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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 4086.2-2025

Replacing GB/T 4086.2-1983

**Data analysis and decision - Tables for statistical distributions -
Part 2: Chi-square distribution**

数据分析与决策 统计分布数值表 第2部分： χ^2 分布

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. This document is Part 2 of GB/T 4086 "Statistical Distribution Numerical Tables for Data Analysis and Decision Making". GB/T 4086 has been published. The following section.

1. Normal Distribution;

---Part 2. χ^2 distribution;

---Part 3. t-distribution;

---Part 4: F-distribution;

5. Binomial Distribution;

6. Poisson Distribution;

7. Non-central t-distribution. This document replaces GB/T 4086.2-1983 "Statistical Distributions - Numerical Tables - χ^2 Distribution". Compared with GB/T 4086.2-1983, except for the structure... Aside from adjustments and editorial changes, the main technical changes are as follows: Table footnotes (see Chapter 1);

b) In the distribution function table of the χ^2 distribution, " $P(\chi^2; \nu) = \int_0^{\chi^2} \frac{1}{2^{\nu/2} \Gamma(\nu/2)} x^{\nu/2-1} e^{-x/2} dx$ " is changed to " $F(\chi^2; \nu) = \frac{1}{2^{\nu/2} \Gamma(\nu/2)} \int_0^{\chi^2} x^{\nu/2-1} e^{-x/2} dx$ " (see Chapter 5, Chapter 1 of the 1983 edition);

c) In the χ^2 distribution quantile table, " $\chi^2_{p(\nu)} = \int_0^{\chi^2} \frac{1}{2^{\nu/2} \Gamma(\nu/2)} x^{\nu/2-1} e^{-x/2} dx = p$ " is changed to " $\chi^2_{p(\nu)}$ satisfies $\frac{1}{2^{\nu/2} \Gamma(\nu/2)} \int_0^{\chi^2_{p(\nu)}} x^{\nu/2-1} e^{-x/2} dx = p$ " (see Chapter 6, Chapter 2 of the 1983 edition). Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of

Statistical Methods Application (SAC/TC21). This document was drafted by: China National Institute of Standardization, Beijing Information Science and Technology University, Keneng Intelligent Manufacturing Technology (Suqian) Co., Ltd., and China Institute of Mathematics and Systems Science, Chinese Academy of Sciences. The main drafters of this document are: Xie Xun, Zhang Xuan, Wang Lei, Zhao Jing, Zhang Fan, Wu Gang, Yang Ziqiang, and Wei Gongyi. This document was first published in 1983, and this is its first revision.

Currently, with the widespread use of computers, using computer programs to obtain the required statistical distribution values is a good method. However, if a computer is not readily available, or if it is desirable to obtain the required statistical distribution values easily, then statistical distribution tables are still necessary. However, it is an indispensable tool. In practice, basic statistical distributions, such as the normal distribution, χ^2 distribution, t distribution, F distribution, binomial distribution, and Poisson's distribution, are essential. Loose distribution and noncentral t-distribution are the distributions that people are most interested in. GB/T 4086 "Statistical Distribution Numerical Tables for Data Analysis and Decision Making" is proposed to consist of 7 parts.

1. Normal Distribution. The aim is to provide the probability density function, distribution function, and quantiles of the standard normal distribution. Numerical value.

2. Chi-square distribution. The purpose is to provide the distribution function of the chi-square distribution and the numerical values of its quantiles.

1 Scope

GB/T 4086.2-2025 is the Chinese national standard covering the chi-square tables - the quantiles by degrees of freedom and probability, used in goodness of fit tests, in variance confidence intervals and in reliability demonstration. Part 2 of the series. It replaces GB/T 4086.2-1983 and is already in force. Issued on 5 October 2025, it has been in force since 5 October 2025, replacing GB/T 4086.2-1983.

This document provides two numerical tables for the χ^2 distribution. Their names, table intervals, and precision are shown in Table 1. Table

1. Names, table spacing, and precision of two numerical tables for the χ^2 distribution.
Name, Distance a, Precision b Table of distribution functions for the χ^2 distribution
nu=1(1)30(2)70

6 decimal places

Quantile table of χ^2 distribution

p=0.0005, 0.001, 0.0025, 0.005, 0.01, 0.02, 0.025, 0.05, 0.1, 0.15, 0.2, 0.25, 0.3, 0.4, 0.5, 0.6, 0.65, 0.7, 0.75, 0.8, 0.85, 0.9, 0.95, 0.975, 0.98, 0.99, 0.995, 0.9975, 0.999, 0.9995

5 decimal places

The table distance $\nu = 1(1)30(2)70$ indicates that the value range of ν is 1~70, where the interval between values in the range of 1~30 is 1, and the interval between values in the range of 30~70 is 1. The value interval is 2. b. Precision refers to the number of decimal places retained in a numerical value. This document applies to situations involving the use of χ^2 distribution function values and quantile values in data analysis and decision-making.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 3358.1 Statistical vocabulary and symbols - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 3358.1 apply to this document.

4 Overview

The quantiles given in this document correspond to the lower-side probabilities. Although the table provides 5 to 6 decimal places, the number of decimal places required in actual use depends on the specific problem. If the numerical tables listed in this document do not meet the application requirements, refer to Appendix A and Appendix B for calculations, or use interpolation methods. Rough calculation.