

ICS 03.120.30

CCS A 41



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

GB/T 4087.1-1983

Replacing GB/T 4087.3-1985

**Statistical interpretation of data -- One-sided confidence lower
limit of reliability for binomial distribution
(English Translation)**

Issued on: October 15, 2009

Implemented on: December 1, 2009

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China, Standardization
Administration of the People's Republic of China**

Table of Contents

Preface

Introduction

1 Scope

2 Normative references

3 Terms, definitions and symbols

3.1 Terms and definitions

3.2 Symbols

4 Sided reliability confidence lower limit of determination

The formula sided reliability confidence lower limit of 4.1 of

4.2 Lookup table to determine the reliability of unilateral lower confidence limit (see Appendix A in Table A.1)

Appendix A (normative) Binomial Distribution Reliability sided lower confidence limit RL Number Table

Annex B (informative) Binomial Distribution Reliability sided lower confidence limit of the approximate formula

Foreword

"Data processing and interpretation of the statistics" includes the following national standards.

Statistical processing and interpretation --- GB/T 3359 statistical data to determine the tolerance interval Statistical interpretation of comparison in the case of two paired observations mean --- GB/T 3361 data Statistical interpretation of Binomial Distribution Reliability sided lower confidence limit --- GB/T 4087 data

--- Statistical processing and interpretation binomial distribution parameters GB/T 4088 Estimation and Test Data

--- Statistical processing and interpretation of the Poisson distribution parameters GB/T 4089 Estimation and test data

--- GB/T 4882 Statistical interpretation of data normality test

--- Analyzing and processing GB /statistical processing and interpretation of normal sample outliers T 4883 data

--- GB/T 4885 Normal distribution complete reliability lower confidence limit

- GB /statistical processing and interpretation of the mean and variance of normal distribution of data T 4889 Estimation and Testing
- GB Statistical interpretation of normal distribution mean and variance test the efficacy/T 4890 data
- GB/Statistical interpretation Gamma distribution (Pearson III distribution) parameters T 8055 data estimates
- GB /statistical processing and interpretation of data distribution index T 8056 judgment and sample handling outliers Analyzing and Processing --- GB /statistical processing and interpretation of Type I extreme value distribution of the sample outliers T 6380 data
- GB /statistical processing and interpretation of test results of multiple comparisons of data T 10092
- GB/T 10094 quantile normal confidence limits and coefficient of variation "Binomial statistical processing and interpretation of data reliability sided lower confidence limit" This standard replaces GB/T 4087.3-1985.

This standard and GB/T 4087.3-1985 compared to the main changes are as follows.

- According to GB/T 1.1-2000 "Standardization Guide Part 1. Standard structure and write rules," the requirements of the standard format it has been revised;
- According to GB/T 3358.1-2009 "Statistics Vocabulary and symbols - Part 1. General statistical terms and terms used in probability" repair He changed the terminology, and added a number of terms, symbols and definitions;
- Appendix A significant digits from the original five increased to seven;
- Appendix B Calculation Program Change by the BASIC language to S-PLUS language.

Appendix A of this standard is a normative appendix, Appendix B is an informative annex.

Application of this standard by the National Standardization Technical Committee on statistical methods (SAC/TC21) and focal points.

This standard was drafted. Northeast Normal University, Beijing University, China National Institute of Standardization.

Introduction

This standard applies to the product test results in success, the failure of the two states sided reliability confidence lower limit estimates for this technology can also be used Scenario of other occasions. Randomly and independently drawn from a number of individuals in the population as a sample product, based on this standard specifies such kind the product is determined sided reliability confidence lower limit of the method.

The main contents of this standard to the number of tables in the form of lists, but some parameters may not be the case in the table, then you can by Appendix B of Approximate formula can also be used in Appendix B S-PLUS program directly calculated.

Statistical processing and interpretation of data Binomial Distribution Reliability sided lower confidence limit

1 Scope

Products from the population randomly and independently drawn a number of individuals as a sample, this standard specifies the sample is determined based on such a reliable product Sided lower confidence limit of the method. Limited overall, provided its size is N , the sample size for the shape. When the extraction is sampling with replacement, or when pumping Take a sample without replacement, but like $\sqrt{N/2}$ Normative references the following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 2900.13 Electrotechnical terminology credibility and quality of service (GB/T 2900.13-2008, IEC 60050 (191).1990, Amd. 1.1999 and Amd. 2.2002, IDT) GB/T 3358.1 Statistics Vocabulary and symbols - Part 1. General statistical terms and terms (GB/T 3358.1- for Probability 2009, ISO 3534-1:2006, IDT) GB/T 3358.2 Statistics Vocabulary and symbols - Part 2. Applied Statistics (GB/T 3358.2-2009, ISO 3534-2:2006, IDT)

3.1 Terms and Definitions

GB/T 2900.13, terms and definitions GB/T 3358.1 and GB/T 3358.2 established apply to this standard. For ease of reference, a these terms are directly from the above criteria.

3.2 Symbol

GB/T 3358.1 and GB/T 3358.2 established and the following symbols apply to this standard.

Shaped sample size

gamma confidence level RL sided reliability confidence lower limit F is the number of failed test results

4.1 Reliability formula of one-sided lower confidence limit

Like the sample size, the number of failures F , in the confidence level gamma, one-sided lower confidence limit of reliability R_{RL} calculated by the following formula.

$F = 0$, $RL =$

1- Sang gamma (1)

$F > 0$, sum

$X_0 = 0$

Like () x_0 RL shape - x_0 (1-RL) $x_0 = 1$ -gamma (2) Like $F = -1$, $RL = 1$ -Sang gamma (3)