JIS

JAPANESE
INDUSTRIAL
STANDARD

JIS Z 9041-2 : 1999

Statistical Interpretation of Data
Part 2: Techniques of estimation and test relating to means and variances

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of International Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law:

By this establishment, **JIS Z 9042**:1962, **JIS Z 9043**:1962, **JIS Z 9044**:1962, **JIS Z 9045**:1962, **JIS Z 9046**:1965, **JIS Z 9047**:1979, **JIS Z 9048**:1979, **JIS Z 9049**:1965, **JIS Z 9050**:1963, **JIS Z 9051**:1963, **JIS Z 9052**:1963, **JIS Z 9053**:1963, **JIS Z 9054**:1966, **JIS Z 9055**:1966, **JIS Z 9056**:1979, **JIS Z 9057**:1966, **JIS Z 9058**:1966 and **JIS Z 9059**:1966 were withdrawn and replaced with **JIS Z 9041-2**:1999.

JIS Z 9041-2:1999 has been prepared based on the first edition of **ISO 2854**:1976.

JIS Z 9041:1999 consists of the following 4 parts under the title "Statistical interpretation of data".

Part 1: Statistical presentation of data

Part 2: Techniques of estimation and test relating to means and variances

Part 3: Tests and confidence intervals relating to proportions

Part 4: Power of tests relating to means and variances

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

Contents

Statistical interpretation of data
Part 2: Techniques of estimation and
test relating to means and variances

Introduction This Japanese Industrial Standard has been made on the basis of **ISO 2854**:1976 *Statistical interpretation of data — Techniques of estimation and test relating to means and variances* published in 1976 as the 1st edition and **ISO 2602**:1980 *Statistical interpretation of test results — Estimation of the mean — Confidence interval*. However, the policy of ongoing work for the revision of **ISO 2854** carried out by **ISO/TC 69/SC 3/WG 3** decides to unify **ISO 2602**:1980 and **ISO 3301**: 1975 *Statistical interpretation of data — Comparison of two means in the case of paired observations* with it. This Standard, therefore, contains the technical contents of **ISO 2602**:1980 and **ISO 3301**:1975 as well.

1 Scope

1.1 This Japanese Industrial Standard specifies the methods for the statistical treatments shown below:

a) determination of the mean (expectation) of random variables or a confidence interval for the variance;

b) test of a hypothesis relating to the mean of random variables or the values of variance by means of sample.

1.2 These methods are significant only when the measured values are resulted from the observations independent from each other.

In the case of finite population, they are applicable when the data are considered to be independent. This case is materialized when the sample size is sufficiently small compared with the finite population. By a rule of thumb, it is preferable that the sample size is smaller than 1/10 of the population size.

1.3 In applying these methods, the random variables shall be assumed to be of a normal distribution. In this hypothesis is possible to be validated from the wide experiences related to the groups of the data to be tested, the random variables are considered to be of normal distribution. The method for studying the random variables to be, or not to be, of normal distribution is as specified in **JIS Z 9041-1** or **ISO 5479**:1997.

Besides, there is the case where the normality hypothesis is recognized based on the external information not based on the sample. If the normality hypothesis is rejected, this method should not be used. However, even if the normality hypothesis is not rejected, there is no guarantee that the random variables are of normal distribution. If a probability paper is used, the graphical study relating to normality is possible and, if a departure from the normal distribution becomes large, the abnormality may be clarified. The application of probability paper, which may be possible to discern the type of departure from the normal distribution, is positioned as a supplement to numerical study of normal distribution.

When the normality of random variables are doubted, the methods given in this Standard should not be used and the method not requiring normality assumption should be used.