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ONE-SIDED TOLERANCE LIMIT TABLES

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ABSTRACT

The tables list K factors used to compute one-sided tolerance limits which can be represented by $\bar{x} + Ks$ or $\bar{x} - Ks$ (upper or lower limits, respectively). Tables are presented with entry by sample size, proportion of population covered, and confidence coefficient. The tables list K factors for $n = 3$ (1) 50 (5) 100 (10) 200, 250, 300 (100) 1000, 9999, and 50000; for proportion of population covered of .50 (.01) .99, .995, .999; and for confidence coefficients of .90, .95, and .99. Examples of the use of the tables are also included.

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ONE-SIDED TOLERANCE LIMIT TABLES

I. INTRODUCTION

Upper and lower 100 (1- α) percent confidence limits may be constructed with the property that when we say these limits include the true value of the parameter, 100 (1- α) percent of all such statements will be correct [1]. For example, the case of the mean [for sample size (n) larger than 29] can be represented as $\bar{x} \pm ks$ where \bar{x} is the mean, k is the corresponding normal deviate divided by \sqrt{n} , and s is the sample standard deviation.

Sometimes it is useful to obtain an interval that covers a fixed proportion of the population distribution with a desired confidence. These intervals are called tolerance intervals and may be constructed such that the interval covers a proportion of the population with a desired confidence. This can be represented by $\bar{x} \pm Ks$ where K is the tolerance factor. As the sample size increases the value of k for confidence intervals approaches zero while K for tolerance intervals approaches the normal deviate that includes the desired proportion of the universe.

Tolerance limits are based on the assumption that the underlying statistical universe is normally distributed. Since μ (the population mean) and σ (the population standard deviation) are not known, the tolerance limits must be based on \bar{x} and s from a random sample of n observations. The quantities \bar{x} and s are random variables and hence the limit depends on the particular outcome of the sample. Different samples

may lead to different limits. Some situations necessitate the use of one-sided tolerance limits (upper or lower) which can be represented by $\bar{x} + Ks$ or $\bar{x} - Ks$. These K values are given in Tables I, II, and III.

Various approximations have been used to calculate K values. Owen [4] [5] discusses the accuracy of four different approximation methods. The enclosed tables are based on the non-central t-distribution and make the use of approximations unnecessary.

II. COVERAGE OF TABLES

Factors K such that $\bar{x} + Ks$ or $\bar{x} - Ks$ is a one-sided tolerance limit for a normally distributed population are given in Table I for 90% confidence, Table II for 95% confidence, and Table III for 99% confidence. These are given for $n = 3$ (1) 50, 55 (5) 100, 110 (10) 200, 250, 300 (100) 1000, 9999, 50000 and for proportion of population covered of .50 (.01) .99, .995, .999.

III. EXAMPLE OF USE OF TABLES

A manufacturer of fuzes would like to specify a single lower limit above which he can be assured with a probability of 95% that at least 99% of his production will lie. A random sample of 30 fuzes is taken and the sample mean and standard deviation are found to be 605.1 and 12.65, respectively. A value of $K = 3.064$ corresponding to $n = 30$ with 95% probability and 99% of population covered is obtained from Table II. The required lower tolerance limit is given by $\bar{x} - Ks = 605.1 - (3.064)(12.65) = 566.3$.

The manufacturer would also like to know with 95% probability what percent of his production will lie above 579.8 using the above data. The K value will be $\frac{\bar{x} - L}{s} = \frac{605.1 - 579.8}{12.65} = \frac{25.3}{12.65} = 2.00$. Table II is searched at $n = 30$ for 2.00. The .93 proportion of population covered column has $K = 2.013$ and the .92 column has $K = 1.927$. A conservative statement would be that the manufacturer can be assured with a probability of 95% that at least 92% of his production will lie above 579.8. Linear interpolation, if necessary, with respect to the proportion of population covered is considered appropriate to use since only small errors can result. More accurate interpolation is accomplished by interpolating with respect to the normal deviate corresponding to the proportion of population covered.

IV. CONSTRUCTION OF TABLES

The values of K given in the tables correspond to percentage points (divided by the square root of n) of the non-central t -distribution. The non-central t statistic, $t_{n-1, \sqrt{n}K_\alpha}$ has $n-1$ degrees of freedom and non-centrality parameter $\sqrt{n}K_\alpha$. K_α is defined by

$$\frac{1}{\sqrt{2\pi}} \int_{K_\alpha}^{\infty} e^{-z^2/2} dz = \alpha.$$

To find K , determine t_0 such that $P[t_{n-1, \sqrt{n}K_\alpha} > t_0] = 1 - \gamma$. Let $K = t_0/\sqrt{n}$ [3]. Then $\bar{x} + Ks$ and $\bar{x} - Ks$ are upper one-sided and lower one-sided tolerance limits, respectively. It can be stated with $100\gamma\%$ confidence that at least $100(1-\alpha)\%$ of the distribution will be less than $\bar{x} + Ks$ (or greater than $\bar{x} - Ks$).

Table IV of Johnson and Welch [2] was used to compute the non-centrality parameter of the non-central t -distribution. An iteration method was necessary and this was performed, in single precision, on a Honeywell 2200 Computer (65K storage). The value ∞ was replaced by 100,000 so interpolation could be performed. The following steps were used:

- A. Determine K_α , the normal deviate exceeded with probability α .
- B. Calculate $\delta = \sqrt{n}K_\alpha$, the non-centrality parameter of the non-central t -distribution, and $f = n-1$, the number of degrees of freedom.
- C. Determine $Z_{(1-\gamma)}$, the normal deviate exceeded with probability $1-\gamma$.
- D. Calculate the first approximation t_1 by

$$\frac{\delta + Z_{(1-\gamma)} \sqrt{1 + \frac{\delta^2}{2f} - \frac{Z_{(1-\gamma)}^2}{2f}}}{1 - \frac{Z_{(1-\gamma)}^2}{2f}}$$

E. Calculate $\frac{t_1}{\sqrt{2f}}$

F. Find $y = \frac{1}{\sqrt{1 + \frac{t_1^2}{2f}}}$ if $\left| \frac{t_1}{\sqrt{2f}} \right|$ is greater than 0.75 or

$y' = \frac{t_1/\sqrt{2f}}{\sqrt{1 + \frac{t_1^2}{2f}}}$ if $\left| \frac{t_1}{\sqrt{2f}} \right|$ is less than 0.75.

G. Obtain $\lambda_1 = \lambda(f, t_1, 1-\gamma)$ from Table IV of Johnson and Welch

H. Calculate a second approximation t_2 where

$$t_2 = \frac{\delta + \lambda_1 \sqrt{1 + \frac{\delta^2}{2f} - \frac{\lambda_1^2}{2f}}}{1 - \frac{\lambda_1^2}{2f}}$$

I. Repeat steps (E) through (H) replacing t_1 by t_2 and calculate a third approximation. Repeat these steps until two successive approximations are the same. Take for $t(f, \delta, 1-\gamma)$ the value so obtained.

J. Calculate $K = \frac{t(f, \delta, 1-\gamma)}{\sqrt{n}}$.

V. ACCURACY

The results in the enclosed tables should be accurate to within .005 and rarely more than .002 from the true value.

ACKNOWLEDGEMENTS

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TABLE I
FACTORS OF ONE-SIDED TOLERANCE LIMITS FOR A NORMAL DISTRIBUTION

90% CONFIDENCE

Proportion of Population Covered —>

| | .50 | .51 | .52 | .53 | .54 | .55 | .56 | .57 | .58 | .59 | .60 | .61 | .62 | .63 | .64 | .65 | .66 | .67 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| N= 3 | 1.089 | 1.136 | 1.184 | 1.234 | 1.283 | 1.334 | 1.386 | 1.439 | 1.492 | 1.547 | 1.602 | 1.659 | 1.717 | 1.776 | 1.836 | 1.898 | 1.961 | 2.025 |
| N= 4 | .819 | .856 | .895 | .933 | .972 | 1.012 | 1.052 | 1.093 | 1.135 | 1.177 | 1.219 | 1.263 | 1.307 | 1.352 | 1.398 | 1.445 | 1.492 | 1.541 |
| N= 5 | .686 | .719 | .753 | .788 | .823 | .858 | .894 | .930 | .967 | 1.004 | 1.042 | 1.080 | 1.119 | 1.158 | 1.198 | 1.239 | 1.281 | 1.323 |
| N= 6 | .602 | .634 | .666 | .698 | .731 | .764 | .797 | .831 | .865 | .900 | .935 | .970 | 1.006 | 1.043 | 1.080 | 1.118 | 1.156 | 1.195 |
| N= 7 | .544 | .575 | .605 | .636 | .667 | .699 | .731 | .763 | .795 | .828 | .862 | .896 | .930 | .965 | 1.000 | 1.036 | 1.072 | 1.109 |
| N= 8 | .500 | .530 | .560 | .590 | .620 | .650 | .681 | .712 | .744 | .776 | .808 | .841 | .874 | .907 | .941 | .976 | 1.011 | 1.047 |
| N= 9 | .466 | .494 | .524 | .553 | .583 | .612 | .643 | .673 | .704 | .734 | .766 | .798 | .830 | .863 | .896 | .930 | .964 | .999 |
| N= 10 | .437 | .466 | .494 | .523 | .552 | .582 | .611 | .641 | .671 | .702 | .732 | .764 | .795 | .827 | .860 | .893 | .926 | .960 |
| N= 11 | .414 | .442 | .470 | .499 | .527 | .556 | .585 | .615 | .644 | .674 | .705 | .735 | .766 | .798 | .830 | .862 | .895 | .928 |
| N= 12 | .394 | .421 | .449 | .478 | .506 | .534 | .563 | .592 | .622 | .651 | .681 | .711 | .742 | .773 | .804 | .836 | .869 | .902 |
| N= 13 | .376 | .404 | .431 | .459 | .487 | .516 | .544 | .573 | .602 | .631 | .661 | .691 | .721 | .752 | .783 | .814 | .846 | .879 |
| N= 14 | .361 | .388 | .416 | .443 | .471 | .499 | .528 | .556 | .585 | .614 | .643 | .673 | .703 | .733 | .764 | .795 | .827 | .859 |
| N= 15 | .347 | .374 | .402 | .429 | .457 | .485 | .513 | .541 | .570 | .598 | .628 | .657 | .687 | .717 | .747 | .778 | .810 | .841 |
| N= 16 | .335 | .362 | .389 | .417 | .444 | .472 | .500 | .528 | .556 | .585 | .614 | .643 | .672 | .702 | .733 | .763 | .794 | .825 |
| N= 17 | .324 | .351 | .378 | .405 | .433 | .460 | .488 | .516 | .544 | .572 | .601 | .630 | .660 | .689 | .719 | .750 | .781 | .812 |
| N= 18 | .314 | .341 | .368 | .395 | .422 | .450 | .477 | .505 | .533 | .561 | .590 | .619 | .648 | .678 | .707 | .738 | .769 | .800 |
| N= 19 | .305 | .332 | .359 | .386 | .413 | .440 | .468 | .495 | .523 | .550 | .580 | .608 | .638 | .667 | .697 | .727 | .757 | .788 |
| N= 20 | .297 | .324 | .350 | .377 | .404 | .431 | .459 | .486 | .514 | .542 | .570 | .599 | .628 | .657 | .687 | .717 | .747 | .778 |
| N= 21 | .289 | .316 | .342 | .369 | .396 | .423 | .450 | .478 | .506 | .534 | .562 | .590 | .619 | .648 | .678 | .708 | .738 | .769 |
| N= 22 | .282 | .309 | .335 | .362 | .389 | .416 | .443 | .470 | .498 | .526 | .554 | .582 | .611 | .640 | .669 | .699 | .729 | .760 |
| N= 23 | .276 | .302 | .328 | .355 | .382 | .409 | .436 | .463 | .491 | .518 | .546 | .575 | .603 | .632 | .662 | .691 | .721 | .752 |
| N= 24 | .270 | .296 | .322 | .349 | .375 | .402 | .429 | .457 | .484 | .512 | .540 | .568 | .596 | .625 | .654 | .684 | .714 | .744 |
| N= 25 | .264 | .290 | .316 | .343 | .369 | .396 | .423 | .450 | .478 | .505 | .533 | .561 | .590 | .618 | .648 | .677 | .707 | .737 |
| N= 26 | .258 | .284 | .311 | .337 | .364 | .391 | .417 | .445 | .472 | .499 | .527 | .555 | .584 | .612 | .641 | .671 | .700 | .730 |
| N= 27 | .253 | .279 | .306 | .332 | .358 | .385 | .412 | .439 | .466 | .494 | .522 | .550 | .578 | .606 | .635 | .665 | .694 | .724 |
| N= 28 | .248 | .274 | .301 | .327 | .354 | .380 | .407 | .434 | .461 | .489 | .516 | .544 | .572 | .601 | .630 | .659 | .689 | .719 |
| N= 29 | .244 | .270 | .296 | .322 | .349 | .375 | .402 | .429 | .456 | .484 | .511 | .539 | .567 | .596 | .625 | .654 | .683 | .713 |
| N= 30 | .239 | .266 | .292 | .318 | .344 | .371 | .398 | .424 | .452 | .479 | .506 | .534 | .562 | .591 | .620 | .649 | .678 | .708 |
| N= 31 | .235 | .261 | .288 | .314 | .340 | .367 | .393 | .420 | .447 | .474 | .502 | .530 | .558 | .586 | .615 | .644 | .673 | .703 |
| N= 32 | .231 | .257 | .284 | .310 | .336 | .363 | .389 | .416 | .443 | .470 | .498 | .525 | .553 | .582 | .610 | .639 | .669 | .699 |
| N= 33 | .228 | .254 | .280 | .306 | .332 | .359 | .385 | .412 | .439 | .466 | .494 | .521 | .549 | .578 | .606 | .635 | .664 | .694 |
| N= 34 | .224 | .250 | .276 | .302 | .329 | .355 | .382 | .408 | .435 | .462 | .490 | .517 | .545 | .574 | .602 | .631 | .660 | .690 |
| N= 35 | .221 | .247 | .273 | .299 | .325 | .352 | .378 | .405 | .432 | .459 | .486 | .514 | .542 | .570 | .598 | .627 | .656 | .686 |
| N= 36 | .218 | .244 | .270 | .296 | .322 | .348 | .375 | .401 | .428 | .455 | .483 | .510 | .538 | .566 | .595 | .623 | .653 | .682 |
| N= 37 | .215 | .240 | .266 | .292 | .319 | .345 | .371 | .398 | .425 | .452 | .479 | .505 | .533 | .561 | .590 | .620 | .650 | .680 |
| N= 38 | .212 | .237 | .263 | .289 | .316 | .342 | .368 | .395 | .422 | .449 | .476 | .504 | .531 | .559 | .588 | .616 | .646 | .675 |
| N= 39 | .209 | .235 | .261 | .287 | .313 | .339 | .365 | .392 | .419 | .446 | .473 | .500 | .528 | .556 | .584 | .613 | .642 | .672 |
| N= 40 | .206 | .232 | .258 | .284 | .310 | .336 | .363 | .389 | .416 | .443 | .470 | .497 | .525 | .553 | .581 | .610 | .639 | .668 |
| N= 41 | .203 | .229 | .255 | .281 | .307 | .333 | .360 | .386 | .413 | .440 | .467 | .495 | .522 | .550 | .578 | .607 | .636 | .665 |
| N= 42 | .201 | .227 | .253 | .279 | .305 | .331 | .357 | .384 | .410 | .437 | .464 | .492 | .519 | .547 | .576 | .604 | .633 | .662 |
| N= 43 | .199 | .224 | .250 | .276 | .302 | .328 | .355 | .381 | .408 | .435 | .462 | .489 | .517 | .545 | .573 | .601 | .630 | .660 |
| N= 44 | .196 | .222 | .248 | .274 | .300 | .326 | .352 | .379 | .405 | .432 | .459 | .487 | .514 | .542 | .570 | .599 | .628 | .658 |
| N= 45 | .194 | .220 | .245 | .271 | .297 | .324 | .350 | .376 | .403 | .430 | .457 | .484 | .512 | .540 | .568 | .596 | .625 | .654 |
| N= 46 | .192 | .217 | .243 | .269 | .295 | .321 | .348 | .374 | .401 | .427 | .454 | .482 | .509 | .537 | .565 | .594 | .622 | .652 |
| N= 47 | .190 | .215 | .241 | .267 | .293 | .319 | .345 | .372 | .398 | .425 | .452 | .479 | .507 | .535 | .563 | .591 | .620 | .649 |
| N= 48 | .188 | .213 | .239 | .265 | .291 | .317 | .343 | .370 | .396 | .423 | .450 | .477 | .505 | .532 | .561 | .589 | .618 | .647 |
| N= 49 | .186 | .211 | .237 | .263 | .289 | .315 | .341 | .368 | .394 | .421 | .448 | .475 | .502 | .530 | .558 | .587 | .615 | .645 |
| N= 50 | .184 | .209 | .235 | .261 | .287 | .313 | .339 | .365 | .392 | .419 | .446 | .473 | .500 | .528 | .556 | .585 | .613 | .642 |
| N= 55 | .175 | .201 | .226 | .252 | .278 | .304 | .330 | .356 | .383 | .409 | .436 | .463 | .491 | .518 | .546 | .575 | .603 | .632 |
| N= 60 | .167 | .193 | .219 | .244 | .270 | .295 | .322 | .348 | .375 | .401 | .428 | .455 | .482 | .510 | .538 | .565 | .595 | .623 |
| N= 65 | .161 | .186 | .212 | .237 | .263 | .289 | .315 | .341 | .368 | .394 | .421 | .448 | .475 | .502 | .530 | .558 | .587 | .616 |
| N= 70 | .155 | .180 | .206 | .231 | .257 | .283 | .309 | .335 | .361 | .388 | .415 | .441 | .469 | .496 | .524 | .552 | .580 | .609 |
| N= 75 | .149 | .175 | .200 | .226 | .252 | .277 | .303 | .329 | .356 | .382 | .409 | .436 | .463 | .490 | .518 | .546 | .574 | .603 |
| N= 80 | .144 | .170 | .195 | .221 | .247 | .273 | .299 | .325 | .351 | .377 | .404 | .430 | .457 | .484 | .511 | .538 | .565 | .593 |

Proportion of Population Covered →

| | .58 | .59 | .70 | .71 | .72 | .73 | .74 | .75 | .76 | .77 | .78 | .79 | .80 | .81 | .82 | .83 | .84 | .85 |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| N= 3 | 2.091 | 2.159 | 2.228 | 2.299 | 2.372 | 2.447 | 2.524 | 2.603 | 2.684 | 2.769 | 2.856 | 2.946 | 3.039 | 3.136 | 3.237 | 3.343 | 3.453 | 3.569 |
| N= 4 | 1.590 | 1.641 | 1.693 | 1.746 | 1.800 | 1.856 | 1.913 | 1.972 | 2.033 | 2.095 | 2.159 | 2.226 | 2.295 | 2.366 | 2.441 | 2.518 | 2.599 | 2.684 |
| N= 5 | 1.365 | 1.411 | 1.456 | 1.502 | 1.549 | 1.597 | 1.647 | 1.698 | 1.750 | 1.804 | 1.859 | 1.917 | 1.976 | 2.038 | 2.101 | 2.168 | 2.237 | 2.310 |
| N= 6 | 1.235 | 1.276 | 1.317 | 1.360 | 1.403 | 1.448 | 1.494 | 1.540 | 1.588 | 1.637 | 1.688 | 1.740 | 1.795 | 1.850 | 1.909 | 1.970 | 2.033 | 2.100 |
| N= 7 | 1.147 | 1.186 | 1.225 | 1.265 | 1.306 | 1.348 | 1.391 | 1.435 | 1.480 | 1.527 | 1.575 | 1.624 | 1.676 | 1.728 | 1.783 | 1.841 | 1.900 | 1.963 |
| N= 8 | 1.083 | 1.120 | 1.158 | 1.197 | 1.236 | 1.276 | 1.318 | 1.360 | 1.403 | 1.448 | 1.494 | 1.541 | 1.590 | 1.641 | 1.693 | 1.748 | 1.805 | 1.865 |
| N= 9 | 1.034 | 1.070 | 1.107 | 1.144 | 1.182 | 1.221 | 1.261 | 1.302 | 1.344 | 1.388 | 1.432 | 1.478 | 1.525 | 1.574 | 1.625 | 1.678 | 1.734 | 1.791 |
| N= 10 | .995 | 1.030 | 1.066 | 1.102 | 1.139 | 1.178 | 1.217 | 1.257 | 1.298 | 1.340 | 1.383 | 1.428 | 1.474 | 1.522 | 1.572 | 1.623 | 1.677 | 1.733 |
| N= 11 | .962 | .997 | 1.032 | 1.068 | 1.104 | 1.142 | 1.180 | 1.219 | 1.260 | 1.301 | 1.343 | 1.387 | 1.432 | 1.479 | 1.528 | 1.578 | 1.631 | 1.686 |
| N= 12 | .935 | .969 | 1.005 | 1.041 | 1.077 | 1.112 | 1.150 | 1.188 | 1.228 | 1.268 | 1.310 | 1.353 | 1.398 | 1.444 | 1.491 | 1.541 | 1.593 | 1.647 |
| N= 13 | .912 | .945 | .980 | 1.014 | 1.050 | 1.086 | 1.123 | 1.162 | 1.201 | 1.241 | 1.282 | 1.324 | 1.368 | 1.414 | 1.461 | 1.509 | 1.560 | 1.614 |
| N= 14 | .892 | .925 | .959 | .993 | 1.028 | 1.064 | 1.101 | 1.139 | 1.177 | 1.217 | 1.258 | 1.299 | 1.343 | 1.388 | 1.434 | 1.482 | 1.532 | 1.585 |
| N= 15 | .874 | .907 | .940 | .974 | 1.009 | 1.045 | 1.081 | 1.119 | 1.157 | 1.196 | 1.236 | 1.278 | 1.321 | 1.365 | 1.411 | 1.458 | 1.504 | 1.560 |
| N= 16 | .858 | .891 | .924 | .958 | .992 | 1.028 | 1.064 | 1.101 | 1.139 | 1.177 | 1.217 | 1.258 | 1.301 | 1.345 | 1.390 | 1.438 | 1.487 | 1.538 |
| N= 17 | .844 | .876 | .909 | .943 | .977 | 1.012 | 1.048 | 1.085 | 1.122 | 1.161 | 1.201 | 1.241 | 1.283 | 1.327 | 1.372 | 1.419 | 1.468 | 1.519 |
| N= 18 | .831 | .864 | .896 | .930 | .964 | .999 | 1.034 | 1.071 | 1.108 | 1.146 | 1.185 | 1.226 | 1.268 | 1.311 | 1.356 | 1.402 | 1.451 | 1.501 |
| N= 19 | .820 | .852 | .885 | .918 | .952 | .986 | 1.021 | 1.058 | 1.095 | 1.133 | 1.172 | 1.212 | 1.254 | 1.296 | 1.341 | 1.387 | 1.435 | 1.485 |
| N= 20 | .809 | .841 | .874 | .907 | .940 | .975 | 1.010 | 1.046 | 1.083 | 1.120 | 1.159 | 1.199 | 1.241 | 1.283 | 1.327 | 1.373 | 1.421 | 1.471 |
| N= 21 | .800 | .831 | .864 | .897 | .930 | .964 | .999 | 1.035 | 1.072 | 1.109 | 1.148 | 1.188 | 1.229 | 1.271 | 1.315 | 1.361 | 1.408 | 1.458 |
| N= 22 | .791 | .822 | .855 | .887 | .921 | .954 | .990 | 1.025 | 1.062 | 1.099 | 1.137 | 1.177 | 1.218 | 1.260 | 1.304 | 1.349 | 1.396 | 1.446 |
| N= 23 | .783 | .814 | .846 | .879 | .912 | .946 | .981 | 1.016 | 1.052 | 1.090 | 1.128 | 1.167 | 1.208 | 1.250 | 1.293 | 1.338 | 1.385 | 1.435 |
| N= 24 | .775 | .806 | .838 | .871 | .904 | .938 | .972 | 1.007 | 1.044 | 1.081 | 1.119 | 1.158 | 1.198 | 1.240 | 1.284 | 1.329 | 1.375 | 1.424 |
| N= 25 | .768 | .799 | .831 | .863 | .896 | .930 | .964 | 1.000 | 1.036 | 1.072 | 1.110 | 1.150 | 1.190 | 1.231 | 1.275 | 1.319 | 1.366 | 1.415 |
| N= 26 | .761 | .792 | .824 | .856 | .889 | .923 | .957 | .992 | 1.028 | 1.065 | 1.103 | 1.142 | 1.182 | 1.223 | 1.266 | 1.311 | 1.357 | 1.406 |
| N= 27 | .755 | .786 | .818 | .850 | .883 | .916 | .950 | .984 | 1.019 | 1.055 | 1.093 | 1.132 | 1.174 | 1.218 | 1.261 | 1.303 | 1.349 | 1.397 |
| N= 28 | .749 | .780 | .812 | .844 | .876 | .910 | .944 | .979 | 1.014 | 1.051 | 1.089 | 1.127 | 1.167 | 1.208 | 1.251 | 1.295 | 1.341 | 1.390 |
| N= 29 | .744 | .775 | .806 | .838 | .871 | .904 | .938 | .973 | 1.008 | 1.045 | 1.082 | 1.121 | 1.160 | 1.202 | 1.244 | 1.288 | 1.334 | 1.382 |
| N= 30 | .738 | .769 | .801 | .832 | .865 | .898 | .932 | .967 | 1.002 | 1.039 | 1.076 | 1.114 | 1.154 | 1.195 | 1.238 | 1.282 | 1.327 | 1.375 |
| N= 31 | .733 | .764 | .795 | .827 | .860 | .893 | .927 | .961 | .997 | 1.033 | 1.070 | 1.109 | 1.148 | 1.189 | 1.231 | 1.275 | 1.321 | 1.369 |
| N= 32 | .729 | .759 | .791 | .822 | .855 | .888 | .922 | .956 | .991 | 1.028 | 1.065 | 1.103 | 1.143 | 1.183 | 1.226 | 1.269 | 1.315 | 1.363 |
| N= 33 | .724 | .755 | .786 | .818 | .850 | .883 | .917 | .951 | .986 | 1.023 | 1.060 | 1.098 | 1.137 | 1.178 | 1.220 | 1.264 | 1.309 | 1.357 |
| N= 34 | .720 | .751 | .782 | .813 | .846 | .879 | .912 | .946 | .982 | 1.018 | 1.055 | 1.093 | 1.132 | 1.173 | 1.215 | 1.258 | 1.304 | 1.351 |
| N= 35 | .716 | .747 | .778 | .810 | .841 | .874 | .908 | .942 | .977 | 1.013 | 1.050 | 1.088 | 1.127 | 1.168 | 1.210 | 1.253 | 1.299 | 1.346 |
| N= 36 | .712 | .743 | .774 | .805 | .837 | .870 | .904 | .938 | .973 | 1.009 | 1.046 | 1.084 | 1.123 | 1.163 | 1.205 | 1.248 | 1.294 | 1.341 |
| N= 37 | .708 | .739 | .770 | .801 | .833 | .866 | .900 | .934 | .969 | 1.005 | 1.041 | 1.079 | 1.118 | 1.159 | 1.200 | 1.244 | 1.289 | 1.336 |
| N= 38 | .705 | .735 | .766 | .798 | .830 | .862 | .896 | .930 | .965 | 1.001 | 1.037 | 1.075 | 1.114 | 1.154 | 1.196 | 1.239 | 1.284 | 1.331 |
| N= 39 | .702 | .732 | .763 | .794 | .826 | .859 | .892 | .926 | .961 | .997 | 1.033 | 1.071 | 1.110 | 1.150 | 1.192 | 1.235 | 1.280 | 1.327 |
| N= 40 | .698 | .729 | .759 | .791 | .823 | .855 | .889 | .923 | .957 | .993 | 1.030 | 1.067 | 1.106 | 1.146 | 1.188 | 1.231 | 1.276 | 1.323 |
| N= 41 | .695 | .726 | .756 | .788 | .819 | .852 | .885 | .919 | .954 | .990 | 1.026 | 1.064 | 1.103 | 1.143 | 1.184 | 1.227 | 1.272 | 1.319 |
| N= 42 | .692 | .722 | .753 | .784 | .816 | .849 | .882 | .916 | .951 | .986 | 1.023 | 1.060 | 1.099 | 1.139 | 1.180 | 1.223 | 1.268 | 1.315 |
| N= 43 | .689 | .720 | .750 | .781 | .813 | .846 | .879 | .913 | .947 | .982 | 1.019 | 1.057 | 1.096 | 1.136 | 1.177 | 1.220 | 1.264 | 1.311 |
| N= 44 | .687 | .717 | .747 | .779 | .810 | .843 | .876 | .910 | .944 | .980 | 1.016 | 1.054 | 1.093 | 1.133 | 1.173 | 1.216 | 1.261 | 1.307 |
| N= 45 | .684 | .714 | .745 | .776 | .808 | .840 | .874 | .907 | .941 | .977 | 1.013 | 1.051 | 1.089 | 1.129 | 1.170 | 1.213 | 1.257 | 1.304 |
| N= 46 | .681 | .711 | .742 | .773 | .805 | .837 | .870 | .904 | .938 | .974 | 1.010 | 1.048 | 1.086 | 1.126 | 1.167 | 1.210 | 1.254 | 1.301 |
| N= 47 | .679 | .709 | .740 | .771 | .802 | .835 | .868 | .901 | .936 | .971 | 1.007 | 1.045 | 1.083 | 1.123 | 1.164 | 1.207 | 1.251 | 1.297 |
| N= 48 | .676 | .707 | .737 | .768 | .800 | .832 | .865 | .899 | .933 | .968 | 1.005 | 1.042 | 1.080 | 1.120 | 1.161 | 1.204 | 1.248 | 1.294 |
| N= 49 | .674 | .704 | .735 | .766 | .797 | .830 | .862 | .896 | .930 | .966 | 1.002 | 1.039 | 1.078 | 1.117 | 1.158 | 1.201 | 1.245 | 1.291 |
| N= 50 | .672 | .702 | .732 | .763 | .795 | .827 | .860 | .894 | .928 | .963 | .999 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 | 1.242 | 1.288 |
| N= 55 | .662 | .692 | .722 | .753 | .784 | .816 | .849 | .882 | .917 | .952 | .988 | 1.025 | 1.062 | 1.102 | 1.143 | 1.185 | 1.229 | 1.275 |
| N= 60 | .653 | .683 | .713 | .744 | .775 | .807 | .839 | .873 | .907 | .942 | .978 | 1.014 | 1.052 | 1.092 | 1.132 | 1.174 | 1.218 | 1.264 |
| N= 65 | .645 | .675 | .705 | .735 | .767 | .799 | .831 | .864 | .898 | .933 | .969 | 1.005 | 1.043 | 1.082 | 1.123 | 1.165 | 1.208 | 1.254 |
| N= 70 | .638 | .668 | .698 | .728 | .760 | .791 | .824 | .857 | .891 | .925 | .961 | .998 | 1.035 | 1.074 | 1.114 | 1.156 | 1.200 | 1.245 |
| N= 75 | .632 | .661 | .691 | .721 | .752 | .783 | .815 | .847 | .880 | .914 | .949 | .985 | 1.022 | 1.061 | 1.101 | 1.142 | 1.185 | 1.230 |
| N= 80 | .626 | .655 | .685 | .715 | .746 | .777 | .808 | .840 | .872 | .906 | .941 | .977 | 1.014 | 1.052 | 1.091 | 1.132 | 1.174 | 1.219 |
| N= 85 | .621 | .650 | .680 | .710 | .741 | .772 | .803 | .834 | .866 | .899 | .933 | .968 | 1.005 | 1.043 | 1.082 | 1.123 | 1.165 | 1.208 |
| N= 90 | .616 | .645 | .675 | .705 | .736 | .767 | .798 | .829 | .861 | .894 | .928 | .963 | 1.000 | 1.038 | 1.077 | 1.118 | 1.159 | 1.201 |
| N= 95 | .611 | .640 | .670 | .700 | .731 | .762 | .793 | .824 | .856 | .889 | .923 | .957 | 1.000 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 |
| N= 100 | .606 | .635 | .665 | .695 | .726 | .757 | .788 | .819 | .851 | .884 | .918 | .952 | 1.000 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 |
| N= 105 | .601 | .630 | .660 | .690 | .721 | .752 | .783 | .814 | .846 | .879 | .913 | .947 | 1.000 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 |
| N= 110 | .596 | .625 | .655 | .685 | .716 | .747 | .778 | .809 | .841 | .874 | .908 | .942 | 1.000 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 |
| N= 115 | .591 | .620 | .650 | .680 | .711 | .742 | .773 | .804 | .836 | .869 | .903 | .937 | 1.000 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 |
| N= 120 | .586 | .615 | .645 | .675 | .706 | .737 | .768 | .800 | .832 | .865 | .899 | .933 | 1.000 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 |
| N= 125 | .581 | .610 | .640 | .670 | .701 | .732 | .763 | .795 | .827 | .860 | .894 | .928 | 1.000 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 |
| N= 130 | .576 | .605 | .635 | .665 | .696 | .727 | .758 | .790 | .822 | .855 | .888 | .922 | 1.000 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 |
| N= 135 | .571 | .600 | .630 | .660 | .691 | .722 | .753 | .785 | .817 | .850 | .883 | .917 | 1.000 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 |
| N= 140 | .566 | .595 | .625 | .655 | .686 | .717 | .748 | .780 | .812 | .845 | .878 | .912 | 1.000 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 |
| N= 145 | .561 | .590 | .620 | .650 | .681 | .712 | .743 | .775 | .807 | .840 | .873 | .907 | 1.000 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 |
| N= 150 | .556 | .585 | .615 | .645 | .676 | .707 | .738 | .770 | .802 | .835 | .868 | .902 | 1.000 | | | | | |

