

Table 1: ALs and CPs of PIs for $X_{s:n}$ for different choices of ϑ based on censoring scheme $(n, r) = (20, 12)$.

| | s | Pivot method | | Conditional method | | Bootstrap method | | S_{4-2} | | S_{4-3} | |
|--------------------------------|----|--------------|--------|--------------------|--------|------------------|--------|-----------|--------|-----------|--------|
| | | AL | CP | AL | CP | AL | CP | AL | CP | AL | CP |
| $\vartheta = (0.1, 2, 4)$ | 13 | 0.1028 | 0.9425 | 0.0998 | 0.9462 | 0.0935 | 0.9481 | 0.1171 | 0.9489 | 0.1171 | 0.9489 |
| | 14 | 0.1591 | 0.9416 | 0.1408 | 0.9453 | 0.1372 | 0.9467 | 0.2070 | 0.9456 | 0.2070 | 0.9456 |
| | 15 | 0.2014 | 0.9401 | 0.1995 | 0.9440 | 0.1742 | 0.9458 | 0.2920 | 0.8386 | 0.3077 | 0.9490 |
| | 16 | 0.2488 | 0.9392 | 0.2423 | 0.9429 | 0.2109 | 0.9447 | 0.3319 | 0.7998 | 0.4141 | 0.8900 |
| | 17 | 0.2930 | 0.9384 | 0.2812 | 0.9417 | 0.2639 | 0.9436 | 0.4561 | 0.8048 | 0.9416 | 0.8822 |
| | 18 | 0.3597 | 0.9370 | 0.3399 | 0.9403 | 0.3065 | 0.9422 | 0.6427 | 0.8236 | 0.6881 | 0.8914 |
| | 19 | 0.4152 | 0.9358 | 0.3968 | 0.9391 | 0.3526 | 0.9418 | 0.9922 | 0.8577 | 1.0497 | 0.9123 |
| | 20 | 0.4873 | 0.9345 | 0.4705 | 0.9376 | 0.4191 | 0.9403 | 2.0038 | 0.9026 | 2.0827 | 0.9349 |
| $\vartheta = (0.1, 0.05, 0.1)$ | 13 | 2.7475 | 0.9489 | 2.6374 | 0.9496 | 2.3718 | 0.9512 | 4.6830 | 0.9489 | 4.6830 | 0.9489 |
| | 14 | 2.9842 | 0.9472 | 2.8658 | 0.9488 | 2.5278 | 0.9501 | 8.2802 | 0.9456 | 8.2802 | 0.9456 |
| | 15 | 3.2522 | 0.9465 | 3.0927 | 0.9476 | 2.8490 | 0.9493 | 11.6765 | 0.8386 | 12.3055 | 0.9490 |
| | 16 | 3.5814 | 0.9455 | 3.3428 | 0.9468 | 3.1015 | 0.9484 | 13.2759 | 0.7998 | 16.5630 | 0.8900 |
| | 17 | 3.7681 | 0.9440 | 3.5248 | 0.9453 | 3.3752 | 0.9471 | 18.2442 | 0.8048 | 19.6618 | 0.8822 |
| | 18 | 3.9829 | 0.9428 | 3.8164 | 0.9445 | 3.5957 | 0.9458 | 25.7070 | 0.8236 | 27.5245 | 0.8914 |
| | 19 | 4.2624 | 0.9423 | 4.1889 | 0.9431 | 3.8243 | 0.9443 | 39.6854 | 0.8577 | 41.9869 | 0.9123 |
| | 20 | 4.5256 | 0.9414 | 4.3735 | 0.9419 | 3.9742 | 0.9430 | 80.1546 | 0.9026 | 83.3086 | 0.9349 |
| $\vartheta = (0.5, 2, 4)$ | 13 | 0.1477 | 0.9436 | 0.1454 | 0.9474 | 0.1271 | 0.9493 | 0.1644 | 0.9489 | 0.1644 | 0.9489 |
| | 14 | 0.2128 | 0.9427 | 0.2114 | 0.9462 | 0.1936 | 0.9481 | 0.2942 | 0.9456 | 0.2942 | 0.9456 |
| | 15 | 0.3002 | 0.9419 | 0.2871 | 0.9450 | 0.2553 | 0.9470 | 0.4200 | 0.8390 | 0.4418 | 0.9490 |
| | 16 | 0.3819 | 0.9408 | 0.3694 | 0.9439 | 0.3328 | 0.9458 | 0.4879 | 0.8002 | 0.6005 | 0.8900 |
| | 17 | 0.4682 | 0.9396 | 0.4522 | 0.9428 | 0.4180 | 0.9446 | 0.6728 | 0.8058 | 0.7228 | 0.8822 |
| | 18 | 0.5585 | 0.9382 | 0.5277 | 0.9415 | 0.4992 | 0.9437 | 0.9441 | 0.8247 | 1.0089 | 0.8915 |
| | 19 | 0.6527 | 0.9371 | 0.6448 | 0.9402 | 0.5845 | 0.9428 | 1.4257 | 0.8576 | 1.5095 | 0.9123 |
