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| --- |
| **Table 1:**  **MSE results for n = 30, p = 3** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | S | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1 | 0.60 | 0.19 | 0.214 | 0.207 | 0.283 | 0.237 | 0.598 | 0.202 | 0.174 | 0.176 | 0.207 | 0.19 | 0.19 | 0.192 | 0.216 | 0.6 | 0.218 | 0.191 | 0.2 | 0.191 | 0.191 | | 0.85 | 0.479 | 0.518 | 0.474 | 0.58 | 0.483 | 0.734 | 0.494 | 0.396 | 0.428 | 0.473 | 0.479 | 0.479 | 0.478 | 0.473 | 0.658 | 0.458 | 0.478 | 0.447 | 0.423 | 0.423 | | 0.99 | 8.408 | 1.658 | 4.604 | 0.989 | 2.896 | 1.687 | 7.336 | 0.996 | 6.978 | 4.61 | 8.393 | 8.408 | 7.554 | 2.995 | 1.544 | 5.493 | 7.802 | 4.362 | 0.992 | 0.992 | | 3 | 0.60 | 1.712 | 1.208 | 1.229 | 0.997 | 1.001 | 0.936 | 1.56 | 1.249 | 1.56 | 1.616 | 1.71 | 1.712 | 1.615 | 1.131 | 0.82 | 1.446 | 1.644 | 1.445 | 0.827 | 0.827 | | 0.85 | 4.315 | 2.041 | 2.589 | 1.268 | 1.808 | 1.33 | 3.783 | 1.843 | 3.806 | 3.94 | 4.31 | 4.315 | 3.977 | 2.124 | 0.967 | 3.294 | 4.078 | 3.252 | 1.072 | 1.072 | | 0.99 | 75.675 | 8.486 | 38.301 | 1.543 | 21.909 | 9.19 | 72.98 | 1.877 | 62.724 | 67.02 | 75.52 | 75.668 | 67.185 | 22.87 | 8.675 | 48.062 | 69.634 | 37.093 | 1.285 | 1.285 | | 5 | 0.60 | 4.756 | 2.776 | 2.863 | 1.913 | 2.033 | 1.517 | 4.352 | 3.399 | 4.326 | 4.596 | 4.749 | 4.756 | 4.365 | 2.533 | 0.951 | 3.855 | 4.482 | 3.825 | 1.404 | 1.404 | | 0.85 | 11.986 | 4.768 | 6.534 | 2.378 | 4.152 | 2.472 | 10.949 | 4.74 | 10.562 | 11.49 | 11.969 | 11.985 | 10.907 | 5.133 | 1.394 | 8.944 | 11.228 | 8.796 | 1.484 | 1.484 | | 0.99 | 210.207 | 22.134 | 105.668 | 2.646 | 59.921 | 24.185 | 206.626 | 3.641 | 174.218 | 200.14 | 209.773 | 210.189 | 186.436 | 62.605 | 22.932 | 133.165 | 193.291 | 102.68 | 1.718 | 1.718 | | 10 | 0.60 | 0.048 | 0.05 | 0.049 | 0.061 | 0.056 | 0.557 | 0.051 | 0.074 | 0.047 | 0.06 | 0.048 | 0.048 | 0.048 | 0.052 | 0.391 | 0.099 | 0.048 | 0.061 | 0.061 | 0.061 | | 0.85 | 47.945 | 17.475 | 24.954 | 7.534 | 15.073 | 7.809 | 46.035 | 18.321 | 42.232 | 47.372 | 47.871 | 47.942 | 43.367 | 19.171 | 3.361 | 35.561 | 44.723 | 34.792 | 2.27 | 2.27 | | 0.99 | 840.83 | 86.12 | 421.431 | 7.82 | 238.117 | 94.459 | 835.924 | 11.909 | 696.857 | 829.746 | 839.086 | 840.755 | 745.412 | 248.88 | 89.787 | 532.391 | 772.922 | 409.863 | 3.484 | 3.484 | |
| |  | | --- | | **Coverage Probability results for n = 30, p = 3** | |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1 | 0.60 | 0.953 | 0.867 | 0.887 | 0.733 | 0.788 | 0.202 | 0.916 | 0.916 | 0.953 | 0.886 | 0.953 | 0.953 | 0.945 | 0.854 | 0.05 | 0.871 | 0.947 | 0.91 | 0.879 | 0.879 | | 0.85 | 0.957 | 0.591 | 0.752 | 0.36 | 0.603 | 0.177 | 0.814 | 0.744 | 0.955 | 0.754 | 0.956 | 0.957 | 0.914 | 0.674 | 0.121 | 0.832 | 0.926 | 0.857 | 0.65 | 0.65 | | 0.99 | 0.953 | 0.179 | 0.711 | 0.024 | 0.489 | 0.267 | 0.797 | 0.003 | 0.953 | 0.711 | 0.953 | 0.953 | 0.933 | 0.502 | 0.309 | 0.81 | 0.941 | 0.811 | 0 | 0 | | 3 | 0.60 | 0.953 | 0.771 | 0.776 | 0.608 | 0.672 | 0.432 | 0.944 | 0.953 | 0.954 | 0.932 | 0.953 | 0.953 | 0.939 | 0.753 | 0.232 | 0.914 | 0.944 | 0.911 | 0.896 | 0.896 | | 0.85 | 0.957 | 0.601 | 0.743 | 0.431 | 0.606 | 0.375 | 0.945 | 0.934 | 0.957 | 0.937 | 0.957 | 0.957 | 0.947 | 0.67 | 0.307 | 0.905 | 0.951 | 0.91 | 0.741 | 0.741 | | 0.99 | 0.953 | 0.362 | 0.89 | 0.159 | 0.817 | 0.524 | 0.945 | 0.626 | 0.954 | 0.946 | 0.953 | 0.953 | 0.95 | 0.823 | 0.618 | 0.901 | 0.951 | 0.919 | 0.093 | 0.093 | | 5 | 0.60 | 0.953 | 0.831 | 0.83 | 0.678 | 0.744 | 0.547 | 0.95 | 0.956 | 0.953 | 0.952 | 0.953 | 0.953 | 0.949 | 0.814 | 0.346 | 0.934 | 0.951 | 0.933 | 0.91 | 0.91 | | 0.85 | 0.957 | 0.731 | 0.84 | 0.567 | 0.738 | 0.528 | 0.956 | 0.951 | 0.957 | 0.956 | 0.957 | 0.957 | 0.953 | 0.795 | 0.477 | 0.938 | 0.955 | 0.939 | 0.811 | 0.811 | | 0.99 | 0.953 | 0.57 | 0.928 | 0.377 | 0.896 | 0.697 | 0.953 | 0.848 | 0.953 | 0.953 | 0.953 | 0.953 | 0.953 | 0.898 | 0.818 | 0.929 | 0.953 | 0.944 | 0.399 | 0.399 | | 10 | 0.60 | 0.953 | 0.942 | 0.944 | 0.91 | 0.907 | 0.068 | 0.937 | 0.806 | 0.947 | 0.883 | 0.953 | 0.953 | 0.952 | 0.933 | 0.011 | 0.794 | 0.952 | 0.902 | 0.875 | 0.875 | | 0.85 | 0.957 | 0.866 | 0.912 | 0.717 | 0.874 | 0.724 | 0.957 | 0.958 | 0.957 | 0.957 | 0.957 | 0.957 | 0.957 | 0.899 | 0.727 | 0.953 | 0.957 | 0.951 | 0.883 | 0.883 | | 0.99 | 0.953 | 0.753 | 0.945 | 0.649 | 0.938 | 0.832 | 0.953 | 0.941 | 0.954 | 0.953 | 0.953 | 0.953 | 0.954 | 0.939 | 0.913 | 0.952 | 0.954 | 0.954 | 0.737 | 0.737 | |
| **Confidence Interval width results for n = 30, p = 3** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1 | 0.60 | 0.923 | 0.806 | 0.823 | 0.677 | 0.724 | 0.39 | 0.861 | 0.782 | 0.88 | 0.827 | 0.923 | 0.923 | 0.907 | 0.782 | 0.37 | 0.807 | 0.912 | 0.839 | 0.732 | 0.732 | | 0.85 | 1.627 | 0.926 | 1.145 | 0.608 | 0.889 | 0.451 | 1.29 | 0.94 | 1.51 | 1.158 | 1.625 | 1.627 | 1.522 | 0.998 | 0.437 | 1.29 | 1.55 | 1.317 | 0.855 | 0.855 | | 0.99 | 8.121 | 0.878 | 3.451 | 0.309 | 2.197 | 1.092 | 5.278 | 0.586 | 7.252 | 3.509 | 8.052 | 8.117 | 6.459 | 2.271 | 1.196 | 4.949 | 6.823 | 4.013 | 0.488 | 0.488 | | 3 | 0.60 | 2.77 | 1.71 | 1.758 | 1.255 | 1.384 | 0.938 | 2.483 | 2.331 | 2.638 | 2.496 | 2.763 | 2.77 | 2.505 | 1.625 | 0.587 | 2.309 | 2.574 | 2.289 | 1.622 | 1.622 | | 0.85 | 4.881 | 1.883 | 2.472 | 1.19 | 1.779 | 1.11 | 3.815 | 2.79 | 4.528 | 4.08 | 4.862 | 4.881 | 4.169 | 2.075 | 0.868 | 3.638 | 4.343 | 3.561 | 1.5 | 1.5 | | 0.99 | 24.364 | 2.476 | 9.937 | 0.886 | 6.245 | 3.214 | 20.145 | 1.754 | 21.756 | 18.996 | 24.161 | 