| | | | | | | | | | | | | | | | | | | |
|---------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| N= 13 | .912 | .945 | .980 | 1.014 | 1.050 | 1.086 | 1.123 | 1.162 | 1.201 | 1.241 | 1.282 | 1.324 | 1.368 | 1.414 | 1.461 | 1.509 | 1.560 | 1.614 |
| N= 14 | .892 | .925 | .959 | 1.028 | 1.064 | 1.101 | 1.139 | 1.177 | 1.217 | 1.258 | 1.299 | 1.343 | 1.388 | 1.434 | 1.482 | 1.532 | 1.586 | 1.645 |
| N= 15 | .874 | .907 | .940 | .974 | 1.009 | 1.045 | 1.081 | 1.119 | 1.157 | 1.196 | 1.236 | 1.278 | 1.321 | 1.365 | 1.411 | 1.458 | 1.508 | 1.560 |
| N= 16 | .858 | .891 | .924 | .958 | .992 | 1.028 | 1.064 | 1.101 | 1.139 | 1.177 | 1.215 | 1.255 | 1.296 | 1.339 | 1.383 | 1.428 | 1.477 | 1.530 |
| N= 17 | .844 | .876 | .909 | .943 | .977 | 1.012 | 1.048 | 1.085 | 1.122 | 1.161 | 1.201 | 1.241 | 1.282 | 1.327 | 1.372 | 1.419 | 1.468 | 1.519 |
| N= 18 | .831 | .864 | .896 | .930 | .964 | .999 | 1.034 | 1.071 | 1.108 | 1.146 | 1.185 | 1.226 | 1.268 | 1.311 | 1.356 | 1.402 | 1.451 | 1.501 |
| N= 19 | .820 | .852 | .885 | .918 | .952 | .986 | 1.021 | 1.058 | 1.095 | 1.133 | 1.172 | 1.212 | 1.254 | 1.296 | 1.341 | 1.387 | 1.435 | 1.485 |
| N= 20 | .809 | .841 | .874 | .907 | .940 | .975 | 1.010 | 1.046 | 1.083 | 1.120 | 1.159 | 1.199 | 1.241 | 1.283 | 1.327 | 1.373 | 1.421 | 1.471 |
| N= 21 | .800 | .831 | .864 | .897 | .930 | .964 | .999 | 1.035 | 1.072 | 1.109 | 1.148 | 1.188 | 1.229 | 1.271 | 1.315 | 1.361 | 1.408 | 1.458 |
| N= 22 | .791 | .822 | .855 | .887 | .921 | .955 | .990 | 1.025 | 1.062 | 1.099 | 1.137 | 1.177 | 1.218 | 1.260 | 1.304 | 1.349 | 1.396 | 1.446 |
| N= 23 | .783 | .814 | .846 | .879 | .912 | .946 | .981 | 1.016 | 1.052 | 1.089 | 1.128 | 1.167 | 1.208 | 1.250 | 1.293 | 1.338 | 1.385 | 1.435 |
| N= 24 | .775 | .805 | .838 | .871 | .904 | .938 | .972 | 1.007 | 1.043 | 1.081 | 1.119 | 1.158 | 1.198 | 1.240 | 1.284 | 1.329 | 1.375 | 1.424 |
| N= 25 | .768 | .799 | .831 | .863 | .896 | .930 | .964 | 1.000 | 1.036 | 1.072 | 1.110 | 1.150 | 1.190 | 1.231 | 1.275 | 1.319 | 1.366 | 1.415 |
| N= 26 | .761 | .792 | .824 | .856 | .888 | .922 | .956 | .992 | 1.028 | 1.065 | 1.103 | 1.143 | 1.182 | 1.223 | 1.266 | 1.311 | 1.357 | 1.406 |
| N= 27 | .755 | .786 | .818 | .850 | .883 | .916 | .950 | .985 | 1.021 | 1.058 | 1.095 | 1.134 | 1.174 | 1.216 | 1.258 | 1.303 | 1.349 | 1.397 |
| N= 28 | .749 | .780 | .812 | .844 | .876 | .909 | .942 | .975 | 1.011 | 1.048 | 1.089 | 1.127 | 1.167 | 1.208 | 1.251 | 1.295 | 1.341 | 1.390 |
| N= 29 | .744 | .775 | .806 | .838 | .871 | .904 | .938 | .972 | 1.008 | 1.045 | 1.082 | 1.121 | 1.160 | 1.202 | 1.244 | 1.288 | 1.334 | 1.382 |
| N= 30 | .738 | .769 | .801 | .832 | .865 | .898 | .932 | .967 | 1.002 | 1.039 | 1.076 | 1.114 | 1.154 | 1.195 | 1.238 | 1.282 | 1.327 | 1.375 |
| N= 31 | .733 | .764 | .795 | .827 | .859 | .892 | .925 | .958 | .991 | 1.028 | 1.065 | 1.103 | 1.143 | 1.184 | 1.226 | 1.269 | 1.315 | 1.363 |
| N= 32 | .729 | .759 | .791 | .822 | .855 | .888 | .922 | .956 | .991 | 1.028 | 1.065 | 1.103 | 1.143 | 1.184 | 1.226 | 1.269 | 1.315 | 1.363 |
| N= 33 | .724 | .755 | .786 | .818 | .850 | .883 | .917 | .951 | .986 | 1.023 | 1.060 | 1.098 | 1.137 | 1.178 | 1.220 | 1.264 | 1.309 | 1.357 |
| N= 34 | .720 | .751 | .782 | .813 | .845 | .876 | .908 | .942 | .977 | 1.013 | 1.050 | 1.088 | 1.127 | 1.168 | 1.210 | 1.253 | 1.300 | 1.351 |
| N= 35 | .716 | .747 | .778 | .809 | .841 | .874 | .908 | .942 | .977 | 1.013 | 1.050 | 1.088 | 1.127 | 1.168 | 1.210 | 1.253 | 1.299 | 1.346 |
| N= 36 | .712 | .743 | .774 | .805 | .837 | .870 | .904 | .938 | .973 | 1.009 | 1.046 | 1.084 | 1.123 | 1.163 | 1.205 | 1.248 | 1.294 | 1.341 |
| N= 37 | .708 | .739 | .770 | .801 | .833 | .866 | .900 | .934 | .969 | 1.005 | 1.041 | 1.079 | 1.118 | 1.159 | 1.200 | 1.244 | 1.289 | 1.336 |
| N= 38 | .705 | .735 | .766 | .798 | .830 | .862 | .896 | .930 | .965 | 1.001 | 1.037 | 1.075 | 1.114 | 1.154 | 1.196 | 1.239 | 1.284 | 1.331 |
| N= 39 | .702 | .732 | .763 | .794 | .826 | .859 | .892 | .926 | .961 | .997 | 1.033 | 1.071 | 1.110 | 1.150 | 1.192 | 1.235 | 1.280 | 1.327 |
| N= 40 | .698 | .729 | .759 | .791 | .823 | .855 | .889 | .923 | .957 | .993 | 1.030 | 1.067 | 1.106 | 1.146 | 1.188 | 1.231 | 1.276 | 1.323 |
| N= 41 | .695 | .726 | .756 | .788 | .820 | .852 | .885 | .919 | .954 | .990 | 1.026 | 1.064 | 1.103 | 1.143 | 1.184 | 1.227 | 1.272 | 1.319 |
| N= 42 | .692 | .722 | .753 | .784 | .816 | .848 | .882 | .916 | .951 | .986 | 1.023 | 1.060 | 1.099 | 1.139 | 1.180 | 1.223 | 1.268 | 1.315 |
| N= 43 | .689 | .720 | .750 | .782 | .813 | .846 | .879 | .913 | .947 | .983 | 1.019 | 1.057 | 1.096 | 1.136 | 1.177 | 1.220 | 1.264 | 1.311 |
| N= 44 | .687 | .717 | .747 | .779 | .810 | .843 | .876 | .910 | .944 | .980 | 1.016 | 1.054 | 1.092 | 1.132 | 1.173 | 1.216 | 1.261 | 1.307 |
| N= 45 | .684 | .714 | .745 | .776 | .808 | .840 | .873 | .907 | .941 | .977 | 1.013 | 1.051 | 1.089 | 1.129 | 1.170 | 1.213 | 1.257 | 1.304 |
| N= 46 | .681 | .711 | .742 | .773 | .805 | .837 | .870 | .904 | .938 | .974 | 1.010 | 1.048 | 1.086 | 1.126 | 1.167 | 1.210 | 1.254 | 1.301 |
| N= 47 | .679 | .709 | .740 | .771 | .802 | .835 | .868 | .901 | .936 | .971 | 1.007 | 1.045 | 1.083 | 1.123 | 1.164 | 1.207 | 1.251 | 1.297 |
| N= 48 | .676 | .707 | .737 | .768 | .800 | .832 | .865 | .899 | .933 | .968 | 1.005 | 1.042 | 1.080 | 1.120 | 1.161 | 1.204 | 1.248 | 1.294 |
| N= 49 | .674 | .704 | .735 | .766 | .797 | .830 | .862 | .896 | .930 | .966 | 1.002 | 1.039 | 1.078 | 1.117 | 1.158 | 1.201 | 1.245 | 1.291 |
| N= 50 | .672 | .702 | .732 | .763 | .795 | .827 | .860 | .894 | .928 | .963 | .999 | 1.037 | 1.075 | 1.114 | 1.155 | 1.198 | 1.242 | 1.288 |
| N= 55 | .662 | .692 | .722 | .753 | .784 | .816 | .849 | .882 | .917 | .952 | .988 | 1.025 | 1.063 | 1.102 | 1.143 | 1.185 | 1.229 | 1.275 |
| N= 60 | .653 | .683 | .713 | .743 | .773 | .803 | .833 | .863 | .893 | .923 | .953 | 1.014 | 1.052 | 1.092 | 1.132 | 1.174 | 1.218 | 1.264 |
| N= 65 | .645 | .675 | .705 | .735 | .765 | .795 | .825 | .855 | .885 | .915 | .945 | 1.005 | 1.043 | 1.082 | 1.123 | 1.165 | 1.208 | 1.254 |
| N= 70 | .638 | .668 | .698 | .728 | .758 | .788 | .818 | .848 | .878 | .908 | .938 | .998 | 1.035 | 1.074 | 1.114 | 1.156 | 1.200 | 1.245 |
| N= 75 | .632 | .661 | .691 | .721 | .751 | .781 | .811 | .841 | .871 | .901 | .931 | .991 | 1.028 | 1.067 | 1.107 | 1.149 | 1.192 | 1.237 |
| N= 80 | .626 | .656 | .686 | .716 | .746 | .776 | .806 | .836 | .866 | .896 | .926 | 1.000 | 1.037 | 1.076 | 1.117 | 1.158 | 1.201 | 1.245 |
| N= 85 | .621 | .651 | .681 | .711 | .741 | .771 | .801 | .831 | .861 | .891 | .921 | .995 | 1.032 | 1.071 | 1.112 | 1.153 | 1.195 | 1.239 |
| N= 90 | .617 | .646 | .676 | .706 | .736 | .766 | .796 | .826 | .856 | .886 | .916 | .990 | 1.027 | 1.066 | 1.107 | 1.148 | 1.189 | 1.233 |
| N= 95 | .613 | .642 | .672 | .702 | .732 | .762 | .792 | .822 | .852 | .882 | .912 | .986 | 1.023 | 1.062 | 1.103 | 1.144 | 1.185 | 1.229 |
| N= 100 | .609 | .638 | .668 | .698 | .728 | .758 | .788 | .818 | .848 | .878 | .908 | .982 | 1.019 | 1.058 | 1.099 | 1.140 | 1.181 | 1.225 |
| N= 110 | .602 | .631 | .661 | .691 | .721 | .751 | .781 | .811 | .841 | .871 | .901 | .975 | 1.012 | 1.051 | 1.092 | 1.133 | 1.174 | 1.218 |
| N= 120 | .596 | .625 | .655 | .685 | .715 | .745 | .775 | .805 | .835 | .865 | .895 | .969 | 1.006 | 1.045 | 1.086 | 1.127 | 1.168 | 1.212 |
| N= 130 | .591 | .620 | .649 | .679 | .709 | .739 | .769 | .799 | .829 | .859 | .889 | .963 | 1.000 | 1.039 | 1.080 | 1.121 | 1.162 | 1.206 |
| N= 140 | .586 | .615 | .645 | .675 | .705 | .735 | .765 | .795 | .825 | .855 | .885 | .959 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 150 | .582 | .611 | .640 | .670 | .700 | .730 | .760 | .790 | .820 | .850 | .880 | .954 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 160 | .578 | .607 | .636 | .666 | .696 | .726 | .756 | .786 | .816 | .846 | .876 | .950 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 170 | .575 | .604 | .633 | .663 | .693 | .723 | .753 | .783 | .813 | .843 | .873 | .947 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 180 | .571 | .600 | .629 | .659 | .689 | .719 | .749 | .779 | .809 | .839 | .869 | .943 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 190 | .569 | .598 | .627 | .657 | .687 | .717 | .747 | .777 | .807 | .837 | .867 | .941 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 200 | .566 | .595 | .624 | .654 | .684 | .714 | .744 | .774 | .804 | .834 | .864 | .938 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 250 | .555 | .584 | .613 | .643 | .673 | .703 | .733 | .763 | .793 | .823 | .853 | .927 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 300 | .547 | .576 | .605 | .635 | .665 | .695 | .725 | .755 | .785 | .815 | .845 | .919 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 400 | .537 | .565 | .594 | .624 | .654 | .684 | .714 | .744 | .774 | .804 | .834 | .908 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 500 | .529 | .558 | .587 | .616 | .646 | .676 | .706 | .736 | .766 | .796 | .826 | .900 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 600 | .524 | .552 | .581 | .611 | .640 | .670 | .700 | .730 | .760 | .790 | .820 | .894 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 700 | .519 | .548 | .577 | .606 | .636 | .666 | .696 | .726 | .756 | .786 | .816 | .890 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 800 | .516 | .545 | .573 | .603 | .633 | .663 | .693 | .723 | .753 | .783 | .813 | .887 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 900 | .513 | .542 | .571 | .600 | .630 | .660 | .690 | .720 | .750 | .780 | .810 | .884 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 1000 | .511 | .539 | .568 | .597 | .627 | .657 | .687 | .717 | .747 | .777 | .807 | .881 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N= 999 | .481 | .509 | .538 | .567 | .597 | .627 | .657 | .687 | .717 | .747 | .777 | .851 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |
| N=50000 | .474 | .502 | .530 | .559 | .589 | .619 | .649 | .679 | .709 | .739 | .769 | .843 | 1.000 | 1.041 | 1.082 | 1.123 | 1.164 | 1.208 |