| | 20 | 0.7364 | 0.9359 | 0.7009 | 0.9389 | 0.6483 | 0.9413 | 2.5733 | 0.8985 | 2.6891 | 0.9305 |
| $\vartheta = (0.5, 0.05, 0.1)$ | 13 | 3.2142 | 0.9502 | 3.1827 | 0.9518 | 2.7183 | 0.9535 | 6.5750 | 0.9489 | 6.5750 | 0.9489 |
| | 14 | 3.4628 | 0.9492 | 3.4052 | 0.9506 | 3.1098 | 0.9521 | 11.7665 | 0.9456 | 11.7665 | 0.9456 |
| | 15 | 3.7821 | 0.9481 | 3.6946 | 0.9490 | 3.3958 | 0.9512 | 16.8000 | 0.8390 | 17.6706 | 0.9490 |
| | 16 | 3.9325 | 0.9473 | 3.8241 | 0.9481 | 3.6053 | 0.9503 | 19.5150 | 0.8002 | 24.0203 | 0.8900 |
| | 17 | 4.3041 | 0.9466 | 4.1075 | 0.9473 | 3.8428 | 0.9492 | 26.9140 | 0.8058 | 28.9123 | 0.8822 |
| | 18 | 4.6919 | 0.9452 | 4.5253 | 0.9459 | 4.0827 | 0.9477 | 37.7636 | 0.8247 | 40.3563 | 0.8915 |
| | 19 | 4.9428 | 0.9439 | 4.7858 | 0.9451 | 4.3419 | 0.9469 | 57.0277 | 0.8576 | 60.3809 | 0.9123 |
| | 20 | 5.3197 | 0.9428 | 5.1576 | 0.9438 | 4.5282 | 0.9460 | 102.9301 | 0.8985 | 107.5615 | 0.9305 |
| $\vartheta = (0.9, 2, 4)$ | 13 | 0.2013 | 0.9444 | 0.1994 | 0.9485 | 0.1733 | 0.9508 | 0.2060 | 0.9489 | 0.2060 | 0.9489 |
| | 14 | 0.2744 | 0.9437 | 0.2713 | 0.9477 | 0.2245 | 0.9499 | 0.3626 | 0.9456 | 0.3626 | 0.9456 |
| | 15 | 0.3551 | 0.9429 | 0.3535 | 0.9463 | 0.2950 | 0.9484 | 0.5074 | 0.8386 | 0.5350 | 0.9490 |
| | 16 | 0.4475 | 0.9418 | 0.4272 | 0.9451 | 0.3926 | 0.9479 | 0.5666 | 0.7998 | 0.7117 | 0.8900 |
| | 17 | 0.5387 | 0.9406 | 0.5094 | 0.9449 | 0.4482 | 0.9462 | 0.7635 | 0.8048 | 0.8263 | 0.8821 |
| | 18 | 0.6329 | 0.9389 | 0.6172 | 0.9436 | 0.5219 | 0.9450 | 1.0470 | 0.8235 | 1.1267 | 0.8913 |
| | 19 | 0.7433 | 0.9379 | 0.7088 | 0.9422 | 0.6134 | 0.9438 | 1.5430 | 0.8565 | 1.6433 | 0.9111 |
| | 20 | 0.7986 | 0.9367 | 0.7668 | 0.9409 | 0.6973 | 0.9427 | 2.6706 | 0.8948 | 2.8075 | 0.9271 |
| $\vartheta = (0.9, 0.05, 0.1)$ | 13 | 3.8657 | 0.9525 | 3.8202 | 0.9534 | 3.1938 | 0.9552 | 8.2384 | 0.9489 | 8.2384 | 0.9489 |
| | 14 | 4.1282 | 0.9513 | 4.0823 | 0.9523 | 3.3246 | 0.9542 | 14.5020 | 0.9456 | 14.5020 | 0.9456 |
| | 15 | 4.3809 | 0.9506 | 4.2182 | 0.9514 | 3.7118 | 0.9533 | 20.2948 | 0.8386 | 21.3993 | 0.9490 |
| | 16 | 4.6282 | 0.9491 | 4.4518 | 0.9501 | 4.0108 | 0.9524 | 22.6645 | 0.7998 | 28.4683 | 0.8900 |
| | 17 | 4.9674 | 0.9483 | 4.7993 | 0.9488 | 4.3371 | 0.9509 | 30.5367 | 0.8048 | 33.0490 | 0.8821 |
| | 18 | 5.2742 | 0.9475 | 5.0837 | 0.9479 | 4.6448 | 0.9498 | 41.8788 | 0.8235 | 45.0661 | 0.8913 |
| | 19 | 5.5154 | 0.9460 | 5.3282 | 0.9468 | 4.8983 | 0.9487 | 61.7202 | 0.8565 | 65.7322 | 0.9111 |
| | 20 | 5.9082 | 0.9453 | 5.7748 | 0.9459 | 5.2183 | 0.9481 | 106.8216 | 0.8948 | 112.2475 | 0.9271 |

Table 2: ALs and CPs of PIs for X_{sin} for different choices of ϑ based on censoring scheme $(n, r) = (40, 30)$.