24.354 | 19.117 | 6.463 | 3.368 | 14.78 | 20.249 | 11.852 | 0.928 | 0.928 | | 5 | 0.60 | 4.617 | 2.642 | 2.702 | 1.927 | 2.087 | 1.465 | 4.178 | 3.883 | 4.396 | 4.359 | 4.603 | 4.617 | 4.085 | 2.49 | 0.852 | 3.779 | 4.222 | 3.719 | 2.237 | 2.237 | | 0.85 | 8.136 | 2.986 | 3.934 | 1.885 | 2.809 | 1.803 | 6.701 | 4.645 | 7.546 | 7.413 | 8.099 | 8.134 | 6.859 | 3.293 | 1.372 | 6.02 | 7.166 | 5.854 | 1.954 | 1.954 | | 0.99 | 40.607 | 4.104 | 16.507 | 1.47 | 10.361 | 5.352 | 35.9 | 2.923 | 36.26 | 35.823 | 40.26 | 40.59 | 31.827 | 10.724 | 5.582 | 24.613 | 33.718 | 19.74 | 1.352 | 1.352 | | 10 | 0.60 | 0.462 | 0.449 | 0.45 | 0.428 | 0.432 | 0.227 | 0.451 | 0.399 | 0.441 | 0.426 | 0.462 | 0.462 | 0.46 | 0.443 | 0.287 | 0.411 | 0.461 | 0.435 | 0.41 | 0.41 | | 0.85 | 16.271 | 5.838 | 7.709 | 3.685 | 5.48 | 3.567 | 14.411 | 9.287 | 15.093 | 15.774 | 16.201 | 16.268 | 13.632 | 6.438 | 2.677 | 11.992 | 14.262 | 11.616 | 2.858 | 2.858 | | 0.99 | 81.213 | 8.187 | 32.967 | 2.935 | 20.68 | 10.704 | 75.998 | 5.845 | 72.52 | 77.629 | 80.506 | 81.18 | 63.626 | 21.406 | 11.138 | 49.244 | 67.407 | 39.435 | 2.206 | 2.206 | |
|  |

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| --- |
| **Table 2:**  **MSE results for n = 30, p = 10** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1 | 0.60 | 0.919 | 0.792 | 0.819 | 0.91 | 0.717 | 0.873 | 0.859 | 0.697 | 0.778 | 0.82 | 0.918 | 0.919 | 0.899 | 0.723 | 0.849 | 0.814 | 0.905 | 0.808 | 0.818 | 0.818 | | 0.85 | 2.328 | 1.468 | 1.755 | 0.945 | 1.14 | 0.986 | 1.939 | 0.949 | 1.88 | 1.761 | 2.327 | 2.328 | 2.26 | 1.197 | 0.922 | 2.048 | 2.282 | 2.007 | 0.945 | 0.945 | | 0.99 | 39.042 | 6.135 | 23.869 | 1.032 | 9.626 | 3.274 | 36.968 | 1.035 | 28.359 | 23.951 | 39.02 | 39.041 | 37.397 | 7.595 | 4.266 | 32.913 | 37.922 | 30.416 | 1.024 | 1.024 | | 3 | 0.60 | 8.27 | 5.391 | 5.474 | 1.451 | 2.71 | 1.509 | 7.29 | 3.059 | 6.789 | 7.778 | 8.258 | 8.269 | 7.812 | 3.383 | 1.136 | 7.002 | 7.957 | 6.796 | 1.108 | 1.108 | | 0.85 | 20.954 | 9.954 | 13.146 | 1.479 | 5.721 | 2.38 | 19.299 | 2.462 | 16.683 | 19.538 | 20.94 | 20.953 | 20.074 | 6.523 | 1.79 | 18.166 | 20.356 | 17.594 | 1.091 | 1.091 | | 0.99 | 351.378 | 48.709 | 211.418 | 1.394 | 81.198 | 22.51 | 348.579 | 1.397 | 254.706 | 324.243 | 351.174 | 351.371 | 336.222 | 62.492 | 31.791 | 295.708 | 341.058 | 272.955 | 1.19 | 1.19 | | 5 | 0.60 | 22.973 | 14.434 | 14.509 | 2.535 | 6.422 | 2.773 | 21.419 | 7.785 | 18.811 | 22.395 | 22.937 | 22.971 | 21.598 | 8.433 | 1.608 | 19.37 | 22.032 | 18.731 | 1.221 | 1.221 | | 0.85 | 58.205 | 26.831 | 35.797 | 2.488 | 14.761 | 5.17 | 56.08 | 5.489 | 46.287 | 56.636 | 58.164 | 58.203 | 55.686 | 17.051 | 3.469 | 50.403 | 56.493 | 48.752 | 1.163 | 1.163 | | 0.99 | 976.051 | 133.848 | 586.481 | 2.116 | 224.34 | 61.038 | 973.122 | 2.122 | 707.393 | 946.574 | 975.483 | 976.03 | 933.872 | 172.281 | 86.832 | 821.257 | 947.329 | 757.755 | 1.501 | 1.501 | | 10 | 0.60 | 0.23 | 0.241 | 0.232 | 0.854 | 0.304 | 0.808 | 0.247 | 0.475 | 0.214 | 0.254 | 0.23 | 0.23 | 0.229 | 0.27 | 0.717 | 0.229 | 0.229 | 0.228 | 0.594 | 0.594 | | 0.85 | 232.821 | 105.91 | 141.946 | 7.197 | 57.115 | 18.19 | 230.316 | 19.672 | 185.052 | 231.175 | 232.654 | 232.813 | 222.614 | 66.376 | 11.333 | 201.522 | 225.883 | 194.863 | 1.329 | 1.329 | | 0.99 | 3904.206 | 532.927 | 2344.497 | 5.497 | 895.325 | 241.733 | 3901.202 | 5.52 | 2829.353 | 3873.512 | 3901.932 | 3904.119 | 3735.356 | 686.921 | 344.83 | 3284.924 | 3789.226 | 3031.096 | 2.904 | 2.904 | |
| **Coverage Probability results for n = 30, p = 10** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1 | 0.60 | 0.953 | 0.926 | 0.92 | 0.156 | 0.768 | 0.202 | 0.923 | 0.86 | 0.952 | 0.92 | 0.953 | 0.953 | 0.951 | 0.841 | 0.166 | 0.95 | 0.952 | 0.949 | 0.355 | 0.355 | | 0.85 | 0.951 | 0.665 | 0.802 | 0.049 | 0.446 | 0.036 | 0.761 | 0.002 | 0.946 | 0.807 | 0.951 | 0.951 | 0.95 | 0.508 | 0.037 | 0.944 | 0.951 | 0.94 | 0 | 0 | | 0.99 | 0.952 | 0.309 | 0.943 | 0.001 | 0.664 | 0.212 | 0.95 | 0 | 0.953 | 0.94 | 0.952 | 0.952 | 0.952 | 0.546 | 0.311 | 0.952 | 0.952 | 0.953 | 0 | 0 | | 3 | 0.60 | 0.953 | 0.948 | 0.948 | 0.475 | 0.918 | 0.717 | 0.951 | 0.953 | 0.951 | 0.951 | 0.953 | 0.953 | 0.952 | 0.939 | 0.6 | 0.95 | 0.953 | 0.951 | 0.682 | 0.682 | | 0.85 | 0.951 | 0.862 | 0.942 | 0.126 | 0.736 | 0.322 | 0.95 | 0.598 | 0.954 | 0.951 | 0.951 | 0.951 | 0.951 | 0.794 | 0.236 | 0.951 | 0.951 | 0.953 | 0 | 0 | | 0.99 | 0.952 | 0.54 | 0.954 | 0.01 | 0.95 | 0.647 | 0.952 | 0 | 0.955 | 0.952 | 0.952 | 0.952 | 0.952 | 0.929 | 0.796 | 0.954 | 0.952 | 0.955 | 0 | 0 | | 5 | 0.60 | 0.953 | 0.951 | 0.951 | 0.611 | 0.949 | 0.871 | 0.952 | 0.961 | 0.952 | 0.953 | 0.953 | 0.953 | 0.953 | 0.95 | 0.83 | 0.952 | 0.953 | 0.953 | 0.796 | 0.796 | | 0.85 | 0.951 | 0.922 | 0.952 | 0.212 | 0.896 | 0.564 | 0.951 | 0.848 | 0.954 | 0.951 | 0.951 | 0.951 | 0.951 | 0.917 | 0.468 | 0.952 | 0.951 | 0.952 | 0.001 | 0.001 | | 0.90 | 0.951 | 0.89 | 0.951 | 0.151 | 0.901 | 0.544 | 0.951 | 0.674 | 0.952 | 0.951 | 0.951 | 0.951 | 0.951 | 0.913 | 0.475 | 0.953 | 0.951 | 0.952 | 0 | 0 | | 10 | 0.60 | 0.953 | 0.936 | 0.945 | 0.065 | 0.843 | 0.039 | 0.932 | 0.599 | 0.949 | 0.909 | 0.953 | 0.953 | 0.951 | 0.894 | 0.072 | 0.943 | 0.952 | 0.945 | 0.262 | 0.262 | | 0.85 | 0.951 | 0.949 | 0.952 | 0.449 | 0.955 | 0.837 | 0.951 | 0.951 | 0.953 | 0.951 | 0.951 | 0.951 | 0.951 | 0.956 | 0.829 | 0.952 | 0.951 | 0.952 | 0.063 | 0.063 | | 0.99 | 0.952 | 0.847 | 0.954 | 0.125 | 0.961 | 0.923 | 0.952 | 0.29 | 0.955 | 0.952 | 0.952 | 0.952 | 0.952 | 0.963 | 0.968 | 0.954 | 0.952 | 0.954 | 0 | 0 | |
