WHO WE ARE
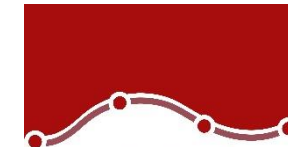
SPS is an Italian center of statistical data analysis with more than 20 years of experience.

SPS was born in 1994 as SPSS Italia and it was the only reseller in Italy for SPSS software suite, authorised by SPSS inc.

Today SPS is an IBM Gold Business Partner, Software Support Provider and Expert Level in Data Science & Business Analytics.

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Statistics for Data Analysis

DATASHEET

Statistics
Amos

Statistics for Data Analysis

Organizations can solve a wide array of business and research problems with the solution Statistics for Data Analysis.

Compared to other statistical software, the solution is easier to use, has a lower total cost of ownership and more comprehensively addresses the entire analytical process, from planning to data collection to analysis, reporting and deployment.

Organizations of all types rely on Statistics for Data Analysis to help increase revenue, outmaneuver competitors, conduct research and make better decisions. With decades of built-in expertise and innovation, it's a leading choice for reliable statistical analysis.

Statistics Base is part of the solution Statistics for Data Analysis, which consists of:

- Software license
- Add-On
- SPS Service Program

This comprehensive, easy-to-use solution includes many different procedures and tests to help users solve complex business and research challenges.

Statistics for Data Analysis

The solution analytical capabilities to meet the analysis requirements of any type of organization, from basic tools for solving common problems to advanced analytical techniques that enable all type of organization to address complex challenges.

Statistics for Data Analysis can help you:

- Analyze your data with new and advanced statistics, including a variety of new features within UNIANOVA methods
- Integrate better with third-party applications, including stronger integration with Microsoft Office
- Save time and effort with productivity enhancements:
  - More attractive and modern-looking charts in Chartbuilder
  - New groundbreaking features in Statistics Amos 25
  - Data and syntax editor enhancements
  - Accessibility improvements for the visually impaired
  - Updated merge user interface
  - Simplified toolbars

Statistics for Data Analysis can access quickly, manage and analyze any kind of dataset, including survey data, corporate databases or data downloaded from the web.

In addition, the software can process Unicode data. This eliminates variability in data due to language-specific encoding and enables your organization to view, analyze and share data written in multiple languages.

Business Benefit Statistics for Data Analysis

- Support business decisions with data-based analytics for improved outcomes.
- Be more confident in your results by incorporating data from many different sources, including geospatial information, in your analysis and using proven, tested techniques to perform your analysis.
- Save time and effort with capabilities that enable experienced analysts to develop procedures or dialogs that others can use to speed through repetitive tasks.
- Give results greater impact by using visualization capabilities that clearly show others the significance of your findings.

Statistics Amos
Datasheet

Test relationships in attitudinal and behavioral models

Statistics Amos is powerful structural equation modeling (SEM) software that enables you to support your research and theories by extending standard multivariate analysis methods, including regression, factor analysis, correlation, and analysis of variance. In Statistics Amos, you can specify, estimate, assess, and present your model in an intuitive path diagram to show hypothesized relationships among variables. You can also use a non-graphical, programmatic method to specify models. Moreover, Statistics Amos provides a way for non-programmers to specify a model easily without drawing the path diagram.

Confirm complex relationships

You can quickly build attitudinal and behavioral models in Statistics Amos that realistically reflect complex relationships. Any numeric variable, whether observed or latent, can be used to predict any other numeric variable. Statistics Amos includes expanded statistical options based on Bayesian estimation.

Highlights:

- Specify, estimate, assess, and present models in an intuitive diagram.
- Alternatively, use a non-graphical, programmatic method to specify models.
- Non-programmers can easily specify a model without drawing the path diagram.
- Increase the reliability of variables by including multiple indicators.
- Impute missing values and latent scores.
- Use for longitudinal studies, multiple-group and reliability analysis

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Statistics Amos
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You can:

- Perform estimation with ordered-categorical and censored data. This enables you to create models based on nonnumerical data without having to assign numerical scores to the data, and work with censored data without having to make assumptions other than the assumption of normality.
- Impute numerical values for ordered-categorical and censored data. The resulting dataset can be used as input to programs that require complete numerical data.
- Estimate posterior predictive distributions to determine probable values for missing or partially missing data values in a latent variable.