| | s | Pivot method | | Conditional method | | Bootstrap method | |
|--------------------------------|----|--------------|--------|--------------------|--------|------------------|--------|
| | | AL | CP | AL | CP | AL | CP |
| $\vartheta = (0.1, 2, 4)$ | 31 | 0.0825 | 0.9406 | 0.0795 | 0.9443 | 0.0750 | 0.9467 |
| | 32 | 0.1109 | 0.9393 | 0.1087 | 0.9432 | 0.0985 | 0.9458 |
| | 33 | 0.1357 | 0.9381 | 0.1307 | 0.9427 | 0.1137 | 0.9449 |
| | 34 | 0.1629 | 0.9376 | 0.1576 | 0.9419 | 0.1342 | 0.9442 |
| | 35 | 0.1862 | 0.9369 | 0.1794 | 0.9411 | 0.1559 | 0.9436 |
| | 36 | 0.2119 | 0.9361 | 0.2061 | 0.9406 | 0.1819 | 0.9424 |
| | 37 | 0.2336 | 0.9354 | 0.2242 | 0.9396 | 0.2046 | 0.9413 |
| | 38 | 0.2588 | 0.9342 | 0.2520 | 0.9384 | 0.2351 | 0.9408 |
| | 39 | 0.2864 | 0.9337 | 0.2693 | 0.9373 | 0.2519 | 0.9400 |
| | 40 | 0.3163 | 0.9325 | 0.2973 | 0.9364 | 0.2811 | 0.9392 |
| $\vartheta = (0.1, 0.05, 0.1)$ | 31 | 2.2573 | 0.9465 | 2.1628 | 0.9474 | 2.0992 | 0.9493 |
| | 32 | 2.5166 | 0.9458 | 2.4834 | 0.9463 | 2.3166 | 0.9483 |
| | 33 | 2.7044 | 0.9449 | 2.6392 | 0.9457 | 2.5549 | 0.9475 |
| | 34 | 2.9621 | 0.9437 | 2.8408 | 0.9448 | 2.7075 | 0.9468 |
| | 35 | 3.1966 | 0.9424 | 2.9810 | 0.9439 | 2.8654 | 0.9459 |
| | 36 | 3.3254 | 0.9416 | 3.2671 | 0.9425 | 2.9792 | 0.9447 |
| | 37 | 3.5719 | 0.9407 | 3.4009 | 0.9416 | 3.1995 | 0.9436 |
| | 38 | 3.7979 | 0.9395 | 3.6337 | 0.9407 | 3.3094 | 0.9428 |
| | 39 | 4.0282 | 0.9388 | 3.8246 | 0.9399 | 3.5813 | 0.9416 |
| | 40 | 4.2816 | 0.9473 | 4.1182 | 0.9386 | 3.8127 | 0.9407 |
| $\vartheta = (0.5, 2, 4)$ | 31 | 0.1039 | 0.9418 | 0.1022 | 0.9452 | 0.0880 | 0.9474 |
| | 32 | 0.1362 | 0.9406 | 0.1344 | 0.9447 | 0.1072 | 0.9462 |
| | 33 | 0.1694 | 0.9398 | 0.1623 | 0.9436 | 0.1319 | 0.9453 |
| | 34 | 0.2025 | 0.9387 | 0.1968 | 0.9425 | 0.1576 | 0.9446 |
| | 35 | 0.2266 | 0.9375 | 0.2118 | 0.9418 | 0.1822 | 0.9432 |
| | 36 | 0.2519 | 0.9369 | 0.2363 | 0.9407 | 0.2090 | 0.9428 |
| | 37 | 0.2779 | 0.9362 | 0.2609 | 0.9401 | 0.2338 | 0.9419 |
| | 38 | 0.3008 | 0.9351 | 0.2886 | 0.9394 | 0.2569 | 0.9398 |
| | 39 | 0.3286 | 0.9347 | 0.3101 | 0.9388 | 0.2781 | 0.9389 |
| | 40 | 0.3574 | 0.9338 | 0.3468 | 0.9374 | 0.3094 | 0.9382 |
| $\vartheta = (0.5, 0.05, 0.1)$ | 31 | 2.5940 | 0.9483 | 2.5282 | 0.9491 | 2.2852 | 0.9513 |
| | 32 | 2.7873 | 0.9476 | 2.7528 | 0.9484 | 2.4627 | 0.9506 |
| | 33 | 2.9142 | 0.9464 | 2.8867 | 0.9475 | 2.7084 | 0.9497 |
| | 34 | 3.2251 | 0.9452 | 3.1189 | 0.9464 | 2.9231 | 0.9486 |
| | 35 | 3.4381 | 0.9445 | 3.3592 | 0.9458 | 3.1867 | 0.9477 |
| | 36 | 3.6709 | 0.9438 | 3.5056 | 0.9446 | 3.4114 | 0.9463 |
| | 37 | 3.9057 | 0.9429 | 3.7284 | 0.9435 | 3.5748 | 0.9451 |
| | 38 | 4.1212 | 0.9417 | 3.9428 | 0.9423 | 3.7852 | 0.9445 |
| | 39 | 4.3529 | 0.9406 | 4.1795 | 0.9416 | 3.9682 | 0.9438 |
