

Chi-square Distribution Table

This table lists selected quantiles for the $\chi^2(\text{df})$ distribution; that is, values of x for which

$$P(X \leq x) = \int_0^x \frac{1}{\Gamma(r/2)2^{r/2}} x^{(r/2)-1} e^{-x/2} dx,$$

where $r = \text{df}$.

| df | 0.010 | 0.025 | 0.050 | 0.100 | 0.900 | 0.950 | 0.975 | 0.990 |
|----|---------|---------|---------|---------|---------|---------|---------|---------|
| 1 | 0.0002 | 0.0010 | 0.0039 | 0.0158 | 2.7055 | 3.8415 | 5.0239 | 6.6349 |
| 2 | 0.0201 | 0.0506 | 0.1026 | 0.2107 | 4.6052 | 5.9915 | 7.3778 | 9.2103 |
| 3 | 0.1148 | 0.2158 | 0.3518 | 0.5844 | 6.2514 | 7.8147 | 9.3484 | 11.3449 |
| 4 | 0.2971 | 0.4844 | 0.7107 | 1.0636 | 7.7794 | 9.4877 | 11.1433 | 13.2767 |
| 5 | 0.5543 | 0.8312 | 1.1455 | 1.6103 | 9.2364 | 11.0705 | 12.8325 | 15.0863 |
| 6 | 0.8721 | 1.2373 | 1.6354 | 2.2041 | 10.6446 | 12.5916 | 14.4494 | 16.8119 |
| 7 | 1.2390 | 1.6899 | 2.1673 | 2.8331 | 12.0170 | 14.0671 | 16.0128 | 18.4753 |
| 8 | 1.6465 | 2.1797 | 2.7326 | 3.4895 | 13.3616 | 15.5073 | 17.5345 | 20.0902 |
| 9 | 2.0879 | 2.7004 | 3.3251 | 4.1682 | 14.6837 | 16.9190 | 19.0228 | 21.6660 |
| 10 | 2.5582 | 3.2470 | 3.9403 | 4.8652 | 15.9872 | 18.3070 | 20.4832 | 23.2093 |
| 11 | 3.0535 | 3.8157 | 4.5748 | 5.5778 | 17.2750 | 19.6751 | 21.9200 | 24.7250 |
| 12 | 3.5706 | 4.4038 | 5.2260 | 6.3038 | 18.5493 | 21.0261 | 23.3367 | 26.2170 |
| 13 | 4.1069 | 5.0088 | 5.8919 | 7.0415 | 19.8119 | 22.3620 | 24.7356 | 27.6882 |
| 14 | 4.6604 | 5.6287 | 6.5706 | 7.7895 | 21.0641 | 23.6848 | 26.1189 | 29.1412 |
| 15 | 5.2293 | 6.2621 | 7.2609 | 8.5468 | 22.3071 | 24.9958 | 27.4884 | 30.5779 |
| 16 | 5.8122 | 6.9077 | 7.9616 | 9.3122 | 23.5418 | 26.2962 | 28.8454 | 31.9999 |
| 17 | 6.4078 | 7.5642 | 8.6718 | 10.0852 | 24.7690 | 27.5871 | 30.1910 | 33.4087 |
| 18 | 7.0149 | 8.2307 | 9.3905 | 10.8649 | 25.9894 | 28.8693 | 31.5264 | 34.8053 |
| 19 | 7.6327 | 8.9065 | 10.1170 | 11.6509 | 27.2036 | 30.1435 | 32.8523 | 36.1909 |
| 20 | 8.2604 | 9.5908 | 10.8508 | 12.4426 | 28.4120 | 31.4104 | 34.1696 | 37.5662 |
| 21 | 8.8972 | 10.2829 | 11.5913 | 13.2396 | 29.6151 | 32.6706 | 35.4789 | 38.9322 |
| 22 | 9.5425 | 10.9823 | 12.3380 | 14.0415 | 30.8133 | 33.9244 | 36.7807 | 40.2894 |
| 23 | 10.1957 | 11.6886 | 13.0905 | 14.8480 | 32.0069 | 35.1725 | 38.0756 | 41.6384 |
| 24 | 10.8564 | 12.4012 | 13.8484 | 15.6587 | 33.1962 | 36.4150 | 39.3641 | 42.9798 |
| 25 | 11.5240 | 13.1197 | 14.6114 | 16.4734 | 34.3816 | 37.6525 | 40.6465 | 44.3141 |
| 26 | 12.1981 | 13.8439 | 15.3792 | 17.2919 | 35.5632 | 38.8851 | 41.9232 | 45.6417 |
| 27 | 12.8785 | 14.5734 | 16.1514 | 18.1139 | 36.7412 | 40.1133 | 43.1945 | 46.9629 |
| 28 | 13.5647 | 15.3079 | 16.9279 | 18.9392 | 37.9159 | 41.3371 | 44.4608 | 48.2782 |
| 29 | 14.2565 | 16.0471 | 17.7084 | 19.7677 | 39.0875 | 42.5570 | 45.7223 | 49.5879 |
| 30 | 14.9535 | 16.7908 | 18.4927 | 20.5992 | 40.2560 | 43.7730 | 46.9792 | 50.8922 |