Problem in analyzing small datasets: Try SYSTAT Exact Test

In many fields of application of statistical methods, such as clinical trials and behavioral research, observed data are based on a small sample, are sparse or imbalanced and not particularly amenable to modeling. Therefore, the traditional way of inference, based on the p-value calculated from an asymptotic distribution of the test statistic, may not work in such situations, even if nonparametric methods are used. Parametric inferences pose additional difficulties due to the lack of fulfillment of the strong assumptions about the parent population. All these hurdles in the analysis of data can be easily tackled by exact inference, which involves only simple assumptions about the data source and data behavior.

SYSTAT Exact Test for You:

SYSTAT provides an extensive set of exact inference procedures through its add-on module, EXACT TESTS 1.0. To support various data types and uses, EXACT TESTS offers a wide variety of test options:

- Goodness-of-Fit Tests
- Two-Sample Tests
- K-Sample Tests
- Tests for Single Sample Rates and Proportions
- Tests for Binomial Responses
- Tests for Association

Use over 30 exact procedures in a familiar SYSTAT interface to:

- Analyze small datasets more accurately
- Breakdown your data into sub-categories
- Analyze rare outcomes in large datasets

Highlights of SYSTAT Exact Test

- Exact tests on ordered and unordered R x C tables
- Exact tests for independent binomial data
- Exact confidence intervals for odds ratios of binomial data

Multiple Modes for p-value computation

- The asymptotic value alone (ASYMPTOTIC option);
- The asymptotic value along with the exact p-value (EXACT option);
- The asymptotic p-value along with the Monte Carlo exact value (MC option).
Following tests are available with SYSTAT Exact Test 1.0

Goodness of Fit Test
Chi Square
Compare the sampling distribution with multinomial distribution
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Kolmogrov-Smirnov
Compare the sampling distribution with one of the seven specified distributions
Use Asymptotic, Exact & Exact Using Monte Carlo test type
2-Sample Test
Sign Test
Compare two related samples using sign test
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Wilcoxon Signed Rank Test
Compare two related samples using Wilcoxon signed-rank test
Use Asymptotic, Exact & Exact Using Monte Carlo test type
McNemar Test
Compare two related samples using McNemar’s test
Use Exact test type.
Marginal Homogeneity Test
Compare two related samples using marginal homogeneity test. Both samples should contain equal levels
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Cohen’s Kappa Test
Test for agreement between two attributes both samples should contain equal levels.
The level of agreement is estimated and corresponding confidence interval is also computed at given level of significance.
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Wilcoxon-Mann-Whitney Test whether the distributions of two independent samples have the same general shape using Wilcoxon-Mann-Whitney test.
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Logrank Test
Compare two populations generating survival data with censored observations
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Kolmogrov-Smirnov Test for 2 samples
Compare two independent samples with respect to shape and location
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Wald-Wolfowitz Runs Test
Compare two independent samples with respect to shape and location using runs
Use Asymptotic, Exact & Exact Using Monte Carlo test type
K-Sample Test
Friedman Test
Perform two-way analysis of variance on multiple variables
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Quade Test
Perform two-way analysis of variance on multiple variables
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Kendall’s Concordance Test
Capture the relation between correlated data series
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Kruskal-Wallis Test
Perform one-way analysis of variance
Use Asymptotic, Exact & Exact Using Monte Carlo test type
ANOVA Test with General Scores
Perform one-way analysis of variance using general scores
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Survival Tests
Compare multiple samples generated from censored survival data using logrank and Breslow tests
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Rates & Proportion
Binomial Test
Estimate and test for proportion of successes
Poisson Test
Estimate and test for homogeneity of Poisson rates
Use Asymptotic, Exact & Exact Using Monte Carlo test type
Binomial Responses
Odds Ratio of Two Binomial Test
Test whether the odds ratio is unity. Samples are assumed to be related
Use Asymptotic & Exact test type
Two Independent Binomials Test
Compare two independent binomial proportions using
Pearson Chi-square Test
Fisher Exact Test
Likelihood Ratio Test
Odds ratio Test
Test for Association
Ordered and Unordered Responses
Test the association between two attributes Using
Pearson Correlation Test
Spearman Correlation Test
Goodman-Kruskal’s Gamma Test
Kendall’s Tau & Somer’s D Test
Nominal Responses
Test the association between two attributes using
Pearson’s chi-square Test
Goodman-Kruskal’s Tau Test
Likelihood ratio Test
Contingency Coefficients Test
Uncertainty Tests
Fisherman-Freeman-Halton Test

Most tests (wherever appropriate) are provided with one- and two-tailed p-values. Based on the nature of test, user can go for their choice

Testimonial:
“Congratulations on offering the Fisher-Freeman-Halton exact test on R x C tables... I am delighted to find ANOVA with general scores i.e. a randomization test on means”
Prof. John Ludbrook
Research Fellow
University of Melbourne Department of Surgery
Royal Melbourne Hospital

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