| | 40 | 4.5082 | 0.9393 | 4.3668 | 0.9407 | 4.0992 | 0.9424 |
| $\vartheta = (0.9, 2, 4)$ | 31 | 0.1475 | 0.9427 | 0.1421 | 0.9467 | 0.1274 | 0.9484 |
| | 32 | 0.1882 | 0.9416 | 0.1833 | 0.9454 | 0.1527 | 0.9473 |
| | 33 | 0.2209 | 0.9408 | 0.2157 | 0.9446 | 0.1892 | 0.9463 |
| | 34 | 0.2591 | 0.9391 | 0.2418 | 0.9435 | 0.2229 | 0.9457 |
| | 35 | 0.3066 | 0.9385 | 0.2889 | 0.9426 | 0.2541 | 0.9448 |
| | 36 | 0.3501 | 0.9377 | 0.3384 | 0.9418 | 0.2981 | 0.9436 |
| | 37 | 0.3968 | 0.9367 | 0.3831 | 0.9407 | 0.3382 | 0.9425 |
| | 38 | 0.4492 | 0.9362 | 0.4218 | 0.9399 | 0.3812 | 0.9418 |
| | 39 | 0.4958 | 0.9356 | 0.4715 | 0.9387 | 0.4207 | 0.9407 |
| | 40 | 0.5752 | 0.9343 | 0.5360 | 0.9475 | 0.4727 | 0.9397 |
| $\vartheta = (0.9, 0.05, 0.1)$ | 31 | 2.6728 | 0.9495 | 2.6182 | 0.9506 | 2.4381 | 0.9527 |
| | 32 | 2.8827 | 0.9486 | 2.8472 | 0.9495 | 2.6218 | 0.9516 |
| | 33 | 3.1072 | 0.9474 | 3.0578 | 0.9487 | 2.8527 | 0.9503 |
| | 34 | 3.3128 | 0.9463 | 3.2482 | 0.9473 | 3.0610 | 0.9492 |
| | 35 | 3.5720 | 0.9455 | 3.4927 | 0.9462 | 3.2928 | 0.9484 |
| | 36 | 3.7958 | 0.9446 | 3.6281 | 0.9450 | 3.5383 | 0.9476 |
| | 37 | 3.9883 | 0.9438 | 3.8683 | 0.9442 | 3.7069 | 0.9462 |
| | 38 | 4.2718 | 0.9429 | 4.1139 | 0.9436 | 3.9472 | 0.9454 |
| | 39 | 4.4508 | 0.9417 | 4.3282 | 0.9428 | 4.1819 | 0.9447 |
| | 40 | 4.7182 | 0.9405 | 4.5601 | 0.9417 | 4.2994 | 0.9438 |

Table 3: ALs and CPs of PIs of $X_{s:N}$ for $r = 12$ and $N \sim \text{Bin}(30, 0.8|s)$ with $s = r + 1, \dots, 20$.

| s | Pivot method | | Conditional method | | Bootstrap method | | S_{4-2} | | S_{4-3} | | |
|--------------------------------|--------------|--------|--------------------|--------|------------------|--------|-----------|---------|-----------|---------|--------|
| | AL | CP | AL | CP | AL | CP | AL | CP | AL | CP | |
| $\vartheta = (0.1, 2, 4)$ | 13 | 0.0711 | 0.9412 | 0.0702 | 0.9432 | 0.0602 | 0.9463 | 0.0797 | 0.9473 | 0.0797 | 0.9473 |
| | 14 | 0.0934 | 0.9406 | 0.0929 | 0.9414 | 0.0743 | 0.9452 | 0.1374 | 0.9478 | 0.1374 | 0.9478 |
| | 15 | 0.1096 | 0.9396 | 0.1088 | 0.9405 | 0.0838 | 0.9447 | 0.1682 | 0.8254 | 0.1982 | 0.9461 |
| | 16 | 0.1352 | 0.9388 | 0.1345 | 0.9391 | 0.1077 | 0.9436 | 0.2202 | 0.7769 | 0.2373 | 0.8838 |
| | 17 | 0.1778 | 0.9375 | 0.1767 | 0.9384 | 0.1362 | 0.9424 | 0.2593 | 0.7659 | 0.3062 | 0.8559 |
| | 18 | 0.2122 | 0.9362 | 0.2112 | 0.9371 | 0.1641 | 0.9418 | 0.3269 | 0.7690 | 0.3531 | 0.8517 |
| | 19 | 0.2682 | 0.9354 | 0.2683 | 0.9362 | 0.1997 | 0.9407 | 0.4208 | 0.7870 | 0.4805 | 0.8669 |
| | 20 | 0.3260 | 0.9342 | 0.3254 | 0.9353 | 0.2529 | 0.9393 | 0.4723 | 0.7853 | 0.5095 | 0.8664 |
| $\vartheta = (0.1, 0.05, 0.1)$ | 13 | 2.2469 | 0.9472 | 2.2460 | 0.9481 | 2.0413 | 0.9493 | 3.1873 | 0.9473 | 3.1873 | 0.9473 |