Statistics Amos enables you to simultaneously analyze data from several populations, such as multiple ethnic groups. Increase the reliability of variables in your analysis by including multiple indicators. Impute missing values and latent scores, such as factor scores, with multiple imputations. You can also use Statistics Amos for longitudinal studies, multiple-group analysis, and reliability analysis.

Statistics Amos
Datasheet

Go from onscreen model to published results quickly

The Statistics Amos interactive, visual approach to SEM makes it easy for you to learn and use. Within the Statistics Amos interface you can create path diagrams of your analysis using drawing tools, rather than by writing equations or by typing commands.

Easier Model Specification

Statistics Amos allows non-programmers to specify a model without drawing a path diagram. The model can be entered into a spreadsheet-like table that can be modified.

After a model has been fitted, parameter estimates will be displayed in the table (in additional columns), in the same way that parameter estimates can now be displayed on the path diagram after a model has been fitted.

The table representation and the path diagram representation will provide two alternate views of a model. The table view will occupy the same area in the main Amos Graphics window that the path diagram occupies. You will be able to switch back and forth between the table view and the path diagram view at any time.

Statistics Amos

Datasheet

The alternative non-graphical, programmatic approach improves accessibility for those who can benefit by specifying models directly. Its scripting capabilities improve the productivity of users who need to run large, complicated models, and make it easy to generate many similar models that differ slightly.

Once you complete a model, you can assess fit with one click. Then, when your model is complete, you can print presentation-quality output. Statistics Amos includes 36 completed examples as an introduction to structural equation modeling. It also has an extensive online help system.

Find models that best fit your data

Use the Statistics Amos exploratory technique, SEM specification search, to choose a model from a large number of candidates. Take advantage of previous research by specifying constraints on parameter values in your model or use Bayesian estimation to specify an informative prior distribution for the parameters. Use confirmatory factor analysis to specify and test a factor pattern, instead of relying on traditional exploratory factor analysis. You can also fit multiple models in a single analysis. Amos examines every pair of models where one model can be obtained by placing parameter restrictions on the other. Amos even suggests how the model may be improved—for example, by adding an arrow to connect two variables. Graphs and statistics help you find an optimum trade-off between model simplicity and goodness of fit.

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Discover unexpected relationships

After you fit a model, the Statistics Amos path diagram shows the strength of the relationship between variables. For example, when working with data from a product survey on condiments, you might initially assume that the variable, "satisfaction of taste", is the best brand loyalty indicator. Looking at the path diagram in Amos, however, you might discover that the best brand loyalty indicator is "package size purchased".

Apply Amos to explore the "hows and whys" in your data

Researchers and graduate students who have observational, or non-experimental, data apply Amos in a variety of fields to convince a committee or boss, secure funding, or get published. Examples include:

- Psychology—Develop models to understand how drug, clinical, and art therapies affect mood
- Medical and healthcare research—Confirm which of three variables—confidence, savings, or research—best predicts a doctor's support for prescribing generic drugs.
- Social sciences—Study how socioeconomic status, organizational membership, and other determinants influence differences in voting behavior and political engagement

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- Educational research—Evaluate training program outcomes to determine the impact on classroom effectiveness
- Market research—Model how customer behavior impacts new product sale
- Institutional research—Study how work-related issues affect job satisfaction

Use with products you have

While you can use Statistics Amos on its own, you can also use it to extend the analyses you might already be doing using Statistics for Data Analysis. Amos especially complements your analyses if you use Statistics Advanced or Statistics Regression, because SEM extends algorithms available in these software products.

