937 | 0.943 |
|  |  | 5000 | 0.937 | 0.949 | 0.951 | 0.954 | 0.960 |
|  | 28 | 500 | 0.730 | 0.801 | 0.818 | 0.838 | 0.878 |
|  |  | 1000 | 0.842 | 0.856 | 0.865 | 0.871 | 0.890 |
|  |  | 2500 | 0.892 | 0.903 | 0.907 | 0.910 | 0.917 |
|  |  | 5000 | 0.925 | 0.932 | 0.935 | 0.937 | 0.943 |

**Density**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Sample size | min | q1 | median | q3 | max |
| Cut-off | 0 | 500 | 0.250 | 0.267 | 0.275 | 0.292 | 0.317 |
|  |  | 1000 | 0.300 | 0.317 | 0.325 | 0.342 | 0.367 |
|  |  | 2500 | 0.358 | 0.392 | 0.400 | 0.408 | 0.442 |
|  |  | 5000 | 0.417 | 0.433 | 0.442 | 0.450 | 0.475 |
|  | 8 | 500 | 0.208 | 0.233 | 0.242 | 0.258 | 0.283 |
|  |  | 1000 | 0.258 | 0.275 | 0.292 | 0.300 | 0.350 |
|  |  | 2500 | 0.325 | 0.350 | 0.358 | 0.375 | 0.408 |
|  |  | 5000 | 0.392 | 0.417 | 0.425 | 0.433 | 0.483 |
|  | 14 | 500 | 0.167 | 0.192 | 0.208 | 0.217 | 0.258 |
|  |  | 1000 | 0.208 | 0.233 | 0.250 | 0.258 | 0.292 |
|  |  | 2500 | 0.283 | 0.300 | 0.317 | 0.325 | 0.358 |
|  |  | 5000 | 0.333 | 0.383 | 0.404 | 0.417 | 0.467 |
|  | 19 | 500 | 0.150 | 0.167 | 0.175 | 0.192 | 0.233 |
|  |  | 1000 | 0.167 | 0.208 | 0.217 | 0.233 | 0.283 |
|  |  | 2500 | 0.250 | 0.283 | 0.296 | 0.317 | 0.350 |
|  |  | 5000 | 0.333 | 0.375 | 0.392 | 0.417 | 0.492 |
|  | 28 | 500 | 0.133 | 0.175 | 0.192 | 0.208 | 0.258 |
|  |  | 1000 | 0.208 | 0.242 | 0.258 | 0.275 | 0.325 |
|  |  | 2500 | 0.317 | 0.358 | 0.375 | 0.392 | 0.442 |
|  |  | 5000 | 0.458 | 0.500 | 0.517 | 0.525 | 0.558 |

**Spurious Negative Edges**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Sample  size | min | q1 | median | q3 | max |
| Cut-off | 0 | 500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017 |
|  |  | 1000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017 |
|  |  | 2500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017 |
|  |  | 5000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017 |
|  | 8 | 500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017 |
|  |  | 1000 | 0.000 | 0.000 | 0.000 | 0.008 | 0.017 |
|  |  | 2500 | 0.000 | 0.000 | 0.000 | 0.008 | 0.025 |
|  |  | 5000 | 0.000 | 0.008 | 0.008 | 0.017 | 0.050 |
|  | 14 | 500 | 0.000 | 0.000 | 0.000 | 0.008 | 0.025 |
|  |  | 1000 | 0.000 | 0.000 | 0.008 | 0.008 | 0.033 |
|  |  | 2500 | 0.000 | 0.008 | 0.017 | 0.025 | 0.042 |
|  |  | 5000 | 0.008 | 0.033 | 0.042 | 0.050 | 0.083 |
|  | 19 | 500 | 0.000 | 0.008 | 0.017 | 0.017 | 0.058 |
|  |  | 1000 | 0.000 | 0.017 | 0.025 | 0.033 | 0.050 |
|  |  | 2500 | 0.025 | 0.042 | 0.050 | 0.060 | 0.083 |
|  |  | 5000 | 0.067 | 0.083 | 0.100 | 0.108 | 0.158 |
|  | 28 | 500 | 0.017 | 0.050 | 0.067 | 0.083 | 0.133 |
|  |  | 1000 | 0.058 | 0.100 | 0.108 | 0.125 | 0.183 |
|  |  | 2500 | 0.158 | 0.192 | 0.200 | 0.225 | 0.250 |
|  |  | 5000 | 0.267 | 0.308 | 0.317 | 0.333 | 0.358 |

