Australian Standard™

Statistical interpretation of data

Part 7: Median—Estimation and confidence intervals

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PREFACE

This Standard was prepared by the Australia members of Joint Standards Australia/New Zealand Committee QR-008, Quality Systems. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australia/New Zealand Standard.

This Standard is identical with, and has been reproduced from ISO 16269-7:2001, *Statistical interpretation of data,* Part 7: *Median—Estimation and confidence intervals*.

This Standard is Part 7 of the AS ISO 16269 series. Parts 1 to 6 are under development and will be titled as follows:

Part 1: Guide to statistical interpretation of data

Part 2: Presentation of statistical data

Part 3: Tests for departure from normality

Part 4: Detection and treatment of outliers

Part 5: Estimation and tests of means and variances for the normal distribution, with power functions for tests

Part 6: Determination of statistical tolerance intervals

The objective of this Standard is to provide analysts with the procedure for establishing a point estimate and confidence intervals for the median of any continuous probability distribution of a population, based on a random sample size from the population.

The term 'informative' has been used in this Standard to define the application of the annex to which it applies. An 'informative' annex is only for information and guidance.

As this Standard is reproduced from an international standard, the following applies:

(a) Its number appears on the cover and title page while the international standard number appears only on the cover.

(b) In the source text 'this part of ISO 16269' should read 'this Australian Standard'.

(c) A full point substitute for a comma when referring to a decimal marker.

(d) None of the normative references in the source document have been adopted as Australian or Australian/New Zealand Standards.

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1 Scope

This part of ISO 16269 specifies the procedures for establishing a point estimate and confidence intervals for the median of any continuous probability distribution of a population, based on a random sample size from the population. These procedures are distribution-free, i.e. they do not require knowledge of the family of distributions to which the population distribution belongs. Similar procedures can be applied to estimate quartiles and percentiles.

NOTE The median is the second quartile and the fiftieth percentile. Similar procedures for other quartiles or percentiles are not described in this part of ISO 16269.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 16269. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 16269 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 2602, *Statistical interpretation of test results — Estimation of the mean — Confidence interval.*

ISO 3534-1, *Statistics — Vocabulary and symbols — Part 1: Probability and general statistical terms.*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this part of ISO 16269, the terms and definitions given in ISO 2602 and ISO 3534-1 and the following apply.

3.1.1
***k*th order statistic of a sample**
value of the *k*th element in a sample when the elements are arranged in non-decreasing order of their values

NOTE For a sample of n elements arranged in non-decreasing order, the kth order statistics is $x_{[k]}$ where

$$x_{[1]} \leqslant x_{[2]} \leqslant \ \ldots \leqslant x_{[n]}$$