Statistics Amos Features

Graphical user interface
- Display, through a path-diagram browser, a description and thumbnail image of all path diagrams in your folders
- Simply point-and-click to select program options
- Create variables in path diagrams with a single click
- Display a diagram for a different group or model with just one click
- View the contents of data files
- Drag variable names from the dataset to the path diagram

Non-graphical, programmatic interface
- Use a non-graphical, programmatic method to specify models:
  - Improved accessibility for those who can benefit by specifying models directly
  - Scripting capabilities improve the productivity of users who need to run large, complicated models
  - Easily generate many similar models that differ slightly
- Statistics Amos allows non-programmers to specify a model without drawing a path diagram.
  - The model can be entered into a spreadsheet-like table that can be modified.
  - Parameter estimates will be displayed in the table (in additional columns).
  - The table representation and the path diagram representation will provide two alternate views of a model.

Modeling capabilities
- Create structural equation models (including such special cases as path analysis and longitudinal data models) with observed and latent variables
- Specify candidate models using one of two methods:
  - Specify each individual candidate model as a set of equality constraints on model parameters
  - Use SEM in an exploratory way. Amos tries out many models and suggests promising ones, while using Akaike information criterion (AIC) and Bayes information criterion (BIC) statistics to compare models
- Fit confirmatory factor analysis models, variance components models, errors-in-variables models, and general latent variable models
- Analyze mean structures and multiple group datasets
  - Quickly specify and test multiple group data through automated specification
- Analyze data from several populations at once
- Save time by combining factor and regression models into a single model, and then fit them simultaneously
- Analyze multiple models simultaneously: Amos determines which models are nested and automatically calculates test statistics
- Translate a path diagram into a Visual Basic program
- Fit linear growth curve models using automatically generated parameter constraints.

Statistics Amos Features

Latent class analysis (mixture modeling)
- Perform market segmentation studies
- Estimate the size of each cluster or segment
- Perform mixture regression and mixture modeling
- Perform mixture factor analysis
- Estimate the probability of group membership for individual cases
- Train the classification algorithm. Assign some cases to groups ahead of time and allow the program to classify the remaining cases
- Require some model parameters to be equal across groups while allowing other parameters to vary across groups.

Bayesian estimation
- Estimate values for ordered-categorical and censored data
- Markov chain Monte Carlo (MCMC) simulation
- Specify an informative prior distribution: Normal, uniform, or custom
- Plot the marginal posterior distribution of any parameter
- Estimate any function of model parameters
- Avoid inadmissible solutions and unstable linear systems
- Obtain optimal asymmetric credible intervals for indirect effects.

Computationally intensive modeling
- Evaluate parameter estimates with normal or non-normal data using powerful bootstrapping options. The bootstrapping and Monte Carlo capabilities in Amos make it easy for you to obtain bias and standard error estimates for any parameter, including standardized coefficients and effect estimates
- Test multivariate normality and perform outlier analysis

Model creation
- Use the path diagram as a model specification
- The model can be entered into a spreadsheet-like table that can be modified
- Modify the model by changing the path diagram with drawing tools
- Display parameter estimates and fit measures graphically on the path diagram
- Display degrees of freedom at any time while drawing on the path diagram
- Copy and paste part of one path diagram into another path diagram

Analytical and statistical capabilities
- Use full information maximum likelihood estimation in missing data situations for more efficient and less biased estimates
- Obtain an approximate confidence interval for any model parameter under any empirical distribution, including standardized coefficients, using fast bootstrap simulation
  - Assess model fit with Bollen and Stine's bootstrap approach
  - Calculate percentile intervals and bias-corrected percentile intervals
- Perform randomized permutation tests to show whether equivalent or better-fitting models can be found
- Specify equality constraints in the path diagram by using the same label for two or more parameters, including means, intercepts, regression weights, and/or covariances, in the same group or across different groups
- Estimate means for exogenous variables
- Estimate intercepts in regression equations
- Perform parametric bootstraps to find an approximate confidence interval for any model parameter under normal distribution theory, including standardized coefficients with Monte Carlo simulation