| | 14 | 2.4381 | 0.9460 | 2.4362 | 0.9477 | 2.2256 | 0.9482 | 5.4873 | 0.9478 | 5.4957 | 0.9478 |
| | 15 | 2.6618 | 0.9449 | 2.6609 | 0.9456 | 2.4382 | 0.9474 | 6.7260 | 0.8254 | 7.9270 | 0.9461 |
| | 16 | 2.9006 | 0.9437 | 2.8995 | 0.9447 | 2.6145 | 0.9465 | 8.8067 | 0.7769 | 9.4907 | 0.8838 |
| | 17 | 3.1415 | 0.9425 | 3.1414 | 0.9438 | 2.8315 | 0.9454 | 10.3700 | 0.7659 | 12.2479 | 0.8559 |
| | 18 | 3.3812 | 0.9419 | 3.3804 | 0.9424 | 2.9925 | 0.9440 | 13.0737 | 0.7690 | 14.1227 | 0.8517 |
| | 19 | 3.6108 | 0.9410 | 3.6099 | 0.9419 | 3.2847 | 0.9437 | 16.8342 | 0.7870 | 19.2199 | 0.8669 |
| | 20 | 3.8522 | 0.9403 | 3.8518 | 0.9407 | 3.5149 | 0.9428 | 18.8916 | 0.7853 | 20.3769 | 0.8664 |
| $\vartheta = (0.5, 2, 4)$ | 13 | 0.0944 | 0.9423 | 0.0942 | 0.9434 | 0.0758 | 0.9476 | 0.1094 | 0.9473 | 0.1094 | 0.9473 |
| | 14 | 0.1236 | 0.9415 | 0.1231 | 0.9421 | 0.1086 | 0.9465 | 0.1905 | 0.9478 | 0.1905 | 0.9478 |
| | 15 | 0.1587 | 0.9408 | 0.1576 | 0.9414 | 0.1267 | 0.9454 | 0.2371 | 0.8252 | 0.2774 | 0.9461 |
| | 16 | 0.1927 | 0.9396 | 0.1923 | 0.9406 | 0.1511 | 0.9443 | 0.3266 | 0.7772 | 0.3370 | 0.8839 |
| | 17 | 0.2286 | 0.9384 | 0.2277 | 0.9394 | 0.1889 | 0.9438 | 0.3750 | 0.7664 | 0.4517 | 0.8560 |
| | 18 | 0.2680 | 0.9374 | 0.2674 | 0.9382 | 0.2162 | 0.9427 | 0.4770 | 0.7695 | 0.5192 | 0.8517 |
| | 19 | 0.2915 | 0.9361 | 0.2914 | 0.9374 | 0.2403 | 0.9416 | 0.6173 | 0.7878 | 0.7153 | 0.8672 |
| | 20 | 0.3482 | 0.9350 | 0.3479 | 0.9366 | 0.2856 | 0.9402 | 0.6947 | 0.7858 | 0.7472 | 0.8666 |
| $\vartheta = (0.5, 0.05, 0.1)$ | 13 | 2.5378 | 0.9493 | 2.5369 | 0.9508 | 2.3824 | 0.9516 | 4.3799 | 0.9473 | 4.3799 | 0.9473 |
| | 14 | 2.7569 | 0.9482 | 2.7532 | 0.9499 | 2.5573 | 0.9507 | 7.6229 | 0.9478 | 7.6229 | 0.9478 |
| | 15 | 2.9712 | 0.9474 | 2.9755 | 0.9487 | 2.7286 | 0.9493 | 9.4836 | 0.8252 | 11.0960 | 0.9461 |
| | 16 | 3.3057 | 0.9465 | 3.3048 | 0.9479 | 2.9621 | 0.9487 | 13.0657 | 0.7772 | 13.4798 | 0.8839 |
| | 17 | 3.5431 | 0.9458 | 3.5389 | 0.9467 | 3.2051 | 0.9474 | 15.0025 | 0.7664 | 18.0687 | 0.8560 |
| | 18 | 3.8146 | 0.9447 | 3.8135 | 0.9454 | 3.4716 | 0.9465 | 19.0767 | 0.7695 | 20.7661 | 0.8517 |
| | 19 | 4.0119 | 0.9434 | 4.0110 | 0.9446 | 3.7182 | 0.9457 | 24.6907 | 0.7878 | 28.6085 | 0.8672 |
| | 20 | 4.2876 | 0.9421 | 4.2861 | 0.9435 | 3.8821 | 0.9446 | 27.7870 | 0.7858 | 29.8857 | 0.8666 |
| $\vartheta = (0.9, 2, 4)$ | 13 | 0.1369 | 0.9435 | 0.1353 | 0.9446 | 0.1154 | 0.9486 | 0.1405 | 0.9473 | 0.1405 | 0.9473 |
| | 14 | 0.1977 | 0.9426 | 0.1969 | 0.9432 | 0.1805 | 0.9474 | 0.2420 | 0.9478 | 0.2420 | 0.9478 |
| | 15 | 0.2426 | 0.9418 | 0.2419 | 0.9425 | 0.2224 | 0.9462 | 0.2953 | 0.8253 | 0.3482 | 0.9461 |
| | 16 | 0.2982 | 0.9407 | 0.2980 | 0.9417 | 0.2663 | 0.9453 | 0.3744 | 0.7769 | 0.4152 | 0.8838 |
| | 17 | 0.3551 | 0.9393 | 0.3540 | 0.9406 | 0.3169 | 0.9445 | 0.4471 | 0.7660 | 0.5219 | 0.8558 |