B

F

TABLE I (Contd.)
FACTORS OF ONE-SIDED TAIL TESTS FOR A NORMAL DISTRIBUTION

90% CONFIDENCE

Proportion of Population Covered →

| | .86 | .87 | .88 | .89 | .90 | .91 | .92 | .93 | .94 | .95 | .96 | .97 | .98 | .99 | .995 | .999 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| N= 3 | 1.952 | 1.916 | 1.883 | 1.856 | 1.833 | 1.811 | 1.792 | 1.776 | 1.762 | 1.750 | 1.739 | 1.730 | 1.722 | 1.715 | 1.709 | 1.704 |
| N= 4 | 1.772 | 1.744 | 1.719 | 1.698 | 1.681 | 1.666 | 1.653 | 1.642 | 1.633 | 1.625 | 1.618 | 1.613 | 1.608 | 1.604 | 1.601 | 1.599 |
| N= 5 | 1.667 | 1.644 | 1.626 | 1.611 | 1.600 | 1.591 | 1.584 | 1.578 | 1.573 | 1.569 | 1.565 | 1.562 | 1.560 | 1.558 | 1.557 | 1.556 |
| N= 6 | 1.608 | 1.590 | 1.577 | 1.566 | 1.559 | 1.554 | 1.550 | 1.547 | 1.545 | 1.543 | 1.541 | 1.540 | 1.539 | 1.538 | 1.537 | 1.536 |
| N= 7 | 1.572 | 1.558 | 1.548 | 1.540 | 1.535 | 1.531 | 1.528 | 1.526 | 1.524 | 1.523 | 1.522 | 1.521 | 1.520 | 1.519 | 1.518 | 1.517 |
| N= 8 | 1.548 | 1.537 | 1.529 | 1.523 | 1.519 | 1.516 | 1.514 | 1.512 | 1.511 | 1.510 | 1.509 | 1.508 | 1.507 | 1.506 | 1.505 | 1.504 |
| N= 9 | 1.532 | 1.523 | 1.517 | 1.512 | 1.509 | 1.506 | 1.504 | 1.503 | 1.502 | 1.501 | 1.500 | 1.500 | 1.499 | 1.498 | 1.497 | 1.496 |
| N= 10 | 1.519 | 1.511 | 1.506 | 1.502 | 1.500 | 1.498 | 1.496 | 1.495 | 1.494 | 1.493 | 1.492 | 1.491 | 1.491 | 1.490 | 1.489 | 1.488 |
| N= 11 | 1.508 | 1.501 | 1.496 | 1.493 | 1.491 | 1.489 | 1.488 | 1.487 | 1.486 | 1.485 | 1.484 | 1.484 | 1.483 | 1.482 | 1.481 | 1.480 |
| N= 12 | 1.500 | 1.494 | 1.490 | 1.487 | 1.485 | 1.484 | 1.483 | 1.482 | 1.481 | 1.480 | 1.480 | 1.479 | 1.478 | 1.477 | 1.476 | 1.475 |
| N= 13 | 1.494 | 1.489 | 1.485 | 1.483 | 1.481 | 1.480 | 1.479 | 1.478 | 1.477 | 1.476 | 1.476 | 1.475 | 1.474 | 1.473 | 1.472 | 1.471 |
| N= 14 | 1.489 | 1.485 | 1.482 | 1.480 | 1.478 | 1.477 | 1.476 | 1.475 | 1.474 | 1.473 | 1.473 | 1.472 | 1.471 | 1.470 | 1.469 | 1.468 |
| N= 15 | 1.485 | 1.481 | 1.478 | 1.476 | 1.474 | 1.473 | 1.472 | 1.471 | 1.470 | 1.469 | 1.468 | 1.468 | 1.467 | 1.466 | 1.465 | 1.464 |
| N= 16 | 1.481 | 1.477 | 1.474 | 1.472 | 1.470 | 1.469 | 1.468 | 1.467 | 1.466 | 1.465 | 1.464 | 1.464 | 1.463 | 1.462 | 1.461 | 1.460 |
| N= 17 | 1.477 | 1.473 | 1.470 | 1.468 | 1.466 | 1.465 | 1.464 | 1.463 | 1.462 | 1.461 | 1.460 | 1.460 | 1.459 | 1.458 | 1.457 | 1.456 |
| N= 18 | 1.473 | 1.469 | 1.466 | 1.464 | 1.462 | 1.461 | 1.460 | 1.459 | 1.458 | 1.457 | 1.456 | 1.456 | 1.455 | 1.454 | 1.453 | 1.452 |
| N= 19 | 1.469 | 1.465 | 1.462 | 1.460 | 1.458 | 1.457 | 1.456 | 1.455 | 1.454 | 1.453 | 1.452 | 1.452 | 1.451 | 1.450 | 1.449 | 1.448 |
| N= 20 | 1.465 | 1.461 | 1.458 | 1.456 | 1.454 | 1.453 | 1.452 | 1.451 | 1.450 | 1.449 | 1.448 | 1.448 | 1.447 | 1.446 | 1.445 | 1.444 |
| N= 21 | 1.461 | 1.457 | 1.454 | 1.452 | 1.450 | 1.449 | 1.448 | 1.447 | 1.446 | 1.445 | 1.444 | 1.444 | 1.443 | 1.442 | 1.441 | 1.440 |
| N= 22 | 1.457 | 1.453 | 1.450 | 1.448 | 1.446 | 1.445 | 1.444 | 1.443 | 1.442 | 1.441 | 1.440 | 1.440 | 1.439 | 1.438 | 1.437 | 1.436 |
| N= 23 | 1.453 | 1.449 | 1.446 | 1.444 | 1.442 | 1.441 | 1.440 | 1.439 | 1.438 | 1.437 | 1.436 | 1.436 | 1.435 | 1.434 | 1.433 | 1.432 |
| N= 24 | 1.449 | 1.445 | 1.442 | 1.440 | 1.438 | 1.437 | 1.436 | 1.435 | 1.434 | 1.433 | 1.432 | 1.432 | 1.431 | 1.430 | 1.429 | 1.428 |
| N= 25 | 1.445 | 1.441 | 1.438 | 1.436 | 1.434 | 1.433 | 1.432 | 1.431 | 1.430 | 1.429 | 1.428 | 1.428 | 1.427 | 1.426 | 1.425 | 1.424 |
| N= 26 | 1.441 | 1.437 | 1.434 | 1.432 | 1.430 | 1.429 | 1.428 | 1.427 | 1.426 | 1.425 | 1.424 | 1.424 | 1.423 | 1.422 | 1.421 | 1.420 |
| N= 27 | 1.437 | 1.433 | 1.430 | 1.428 | 1.426 | 1.425 | 1.424 | 1.423 | 1.422 | 1.421 | 1.420 | 1.420 | 1.419 | 1.418 | 1.417 | 1.416 |
| N= 28 | 1.433 | 1.429 | 1.426 | 1.424 | 1.422 | 1.421 | 1.420 | 1.419 | 1.418 | 1.417 | 1.416 | 1.416 | 1.415 | 1.414 | 1.413 | 1.412 |
| N= 29 | 1.429 | 1.425 | 1.422 | 1.420 | 1.418 | 1.417 | 1.416 | 1.415 | 1.414 | 1.413 | 1.412 | 1.412 | 1.411 | 1.410 | 1.409 | 1.408 |
| N= 30 | 1.425 | 1.421 | 1.418 | 1.416 | 1.414 | 1.413 | 1.412 | 1.411 | 1.410 | 1.409 | 1.408 | 1.408 | 1.407 | 1.406 | 1.405 | 1.404 |
| N= 31 | 1.421 | 1.417 | 1.414 | 1.412 | 1.410 | 1.409 | 1.408 | 1.407 | 1.406 | 1.405 | 1.404 | 1.404 | 1.403 | 1.402 | 1.401 | 1.400 |
| N= 32 | 1.417 | 1.413 | 1.410 | 1.408 | 1.406 | 1.405 | 1.404 | 1.403 | 1.402 | 1.401 | 1.400 | 1.400 | 1.399 | 1.398 | 1.397 | 1.396 |
| N= 33 | 1.413 | 1.409 | 1.406 | 1.404 | 1.402 | 1.401 | 1.400 | 1.399 | 1.398 | 1.397 | 1.396 | 1.396 | 1.395 | 1.394 | 1.393 | 1.392 |
| N= 34 | 1.409 | 1.405 | 1.402 | 1.400 | 1.398 | 1.397 | 1.396 | 1.395 | 1.394 | 1.393 | 1.392 | 1.392 | 1.391 | 1.390 | 1.389 | 1.388 |
| N= 35 | 1.405 | 1.401 | 1.398 | 1.396 | 1.394 | 1.393 | 1.392 | 1.391 | 1.390 | 1.389 | 1.388 | 1.388 | 1.387 | 1.386 | 1.385 | 1.384 |
| N= 36 | 1.401 | 1.397 | 1.394 | 1.392 | 1.390 | 1.389 | 1.388 | 1.387 | 1.386 | 1.385 | 1.384 | 1.384 | 1.383 | 1.382 | 1.381 | 1.380 |
| N= 37 | 1.397 | 1.393 | 1.390 | 1.388 | 1.386 | 1.385 | 1.384 | 1.383 | 1.382 | 1.381 | 1.380 | 1.380 | 1.379 | 1.378 | 1.377 | 1.376 |
| N= 38 | 1.393 | 1.389 | 1.386 | 1.384 | 1.382 | 1.381 | 1.380 | 1.379 | 1.378 | 1.377 | 1.376 | 1.376 | 1.375 | 1.374 | 1.373 | 1.372 |
| N= 39 | 1.389 | 1.385 | 1.382 | 1.380 | 1.378 | 1.377 | 1.376 | 1.375 | 1.374 | 1.373 | 1.372 | 1.372 | 1.371 | 1.370 | 1.369 | 1.368 |
| N= 40 | 1.385 | 1.381 | 1.378 | 1.376 | 1.374 | 1.373 | 1.372 | 1.371 | 1.370 | 1.369 | 1.368 | 1.368 | 1.367 | 1.366 | 1.365 | 1.364 |
| N= 41 | 1.381 | 1.377 | 1.374 | 1.372 | 1.370 | 1.369 | 1.368 | 1.367 | 1.366 | 1.365 | 1.364 | 1.364 | 1.363 | 1.362 | 1.361 | 1.360 |
| N= 42 | 1.377 | 1.373 | 1.370 | 1.368 | 1.366 | 1.365 | 1.364 | 1.363 | 1.362 | 1.361 | 1.360 | 1.360 | 1.359 | 1.358 | 1.357 | 1.356 |
| N= 43 | 1.373 | 1.369 | 1.366 | 1.364 | 1.362 | 1.361 | 1.360 | 1.359 | 1.358 | 1.357 | 1.356 | 1.356 | 1.355 | 1.354 | 1.353 | 1.352 |
| N= 44 | 1.369 | 1.365 | 1.362 | 1.360 | 1.358 | 1.357 | 1.356 | 1.355 | 1.354 | 1.353 | 1.352 | 1.352 | 1.351 | 1.350 | 1.349 | 1.348 |
| N= 45 | 1.365 | 1.361 | 1.358 | 1.356 | 1.354 | 1.353 | 1.352 | 1.351 | 1.350 | 1.349 | 1.348 | 1.348 | 1.347 | 1.346 | 1.345 | 1.344 |
| N= 46 | 1.361 | 1.357 | 1.354 | 1.352 | 1.350 | 1.349 | 1.348 | 1.347 | 1.346 | 1.345 | 1.344 | 1.344 | 1.343 | 1.342 | 1.341 | 1.340 |
| N= 47 | 1.357 | 1.353 | 1.350 | 1.348 | 1.346 | 1.345 | 1.344 | 1.343 | 1.342 | 1.341 | 1.340 | 1.340 | 1.339 | 1.338 | 1.337 | 1.336 |
| N= 48 | 1.353 | 1.349 | 1.346 | 1.344 | 1.342 | 1.341 | 1.340 | 1.339 | 1.338 | 1.337 | 1.336 | 1.336 | 1.335 | 1.334 | 1.333 | 1.332 |
| N= 49 | 1.349 | 1.345 | 1.342 | 1.340 | 1.338 | 1.337 | 1.336 | 1.335 | 1.334 | 1.333 | 1.332 | 1.332 | 1.331 | 1.330 | 1.329 | 1.328 |
| N= 50 | 1.345 | 1.341 | 1.338 | 1.336 | 1.334 | 1.333 | 1.332 | 1.331 | 1.330 | 1.329 | 1.328 | 1.328 | 1.327 | 1.326 | 1.325 | 1.324 |
| N= 51 | 1.341 | 1.337 | 1.334 | 1.332 | 1.330 | 1.329 | 1.328 | 1.327 | 1.326 | 1.325 | 1.324 | 1.324 | 1.323 | 1.322 | 1.321 | 1.320 |
| N= 52 | 1.337 | 1.333 | 1.330 | 1.328 | 1.326 | 1.325 | 1.324 | 1.323 | 1.322 | 1.321 | 1.320 | 1.320 | 1.319 | 1.318 | 1.317 | 1.316 |
| N= 53 | 1.333 | 1.329 | 1.326 | 1.324 | 1.322 | 1.321 | 1.320 | 1.319 | 1.318 | 1.317 | 1.316 | 1.316 | 1.315 | 1.314 | 1.313 | 1.312 |
| N= 54 | 1.329 | 1.325 | 1.322 | 1.320 | 1.318 | 1.317 | 1.316 | 1.315 | 1.314 | 1.313 | 1.312 | 1.312 | 1.311 | 1.310 | 1.309 | 1.308 |
| N= 55 | 1.325 | 1.321 | 1.318 | 1.316 | 1.314 | 1.313 | 1.312 | 1.311 | 1.310 | 1.309 | 1.308 | 1.308 | 1.307 | 1.306 | 1.305 | 1.304 |
| N= 56 | 1.321 | 1.317 | 1.314 | 1.312 | 1.310 | 1.309 | 1.308 | 1.307 | 1.306 | 1.305 | 1.304 | 1.304 | 1.303 | 1.302 | 1.301 | 1.300 |
| N= 57 | 1.317 | 1.313 | 1.310 | 1.308 | 1.306 | 1.305 | 1.304 | 1.303 | 1.302 | 1.301 | 1.300 | 1.300 | 1.299 | 1.298 | 1.297 | 1.296 |
| N= 58 | 1.313 | 1.309 | 1.306 | 1.304 | 1.302 | 1.301 | 1.300 | 1.299 | 1.298 | 1.297 | 1.296 | 1.296 | 1.295 | 1.294 | 1.293 | 1.292 |
| N= 59 | 1.309 | 1.305 | 1.302 | 1.300 | 1.298 | 1.297 | 1.296 | 1.295 | 1.294 | 1.293 | 1.292 | 1.292 | 1.291 | 1.290 | 1.289 | 1.288 |
| N= 60 | 1.305 | 1.301 | 1.298 | 1.296 | 1.294 | 1.293 | 1.292 | 1.291 | 1.290 | 1.289 | 1.288 | 1.288 | 1.287 | 1.286 | 1.285 | 1.284 |
| N= 61 | 1.301 | 1.297 | 1.294 | 1.292 | 1.290 | 1.289 | 1.288 | 1.287 | 1.286 | 1.285 | 1.284 | 1.284 | 1.283 | 1.282 | 1.281 | 1.280 |
| N= 62 | 1.297 | 1.293 | 1.290 | 1.288 | 1.286 | 1.285 | 1.284 | 1.283 | 1.282 | 1.281 | 1.280 | 1.280 | 1.279 | 1.278 | 1.277 | 1.276 |
| N= 63 | 1.293 | 1.289 | 1.286 | 1.284 | 1.282 | 1.281 | 1.280 | 1.279 | 1.278 | 1.277 | 1.276 | 1.276 | 1.275 | 1.274 | 1.273 | 1.272 |
| N= 64 | 1.289 | 1.285 | 1.282 | 1.280 | 1.278 | 1.277 | 1.276 | 1.275 | 1.274 | 1.273 | 1.272 | 1.272 | 1.271 | 1.270 | 1.269 | 1.268 |
| N= 65 | 1.285 | 1.281 | 1.278 | 1.276 | 1.274 | 1.273 | 1.272 | 1.271 | 1.270 | 1.269 | 1.268 | 1.268 | 1.267 | 1.266 | 1.265 | 1.264 |
| N= 66 | 1.281 | 1.277 | 1.274 | 1.272 | 1.270 | 1.269 | 1.268 | 1.267 | 1.266 | 1.265 | 1.264 | 1.264 | 1.263 | 1.262 | 1.261 | 1.260 |
| N= 67 | 1.277 | 1.273 | 1.270 | 1.268 | 1.266 | 1.265 | 1.264 | 1.263 | 1.262 | 1.261 | 1.260 | 1.260 | 1.259 | 1.258 | 1.257 | 1.256 |
| N= 68 | 1.273 | 1.269 | 1.266 | 1.264 | 1.262 | 1.261 | 1.260 | 1.259 | 1.258 | 1.257 | 1.256 | 1.256 | 1.255 | 1.254 | 1.253 | 1.252 |
| N= 69 | 1.269 | 1.265 | 1.262 | 1.260 | 1.258 | 1.257 | 1.256 | 1.255 | 1.254 | 1.253 | 1.252 | 1.252 | 1.251 | 1.250 | 1.249 | 1.248 |
| N= 70 | 1.265 | 1.261 | 1.258 | 1.256 | 1.254 | 1.253 | 1.252 | 1.251 | 1.250 | 1.249 | 1.248 | 1.248 | 1.247 | 1.246 | 1.245 | 1.244 |
| N= 71 | 1.261 | 1.257 | 1.254 | 1.252 | 1.250 | 1.249 | 1.248 | 1.247 | 1.246 | 1.245 | 1.244 | 1.244 | 1.243 | 1.242 | 1.241 | 1.240 |
| N= 72 | 1.257 | 1.253 | 1.250 | 1.248 | 1.246 | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| N= 1 | 1.060 | 1.698 | 1.759 | 1.825 | 1.895 | 1.971 | 2.053 | 2.144 | 2.246 | 2.363 | 2.500 | 2.670 | 2.897 | 3.257 | 3.587 | 4.273 |
| N= 15 | 1.615 | 1.672 | 1.732 | 1.797 | 1.867 | 1.941 | 2.023 | 2.113 | 2.213 | 2.329 | 2.465 | 2.633 | 2.857 | 3.212 | 3.538 | 4.215 |
| N= 16 | 1.592 | 1.649 | 1.709 | 1.773 | 1.842 | 1.916 | 1.996 | 2.085 | 2.185 | 2.299 | 2.433 | 2.599 | 2.821 | 3.172 | 3.495 | 4.164 |
| N= 17 | 1.572 | 1.629 | 1.688 | 1.752 | 1.819 | 1.893 | 1.973 | 2.061 | 2.159 | 2.272 | 2.406 | 2.570 | 2.789 | 3.137 | 3.456 | 4.118 |
| N= 18 | 1.554 | 1.610 | 1.669 | 1.732 | 1.799 | 1.872 | 1.951 | 2.039 | 2.137 | 2.249 | 2.381 | 2.543 | 2.761 | 3.105 | 3.422 | 4.072 |
| N= 19 | 1.538 | 1.593 | 1.652 | 1.715 | 1.781 | 1.854 | 1.932 | 2.019 | 2.116 | 2.227 | 2.358 | 2.520 | 2.737 | 3.077 | 3.391 | 4.042 |
| N= 20 | 1.523 | 1.578 | 1.636 | 1.699 | 1.765 | 1.837 | 1.915 | 2.001 | 2.097 | 2.208 | 2.338 | 2.498 | 2.712 | 3.031 | 3.363 | 4.009 |
| N= 21 | 1.510 | 1.565 | 1.622 | 1.684 | 1.750 | 1.821 | 1.899 | 1.984 | 2.080 | 2.190 | 2.319 | 2.479 | 2.691 | 3.028 | 3.338 | 3.979 |
| N= 22 | 1.497 | 1.552 | 1.609 | 1.671 | 1.736 | 1.804 | 1.874 | 1.956 | 2.052 | 2.174 | 2.302 | 2.461 | 2.672 | 3.007 | 3.314 | 3.951 |
| N= 23 | 1.486 | 1.540 | 1.597 | 1.659 | 1.724 | 1.794 | 1.871 | 1.956 | 2.050 | 2.174 | 2.296 | 2.454 | 2.665 | 2.987 | 3.293 | 3.926 |
| N= 24 | 1.476 | 1.530 | 1.586 | 1.647 | 1.712 | 1.782 | 1.859 | 1.943 | 2.037 | 2.160 | 2.272 | 2.429 | 2.638 | 2.969 | 3.273 | 3.903 |
| N= 25 | 1.466 | 1.519 | 1.576 | 1.637 | 1.701 | 1.771 | 1.848 | 1.931 | 2.025 | 2.148 | 2.259 | 2.415 | 2.623 | 2.952 | 3.255 | 3.882 |
| N= 26 | 1.457 | 1.510 | 1.566 | 1.627 | 1.691 | 1.761 | 1.836 | 1.920 | 2.013 | 2.136 | 2.246 | 2.401 | 2.609 | 2.937 | 3.238 | 3.862 |
| N= 27 | 1.448 | 1.501 | 1.557 | 1.618 | 1.682 | 1.751 | 1.826 | 1.910 | 2.002 | 2.125 | 2.235 | 2.389 | 2.595 | 2.922 | 3.222 | 3.843 |
| N= 28 | 1.440 | 1.493 | 1.549 | 1.609 | 1.673 | 1.742 | 1.817 | 1.900 | 1.993 | 2.116 | 2.224 | 2.378 | 2.583 | 2.908 | 3.207 | 3.826 |
| N= 29 | 1.433 | 1.486 | 1.541 | 1.601 | 1.665 | 1.734 | 1.808 | 1.891 | 1.983 | 2.099 | 2.224 | 2.378 | 2.583 | 2.908 | 3.207 | 3.826 |
| N= 30 | 1.425 | 1.478 | 1.533 | 1.593 | 1.657 | 1.725 | 1.800 | 1.882 | 1.974 | 2.089 | 2.213 | 2.367 | 2.572 | 2.884 | 3.180 | 3.794 |
| N= 31 | 1.419 | 1.471 | 1.527 | 1.586 | 1.650 | 1.718 | 1.792 | 1.874 | 1.966 | 2.071 | 2.195 | 2.347 | 2.550 | 2.872 | 3.168 | 3.780 |
| N= 32 | 1.412 | 1.465 | 1.520 | 1.579 | 1.643 | 1.711 | 1.785 | 1.867 | 1.958 | 2.063 | 2.187 | 2.339 | 2.541 | 2.862 | 3.156 | 3.766 |
| N= 33 | 1.406 | 1.459 | 1.514 | 1.573 | 1.636 | 1.704 | 1.778 | 1.859 | 1.951 | 2.055 | 2.178 | 2.330 | 2.532 | 2.851 | 3.145 | 3.753 |
| N= 34 | 1.401 | 1.453 | 1.508 | 1.567 | 1.630 | 1.698 | 1.771 | 1.853 | 1.944 | 2.048 | 2.170 | 2.321 | 2.523 | 2.842 | 3.135 | 3.741 |
| N= 35 | 1.395 | 1.447 | 1.502 | 1.561 | 1.624 | 1.691 | 1.765 | 1.846 | 1.937 | 2.041 | 2.163 | 2.314 | 2.515 | 2.833 | 3.125 | 3.729 |
| N= 36 | 1.390 | 1.442 | 1.497 | 1.556 | 1.618 | 1.686 | 1.759 | 1.840 | 1.930 | 2.034 | 2.156 | 2.306 | 2.507 | 2.824 | 3.115 | 3.718 |
| N= 37 | 1.385 | 1.437 | 1.491 | 1.550 | 1.613 | 1.680 | 1.753 | 1.834 | 1.924 | 2.028 | 2.149 | 2.299 | 2.499 | 2.816 | 3.106 | 3.708 |
| N= 38 | 1.381 | 1.432 | 1.487 | 1.545 | 1.608 | 1.675 | 1.748 | 1.828 | 1.918 | 2.022 | 2.143 | 2.293 | 2.492 | 2.808 | 3.098 | 3.698 |
| N= 39 | 1.376 | 1.428 | 1.482 | 1.540 | 1.603 | 1.670 | 1.743 | 1.823 | 1.913 | 2.016 | 2.137 | 2.286 | 2.485 | 2.800 | 3.090 | 3.688 |
| N= 40 | 1.372 | 1.423 | 1.477 | 1.536 | 1.598 | 1.665 | 1.738 | 1.818 | 1.908 | 2.011 | 2.131 | 2.280 | 2.479 | 2.793 | 3.082 | 3.679 |
| N= 41 | 1.368 | 1.419 | 1.473 | 1.531 | 1.593 | 1.660 | 1.733 | 1.813 | 1.902 | 2.005 | 2.126 | 2.274 | 2.473 | 2.786 | 3.074 | 3.670 |
| N= 42 | 1.364 | 1.415 | 1.469 | 1.527 | 1.589 | 1.656 | 1.728 | 1.808 | 1.897 | 2.000 | 2.120 | 2.269 | 2.468 | 2.780 | 3.067 | 3.662 |
| N= 43 | 1.360 | 1.411 | 1.465 | 1.523 | 1.585 | 1.651 | 1.724 | 1.803 | 1.893 | 1.995 | 2.115 | 2.263 | 2.461 | 2.773 | 3.060 | 3.653 |
| N= 44 | 1.356 | 1.407 | 1.461 | 1.519 | 1.581 | 1.647 | 1.719 | 1.799 | 1.888 | 1.990 | 2.110 | 2.258 | 2.455 | 2.767 | 3.053 | 3.646 |
| N= 45 | 1.353 | 1.404 | 1.457 | 1.515 | 1.577 | 1.643 | 1.715 | 1.795 | 1.884 | 1.986 | 2.105 | 2.253 | 2.450 | 2.761 | 3.047 | 3.638 |
| N= 46 | 1.349 | 1.400 | 1.454 | 1.512 | 1.573 | 1.639 | 1.711 | 1.791 | 1.880 | 1.981 | 2.101 | 2.249 | 2.445 | 2.756 | 3.041 | 3.631 |
| N= 47 | 1.346 | 1.397 | 1.450 | 1.508 | 1.569 | 1.636 | 1.708 | 1.787 | 1.876 | 1.977 | 2.096 | 2.244 | 2.440 | 2.750 | 3.035 | 3.624 |
| N= 48 | 1.343 | 1.394 | 1.447 | 1.505 | 1.566 | 1.632 | 1.704 | 1.783 | 1.872 | 1.973 | 2.092 | 2.239 | 2.435 | 2.745 | 3.029 | 3.617 |
| N= 49 | 1.340 | 1.391 | 1.444 | 1.502 | 1.563 | 1.629 | 1.700 | 1.779 | 1.868 | 1.969 | 2.088 | 2.235 | 2.430 | 2.740 | 3.024 | 3.611 |
| N= 50 | 1.337 | 1.388 | 1.441 | 1.498 | 1.559 | 1.625 | 1.697 | 1.776 | 1.866 | 1.965 | 2.084 | 2.231 | 2.426 | 2.735 | 3.018 | 3.605 |
| N= 51 | 1.333 | 1.374 | 1.427 | 1.484 | 1.545 | 1.610 | 1.681 | 1.760 | 1.848 | 1.948 | 2.066 | 2.212 | 2.406 | 2.713 | 2.994 | 3.576 |
| N= 52 | 1.329 | 1.370 | 1.423 | 1.480 | 1.541 | 1.606 | 1.677 | 1.756 | 1.844 | 1.943 | 2.061 | 2.207 | 2.400 | 2.707 | 2.988 | 3.552 |
| N= 53 | 1.325 | 1.366 | 1.419 | 1.476 | 1.537 | 1.602 | 1.673 | 1.752 | 1.840 | 1.939 | 2.057 | 2.203 | 2.395 | 2.701 | 2.981 | 3.538 |
| N= 54 | 1.321 | 1.362 | 1.415 | 1.472 | 1.533 | 1.598 | 1.669 | 1.748 | 1.836 | 1.935 | 2.053 | 2.200 | 2.391 | 2.696 | 2.976 | 3.524 |
| N= 55 | 1.317 | 1.358 | 1.411 | 1.468 | 1.529 | 1.594 | 1.665 | 1.744 | 1.832 | 1.931 | 2.049 | 2.196 | 2.387 | 2.691 | 2.971 | 3.510 |
| N= 56 | 1.313 | 1.354 | 1.407 | 1.464 | 1.525 | 1.590 | 1.661 | 1.740 | 1.828 | 1.927 | 2.045 | 2.192 | 2.383 | 2.686 | 2.966 | 3.496 |
| N= 57 | 1.309 | 1.350 | 1.403 | 1.460 | 1.521 | 1.586 | 1.657 | 1.736 | 1.824 | 1.923 | 2.041 | 2.188 | 2.379 | 2.682 | 2.962 | 3.481 |
| N= 58 | 1.305 | 1.346 | 1.399 | 1.456 | 1.517 | 1.582 | 1.653 | 1.732 | 1.820 | 1.919 | 2.037 | 2.184 | 2.375 | 2.678 | 2.958 | 3.466 |
| N= 59 | 1.301 | 1.342 | 1.395 | 1.452 | 1.513 | 1.578 | 1.649 | 1.728 | 1.816 | 1.915 | 2.033 | 2.180 | 2.371 | 2.674 | 2.954 | 3.451 |
| N= 60 | 1.297 | 1.338 | 1.391 | 1.448 | 1.509 | 1.574 | 1.645 | 1.724 | 1.812 | 1.911 | 2.029 | 2.176 | 2.367 | 2.670 | 2.950 | 3.436 |
| N= 61 | 1.293 | 1.334 | 1.387 | 1.444 | 1.505 | 1.570 | 1.641 | 1.720 | 1.808 | 1.907 | 2.025 | 2.172 | 2.363 | 2.666 | 2.946 | 3.421 |
| N= 62 | 1.289 | 1.330 | 1.383 | 1.440 | 1.501 | 1.566 | 1.637 | 1.716 | 1.804 | 1.903 | 2.021 | 2.168 | 2.359 | 2.662 | 2.941 | 3.406 |
| N= 63 | 1.285 | 1.326 | 1.379 | 1.436 | 1.497 | 1.562 | 1.633 | 1.712 | 1.800 | 1.900 | 2.017 | 2.164 | 2.355 | 2.658 | 2.936 | 3.391 |
| N= 64 | 1.281 | 1.322 | 1.375 | 1.432 | 1.493 | 1.558 | 1.629 | 1.708 | 1.796 | 1.895 | 2.013 | 2.160 | 2.351 | 2.654 | 2.931 | 3.376 |
| N= 65 | 1.277 | 1.318 | 1.371 | 1.428 | 1.489 | 1.554 | 1.625 | 1.704 | 1.792 | 1.891 | 2.009 | 2.156 | 2.347 | 2.650 | 2.926 | 3.361 |
| N= 66 | 1.273 | 1.314 | 1.367 | 1.424 | 1.485 | 1.550 | 1.621 | 1.700 | 1.788 | 1.887 | 2.005 | 2.152 | 2.343 | 2.646 | 2.921 | 3.346 |
| N= 67 | 1.269 | 1.310 | 1.363 | 1.420 | 1.481 | 1.546 | 1.617 | 1.696 | 1.784 | 1.883 | 2.001 | 2.148 | 2.339 | 2.642 | 2.916 | 3.331 |
| N= 68 | 1.265 | 1.306 | 1.359 | 1.416 | 1.477 | 1.542 | 1.613 | 1.692 | 1.780 | 1.879 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 69 | 1.261 | 1.302 | 1.355 | 1.412 | 1.473 | 1.538 | 1.609 | 1.688 | 1.776 | 1.875 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 70 | 1.257 | 1.300 | 1.353 | 1.410 | 1.471 | 1.536 | 1.607 | 1.686 | 1.774 | 1.873 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 71 | 1.253 | 1.296 | 1.349 | 1.406 | 1.467 | 1.532 | 1.603 | 1.682 | 1.770 | 1.869 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 72 | 1.249 | 1.292 | 1.345 | 1.402 | 1.463 | 1.528 | 1.599 | 1.678 | 1.766 | 1.865 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 73 | 1.245 | 1.288 | 1.341 | 1.398 | 1.459 | 1.524 | 1.595 | 1.674 | 1.762 | 1.861 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 74 | 1.241 | 1.284 | 1.337 | 1.394 | 1.455 | 1.520 | 1.591 | 1.670 | 1.758 | 1.857 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 75 | 1.237 | 1.280 | 1.333 | 1.390 | 1.451 | 1.516 | 1.587 | 1.666 | 1.754 | 1.853 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 76 | 1.233 | 1.276 | 1.329 | 1.386 | 1.447 | 1.512 | 1.583 | 1.662 | 1.750 | 1.849 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 77 | 1.229 | 1.272 | 1.325 | 1.382 | 1.443 | 1.508 | 1.579 | 1.658 | 1.746 | 1.845 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 78 | 1.225 | 1.268 | 1.321 | 1.378 | 1.439 | 1.504 | 1.575 | 1.654 | 1.742 | 1.841 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 79 | 1.221 | 1.264 | 1.317 | 1.374 | 1.435 | 1.500 | 1.571 | 1.650 | 1.738 | 1.837 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 80 | 1.217 | 1.260 | 1.313 | 1.370 | 1.431 | 1.496 | 1.567 | 1.646 | 1.734 | 1.833 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 81 | 1.213 | 1.256 | 1.309 | 1.366 | 1.427 | 1.492 | 1.563 | 1.642 | 1.730 | 1.829 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 82 | 1.209 | 1.252 | 1.305 | 1.362 | 1.423 | 1.488 | 1.559 | 1.638 | 1.726 | 1.825 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 83 | 1.205 | 1.248 | 1.301 | 1.358 | 1.419 | 1.484 | 1.555 | 1.634 | 1.722 | 1.821 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |
| N= 84 | 1.201 | 1.244 | 1.297 | 1.354 | 1.415 | 1.480 | 1.551 | 1.630 | 1.718 | 1.817 | 2.000 | 2.147 | 2.338 | 2.641 | 2.911 | 3.316 |

TABLE II
FACTORS OF ONE-SIDED TOLERANCE LIMITS FOR A NORMAL DISTRIBUTION

95% CONFIDENCE

Proportion of Population Covered →

| | .50 | .51 | .52 | .53 | .54 | .55 | .56 | .57 | .58 | .59 | .60 | .61 | .62 | .63 | .64 | .65 | .66 | .67 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| N= 3 | 1.686 | 1.751 | 1.818 | 1.886 | 1.955 | 2.025 | 2.097 | 2.170 | 2.245 | 2.321 | 2.399 | 2.478 | 2.559 | 2.642 | 2.727 | 2.813 | 2.901 | 2.992 |
| N= 4 | 1.177 | 1.223 | 1.270 | 1.317 | 1.366 | 1.415 | 1.464 | 1.515 | 1.566 | 1.619 | 1.672 | 1.726 | 1.781 | 1.838 | 1.895 | 1.953 | 2.013 | 2.074 |
| N= 5 | .953 | .993 | 1.032 | 1.072 | 1.113 | 1.154 | 1.196 | 1.239 | 1.282 | 1.325 | 1.370 | 1.415 | 1.461 | 1.507 | 1.555 | 1.603 | 1.653 | 1.703 |
| N= 6 | .823 | .858 | .894 | .931 | .968 | 1.005 | 1.043 | 1.081 | 1.117 | 1.159 | 1.199 | 1.239 | 1.281 | 1.323 | 1.365 | 1.408 | 1.453 | 1.498 |
| N= 7 | .734 | .768 | .802 | .836 | .870 | .905 | .941 | .977 | 1.013 | 1.049 | 1.087 | 1.124 | 1.163 | 1.202 | 1.241 | 1.282 | 1.323 | 1.364 |
| N= 8 | .670 | .702 | .734 | .767 | .800 | .833 | .867 | .901 | .936 | .971 | 1.006 | 1.042 | 1.078 | 1.115 | 1.153 | 1.191 | 1.230 | 1.270 |
| N= 9 | .620 | .651 | .682 | .714 | .746 | .778 | .811 | .843 | .877 | .910 | .945 | .979 | 1.014 | 1.050 | 1.086 | 1.123 | 1.160 | 1.198 |
| N= 10 | .580 | .610 | .640 | .671 | .702 | .734 | .765 | .798 | .830 | .863 | .896 | .929 | .964 | .998 | 1.033 | 1.069 | 1.105 | 1.142 |
| N= 11 | .546 | .576 | .606 | .636 | .667 | .697 | .728 | .760 | .791 | .823 | .856 | .889 | .922 | .956 | .990 | 1.025 | 1.060 | 1.096 |
| N= 12 | .518 | .548 | .577 | .607 | .637 | .667 | .697 | .728 | .759 | .791 | .822 | .855 | .887 | .920 | .954 | .988 | 1.023 | 1.058 |
| N= 13 | .494 | .523 | .552 | .581 | .611 | .641 | .671 | .701 | .732 | .763 | .794 | .826 | .858 | .890 | .923 | .957 | .991 | 1.026 |
| N= 14 | .473 | .502 | .531 | .559 | .589 | .618 | .648 | .678 | .708 | .738 | .769 | .801 | .832 | .864 | .897 | .930 | .964 | .998 |
| N= 15 | .455 | .483 | .511 | .540 | .569 | .598 | .627 | .657 | .687 | .717 | .748 | .779 | .810 | .842 | .874 | .907 | .940 | .973 |
| N= 16 | .438 | .466 | .494 | .523 | .552 | .580 | .609 | .638 | .668 | .698 | .729 | .759 | .790 | .822 | .854 | .886 | .919 | .952 |
| N= 17 | .423 | .451 | .479 | .507 | .536 | .565 | .593 | .622 | .652 | .682 | .712 | .742 | .773 | .804 | .835 | .867 | .900 | .933 |
| N= 18 | .410 | .438 | .466 | .494 | .522 | .550 | .579 | .608 | .637 | .666 | .696 | .726 | .757 | .788 | .819 | .851 | .883 | .916 |
| N= 19 | .398 | .425 | .453 | .481 | .509 | .537 | .566 | .594 | .623 | .653 | .682 | .712 | .742 | .773 | .804 | .836 | .867 | .900 |
| N= 20 | .387 | .414 | .442 | .469 | .497 | .525 | .554 | .582 | .611 | .640 | .669 | .699 | .729 | .760 | .791 | .822 | .854 | .886 |
| N= 21 | .376 | .404 | .431 | .459 | .486 | .514 | .543 | .571 | .600 | .629 | .658 | .687 | .717 | .747 | .778 | .809 | .841 | .873 |
| N= 22 | .367 | .394 | .421 | .449 | .476 | .504 | .532 | .561 | .589 | .618 | .647 | .676 | .706 | .736 | .767 | .798 | .829 | .861 |
| N= 23 | .358 | .385 | .412 | .440 | .467 | .495 | .523 | .551 | .579 | .608 | .637 | .666 | .696 | .726 | .756 | .787 | .818 | .850 |
| N= 24 | .350 | .377 | .404 | .431 | .459 | .486 | .514 | .542 | .570 | .599 | .628 | .657 | .686 | .716 | .746 | .777 | .808 | .840 |
| N= 25 | .342 | .369 | .396 | .423 | .451 | .478 | .506 | .534 | .562 | .590 | .619 | .648 | .677 | .707 | .737 | .768 | .799 | .830 |
| N= 26 | .335 | .362 | .389 | .416 | .443 | .471 | .498 | .526 | .554 | .582 | .610 | .640 | .669 | .699 | .729 | .759 | .790 | .821 |
| N= 27 | .328 | .355 | .382 | .409 | .436 | .463 | .491 | .519 | .547 | .575 | .603 | .632 | .661 | .691 | .721 | .751 | .782 | .813 |
| N= 28 | .322 | .349 | .375 | .402 | .429 | .457 | .484 | .512 | .540 | .568 | .596 | .625 | .654 | .684 | .713 | .743 | .774 | .805 |
| N= 29 | .316 | .343 | .369 | .396 | .423 | .450 | .478 | .505 | .533 | .561 | .590 | .618 | .647 | .677 | .706 | .736 | .767 | .798 |
| N= 30 | .310 | .337 | .363 | .390 | .417 | .444 | .472 | .499 | .527 | .555 | .583 | .612 | .641 | .670 | .700 | .730 | .760 | .791 |
| N= 31 | .305 | .331 | .358 | .385 | .412 | .439 | .466 | .493 | .521 | .549 | .577 | .606 | .635 | .664 | .693 | .723 | .753 | .784 |
| N= 32 | .300 | .326 | .353 | .379 | .406 | .433 | .461 | .488 | .516 | .544 | .572 | .600 | .629 | .658 | .687 | .717 | .747 | .778 |
| N= 33 | .295 | .321 | .348 | .374 | .401 | .428 | .455 | .483 | .510 | .538 | .566 | .595 | .623 | .652 | .682 | .711 | .742 | .772 |
| N= 34 | .290 | .317 | .343 | .370 | .396 | .423 | .451 | .478 | .505 | .533 | .561 | .589 | .618 | .647 | .676 | .706 | .736 | .767 |
| N= 35 | .286 | .312 | .339 | .365 | .392 | .419 | .446 | .473 | .501 | .528 | .556 | .585 | .613 | .642 | .671 | .701 | .731 | .761 |
| N= 36 | .282 | .308 | .334 | .361 | .387 | .414 | .441 | .469 | .496 | .524 | .552 | .580 | .608 | .637 | .666 | .695 | .726 | .756 |
| N= 37 | .278 | .304 | .330 | .357 | .383 | .410 | .437 | .464 | .492 | .519 | .547 | .575 | .604 | .632 | .662 | .691 | .721 | .751 |
| N= 38 | .274 | .300 | .326 | .353 | .379 | .406 | .433 | .460 | .487 | .515 | .543 | .571 | .599 | .628 | .657 | .687 | .716 | .747 |
| N= 39 | .270 | .296 | .322 | .349 | .375 | .402 | .429 | .456 | .483 | .511 | .539 | .567 | .595 | .624 | .653 | .682 | .712 | .742 |
| N= 40 | .266 | .293 | .319 | .345 | .372 | .398 | .425 | .452 | .480 | .507 | .535 | .563 | .591 | .620 | .649 | .678 | .708 | .738 |
| N= 41 | .263 | .289 | .315 | .342 | .368 | .395 | .422 | .449 | .476 | .503 | .531 | .559 | .587 | .616 | .645 | .674 | .704 | .734 |
| N= 42 | .260 | .286 | .312 | .338 | .365 | .391 | .418 | .445 | .472 | .500 | .527 | .555 | .584 | .612 | .641 | .670 | .700 | .730 |
| N= 43 | .256 | .283 | .309 | .335 | .362 | .388 | .415 | .442 | .469 | .496 | .524 | .552 | .580 | .609 | .637 | .667 | .696 | .726 |
| N= 44 | .253 | .280 | .306 | .332 | .358 | .385 | .412 | .439 | .466 | .493 | .521 | .549 | .577 | .605 | .634 | .663 | .693 | .723 |
| N= 45 | .250 | .277 | .303 | .329 | .355 | .382 | .409 | .435 | .463 | .490 | .517 | .545 | .573 | .601 | .631 | .660 | .690 | .720 |
| N= 46 | .248 | .274 | .300 | .326 | .352 | .379 | .406 | .432 | .459 | .487 | .514 | .542 | .570 | .599 | .627 | .656 | .685 | .715 |
| N= 47 | .245 | .271 | .297 | .323 | .350 | .376 | .403 | .430 | .457 | .484 | .511 | .539 | .567 | .595 | .624 | .653 | .683 | .712 |
| N= 48 | .242 | .268 | .294 | .320 | .347 | .373 | .400 | .427 | .454 | .481 | .508 | .536 | .564 | .592 | .621 | .650 | .679 | .709 |
| N= 49 | .240 | .266 | .292 | .318 | .344 | .371 | .397 | .424 | .451 | .478 | .506 | .533 | .561 | .589 | .618 | .647 | .676 | .706 |
| N= 50 | .237 | .263 | .289 | .315 | .342 | .368 | .395 | .421 | .448 | .475 | .503 | .530 | .558 | .587 | .615 | .644 | .674 | .703 |
| N= 55 | .226 | .252 | .278 | .304 | .330 | .356 | .383 | .409 | .436 | .463 | .490 | .518 | .546 | .574 | .602 | .631 | .660 | .690 |
| N= 60 | .216 | .242 | .267 | .293 | .320 | .346 | .372 | .399 | .425 | .452 | .480 | .507 | .535 | .563 | .591 | .620 | .649 | .678 |
| N= 65 | .207 | .233 | .259 | .285 | .311 | .337 | .363 | .390 | .416 | .443 | .470 | .498 | .525 | .553 | .581 | .610 | .639 | .668 |
| N= 70 | .199 | .225 | .251 | .277 | .303 | .329 | .355 | .381 | .408 | .435 | .462 | .489 | .517 | .544 | .573 | .601 | .630 | .659 |
| N= 75 | .192 | .218 | .244 | .270 | .295 | .322 | .348 | .374 | .401 | .427 | .454 | .482 | .509 | .537 | .565 | .593 | .622 | .651 |
| N= 80 | .186 | .212 | .237 | .263 | .289 | .315 | .341 | .368 | .394 | .421 | .448 | .475 | .502 | .530 | .558 | .586 | .615 | .644 |
| N= 85 | .180 | .206 | .232 | .257 | .283 | .309 | .335 | .362 | .388 | .415 | .442 | .469 | .496 | .524 | .552 | .580 | .608 | .637 |

| | | | | | | | | | | | | | | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| N= 1 | 473 | 502 | 531 | 559 | 589 | 618 | 648 | 678 | 708 | 738 | 768 | 798 | 828 | 858 | 888 | 918 | 948 | 978 | 1008 |
| N= 14 | 475 | 504 | 533 | 561 | 589 | 618 | 648 | 678 | 708 | 738 | 768 | 798 | 828 | 858 | 888 | 918 | 948 | 978 | 1008 |
| N= 15 | 473 | 502 | 531 | 559 | 589 | 618 | 648 | 678 | 708 | 738 | 768 | 798 | 828 | 858 | 888 | 918 | 948 | 978 | 1008 |
| N= 16 | 438 | 466 | 494 | 523 | 552 | 580 | 609 | 639 | 668 | 698 | 729 | 759 | 790 | 821 | 852 | 883 | 914 | 945 | 976 |
| N= 17 | 423 | 451 | 479 | 507 | 536 | 565 | 593 | 622 | 652 | 682 | 712 | 742 | 773 | 804 | 835 | 866 | 897 | 928 | 959 |
| N= 18 | 410 | 438 | 466 | 494 | 522 | 550 | 579 | 608 | 636 | 666 | 696 | 726 | 757 | 788 | 819 | 851 | 883 | 916 | 949 |
| N= 19 | 398 | 425 | 453 | 481 | 509 | 537 | 566 | 594 | 623 | 653 | 682 | 712 | 742 | 773 | 804 | 836 | 867 | 900 | 933 |
| N= 20 | 387 | 414 | 442 | 469 | 497 | 525 | 554 | 582 | 611 | 640 | 669 | 699 | 729 | 760 | 791 | 822 | 854 | 886 | 919 |
| N= 21 | 376 | 404 | 431 | 459 | 486 | 514 | 543 | 571 | 600 | 629 | 658 | 687 | 717 | 747 | 778 | 809 | 841 | 873 | 906 |
| N= 22 | 367 | 394 | 421 | 449 | 476 | 504 | 532 | 561 | 589 | 618 | 647 | 676 | 706 | 736 | 767 | 798 | 829 | 861 | 894 |
| N= 23 | 358 | 385 | 412 | 440 | 467 | 495 | 523 | 551 | 579 | 608 | 636 | 666 | 696 | 726 | 756 | 787 | 818 | 850 | 883 |
| N= 24 | 350 | 377 | 404 | 431 | 459 | 486 | 514 | 542 | 570 | 599 | 628 | 657 | 686 | 716 | 746 | 777 | 808 | 840 | 873 |
| N= 25 | 342 | 369 | 396 | 423 | 451 | 478 | 506 | 534 | 562 | 590 | 619 | 648 | 677 | 707 | 737 | 768 | 799 | 830 | 863 |
| N= 26 | 335 | 362 | 389 | 416 | 443 | 471 | 498 | 526 | 554 | 582 | 611 | 640 | 669 | 699 | 729 | 759 | 790 | 821 | 854 |
| N= 27 | 328 | 355 | 382 | 409 | 436 | 463 | 491 | 519 | 547 | 575 | 603 | 632 | 661 | 691 | 721 | 751 | 782 | 813 | 846 |
| N= 28 | 322 | 349 | 375 | 402 | 429 | 457 | 484 | 512 | 540 | 568 | 596 | 625 | 654 | 684 | 713 | 743 | 774 | 805 | 836 |
| N= 29 | 316 | 343 | 369 | 396 | 423 | 450 | 478 | 505 | 533 | 561 | 589 | 618 | 647 | 677 | 706 | 736 | 767 | 798 | 829 |
| N= 30 | 310 | 337 | 363 | 390 | 417 | 444 | 472 | 499 | 527 | 555 | 583 | 612 | 641 | 670 | 700 | 730 | 760 | 791 | 822 |
| N= 31 | 305 | 331 | 358 | 385 | 412 | 439 | 466 | 493 | 521 | 549 | 577 | 606 | 635 | 664 | 693 | 723 | 753 | 784 | 815 |
| N= 32 | 300 | 326 | 353 | 379 | 406 | 433 | 461 | 488 | 516 | 544 | 572 | 600 | 629 | 658 | 687 | 717 | 747 | 778 | 809 |
| N= 33 | 295 | 321 | 348 | 374 | 401 | 428 | 455 | 483 | 510 | 538 | 566 | 595 | 623 | 652 | 682 | 711 | 742 | 772 | 803 |
| N= 34 | 290 | 317 | 343 | 370 | 396 | 423 | 451 | 478 | 505 | 533 | 561 | 589 | 618 | 647 | 676 | 706 | 736 | 767 | 798 |
| N= 35 | 286 | 312 | 339 | 365 | 392 | 419 | 446 | 473 | 501 | 528 | 556 | 585 | 613 | 642 | 671 | 701 | 731 | 761 | 792 |
| N= 36 | 282 | 308 | 334 | 361 | 387 | 414 | 441 | 469 | 496 | 524 | 552 | 580 | 608 | 637 | 666 | 696 | 726 | 756 | 787 |
| N= 37 | 278 | 304 | 330 | 357 | 383 | 410 | 437 | 464 | 492 | 520 | 547 | 575 | 604 | 632 | 662 | 691 | 721 | 751 | 782 |
| N= 38 | 274 | 300 | 325 | 353 | 379 | 406 | 433 | 460 | 487 | 515 | 543 | 571 | 599 | 628 | 657 | 687 | 716 | 747 | 778 |
| N= 39 | 270 | 296 | 322 | 349 | 375 | 402 | 429 | 456 | 483 | 511 | 539 | 567 | 595 | 624 | 653 | 682 | 712 | 742 | 773 |
| N= 40 | 266 | 293 | 319 | 345 | 372 | 398 | 425 | 452 | 480 | 507 | 535 | 563 | 591 | 620 | 649 | 678 | 708 | 738 | 769 |
| N= 41 | 263 | 289 | 315 | 342 | 368 | 395 | 422 | 449 | 476 | 503 | 531 | 559 | 587 | 616 | 645 | 674 | 704 | 734 | 765 |
| N= 42 | 260 | 286 | 312 | 338 | 365 | 391 | 418 | 445 | 472 | 500 | 527 | 555 | 584 | 612 | 641 | 670 | 700 | 730 | 761 |
| N= 43 | 256 | 283 | 309 | 335 | 362 | 388 | 415 | 442 | 469 | 496 | 524 | 552 | 580 | 609 | 637 | 667 | 696 | 726 | 757 |
| N= 44 | 253 | 280 | 306 | 332 | 358 | 385 | 412 | 439 | 466 | 493 | 521 | 549 | 577 | 605 | 634 | 663 | 693 | 723 | 754 |
| N= 45 | 250 | 277 | 303 | 329 | 355 | 382 | 409 | 435 | 463 | 490 | 517 | 545 | 573 | 602 | 631 | 660 | 689 | 719 | 750 |
| N= 46 | 248 | 274 | 300 | 326 | 352 | 379 | 406 | 432 | 459 | 487 | 514 | 542 | 570 | 599 | 627 | 656 | 686 | 716 | 747 |
| N= 47 | 245 | 271 | 297 | 323 | 350 | 376 | 403 | 430 | 457 | 484 | 511 | 539 | 567 | 595 | 624 | 653 | 683 | 713 | 744 |
| N= 48 | 242 | 268 | 294 | 320 | 347 | 373 | 400 | 427 | 454 | 481 | 508 | 536 | 564 | 592 | 621 | 650 | 679 | 709 | 740 |
| N= 49 | 240 | 266 | 292 | 318 | 344 | 371 | 397 | 424 | 451 | 478 | 506 | 533 | 561 | 590 | 618 | 647 | 676 | 706 | 737 |
| N= 50 | 237 | 263 | 289 | 315 | 342 | 368 | 395 | 421 | 448 | 475 | 503 | 530 | 558 | 587 | 615 | 644 | 674 | 703 | 734 |
| N= 51 | 234 | 260 | 286 | 312 | 338 | 365 | 391 | 418 | 445 | 472 | 500 | 527 | 555 | 584 | 612 | 641 | 670 | 700 | 731 |
| N= 52 | 231 | 257 | 283 | 309 | 335 | 362 | 388 | 415 | 442 | 469 | 496 | 524 | 552 | 580 | 609 | 637 | 667 | 696 | 727 |
| N= 53 | 228 | 254 | 280 | 306 | 332 | 358 | 385 | 412 | 439 | 466 | 493 | 521 | 549 | 577 | 605 | 634 | 663 | 693 | 724 |
| N= 54 | 225 | 251 | 277 | 303 | 329 | 355 | 382 | 409 | 435 | 463 | 490 | 517 | 545 | 573 | 602 | 631 | 660 | 689 | 720 |
| N= 55 | 222 | 248 | 274 | 300 | 326 | 352 | 379 | 406 | 432 | 459 | 487 | 514 | 542 | 570 | 599 | 627 | 656 | 686 | 717 |
| N= 56 | 219 | 245 | 271 | 297 | 323 | 350 | 376 | 403 | 430 | 457 | 484 | 511 | 539 | 567 | 595 | 624 | 653 | 683 | 714 |
| N= 57 | 216 | 242 | 268 | 294 | 320 | 347 | 373 | 400 | 427 | 454 | 481 | 508 | 536 | 564 | 592 | 621 | 650 | 679 | 710 |
| N= 58 | 213 | 239 | 265 | 291 | 317 | 343 | 370 | 396 | 423 | 450 | 477 | 504 | 531 | 559 | 587 | 615 | 644 | 674 | 705 |
| N= 59 | 210 | 236 | 262 | 288 | 314 | 340 | 367 | 393 | 420 | 447 | 474 | 501 | 528 | 555 | 583 | 611 | 640 | 670 | 701 |
| N= 60 | 207 | 233 | 259 | 285 | 311 | 337 | 363 | 390 | 416 | 443 | 470 | 498 | 525 | 553 | 581 | 610 | 639 | 668 | 700 |
| N= 61 | 204 | 230 | 256 | 282 | 308 | 334 | 360 | 387 | 413 | 439 | 465 | 492 | 519 | 546 | 574 | 602 | 631 | 661 | 692 |
| N= 62 | 201 | 227 | 253 | 279 | 305 | 331 | 357 | 384 | 411 | 437 | 464 | 492 | 519 | 547 | 576 | 605 | 635 | 665 | 696 |
| N= 63 | 198 | 224 | 250 | 276 | 302 | 328 | 354 | 381 | 408 | 435 | 462 | 489 | 516 | 544 | 572 | 601 | 630 | 660 | 691 |
| N= 64 | 195 | 221 | 247 | 273 | 299 | 325 | 351 | 378 | 404 | 431 | 458 | 485 | 513 | 541 | 569 | 597 | 626 | 656 | 687 |
| N= 65 | 192 | 218 | 244 | 270 | 296 | 322 | 348 | 374 | 401 | 427 | 454 | 482 | 509 | 537 | 565 | 593 | 622 | 651 | 682 |
| N= 66 | 189 | 215 | 241 | 267 | 293 | 319 | 345 | 371 | 397 | 424 | 451 | 478 | 506 | 533 | 561 | 590 | 618 | 647 | 678 |
| N= 67 | 186 | 212 | 238 | 264 | 290 | 316 | 342 | 368 | 395 | 421 | 448 | 475 | 503 | 530 | 558 | 587 | 615 | 644 | 675 |
| N= 68 | 183 | 209 | 235 | 261 | 287 | 313 | 339 | 365 | 391 | 418 | 445 | 472 | 500 | 527 | 555 | 584 | 612 | 641 | 672 |
| N= 69 | 180 | 206 | 232 | 258 | 284 | 310 | 336 | 362 | 388 | 414 | 441 | 468 | 495 | 522 | 550 | 578 | 607 | 636 | 667 |
| N= 70 | 177 | 203 | 229 | 255 | 281 | 307 | 333 | 359 | 385 | 411 | 438 | 465 | 493 | 521 | 549 | 577 | 606 | 635 | 666 |
| N= 71 | 174 | 199 | 225 | 251 | 277 | 303 | 329 | 355 | 382 | 409 | 435 | 463 | 490 | 517 | 545 | 573 | 602 | 631 | 662 |
| N= 72 | 171 | 196 | 222 | 248 | 274 | 300 | 326 | 352 | 379 | 406 | 432 | 459 | 487 | 514 | 542 | 570 | 599 | 628 | 659 |
| N= 73 | 168 | 194 | 220 | 246 | 272 | 298 | 324 | 350 | 376 | 403 | 430 | 457 | 484 | 511 | 539 | 567 | 595 | 624 | 655 |
| N= 74 | 165 | 191 | 217 | 243 | 269 | 295 | 321 | 347 | 373 | 400 | 427 | 454 | 481 | 508 | 536 | 564 | 592 | 621 | 652 |
| N= 75 | 162 | 188 | 214 | 240 | 266 | 292 | 318 | 344 | 371 | 397 | 424 | 451 | 478 | 506 | 533 | 561 | 590 | 618 | 649 |
| N= 76 | 159 | 185 | 211 | 237 | 263 | 289 | 315 | 341 | 368 | 394 | 421 | 448 | 475 | 503 | 530 | 558 | 587 | 615 | 646 |
| N= 77 | 156 | 182 | 208 | 234 | 260 | 286 | 312 | 338 | 365 | 391 | 418 | 445 | 472 | 500 | 527 | 555 | 584 | 612 | 643 |
| N= 78 | 153 | 179 | 205 | 231 | 257 | 283 | 309 | 335 | 362 | 388 | 415 | 442 | 469 | 496 | 524 | 552 | 580 | 609 | 640 |
| N= 79 | 150 | 176 | 202 | 228 | 254 | 280 | 306 | 332 | 358 | 385 | 412 | 439 | 466 | 493 | 521 | 549 | 577 | 606 | 637 |
| N= 80 | 147 | 173 | 199 | 225 | 251 | 277 | 303 | 329 | 355 | 382 | 409 | 435 | 463 | 490 | 517 | 545 | 573 | 602 | 633 |
| N= 81 | 144 | 170 | 196 | 222 | 248 | 274 | 300 | 326 | 352 | 379 | 406 | 432 | 459 | 487 | 514 | 542 | 570 | 599 | 630 |
| N= 82 | 141 | 167 | 193 | 219 | 245 | 271 | 297 | 323 | 349 | 375 | 402 | 429 | 456 | 483 | 511 | 539 | 567 | 595 | 626 |
| N= 83 | 138 | 164 | 190 | 216 | 242 | 268 | 294 | 320 | 346 | 372 | 399 | 425 | 452 | 480 | 507 | 535 | 563 | 591 | 622 |
| N= 84 | 135 | 161 | 187 | 213 | 239 | 265 | 291 | 317 | 343 | 369 | 395 | 421 | 448 | 475 | 503 | 530 | 558 | 587 | 618 |
| N= 85 | 132 | 158 | 184 | 210 | 236 | 262 | 288 | 314 | 340 | 366 | 392 | 418 | 445 | 472 | 500 | 527 | 555 | 584 | 615 |
| N= 86 | 129 | 155 | 181 | 207 | 233 | 259 | 285 | 311 | 337 | 363 | 389 | 415 | 442 | 469 | 496 | 524 | 552 | 580 | 611 |
| N= 87 | 126 | 152 | 178 | 204 | 230 | 256 | | | | | | | | | | | | | |

TABLE II (Cont.)
FACTORS OF ONE-SIDED TESTS FOR A NORMAL DISTRIBUTION

95% CONFIDENCE

Proportion of Population Covered →

| | .68 | .69 | .70 | .71 | .72 | .73 | .74 | .75 | .76 | .77 | .78 | .79 | .80 | .81 | .82 | .83 | .84 | .85 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| N= 3 | 3.085 | 3.180 | 3.277 | 3.377 | 3.480 | 3.586 | 3.694 | 3.806 | 3.922 | 4.041 | 4.164 | 4.292 | 4.424 | 4.562 | 4.705 | 4.854 | 5.011 | 5.175 |
| N= 4 | 2.136 | 2.200 | 2.265 | 2.332 | 2.401 | 2.471 | 2.543 | 2.618 | 2.694 | 2.773 | 2.854 | 2.939 | 3.026 | 3.117 | 3.211 | 3.309 | 3.412 | 3.520 |
| N= 5 | 1.755 | 1.807 | 1.861 | 1.916 | 1.972 | 2.030 | 2.089 | 2.150 | 2.212 | 2.277 | 2.343 | 2.412 | 2.483 | 2.557 | 2.634 | 2.714 | 2.798 | 2.885 |
| N= 6 | 1.543 | 1.593 | 1.638 | 1.687 | 1.737 | 1.788 | 1.841 | 1.895 | 1.951 | 2.008 | 2.067 | 2.128 | 2.191 | 2.256 | 2.324 | 2.395 | 2.469 | 2.546 |
| N= 7 | 1.407 | 1.450 | 1.495 | 1.540 | 1.586 | 1.634 | 1.682 | 1.732 | 1.784 | 1.836 | 1.891 | 1.947 | 2.005 | 2.065 | 2.128 | 2.193 | 2.261 | 2.332 |
| N= 8 | 1.310 | 1.351 | 1.393 | 1.436 | 1.480 | 1.525 | 1.571 | 1.618 | 1.666 | 1.716 | 1.767 | 1.820 | 1.875 | 1.932 | 1.991 | 2.053 | 2.117 | 2.184 |
| N= 9 | 1.237 | 1.276 | 1.317 | 1.358 | 1.400 | 1.443 | 1.487 | 1.532 | 1.579 | 1.626 | 1.675 | 1.726 | 1.779 | 1.833 | 1.889 | 1.948 | 2.009 | 2.074 |
| N= 10 | 1.179 | 1.218 | 1.257 | 1.297 | 1.337 | 1.379 | 1.421 | 1.465 | 1.510 | 1.556 | 1.604 | 1.653 | 1.703 | 1.755 | 1.810 | 1.867 | 1.926 | 1.988 |
| N= 11 | 1.133 | 1.170 | 1.208 | 1.247 | 1.286 | 1.327 | 1.368 | 1.411 | 1.454 | 1.499 | 1.546 | 1.593 | 1.642 | 1.693 | 1.746 | 1.801 | 1.859 | 1.919 |
| N= 12 | 1.094 | 1.130 | 1.167 | 1.205 | 1.244 | 1.284 | 1.324 | 1.366 | 1.409 | 1.452 | 1.498 | 1.544 | 1.592 | 1.642 | 1.694 | 1.748 | 1.804 | 1.862 |
| N= 13 | 1.061 | 1.097 | 1.133 | 1.170 | 1.208 | 1.247 | 1.287 | 1.328 | 1.370 | 1.413 | 1.457 | 1.503 | 1.550 | 1.599 | 1.652 | 1.707 | 1.763 | 1.821 |
| N= 14 | 1.032 | 1.068 | 1.104 | 1.140 | 1.178 | 1.216 | 1.255 | 1.296 | 1.337 | 1.379 | 1.423 | 1.468 | 1.514 | 1.562 | 1.612 | 1.664 | 1.718 | 1.774 |
| N= 15 | 1.008 | 1.042 | 1.078 | 1.114 | 1.151 | 1.189 | 1.228 | 1.267 | 1.308 | 1.350 | 1.393 | 1.437 | 1.483 | 1.530 | 1.579 | 1.630 | 1.683 | 1.739 |
| N= 16 | .986 | 1.020 | 1.055 | 1.091 | 1.128 | 1.165 | 1.203 | 1.242 | 1.283 | 1.324 | 1.366 | 1.410 | 1.455 | 1.502 | 1.550 | 1.601 | 1.653 | 1.708 |
| N= 17 | .966 | 1.000 | 1.035 | 1.071 | 1.107 | 1.144 | 1.182 | 1.220 | 1.260 | 1.301 | 1.343 | 1.386 | 1.431 | 1.477 | 1.525 | 1.575 | 1.627 | 1.681 |
| N= 18 | .949 | .983 | 1.017 | 1.052 | 1.088 | 1.125 | 1.162 | 1.201 | 1.240 | 1.280 | 1.322 | 1.365 | 1.409 | 1.455 | 1.502 | 1.551 | 1.603 | 1.656 |
| N= 19 | .933 | .967 | 1.001 | 1.036 | 1.071 | 1.107 | 1.145 | 1.183 | 1.222 | 1.262 | 1.303 | 1.345 | 1.389 | 1.434 | 1.481 | 1.530 | 1.581 | 1.634 |
| N= 20 | .919 | .952 | .986 | 1.020 | 1.056 | 1.092 | 1.129 | 1.166 | 1.205 | 1.245 | 1.286 | 1.328 | 1.371 | 1.416 | 1.463 | 1.511 | 1.562 | 1.614 |
| N= 21 | .905 | .938 | .972 | 1.006 | 1.042 | 1.077 | 1.114 | 1.151 | 1.190 | 1.229 | 1.270 | 1.312 | 1.355 | 1.399 | 1.446 | 1.494 | 1.544 | 1.596 |
| N= 22 | .893 | .926 | .960 | .994 | 1.029 | 1.064 | 1.101 | 1.138 | 1.176 | 1.215 | 1.255 | 1.297 | 1.340 | 1.384 | 1.430 | 1.478 | 1.527 | 1.579 |
| N= 23 | .882 | .915 | .948 | .982 | 1.017 | 1.052 | 1.088 | 1.125 | 1.163 | 1.202 | 1.242 | 1.283 | 1.326 | 1.370 | 1.416 | 1.463 | 1.512 | 1.564 |
| N= 24 | .872 | .904 | .937 | .971 | 1.006 | 1.041 | 1.077 | 1.114 | 1.151 | 1.190 | 1.230 | 1.271 | 1.313 | 1.357 | 1.402 | 1.450 | 1.499 | 1.550 |
| N= 25 | .862 | .894 | .927 | .961 | .995 | 1.030 | 1.066 | 1.103 | 1.140 | 1.179 | 1.218 | 1.259 | 1.301 | 1.345 | 1.393 | 1.437 | 1.486 | 1.537 |
| N= 26 | .853 | .885 | .918 | .952 | .986 | 1.021 | 1.056 | 1.093 | 1.130 | 1.168 | 1.208 | 1.248 | 1.290 | 1.334 | 1.379 | 1.425 | 1.474 | 1.525 |
| N= 27 | .844 | .877 | .909 | .943 | .977 | 1.011 | 1.047 | 1.083 | 1.120 | 1.159 | 1.198 | 1.238 | 1.280 | 1.323 | 1.368 | 1.414 | 1.463 | 1.513 |
| N= 28 | .837 | .869 | .901 | .934 | .968 | 1.003 | 1.038 | 1.074 | 1.112 | 1.150 | 1.189 | 1.229 | 1.270 | 1.313 | 1.358 | 1.404 | 1.452 | 1.503 |
| N= 29 | .829 | .861 | .894 | .927 | .960 | .995 | 1.030 | 1.066 | 1.103 | 1.141 | 1.180 | 1.220 | 1.261 | 1.304 | 1.349 | 1.395 | 1.442 | 1.493 |
| N= 30 | .822 | .854 | .886 | .919 | .953 | .987 | 1.022 | 1.058 | 1.095 | 1.133 | 1.172 | 1.212 | 1.253 | 1.296 | 1.340 | 1.385 | 1.433 | 1.483 |
| N= 31 | .815 | .847 | .880 | .912 | .946 | .980 | 1.015 | 1.051 | 1.088 | 1.125 | 1.164 | 1.204 | 1.245 | 1.287 | 1.331 | 1.377 | 1.425 | 1.474 |
| N= 32 | .809 | .841 | .873 | .906 | .939 | .973 | 1.008 | 1.044 | 1.081 | 1.118 | 1.157 | 1.196 | 1.237 | 1.280 | 1.323 | 1.369 | 1.416 | 1.466 |
| N= 33 | .803 | .835 | .867 | .900 | .933 | .967 | 1.002 | 1.037 | 1.074 | 1.111 | 1.150 | 1.189 | 1.230 | 1.272 | 1.316 | 1.361 | 1.409 | 1.458 |
| N= 34 | .798 | .829 | .861 | .894 | .927 | .961 | .996 | 1.031 | 1.067 | 1.105 | 1.143 | 1.183 | 1.223 | 1.265 | 1.309 | 1.354 | 1.401 | 1.450 |
| N= 35 | .792 | .824 | .856 | .888 | .921 | .955 | .990 | 1.025 | 1.061 | 1.099 | 1.137 | 1.176 | 1.217 | 1.259 | 1.302 | 1.347 | 1.394 | 1.443 |
| N= 36 | .787 | .818 | .850 | .883 | .916 | .950 | .984 | 1.019 | 1.056 | 1.093 | 1.131 | 1.170 | 1.210 | 1.252 | 1.296 | 1.341 | 1.387 | 1.436 |
| N= 37 | .782 | .813 | .845 | .878 | .911 | .944 | .979 | 1.014 | 1.050 | 1.087 | 1.125 | 1.164 | 1.205 | 1.246 | 1.290 | 1.334 | 1.381 | 1.430 |
| N= 38 | .777 | .809 | .840 | .873 | .906 | .939 | .974 | 1.009 | 1.045 | 1.082 | 1.120 | 1.159 | 1.199 | 1.241 | 1.284 | 1.328 | 1.375 | 1.424 |
| N= 39 | .773 | .804 | .836 | .868 | .901 | .934 | .969 | 1.004 | 1.040 | 1.077 | 1.114 | 1.153 | 1.194 | 1.235 | 1.278 | 1.323 | 1.369 | 1.418 |
| N= 40 | .769 | .800 | .831 | .863 | .896 | .930 | .964 | .999 | 1.035 | 1.072 | 1.109 | 1.148 | 1.188 | 1.230 | 1.273 | 1.317 | 1.364 | 1.412 |
| N= 41 | .764 | .795 | .827 | .859 | .892 | .925 | .959 | .994 | 1.030 | 1.067 | 1.105 | 1.143 | 1.183 | 1.225 | 1.268 | 1.312 | 1.358 | 1.407 |
| N= 42 | .760 | .791 | .823 | .855 | .888 | .921 | .955 | .990 | 1.026 | 1.062 | 1.100 | 1.139 | 1.179 | 1.220 | 1.263 | 1.307 | 1.353 | 1.401 |
| N= 43 | .757 | .788 | .819 | .851 | .884 | .917 | .951 | .986 | 1.021 | 1.058 | 1.096 | 1.134 | 1.174 | 1.215 | 1.258 | 1.302 | 1.348 | 1.396 |
| N= 44 | .753 | .784 | .815 | .847 | .880 | .913 | .947 | .982 | 1.017 | 1.054 | 1.091 | 1.130 | 1.170 | 1.211 | 1.255 | 1.297 | 1.343 | 1.391 |
| N= 45 | .749 | .780 | .812 | .844 | .876 | .909 | .943 | .978 | 1.013 | 1.050 | 1.087 | 1.126 | 1.165 | 1.206 | 1.249 | 1.293 | 1.339 | 1.387 |
| N= 46 | .746 | .777 | .808 | .840 | .872 | .906 | .939 | .974 | 1.010 | 1.046 | 1.083 | 1.122 | 1.161 | 1.202 | 1.245 | 1.289 | 1.335 | 1.382 |
| N= 47 | .743 | .774 | .805 | .837 | .869 | .902 | .936 | .970 | 1.006 | 1.042 | 1.079 | 1.118 | 1.157 | 1.198 | 1.241 | 1.285 | 1.330 | 1.378 |
| N= 48 | .739 | .770 | .801 | .833 | .866 | .899 | .932 | .967 | 1.002 | 1.039 | 1.076 | 1.114 | 1.154 | 1.194 | 1.237 | 1.281 | 1.326 | 1.374 |
| N= 49 | .736 | .767 | .798 | .830 | .862 | .895 | .929 | .964 | .999 | 1.035 | 1.072 | 1.110 | 1.150 | 1.191 | 1.233 | 1.277 | 1.322 | 1.370 |
| N= 50 | .733 | .764 | .795 | .827 | .859 | .892 | .926 | .960 | .996 | 1.032 | 1.069 | 1.107 | 1.146 | 1.187 | 1.229 | 1.273 | 1.318 | 1.366 |
| N= 55 | .720 | .750 | .781 | .813 | .845 | .878 | .911 | .945 | .980 | 1.016 | 1.053 | 1.091 | 1.130 | 1.171 | 1.213 | 1.256 | 1.301 | 1.348 |
| N= 60 | .707 | .738 | .769 | .801 | .833 | .865 | .897 | .933 | .967 | 1.003 | 1.040 | 1.078 | 1.116 | 1.157 | 1.198 | 1.241 | 1.285 | 1.330 |
| N= 65 | .694 | .725 | .756 | .789 | .821 | .854 | .887 | .921 | .956 | 1.004 | 1.042 | 1.081 | 1.120 | 1.161 | 1.201 | 1.241 | 1.281 | 1.320 |
| N= 70 | .689 | .719 | .749 | .781 | .812 | .845 | .878 | .911 | .946 | .981 | 1.018 | 1.055 | 1.094 | 1.133 | 1.176 | 1.219 | 1.262 | 1.308 |