| **Confidence Interval width results for n = 30, p = 10** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1 | 0.60 | 1.4 | 1.084 | 1.138 | 0.25 | 0.735 | 0.331 | 1.155 | 0.736 | 1.245 | 1.151 | 1.399 | 1.4 | 1.357 | 0.844 | 0.312 | 1.25 | 1.371 | 1.232 | 0.413 | 0.413 | | 0.85 | 2.863 | 1.469 | 1.901 | 0.262 | 0.983 | 0.394 | 2.007 | 0.488 | 2.404 | 1.935 | 2.861 | 2.863 | 2.748 | 1.088 | 0.383 | 2.526 | 2.784 | 2.452 | 0.291 | 0.291 | | 0.99 | 15.169 | 1.95 | 7.623 | 0.111 | 3.137 | 1.112 | 13.159 | 0.15 | 11.385 | 7.792 | 15.155 | 15.168 | 14.188 | 2.518 | 1.529 | 12.689 | 14.491 | 11.494 | 0.121 | 0.121 | | 3 | 0.60 | 4.2 | 2.894 | 2.853 | 0.709 | 1.657 | 0.907 | 3.595 | 2.14 | 3.727 | 3.95 | 4.195 | 4.2 | 3.98 | 1.982 | 0.678 | 3.709 | 4.048 | 3.604 | 0.659 | 0.659 | | 0.85 | 8.589 | 3.994 | 5.054 | 0.591 | 2.46 | 1.118 | 7.423 | 1.433 | 7.205 | 7.861 | 8.581 | 8.588 | 8.151 | 2.75 | 0.939 | 7.523 | 8.289 | 7.247 | 0.463 | 0.463 | | 0.99 | 45.506 | 5.805 | 22.627 | 0.325 | 9.269 | 3.324 | 44.355 | 0.45 | 34.152 | 39.901 | 45.464 | 45.505 | 42.53 | 7.431 | 4.501 | 38.012 | 43.452 | 34.425 | 0.278 | 0.278 | | 5 | 0.60 | 7.001 | 4.764 | 4.653 | 1.176 | 2.671 | 1.495 | 6.392 | 3.558 | 6.21 | 6.828 | 6.99 | 7 | 6.614 | 3.208 | 1.088 | 6.169 | 6.735 | 5.986 | 0.831 | 0.831 | | 0.85 | 14.314 | 6.598 | 8.324 | 0.959 | 4.031 | 1.855 | 13.327 | 2.384 | 12.008 | 13.822 | 14.302 | 14.314 | 13.57 | 4.511 | 1.535 | 12.528 | 13.805 | 12.057 | 0.611 | 0.611 | | 0.99 | 75.844 | 9.671 | 37.677 | 0.541 | 15.429 | 5.541 | 75.076 | 0.75 | 56.92 | 71.981 | 75.774 | 75.841 | 70.881 | 12.368 | 7.49 | 63.34 | 72.418 | 57.334 | 0.404 | 0.404 | | 10 | 0.60 | 0.7 | 0.633 | 0.662 | 0.146 | 0.521 | 0.193 | 0.653 | 0.404 | 0.628 | 0.594 | 0.7 | 0.7 | 0.693 | 0.561 | 0.249 | 0.631 | 0.695 | 0.631 | 0.33 | 0.33 | | 0.85 | 28.629 | 13.146 | 16.563 | 1.895 | 8.005 | 3.702 | 27.976 | 4.765 | 24.015 | 28.367 | 28.604 | 28.628 | 27.127 | 8.962 | 3.046 | 25.055 | 27.599 | 24.109 | 0.87 | 0.87 | | 0.99 | 151.687 | 19.338 | 75.32 | 1.082 | 30.841 | 11.084 | 151.277 | 1.5 | 113.839 | 149.613 | 151.547 | 151.682 | 141.76 | 24.721 | 14.969 | 126.667 | 144.835 | 114.705 | 0.623 | 0.623 | |

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|  |
| **Table 3:**  **MSE results for n = 50, p = 3** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1 | 0.60 | 0.1 | 0.108 | 0.105 | 0.133 | 0.121 | 0.542 | 0.105 | 0.097 | 0.096 | 0.105 | 0.1 | 0.1 | 0.1 | 0.106 | 0.575 | 0.114 | 0.1 | 0.104 | 0.099 | 0.099 | | 0.85 | 0.253 | 0.325 | 0.274 | 0.413 | 0.307 | 0.659 | 0.277 | 0.254 | 0.24 | 0.273 | 0.253 | 0.253 | 0.254 | 0.277 | 0.618 | 0.26 | 0.254 | 0.252 | 0.246 | 0.246 | | 0.99 | 4.447 | 1.267 | 2.608 | 0.958 | 1.786 | 1.284 | 3.726 | 0.935 | 4.079 | 2.612 | 4.446 | 4.447 | 4.255 | 2.181 | 1.082 | 3.505 | 4.315 | 3.119 | 0.934 | 0.934 | | 3 | 0.60 | 0.897 | 0.741 | 0.744 | 0.691 | 0.672 | 0.754 | 0.838 | 0.73 | 0.857 | 0.869 | 0.897 | 0.897 | 0.882 | 0.737 | 0.796 | 0.83 | 0.887 | 0.836 | 0.577 | 0.577 | | 0.85 | 2.281 | 1.283 | 1.513 | 0.936 | 1.166 | 1.026 | 1.998 | 1.249 | 2.15 | 2.118 | 2.281 | 2.281 | 2.211 | 1.45 | 0.849 | 1.981 | 2.233 | 1.992 | 0.89 | 0.89 | | 0.99 | 40.023 | 4.939 | 20.599 | 1.28 | 12.08 | 5.761 | 37.862 | 1.688 | 36.675 | 35.567 | 40.009 | 40.023 | 37.958 | 16.235 | 4.48 | 30.692 | 38.597 | 26.774 | 1.25 | 1.25 | | 5 | 0.60 | 2.491 | 1.601 | 1.645 | 1.207 | 1.268 | 1.077 | 2.296 | 1.994 | 2.378 | 2.421 | 2.491 | 2.491 | 2.406 | 1.648 | 0.871 | 2.234 | 2.433 | 2.233 | 1.138 | 1.138 | | 0.85 | 6.337 | 2.718 | 3.628 | 1.515 | 2.445 | 1.671 | 5.669 | 3.237 | 5.968 | 6.094 | 6.335 | 6.336 | 6.083 | 3.437 | 1.039 | 5.408 | 6.163 | 5.403 | 1.381 | 1.381 | | 0.99 | 111.176 | 12.255 | 56.569 | 1.911 | 32.623 | 14.684 | 108.225 | 3.189 | 101.862 | 105.996 | 111.135 | 111.175 | 105.356 | 44.306 | 11.236 | 85.057 | 107.155 | 74.069 | 1.64 | 1.64 | | 10 | 0.60 | 0.025 | 0.025 | 0.025 | 0.027 | 0.027 | 0.518 | 0.026 | 0.038 | 0.025 | 0.028 | 0.025 | 0.025 | 0.025 | 0.025 | 0.371 | 0.046 | 0.025 | 0.029 | 0.028 | 0.028 | | 0.85 | 25.346 | 9.299 | 13.436 | 4.107 | 8.306 | 4.644 | 23.951 | 12.541 | 23.863 | 25.053 | 25.339 | 25.346 | 24.215 | 12.635 | 1.856 | 21.398 | 24.57 | 21.352 | 2.287 | 2.287 | | 0.99 | 444.703 | 46.55 | 225.2 | 4.863 | 128.913 | 56.478 | 440.604 | 10.21 | 407.421 | 439.024 | 444.54 | 444.7 | 421.278 | 175.888 | 42.88 | 339.752 | 428.515 | 295.68 | 3.29 | 3.29 | |
| **Coverage Probability results for n = 50, p = 3** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1 | 0.60 | 0.955 | 0.916 | 0.921 | 0.843 | 0.85 | 0.14 | 0.927 | 0.918 | 0.953 | 0.922 | 0.955 | 0.955 | 0.953 | 0.917 | 0.002 | 0.906 | 0.953 | 0.933 | 0.912 | 0.912 | | 0.85 | 0.952 | 0.674 | 0.82 | 0.431 | 0.679 | 0.145 | 0.833 | 0.749 | 0.951 | 0.818 | 0.951 | 0.952 | 0.943 | 0.799 | 0.022 | 0.891 | 0.945 | 0.915 | 0.785 | 0.785 | | 0.99 | 0.952 | 0.137 | 0.632 | 0.014 | 0.47 | 0.237 | 0.725 | 0 | 0.951 | 0.641 | 0.952 | 0.952 | 0.936 | 0.56 | 0.255 | 0.855 | 0.943 | 0.863 | 0.001 | 0.001 | | 3 | 0.60 | 0.955 | 0.762 | 0.784 | 0.608 | 0.674 | 0.39 | 0.942 | 0.949 | 0.953 | 0.916 | 0.955 | 0.955 | 0.941 | 0.794 | 0.086 | 0.925 | 0.946 | 0.924 | 0.919 | 0.919 | | 0.85 | 0.952 | 0.53 | 0.69 | 0.354 | 0.551 | 0.308 | 0.93 | 0.934 | 0.952 | 0.909 | 0.952 | 0.952 | 0.944 | 0.682 | 0.162 | 0.92 | 0.947 | 0.918 | 0.807 | 0.807 | | 0.99 | 0.952 | 0.23 | 0.863 | 0.068 | 0.748 | 0.451 | 0.942 | 0.561 | 0.951 | 0.943 | 0.952 | 0.952 | 0.95 | 0.824 | 0.439 | 0.91 | 0.951 | 0.929 | 0.034 | 0.034 | | 5 | 0.60 | 0.955 | 0.786 | 0.805 | 0.631 | 0.696 | 0.487 | 0.949 | 0.954 | 0.954 | 0.949 | 0.955 | 0.955 | 0.95 | 0.818 | 0.193 | 0.942 | 0.952 | 0.938 | 0.926 | 0.926 | | 0.85 | 0.952 | 0.624 | 0.783 | 0.454 | 0.648 | 0.425 | 0.948 | 0.946 | 0.952 | 0.947 | 0.952 | 0.952 | 0.949 | 0.779 | 0.303 | 0.934 | 0.95 | 0.936 | 0.834 | 0.834 | | 0.99 | 0.952 | 0.357 | 0.911 | 0.171 | 0.851 | 0.579 | 0.952 | 0.81 | 0.951 | 0.951 | 0.952 | 0.952 | 0.951 | 0.891 | 0.683 | 0.93 | 0.951 | 0.943 | 0.194 | 0.194 | | 10 | 0.60 | 0.955 | 0.947 | 0.948 | 0.937 | 0.925 | 0.04 | 0.943 | 0.811 | 0.948 | 0.913 | 0.955 | 0.955 | 0.954 | 0.946 | 0 | 0.846 | 0.954 | 0.927 | 0.911 | 0.911 | | 0.85 | 0.952 | 0.791 | 0.889 | 0.626 | 0.826 | 0.637 | 0.952 | 0.952 | 0.952 | 0.952 | 0.952 | 0.952 | 0.951 | 0.893 | 0.59 | 0.949 | 0.951 | 0.949 | 0.878 | 0.878 | | 0.99 | 0.952 | 0.641 | 0.94 | 0.482 | 0.923 | 0.777 | 0.952 | 0.928 | 0.952 | 0.952 | 0.952 | 0.952 | 0.952 | 0.935 | 0.883 | 0.951 | 0.952 | 0.95 | 0.607 | 0.607 | |
| **Confidence Interval width results for n = 50, p = 3** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1 | 0.60 | 0.598 | 0.563 | 0.568 | 0.521 | 0.527 | 0.28 | 0.576 | 0.536 | 0.584 | 0.569 | 0.598 | 0.598 | 0.596 | 0.563 | 0.265 | 0.56 | 0.596 | 0.575 | 0.53 | 0.53 | | 0.85 | 1.095 | 0.763 | 0.898 | 0.543 | 0.737 | 0.35 | 0.947 | 0.733 | 1.057 | 0.902 | 1.095 | 1.095 | 1.08 | 0.866 | 0.321 | 0.977 | 1.085 | 1.004 | 0.751 | 0.751 | | 0.99 | 5.6 | 0.608 | 2.558 | 0.211 | 1.651 | 0.857 | 3.499 | 0.522 | 5.308 | 2.585 | 5.592 | 5.599 | 5.029 | 2.102 | 0.838 | 4.192 | 5.172 | 3.723 | 0.546 | 0.546 | | 3 | 0.60 | 1.793 | 1.236 | 1.279 | 0.949 | 1.041 | 0.703 | 1.664 | 1.604 | 1.751 | 1.668 | 1.792 | 1.793 | 1.728 | 1.286 | 0.418 | 1.644 | 1.747 | 1.64 | 1.316 | 1.316 | | 0.85 | 3.286 | 1.343 | 1.807 | 0.863 | 1.316 | 0.829 | 2.663 | 2.182 | 3.17 | 2.831 | 3.283 | 3.286 | 3.065 | 1.74 | 0.586 | 2.81 | 3.125 | 2.778 | 1.444 | 1.444 | | 0.99 | 16.799 | 1.633 | 7.119 | 0.577 | 4.487 | 2.438 | 13.513 | 1.562 | 15.923 | 13.392 | 16.774 | 16.798 | 14.908 | 5.787 | 2.245 | 12.37 | 15.382 | 10.909 | 0.792 | 0.792 | | 5 | 0.60 | 2.988 | 1.832 | 1.896 | 1.358 | 1.501 | 1.071 | 2.774 | 2.673 | 2.919 | 2.851 | 2.986 | 2.988 | 2.832 | 1.927 | 0.574 | 2.704 | 2.876 | 2.671 | 1.912 | 1.912 | | 0.85 | 5.476 | 2.04 | 2.786 | 1.298 | 1.998 | 1.313 | 4.576 | 3.634 | 5.284 | 5.047 | 5.472 | 5.476 | 5.05 | 2.687 | 0.9 | 4.642 | 5.165 | 4.565 | 1.865 | 1.865 | | 0.99 | 27.998 | 2.697 | 11.781 | 0.954 | 7.414 | 4.04 | 24.334 | 2.603 | 26.539 | 25.045 | 27.952 | 27.996 | 24.801 | 9.569 | 3.706 | 20.579 | 25.601 | 18.126 | 1.078 | 1.078 | | 10 | 0.60 | 0.299 | 0.295 | 0.295 | 0.29 | 0.289 | 0.164 | 0.295 | 0.271 | 0.292 | 0.287 | 0.299 | 0.299 | 0.299 | 0.295 | 0.198 | 0.282 | 0.299 | 0.292 | 0.281 | 0.281 | | 0.85 | 10.952 | 3.902 | 5.364 | 2.471 | 3.821 | 2.543 | 9.706 | 7.266 | 10.568 | 10.656 | 10.944 | 10.952 | 10.041 | 5.175 | 1.73 | 9.184 | 10.287 | 9.026 | 2.666 | 2.666 | | 0.99 | 55.995 | 5.372 | 23.483 | 1.902 | 14.772 | 8.057 | 52.018 | 5.206 | 53.078 | 53.856 | 55.906 | 55.994 | 49.537 | 19.069 | 7.382 | 41.085 | 51.146 | 36.19 | 1.79 | 1.79 | |
|  |

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| --- |
| **Table 4:**  **MSE results for n = 50, p = 10** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1  1  1 | 0.60 | 0.47 | 0.487 | 0.48 | 0.592 | 0.564 | 0.884 | 0.501 | 0.512 | 0.43 | 0.48 | 0.47 | 0.47 | 0.469 | 0.503 | 0.855 | 0.441 | 0.47 | 0.441 | 0.681 | 0.681 | | 0.85 | 1.326 | 1.015 | 1.124 | 0.908 | 0.925 | 0.987 | 1.213 | 0.964 | 1.115 | 1.126 | 1.325 | 1.326 | 1.307 | 0.957 | 0.926 | 1.177 | 1.313 | 1.165 | 0.966 | 0.966 | | 0.99 | 25.331 | 3.656 | 14.92 | 1.036 | 5.762 | 2.154 | 23.351 | 1.061 | 17.529 | 14.964 | 25.324 | 25.331 | 24.386 | 5.717 | 2.911 | 20.266 | 24.687 | 18.623 | 1.041 | 1.041 | | 3  3  3 | 0.60 | 4.231 | 2.886 | 2.981 | 1.31 | 1.7 | 1.213 | 3.725 | 2.373 | 3.755 | 4.006 | 4.23 | 4.231 | 4.101 | 2.247 | 1.013 | 3.77 | 4.143 | 3.705 | 1.206 | 1.206 | | 0.85 | 11.93 | 5.336 | 7.514 | 1.4 | 3.393 | 1.695 | 10.612 | 2.699 | 9.776 | 11.038 | 11.927 | 11.93 | 11.562 | 4.499 | 1.396 | 10.356 | 11.681 | 10.112 | 1.232 | 1.232 | | 0.99 | 227.983 | 25.959 | 130.998 | 1.412 | 46.077 | 11.781 | 224.644 | 1.633 | 157.044 | 206.317 | 227.915 | 227.982 | 219.171 | 45.663 | 19.308 | 181.944 | 221.979 | 166.776 | 1.204 | 1.204 | | 5  5  5 | 0.60 | 11.754 | 7.459 | 7.574 | 2.241 | 3.568 | 1.857 | 10.692 | 6.088 | 10.402 | 11.452 | 11.748 | 11.754 | 11.328 | 5.351 | 1.203 | 10.424 | 11.465 | 10.204 | 1.466 | 1.466 | | 0.85 | 33.14 | 13.878 | 20.116 | 2.286 | 8.177 | 3.094 | 31.161 | 6.162 | 27.09 | 32.084 | 33.13 | 33.139 | 32.059 | 11.426 | 2.274 | 28.714 | 32.406 | 27.997 | 1.354 | 1.354 | | 0.99 | 633.286 | 70.535 | 363.195 | 2.162 | 126.699 | 30.971 | 629.566 | 2.777 | 436.02 | 608.629 | 633.098 | 633.282 | 608.74 | 125.544 | 52.093 | 505.291 | 616.562 | 463.076 | 1.513 | 1.513 | | 10  10  10 | 0.60 | 0.118 | 0.136 | 0.122 | 0.211 | 0.202 | 0.85 | 0.131 | 0.337 | 0.118 | 0.146 | 0.118 | 0.118 | 0.118 | 0.15 | 0.724 | 0.128 | 0.118 | 0.125 | 0.401 | 0.401 | | 0.85 | 132.559 | 53.886 | 79.176 | 6.422 | 30.576 | 9.634 | 129.902 | 22.381 | 108.234 | 131.418 | 132.519 | 132.558 | 128.134 | 43.865 | 6.38 | 114.76 | 129.556 | 111.815 | 1.588 | 1.588 | | 0.99 | 2533.144 | 279.419 | 1451.701 | 5.676 | 504.609 | 120.793 | 2529.146 | 8.132 | 1743.603 | 2506.687 | 2532.391 | 2533.128 | 2434.843 | 499.982 | 205.764 | 2020.92 | 2466.167 | 1851.959 | 2.924 | 2.924 | |
