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

GB/T 4086.7-2025

Replacing GB/T 15932-1995

**Data analysis and decision - Tables for statistical distributions -
Part 7: Non-central t-distribution**

数据分析与决策 统计分布数值表 第7部分：非中心t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 7 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 15932-1995 "Quantile Tables for Non-Central t-Distribution". Compared with GB/T 15932-1995, except for structural adjustments... Aside from integration and editorial changes, the main technical changes are as follows:

a) The term "quantile probability" and its symbol in Chapter 3 have been removed (see Chapter 3 of GB/T 15932-1995);

b) The quantiles were recalculated, and the values of some quantiles were calibrated (see Chapter 5, Chapter 4 of GB/T 15932-1995). 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 Pingdingshan County. Mountain College, North China University of Technology. The main drafters of this document are. Zeng Dake, Zhang Xuan, Wang Lei, Yang Yu, Xu Liwen, Zhao Jing, Zhang Fan, and Wu Gang. This document was first published in 1995 as GB/T 15932-1995, and this is the 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 non-central 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 4086.7-2025 is the Chinese national standard covering the non-central t tables - the distribution that appears in the power of a t test and in the tolerance intervals and variables sampling plans, where the central t is not the right answer. It replaces GB/T 15932-1995 and brings it into the 4086 series as Part 7. Already in force. Issued on 5 October 2025, it has been in force since 5 October 2025, replacing GB/T 15932-1995.

This document provides a quantile table for the non-central t-distribution, with the table distances as follows: $p=0.60, 0.70, 0.80, 0.90, 0.95, 0.99$; $\nu=5(1)30(10)80, 100, 125, 150, 200$; $\delta=1(1)36$. Note

1. Table intervals such as $\nu=5(1)30(10)80, 100, 125, 150, 200$ indicate that the value range of ν is 5~200, where the value intervals are within the range of 5~30. The value is 1, the interval between values in the range of $>30\sim80$ is 10, and the values in the range of $>80\sim200$ are 100, 125, 150, and 200. The precision of the quantile table is 5 decimal places. Note

2. Precision refers to the number of decimal places retained in a numerical value. This document applies to situations involving the use of quantile values from non-central t-distributions 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 and the following terms and definitions apply to this document.

3.1 non-central t-distribution It has the following probability density function $f(x; \nu, \delta) = \frac{\pi^{-1/2} \Gamma(\nu/2)}{\Gamma(\nu/2) \delta^{\nu/2}} e^{-\frac{x^2 + \delta^2}{2\delta^2}} {}_2F_1\left(\frac{\nu}{2}, \frac{x^2 + \delta^2}{2\delta^2}; \frac{\nu+1}{2}; -\frac{\delta^2}{x^2 + \delta^2}\right) \frac{\delta^{\nu/2}}{\sqrt{\pi}}$ is a continuous distribution, where $-\infty < x < \infty$; δ is a non-central parameter and $-\infty < \delta < \infty$, ν is the degrees of freedom and takes positive integer values, and $\Gamma(a) = \int_0^\infty x^{a-1} e^{-x} dx$.

Note. Assume Y follows a normal distribution $N(\mu, \sigma^2)$ with mean μ and variance σ^2 , and Z/σ^2 follows a χ^2 distribution with degrees of freedom ν . If Y and Z are independent, If $\mu \neq 0$, then $X = Y/Z/\nu$ follows a non-central t-distribution with non-central parameter μ/σ and degrees of freedom ν .

4 Overview

The quantiles given in this document correspond to the lower-side probabilities.