| | 18 | 0.4119 | 0.9384 | 0.4108 | 0.9396 | 0.3753 | 0.9436 | 0.5605 | 0.7690 | 0.6015 | 0.8517 |
| | 19 | 0.4606 | 0.9372 | 0.4596 | 0.9384 | 0.4194 | 0.9428 | 0.7113 | 0.7871 | 0.8068 | 0.8670 |
| | 20 | 0.5246 | 0.9361 | 0.5239 | 0.9376 | 0.4588 | 0.9419 | 0.7892 | 0.7855 | 0.8545 | 0.8664 |
| $\vartheta = (0.9, 0.05, 0.1)$ | 13 | 2.8428 | 0.9506 | 2.8423 | 0.9519 | 2.6721 | 0.9534 | 5.6191 | 0.9473 | 5.6191 | 0.9473 |
| | 14 | 3.1382 | 0.9493 | 3.1377 | 0.9507 | 2.8716 | 0.9522 | 9.6776 | 0.9478 | 9.6776 | 0.9478 |
| | 15 | 3.4217 | 0.9485 | 3.4186 | 0.9498 | 3.1144 | 0.9514 | 11.8123 | 0.8253 | 13.9283 | 0.9461 |
| | 16 | 3.7199 | 0.9473 | 3.7167 | 0.9489 | 3.4902 | 0.9505 | 14.9756 | 0.7769 | 16.6051 | 0.8838 |
| | 17 | 4.0892 | 0.9463 | 4.0730 | 0.9477 | 3.7355 | 0.9496 | 17.8837 | 0.7660 | 20.8766 | 0.8558 |
| | 18 | 4.3356 | 0.9455 | 4.3345 | 0.9469 | 3.9632 | 0.9487 | 22.4219 | 0.7690 | 24.0619 | 0.8517 |
| | 19 | 4.6912 | 0.9447 | 4.6908 | 0.9455 | 4.2619 | 0.9479 | 28.4524 | 0.7871 | 32.2718 | 0.8670 |
| | 20 | 4.9235 | 0.9436 | 4.9243 | 0.9444 | 4.5108 | 0.9471 | 31.5688 | 0.7855 | 34.1793 | 0.8664 |

Table 4: ALs and CPs of PIs of $X_{s:N}$ for $r = 20$ and $N \sim \text{Bin}(50, 0.8|s)$ with $s = r + 1, \dots, 30$.

| | s | Pivot method | | Conditional method | | Bootstrap method | |
|--------------------------------|----|--------------|--------|--------------------|--------|------------------|--------|
| | | AL | CP | AL | CP | AL | CP |
| $\vartheta = (0.1, 2, 4)$ | 21 | 0.0612 | 0.9394 | 0.0603 | 0.9418 | 0.0505 | 0.9455 |
| | 22 | 0.0785 | 0.9382 | 0.0775 | 0.9406 | 0.0619 | 0.9446 |
| | 23 | 0.0904 | 0.9374 | 0.0901 | 0.9392 | 0.0776 | 0.9437 |
| | 24 | 0.1115 | 0.9367 | 0.1106 | 0.9386 | 0.0932 | 0.9428 |
| | 25 | 0.1336 | 0.9354 | 0.1325 | 0.9374 | 0.1176 | 0.9417 |
| | 26 | 0.1642 | 0.9343 | 0.1632 | 0.9367 | 0.1439 | 0.9408 |
| | 27 | 0.1879 | 0.9331 | 0.1872 | 0.9354 | 0.1648 | 0.9396 |
| | 28 | 0.2117 | 0.9322 | 0.2109 | 0.9345 | 0.1791 | 0.9384 |
| | 29 | 0.2419 | 0.9314 | 0.2418 | 0.9337 | 0.1926 | 0.9375 |
| | 30 | 0.2767 | 0.9305 | 0.2748 | 0.9328 | 0.2210 | 0.9365 |
| $\vartheta = (0.1, 0.05, 0.1)$ | 21 | 1.9347 | 0.9452 | 1.9274 | 0.9467 | 1.7167 | 0.9486 |
| | 22 | 2.0184 | 0.9445 | 2.0068 | 0.9455 | 1.8345 | 0.9473 |
| | 23 | 2.2478 | 0.9436 | 2.2027 | 0.9446 | 1.9851 | 0.9462 |
| | 24 | 2.4171 | 0.9427 | 2.4107 | 0.9435 | 2.1082 | 0.9454 |
| | 25 | 2.6218 | 0.9418 | 2.6212 | 0.9428 | 2.3517 | 0.9447 |
| | 26 | 2.8436 | 0.9406 | 2.8335 | 0.9415 | 2.5144 | 0.9438 |
| | 27 | 2.9811 | 0.9396 | 2.9670 | 0.9404 | 2.6834 | 0.9425 |
| | 28 | 3.1105 | 0.9383 | 3.1069 | 0.9392 | 2.8218 | 0.9416 |
| | 29 | 3.3847 | 0.9375 | 3.3824 | 0.9386 | 3.0618 | 0.9404 |