| | | | | | | | | | | | | | | | | | | |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| N# 14 | 1.032 | 1.068 | 1.104 | 1.140 | 1.178 | 1.216 | 1.255 | 1.296 | 1.337 | 1.379 | 1.423 | 1.468 | 1.514 | 1.562 | 1.612 | 1.664 | 1.718 | 1.774 |
| N# 15 | 1.009 | 1.042 | 1.078 | 1.114 | 1.151 | 1.189 | 1.228 | 1.267 | 1.308 | 1.350 | 1.393 | 1.437 | 1.483 | 1.530 | 1.579 | 1.630 | 1.683 | 1.739 |
| N# 16 | 0.985 | 1.020 | 1.055 | 1.091 | 1.128 | 1.165 | 1.203 | 1.242 | 1.283 | 1.324 | 1.366 | 1.410 | 1.455 | 1.502 | 1.550 | 1.601 | 1.653 | 1.708 |
| N# 17 | 0.966 | 1.000 | 1.035 | 1.071 | 1.107 | 1.144 | 1.182 | 1.220 | 1.260 | 1.301 | 1.343 | 1.386 | 1.431 | 1.477 | 1.525 | 1.575 | 1.627 | 1.681 |
| N# 18 | 0.949 | 0.983 | 1.017 | 1.052 | 1.088 | 1.125 | 1.162 | 1.201 | 1.240 | 1.280 | 1.322 | 1.365 | 1.409 | 1.455 | 1.502 | 1.551 | 1.603 | 1.656 |
| N# 19 | 0.933 | 0.967 | 1.001 | 1.036 | 1.071 | 1.107 | 1.145 | 1.183 | 1.222 | 1.262 | 1.303 | 1.345 | 1.389 | 1.434 | 1.481 | 1.530 | 1.581 | 1.634 |
| N# 20 | 0.919 | 0.952 | 0.986 | 1.020 | 1.056 | 1.092 | 1.129 | 1.166 | 1.205 | 1.245 | 1.286 | 1.328 | 1.371 | 1.416 | 1.463 | 1.511 | 1.562 | 1.614 |
| N# 21 | 0.905 | 0.938 | 0.972 | 1.006 | 1.042 | 1.077 | 1.114 | 1.151 | 1.190 | 1.229 | 1.270 | 1.312 | 1.355 | 1.399 | 1.446 | 1.494 | 1.544 | 1.596 |
| N# 22 | 0.893 | 0.926 | 0.960 | 0.994 | 1.029 | 1.064 | 1.101 | 1.138 | 1.176 | 1.215 | 1.255 | 1.297 | 1.340 | 1.384 | 1.430 | 1.478 | 1.527 | 1.579 |
| N# 23 | 0.882 | 0.915 | 0.948 | 0.982 | 1.017 | 1.052 | 1.088 | 1.125 | 1.163 | 1.202 | 1.242 | 1.283 | 1.326 | 1.370 | 1.416 | 1.463 | 1.512 | 1.564 |
| N# 24 | 0.872 | 0.904 | 0.937 | 0.971 | 1.006 | 1.041 | 1.077 | 1.114 | 1.151 | 1.190 | 1.230 | 1.271 | 1.313 | 1.357 | 1.402 | 1.450 | 1.499 | 1.550 |
| N# 25 | 0.862 | 0.894 | 0.927 | 0.961 | 0.995 | 1.030 | 1.066 | 1.103 | 1.140 | 1.179 | 1.218 | 1.259 | 1.301 | 1.345 | 1.390 | 1.437 | 1.486 | 1.537 |
| N# 26 | 0.853 | 0.885 | 0.918 | 0.952 | 0.986 | 1.021 | 1.056 | 1.093 | 1.130 | 1.168 | 1.208 | 1.248 | 1.290 | 1.334 | 1.379 | 1.425 | 1.474 | 1.525 |
| N# 27 | 0.844 | 0.877 | 0.909 | 0.943 | 0.977 | 1.011 | 1.047 | 1.083 | 1.120 | 1.159 | 1.198 | 1.238 | 1.280 | 1.323 | 1.368 | 1.414 | 1.463 | 1.513 |
| N# 28 | 0.837 | 0.869 | 0.901 | 0.934 | 0.968 | 1.003 | 1.038 | 1.074 | 1.112 | 1.150 | 1.189 | 1.229 | 1.270 | 1.313 | 1.358 | 1.404 | 1.452 | 1.503 |
| N# 29 | 0.829 | 0.861 | 0.894 | 0.927 | 0.960 | 0.995 | 1.030 | 1.066 | 1.103 | 1.141 | 1.180 | 1.220 | 1.261 | 1.304 | 1.349 | 1.395 | 1.442 | 1.493 |
| N# 30 | 0.822 | 0.854 | 0.886 | 0.919 | 0.953 | 0.987 | 1.022 | 1.058 | 1.095 | 1.133 | 1.172 | 1.212 | 1.253 | 1.296 | 1.340 | 1.385 | 1.433 | 1.483 |
| N# 31 | 0.815 | 0.847 | 0.880 | 0.912 | 0.946 | 0.980 | 1.015 | 1.051 | 1.088 | 1.125 | 1.164 | 1.204 | 1.245 | 1.287 | 1.331 | 1.377 | 1.425 | 1.474 |
| N# 32 | 0.809 | 0.841 | 0.873 | 0.906 | 0.939 | 0.973 | 1.008 | 1.044 | 1.081 | 1.118 | 1.157 | 1.196 | 1.237 | 1.280 | 1.323 | 1.369 | 1.416 | 1.465 |
| N# 33 | 0.803 | 0.835 | 0.867 | 0.900 | 0.933 | 0.967 | 1.002 | 1.037 | 1.074 | 1.111 | 1.150 | 1.189 | 1.230 | 1.272 | 1.316 | 1.361 | 1.409 | 1.459 |
| N# 34 | 0.798 | 0.829 | 0.861 | 0.894 | 0.927 | 0.961 | 0.996 | 1.031 | 1.067 | 1.105 | 1.143 | 1.183 | 1.222 | 1.265 | 1.309 | 1.354 | 1.401 | 1.450 |
| N# 35 | 0.792 | 0.824 | 0.856 | 0.888 | 0.921 | 0.955 | 0.990 | 1.025 | 1.061 | 1.099 | 1.137 | 1.176 | 1.217 | 1.259 | 1.302 | 1.347 | 1.394 | 1.443 |
| N# 36 | 0.787 | 0.818 | 0.850 | 0.883 | 0.916 | 0.950 | 0.984 | 1.019 | 1.056 | 1.093 | 1.131 | 1.170 | 1.210 | 1.252 | 1.296 | 1.341 | 1.387 | 1.436 |
| N# 37 | 0.782 | 0.813 | 0.845 | 0.878 | 0.911 | 0.944 | 0.979 | 1.014 | 1.050 | 1.087 | 1.125 | 1.164 | 1.205 | 1.246 | 1.290 | 1.334 | 1.381 | 1.430 |
| N# 38 | 0.777 | 0.809 | 0.840 | 0.873 | 0.906 | 0.939 | 0.974 | 1.009 | 1.045 | 1.082 | 1.120 | 1.159 | 1.199 | 1.241 | 1.284 | 1.328 | 1.375 | 1.424 |
| N# 39 | 0.773 | 0.804 | 0.836 | 0.868 | 0.901 | 0.934 | 0.969 | 1.004 | 1.040 | 1.077 | 1.114 | 1.153 | 1.194 | 1.235 | 1.278 | 1.323 | 1.369 | 1.418 |
| N# 40 | 0.769 | 0.800 | 0.831 | 0.863 | 0.896 | 0.930 | 0.964 | 0.999 | 1.035 | 1.072 | 1.109 | 1.148 | 1.188 | 1.230 | 1.273 | 1.317 | 1.364 | 1.412 |
| N# 41 | 0.764 | 0.795 | 0.827 | 0.859 | 0.892 | 0.925 | 0.959 | 0.994 | 1.030 | 1.067 | 1.105 | 1.143 | 1.183 | 1.225 | 1.268 | 1.312 | 1.358 | 1.407 |
| N# 42 | 0.760 | 0.791 | 0.823 | 0.855 | 0.888 | 0.921 | 0.955 | 0.990 | 1.026 | 1.062 | 1.100 | 1.139 | 1.179 | 1.220 | 1.263 | 1.307 | 1.353 | 1.401 |
| N# 43 | 0.757 | 0.788 | 0.819 | 0.851 | 0.884 | 0.917 | 0.951 | 0.986 | 1.021 | 1.058 | 1.096 | 1.134 | 1.174 | 1.215 | 1.258 | 1.302 | 1.348 | 1.396 |
| N# 44 | 0.753 | 0.784 | 0.815 | 0.847 | 0.880 | 0.913 | 0.947 | 0.982 | 1.017 | 1.054 | 1.091 | 1.130 | 1.170 | 1.211 | 1.253 | 1.297 | 1.343 | 1.391 |
| N# 45 | 0.749 | 0.780 | 0.812 | 0.844 | 0.876 | 0.909 | 0.943 | 0.978 | 1.013 | 1.050 | 1.087 | 1.126 | 1.165 | 1.206 | 1.245 | 1.289 | 1.339 | 1.387 |
| N# 46 | 0.746 | 0.777 | 0.808 | 0.840 | 0.872 | 0.906 | 0.939 | 0.974 | 1.010 | 1.046 | 1.083 | 1.122 | 1.161 | 1.202 | 1.245 | 1.289 | 1.334 | 1.382 |
| N# 47 | 0.743 | 0.773 | 0.805 | 0.837 | 0.869 | 0.902 | 0.936 | 0.970 | 1.006 | 1.042 | 1.079 | 1.118 | 1.157 | 1.198 | 1.241 | 1.285 | 1.330 | 1.378 |
| N# 48 | 0.739 | 0.770 | 0.801 | 0.833 | 0.866 | 0.899 | 0.932 | 0.967 | 1.002 | 1.039 | 1.076 | 1.114 | 1.154 | 1.194 | 1.237 | 1.281 | 1.326 | 1.374 |
| N# 49 | 0.736 | 0.767 | 0.798 | 0.830 | 0.862 | 0.895 | 0.929 | 0.964 | 0.999 | 1.035 | 1.072 | 1.110 | 1.150 | 1.191 | 1.233 | 1.277 | 1.322 | 1.370 |
| N# 50 | 0.733 | 0.764 | 0.795 | 0.827 | 0.859 | 0.892 | 0.926 | 0.960 | 0.996 | 1.032 | 1.069 | 1.107 | 1.146 | 1.187 | 1.229 | 1.273 | 1.318 | 1.366 |
| N# 55 | 0.720 | 0.750 | 0.781 | 0.813 | 0.845 | 0.878 | 0.911 | 0.945 | 0.980 | 1.016 | 1.053 | 1.091 | 1.130 | 1.171 | 1.213 | 1.256 | 1.301 | 1.346 |
| N# 60 | 0.708 | 0.738 | 0.769 | 0.801 | 0.833 | 0.865 | 0.899 | 0.933 | 0.967 | 1.003 | 1.040 | 1.078 | 1.116 | 1.157 | 1.198 | 1.241 | 1.285 | 1.330 |
| N# 65 | 0.698 | 0.728 | 0.759 | 0.790 | 0.822 | 0.854 | 0.887 | 0.921 | 0.956 | 0.992 | 1.028 | 1.066 | 1.104 | 1.144 | 1.186 | 1.229 | 1.273 | 1.320 |
| N# 70 | 0.689 | 0.719 | 0.749 | 0.781 | 0.812 | 0.845 | 0.878 | 0.911 | 0.946 | 0.981 | 1.018 | 1.055 | 1.094 | 1.133 | 1.175 | 1.217 | 1.262 | 1.308 |
| N# 75 | 0.681 | 0.711 | 0.741 | 0.772 | 0.804 | 0.836 | 0.869 | 0.903 | 0.937 | 0.972 | 1.009 | 1.046 | 1.084 | 1.124 | 1.165 | 1.207 | 1.252 | 1.298 |
| N# 80 | 0.673 | 0.703 | 0.734 | 0.765 | 0.796 | 0.828 | 0.861 | 0.895 | 0.929 | 0.964 | 1.000 | 1.037 | 1.076 | 1.115 | 1.156 | 1.198 | 1.243 | 1.289 |
| N# 85 | 0.667 | 0.697 | 0.727 | 0.758 | 0.789 | 0.821 | 0.854 | 0.888 | 0.922 | 0.957 | 0.993 | 1.030 | 1.068 | 1.107 | 1.148 | 1.190 | 1.234 | 1.280 |
| N# 90 | 0.661 | 0.691 | 0.721 | 0.752 | 0.783 | 0.815 | 0.848 | 0.881 | 0.915 | 0.950 | 0.986 | 1.023 | 1.061 | 1.100 | 1.141 | 1.183 | 1.227 | 1.273 |
| N# 95 | 0.655 | 0.685 | 0.715 | 0.746 | 0.777 | 0.809 | 0.842 | 0.875 | 0.909 | 0.944 | 0.980 | 1.017 | 1.055 | 1.094 | 1.134 | 1.176 | 1.220 | 1.266 |
| N# 100 | 0.650 | 0.680 | 0.710 | 0.741 | 0.772 | 0.804 | 0.836 | 0.870 | 0.904 | 0.938 | 0.974 | 1.011 | 1.049 | 1.088 | 1.128 | 1.170 | 1.214 | 1.259 |
| N# 110 | 0.641 | 0.671 | 0.701 | 0.732 | 0.763 | 0.794 | 0.827 | 0.860 | 0.894 | 0.928 | 0.964 | 1.001 | 1.038 | 1.077 | 1.117 | 1.159 | 1.203 | 1.248 |
| N# 120 | 0.633 | 0.663 | 0.693 | 0.723 | 0.754 | 0.786 | 0.818 | 0.851 | 0.885 | 0.920 | 0.955 | 0.992 | 1.029 | 1.068 | 1.108 | 1.150 | 1.193 | 1.238 |
| N# 130 | 0.627 | 0.656 | 0.686 | 0.716 | 0.747 | 0.779 | 0.811 | 0.844 | 0.878 | 0.912 | 0.947 | 0.984 | 1.021 | 1.060 | 1.100 | 1.141 | 1.185 | 1.230 |
| N# 140 | 0.621 | 0.650 | 0.680 | 0.710 | 0.741 | 0.772 | 0.805 | 0.837 | 0.871 | 0.905 | 0.941 | 0.977 | 1.014 | 1.053 | 1.093 | 1.134 | 1.177 | 1.222 |
| N# 150 | 0.615 | 0.644 | 0.674 | 0.704 | 0.735 | 0.767 | 0.799 | 0.832 | 0.865 | 0.899 | 0.935 | 0.971 | 1.008 | 1.046 | 1.086 | 1.128 | 1.170 | 1.215 |
| N# 160 | 0.610 | 0.639 | 0.669 | 0.699 | 0.730 | 0.762 | 0.794 | 0.826 | 0.860 | 0.894 | 0.929 | 0.965 | 1.002 | 1.041 | 1.080 | 1.122 | 1.164 | 1.209 |
| N# 170 | 0.606 | 0.635 | 0.665 | 0.695 | 0.726 | 0.757 | 0.789 | 0.821 | 0.855 | 0.889 | 0.924 | 0.960 | 0.997 | 1.036 | 1.075 | 1.116 | 1.159 | 1.204 |
| N# 180 | 0.602 | 0.631 | 0.661 | 0.691 | 0.721 | 0.753 | 0.785 | 0.817 | 0.850 | 0.885 | 0.920 | 0.956 | 0.993 | 1.031 | 1.070 | 1.111 | 1.154 | 1.198 |
| N# 190 | 0.598 | 0.627 | 0.657 | 0.687 | 0.717 | 0.749 | 0.781 | 0.813 | 0.846 | 0.880 | 0.915 | 0.951 | 0.988 | 1.026 | 1.066 | 1.107 | 1.149 | 1.194 |
| N# 200 | 0.595 | 0.624 | 0.653 | 0.683 | 0.714 | 0.745 | 0.777 | 0.809 | 0.843 | 0.877 | 0.912 | 0.947 | 0.984 | 1.022 | 1.062 | 1.103 | 1.145 | 1.190 |
| N# 250 | 0.581 | 0.610 | 0.639 | 0.669 | 0.700 | 0.731 | 0.762 | 0.794 | 0.828 | 0.862 | 0.896 | 0.932 | 0.969 | 1.006 | 1.046 | 1.086 | 1.128 | 1.172 |
| N# 300 | 0.571 | 0.599 | 0.629 | 0.659 | 0.689 | 0.720 | 0.751 | 0.784 | 0.817 | 0.850 | 0.885 | 0.920 | 0.957 | 0.995 | 1.034 | 1.074 | 1.116 | 1.160 |
| N# 400 | 0.556 | 0.585 | 0.614 | 0.644 | 0.674 | 0.705 | 0.736 | 0.768 | 0.801 | 0.835 | 0.869 | 0.904 | 0.941 | 0.978 | 1.017 | 1.057 | 1.099 | 1.143 |
| N# 500 | 0.547 | 0.576 | 0.605 | 0.634 | 0.664 | 0.695 | 0.726 | 0.758 | 0.791 | 0.824 | 0.859 | 0.894 | 0.930 | 0.967 | 1.006 | 1.046 | 1.088 | 1.131 |
| N# 600 | 0.540 | 0.568 | 0.597 | 0.627 | 0.657 | 0.688 | 0.719 | 0.751 | 0.783 | 0.817 | 0.851 | 0.886 | 0.922 | 0.959 | 0.998 | 1.038 | 1.079 | 1.122 |
| N# 700 | 0.534 | 0.563 | 0.592 | 0.621 | 0.651 | 0.682 | 0.713 | 0.745 | 0.777 | 0.811 | 0.845 | 0.880 | 0.916 | 0.953 | 0.992 | 1.031 | 1.073 | 1.116 |
| N# 800 | 0.530 | 0.558 | 0.588 | 0.617 | 0.647 | 0.677 | 0.709 | 0.740 | 0.773 | 0.80 | | | | | | | | |

TABLE II (Cont.)
FACTORS OF ONE-SIDED TOLERANCE LIMITS FOR A NORMAL DISTRIBUTION

95% CONFIDENCE

Proportion of Population Covered →

| | .86 | .87 | .88 | .89 | .90 | .91 | .92 | .93 | .94 | .95 | .96 | .97 | .98 | .99 | .995 | .999 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| N= 3 | 5.348 | 5.531 | 5.723 | 5.932 | 6.155 | 6.397 | 6.660 | 6.952 | 7.280 | 7.656 | 8.100 | 8.650 | 9.385 | 10.553 | 11.628 | 13.857 |
| N= 4 | 3.633 | 3.753 | 3.879 | 4.016 | 4.162 | 4.320 | 4.492 | 4.683 | 4.898 | 5.144 | 5.435 | 5.795 | 6.277 | 7.041 | 7.748 | 9.214 |
| N= 5 | 2.977 | 3.075 | 3.177 | 3.288 | 3.407 | 3.535 | 3.675 | 3.829 | 4.003 | 4.203 | 4.438 | 4.730 | 5.121 | 5.741 | 6.313 | 7.502 |
| N= 6 | 2.627 | 2.713 | 2.804 | 2.902 | 3.006 | 3.119 | 3.242 | 3.379 | 3.532 | 3.708 | 3.915 | 4.172 | 4.516 | 5.062 | 5.565 | 6.612 |
| N= 7 | 2.407 | 2.485 | 2.569 | 2.659 | 2.755 | 2.859 | 2.972 | 3.098 | 3.238 | 3.399 | 3.590 | 3.826 | 4.141 | 4.642 | 5.103 | 6.063 |
| N= 8 | 2.254 | 2.329 | 2.407 | 2.492 | 2.582 | 2.679 | 2.786 | 2.904 | 3.036 | 3.187 | 3.366 | 3.588 | 3.884 | 4.354 | 4.787 | 5.687 |
| N= 9 | 2.141 | 2.212 | 2.287 | 2.368 | 2.454 | 2.544 | 2.648 | 2.761 | 2.887 | 3.031 | 3.202 | 3.413 | 3.695 | 4.143 | 4.556 | 5.413 |
| N= 10 | 2.053 | 2.122 | 2.193 | 2.272 | 2.355 | 2.444 | 2.542 | 2.650 | 2.772 | 2.911 | 3.075 | 3.278 | 3.550 | 3.981 | 4.378 | 5.203 |
| N= 11 | 1.982 | 2.049 | 2.118 | 2.194 | 2.275 | 2.362 | 2.457 | 2.562 | 2.679 | 2.814 | 2.974 | 3.170 | 3.434 | 3.851 | 4.236 | 5.035 |
| N= 12 | 1.924 | 1.989 | 2.057 | 2.131 | 2.209 | 2.294 | 2.387 | 2.489 | 2.604 | 2.735 | 2.891 | 3.083 | 3.339 | 3.746 | 4.121 | 4.899 |
| N= 13 | 1.875 | 1.939 | 2.005 | 2.078 | 2.155 | 2.238 | 2.329 | 2.429 | 2.541 | 2.670 | 2.822 | 3.009 | 3.260 | 3.658 | 4.025 | 4.785 |
| N= 14 | 1.833 | 1.896 | 1.961 | 2.033 | 2.108 | 2.190 | 2.279 | 2.377 | 2.487 | 2.614 | 2.763 | 2.947 | 3.193 | 3.584 | 3.943 | 4.689 |
| N= 15 | 1.797 | 1.859 | 1.923 | 1.994 | 2.068 | 2.148 | 2.236 | 2.333 | 2.441 | 2.566 | 2.712 | 2.893 | 3.135 | 3.520 | 3.873 | 4.607 |
| N= 16 | 1.764 | 1.827 | 1.890 | 1.959 | 2.033 | 2.112 | 2.198 | 2.294 | 2.401 | 2.523 | 2.668 | 2.847 | 3.085 | 3.464 | 3.812 | 4.535 |
| N= 17 | 1.733 | 1.798 | 1.861 | 1.929 | 2.002 | 2.080 | 2.165 | 2.260 | 2.365 | 2.486 | 2.629 | 2.805 | 3.041 | 3.414 | 3.758 | 4.471 |
| N= 18 | 1.713 | 1.772 | 1.834 | 1.902 | 1.974 | 2.051 | 2.135 | 2.229 | 2.333 | 2.453 | 2.594 | 2.768 | 3.001 | 3.370 | 3.710 | 4.414 |
| N= 19 | 1.690 | 1.749 | 1.811 | 1.877 | 1.948 | 2.025 | 2.109 | 2.201 | 2.304 | 2.423 | 2.562 | 2.735 | 2.965 | 3.330 | 3.667 | 4.364 |
| N= 20 | 1.670 | 1.728 | 1.789 | 1.855 | 1.926 | 2.002 | 2.084 | 2.176 | 2.278 | 2.396 | 2.534 | 2.705 | 2.933 | 3.295 | 3.628 | 4.318 |
| N= 21 | 1.651 | 1.709 | 1.769 | 1.835 | 1.905 | 1.980 | 2.062 | 2.153 | 2.255 | 2.371 | 2.508 | 2.678 | 2.904 | 3.262 | 3.592 | 4.278 |
| N= 22 | 1.634 | 1.691 | 1.752 | 1.817 | 1.886 | 1.961 | 2.042 | 2.132 | 2.233 | 2.349 | 2.485 | 2.653 | 2.877 | 3.233 | 3.560 | 4.238 |
| N= 23 | 1.618 | 1.675 | 1.735 | 1.800 | 1.869 | 1.943 | 2.024 | 2.113 | 2.213 | 2.328 | 2.463 | 2.630 | 2.853 | 3.206 | 3.530 | 4.203 |
| N= 24 | 1.604 | 1.660 | 1.720 | 1.784 | 1.853 | 1.926 | 2.007 | 2.096 | 2.195 | 2.309 | 2.443 | 2.609 | 2.830 | 3.181 | 3.503 | 4.171 |
| N= 25 | 1.590 | 1.647 | 1.706 | 1.770 | 1.838 | 1.911 | 1.991 | 2.079 | 2.178 | 2.291 | 2.425 | 2.589 | 2.809 | 3.157 | 3.478 | 4.142 |
| N= 26 | 1.578 | 1.634 | 1.693 | 1.756 | 1.824 | 1.897 | 1.976 | 2.064 | 2.162 | 2.275 | 2.408 | 2.571 | 2.790 | 3.136 | 3.454 | 4.114 |
| N= 27 | 1.566 | 1.622 | 1.680 | 1.742 | 1.811 | 1.884 | 1.963 | 2.051 | 2.148 | 2.260 | 2.392 | 2.554 | 2.772 | 3.116 | 3.433 | 4.089 |
| N= 28 | 1.555 | 1.611 | 1.669 | 1.732 | 1.799 | 1.871 | 1.950 | 2.037 | 2.134 | 2.245 | 2.377 | 2.539 | 2.755 | 3.097 | 3.412 | 4.065 |
| N= 29 | 1.545 | 1.600 | 1.658 | 1.721 | 1.788 | 1.860 | 1.938 | 2.024 | 2.121 | 2.232 | 2.363 | 2.524 | 2.739 | 3.080 | 3.393 | 4.043 |
| N= 30 | 1.535 | 1.591 | 1.648 | 1.711 | 1.777 | 1.849 | 1.927 | 2.013 | 2.109 | 2.220 | 2.350 | 2.510 | 2.724 | 3.064 | 3.376 | 4.022 |
| N= 31 | 1.526 | 1.581 | 1.639 | 1.701 | 1.767 | 1.838 | 1.916 | 2.002 | 2.098 | 2.208 | 2.337 | 2.497 | 2.710 | 3.048 | 3.359 | 4.002 |
| N= 32 | 1.518 | 1.572 | 1.630 | 1.692 | 1.758 | 1.829 | 1.906 | 1.992 | 2.087 | 2.197 | 2.326 | 2.485 | 2.697 | 3.034 | 3.343 | 3.984 |
| N= 33 | 1.510 | 1.564 | 1.621 | 1.683 | 1.749 | 1.820 | 1.897 | 1.982 | 2.077 | 2.186 | 2.315 | 2.473 | 2.685 | 3.020 | 3.328 | 3.966 |
| N= 34 | 1.502 | 1.556 | 1.613 | 1.675 | 1.740 | 1.811 | 1.888 | 1.972 | 2.067 | 2.176 | 2.304 | 2.462 | 2.673 | 3.007 | 3.314 | 3.949 |
| N= 35 | 1.495 | 1.549 | 1.605 | 1.667 | 1.732 | 1.803 | 1.879 | 1.964 | 2.058 | 2.167 | 2.294 | 2.452 | 2.662 | 2.994 | 3.300 | 3.934 |
| N= 36 | 1.488 | 1.542 | 1.598 | 1.659 | 1.724 | 1.795 | 1.871 | 1.955 | 2.050 | 2.158 | 2.285 | 2.442 | 2.651 | 2.983 | 3.287 | 3.919 |
| N= 37 | 1.481 | 1.535 | 1.591 | 1.652 | 1.717 | 1.787 | 1.863 | 1.947 | 2.041 | 2.149 | 2.276 | 2.432 | 2.641 | 2.972 | 3.275 | 3.904 |
| N= 38 | 1.475 | 1.528 | 1.585 | 1.646 | 1.710 | 1.780 | 1.856 | 1.940 | 2.033 | 2.141 | 2.267 | 2.423 | 2.631 | 2.961 | 3.264 | 3.891 |
| N= 39 | 1.469 | 1.522 | 1.578 | 1.639 | 1.703 | 1.773 | 1.849 | 1.932 | 2.026 | 2.133 | 2.259 | 2.415 | 2.622 | 2.951 | 3.253 | 3.879 |
| N= 40 | 1.463 | 1.516 | 1.572 | 1.633 | 1.697 | 1.766 | 1.842 | 1.925 | 2.019 | 2.125 | 2.251 | 2.406 | 2.613 | 2.941 | 3.242 | 3.865 |
| N= 41 | 1.457 | 1.510 | 1.566 | 1.627 | 1.691 | 1.760 | 1.836 | 1.919 | 2.012 | 2.118 | 2.244 | 2.398 | 2.605 | 2.931 | 3.232 | 3.853 |
| N= 42 | 1.452 | 1.505 | 1.561 | 1.621 | 1.685 | 1.754 | 1.829 | 1.912 | 2.005 | 2.111 | 2.236 | 2.391 | 2.597 | 2.923 | 3.222 | 3.842 |
| N= 43 | 1.447 | 1.500 | 1.555 | 1.616 | 1.679 | 1.748 | 1.823 | 1.906 | 1.999 | 2.105 | 2.230 | 2.383 | 2.589 | 2.914 | 3.213 | 3.831 |
| N= 44 | 1.442 | 1.495 | 1.550 | 1.610 | 1.674 | 1.743 | 1.818 | 1.900 | 1.993 | 2.098 | 2.223 | 2.376 | 2.581 | 2.906 | 3.204 | 3.821 |
| N= 45 | 1.437 | 1.490 | 1.545 | 1.605 | 1.669 | 1.737 | 1.812 | 1.894 | 1.987 | 2.092 | 2.216 | 2.370 | 2.574 | 2.898 | 3.195 | 3.810 |
| N= 46 | 1.432 | 1.485 | 1.540 | 1.600 | 1.664 | 1.732 | 1.807 | 1.889 | 1.981 | 2.086 | 2.210 | 2.363 | 2.567 | 2.890 | 3.187 | 3.801 |
| N= 47 | 1.428 | 1.481 | 1.536 | 1.596 | 1.659 | 1.727 | 1.802 | 1.884 | 1.976 | 2.081 | 2.204 | 2.357 | 2.561 | 2.883 | 3.179 | 3.791 |
| N= 48 | 1.424 | 1.476 | 1.531 | 1.591 | 1.654 | 1.723 | 1.797 | 1.879 | 1.970 | 2.075 | 2.199 | 2.351 | 2.554 | 2.876 | 3.171 | 3.782 |
| N= 49 | 1.420 | 1.472 | 1.527 | 1.587 | 1.650 | 1.718 | 1.792 | 1.874 | 1.965 | 2.070 | 2.193 | 2.345 | 2.548 | 2.869 | 3.164 | 3.774 |
| N= 50 | 1.416 | 1.468 | 1.523 | 1.582 | 1.645 | 1.713 | 1.787 | 1.869 | 1.960 | 2.065 | 2.188 | 2.340 | 2.542 | 2.862 | 3.156 | 3.765 |
| N= 55 | 1.398 | 1.450 | 1.504 | 1.563 | 1.626 | 1.693 | 1.767 | 1.848 | 1.938 | 2.042 | 2.164 | 2.316 | 2.517 | 2.832 | 3.124 | 3.727 |
| N= 60 | 1.382 | 1.434 | 1.488 | 1.547 | 1.609 | 1.676 | 1.749 | 1.829 | 1.919 | 2.022 | 2.143 | 2.293 | 2.492 | 2.807 | 3.096 | 3.695 |
| N= 65 | 1.369 | 1.420 | 1.474 | 1.532 | 1.594 | 1.661 | 1.733 | 1.813 | 1.903 | 2.005 | 2.125 | 2.274 | 2.472 | 2.785 | 3.072 | 3.667 |
| N= 70 | 1.357 | 1.408 | 1.462 | 1.520 | 1.581 | 1.647 | 1.720 | 1.799 | 1.888 | 1.990 | 2.109 | 2.257 | 2.454 | 2.765 | 3.051 | 3.642 |
| N= 75 | 1.346 | 1.397 | 1.451 | 1.508 | 1.569 | 1.636 | 1.707 | 1.787 | 1.875 | 1.976 | 2.096 | 2.242 | 2.438 | 2.748 | 3.032 | 3.620 |
| N= 80 | 1.337 | 1.388 | 1.441 | 1.498 | 1.559 | 1.625 | 1.696 | 1.775 | 1.863 | 1.964 | 2.083 | 2.229 | 2.424 | 2.732 | 3.015 | 3.601 |
| N= 85 | 1.328 | 1.379 | 1.432 | 1.489 | 1.550 | 1.615 | 1.687 | 1.765 | 1.853 | 1.953 | 2.072 | 2.217 | 2.412 | 2.719 | 3.000 | 3.583 |
| N= 90 | 1.321 | 1.371 | 1.424 | 1.481 | 1.542 | 1.607 | 1.678 | 1.755 | 1.843 | 1.943 | 2.062 | 2.207 | 2.402 | 2.709 | 3.000 | 3.583 |