| **Coverage Probability results for n = 50, p = 10** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1  1  1 | 0.60 | 0.958 | 0.715 | 0.804 | 0.304 | 0.343 | 0 | 0.773 | 0.35 | 0.943 | 0.807 | 0.958 | 0.958 | 0.947 | 0.578 | 0 | 0.929 | 0.95 | 0.926 | 0 | 0 | | 0.85 | 0.957 | 0.417 | 0.636 | 0.041 | 0.262 | 0 | 0.595 | 0 | 0.947 | 0.639 | 0.957 | 0.957 | 0.953 | 0.395 | 0.004 | 0.942 | 0.955 | 0.931 | 0 | 0 | | 0.99 | 0.955 | 0.207 | 0.876 | 0 | 0.353 | 0.034 | 0.932 | 0 | 0.954 | 0.876 | 0.955 | 0.955 | 0.954 | 0.35 | 0.166 | 0.953 | 0.955 | 0.952 | 0 | 0 | | 3  3  3 | 0.60 | 0.958 | 0.832 | 0.749 | 0.241 | 0.37 | 0.044 | 0.927 | 0.881 | 0.955 | 0.952 | 0.958 | 0.958 | 0.956 | 0.588 | 0.006 | 0.952 | 0.956 | 0.95 | 0.007 | 0.007 | | 0.85 | 0.957 | 0.681 | 0.832 | 0.084 | 0.368 | 0.047 | 0.943 | 0.369 | 0.955 | 0.956 | 0.957 | 0.957 | 0.956 | 0.516 | 0.06 | 0.955 | 0.956 | 0.954 | 0 | 0 | | 0.99 | 0.955 | 0.384 | 0.953 | 0.005 | 0.85 | 0.302 | 0.955 | 0 | 0.956 | 0.954 | 0.955 | 0.955 | 0.955 | 0.847 | 0.374 | 0.955 | 0.955 | 0.955 | 0 | 0 | | 5  5  5 | 0.60 | 0.958 | 0.907 | 0.879 | 0.284 | 0.529 | 0.166 | 0.956 | 0.936 | 0.956 | 0.957 | 0.958 | 0.958 | 0.957 | 0.755 | 0.049 | 0.956 | 0.957 | 0.955 | 0.046 | 0.046 | | 0.85 | 0.957 | 0.807 | 0.933 | 0.125 | 0.528 | 0.145 | 0.957 | 0.725 | 0.956 | 0.956 | 0.957 | 0.957 | 0.956 | 0.745 | 0.128 | 0.955 | 0.956 | 0.956 | 0 | 0 | | 0.99 | 0.955 | 0.493 | 0.955 | 0.016 | 0.941 | 0.519 | 0.955 | 0 | 0.956 | 0.955 | 0.955 | 0.955 | 0.955 | 0.94 | 0.645 | 0.955 | 0.955 | 0.955 | 0 | 0 | | 10  10  10 | 0.60 | 0.958 | 0.847 | 0.924 | 0.507 | 0.52 | 0 | 0.893 | 0.007 | 0.919 | 0.783 | 0.958 | 0.958 | 0.955 | 0.757 | 0 | 0.877 | 0.956 | 0.891 | 0 | 0 | | 0.85 | 0.957 | 0.915 | 0.955 | 0.257 | 0.867 | 0.467 | 0.957 | 0.911 | 0.956 | 0.957 | 0.957 | 0.957 | 0.957 | 0.938 | 0.324 | 0.957 | 0.957 | 0.956 | 0.009 | 0.009 | | 0.99 | 0.955 | 0.669 | 0.955 | 0.062 | 0.956 | 0.775 | 0.955 | 0.138 | 0.955 | 0.955 | 0.955 | 0.955 | 0.955 | 0.956 | 0.914 | 0.955 | 0.955 | 0.955 | 0 | 0 | |
| **Confidence Interval width results for n = 50, p = 10** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1  1  1 | 0.60 | 1.365 | 0.959 | 1.085 | 0.53 | 0.598 | 0.19 | 1.109 | 0.689 | 1.213 | 1.092 | 1.364 | 1.365 | 1.334 | 0.804 | 0.192 | 1.206 | 1.344 | 1.195 | 0.414 | 0.414 | | 0.85 | 2.877 | 1.072 | 1.665 | 0.257 | 0.698 | 0.201 | 1.725 | 0.437 | 2.387 | 1.682 | 2.875 | 2.876 | 2.761 | 0.951 | 0.232 | 2.489 | 2.798 | 2.422 | 0.295 | 0.295 | | 0.99 | 15.101 | 1.219 | 6.091 | 0.079 | 2.01 | 0.524 | 11.052 | 0.123 | 11.113 | 6.163 | 15.093 | 15.101 | 14.069 | 1.991 | 0.903 | 12.3 | 14.387 | 11.048 | 0.102 | 0.102 | | 3  3  3 | 0.60 | 4.095 | 2.297 | 2.27 | 0.707 | 1.072 | 0.525 | 3.106 | 2.033 | 3.635 | 3.667 | 4.092 | 4.095 | 3.875 | 1.588 | 0.37 | 3.58 | 3.944 | 3.476 | 0.631 | 0.631 | | 0.85 | 8.63 | 2.818 | 3.956 | 0.464 | 1.523 | 0.583 | 6.218 | 1.297 | 7.158 | 7.331 | 8.625 | 8.629 | 8.158 | 2.156 | 0.51 | 7.429 | 8.306 | 7.148 | 0.418 | 0.418 | | 0.99 | 45.303 | 3.634 | 17.998 | 0.233 | 5.898 | 1.564 | 41.914 | 0.37 | 33.336 | 36.306 | 45.278 | 45.303 | 42.169 | 5.843 | 2.637 | 36.87 | 43.133 | 33.11 | 0.215 | 0.215 | | 5  5  5 | 0.60 | 6.825 | 3.731 | 3.569 | 1.026 | 1.666 | 0.865 | 5.588 | 3.384 | 6.059 | 6.502 | 6.819 | 6.824 | 6.43 | 2.495 | 0.58 | 5.959 | 6.553 | 5.769 | 0.805 | 0.805 | | 0.85 | 14.383 | 4.643 | 6.437 | 0.734 | 2.459 | 0.967 | 11.893 | 2.16 | 11.93 | 13.43 | 14.375 | 14.382 | 13.577 | 3.495 | 0.824 | 12.375 | 13.83 | 11.902 | 0.542 | 0.542 | | 0.99 | 75.505 | 6.056 | 29.97 | 0.387 | 9.815 | 2.603 | 72.941 | 0.617 | 55.56 | 68.667 | 75.463 | 75.505 | 70.28 | 9.724 | 4.388 | 61.451 | 71.888 | 55.195 | 0.326 | 0.326 | | 10  10  10 | 0.60 | 0.682 | 0.608 | 0.648 | 0.477 | 0.483 | 0.108 | 0.642 | 0.363 | 0.608 | 0.574 | 0.682 | 0.682 | 0.678 | 0.562 | 0.16 | 0.606 | 0.68 | 0.61 | 0.323 | 0.323 | | 0.85 | 28.765 | 9.245 | 12.75 | 1.436 | 4.854 | 1.93 | 26.742 | 4.319 | 23.859 | 28.239 | 28.75 | 28.765 | 27.14 | 6.91 | 1.628 | 24.742 | 27.65 | 23.78 | 0.821 | 0.821 | | 0.99 | 151.011 | 12.113 | 59.928 | 0.775 | 19.622 | 5.201 | 149.487 | 1.234 | 111.12 | 147.081 | 150.926 | 151.009 | 140.563 | 19.438 | 8.771 | 122.9 | 143.778 | 110.426 | 0.559 | 0.559 | |
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| --- |
| **Table 5:**  **MSE results for n = 100, p = 3** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1  1  1 | 0.60 | 0.047 | 0.049 | 0.049 | 0.059 | 0.055 | 0.53 | 0.049 | 0.047 | 0.047 | 0.049 | 0.047 | 0.047 | 0.047 | 0.049 | 0.565 | 0.06 | 0.047 | 0.05 | 0.048 | 0.048 | | 0.85 | 0.119 | 0.158 | 0.132 | 0.264 | 0.158 | 0.632 | 0.131 | 0.122 | 0.116 | 0.131 | 0.119 | 0.119 | 0.12 | 0.13 | 0.591 | 0.13 | 0.12 | 0.121 | 0.123 | 0.123 | | 0.99 | 2.079 | 1.005 | 1.396 | 0.944 | 1.075 | 0.983 | 1.761 | 0.825 | 1.985 | 1.397 | 2.079 | 2.079 | 2.039 | 1.327 | 0.831 | 1.763 | 2.052 | 1.698 | 0.827 | 0.827 | | 3  3  3 | 0.60 | 0.427 | 0.428 | 0.422 | 0.486 | 0.431 | 0.641 | 0.414 | 0.389 | 0.417 | 0.426 | 0.427 | 0.427 | 0.427 | 0.419 | 0.796 | 0.416 | 0.427 | 0.418 | 0.342 | 0.342 | | 0.85 | 1.074 | 0.821 | 0.854 | 0.75 | 0.75 | 0.831 | 0.993 | 0.799 | 1.04 | 1.031 | 1.074 | 1.074 | 1.063 | 0.867 | 0.812 | 0.986 | 1.067 | 1.004 | 0.634 | 0.634 | | 0.99 | 18.711 | 2.788 | 9.773 | 1.183 | 5.838 | 3.019 | 17.161 | 2.024 | 17.857 | 16.661 | 18.709 | 18.711 | 18.152 | 9.038 | 2.203 | 15.159 | 18.33 | 14.421 | 1.258 | 1.258 | | 5  5  5 | 0.60 | 1.186 | 0.917 | 0.924 | 0.816 | 0.8 | 0.816 | 1.131 | 1.074 | 1.157 | 1.167 | 1.186 | 1.186 | 1.172 | 0.966 | 0.857 | 1.118 | 1.177 | 1.124 | 0.78 | 0.78 | | 0.85 | 2.983 | 1.569 | 1.887 | 1.064 | 1.393 | 1.146 | 2.713 | 2.152 | 2.889 | 2.889 | 2.983 | 2.983 | 2.927 | 1.983 | 0.905 | 2.683 | 2.945 | 2.722 | 1.172 | 1.172 | | 0.99 | 51.975 | 6.29 | 26.448 | 1.638 | 15.277 | 7.056 | 49.69 | 4.423 | 49.6 | 49.54 | 51.969 | 51.975 | 50.369 | 24.38 | 4.882 | 42.044 | 50.878 | 39.866 | 1.662 | 1.662 | | 10  10  10 | 0.60 | 0.012 | 0.012 | 0.012 | 0.013 | 0.012 | 0.519 | 0.012 | 0.015 | 0.012 | 0.013 | 0.012 | 0.012 | 0.012 | 0.012 | 0.363 | 0.026 | 0.012 | 0.014 | 0.013 | 0.013 | | 0.85 | 11.934 | 4.793 | 6.49 | 2.316 | 4.14 | 2.543 | 11.196 | 8.495 | 11.555 | 11.8 | 11.933 | 11.934 | 11.64 | 6.992 | 1.232 | 10.609 | 11.734 | 10.727 | 2.338 | 2.338 | | 0.99 | 207.9 | 22.691 | 104.602 | 3.762 | 59.509 | 25.954 | 204.483 | 15.667 | 198.398 | 205.191 | 207.875 | 207.9 | 201.381 | 96.284 | 17.429 | 168.257 | 203.446 | 159.322 | 3.258 | 3.258 | |
| **Coverage Probability results for n = 100, p = 3** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1  1  1 | 0.60 | 0.952 | 0.938 | 0.94 | 0.906 | 0.901 | 0.062 | 0.94 | 0.941 | 0.952 | 0.94 | 0.952 | 0.952 | 0.951 | 0.942 | 0 | 0.906 | 0.951 | 0.939 | 0.934 | 0.934 | | 0.85 | 0.955 | 0.807 | 0.896 | 0.487 | 0.781 | 0.076 | 0.905 | 0.877 | 0.955 | 0.895 | 0.955 | 0.955 | 0.953 | 0.9 | 0.001 | 0.91 | 0.954 | 0.936 | 0.879 | 0.879 | | 0.99 | 0.954 | 0.141 | 0.606 | 0.005 | 0.454 | 0.191 | 0.634 | 0.058 | 0.954 | 0.605 | 0.954 | 0.954 | 0.938 | 0.587 | 0.215 | 0.872 | 0.944 | 0.879 | 0.042 | 0.042 | | 3  3  3 | 0.60 | 0.952 | 0.798 | 0.818 | 0.613 | 0.704 | 0.306 | 0.945 | 0.951 | 0.952 | 0.924 | 0.951 | 0.952 | 0.943 | 0.85 | 0.006 | 0.933 | 0.946 | 0.935 | 0.934 | 0.934 | | 0.85 | 0.955 | 0.54 | 0.692 | 0.309 | 0.55 | 0.246 | 0.939 | 0.948 | 0.954 | 0.897 | 0.955 | 0.955 | 0.945 | 0.73 | 0.044 | 0.924 | 0.949 | 0.924 | 0.885 | 0.885 | | 0.99 | 0.954 | 0.194 | 0.806 | 0.034 | 0.596 | 0.345 | 0.953 | 0.792 | 0.954 | 0.936 | 0.954 | 0.954 | 0.952 | 0.789 | 0.313 | 0.927 | 0.953 | 0.934 | 0.09 | 0.09 | | 5  5  5 | 0.60 | 0.952 | 0.756 | 0.769 | 0.584 | 0.659 | 0.415 | 0.949 | 0.952 | 0.952 | 0.94 | 0.952 | 0.952 | 0.947 | 0.814 | 0.038 | 0.936 | 0.949 | 0.933 | 0.936 | 0.936 | | 0.85 | 0.955 | 0.564 | 0.708 | 0.358 | 0.568 | 0.329 | 0.948 | 0.952 | 0.955 | 0.945 | 0.955 | 0.955 | 0.952 | 0.749 | 0.135 | 0.941 | 0.953 | 0.941 | 0.893 | 0.893 | | 0.99 | 0.954 | 0.273 | 0.877 | 0.088 | 0.768 | 0.47 | 0.954 | 0.896 | 0.954 | 0.952 | 0.954 | 0.954 | 0.953 | 0.869 | 0.455 | 0.939 | 0.954 | 0.948 | 0.195 | 0.195 | | 10  10  10 | 0.60 | 0.952 | 0.949 | 0.949 | 0.946 | 0.943 | 0.009 | 0.946 | 0.895 | 0.951 | 0.936 | 0.952 | 0.952 | 0.951 | 0.95 | 0 | 0.86 | 0.952 | 0.937 | 0.934 | 0.934 | | 0.85 | 0.955 | 0.73 | 0.835 | 0.529 | 0.732 | 0.524 | 0.954 | 0.953 | 0.955 | 0.954 | 0.955 | 0.955 | 0.954 | 0.866 | 0.358 | 0.95 | 0.954 | 0.949 | 0.905 | 0.905 | | 0.99 | 0.954 | 0.543 | 0.929 | 0.325 | 0.895 | 0.689 | 0.954 | 0.944 | 0.954 | 0.954 | 0.954 | 0.954 | 0.954 | 0.929 | 0.779 | 0.95 | 0.954 | 0.953 | 0.53 | 0.53 | |
| **Confidence Interval width results for n = 100, p = 3** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1  1  1 | 0.60 | 0.431 | 0.42 | 0.421 | 0.4 | 0.404 | 0.195 | 0.424 | 0.409 | 0.426 | 0.422 | 0.431 | 0.431 | 0.431 | 0.422 | 0.188 | 0.412 | 0.431 | 0.423 | 0.405 | 0.405 | | 0.85 | 0.768 | 0.649 | 0.701 | 0.475 | 0.616 | 0.245 | 0.718 | 0.627 | 0.753 | 0.702 | 0.768 | 0.768 | 0.765 | 0.703 | 0.238 | 0.713 | 0.766 | 0.737 | 0.627 | 0.627 | | 0.99 | 3.841 | 0.494 | 1.874 | 0.159 | 1.236 | 0.602 | 2.339 | 0.708 | 3.733 | 1.883 | 3.839 | 3.841 | 3.597 | 1.769 | 0.58 | 3.123 | 3.66 | 2.96 | 0.685 | 0.685 | | 3  3  3 | 0.60 | 1.294 | 1.003 | 1.028 | 0.769 | 0.859 | 0.53 | 1.245 | 1.227 | 1.277 | 1.24 | 1.294 | 1.294 | 1.277 | 1.076 | 0.287 | 1.231 | 1.282 | 1.238 | 1.088 | 1.088 | | 0.85 | 2.303 | 1.092 | 1.396 | 0.67 | 1.038 | 0.611 | 2.026 | 1.878 | 2.259 | 2.048 | 2.303 | 2.303 | 2.23 | 1.473 | 0.399 | 2.095 | 2.252 | 2.1 | 1.395 | 1.395 | | 0.99 | 11.523 | 1.19 | 4.87 | 0.403 | 3.062 | 1.617 | 8.694 | 2.121 | 11.198 | 9.113 | 11.517 | 11.523 | 10.625 | 4.574 | 1.401 | 9.116 | 10.857 | 8.57 | 0.872 | 0.872 | | 5  5  5 | 0.60 | 2.157 | 1.421 | 1.453 | 1.036 | 1.161 | 0.795 | 2.07 | 2.046 | 2.129 | 2.074 | 2.156 | 2.157 | 2.1 | 1.579 | 0.359 | 2.027 | 2.117 | 2.021 | 1.653 | 1.653 | | 0.85 | 3.838 | 1.55 | 2.03 | 0.943 | 1.467 | 0.93 | 3.389 | 3.129 | 3.765 | 3.553 | 3.837 | 3.838 | 3.663 | 2.18 | 0.573 | 3.451 | 3.713 | 3.432 | 1.882 | 1.882 | | 0.99 | 19.205 | 1.943 | 8.007 | 0.662 | 5.011 | 2.67 | 15.89 | 3.534 | 18.663 | 17.058 | 19.195 | 19.205 | 17.681 | 7.519 | 2.288 | 15.187 | 18.074 | 14.217 | 1.049 | 1.049 | | 10  10  10 | 0.60 | 0.216 | 0.214 | 0.214 | 0.212 | 0.212 | 0.114 | 0.215 | 0.205 | 0.213 | 0.211 | 0.216 | 0.216 | 0.216 | 0.215 | 0.141 | 0.207 | 0.216 | 0.213 | 0.209 | 0.209 | | 0.85 | 7.677 | 2.842 | 3.771 | 1.725 | 2.682 | 1.752 | 6.962 | 6.258 | 7.53 | 7.457 | 7.675 | 7.677 | 7.271 | 4.081 | 1.055 | 6.822 | 7.385 | 6.77 | 2.686 | 2.686 | | 0.99 | 38.41 | 3.848 | 15.916 | 1.316 | 9.947 | 5.331 | 34.567 | 7.068 | 37.326 | 36.831 | 38.39 | 38.409 | 35.355 | 14.95 | 4.537 | 30.467 | 36.149 | 28.468 | 1.556 | 1.556 | |
|  |

|  |
| --- |