| | 30 | 3.5014 | 0.9363 | 3.5010 | 0.9373 | 3.1995 | 0.9391 |
| $\vartheta = (0.5, 2, 4)$ | 21 | 0.0915 | 0.9405 | 0.0913 | 0.9426 | 0.0756 | 0.9463 |
| | 22 | 0.1063 | 0.9392 | 0.1051 | 0.9414 | 0.0923 | 0.9455 |
| | 23 | 0.1275 | 0.9384 | 0.1269 | 0.9406 | 0.1085 | 0.9446 |
| | 24 | 0.1490 | 0.9375 | 0.1471 | 0.9397 | 0.1233 | 0.9434 |
| | 25 | 0.1708 | 0.9366 | 0.1692 | 0.9382 | 0.1467 | 0.9425 |
| | 26 | 0.1968 | 0.9354 | 0.1938 | 0.9371 | 0.1709 | 0.9417 |
| | 27 | 0.2225 | 0.9342 | 0.2219 | 0.9364 | 0.1835 | 0.9406 |
| | 28 | 0.2537 | 0.9331 | 0.2528 | 0.9356 | 0.2196 | 0.9393 |
| | 29 | 0.2764 | 0.9324 | 0.2755 | 0.9345 | 0.2365 | 0.9385 |
| | 30 | 0.3058 | 0.9316 | 0.3044 | 0.9336 | 0.2610 | 0.9378 |
| $\vartheta = (0.5, 0.05, 0.1)$ | 21 | 2.1524 | 0.9473 | 2.1452 | 0.9484 | 1.9577 | 0.9506 |
| | 22 | 2.3415 | 0.9462 | 2.3316 | 0.9476 | 2.1074 | 0.9494 |
| | 23 | 2.5648 | 0.9454 | 2.5607 | 0.9467 | 2.2846 | 0.9487 |
| | 24 | 2.7186 | 0.9447 | 2.7138 | 0.9459 | 2.4186 | 0.9475 |
| | 25 | 2.9671 | 0.9438 | 2.9600 | 0.9448 | 2.6879 | 0.9466 |
| | 26 | 3.1579 | 0.9427 | 3.1558 | 0.9436 | 2.8177 | 0.9454 |
| | 27 | 3.3575 | 0.9419 | 3.3491 | 0.9424 | 2.9718 | 0.9443 |
| | 28 | 3.6088 | 0.9406 | 3.6044 | 0.9412 | 3.1280 | 0.9436 |
| | 29 | 3.8617 | 0.9395 | 3.8510 | 0.9400 | 3.3978 | 0.9426 |
| | 30 | 4.1971 | 0.9383 | 4.1978 | 0.9393 | 3.5581 | 0.9413 |
| $\vartheta = (0.9, 2, 4)$ | 21 | 0.1086 | 0.9417 | 0.1083 | 0.9436 | 0.0909 | 0.9476 |
| | 22 | 0.1223 | 0.9404 | 0.1216 | 0.9428 | 0.1115 | 0.9465 |
| | 23 | 0.1426 | 0.9392 | 0.1408 | 0.9414 | 0.1230 | 0.9457 |
| | 24 | 0.1637 | 0.9381 | 0.1622 | 0.9405 | 0.1452 | 0.9442 |
| | 25 | 0.1987 | 0.9373 | 0.1971 | 0.9394 | 0.1634 | 0.9436 |
| | 26 | 0.2236 | 0.9365 | 0.2208 | 0.9382 | 0.1821 | 0.9424 |
| | 27 | 0.2539 | 0.9357 | 0.2534 | 0.9373 | 0.2096 | 0.9418 |
| | 28 | 0.2822 | 0.9349 | 0.2819 | 0.9366 | 0.2432 | 0.9403 |
| | 29 | 0.3086 | 0.9340 | 0.3077 | 0.9358 | 0.2580 | 0.9397 |
| | 30 | 0.3351 | 0.9332 | 0.3348 | 0.9346 | 0.2888 | 0.9382 |
| $\vartheta = (0.9, 0.05, 0.1)$ | 21 | 2.3874 | 0.9491 | 2.3682 | 0.9502 | 2.1249 | 0.9519 |
| | 22 | 2.6472 | 0.9482 | 2.6233 | 0.9491 | 2.3385 | 0.9506 |
| | 23 | 2.8829 | 0.9474 | 2.8785 | 0.9483 | 2.5418 | 0.9494 |
| | 24 | 3.1227 | 0.9463 | 3.1156 | 0.9476 | 2.7144 | 0.9483 |
| | 25 | 3.3679 | 0.9457 | 3.3588 | 0.9465 | 2.9288 | 0.9475 |
| | 26 | 3.5937 | 0.9449 | 3.5892 | 0.9459 | 3.0926 | 0.9466 |
| | 27 | 3.8368 | 0.9441 | 3.8358 | 0.9448 | 3.2852 | 0.9454 |
| | 28 | 4.0972 | 0.9434 | 4.0963 | 0.9436 | 3.5211 | 0.9448 |
| | 29 | 4.3386 | 0.9421 | 4.3371 | 0.9427 | 3.7158 | 0.9439 |
| | 30 | 4.5609 | 0.9416 | 4.5621 | 0.9418 | 4.0326 | 0.9430 |

Table 5: Comparison of two approaches of bootstrap for selected cases based on censoring scheme $(n, r) = (20, 12)$.