| | | | | | | | | | | | | | | | | |
|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| N= | 14 | 1.833 | 1.896 | 1.961 | 2.033 | 2.108 | 2.190 | 2.279 | 2.377 | 2.487 | 2.614 | 2.763 | 2.947 | 3.193 | 3.584 | 4.089 |
| N= | 15 | 1.797 | 1.859 | 1.923 | 1.994 | 2.068 | 2.148 | 2.236 | 2.333 | 2.441 | 2.566 | 2.712 | 2.893 | 3.135 | 3.520 | 4.077 |
| N= | 16 | 1.766 | 1.827 | 1.890 | 1.959 | 2.033 | 2.112 | 2.198 | 2.294 | 2.401 | 2.523 | 2.668 | 2.847 | 3.085 | 3.464 | 4.035 |
| N= | 17 | 1.738 | 1.798 | 1.861 | 1.929 | 2.002 | 2.080 | 2.165 | 2.260 | 2.365 | 2.486 | 2.629 | 2.805 | 3.041 | 3.414 | 4.071 |
| N= | 18 | 1.713 | 1.772 | 1.834 | 1.902 | 1.974 | 2.051 | 2.135 | 2.229 | 2.333 | 2.453 | 2.594 | 2.768 | 3.001 | 3.370 | 4.014 |
| N= | 19 | 1.690 | 1.749 | 1.811 | 1.877 | 1.948 | 2.025 | 2.109 | 2.201 | 2.304 | 2.423 | 2.562 | 2.735 | 2.965 | 3.330 | 4.064 |
| N= | 20 | 1.670 | 1.728 | 1.789 | 1.855 | 1.926 | 2.002 | 2.084 | 2.176 | 2.278 | 2.396 | 2.534 | 2.705 | 2.933 | 3.295 | 4.018 |
| N= | 21 | 1.651 | 1.709 | 1.769 | 1.835 | 1.905 | 1.980 | 2.062 | 2.153 | 2.255 | 2.371 | 2.508 | 2.678 | 2.904 | 3.262 | 4.076 |
| N= | 22 | 1.634 | 1.691 | 1.752 | 1.817 | 1.886 | 1.961 | 2.042 | 2.132 | 2.233 | 2.349 | 2.485 | 2.653 | 2.877 | 3.233 | 4.038 |
| N= | 23 | 1.618 | 1.675 | 1.735 | 1.800 | 1.869 | 1.943 | 2.024 | 2.113 | 2.213 | 2.328 | 2.463 | 2.630 | 2.853 | 3.206 | 4.023 |
| N= | 24 | 1.604 | 1.660 | 1.720 | 1.784 | 1.853 | 1.926 | 2.007 | 2.096 | 2.195 | 2.309 | 2.443 | 2.609 | 2.830 | 3.181 | 4.011 |
| N= | 25 | 1.590 | 1.647 | 1.706 | 1.770 | 1.838 | 1.911 | 1.991 | 2.079 | 2.178 | 2.291 | 2.425 | 2.589 | 2.809 | 3.157 | 4.042 |
| N= | 26 | 1.578 | 1.634 | 1.693 | 1.756 | 1.824 | 1.897 | 1.976 | 2.064 | 2.162 | 2.275 | 2.408 | 2.571 | 2.790 | 3.136 | 4.014 |
| N= | 27 | 1.566 | 1.622 | 1.680 | 1.744 | 1.811 | 1.884 | 1.963 | 2.050 | 2.148 | 2.260 | 2.392 | 2.554 | 2.772 | 3.116 | 4.089 |
| N= | 28 | 1.555 | 1.611 | 1.669 | 1.732 | 1.799 | 1.871 | 1.950 | 2.037 | 2.134 | 2.245 | 2.377 | 2.539 | 2.755 | 3.097 | 4.065 |
| N= | 29 | 1.545 | 1.600 | 1.658 | 1.721 | 1.788 | 1.860 | 1.938 | 2.024 | 2.121 | 2.232 | 2.363 | 2.524 | 2.739 | 3.080 | 4.043 |
| N= | 30 | 1.535 | 1.591 | 1.648 | 1.711 | 1.777 | 1.849 | 1.927 | 2.013 | 2.109 | 2.220 | 2.350 | 2.510 | 2.724 | 3.064 | 4.022 |
| N= | 31 | 1.526 | 1.581 | 1.639 | 1.701 | 1.767 | 1.838 | 1.916 | 2.002 | 2.098 | 2.208 | 2.337 | 2.497 | 2.710 | 3.048 | 4.002 |
| N= | 32 | 1.518 | 1.572 | 1.630 | 1.692 | 1.758 | 1.829 | 1.906 | 1.992 | 2.087 | 2.197 | 2.326 | 2.485 | 2.697 | 3.034 | 3.984 |
| N= | 33 | 1.510 | 1.564 | 1.621 | 1.683 | 1.749 | 1.820 | 1.897 | 1.982 | 2.077 | 2.186 | 2.315 | 2.473 | 2.685 | 3.020 | 3.966 |
| N= | 34 | 1.502 | 1.556 | 1.613 | 1.675 | 1.740 | 1.811 | 1.888 | 1.972 | 2.067 | 2.176 | 2.304 | 2.462 | 2.674 | 3.007 | 3.949 |
| N= | 35 | 1.495 | 1.549 | 1.605 | 1.667 | 1.732 | 1.803 | 1.879 | 1.964 | 2.058 | 2.167 | 2.294 | 2.452 | 2.662 | 2.994 | 3.934 |
| N= | 36 | 1.488 | 1.542 | 1.598 | 1.659 | 1.724 | 1.795 | 1.871 | 1.955 | 2.050 | 2.158 | 2.285 | 2.442 | 2.651 | 2.983 | 3.919 |
| N= | 37 | 1.481 | 1.535 | 1.591 | 1.652 | 1.717 | 1.787 | 1.863 | 1.947 | 2.041 | 2.149 | 2.276 | 2.432 | 2.641 | 2.972 | 3.904 |
| N= | 38 | 1.475 | 1.528 | 1.585 | 1.646 | 1.710 | 1.780 | 1.856 | 1.940 | 2.033 | 2.141 | 2.267 | 2.423 | 2.631 | 2.961 | 3.884 |
| N= | 39 | 1.469 | 1.522 | 1.578 | 1.639 | 1.703 | 1.773 | 1.849 | 1.932 | 2.026 | 2.133 | 2.259 | 2.415 | 2.622 | 2.951 | 3.878 |
| N= | 40 | 1.463 | 1.516 | 1.572 | 1.633 | 1.697 | 1.766 | 1.842 | 1.925 | 2.019 | 2.125 | 2.251 | 2.406 | 2.613 | 2.941 | 3.865 |
| N= | 41 | 1.457 | 1.510 | 1.566 | 1.627 | 1.691 | 1.760 | 1.836 | 1.919 | 2.012 | 2.118 | 2.244 | 2.398 | 2.605 | 2.931 | 3.853 |
| N= | 42 | 1.452 | 1.505 | 1.561 | 1.621 | 1.685 | 1.754 | 1.829 | 1.912 | 2.005 | 2.111 | 2.236 | 2.391 | 2.597 | 2.923 | 3.842 |
| N= | 43 | 1.447 | 1.500 | 1.555 | 1.616 | 1.679 | 1.748 | 1.823 | 1.906 | 1.999 | 2.105 | 2.230 | 2.383 | 2.589 | 2.914 | 3.831 |
| N= | 44 | 1.442 | 1.495 | 1.550 | 1.610 | 1.674 | 1.743 | 1.818 | 1.900 | 1.993 | 2.098 | 2.223 | 2.376 | 2.581 | 2.906 | 3.821 |
| N= | 45 | 1.437 | 1.490 | 1.545 | 1.605 | 1.669 | 1.737 | 1.812 | 1.894 | 1.987 | 2.092 | 2.216 | 2.370 | 2.574 | 2.898 | 3.810 |
| N= | 46 | 1.432 | 1.485 | 1.540 | 1.600 | 1.664 | 1.732 | 1.807 | 1.889 | 1.981 | 2.086 | 2.210 | 2.363 | 2.567 | 2.890 | 3.801 |
| N= | 47 | 1.428 | 1.481 | 1.536 | 1.596 | 1.659 | 1.727 | 1.802 | 1.884 | 1.976 | 2.081 | 2.204 | 2.357 | 2.561 | 2.883 | 3.791 |
| N= | 48 | 1.424 | 1.476 | 1.531 | 1.591 | 1.654 | 1.722 | 1.797 | 1.879 | 1.970 | 2.075 | 2.199 | 2.351 | 2.554 | 2.876 | 3.782 |
| N= | 49 | 1.420 | 1.472 | 1.527 | 1.587 | 1.650 | 1.718 | 1.792 | 1.874 | 1.965 | 2.070 | 2.193 | 2.345 | 2.548 | 2.869 | 3.774 |
| N= | 50 | 1.416 | 1.468 | 1.523 | 1.582 | 1.645 | 1.713 | 1.787 | 1.869 | 1.960 | 2.065 | 2.188 | 2.340 | 2.542 | 2.862 | 3.765 |
| N= | 51 | 1.412 | 1.464 | 1.519 | 1.578 | 1.641 | 1.709 | 1.782 | 1.864 | 1.955 | 2.060 | 2.182 | 2.334 | 2.536 | 2.856 | 3.756 |
| N= | 52 | 1.408 | 1.460 | 1.515 | 1.574 | 1.637 | 1.705 | 1.778 | 1.860 | 1.951 | 2.056 | 2.178 | 2.330 | 2.532 | 2.852 | 3.747 |
| N= | 53 | 1.404 | 1.456 | 1.511 | 1.570 | 1.633 | 1.701 | 1.774 | 1.856 | 1.947 | 2.052 | 2.174 | 2.326 | 2.528 | 2.848 | 3.738 |
| N= | 54 | 1.400 | 1.452 | 1.507 | 1.566 | 1.629 | 1.697 | 1.770 | 1.852 | 1.943 | 2.048 | 2.170 | 2.322 | 2.524 | 2.844 | 3.729 |
| N= | 55 | 1.396 | 1.448 | 1.503 | 1.562 | 1.625 | 1.693 | 1.766 | 1.848 | 1.939 | 2.044 | 2.166 | 2.318 | 2.520 | 2.840 | 3.720 |
| N= | 56 | 1.392 | 1.444 | 1.499 | 1.558 | 1.621 | 1.689 | 1.762 | 1.844 | 1.935 | 2.040 | 2.162 | 2.314 | 2.516 | 2.832 | 3.711 |
| N= | 57 | 1.388 | 1.440 | 1.495 | 1.554 | 1.617 | 1.685 | 1.758 | 1.840 | 1.931 | 2.036 | 2.158 | 2.310 | 2.512 | 2.832 | 3.702 |
| N= | 58 | 1.384 | 1.436 | 1.491 | 1.550 | 1.613 | 1.681 | 1.754 | 1.836 | 1.927 | 2.032 | 2.154 | 2.306 | 2.508 | 2.828 | 3.693 |
| N= | 59 | 1.380 | 1.432 | 1.487 | 1.546 | 1.609 | 1.677 | 1.750 | 1.832 | 1.923 | 2.028 | 2.150 | 2.302 | 2.504 | 2.824 | 3.684 |
| N= | 60 | 1.376 | 1.428 | 1.483 | 1.542 | 1.605 | 1.673 | 1.746 | 1.828 | 1.919 | 2.024 | 2.146 | 2.298 | 2.500 | 2.820 | 3.675 |
| N= | 61 | 1.372 | 1.424 | 1.479 | 1.538 | 1.601 | 1.669 | 1.742 | 1.824 | 1.915 | 2.020 | 2.142 | 2.294 | 2.496 | 2.816 | 3.666 |
| N= | 62 | 1.368 | 1.420 | 1.475 | 1.534 | 1.597 | 1.665 | 1.738 | 1.820 | 1.911 | 2.016 | 2.138 | 2.290 | 2.492 | 2.812 | 3.657 |
| N= | 63 | 1.364 | 1.416 | 1.471 | 1.530 | 1.593 | 1.661 | 1.734 | 1.816 | 1.907 | 2.012 | 2.134 | 2.286 | 2.488 | 2.808 | 3.648 |
| N= | 64 | 1.360 | 1.412 | 1.467 | 1.526 | 1.589 | 1.657 | 1.730 | 1.812 | 1.903 | 2.008 | 2.130 | 2.282 | 2.484 | 2.804 | 3.639 |
| N= | 65 | 1.356 | 1.408 | 1.463 | 1.522 | 1.585 | 1.653 | 1.726 | 1.808 | 1.899 | 2.004 | 2.126 | 2.278 | 2.480 | 2.800 | 3.630 |
| N= | 66 | 1.352 | 1.404 | 1.459 | 1.518 | 1.581 | 1.649 | 1.722 | 1.804 | 1.895 | 2.000 | 2.122 | 2.274 | 2.476 | 2.796 | 3.621 |
| N= | 67 | 1.348 | 1.400 | 1.455 | 1.514 | 1.577 | 1.645 | 1.718 | 1.800 | 1.891 | 2.000 | 2.122 | 2.274 | 2.476 | 2.796 | 3.612 |
| N= | 68 | 1.344 | 1.396 | 1.451 | 1.510 | 1.573 | 1.641 | 1.714 | 1.796 | 1.887 | 1.996 | 2.118 | 2.270 | 2.472 | 2.792 | 3.603 |
| N= | 69 | 1.340 | 1.392 | 1.447 | 1.506 | 1.569 | 1.637 | 1.710 | 1.792 | 1.883 | 1.992 | 2.114 | 2.266 | 2.468 | 2.788 | 3.594 |
| N= | 70 | 1.336 | 1.388 | 1.443 | 1.502 | 1.565 | 1.633 | 1.706 | 1.788 | 1.879 | 1.988 | 2.110 | 2.262 | 2.464 | 2.784 | 3.585 |
| N= | 71 | 1.332 | 1.384 | 1.439 | 1.498 | 1.561 | 1.629 | 1.702 | 1.784 | 1.875 | 1.984 | 2.106 | 2.258 | 2.460 | 2.780 | 3.576 |
| N= | 72 | 1.328 | 1.380 | 1.435 | 1.494 | 1.557 | 1.625 | 1.698 | 1.780 | 1.871 | 1.980 | 2.102 | 2.254 | 2.456 | 2.776 | 3.567 |
| N= | 73 | 1.324 | 1.376 | 1.431 | 1.490 | 1.553 | 1.621 | 1.694 | 1.776 | 1.867 | 1.976 | 2.098 | 2.250 | 2.452 | 2.772 | 3.558 |
| N= | 74 | 1.320 | 1.372 | 1.427 | 1.486 | 1.549 | 1.617 | 1.690 | 1.772 | 1.863 | 1.972 | 2.094 | 2.246 | 2.448 | 2.768 | 3.549 |
| N= | 75 | 1.316 | 1.368 | 1.423 | 1.482 | 1.545 | 1.613 | 1.686 | 1.768 | 1.859 | 1.968 | 2.090 | 2.242 | 2.444 | 2.764 | 3.540 |
| N= | 76 | 1.312 | 1.364 | 1.419 | 1.478 | 1.541 | 1.609 | 1.682 | 1.764 | 1.855 | 1.964 | 2.086 | 2.238 | 2.440 | 2.760 | 3.531 |
| N= | 77 | 1.308 | 1.360 | 1.415 | 1.474 | 1.537 | 1.605 | 1.678 | 1.760 | 1.851 | 1.960 | 2.082 | 2.234 | 2.436 | 2.756 | 3.522 |
| N= | 78 | 1.304 | 1.356 | 1.411 | 1.470 | 1.533 | 1.601 | 1.674 | 1.756 | 1.847 | 1.956 | 2.078 | 2.230 | 2.432 | 2.752 | 3.513 |
| N= | 79 | 1.300 | 1.352 | 1.407 | 1.466 | 1.529 | 1.597 | 1.670 | 1.752 | 1.843 | 1.952 | 2.074 | 2.226 | 2.428 | 2.748 | 3.504 |
| N= | 80 | 1.296 | 1.348 | 1.403 | 1.462 | 1.525 | 1.593 | 1.666 | 1.748 | 1.839 | 1.948 | 2.070 | 2.222 | 2.424 | 2.744 | 3.495 |
| N= | 81 | 1.292 | 1.344 | 1.399 | 1.458 | 1.521 | 1.589 | 1.662 | 1.744 | 1.835 | 1.944 | 2.066 | 2.218 | 2.420 | 2.740 | 3.486 |
| N= | 82 | 1.288 | 1.340 | 1.395 | 1.454 | 1.517 | 1.585 | 1.658 | 1.740 | 1.831 | 1.940 | 2.062 | 2.214 | 2.416 | 2.736 | 3.477 |
| N= | 83 | 1.284 | 1.336 | 1.391 | 1.450 | 1.513 | 1.581 | 1.654 | 1.736 | 1.827 | 1.936 | 2.058 | 2.210 | 2.412 | 2.732 | 3.468 |
| N= | 84 | 1.280 | 1.332 | 1.387 | 1.446 | 1.509 | 1.577 | 1.650 | 1.732 | 1.823 | 1.932 | 2.054 | 2.206 | 2.408 | 2.728 | 3.459 |
| N= | 85 | 1.276 | 1.328 | 1.383 | 1.442 | 1.505 | 1.573 | 1.646 | 1.728 | 1.819 | 1.928 | 2.050 | 2.202 | 2.404 | 2.724 | 3.450 |
| N= | 86 | 1.272 | 1.324 | 1.379 | 1.438 | 1.501 | 1.569 | 1.642 | 1.724 | 1.815 | 1.924 | 2.046 | 2.198 | 2.400 | 2.720 | 3.441 |
| N= | 87 | 1.268 | 1.320 | 1.375 | 1.434 | 1.497 | 1.565 | 1.638 | | | | | | | | |

TABLE III
FACTORS OF ONE-SIDED TOLERANCE LIMITS FOR A NORMAL DISTRIBUTION

99% CONFIDENCE

Proportion of Population Covered →

| | .50 | .51 | .52 | .53 | .54 | .55 | .56 | .57 | .58 | .59 | .60 | .61 | .62 | .63 | .64 | .65 | .66 | .67 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| N= 3 | 4.021 | 4.165 | 4.311 | 4.460 | 4.612 | 4.768 | 4.926 | 5.088 | 5.253 | 5.421 | 5.593 | 5.769 | 5.949 | 6.133 | 6.320 | 6.513 | 6.710 | 6.911 |
| N= 4 | 2.270 | 2.347 | 2.425 | 2.505 | 2.586 | 2.668 | 2.752 | 2.837 | 2.924 | 3.012 | 3.102 | 3.194 | 3.287 | 3.383 | 3.480 | 3.580 | 3.681 | 3.785 |
| N= 5 | 1.676 | 1.733 | 1.791 | 1.849 | 1.909 | 1.969 | 2.031 | 2.093 | 2.157 | 2.221 | 2.287 | 2.354 | 2.422 | 2.492 | 2.562 | 2.635 | 2.708 | 2.783 |
| N= 6 | 1.374 | 1.422 | 1.470 | 1.519 | 1.569 | 1.620 | 1.671 | 1.723 | 1.776 | 1.830 | 1.884 | 1.940 | 1.997 | 2.054 | 2.113 | 2.172 | 2.233 | 2.296 |
| N= 7 | 1.188 | 1.231 | 1.274 | 1.318 | 1.362 | 1.407 | 1.453 | 1.499 | 1.546 | 1.593 | 1.642 | 1.691 | 1.741 | 1.792 | 1.843 | 1.896 | 1.950 | 2.005 |
| N= 8 | 1.060 | 1.094 | 1.139 | 1.180 | 1.221 | 1.262 | 1.304 | 1.346 | 1.389 | 1.433 | 1.478 | 1.523 | 1.568 | 1.615 | 1.662 | 1.711 | 1.760 | 1.810 |
| N= 9 | 0.965 | 1.003 | 1.040 | 1.078 | 1.117 | 1.156 | 1.195 | 1.235 | 1.275 | 1.316 | 1.358 | 1.400 | 1.443 | 1.487 | 1.531 | 1.576 | 1.622 | 1.669 |
| N= 10 | 0.892 | 0.928 | 0.964 | 1.000 | 1.037 | 1.074 | 1.111 | 1.149 | 1.188 | 1.227 | 1.267 | 1.307 | 1.347 | 1.389 | 1.431 | 1.474 | 1.518 | 1.562 |
| N= 11 | 0.833 | 0.867 | 0.901 | 0.936 | 0.972 | 1.007 | 1.043 | 1.080 | 1.117 | 1.154 | 1.192 | 1.231 | 1.270 | 1.310 | 1.350 | 1.391 | 1.433 | 1.476 |
| N= 12 | 0.784 | 0.817 | 0.850 | 0.884 | 0.918 | 0.953 | 0.988 | 1.023 | 1.059 | 1.096 | 1.132 | 1.170 | 1.208 | 1.246 | 1.285 | 1.325 | 1.365 | 1.406 |
| N= 13 | 0.743 | 0.775 | 0.808 | 0.841 | 0.874 | 0.908 | 0.942 | 0.976 | 1.011 | 1.047 | 1.083 | 1.119 | 1.156 | 1.193 | 1.231 | 1.270 | 1.309 | 1.349 |
| N= 14 | 0.708 | 0.739 | 0.771 | 0.804 | 0.836 | 0.869 | 0.903 | 0.937 | 0.971 | 1.005 | 1.040 | 1.076 | 1.112 | 1.148 | 1.185 | 1.223 | 1.261 | 1.300 |
| N= 15 | 0.677 | 0.708 | 0.740 | 0.772 | 0.804 | 0.836 | 0.869 | 0.902 | 0.936 | 0.969 | 1.004 | 1.039 | 1.074 | 1.110 | 1.146 | 1.183 | 1.220 | 1.259 |
| N= 16 | 0.650 | 0.681 | 0.712 | 0.744 | 0.775 | 0.807 | 0.839 | 0.872 | 0.905 | 0.936 | 0.972 | 1.006 | 1.041 | 1.076 | 1.112 | 1.148 | 1.185 | 1.222 |
| N= 17 | 0.627 | 0.657 | 0.688 | 0.719 | 0.750 | 0.781 | 0.813 | 0.845 | 0.878 | 0.910 | 0.944 | 0.977 | 1.012 | 1.046 | 1.081 | 1.117 | 1.154 | 1.190 |
| N= 18 | 0.605 | 0.635 | 0.665 | 0.696 | 0.727 | 0.758 | 0.789 | 0.821 | 0.853 | 0.885 | 0.918 | 0.951 | 0.985 | 1.019 | 1.054 | 1.089 | 1.125 | 1.161 |
| N= 19 | 0.585 | 0.615 | 0.645 | 0.675 | 0.706 | 0.737 | 0.768 | 0.799 | 0.831 | 0.863 | 0.895 | 0.928 | 0.961 | 0.995 | 1.029 | 1.064 | 1.099 | 1.135 |
| N= 20 | 0.568 | 0.597 | 0.627 | 0.657 | 0.687 | 0.717 | 0.748 | 0.779 | 0.810 | 0.842 | 0.874 | 0.907 | 0.940 | 0.973 | 1.007 | 1.041 | 1.076 | 1.112 |
| N= 21 | 0.551 | 0.581 | 0.610 | 0.640 | 0.670 | 0.700 | 0.730 | 0.761 | 0.792 | 0.823 | 0.855 | 0.887 | 0.920 | 0.953 | 0.987 | 1.021 | 1.055 | 1.090 |
| N= 22 | 0.537 | 0.566 | 0.595 | 0.624 | 0.654 | 0.684 | 0.714 | 0.744 | 0.775 | 0.806 | 0.838 | 0.870 | 0.902 | 0.935 | 0.968 | 1.002 | 1.036 | 1.071 |
| N= 23 | 0.523 | 0.552 | 0.581 | 0.610 | 0.639 | 0.669 | 0.699 | 0.729 | 0.760 | 0.791 | 0.822 | 0.854 | 0.886 | 0.918 | 0.951 | 0.984 | 1.018 | 1.053 |
| N= 24 | 0.510 | 0.539 | 0.568 | 0.597 | 0.626 | 0.655 | 0.685 | 0.715 | 0.746 | 0.776 | 0.807 | 0.839 | 0.870 | 0.903 | 0.935 | 0.969 | 1.002 | 1.036 |
| N= 25 | 0.498 | 0.527 | 0.555 | 0.584 | 0.613 | 0.643 | 0.672 | 0.702 | 0.732 | 0.763 | 0.794 | 0.825 | 0.856 | 0.888 | 0.921 | 0.954 | 0.987 | 1.021 |
| N= 26 | 0.487 | 0.516 | 0.544 | 0.573 | 0.602 | 0.631 | 0.660 | 0.690 | 0.720 | 0.751 | 0.781 | 0.812 | 0.843 | 0.874 | 0.907 | 0.940 | 0.973 | 1.007 |
| N= 27 | 0.477 | 0.505 | 0.533 | 0.562 | 0.591 | 0.620 | 0.649 | 0.679 | 0.708 | 0.739 | 0.769 | 0.800 | 0.831 | 0.863 | 0.895 | 0.927 | 0.960 | 0.994 |
| N= 28 | 0.467 | 0.495 | 0.523 | 0.552 | 0.581 | 0.609 | 0.639 | 0.668 | 0.698 | 0.728 | 0.758 | 0.789 | 0.820 | 0.851 | 0.883 | 0.915 | 0.948 | 0.981 |
| N= 29 | 0.456 | 0.484 | 0.512 | 0.540 | 0.568 | 0.597 | 0.626 | 0.655 | 0.685 | 0.715 | 0.746 | 0.776 | 0.807 | 0.838 | 0.869 | 0.900 | 0.931 | 0.962 |
| N= 30 | 0.449 | 0.477 | 0.505 | 0.533 | 0.562 | 0.591 | 0.619 | 0.649 | 0.678 | 0.708 | 0.738 | 0.768 | 0.799 | 0.830 | 0.862 | 0.894 | 0.926 | 0.959 |
| N= 31 | 0.441 | 0.469 | 0.497 | 0.525 | 0.553 | 0.582 | 0.611 | 0.640 | 0.669 | 0.699 | 0.728 | 0.759 | 0.789 | 0.820 | 0.852 | 0.884 | 0.916 | 0.949 |
| N= 32 | 0.434 | 0.461 | 0.489 | 0.517 | 0.545 | 0.574 | 0.602 | 0.631 | 0.660 | 0.690 | 0.720 | 0.750 | 0.780 | 0.811 | 0.842 | 0.874 | 0.906 | 0.939 |
| N= 33 | 0.426 | 0.454 | 0.482 | 0.509 | 0.538 | 0.566 | 0.594 | 0.623 | 0.652 | 0.682 | 0.711 | 0.741 | 0.772 | 0.803 | 0.834 | 0.865 | 0.897 | 0.930 |
| N= 34 | 0.419 | 0.447 | 0.474 | 0.502 | 0.530 | 0.559 | 0.587 | 0.616 | 0.645 | 0.674 | 0.704 | 0.733 | 0.764 | 0.794 | 0.825 | 0.857 | 0.889 | 0.921 |
| N= 35 | 0.413 | 0.440 | 0.468 | 0.495 | 0.523 | 0.551 | 0.580 | 0.608 | 0.637 | 0.667 | 0.696 | 0.726 | 0.756 | 0.787 | 0.817 | 0.849 | 0.881 | 0.913 |
| N= 36 | 0.406 | 0.434 | 0.461 | 0.488 | 0.515 | 0.543 | 0.573 | 0.602 | 0.630 | 0.660 | 0.689 | 0.719 | 0.749 | 0.779 | 0.810 | 0.841 | 0.873 | 0.905 |
| N= 37 | 0.400 | 0.427 | 0.455 | 0.483 | 0.510 | 0.538 | 0.567 | 0.595 | 0.624 | 0.653 | 0.682 | 0.712 | 0.742 | 0.772 | 0.803 | 0.834 | 0.866 | 0.898 |
| N= 38 | 0.394 | 0.422 | 0.449 | 0.477 | 0.504 | 0.532 | 0.560 | 0.589 | 0.617 | 0.646 | 0.675 | 0.705 | 0.735 | 0.765 | 0.796 | 0.827 | 0.858 | 0.890 |
| N= 39 | 0.389 | 0.416 | 0.443 | 0.471 | 0.499 | 0.526 | 0.554 | 0.583 | 0.611 | 0.640 | 0.669 | 0.699 | 0.729 | 0.759 | 0.789 | 0.820 | 0.852 | 0.884 |
| N= 40 | 0.384 | 0.411 | 0.438 | 0.465 | 0.493 | 0.521 | 0.549 | 0.577 | 0.606 | 0.634 | 0.663 | 0.693 | 0.722 | 0.752 | 0.783 | 0.814 | 0.845 | 0.877 |
| N= 41 | 0.378 | 0.405 | 0.433 | 0.460 | 0.488 | 0.515 | 0.543 | 0.571 | 0.600 | 0.629 | 0.658 | 0.687 | 0.717 | 0.747 | 0.777 | 0.808 | 0.839 | 0.871 |
| N= 42 | 0.374 | 0.401 | 0.428 | 0.455 | 0.483 | 0.510 | 0.538 | 0.566 | 0.595 | 0.623 | 0.652 | 0.681 | 0.711 | 0.741 | 0.771 | 0.802 | 0.833 | 0.865 |
| N= 43 | 0.369 | 0.396 | 0.423 | 0.450 | 0.478 | 0.505 | 0.533 | 0.561 | 0.589 | 0.618 | 0.647 | 0.676 | 0.705 | 0.735 | 0.765 | 0.796 | 0.827 | 0.859 |
| N= 44 | 0.364 | 0.391 | 0.418 | 0.445 | 0.473 | 0.500 | 0.528 | 0.556 | 0.584 | 0.613 | 0.642 | 0.671 | 0.700 | 0.730 | 0.760 | 0.791 | 0.822 | 0.853 |
| N= 45 | 0.360 | 0.387 | 0.414 | 0.441 | 0.468 | 0.495 | 0.522 | 0.550 | 0.578 | 0.606 | 0.634 | 0.662 | 0.691 | 0.720 | 0.750 | 0.780 | 0.811 | 0.842 |
| N= 46 | 0.356 | 0.382 | 0.409 | 0.437 | 0.464 | 0.491 | 0.519 | 0.547 | 0.575 | 0.603 | 0.632 | 0.661 | 0.690 | 0.720 | 0.750 | 0.780 | 0.811 | 0.843 |
| N= 47 | 0.352 | 0.378 | 0.405 | 0.432 | 0.459 | 0.487 | 0.515 | 0.543 | 0.571 | 0.599 | 0.628 | 0.656 | 0.686 | 0.715 | 0.745 | 0.776 | 0.806 | 0.838 |
| N= 48 | 0.348 | 0.374 | 0.401 | 0.428 | 0.455 | 0.483 | 0.510 | 0.538 | 0.566 | 0.595 | 0.623 | 0.652 | 0.681 | 0.711 | 0.741 | 0.771 | 0.802 | 0.833 |
| N= 49 | 0.344 | 0.371 | 0.397 | 0.424 | 0.452 | 0.479 | 0.506 | 0.534 | 0.562 | 0.590 | 0.619 | 0.648 | 0.677 | 0.706 | 0.736 | 0.766 | 0.797 | 0.828 |
| N= 50 | 0.340 | 0.367 | 0.394 | 0.421 | 0.448 | 0.475 | 0.502 | 0.530 | 0.558 | 0.586 | 0.615 | 0.644 | 0.673 | 0.702 | 0.732 | 0.762 | 0.793 | 0.824 |
| N= 55 | 0.323 | 0.350 | 0.376 | 0.403 | 0.430 | 0.457 | 0.485 | 0.512 | 0.540 | 0.568 | 0.596 | 0.625 | 0.654 | 0.683 | 0.712 | 0.742 | 0.773 | 0.803 |
| N= 60 | 0.309 | 0.335 | 0.362 | 0.388 | 0.415 | 0.442 | 0.469 | 0.497 | 0.524 | 0.552 | 0.580 | 0.608 | 0.637 | 0.666 | 0.696 | 0.725 | 0.755 | 0.786 |
| N= 65 | 0.296 | 0.322 | 0.349 | 0.375 | 0.402 | 0.429 | 0.456 | 0.483 | 0.510 | 0.538 | 0.566 | 0.594 | 0.623 | 0.652 | 0.681 | 0.710 | 0.740 | 0.771 |
| N= 70 | 0.285 | 0.311 | 0.337 | 0.364 | 0.390 | 0.417 | 0.444 | 0.471 | 0.498 | 0.526 | 0.554 | 0.582 | 0.610 | 0.639 | 0.668 | 0.697 | 0.727 | 0.757 |
| N= 75 | 0.275 | 0.301 | 0.327 | 0.353 | 0.380 | 0.406 | 0.433 | 0.460 | 0.488 | 0.515 | 0.543 | 0.571 | 0.599 | 0.627 | 0.656 | 0.685 | 0.715 | 0.745 |

| | | | | | | | | | | | | | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| N# 12 | 784 | 817 | 850 | 884 | 918 | 953 | 988 | 1,023 | 1,059 | 1,096 | 1,132 | 1,170 | 1,208 | 1,246 | 1,285 | 1,325 | 1,365 | 1,406 |
| N# 13 | 743 | 775 | 808 | 841 | 874 | 908 | 942 | 976 | 1,011 | 1,047 | 1,083 | 1,119 | 1,156 | 1,193 | 1,231 | 1,270 | 1,309 | 1,349 |
| N# 14 | 708 | 739 | 771 | 804 | 836 | 869 | 903 | 937 | 971 | 1,005 | 1,040 | 1,076 | 1,112 | 1,148 | 1,185 | 1,222 | 1,259 | 1,299 |
| N# 15 | 677 | 708 | 740 | 772 | 804 | 836 | 869 | 902 | 936 | 969 | 1,004 | 1,039 | 1,074 | 1,110 | 1,146 | 1,183 | 1,220 | 1,259 |
| N# 16 | 650 | 681 | 712 | 744 | 775 | 807 | 839 | 872 | 905 | 938 | 972 | 1,006 | 1,041 | 1,076 | 1,112 | 1,148 | 1,185 | 1,222 |
| N# 17 | 627 | 657 | 688 | 719 | 750 | 781 | 813 | 845 | 878 | 910 | 944 | 977 | 1,012 | 1,046 | 1,081 | 1,117 | 1,154 | 1,190 |
| N# 18 | 605 | 635 | 665 | 696 | 727 | 758 | 789 | 821 | 853 | 885 | 918 | 951 | 985 | 1,019 | 1,054 | 1,089 | 1,125 | 1,161 |
| N# 19 | 585 | 615 | 645 | 675 | 706 | 737 | 768 | 799 | 831 | 863 | 895 | 928 | 961 | 995 | 1,029 | 1,064 | 1,099 | 1,135 |
| N# 20 | 568 | 597 | 627 | 657 | 687 | 717 | 748 | 779 | 810 | 842 | 874 | 907 | 940 | 973 | 1,007 | 1,041 | 1,076 | 1,112 |
| N# 21 | 551 | 581 | 610 | 640 | 670 | 700 | 730 | 761 | 792 | 823 | 855 | 887 | 920 | 953 | 987 | 1,021 | 1,055 | 1,090 |
| N# 22 | 537 | 566 | 595 | 624 | 654 | 684 | 714 | 744 | 775 | 806 | 838 | 870 | 902 | 935 | 968 | 1,002 | 1,036 | 1,071 |
| N# 23 | 523 | 552 | 581 | 610 | 639 | 669 | 699 | 729 | 760 | 791 | 822 | 854 | 886 | 918 | 951 | 984 | 1,018 | 1,053 |
| N# 24 | 510 | 539 | 568 | 597 | 626 | 655 | 685 | 715 | 746 | 776 | 807 | 839 | 870 | 903 | 935 | 969 | 1,002 | 1,036 |
| N# 25 | 498 | 527 | 555 | 584 | 613 | 643 | 672 | 702 | 732 | 763 | 794 | 825 | 856 | 888 | 921 | 954 | 987 | 1,021 |
| N# 26 | 487 | 516 | 544 | 573 | 602 | 631 | 660 | 690 | 720 | 750 | 781 | 812 | 843 | 875 | 907 | 940 | 973 | 1,007 |
| N# 27 | 477 | 505 | 533 | 562 | 591 | 620 | 649 | 679 | 708 | 739 | 769 | 800 | 831 | 863 | 895 | 927 | 960 | 994 |
| N# 28 | 467 | 495 | 523 | 552 | 581 | 609 | 639 | 668 | 698 | 728 | 758 | 789 | 820 | 851 | 883 | 915 | 948 | 981 |
| N# 29 | 458 | 486 | 514 | 542 | 571 | 600 | 629 | 658 | 688 | 717 | 746 | 776 | 807 | 838 | 870 | 902 | 935 | 970 |
| N# 30 | 449 | 477 | 505 | 533 | 562 | 591 | 619 | 648 | 678 | 708 | 736 | 766 | 799 | 830 | 862 | 894 | 926 | 959 |
| N# 31 | 441 | 469 | 497 | 525 | 553 | 582 | 611 | 640 | 669 | 699 | 728 | 759 | 789 | 820 | 852 | 884 | 916 | 949 |
| N# 32 | 434 | 461 | 489 | 517 | 545 | 574 | 602 | 631 | 660 | 690 | 720 | 750 | 780 | 811 | 842 | 874 | 906 | 939 |
| N# 33 | 426 | 454 | 482 | 509 | 538 | 566 | 594 | 623 | 652 | 682 | 711 | 741 | 772 | 803 | 834 | 865 | 897 | 930 |
| N# 34 | 419 | 447 | 474 | 502 | 530 | 559 | 587 | 616 | 645 | 674 | 704 | 733 | 764 | 794 | 825 | 857 | 889 | 921 |
| N# 35 | 413 | 440 | 468 | 495 | 523 | 551 | 580 | 608 | 637 | 666 | 696 | 726 | 756 | 787 | 817 | 849 | 881 | 913 |
| N# 36 | 406 | 434 | 461 | 489 | 517 | 545 | 573 | 602 | 630 | 660 | 689 | 719 | 749 | 779 | 810 | 841 | 873 | 905 |
| N# 37 | 400 | 427 | 455 | 483 | 510 | 538 | 567 | 595 | 624 | 653 | 682 | 712 | 742 | 772 | 803 | 834 | 866 | 898 |
| N# 38 | 394 | 422 | 449 | 477 | 504 | 532 | 560 | 589 | 617 | 646 | 676 | 705 | 735 | 765 | 796 | 827 | 858 | 890 |
| N# 39 | 389 | 416 | 443 | 471 | 499 | 526 | 554 | 583 | 611 | 640 | 669 | 699 | 729 | 759 | 789 | 820 | 852 | 884 |
| N# 40 | 384 | 411 | 438 | 465 | 493 | 521 | 549 | 577 | 606 | 634 | 663 | 693 | 722 | 752 | 783 | 814 | 845 | 877 |
| N# 41 | 378 | 405 | 433 | 460 | 488 | 515 | 543 | 571 | 600 | 629 | 658 | 687 | 717 | 747 | 777 | 808 | 839 | 871 |
| N# 42 | 374 | 401 | 428 | 455 | 482 | 510 | 538 | 566 | 595 | 623 | 652 | 681 | 711 | 741 | 771 | 802 | 833 | 865 |
| N# 43 | 369 | 396 | 423 | 450 | 478 | 505 | 533 | 561 | 589 | 618 | 647 | 676 | 706 | 736 | 766 | 797 | 828 | 859 |
| N# 44 | 364 | 391 | 418 | 445 | 473 | 500 | 528 | 556 | 584 | 613 | 642 | 671 | 700 | 730 | 760 | 791 | 822 | 853 |
| N# 45 | 350 | 377 | 404 | 431 | 458 | 486 | 514 | 542 | 570 | 598 | 626 | 654 | 683 | 712 | 742 | 773 | 804 | 835 |
| N# 46 | 356 | 382 | 409 | 437 | 464 | 491 | 519 | 547 | 575 | 603 | 632 | 661 | 690 | 720 | 750 | 781 | 812 | 843 |
| N# 47 | 352 | 378 | 405 | 432 | 460 | 487 | 515 | 543 | 571 | 599 | 628 | 656 | 686 | 715 | 745 | 776 | 806 | 838 |
| N# 48 | 348 | 374 | 401 | 428 | 455 | 483 | 510 | 538 | 566 | 595 | 623 | 652 | 681 | 711 | 741 | 771 | 802 | 833 |
| N# 49 | 344 | 371 | 397 | 424 | 452 | 479 | 506 | 534 | 562 | 590 | 619 | 648 | 677 | 706 | 736 | 766 | 797 | 828 |
| N# 50 | 340 | 367 | 394 | 421 | 448 | 475 | 502 | 530 | 558 | 586 | 615 | 644 | 673 | 702 | 732 | 762 | 793 | 824 |
| N# 51 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 52 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 53 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 54 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 55 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 56 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 57 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 58 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 59 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 60 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 61 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 62 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 63 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 64 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 65 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 66 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 67 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 68 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 69 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 70 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 71 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 72 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 73 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 74 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 75 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 76 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 77 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 78 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 79 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 80 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 81 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 82 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 83 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 84 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 85 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 86 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 87 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 88 | 335 | 362 | 389 | 416 | 443 | 470 | 497 | 524 | 551 | 578 | 606 | 634 | 663 | 692 | 722 | 752 | 783 | 814 |
| N# 89 | 335 | 362 | | | | | | | | | | | | | | | | |

TABLE III (Contd.)
FACTORS OF ONE-SIDED TOLERANCE LIMITS FOR A NORMAL DISTRIBUTION

99% CONFIDENCE

Proportion of Population Covered →

| | .68 | .69 | .70 | .71 | .72 | .73 | .74 | .75 | .76 | .77 | .78 | .79 | .80 | .81 | .82 | .83 | .84 | .85 |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| N=1 | 7.118 | 7.329 | 7.547 | 7.770 | 7.999 | 8.235 | 8.478 | 8.728 | 8.986 | 9.253 | 9.529 | 9.815 | 10.111 | 10.419 | 10.740 | 11.075 | 11.426 | 11.795 |
| N=2 | 4.389 | 4.600 | 4.812 | 5.026 | 5.243 | 5.464 | 5.688 | 5.915 | 6.146 | 6.382 | 6.623 | 6.869 | 7.119 | 7.373 | 7.633 | 7.898 | 8.168 | 8.443 |
| N=3 | 3.460 | 3.639 | 3.819 | 3.999 | 4.179 | 4.359 | 4.539 | 4.719 | 4.899 | 5.079 | 5.259 | 5.439 | 5.619 | 5.799 | 5.979 | 6.159 | 6.339 | 6.519 |
| N=4 | 2.859 | 3.009 | 3.159 | 3.309 | 3.459 | 3.609 | 3.759 | 3.909 | 4.059 | 4.209 | 4.359 | 4.509 | 4.659 | 4.809 | 4.959 | 5.109 | 5.259 | 5.409 |
| N=5 | 2.459 | 2.579 | 2.699 | 2.819 | 2.939 | 3.059 | 3.179 | 3.299 | 3.419 | 3.539 | 3.659 | 3.779 | 3.899 | 4.019 | 4.139 | 4.259 | 4.379 | 4.499 |
| N=6 | 2.159 | 2.249 | 2.339 | 2.429 | 2.519 | 2.609 | 2.699 | 2.789 | 2.879 | 2.969 | 3.059 | 3.149 | 3.239 | 3.329 | 3.419 | 3.509 | 3.599 | 3.689 |
| N=7 | 1.959 | 2.029 | 2.099 | 2.169 | 2.239 | 2.309 | 2.379 | 2.449 | 2.519 | 2.589 | 2.659 | 2.729 | 2.799 | 2.869 | 2.939 | 3.009 | 3.079 | 3.149 |
| N=8 | 1.809 | 1.869 | 1.929 | 1.989 | 2.049 | 2.109 | 2.169 | 2.229 | 2.289 | 2.349 | 2.409 | 2.469 | 2.529 | 2.589 | 2.649 | 2.709 | 2.769 | 2.829 |
| N=9 | 1.699 | 1.749 | 1.799 | 1.849 | 1.899 | 1.949 | 1.999 | 2.049 | 2.099 | 2.149 | 2.199 | 2.249 | 2.299 | 2.349 | 2.399 | 2.449 | 2.499 | 2.549 |
| N=10 | 1.609 | 1.654 | 1.699 | 1.749 | 1.799 | 1.849 | 1.899 | 1.949 | 1.999 | 2.049 | 2.099 | 2.149 | 2.199 | 2.249 | 2.299 | 2.349 | 2.399 | 2.449 |
| N=11 | 1.519 | 1.563 | 1.609 | 1.655 | 1.702 | 1.751 | 1.800 | 1.851 | 1.903 | 1.957 | 2.013 | 2.070 | 2.129 | 2.191 | 2.255 | 2.321 | 2.391 | 2.463 |
| N=12 | 1.448 | 1.491 | 1.535 | 1.579 | 1.625 | 1.671 | 1.719 | 1.768 | 1.819 | 1.871 | 1.924 | 1.980 | 2.037 | 2.096 | 2.157 | 2.221 | 2.288 | 2.358 |
| N=13 | 1.390 | 1.431 | 1.473 | 1.517 | 1.561 | 1.606 | 1.653 | 1.700 | 1.749 | 1.800 | 1.852 | 1.905 | 1.960 | 2.018 | 2.077 | 2.139 | 2.204 | 2.272 |
| N=14 | 1.340 | 1.381 | 1.422 | 1.464 | 1.507 | 1.551 | 1.597 | 1.643 | 1.691 | 1.740 | 1.790 | 1.843 | 1.896 | 1.952 | 2.010 | 2.071 | 2.134 | 2.200 |
| N=15 | 1.298 | 1.337 | 1.378 | 1.419 | 1.461 | 1.504 | 1.549 | 1.594 | 1.641 | 1.689 | 1.738 | 1.789 | 1.842 | 1.896 | 1.953 | 2.012 | 2.074 | 2.138 |
| N=16 | 1.261 | 1.300 | 1.339 | 1.380 | 1.421 | 1.464 | 1.507 | 1.552 | 1.597 | 1.644 | 1.693 | 1.743 | 1.794 | 1.848 | 1.903 | 1.961 | 2.021 | 2.085 |
| N=17 | 1.228 | 1.266 | 1.305 | 1.345 | 1.386 | 1.428 | 1.470 | 1.514 | 1.559 | 1.605 | 1.653 | 1.702 | 1.753 | 1.805 | 1.860 | 1.917 | 1.976 | 2.038 |
| N=18 | 1.198 | 1.236 | 1.275 | 1.314 | 1.354 | 1.395 | 1.437 | 1.480 | 1.524 | 1.570 | 1.617 | 1.665 | 1.715 | 1.767 | 1.820 | 1.876 | 1.934 | 1.995 |
| N=19 | 1.172 | 1.209 | 1.247 | 1.286 | 1.325 | 1.366 | 1.407 | 1.450 | 1.493 | 1.538 | 1.584 | 1.632 | 1.681 | 1.732 | 1.785 | 1.840 | 1.898 | 1.958 |
| N=20 | 1.148 | 1.185 | 1.222 | 1.260 | 1.300 | 1.340 | 1.381 | 1.422 | 1.466 | 1.510 | 1.555 | 1.602 | 1.651 | 1.701 | 1.754 | 1.808 | 1.864 | 1.924 |
| N=21 | 1.126 | 1.162 | 1.200 | 1.237 | 1.276 | 1.316 | 1.356 | 1.398 | 1.441 | 1.484 | 1.529 | 1.576 | 1.624 | 1.673 | 1.725 | 1.779 | 1.835 | 1.893 |
| N=22 | 1.106 | 1.142 | 1.179 | 1.217 | 1.255 | 1.294 | 1.334 | 1.375 | 1.417 | 1.461 | 1.505 | 1.551 | 1.599 | 1.648 | 1.699 | 1.752 | 1.807 | 1.865 |
| N=23 | 1.088 | 1.124 | 1.160 | 1.197 | 1.235 | 1.274 | 1.314 | 1.355 | 1.396 | 1.439 | 1.483 | 1.529 | 1.576 | 1.625 | 1.675 | 1.728 | 1.783 | 1.840 |
| N=24 | 1.071 | 1.107 | 1.143 | 1.180 | 1.217 | 1.256 | 1.295 | 1.336 | 1.377 | 1.420 | 1.463 | 1.508 | 1.555 | 1.603 | 1.653 | 1.705 | 1.760 | 1.816 |
| N=25 | 1.056 | 1.091 | 1.127 | 1.163 | 1.201 | 1.239 | 1.278 | 1.318 | 1.359 | 1.401 | 1.445 | 1.490 | 1.536 | 1.584 | 1.633 | 1.685 | 1.739 | 1.795 |
| N=26 | 1.041 | 1.076 | 1.112 | 1.148 | 1.185 | 1.223 | 1.262 | 1.302 | 1.343 | 1.384 | 1.428 | 1.472 | 1.518 | 1.565 | 1.615 | 1.666 | 1.719 | 1.775 |
| N=27 | 1.028 | 1.063 | 1.098 | 1.134 | 1.171 | 1.209 | 1.247 | 1.287 | 1.327 | 1.369 | 1.412 | 1.456 | 1.501 | 1.548 | 1.597 | 1.648 | 1.701 | 1.756 |
| N=28 | 1.015 | 1.050 | 1.085 | 1.121 | 1.158 | 1.195 | 1.233 | 1.273 | 1.313 | 1.354 | 1.397 | 1.440 | 1.486 | 1.533 | 1.581 | 1.632 | 1.684 | 1.739 |
| N=29 | 1.004 | 1.038 | 1.073 | 1.109 | 1.145 | 1.182 | 1.220 | 1.259 | 1.299 | 1.340 | 1.383 | 1.426 | 1.471 | 1.518 | 1.566 | 1.616 | 1.668 | 1.723 |
| N=30 | 0.993 | 1.027 | 1.062 | 1.097 | 1.133 | 1.170 | 1.208 | 1.247 | 1.287 | 1.328 | 1.370 | 1.413 | 1.458 | 1.504 | 1.552 | 1.602 | 1.654 | 1.708 |
| N=31 | 0.982 | 1.016 | 1.051 | 1.086 | 1.122 | 1.159 | 1.197 | 1.235 | 1.274 | 1.315 | 1.357 | 1.400 | 1.445 | 1.491 | 1.538 | 1.588 | 1.640 | 1.694 |
| N=32 | 0.972 | 1.006 | 1.041 | 1.076 | 1.112 | 1.148 | 1.186 | 1.224 | 1.264 | 1.304 | 1.346 | 1.388 | 1.433 | 1.478 | 1.526 | 1.575 | 1.627 | 1.680 |
| N=33 | 0.963 | 0.997 | 1.031 | 1.066 | 1.102 | 1.138 | 1.176 | 1.214 | 1.253 | 1.293 | 1.335 | 1.377 | 1.421 | 1.467 | 1.514 | 1.563 | 1.614 | 1.668 |
| N=34 | 0.954 | 0.988 | 1.022 | 1.057 | 1.092 | 1.129 | 1.166 | 1.204 | 1.243 | 1.283 | 1.324 | 1.367 | 1.410 | 1.456 | 1.503 | 1.552 | 1.602 | 1.656 |
| N=35 | 0.946 | 0.979 | 1.013 | 1.048 | 1.083 | 1.120 | 1.157 | 1.195 | 1.233 | 1.273 | 1.314 | 1.357 | 1.400 | 1.445 | 1.492 | 1.541 | 1.591 | 1.644 |
| N=36 | 0.938 | 0.971 | 1.005 | 1.040 | 1.075 | 1.111 | 1.148 | 1.186 | 1.224 | 1.264 | 1.305 | 1.347 | 1.390 | 1.435 | 1.482 | 1.530 | 1.581 | 1.634 |
| N=37 | 0.930 | 0.964 | 0.997 | 1.032 | 1.067 | 1.103 | 1.140 | 1.177 | 1.216 | 1.255 | 1.296 | 1.338 | 1.381 | 1.426 | 1.472 | 1.521 | 1.571 | 1.623 |
| N=38 | 0.923 | 0.956 | 0.990 | 1.024 | 1.059 | 1.095 | 1.132 | 1.169 | 1.207 | 1.247 | 1.287 | 1.329 | 1.372 | 1.417 | 1.463 | 1.511 | 1.561 | 1.613 |
| N=39 | 0.916 | 0.949 | 0.983 | 1.017 | 1.052 | 1.087 | 1.124 | 1.161 | 1.199 | 1.239 | 1.279 | 1.321 | 1.364 | 1.408 | 1.454 | 1.502 | 1.552 | 1.604 |
| N=40 | 0.909 | 0.942 | 0.976 | 1.010 | 1.045 | 1.080 | 1.117 | 1.154 | 1.192 | 1.231 | 1.271 | 1.313 | 1.356 | 1.400 | 1.446 | 1.493 | 1.543 | 1.595 |
| N=41 | 0.903 | 0.936 | 0.969 | 1.003 | 1.038 | 1.073 | 1.109 | 1.147 | 1.185 | 1.224 | 1.264 | 1.305 | 1.348 | 1.392 | 1.438 | 1.485 | 1.535 | 1.586 |
| N=42 | 0.897 | 0.929 | 0.963 | 0.997 | 1.031 | 1.067 | 1.103 | 1.140 | 1.178 | 1.217 | 1.257 | 1.298 | 1.340 | 1.384 | 1.430 | 1.477 | 1.527 | 1.578 |
| N=43 | 0.891 | 0.924 | 0.957 | 0.991 | 1.025 | 1.060 | 1.096 | 1.133 | 1.171 | 1.210 | 1.250 | 1.291 | 1.333 | 1.377 | 1.422 | 1.470 | 1.519 | 1.570 |
| N=44 | 0.885 | 0.918 | 0.951 | 0.985 | 1.019 | 1.054 | 1.090 | 1.127 | 1.165 | 1.203 | 1.243 | 1.284 | 1.326 | 1.370 | 1.415 | 1.462 | 1.511 | 1.563 |
| N=45 | 0.880 | 0.912 | 0.945 | 0.979 | 1.013 | 1.048 | 1.084 | 1.121 | 1.158 | 1.197 | 1.237 | 1.278 | 1.320 | 1.363 | 1.409 | 1.454 | 1.504 | 1.556 |
| N=46 | 0.875 | 0.907 | 0.940 | 0.973 | 1.008 | 1.043 | 1.078 | 1.115 | 1.153 | 1.191 | 1.231 | 1.271 | 1.313 | 1.356 | 1.400 | 1.446 | 1.493 | 1.545 |
| N=47 | 0.870 | 0.902 | 0.935 | 0.968 | 1.002 | 1.037 | 1.073 | 1.109 | 1.147 | 1.185 | 1.225 | 1.265 | 1.307 | 1.351 | 1.396 | 1.442 | 1.491 | 1.542 |
| N=48 | 0.865 | 0.897 | 0.930 | 0.963 | 0.997 | 1.032 | 1.068 | 1.104 | 1.141 | 1.180 | 1.219 | 1.259 | 1.301 | 1.345 | 1.389 | 1.436 | 1.485 | 1.535 |
| N=49 | 0.860 | 0.892 | 0.925 | 0.958 | 0.992 | 1.027 | 1.062 | 1.099 | 1.136 | 1.174 | 1.214 | 1.254 | 1.296 | 1.339 | 1.384 | 1.430 | 1.478 | 1.529 |
| N=50 | 0.855 | 0.888 | 0.920 | 0.953 | 0.987 | 1.022 | 1.057 | 1.094 | 1.131 | 1.169 | 1.208 | 1.249 | 1.290 | 1.333 | 1.378 | 1.424 | 1.472 | 1.523 |
| N=51 | 0.850 | 0.883 | 0.915 | 0.948 | 0.981 | 1.016 | 1.051 | 1.088 | 1.125 | 1.164 | 1.203 | 1.244 | 1.284 | 1.326 | 1.369 | 1.414 | 1.462 | 1.512 |
| N=52 | 0.845 | 0.877 | 0.909 | 0.942 | 0.975 | 1.010 | 1.045 | 1.081 | 1.118 | 1.155 | 1.194 | 1.234 | 1.274 | 1.316 | 1.359 | 1.404 | 1.452 | 1.502 |
| N=53 | 0.840 | 0.872 | 0.904 | 0.937 | 0.970 | 1.005 | 1.040 | 1.076 | 1.113 | 1.150 | 1.188 | 1.227 | 1.266 | 1.306 | 1.349 | 1.394 | 1.442 | 1.492 |
| N=54 | 0.835 | 0.867 | 0.899 | 0.932 | 0.965 | 1.000 | 1.035 | 1.071 | 1.108 | 1.145 | 1.184 | 1.224 | 1.264 | 1.306 | 1.351 | 1.398 | 1.446 | 1.496 |
| N=55 | 0.830 | 0.862 | 0.894 | 0.927 | 0.960 | 0.995 | 1.030 | 1.066 | 1.103 | 1.140 | 1.178 | 1.217 | 1.257 | 1.300 | 1.345 | 1.392 | 1.440 | 1.490 |
| N=56 | 0.825 | 0.857 | 0.889 | 0.922 | 0.955 | 0.990 | 1.025 | 1.061 | 1.098 | 1.135 | 1.173 | 1.212 | 1.252 | 1.295 | 1.340 | 1.387 | 1.436 | 1.486 |
| N=57 | 0.820 | 0.852 | 0.884 | 0.917 | 0.950 | 0.985 | 1.020 | 1.056 | 1.093 | 1.130 | 1.168 | 1.207 | 1.247 | 1.290 | 1.335 | 1.382 | 1.430 | 1.480 |
| N=58 | 0.815 | 0.847 | 0.879 | 0.912 | 0.945 | 0.980 | 1.015 | 1.051 | 1.088 | 1.125 | 1.164 | 1.203 | 1.244 | 1.286 | 1.330 | 1.376 | 1.424 | 1.474 |
| N=59 | 0.810 | 0.842 | 0.874 | 0.907 | 0.940 | 0.975 | 1.010 | 1.046 | 1.083 | 1.120 | 1.158 | 1.197 | 1.237 | 1.280 | 1.326 | 1.373 | 1.422 | 1.472 |
| N=60 | 0.805 | 0.837 | 0.869 | 0.902 | 0.935 | 0.970 | 1.005 | 1.041 | 1.078 | 1.115 | 1.153 | 1.192 | 1.232 | 1.275 | 1.321 | 1.368 | 1.416 | 1.466 |
| N=61 | 0.800 | 0.832 | 0.864 | 0.897 | 0.930 | 0.965 | 1.000 | 1.036 | 1.073 | 1.110 | 1.148 | 1.187 | 1.227 | 1.270 | 1.315 | 1.362 | 1.410 | 1.460 |
| N=62 | 0.795 | 0.827 | 0.859 | 0.892 | 0.925 | 0.960 | 0.995 | 1.031 | 1.068 | 1.105 | 1.143 | 1.182 | 1.222 | 1.265 | 1.310 | 1.357 | 1.405 | 1.455 |
| N=63 | 0.790 | 0.822 | 0.854 | 0.887 | 0.920 | 0.955 | | | | | | | | | | | | |