**Simulation Study 2**

**Specificity**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Sample  size | min | q1 | median | q3 | max |
| Cut-off | 0 | 500 | 0.902 | 0.951 | 0.976 | 1.000 | 1.000 |
|  |  | 1000 | 0.854 | 0.927 | 0.951 | 0.976 | 1.000 |
|  |  | 2500 | 0.829 | 0.902 | 0.927 | 0.951 | 1.000 |
|  |  | 5000 | 0.805 | 0.902 | 0.927 | 0.951 | 1.000 |
|  | 5 | 500 | 0.951 | 1.000 | 1.000 | 1.000 | 1.000 |
|  |  | 1000 | 0.927 | 0.976 | 1.000 | 1.000 | 1.000 |
|  |  | 2500 | 0.927 | 0.976 | 1.000 | 1.000 | 1.000 |
|  |  | 5000 | 0.854 | 0.927 | 0.951 | 0.976 | 1.000 |
|  | 8 | 500 | 0.951 | 0.994 | 1.000 | 1.000 | 1.000 |
|  |  | 1000 | 0.927 | 0.976 | 0.976 | 1.000 | 1.000 |
|  |  | 2500 | 0.829 | 0.927 | 0.951 | 0.976 | 1.000 |
|  |  | 5000 | 0.610 | 0.780 | 0.829 | 0.860 | 0.951 |
|  | 12 | 500 | 0.902 | 0.976 | 0.976 | 1.000 | 1.000 |
|  |  | 1000 | 0.756 | 0.902 | 0.927 | 0.951 | 1.000 |
|  |  | 2500 | 0.390 | 0.488 | 0.537 | 0.585 | 0.659 |
|  |  | 5000 | 0.293 | 0.366 | 0.390 | 0.439 | 0.512 |
|  | 14 | 500 | NA | 0.829 | NA | 0.902 | NA |
|  |  | 1000 | NA | 0.683 | NA | 0.732 | NA |
|  |  | 2500 | 0.463 | 0.512 | 0.561 | 0.585 | 0.610 |
|  |  | 5000 | 0.390 | 0.482 | 0.488 | 0.512 | 0.512 |

**Sensitivity**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Sample  size | min | q1 | median | q3 | max |
| Cut-off | 0 | 500 | 0.333 | 0.425 | 0.460 | 0.494 | 0.552 |
|  |  | 1000 | 0.471 | 0.563 | 0.598 | 0.644 | 0.701 |
|  |  | 2500 | 0.690 | 0.767 | 0.782 | 0.816 | 0.885 |
|  |  | 5000 | 0.782 | 0.862 | 0.885 | 0.908 | 0.966 |
|  | 5 | 500 | 0.126 | 0.207 | 0.218 | 0.253 | 0.322 |
|  |  | 1000 | 0.218 | 0.287 | 0.310 | 0.345 | 0.402 |
|  |  | 2500 | 0.345 | 0.402 | 0.437 | 0.471 | 0.540 |
|  |  | 5000 | 0.460 | 0.529 | 0.563 | 0.586 | 0.678 |
|  | 8 | 500 | 0.046 | 0.069 | 0.080 | 0.103 | 0.126 |
|  |  | 1000 | 0.092 | 0.126 | 0.138 | 0.161 | 0.230 |
|  |  | 2500 | 0.172 | 0.207 | 0.230 | 0.241 | 0.310 |
|  |  | 5000 | 0.230 | 0.276 | 0.299 | 0.325 | 0.437 |
|  | 12 | 500 | 0.011 | 0.011 | 0.011 | 0.023 | 0.046 |
|  |  | 1000 | 0.011 | 0.023 | 0.034 | 0.046 | 0.080 |
|  |  | 2500 | 0.195 | 0.296 | 0.322 | 0.368 | 0.425 |
|  |  | 5000 | 0.391 | 0.425 | 0.460 | 0.494 | 0.586 |
|  | 14 | 500 | NA | 0.023 | NA | 0.046 | NA |
|  |  | 1000 | NA | 0.149 | NA | 0.195 | NA |
|  |  | 2500 | 0.287 | 0.322 | 0.339 | 0.391 | 0.414 |
|  |  | 5000 | 0.391 | 0.402 | 0.402 | 0.414 | 0.483 |