| s | Direct bootstrap method | | Bootstrap method | | |
|--------------------------------|-------------------------|---------|------------------|--------|--------|
| | AL | CP | AL | CP | |
| $\vartheta = (0.1, 2, 4)$ | 13 | 0.3124 | 0.9418 | 0.0935 | 0.9481 |
| | 15 | 0.3258 | 0.9406 | 0.1742 | 0.9458 |
| | 17 | 0.4385 | 0.9393 | 0.2639 | 0.9436 |
| | 19 | 0.7138 | 0.9381 | 0.3526 | 0.9418 |
| $\vartheta = (0.1, 0.05, 0.1)$ | 13 | 12.4993 | 0.9477 | 2.3718 | 0.9512 |
| | 15 | 13.0323 | 0.9462 | 2.8490 | 0.9493 |
| | 17 | 17.5410 | 0.9451 | 3.3752 | 0.9471 |
| | 19 | 21.5531 | 0.9437 | 3.8243 | 0.9443 |
| $\vartheta = (0.5, 2, 4)$ | 13 | 0.3516 | 0.9424 | 0.1271 | 0.9493 |
| | 15 | 0.3666 | 0.9412 | 0.2553 | 0.9470 |
| | 17 | 0.4934 | 0.9401 | 0.4180 | 0.9446 |
| | 19 | 0.8032 | 0.9390 | 0.5845 | 0.9428 |
| $\vartheta = (0.5, 0.05, 0.1)$ | 13 | 14.0659 | 0.9481 | 2.7183 | 0.9535 |
| | 15 | 14.6657 | 0.9469 | 3.3958 | 0.9512 |
| | 17 | 19.7394 | 0.9455 | 3.8428 | 0.9492 |
| | 19 | 22.1317 | 0.9441 | 4.3419 | 0.9469 |
| $\vartheta = (0.9, 2, 4)$ | 13 | 0.4262 | 0.9411 | 0.1733 | 0.9508 |
| | 15 | 0.4444 | 0.9399 | 0.2950 | 0.9484 |
| | 17 | 0.5981 | 0.9386 | 0.4482 | 0.9462 |
| | 19 | 0.9737 | 0.9374 | 0.6134 | 0.9438 |
| $\vartheta = (0.9, 0.05, 0.1)$ | 13 | 17.0505 | 0.9496 | 3.1938 | 0.9552 |
| | 15 | 17.7776 | 0.9481 | 3.7118 | 0.9533 |
| | 17 | 23.9279 | 0.9469 | 4.3371 | 0.9509 |
| | 19 | 28.9497 | 0.9456 | 4.8983 | 0.9487 |

Table 6: Comparison of two approaches of bootstrap for selected cases for $r = 12$ and $N \sim \text{Bin}(30, 0.8|s)$ with $s = r + 1, \dots, 20$.

| s | Direct bootstrap method | | Bootstrap method | | |
|--------------------------------|-------------------------|---------|------------------|--------|--------|
| | AL | CP | AL | CP | |
| $\vartheta = (0.1, 2, 4)$ | 13 | 0.1956 | 0.9399 | 0.0602 | 0.9463 |
| | 15 | 0.2495 | 0.9385 | 0.0838 | 0.9447 |
| | 17 | 0.2621 | 0.9372 | 0.1362 | 0.9424 |
| | 19 | 0.3817 | 0.9358 | 0.1997 | 0.9407 |
| $\vartheta = (0.1, 0.05, 0.1)$ | 13 | 7.8274 | 0.9456 | 2.0413 | 0.9493 |
| | 15 | 9.9815 | 0.9443 | 2.4382 | 0.9474 |
| | 17 | 10.4865 | 0.9431 | 2.8315 | 0.9454 |
| | 19 | 12.2715 | 0.9417 | 3.2847 | 0.9437 |
| $\vartheta = (0.5, 2, 4)$ | 13 | 0.2391 | 0.9408 | 0.0758 | 0.9476 |
| | 15 | 0.3049 | 0.9396 | 0.1267 | 0.9454 |
| | 17 | 0.3203 | 0.9383 | 0.1889 | 0.9438 |
| | 19 | 0.4665 | 0.9371 | 0.2403 | 0.9416 |
| $\vartheta = (0.5, 0.05, 0.1)$ | 13 | 9.5654 | 0.9470 | 2.3824 | 0.9516 |
| | 15 | 12.1978 | 0.9457 | 2.7286 | 0.9493 |
| | 17 | 12.8149 | 0.9444 | 3.2051 | 0.9474 |
| | 19 | 14.6623 | 0.9430 | 3.7182 | 0.9457 |
| $\vartheta = (0.9, 2, 4)$ | 13 | 0.3679 | 0.9422 | 0.1154 | 0.9486 |
| | 15 | 0.4692 | 0.9408 | 0.2224 | 0.9462 |
| | 17 | 0.4930 | 0.9392 | 0.3169 | 0.9445 |
| | 19 | 0.7179 | 0.9377 | 0.4194 | 0.9428 |
| $\vartheta = (0.9, 0.05, 0.1)$ | 13 | 14.7198 | 0.9482 | 2.6721 | 0.9534 |
| | 15 | 16.7706 | 0.9469 | 3.1144 | 0.9514 |
| | 17 | 19.7202 | 0.9455 | 3.7355 | 0.9496 |
| | 19 | 23.7184 | 0.9441 | 4.2619 | 0.9479 |