What does SAS/STAT® do?
From analysis of variance and linear regression to Bayesian inference and high-performance modeling tools for massive data, SAS/STAT software provides tools for both specialized and enterprisewide statistical needs.

Why is SAS/STAT® important?
Organizations of all types and sizes depend on statistical analysis to guide critical decisions. Modern statistical methods provide trustworthy evidence for creating effective treatments for disease, improving manufacturing processes, predicting customer behavior and making policy decisions. SAS/STAT provides a comprehensive set of up-to-date tools that can meet the data analysis needs of your entire organization.

For whom is SAS/STAT® designed?
It is designed for use by business analysts, statisticians, data scientists, researchers and engineers.

Organizations in every field depend on data and analysis to provide new insights, gain competitive advantage and make informed decisions. For many organizations, the complexity and volume of their data has outgrown the capabilities of other statistical software.

SAS/STAT software provides extensive statistical capabilities that scale to meet the expanding requirements of specialized and enterprisewide analysis.

Whether you want to perform a customer preference study, analyze the results of clinical trials, predict credit card usage patterns, model air pollution patterns or design a health behavior survey, SAS/STAT is the software of choice.

And because SAS remains committed to its long tradition of constantly enriching its statistical offerings, you’ll continue to have the most up-to-date statistical techniques.

Benefits

- **Apply the latest statistical techniques.**
  With an accelerated release schedule, SAS/STAT keeps up with new methods emerging from the rapidly expanding field of statistics.

- **Analyze any kind and size of data.**
  SAS/STAT includes exact techniques for small data sets, high-performance statistical modeling tools for large-data tasks and modern methods for analyzing data with missing values.

- **Readily understand results with a wealth of graphs.**
  SAS/STAT output provides hundreds of built-in, customizable graphs that are designed for a consistent look across analyses.

- **Take advantage of our technical support and web user communities.**
  Backed by industry-leading statistical technical support, SAS/STAT software is the complete answer to a broad spectrum of statistical needs.

- **Use proven and validated methods.**
  SAS has decades of experience developing advanced statistical analysis software designed for superior, reliable results. A rigorous software testing and quality assurance program means you can count on the quality of each release. With SAS/STAT, you can produce code that is documented and verified for corporate and governmental compliance requirements.
Overview

Statistics is a rapidly expanding discipline, and SAS/STAT is keeping pace. An accelerated release schedule delivers more state-of-the-art statistical methods and high-performance computational tools, along with user-requested enhancements. SAS/STAT software provides the foundation for many SAS Analytic offerings. It delivers a complete, comprehensive set of statistical tools that can meet the data analysis requirements of your entire organization.

Expansive library of ready-to-use statistical procedures

With SAS/STAT, you get more than 90 prewritten procedures for statistical analysis. These procedures encapsulate and deliver significant functionality that can be executed with just a few simple commands, enabling programmers to be more efficient and productive. This wide range of robust statistical methods can help you solve your most complicated business and scientific problems, such as uncovering new information for improving processes, driving development and revenues and retaining valued and satisfied customers.

Highly interpretable statistical output

Clarity and consistency of statistical output, including a wealth of built-in graphs, enable users to readily understand analysis results.

Comprehensive documentation and training

Extensive online documentation, including a rich set of introductory examples, allows users to get up and running with the software quickly and effectively. Free “how to” videos, tutorials and demos help you build your knowledge of statistical methods and learn how to apply SAS/STAT in your work.

Cross-platform support and scalability

SAS runs on all major computing platforms and can access nearly any data source. The technology easily integrates into any organization’s computing environment and can scale as you face larger or more complex analytical problems.
### Key Features

#### Analysis of Variance
- Balanced and unbalanced designs.
- Multivariate analysis of variance and repeated measurements.
- Linear models.
- More analysis of variance capabilities.

#### Bayesian Analysis
- Built-in Bayesian modeling and inference for generalized linear models, accelerated failure time models, Cox regression models and finite mixture models.
- Wide range of Bayesian models available via general-purpose MCMC simulation procedure.
- Bayesian discrete choice modeling.
- More Bayesian analysis capabilities.

#### Categorical Data Analysis
- Contingency tables and measures of association.
- Bioassay analysis.
- Generalized linear models.
- More categorical data analysis capabilities.