**Correlation**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Sample  size | min | q1 | median | q3 | max |
| Cut-off | 0 | 500 | 0.776 | 0.849 | 0.865 | 0.880 | 0.928 |
|  |  | 1000 | 0.877 | 0.908 | 0.917 | 0.929 | 0.944 |
|  |  | 2500 | 0.942 | 0.958 | 0.963 | 0.968 | 0.977 |
|  |  | 5000 | 0.970 | 0.980 | 0.982 | 0.983 | 0.988 |
|  | 5 | 500 | 0.795 | 0.842 | 0.858 | 0.877 | 0.918 |
|  |  | 1000 | 0.861 | 0.902 | 0.911 | 0.915 | 0.936 |
|  |  | 2500 | 0.919 | 0.942 | 0.947 | 0.953 | 0.959 |
|  |  | 5000 | 0.951 | 0.961 | 0.965 | 0.967 | 0.974 |
|  | 8 | 500 | 0.540 | 0.673 | 0.714 | 0.743 | 0.822 |
|  |  | 1000 | 0.698 | 0.776 | 0.797 | 0.832 | 0.890 |
|  |  | 2500 | 0.837 | 0.877 | 0.889 | 0.897 | 0.925 |
|  |  | 5000 | 0.901 | 0.918 | 0.925 | 0.930 | 0.947 |
|  | 12 | 500 | 0.359 | 0.463 | 0.463 | 0.467 | 0.622 |
|  |  | 1000 | 0.401 | 0.456 | 0.470 | 0.497 | 0.656 |
|  |  | 2500 | 0.510 | 0.590 | 0.637 | 0.672 | 0.713 |
|  |  | 5000 | 0.630 | 0.703 | 0.731 | 0.752 | 0.793 |
|  | 14 | 500 | NA | 0.146 | NA | 0.196 | NA |
|  |  | 1000 | NA | 0.228 | NA | 0.263 | NA |
|  |  | 2500 | 0.282 | 0.317 | 0.333 | 0.357 | 0.459 |
|  |  | 5000 | 0.340 | 0.364 | 0.374 | 0.401 | 0.438 |

**Density**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Sample size | min | q1 | median | q3 | max |
| Cut-off | 0 | 500 | 0.242 | 0.317 | 0.342 | 0.369 | 0.408 |
|  |  | 1000 | 0.350 | 0.425 | 0.450 | 0.483 | 0.533 |
|  |  | 2500 | 0.517 | 0.575 | 0.596 | 0.625 | 0.675 |
|  |  | 5000 | 0.583 | 0.650 | 0.675 | 0.692 | 0.733 |
|  | 5 | 500 | 0.092 | 0.150 | 0.167 | 0.183 | 0.233 |
|  |  | 1000 | 0.167 | 0.217 | 0.233 | 0.250 | 0.292 |
|  |  | 2500 | 0.250 | 0.300 | 0.325 | 0.350 | 0.400 |
|  |  | 5000 | 0.342 | 0.392 | 0.417 | 0.450 | 0.525 |
|  | 8 | 500 | 0.033 | 0.050 | 0.063 | 0.075 | 0.100 |
|  |  | 1000 | 0.067 | 0.092 | 0.108 | 0.125 | 0.192 |
|  |  | 2500 | 0.125 | 0.167 | 0.183 | 0.200 | 0.267 |
|  |  | 5000 | 0.200 | 0.258 | 0.275 | 0.308 | 0.433 |
|  | 12 | 500 | 0.008 | 0.008 | 0.017 | 0.025 | 0.050 |
|  |  | 1000 | 0.008 | 0.033 | 0.050 | 0.067 | 0.133 |
|  |  | 2500 | 0.267 | 0.367 | 0.396 | 0.433 | 0.517 |
|  |  | 5000 | 0.458 | 0.506 | 0.538 | 0.569 | 0.667 |
|  | 14 | 500 | NA | 0.050 | NA | 0.092 | NA |
|  |  | 1000 | NA | 0.200 | NA | 0.242 | NA |
|  |  | 2500 | 0.350 | 0.375 | 0.392 | 0.450 | 0.475 |
|  |  | 5000 | 0.450 | 0.458 | 0.467 | 0.475 | 0.550 |

**Spurious Negative Edges**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Sample  size | min | q1 | median | q3 | max |
| Cut-off | 0 | 500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 |
|  |  | 1000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 |
|  |  | 2500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 |
|  |  | 5000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 |
|  | 5 | 500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 |
|  |  | 1000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017 |
|  |  | 2500 | 0.000 | 0.000 | 0.000 | 0.008 | 0.025 |
|  |  | 5000 | 0.000 | 0.008 | 0.017 | 0.025 | 0.067 |
|  | 8 | 500 | 0.000 | 0.000 | 0.000 | 0.008 | 0.025 |
|  |  | 1000 | 0.000 | 0.000 | 0.008 | 0.017 | 0.033 |
|  |  | 2500 | 0.000 | 0.017 | 0.025 | 0.033 | 0.075 |
|  |  | 5000 | 0.025 | 0.058 | 0.075 | 0.100 | 0.175 |
|  | 12 | 500 | 0.000 | 0.000 | 0.008 | 0.010 | 0.033 |
|  |  | 1000 | 0.000 | 0.017 | 0.033 | 0.050 | 0.108 |
|  |  | 2500 | 0.217 | 0.325 | 0.354 | 0.392 | 0.483 |
|  |  | 5000 | 0.417 | 0.456 | 0.483 | 0.517 | 0.608 |
|  | 14 | 500 | NA | 0.050 | NA | 0.083 | NA |
|  |  | 1000 | NA | 0.192 | NA | 0.242 | NA |
|  |  | 2500 | 0.342 | 0.367 | 0.383 | 0.442 | 0.467 |
|  |  | 5000 | 0.450 | 0.450 | 0.458 | 0.467 | 0.542 |