| **Table 6:**  **MSE results for n = 100, p = 10** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1 | 0.60 | 0.203 | 0.216 | 0.208 | 0.317 | 0.284 | 0.804 | 0.213 | 0.223 | 0.196 | 0.208 | 0.203 | 0.203 | 0.203 | 0.219 | 0.82 | 0.199 | 0.203 | 0.199 | 0.301 | 0.301 | | 1 | 0.85 | 0.549 | 0.593 | 0.549 | 0.776 | 0.608 | 0.899 | 0.582 | 0.65 | 0.517 | 0.548 | 0.549 | 0.549 | 0.548 | 0.55 | 0.86 | 0.529 | 0.548 | 0.529 | 0.693 | 0.693 | | 1 | 0.99 | 9.928 | 2.174 | 6.32 | 1.013 | 2.877 | 1.501 | 8.675 | 1.073 | 8.784 | 6.327 | 9.927 | 9.928 | 9.802 | 3.504 | 1.572 | 9.206 | 9.843 | 8.932 | 1.064 | 1.064 | | 3 | 0.60 | 1.827 | 1.447 | 1.466 | 0.928 | 1.043 | 0.97 | 1.68 | 1.38 | 1.753 | 1.768 | 1.827 | 1.827 | 1.812 | 1.319 | 0.932 | 1.759 | 1.817 | 1.75 | 0.997 | 0.997 | | 3 | 0.85 | 4.938 | 2.729 | 3.42 | 1.061 | 1.856 | 1.244 | 4.283 | 2.129 | 4.626 | 4.657 | 4.938 | 4.938 | 4.89 | 2.67 | 1.035 | 4.719 | 4.906 | 4.682 | 1.293 | 1.293 | | 3 | 0.99 | 89.35 | 12.968 | 53.623 | 1.215 | 20.264 | 6.21 | 86.788 | 1.92 | 78.982 | 81.854 | 89.346 | 89.35 | 88.108 | 26.486 | 7.236 | 82.765 | 88.515 | 80.171 | 1.249 | 1.249 | | 5 | 0.60 | 5.075 | 3.608 | 3.542 | 1.317 | 1.935 | 1.281 | 4.625 | 3.695 | 4.866 | 4.975 | 5.075 | 5.075 | 5.015 | 3.087 | 0.991 | 4.874 | 5.035 | 4.839 | 1.521 | 1.521 | | 5 | 0.85 | 13.717 | 6.768 | 8.815 | 1.366 | 3.992 | 1.923 | 12.477 | 5.088 | 12.844 | 13.357 | 13.716 | 13.717 | 13.564 | 6.579 | 1.273 | 13.096 | 13.614 | 12.977 | 1.604 | 1.604 | | 5 | 0.99 | 248.196 | 34.553 | 148.212 | 1.617 | 55.007 | 15.628 | 245.249 | 3.615 | 219.379 | 239.789 | 248.184 | 248.196 | 244.719 | 72.417 | 18.544 | 229.866 | 245.86 | 222.652 | 1.554 | 1.554 | | 10 | 0.60 | 0.051 | 0.052 | 0.051 | 0.072 | 0.068 | 0.788 | 0.052 | 0.115 | 0.05 | 0.054 | 0.051 | 0.051 | 0.051 | 0.053 | 0.691 | 0.052 | 0.051 | 0.051 | 0.113 | 0.113 | | 10 | 0.85 | 54.866 | 25.649 | 34.005 | 2.739 | 13.917 | 5.111 | 52.891 | 18.957 | 51.364 | 54.464 | 54.864 | 54.866 | 54.221 | 24.816 | 2.359 | 52.364 | 54.434 | 51.858 | 2.069 | 2.069 | | 10 | 0.99 | 992.783 | 135.738 | 591.56 | 3.506 | 217.837 | 59.841 | 989.54 | 11.559 | 877.489 | 983.861 | 992.738 | 992.783 | 978.837 | 287.698 | 71.536 | 919.376 | 983.413 | 890.513 | 2.948 | 2.948 | |
| **Coverage Probability results for n = 100, p = 10** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1 | 0.60 | 0.947 | 0.841 | 0.893 | 0.4 | 0.48 | 0 | 0.877 | 0.672 | 0.941 | 0.894 | 0.947 | 0.947 | 0.945 | 0.802 | 0 | 0.934 | 0.946 | 0.935 | 0.181 | 0.181 | | 1 | 0.85 | 0.949 | 0.496 | 0.767 | 0.03 | 0.311 | 0 | 0.717 | 0.01 | 0.944 | 0.767 | 0.949 | 0.949 | 0.943 | 0.594 | 0 | 0.94 | 0.945 | 0.938 | 0.001 | 0.001 | | 1 | 0.99 | 0.948 | 0.185 | 0.749 | 0 | 0.31 | 0.019 | 0.851 | 0 | 0.946 | 0.749 | 0.948 | 0.948 | 0.948 | 0.4 | 0.1 | 0.946 | 0.948 | 0.946 | 0 | 0 | | 3 | 0.60 | 0.947 | 0.79 | 0.728 | 0.216 | 0.361 | 0.013 | 0.909 | 0.913 | 0.947 | 0.932 | 0.947 | 0.947 | 0.945 | 0.682 | 0 | 0.944 | 0.946 | 0.941 | 0.218 | 0.218 | | 3 | 0.85 | 0.949 | 0.604 | 0.713 | 0.05 | 0.331 | 0.023 | 0.866 | 0.689 | 0.949 | 0.944 | 0.949 | 0.949 | 0.948 | 0.592 | 0.005 | 0.947 | 0.948 | 0.945 | 0.001 | 0.001 | | 3 | 0.99 | 0.948 | 0.322 | 0.941 | 0.001 | 0.665 | 0.219 | 0.948 | 0 | 0.948 | 0.948 | 0.948 | 0.948 | 0.948 | 0.837 | 0.245 | 0.947 | 0.948 | 0.948 | 0 | 1.249 | | 5 | 0.60 | 0.947 | 0.854 | 0.792 | 0.217 | 0.434 | 0.081 | 0.934 | 0.932 | 0.947 | 0.945 | 0.947 | 0.947 | 0.947 | 0.752 | 0.001 | 0.946 | 0.947 | 0.946 | 0.267 | 0.267 | | 5 | 0.85 | 0.949 | 0.722 | 0.861 | 0.075 | 0.437 | 0.09 | 0.948 | 0.853 | 0.949 | 0.948 | 0.949 | 0.949 | 0.949 | 0.732 | 0.026 | 0.948 | 0.948 | 0.948 | 0.003 | 0.003 | | 5 | 0.99 | 0.948 | 0.401 | 0.947 | 0.005 | 0.882 | 0.408 | 0.948 | 0.005 | 0.949 | 0.948 | 0.948 | 0.948 | 0.948 | 0.929 | 0.353 | 0.948 | 0.948 | 0.948 | 0 | 0 | | 10 | 0.60 | 0.947 | 0.924 | 0.937 | 0.695 | 0.73 | 0 | 0.927 | 0.165 | 0.93 | 0.882 | 0.947 | 0.947 | 0.947 | 0.898 | 0 | 0.914 | 0.947 | 0.925 | 0.176 | 0.176 | | 10 | 0.85 | 0.949 | 0.863 | 0.94 | 0.135 | 0.702 | 0.308 | 0.949 | 0.922 | 0.948 | 0.949 | 0.949 | 0.949 | 0.948 | 0.919 | 0.122 | 0.949 | 0.949 | 0.949 | 0.02 | 0.02 | | 10 | 0.99 | 0.948 | 0.556 | 0.949 | 0.021 | 0.943 | 0.671 | 0.948 | 0.362 | 0.948 | 0.948 | 0.948 | 0.948 | 0.948 | 0.947 | 0.747 | 0.948 | 0.948 | 0.948 | 0 | 0 | |
| **Confidence Interval width results for n = 100, p = 10** |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | s | rho | OLS | k1 | k2 | k3 | k4 | k5 | k6 | k7 | k8 | k9 | k10 | k11 | k12 | k13 | k14 | k15 | k16 | k17 | k19 | k20 | | 1 | 0.60 | 0.798 | 0.703 | 0.743 | 0.48 | 0.519 | 0.134 | 0.746 | 0.585 | 0.767 | 0.744 | 0.798 | 0.798 | 0.796 | 0.67 | 0.12 | 0.766 | 0.796 | 0.767 | 0.471 | 0.471 | | 1 | 0.85 | 1.639 | 0.866 | 1.242 | 0.25 | 0.627 | 0.151 | 1.239 | 0.538 | 1.54 | 1.246 | 1.639 | 1.639 | 1.625 | 0.943 | 0.155 | 1.564 | 1.63 | 1.554 | 0.454 | 0.454 | | 1 | 0.99 | 8.492 | 0.895 | 3.838 | 0.047 | 1.364 | 0.398 | 5.671 | 0.156 | 7.646 | 3.86 | 8.491 | 8.492 | 8.294 | 1.804 | 0.535 | 7.893 | 8.358 | 7.578 | 0.143 | 0.143 | | 3 | 0.60 | 2.394 | 1.599 | 1.593 | 0.533 | 0.816 | 0.368 | 2.03 | 1.744 | 2.301 | 2.238 | 2.394 | 2.394 | 2.359 | 1.368 | 0.211 | 2.291 | 2.371 | 2.271 | 0.794 | 0.794 | | 3 | 0.85 | 4.916 | 1.974 | 2.614 | 0.298 | 1.09 | 0.423 | 3.527 | 1.597 | 4.619 | 4.363 | 4.916 | 4.916 | 4.832 | 1.902 | 0.282 | 4.674 | 4.859 | 4.611 | 0.584 | 0.584 | | 3 | 0.99 | 25.476 | 2.623 | 11.016 | 0.13 | 3.851 | 1.186 | 