Statistics Amos Features

- Use a variety of estimation methods, including maximum likelihood, unweighted least squares, generalized least squares, Browne's asymptotically distribution-free criterion, and scale-free least squares
- Evaluate models using more than two dozen fit statistics, including Chi-square; AIC; Bayes and Bozdogan information criteria; Browne-Cudeck (BCC); ECVI, RMSEA, and PCLOSE criteria; root mean square residual; Hoelter's critical n; and Bentler-Bonett and Tucker-Lewis indices
- Obtain bias and standard error estimates for any parameter and derived statistics with bootstrapping or Monte Carlo options
- Optionally, estimate standard errors using the observed information matrix
- View p values along with critical ratios for individual parameters Output
- Use additional navigation aids, display options, and table- formatting options with enhanced text output
  - Quickly navigate to and display portions of output in the navigation panel
  - Link section and table headings to context-sensitive help
  - Link numbers, such as p values displayed in the navigation panel, to "use-it-in-a-sentence" help, and receive a plain-English description of what the numbers represent
- View XHTML (Web-based) output of your text files in your browser
  - Preserve table formatting when you use the clipboard or drag-and-drop editing to copy tables to other applications
  - Use XHTML-formatted files as an archival format
  - Parse Amos output using an XML parser; when writing programs to post-process SPSS Amos output, use an XPATH expression to extract any desired portion of the output
- Print preview

Data imputation
- Impute numerical values for ordered-categorical and censored data
- Impute missing values and latent variable scores
- Choose from three different methods: Regression, stochastic regression, and Bayesian
- Single imputation:
  - Regression imputation uses linear regression to replace missing values
- Single or multiple imputation:
  - Stochastic regression imputation uses maximum likelihood (ML)-based parameter estimates of observed data; assumes parameters are equal to their ML estimates
  - Bayesian estimation is similar to stochastic regression imputation; however, it assumes that parameter values are estimated, not known

Drawing and other tools
- Create presentation-quality path diagrams
  - Easily show or hide all variable names or labels in a path diagram
- Print or paste path diagrams into other applications
- Use toolbox buttons, including shape, copy, erase, fit-to-page, and align, to draw your model
- Customize the toolbar
  - Associate a toolbar button, menu item, or hot key with any Amos macro, including those you write yourself
  - Add an image to a toolbar button
  - Create a shortcut key for macro execution

Statistics Amos Features

- Fit your model by selecting buttons on the toolbar
- Work with variable names you assign, instead of Greek letters
- Add titles and annotations to your diagram
- Work with the toolbar, menus, and hot keys for frequently used tasks
- Use pop-up menus that show useful actions for each element in your diagram
- Re-arrange measurement models by using the reflect and rotate buttons
- Use plugins to extend program capabilities.

Programmability
- Extend the capabilities of Amos:
  - In Bayesian analysis, find the posterior distribution of any function of the parameters
  - Define your own fit measures.

Documentation and help
- Extensive online help with cross-references to explanations of the output
- Includes User's Guide PDF file with 36 completed examples

Statistics for Data Analysis solution

Add more analytical power, as you need it, with optional modules and stand-alone software from the Statistics for Data Analysis family.

Statistics Base

Statistics Base includes the core capabilities to take the analytical process from start to finish. It is easy to use and includes a broad range of procedures and techniques to increase revenue, outperform competitors, conduct research and make better decisions.

Statistics Advanced

Statistics Advanced includes these powerful multivariate techniques: generalized linear models (GENLIN), generalized estimating equations (GEE), mixed level models, general linear mixed models (GLMM), variance component estimation, MANOVA, Kaplan-Meier estimation, Cox regression, hiloglinear, loglinear and survival analysis.