#### Causal Inference
- Propensity score analysis.
- Estimation of causal treatment effects.

#### Cluster Analysis
- Hierarchical clustering of multivariate data or distance data.
- Disjoint clustering of large data sets.
- Nonparametric clustering with hypothesis tests for the number of clusters.
- More cluster analysis capabilities.

#### Descriptive Statistics
- Box-and-whisker plots.
- Compute directly and indirectly standardized rates and risks for study populations.
- More descriptive statistics capabilities.

#### Discriminant Analysis
- Canonical discriminant analysis.

#### Distribution Analysis
- Univariate and bivariate kernel density estimation.
- More distribution analysis capabilities.

#### Exact Inference
- Exact p-values and confidence intervals for many test statistics and measures based on one-way and n-way frequency tables.
- Exact tests for the parameters of a logistic regression model.
- Exact tests for the parameters of a Poisson regression model.
- More exact methods capabilities.

#### Finite Mixture Models
- Modeling of component distributions and mixing probabilities.
- Maximum likelihood and Bayesian methods.
- More finite mixture capabilities.

#### Group Sequential Design and Analysis
- Design of interim analyses.
- Perform interim analyses.
- More on group sequential design and analysis capabilities.

#### Longitudinal Data Analysis
- Marginal and mixed models.
- Continuous and categorical outcomes.
- More longitudinal data analysis capabilities.

#### Market Research
- Simple and multiple correspondence analysis.
- Two-way and three-way metric and nonmetric multidimensional scaling models.
- Discrete choice models.
- More market research capabilities.

#### Missing Data Analysis
- Multiple imputation.
- Weighted generalized estimating equations.
- Imputation for survey data.
- More missing data analysis capabilities.

#### Mixed Models
- Linear and nonlinear mixed models.
- Generalized linear mixed models.
- Nested models.
- More mixed models capabilities.

#### Model Selection
- Linear models.
- Generalized linear models.
- Quantile regression models.
- More model selection capabilities.

#### Multivariate Analysis
- Exploratory and confirmatory factor analysis.
- Principal components analysis.
- Canonical correlation and partial canonical correlation.
- More multivariate analysis capabilities.

#### Nonlinear Regression
- Automatic derivatives.
- Bootstrapped confidence intervals.
- More nonlinear regression capabilities.

#### Nonparametric Analysis
- Kruskal-Wallis, Wilcoxon-Mann-Whitney and Friedman tests.
- Other rank tests for balanced or unbalanced one-way or two-way designs.
- Exact probabilities for many nonparametric statistics.
- More nonparametric analysis capabilities.

#### Nonparametric Regression
- Multivariate adaptive regression splines.
- Generalized additive models.
- Local regression.
Key Features (continued)

- Thin-plate smoothing splines.
- More nonparametric regression capabilities.

Power and Sample Size
- Computations for linear models including MANOVA repeated measurements.
- Computations for many hypothesis tests, equivalence tests and correlation analysis.
- Computations for binary logistic regression and survival analysis.
- More power and sample size capabilities.

Regression
- Least squares regression.
- Principal components regression.
- Quadratic response surface models.
- Accurate estimation for ill-conditioned data.
- More regression capabilities.

Robust Regression
- M estimation and high-breakdown methods.
- Outlier diagnostics.
- More robust regression capabilities.

Spatial Analysis
- Ordinary kriging in two dimensions.
- Spatial point pattern analysis.
- Variogram diagnostics.
- More spatial analysis capabilities.

Standardization
- 18 standardization methods.
- More standardization capabilities.

Structural Equations
- Structural equation models specified with popular modeling languages.
- Parameter estimation and hypothesis testing for constrained and unconstrained problems.
- More structural equation capabilities.

Survey Sampling and Analysis
- Sample selection.
- Descriptive statistics.
- Linear and logistic regression.
- Proportional hazards regression.

SAS/STAT takes advantage of the SAS®9 engine, part of the SAS Platform. Many SAS procedures have been enhanced so code launched from SAS 9 can run in SAS Viya, the SAS Platform’s new distributed, in-memory engine. For more information, visit sas.com/platform.

To learn more about SAS/STAT, download white papers, view screenshots and see other related material, please visit sas.com/stat.

SAS/STAT takes advantage of the SAS®9 engine, part of the SAS Platform. Many SAS procedures have been enhanced so code launched from SAS 9 can run in SAS Viya, the SAS Platform’s new distributed, in-memory engine. For more information, visit sas.com/platform.

To contact your local SAS office, please visit: sas.com/offices

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