22.773 | 0.467 | 22.937 | 21.228 | 25.474 | 25.476 | 24.854 | 5.126 | 1.487 | 23.671 | 25.056 | 22.693 | 0.192 | 0.192 | | 5 | 0.60 | 3.99 | 2.521 | 2.392 | 0.666 | 1.18 | 0.597 | 3.432 | 2.906 | 3.835 | 3.858 | 3.99 | 3.99 | 3.919 | 2.073 | 0.312 | 3.814 | 3.942 | 3.771 | 0.963 | 0.963 | | 5 | 0.85 | 8.194 | 3.195 | 4.127 | 0.431 | 1.688 | 0.697 | 6.553 | 2.66 | 7.699 | 7.782 | 8.193 | 8.194 | 8.042 | 2.999 | 0.441 | 7.786 | 8.092 | 7.672 | 0.657 | 0.657 | | 5 | 0.99 | 42.46 | 4.363 | 18.289 | 0.216 | 6.385 | 1.976 | 40.34 | 0.778 | 38.228 | 39.37 | 42.456 | 42.46 | 41.42 | 8.503 | 2.461 | 39.447 | 41.757 | 37.814 | 0.257 | 0.257 | | 10 | 0.60 | 0.399 | 0.389 | 0.393 | 0.344 | 0.349 | 0.077 | 0.392 | 0.299 | 0.384 | 0.376 | 0.399 | 0.399 | 0.399 | 0.38 | 0.101 | 0.383 | 0.399 | 0.385 | 0.3 | 0.3 | | 10 | 0.85 | 16.388 | 6.309 | 8.045 | 0.805 | 3.263 | 1.387 | 14.855 | 5.318 | 15.398 | 16.159 | 16.386 | 16.388 | 16.075 | 5.849 | 0.855 | 15.568 | 16.177 | 15.334 | 0.833 | 0.833 | | 10 | 0.99 | 84.919 | 8.72 | 36.508 | 0.43 | 12.742 | 3.953 | 83.616 | 1.557 | 76.457 | 83.202 | 84.913 | 84.919 | 82.836 | 16.972 | 4.909 | 78.885 | 83.512 | 75.597 | 0.433 | 0.433 | |

**Table : 7 : Mcdonald data**

|  |  |
| --- | --- |
| **Predictor**  <chr> | **mc\_vif**  <dbl> |
| PREC | 4.113888 |
| JANT | 6.143551 |
| JULT | 3.967774 |
| OVR65 | 7.470045 |
| POPN | 4.307618 |
| EDUC | 4.860538 |
| HOUS | 3.994781 |
| DENS | 1.658281 |
| NONW | 6.779599 |
| WWDRK | 2.841582 |
| POOR | 8.717068 |
| HC | 98.639935 |
| NOX | 104.982405 |
| SOx | 4.228929 |
| HUMID | 1.907092 |

**Table 9: Variable description**

| **Variable** | **Description** |
| --- | --- |
| PREC | Average annual precipitation in inches |
| JANT | Average January temperature in degrees Fahrenheit |
| JULT | Average July temperature in degrees Fahrenheit |
| OVR65 | Percentage of the 1960 SMSA population aged 65 or older |
| POPN | Average household size |
| EDUC | Median school years completed by individuals over 22 |
| HOUS | Percentage of housing units that are sound and equipped with all facilities |
| DENS | Population density per square mile in urbanized areas (1960) |
| NONW | Percentage of non-white population in urbanized areas (1960) |
| WWDRK | Percentage employed in white-collar occupations |
| POOR | Percentage of families with income below $3,000 |
| HC | Relative hydrocarbon pollution potential |
| NOX | Relative nitric oxides pollution potential |
| SOx | Relative sulfur dioxide pollution potential |
| HUMID | Annual average relative humidity at 1 PM (percentage) |
| MORT | Total age-adjusted mortality rate per 100,000 individuals |

**Table 10 : Results for NOX and HC**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | NOX | | | | HC | | | |
| Method | Coeff. | Confidence Interval | | CI\_Width | Coeff. | Confidence Interval | | CI\_Width |
| Lower\_CI | Upper\_CI | Lower\_CI | Upper\_CI |
| OLS | 8.033414498 | 3.72198237 | 12.3448466 | 8.6228643 | 3.5476933776 | 1.23981617 | 5.85557058 | 4.61575441 |
| k1 | 7.494299249 | 3.32783868 | 11.6607598 | 8.3329211 | 3.2085736308 | 1.01216262 | 5.40498464 | 4.39282203 |
| k2 | 7.494299249 | 3.32783868 | 11.6607598 | 8.3329211 | 3.2085736308 | 1.01216262 | 5.40498464 | 4.39282203 |
| k3 | 4.151255115 | 0.96784839 | 7.3346618 | 6.3668134 | 1.4943994543 | -0.04317139 | 3.03197030 | 3.07514170 |
| k4 | 3.863982036 | 0.78043120 | 6.9475329 | 6.1671017 | 1.3722155433 | -0.10575371 | 2.85018480 | 2.95593851 |
| k5 | 7.494299249 | 3.32783868 | 11.6607598 | 8.3329211 | 3.2085736308 | 1.01216262 | 5.40498464 | 4.39282203 |
| k6 | 8.024896570 | 3.71575021 | 12.3340429 | 8.6182927 | 3.5262030630 | 1.22531974 | 5.82708638 | 4.60176664 |
| k7 | 7.899303214 | 3.62387010 | 12.1747363 | 8.5508662 | 3.4837265744 | 1.19669053 | 5.77076262 | 4.57407210 |
| **k8** | **7.899303214** | **3.62387010** | **12.1747363** | **8.5508662** | **3.4837265744** | **1.19669053** | **5.77076262** | **4.57407210** |
| **k9** | **8.033413707** | **3.72198179** | **12.3448456** | **8.6228638** | **3.5476928959** | **1.23981585** | **5.85556994** | **4.61575409** |
| **k10** | **8.033414493** | **3.72198236** | **12.3448466** | **8.6228643** | **3.5476933774** | **1.23981617** | **5.85557058** | **4.61575441** |
| **k11** | **8.033414498** | **3.72198237** | **12.3448466** | **8.6228643** | **3.5476933776** | **1.23981617** | **5.85557058** | **4.61575441** |
| **k12** | **7.876024799** | **3.60684308** | **12.1452065** | **8.5383634** | **3.4816976865** | **1.19532387** | **5.76807150** | **4.57274764** |
| k13 | 2.508359613 | -0.03150659 | 5.0482258 | 5.0797324 | 0.9853944475 | -0.28076837 | 2.25155727 | 2.53232564 |
| k14 | 0.005025849 | -0.11483172 | 0.1248834 | 0.2397151 | 0.0009504333 | -0.03973899 | 0.04163986 | 0.08137885 |
| k15 | 8.033407157 | 3.72197700 | 12.3448373 | 8.6228603 | 3.5476920959 | 1.23981531 | 5.85556888 | 4.61575357 |
| **k16** | **8.033407157** | **3.72197700** | **12.3448373** | **8.6228603** | **3.5476920959** | **1.23981531** | **5.85556888** | **4.61575357** |
| k17 | 8.033407157 | 3.72197700 | 12.3448373 | 8.6228603 | 3.5476920959 | 1.23981531 | 5.85556888 | 4.61575357 |
| k18 | 1.365287823 | -0.55094693 | 3.2815226 | 3.8324695 | 0.4665321920 | -0.41955329 | 1.35261768 | 1.77217097 |
| k19 | 6.923573135 | 2.91203504 | 10.9351112 | 8.0230762 | 3.3965107230 | 1.13801443 | 5.65500701 | 4.51699258 |
| k20 | 6.923573135 | 2.91203504 | 10.9351112 | 8.0230762 | 3.3965107230 | 1.13801443 | 5.65500701 | 4.51699258 |