Statistics Bootstrapping

Statistics Bootstrapping enables researchers and analysts to use bootstrapping techniques on a number of tests contained in Statistics for Data Analysis modules. This provides an efficient way to ensure that your models are stable and reliable. With Statistics Bootstrapping, you can reliably estimate the standard errors and confidence intervals of a population parameter like a mean, median, proportion, odds ratio, correlation coefficient, regression coefficient and numerous.

Statistics Categories

Unleash the full potential of your categorical data through perceptual maps with optimal scaling and dimension reduction techniques. This add-on module provides you with everything you need to analyze and interpret multivariate data and their relationships more completely.

Statistics Complex Samples

Incorporate complex sample designs into data analysis for more accurate analysis of complex sample data. Statistics Complex Samples, with specialized planning tools and statistics, reduces the risk of reaching incorrect or misleading inferences for stratified, clustered or multistage sampling.

Statistics Conjoint

Statistics Conjoint helps market researchers develop successful products. By performing conjoint analysis, you learn what product attributes are important in the consumer's mind and what the most preferred attribute levels are, and can perform pricing studies and brand equity studies.

Statistics Tables

Use Statistics Tables to present survey, customer satisfaction, polling and compliance reporting results. Features such as a table builder preview, included inferential statistics and data management capabilities make it easy to clearly communicate your results.

Statistics Preparation
With Statistics Preparation, you gain several procedures that facilitate the data preparation process. This add-on module enables you to easily identify suspicious and invalid cases, variables and data values; view patterns of missing data; summarize variable distributions to get your data ready for analysis; and more accurately work with algorithms designed for nominal attributes.

Statistics Decision Trees
Create highly visual classification and decision trees directly within Statistics for Data Analysis for segmentation, stratification, prediction, data reduction and variable screening, interaction identification, category merging and discretizing continuous variables. Highly visual trees enable you to present results in an intuitive manner.

Statistics Direct Marketing
Statistics Direct Marketing helps marketers perform various kinds of analyses easily and confidently, without requiring a detailed understanding of statistics. They can conduct recency, frequency and monetary value (RFM) analysis, cluster analysis, and prospect profiling. They can also improve marketing campaigns through postal code analysis, propensity scoring, and control package testing. And they can easily score new customer data and access pre-built models.

Statistics Exact Tests
Statistics Exact Tests always provides you with correct p values, regardless of your data structure, even if you have a

small number of cases, have subset your data into fine breakdowns or have variables where 80 percent or more of the responses are in one category.

Statistics Forecasting
Improve forecasting with complete time-series analyses, including multiple curve-fitting, smoothing models, methods for estimating autoregressive functions and temporal causal modeling. Use the Expert Modeler to automatically determine

which ARIMA (autoregressive integrated moving average) process or exponential smoothing model best fits your time-series and independent variables, eliminating selection through trial and error.

Statistics Missing Values
If values are missing from your data, this module may find some relationships between the missing values and other variables. In addition, the missing values module can estimate what the value would be if data weren't missing.

Statistics Neural Networks
Use the Statistics Neural Networks module to model complex relationships between inputs and outputs or to discover patterns in your data. Choose from algorithms that can be used for classification (categorical outcomes) and prediction (numerical outcomes). The two available algorithms are Multilayer Perceptron and Radial Basis Function.

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Statistics Regression

Predict behavior or events when your data go beyond the assumptions of linear regression techniques. Perform multinomial or binary logistic regression and nonlinear regression, weighted least squares, two-stage least squares and probit analysis.

Complementary product

Use these products with Statistics for Data Analysis to enhance your analytical results.

Statistics Amos

Support your research and theories by extending standard multivariate analysis methods when using this stand-alone software package for structural equation modeling (SEM). Build attitudinal and behavioral models that more realistically reflect complex relationships, because any numeric variable, whether observed or latent, can be used to predict any other numeric variable. The latest release includes a new nongraphical method of model specification that improves accessibility for users who need scripting capabilities and enables large, complicated models to be run more quickly.