TABLE III (Cont.)
FACTORS OF ONE-SIDED TOLERANCE LIMITS FOR A NORMAL DISTRIBUTION

99% CONFIDENCE

Proportion of Population Covered →

| | .86 | .87 | .88 | .89 | .90 | .91 | .92 | .93 | .94 | .95 | .96 | .97 | .98 | .99 | .999 | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| N= 3 | 12.183 | 12.593 | 13.025 | 13.495 | 13.995 | 14.538 | 15.131 | 15.786 | 16.524 | 17.370 | 18.371 | 19.609 | 21.265 | 23.896 | 26.319 | 31.348 |
| N= 4 | 6.465 | 6.672 | 6.890 | 7.127 | 7.380 | 7.653 | 7.953 | 8.284 | 8.656 | 9.063 | 9.589 | 10.215 | 11.054 | 12.387 | 13.618 | 16.176 |
| N= 5 | 4.708 | 4.856 | 5.012 | 5.181 | 5.362 | 5.557 | 5.771 | 6.007 | 6.273 | 6.578 | 6.939 | 7.387 | 7.970 | 8.739 | 9.619 | 11.649 |
| N= 6 | 3.876 | 3.997 | 4.125 | 4.263 | 4.411 | 4.571 | 4.745 | 4.939 | 5.156 | 5.405 | 5.701 | 6.066 | 6.556 | 7.335 | 8.054 | 9.550 |
| N= 7 | 3.391 | 3.497 | 3.609 | 3.730 | 3.859 | 3.999 | 4.151 | 4.320 | 4.510 | 4.728 | 4.985 | 5.304 | 5.732 | 6.412 | 7.040 | 8.346 |
| N= 8 | 3.073 | 3.169 | 3.270 | 3.380 | 3.497 | 3.624 | 3.762 | 3.916 | 4.088 | 4.285 | 4.519 | 4.808 | 5.195 | 5.812 | 6.381 | 7.564 |
| N= 9 | 2.846 | 2.935 | 3.029 | 3.132 | 3.240 | 3.358 | 3.487 | 3.629 | 3.792 | 3.972 | 4.169 | 4.457 | 4.813 | 5.389 | 5.917 | 7.014 |
| N= 10 | 2.675 | 2.760 | 2.849 | 2.945 | 3.048 | 3.159 | 3.280 | 3.415 | 3.565 | 3.738 | 3.943 | 4.196 | 4.535 | 5.074 | 5.571 | 6.605 |
| N= 11 | 2.540 | 2.621 | 2.705 | 2.797 | 2.895 | 3.001 | 3.117 | 3.245 | 3.389 | 3.554 | 3.749 | 3.990 | 4.313 | 4.826 | 5.300 | 6.285 |
| N= 12 | 2.432 | 2.509 | 2.591 | 2.680 | 2.774 | 2.876 | 3.000 | 3.133 | 3.287 | 3.468 | 3.682 | 3.952 | 4.268 | 4.768 | 5.224 | 6.030 |
| N= 13 | 2.343 | 2.418 | 2.497 | 2.583 | 2.674 | 2.773 | 2.881 | 3.000 | 3.133 | 3.287 | 3.468 | 3.682 | 3.952 | 4.268 | 4.768 | 5.224 |
| N= 14 | 2.269 | 2.342 | 2.419 | 2.502 | 2.592 | 2.697 | 2.811 | 2.937 | 3.077 | 3.236 | 3.422 | 3.656 | 3.941 | 4.278 | 4.768 | 5.224 |
| N= 15 | 2.206 | 2.277 | 2.352 | 2.433 | 2.520 | 2.614 | 2.716 | 2.829 | 2.955 | 3.101 | 3.272 | 3.485 | 3.769 | 4.220 | 4.637 | 5.102 |
| N= 16 | 2.151 | 2.221 | 2.294 | 2.374 | 2.459 | 2.550 | 2.650 | 2.761 | 2.885 | 3.027 | 3.195 | 3.403 | 3.681 | 4.122 | 4.529 | 5.075 |
| N= 17 | 2.103 | 2.172 | 2.244 | 2.322 | 2.405 | 2.495 | 2.593 | 2.701 | 2.823 | 2.963 | 3.127 | 3.331 | 3.604 | 4.037 | 4.436 | 5.065 |
| N= 18 | 2.059 | 2.127 | 2.198 | 2.275 | 2.356 | 2.445 | 2.541 | 2.648 | 2.767 | 2.905 | 3.066 | 3.267 | 3.534 | 3.960 | 4.352 | 5.066 |
| N= 19 | 2.021 | 2.087 | 2.157 | 2.233 | 2.313 | 2.400 | 2.495 | 2.600 | 2.718 | 2.853 | 3.012 | 3.209 | 3.473 | 3.891 | 4.277 | 5.078 |
| N= 20 | 1.986 | 2.052 | 2.120 | 2.195 | 2.275 | 2.360 | 2.454 | 2.557 | 2.674 | 2.807 | 2.964 | 3.158 | 3.418 | 3.830 | 4.210 | 5.000 |
| N= 21 | 1.955 | 2.019 | 2.087 | 2.161 | 2.240 | 2.324 | 2.417 | 2.519 | 2.634 | 2.765 | 2.920 | 3.112 | 3.368 | 3.775 | 4.150 | 4.929 |
| N= 22 | 1.926 | 1.990 | 2.057 | 2.130 | 2.208 | 2.292 | 2.383 | 2.484 | 2.597 | 2.727 | 2.880 | 3.070 | 3.323 | 3.725 | 4.096 | 4.865 |
| N= 23 | 1.900 | 1.963 | 2.030 | 2.102 | 2.179 | 2.262 | 2.352 | 2.452 | 2.564 | 2.693 | 2.844 | 3.032 | 3.282 | 3.680 | 4.046 | 4.806 |
| N= 24 | 1.876 | 1.939 | 2.005 | 2.076 | 2.152 | 2.234 | 2.324 | 2.423 | 2.534 | 2.661 | 2.811 | 2.997 | 3.244 | 3.638 | 4.000 | 4.753 |
| N= 25 | 1.854 | 1.916 | 1.982 | 2.053 | 2.128 | 2.209 | 2.298 | 2.396 | 2.506 | 2.632 | 2.781 | 2.964 | 3.210 | 3.600 | 3.959 | 4.704 |
| N= 26 | 1.834 | 1.895 | 1.960 | 2.031 | 2.105 | 2.186 | 2.274 | 2.371 | 2.480 | 2.605 | 2.752 | 2.934 | 3.178 | 3.564 | 3.920 | 4.658 |
| N= 27 | 1.815 | 1.876 | 1.940 | 2.010 | 2.084 | 2.164 | 2.252 | 2.348 | 2.456 | 2.580 | 2.726 | 2.907 | 3.148 | 3.531 | 3.884 | 4.616 |
| N= 28 | 1.797 | 1.858 | 1.922 | 1.991 | 2.065 | 2.144 | 2.231 | 2.326 | 2.434 | 2.557 | 2.702 | 2.881 | 3.121 | 3.501 | 3.851 | 4.577 |
| N= 29 | 1.780 | 1.841 | 1.904 | 1.973 | 2.046 | 2.125 | 2.211 | 2.306 | 2.413 | 2.535 | 2.679 | 2.857 | 3.095 | 3.472 | 3.820 | 4.541 |
| N= 30 | 1.765 | 1.825 | 1.888 | 1.957 | 2.029 | 2.108 | 2.193 | 2.288 | 2.393 | 2.515 | 2.658 | 2.835 | 3.071 | 3.446 | 3.791 | 4.507 |
| N= 31 | 1.750 | 1.810 | 1.873 | 1.941 | 2.013 | 2.091 | 2.176 | 2.270 | 2.375 | 2.496 | 2.638 | 2.813 | 3.048 | 3.421 | 3.763 | 4.475 |
| N= 32 | 1.737 | 1.796 | 1.858 | 1.926 | 2.007 | 2.075 | 2.160 | 2.253 | 2.358 | 2.478 | 2.619 | 2.794 | 3.027 | 3.397 | 3.738 | 4.442 |
| N= 33 | 1.724 | 1.783 | 1.845 | 1.912 | 1.984 | 2.061 | 2.145 | 2.238 | 2.342 | 2.461 | 2.601 | 2.775 | 3.007 | 3.377 | 3.714 | 4.410 |
| N= 34 | 1.712 | 1.770 | 1.832 | 1.899 | 1.970 | 2.047 | 2.130 | 2.223 | 2.326 | 2.445 | 2.585 | 2.757 | 2.988 | 3.354 | 3.691 | 4.389 |
| N= 35 | 1.700 | 1.759 | 1.820 | 1.886 | 1.957 | 2.034 | 2.117 | 2.209 | 2.312 | 2.430 | 2.569 | 2.741 | 2.970 | 3.334 | 3.669 | 4.354 |
| N= 36 | 1.689 | 1.747 | 1.808 | 1.875 | 1.945 | 2.021 | 2.104 | 2.195 | 2.298 | 2.415 | 2.554 | 2.725 | 2.953 | 3.315 | 3.649 | 4.340 |
| N= 37 | 1.678 | 1.737 | 1.797 | 1.863 | 1.933 | 2.009 | 2.092 | 2.183 | 2.285 | 2.402 | 2.539 | 2.710 | 2.937 | 3.297 | 3.629 | 4.317 |
| N= 38 | 1.668 | 1.726 | 1.787 | 1.853 | 1.922 | 1.998 | 2.080 | 2.170 | 2.272 | 2.388 | 2.526 | 2.695 | 2.921 | 3.280 | 3.610 | 4.295 |
| N= 39 | 1.659 | 1.716 | 1.777 | 1.842 | 1.912 | 1.987 | 2.069 | 2.159 | 2.260 | 2.376 | 2.512 | 2.681 | 2.907 | 3.264 | 3.593 | 4.275 |
| N= 40 | 1.650 | 1.707 | 1.767 | 1.832 | 1.902 | 1.976 | 2.058 | 2.148 | 2.248 | 2.364 | 2.500 | 2.668 | 2.892 | 3.248 | 3.576 | 4.255 |
| N= 41 | 1.641 | 1.698 | 1.758 | 1.823 | 1.892 | 1.966 | 2.047 | 2.137 | 2.237 | 2.352 | 2.488 | 2.655 | 2.879 | 3.233 | 3.559 | 4.236 |
| N= 42 | 1.632 | 1.689 | 1.749 | 1.814 | 1.883 | 1.957 | 2.038 | 2.127 | 2.227 | 2.341 | 2.477 | 2.643 | 2.866 | 3.219 | 3.544 | 4.217 |
| N= 43 | 1.624 | 1.681 | 1.741 | 1.805 | 1.874 | 1.948 | 2.028 | 2.117 | 2.217 | 2.331 | 2.466 | 2.632 | 2.854 | 3.205 | 3.529 | 4.200 |
| N= 44 | 1.616 | 1.673 | 1.732 | 1.797 | 1.865 | 1.939 | 2.019 | 2.108 | 2.207 | 2.321 | 2.455 | 2.621 | 2.842 | 3.192 | 3.515 | 4.183 |
| N= 45 | 1.609 | 1.666 | 1.725 | 1.789 | 1.857 | 1.930 | 2.011 | 2.099 | 2.198 | 2.311 | 2.445 | 2.610 | 2.831 | 3.180 | 3.501 | 4.167 |
| N= 46 | 1.602 | 1.658 | 1.717 | 1.781 | 1.849 | 1.922 | 2.002 | 2.090 | 2.189 | 2.302 | 2.436 | 2.600 | 2.820 | 3.168 | 3.488 | 4.152 |
| N= 47 | 1.595 | 1.651 | 1.710 | 1.774 | 1.841 | 1.915 | 1.994 | 2.082 | 2.180 | 2.293 | 2.426 | 2.590 | 2.809 | 3.156 | 3.476 | 4.137 |
| N= 48 | 1.588 | 1.644 | 1.703 | 1.767 | 1.834 | 1.907 | 1.986 | 2.074 | 2.172 | 2.285 | 2.417 | 2.581 | 2.799 | 3.145 | 3.463 | 4.123 |
| N= 49 | 1.582 | 1.638 | 1.696 | 1.760 | 1.827 | 1.900 | 1.979 | 2.066 | 2.164 | 2.276 | 2.408 | 2.572 | 2.789 | 3.134 | 3.452 | 4.110 |
| N= 50 | 1.576 | 1.632 | 1.690 | 1.753 | 1.820 | 1.893 | 1.972 | 2.059 | 2.157 | 2.268 | 2.400 | 2.563 | 2.780 | 3.124 | 3.440 | 4.096 |
| N= 55 | 1.548 | 1.603 | 1.661 | 1.723 | 1.790 | 1.861 | 1.939 | 2.026 | 2.122 | 2.232 | 2.363 | 2.525 | 2.739 | 3.077 | 3.390 | 4.037 |
| N= 60 | 1.524 | 1.579 | 1.636 | 1.698 | 1.764 | 1.835 | 1.912 | 1.997 | 2.093 | 2.202 | 2.331 | 2.490 | 2.702 | 3.038 | 3.347 | 3.987 |
| N= 65 | 1.504 | 1.558 | 1.614 | 1.676 | 1.741 | 1.811 | 1.898 | 1.972 | 2.067 | 2.175 | 2.303 | 2.460 | 2.671 | 3.003 | 3.309 | 3.943 |
| N= 70 | 1.485 | 1.539 | 1.595 | 1.656 | 1.721 | 1.791 | 1.867 | 1.951 | 2.045 | 2.152 | 2.279 | 2.435 | 2.643 | 2.973 | 3.277 | 3.905 |
| N= 75 | 1.469 | 1.523 | 1.579 | 1.639 | 1.704 | 1.773 | 1.848 | 1.932 | 2.025 | 2.132 | 2.257 | 2.412 | 2.619 | 2.947 | 3.248 | 3.871 |
| N= 80 | 1.455 | 1.508 | 1.564 | 1.624 | 1.688 | 1.757 | 1.832 | 1.915 | 2.007 | 2.113 | 2.238 | 2.392 | 2.598 | 2.923 | 3.222 | 3.841 |
| N= 85 | 1.442 | 1.495 | 1.550 | 1.610 | 1.674 | 1.742 | 1.817 | 1.899 | 1.991 | 2.097 | 2.221 | 2.374 | 2.579 | 2.902 | 3.199 | 3.815 |
| N= 90 | 1.431 | 1.483 | 1.538 | 1.598 | 1.661 | 1.729 | 1.804 | 1.885 | 1.977 | 2.082 | 2.206 | 2.358 | 2.561 | 2.883 | 3.178 | 3.790 |
| N= 95 | 1.420 | 1.472 | 1.527 | 1.586 | 1.649 | 1.717 | 1.791 | 1.873 | 1.964 | 2.068 | 2.191 | 2.343 | 2.545 | 2.865 | 3.159 | 3.768 |
| N= 100 | 1.410 | 1.462 | 1.517 | 1.576 | 1.639 | 1.706 | 1.780 | 1.861 | 1.952 | 2.056 | 2.178 | 2.329 | 2.531 | 2.840 | 3.129 | 3.748 |

| | | | | | | | | | | | | | | | | | |
|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| N# | 18 | 2,059 | 2,127 | 2,198 | 2,275 | 2,356 | 2,445 | 2,541 | 2,648 | 2,767 | 2,905 | 3,066 | 3,267 | 3,534 | 3,960 | 4,362 | 5,166 |
| N# | 19 | 2,021 | 2,087 | 2,157 | 2,233 | 2,313 | 2,400 | 2,495 | 2,600 | 2,718 | 2,853 | 3,012 | 3,209 | 3,473 | 3,891 | 4,277 | 5,078 |
| N# | 20 | 1,986 | 2,052 | 2,120 | 2,195 | 2,275 | 2,360 | 2,454 | 2,557 | 2,674 | 2,807 | 2,964 | 3,158 | 3,418 | 3,830 | 4,210 | 5,000 |
| N# | 21 | 1,955 | 2,019 | 2,087 | 2,161 | 2,240 | 2,324 | 2,417 | 2,519 | 2,634 | 2,765 | 2,920 | 3,112 | 3,368 | 3,775 | 4,150 | 4,929 |
| N# | 22 | 1,926 | 1,990 | 2,057 | 2,130 | 2,208 | 2,292 | 2,383 | 2,484 | 2,597 | 2,727 | 2,880 | 3,070 | 3,323 | 3,725 | 4,096 | 4,865 |
| N# | 23 | 1,900 | 1,963 | 2,030 | 2,102 | 2,179 | 2,262 | 2,352 | 2,452 | 2,564 | 2,693 | 2,844 | 3,032 | 3,282 | 3,680 | 4,046 | 4,806 |
| N# | 24 | 1,876 | 1,939 | 2,005 | 2,076 | 2,152 | 2,234 | 2,324 | 2,423 | 2,534 | 2,661 | 2,811 | 2,997 | 3,244 | 3,638 | 4,000 | 4,763 |
| N# | 25 | 1,854 | 1,916 | 1,982 | 2,053 | 2,128 | 2,209 | 2,298 | 2,396 | 2,506 | 2,632 | 2,781 | 2,964 | 3,210 | 3,600 | 3,959 | 4,704 |
| N# | 26 | 1,834 | 1,895 | 1,960 | 2,031 | 2,105 | 2,186 | 2,274 | 2,371 | 2,480 | 2,605 | 2,752 | 2,934 | 3,178 | 3,564 | 3,920 | 4,658 |
| N# | 27 | 1,815 | 1,876 | 1,940 | 2,010 | 2,084 | 2,164 | 2,252 | 2,348 | 2,456 | 2,580 | 2,726 | 2,907 | 3,148 | 3,531 | 3,884 | 4,616 |
| N# | 28 | 1,797 | 1,858 | 1,922 | 1,991 | 2,065 | 2,144 | 2,231 | 2,326 | 2,434 | 2,557 | 2,702 | 2,881 | 3,121 | 3,501 | 3,851 | 4,577 |
| N# | 29 | 1,780 | 1,841 | 1,904 | 1,973 | 2,046 | 2,125 | 2,211 | 2,306 | 2,413 | 2,535 | 2,679 | 2,857 | 3,097 | 3,472 | 3,820 | 4,541 |
| N# | 30 | 1,765 | 1,825 | 1,888 | 1,957 | 2,029 | 2,108 | 2,193 | 2,288 | 2,393 | 2,515 | 2,658 | 2,835 | 3,071 | 3,446 | 3,791 | 4,507 |
| N# | 31 | 1,750 | 1,810 | 1,873 | 1,941 | 2,013 | 2,091 | 2,176 | 2,270 | 2,375 | 2,496 | 2,638 | 2,813 | 3,048 | 3,421 | 3,763 | 4,475 |
| N# | 32 | 1,737 | 1,796 | 1,858 | 1,926 | 1,998 | 2,075 | 2,160 | 2,253 | 2,358 | 2,478 | 2,619 | 2,794 | 3,027 | 3,397 | 3,738 | 4,445 |
| N# | 33 | 1,724 | 1,783 | 1,845 | 1,912 | 1,984 | 2,061 | 2,145 | 2,238 | 2,342 | 2,461 | 2,601 | 2,775 | 3,007 | 3,375 | 3,714 | 4,416 |
| N# | 34 | 1,712 | 1,770 | 1,832 | 1,899 | 1,970 | 2,047 | 2,130 | 2,223 | 2,326 | 2,445 | 2,585 | 2,757 | 2,988 | 3,354 | 3,691 | 4,389 |
| N# | 35 | 1,700 | 1,759 | 1,820 | 1,886 | 1,957 | 2,034 | 2,117 | 2,209 | 2,312 | 2,430 | 2,569 | 2,741 | 2,970 | 3,334 | 3,669 | 4,364 |
| N# | 36 | 1,689 | 1,747 | 1,808 | 1,874 | 1,945 | 2,021 | 2,104 | 2,195 | 2,298 | 2,415 | 2,554 | 2,725 | 2,953 | 3,315 | 3,649 | 4,340 |
| N# | 37 | 1,678 | 1,737 | 1,797 | 1,863 | 1,933 | 2,009 | 2,092 | 2,183 | 2,285 | 2,402 | 2,539 | 2,710 | 2,937 | 3,297 | 3,629 | 4,317 |
| N# | 38 | 1,668 | 1,726 | 1,787 | 1,853 | 1,922 | 1,998 | 2,080 | 2,170 | 2,272 | 2,388 | 2,526 | 2,695 | 2,921 | 3,280 | 3,610 | 4,295 |
| N# | 39 | 1,659 | 1,716 | 1,777 | 1,842 | 1,912 | 1,987 | 2,069 | 2,159 | 2,260 | 2,376 | 2,512 | 2,681 | 2,907 | 3,264 | 3,593 | 4,275 |
| N# | 40 | 1,650 | 1,707 | 1,767 | 1,832 | 1,902 | 1,976 | 2,058 | 2,148 | 2,248 | 2,364 | 2,500 | 2,668 | 2,892 | 3,248 | 3,576 | 4,255 |
| N# | 41 | 1,641 | 1,698 | 1,758 | 1,823 | 1,892 | 1,966 | 2,047 | 2,137 | 2,237 | 2,352 | 2,488 | 2,655 | 2,879 | 3,233 | 3,559 | 4,236 |
| N# | 42 | 1,632 | 1,689 | 1,749 | 1,814 | 1,883 | 1,957 | 2,038 | 2,127 | 2,227 | 2,341 | 2,477 | 2,643 | 2,866 | 3,219 | 3,544 | 4,217 |
| N# | 43 | 1,624 | 1,681 | 1,741 | 1,805 | 1,874 | 1,948 | 2,028 | 2,117 | 2,217 | 2,331 | 2,466 | 2,632 | 2,854 | 3,205 | 3,529 | 4,200 |
| N# | 44 | 1,616 | 1,673 | 1,732 | 1,797 | 1,865 | 1,939 | 2,019 | 2,108 | 2,207 | 2,321 | 2,455 | 2,621 | 2,842 | 3,192 | 3,515 | 4,183 |
| N# | 45 | 1,609 | 1,666 | 1,725 | 1,789 | 1,857 | 1,930 | 2,011 | 2,099 | 2,192 | 2,311 | 2,445 | 2,610 | 2,831 | 3,180 | 3,501 | 4,167 |
| N# | 46 | 1,602 | 1,658 | 1,717 | 1,781 | 1,849 | 1,922 | 2,002 | 2,090 | 2,189 | 2,302 | 2,435 | 2,600 | 2,820 | 3,168 | 3,488 | 4,152 |
| N# | 47 | 1,595 | 1,651 | 1,710 | 1,774 | 1,841 | 1,915 | 1,994 | 2,082 | 2,180 | 2,293 | 2,426 | 2,590 | 2,809 | 3,156 | 3,475 | 4,137 |
| N# | 48 | 1,588 | 1,644 | 1,703 | 1,767 | 1,834 | 1,907 | 1,986 | 2,074 | 2,172 | 2,285 | 2,417 | 2,581 | 2,799 | 3,145 | 3,463 | 4,123 |
| N# | 49 | 1,582 | 1,638 | 1,696 | 1,760 | 1,827 | 1,900 | 1,979 | 2,066 | 2,164 | 2,276 | 2,408 | 2,572 | 2,789 | 3,134 | 3,452 | 4,110 |
| N# | 50 | 1,576 | 1,632 | 1,690 | 1,753 | 1,820 | 1,893 | 1,972 | 2,059 | 2,157 | 2,268 | 2,400 | 2,563 | 2,780 | 3,124 | 3,440 | 4,096 |
| N# | 51 | 1,568 | 1,623 | 1,681 | 1,743 | 1,809 | 1,881 | 1,959 | 2,026 | 2,122 | 2,232 | 2,363 | 2,523 | 2,738 | 3,077 | 3,390 | 4,037 |
| N# | 60 | 1,524 | 1,579 | 1,636 | 1,696 | 1,764 | 1,835 | 1,912 | 1,997 | 2,093 | 2,202 | 2,331 | 2,490 | 2,702 | 3,038 | 3,347 | 3,987 |
| N# | 65 | 1,504 | 1,558 | 1,614 | 1,676 | 1,741 | 1,811 | 1,888 | 1,972 | 2,067 | 2,175 | 2,303 | 2,460 | 2,671 | 3,003 | 3,309 | 3,943 |
| N# | 70 | 1,485 | 1,539 | 1,595 | 1,656 | 1,721 | 1,791 | 1,867 | 1,951 | 2,046 | 2,152 | 2,279 | 2,435 | 2,643 | 2,973 | 3,277 | 3,905 |
| N# | 75 | 1,469 | 1,523 | 1,579 | 1,639 | 1,704 | 1,773 | 1,848 | 1,932 | 2,025 | 2,132 | 2,257 | 2,412 | 2,619 | 2,947 | 3,248 | 3,871 |
| N# | 80 | 1,455 | 1,508 | 1,564 | 1,624 | 1,688 | 1,757 | 1,832 | 1,915 | 2,007 | 2,113 | 2,238 | 2,392 | 2,598 | 2,923 | 3,222 | 3,841 |
| N# | 85 | 1,442 | 1,495 | 1,550 | 1,610 | 1,674 | 1,742 | 1,817 | 1,899 | 1,991 | 2,097 | 2,221 | 2,374 | 2,579 | 2,902 | 3,199 | 3,815 |
| N# | 90 | 1,431 | 1,483 | 1,538 | 1,598 | 1,661 | 1,729 | 1,804 | 1,885 | 1,977 | 2,082 | 2,206 | 2,358 | 2,561 | 2,883 | 3,178 | 3,790 |
| N# | 95 | 1,420 | 1,472 | 1,527 | 1,586 | 1,649 | 1,717 | 1,791 | 1,873 | 1,964 | 2,068 | 2,191 | 2,343 | 2,545 | 2,865 | 3,159 | 3,768 |
| N# | 100 | 1,410 | 1,462 | 1,517 | 1,576 | 1,639 | 1,706 | 1,780 | 1,861 | 1,952 | 2,056 | 2,178 | 2,329 | 2,531 | 2,849 | 3,142 | 3,748 |
| N# | 110 | 1,393 | 1,445 | 1,499 | 1,558 | 1,620 | 1,687 | 1,760 | 1,841 | 1,931 | 2,034 | 2,156 | 2,305 | 2,505 | 2,821 | 3,111 | 3,712 |
| N# | 120 | 1,378 | 1,429 | 1,483 | 1,542 | 1,604 | 1,670 | 1,743 | 1,823 | 1,913 | 2,015 | 2,136 | 2,285 | 2,483 | 2,797 | 3,085 | 3,681 |
| N# | 130 | 1,365 | 1,416 | 1,470 | 1,528 | 1,589 | 1,656 | 1,728 | 1,808 | 1,897 | 1,999 | 2,119 | 2,267 | 2,464 | 2,776 | 3,062 | 3,655 |
| N# | 140 | 1,353 | 1,404 | 1,458 | 1,516 | 1,577 | 1,643 | 1,715 | 1,794 | 1,883 | 1,984 | 2,104 | 2,251 | 2,447 | 2,757 | 3,042 | 3,631 |
| N# | 150 | 1,343 | 1,394 | 1,447 | 1,505 | 1,566 | 1,632 | 1,703 | 1,782 | 1,870 | 1,971 | 2,090 | 2,236 | 2,432 | 2,740 | 3,024 | 3,610 |
| N# | 160 | 1,334 | 1,385 | 1,438 | 1,495 | 1,556 | 1,621 | 1,693 | 1,771 | 1,859 | 1,960 | 2,078 | 2,224 | 2,418 | 2,726 | 3,008 | 3,591 |
| N# | 170 | 1,326 | 1,376 | 1,429 | 1,486 | 1,547 | 1,612 | 1,683 | 1,761 | 1,849 | 1,949 | 2,067 | 2,212 | 2,406 | 2,712 | 2,993 | 3,574 |
| N# | 180 | 1,318 | 1,368 | 1,421 | 1,478 | 1,538 | 1,603 | 1,674 | 1,752 | 1,840 | 1,940 | 2,057 | 2,202 | 2,395 | 2,700 | 2,980 | 3,559 |
| N# | 190 | 1,311 | 1,361 | 1,414 | 1,471 | 1,531 | 1,596 | 1,666 | 1,744 | 1,831 | 1,931 | 2,048 | 2,192 | 2,385 | 2,689 | 2,968 | 3,545 |
| N# | 200 | 1,305 | 1,355 | 1,407 | 1,464 | 1,524 | 1,589 | 1,659 | 1,737 | 1,824 | 1,923 | 2,040 | 2,184 | 2,375 | 2,678 | 2,957 | 3,532 |
| N# | 250 | 1,279 | 1,329 | 1,381 | 1,437 | 1,496 | 1,560 | 1,630 | 1,707 | 1,793 | 1,891 | 2,006 | 2,148 | 2,338 | 2,637 | 2,912 | 3,480 |
| N# | 300 | 1,261 | 1,310 | 1,361 | 1,417 | 1,476 | 1,540 | 1,609 | 1,685 | 1,770 | 1,867 | 1,982 | 2,123 | 2,311 | 2,608 | 2,880 | 3,443 |
| N# | 400 | 1,235 | 1,284 | 1,335 | 1,390 | 1,448 | 1,511 | 1,580 | 1,655 | 1,739 | 1,835 | 1,949 | 2,088 | 2,274 | 2,567 | 2,836 | 3,392 |
| N# | 500 | 1,218 | 1,266 | 1,317 | 1,372 | 1,430 | 1,492 | 1,560 | 1,635 | 1,719 | 1,814 | 1,926 | 2,065 | 2,249 | 2,540 | 2,807 | 3,358 |
| N# | 600 | 1,205 | 1,253 | 1,304 | 1,358 | 1,416 | 1,478 | 1,546 | 1,620 | 1,703 | 1,798 | 1,910 | 2,048 | 2,231 | 2,520 | 2,785 | 3,333 |
| N# | 700 | 1,196 | 1,244 | 1,294 | 1,348 | 1,406 | 1,468 | 1,536 | 1,609 | 1,692 | 1,786 | 1,898 | 2,035 | 2,217 | 2,505 | 2,769 | 3,314 |
| N# | 800 | 1,188 | 1,236 | 1,286 | 1,340 | 1,397 | 1,459 | 1,526 | 1,600 | 1,683 | 1,777 | 1,888 | 2,024 | 2,206 | 2,493 | 2,756 | 3,299 |
| N# | 900 | 1,181 | 1,229 | 1,279 | 1,333 | 1,390 | 1,452 | 1,519 | 1,593 | 1,675 | 1,769 | 1,880 | 2,016 | 2,197 | 2,483 | 2,745 | 3,286 |
| N# | 1000 | 1,176 | 1,224 | 1,274 | 1,327 | 1,385 | 1,446 | 1,513 | 1,586 | 1,669 | 1,762 | 1,873 | 2,009 | 2,189 | 2,474 | 2,736 | 3,276 |
| N# | 9999 | 1,110 | 1,156 | 1,205 | 1,256 | 1,313 | 1,373 | 1,438 | 1,510 | 1,590 | 1,681 | 1,788 | 1,920 | 2,095 | 2,372 | 2,625 | 3,147 |
| N# | 50000 | 1,093 | 1,140 | 1,188 | 1,240 | 1,296 | 1,355 | 1,420 | 1,471 | 1,570 | 1,661 | 1,767 | 1,898 | 2,072 | 2,346 | 2,598 | 3,115 |