



## SAS® Visual Data Discovery

Unmatched analytics and interactive, dynamic data visualization in a single, easy-to-use package

### What does SAS® Visual Data Discovery do?

SAS Visual Data Discovery, powered by JMP® software, provides a point-and-click interface to the advanced analytic capabilities of SAS. It enhances advanced analytics and exploratory data analysis with interactive data visualization, leading to better analyses, faster decisions and more effective presentations of analytic results.

### Why is SAS® Visual Data Discovery important?

SAS Visual Data Discovery combines the power of SAS data access and advanced analytics with JMP software's interactive interface. It provides unmatched advanced analytics with data visualization, delivering the ability to interactively explore ideas, investigate patterns, discover previously hidden facts and reveal opportunities through visual queries.

### For whom is SAS® Visual Data Discovery designed?

SAS Visual Data Discovery is designed for business analysts, researchers, statisticians, engineers and scientists who are looking to better leverage information assets. It is designed for those who have a need for advanced statistical capabilities along with dynamic visualization in a self-provisioned, interactive environment and who are restricted by the limitations in desktop statistical packages, spreadsheets and static graphs.

Today's organizations are overwhelmed with data. The challenge is to access and analyze the data, then deliver the resulting information quickly so appropriate actions can be taken. For many organizations, data sources have gotten so large and varied that the majority of statistical software products just can't handle them. The data needed to answer key questions may lie in disparate data sources, and IT often is needed to create custom extracts. Niche solutions that are not integrated can require further IT intervention. It is difficult to provide self-sufficiency to users so that the organization can leverage all key information assets.

In addition, increasingly advanced statistical methods are needed, along with analyses that can be verified and documented to meet compliance standards. On top of that, static reports and graphs with no interactive capabilities for dynamically exploring data make it difficult to discover relationships and determine organizational impacts.

Mixing and matching software packages to achieve analytic excellence can tax IT resources and everyone's patience. SAS Visual Data Discovery can help organizations enhance analytic effectiveness for faster insights and actions. SAS Visual Data Discovery combines SAS' top-selling products (Base SAS, SAS/STAT®, SAS/GRAPH® and SAS Enterprise Guide®) with JMP software's interactive interface to provide an easy-to-install, easy-to-use advanced analysis and data visualization package. The enterprise version provides access to data resources throughout the organization with the inclusion of SAS Integration Technologies and a choice of one SAS/ACCESS® engine.

### Key benefits

- Enhance analytic effectiveness for faster insights and actions.** Exploratory data analysis and interactive data visualization are provided in an extendable point-and-click environment so information can be viewed in more compelling ways. Sharing analytic results interactively and visually leads to enhanced communication, enabling consumers of analytic results to make faster, better decisions. Interactive Adobe Flash animations can be exported into presentations, Web pages and other documents.
- Take advantage of all data to uncover new opportunities.** SAS Visual Data Discovery is designed to handle large, disparate data sources, so that all available data can be leveraged for analysis. The interactive, comprehensive visualization environment empowers even more users with advanced analytics from SAS.
- Reduce overall costs and complexity with a consolidated vendor portfolio.** A full range of analysis, reporting and visualization capabilities from one vendor reduces the cost of licensing, maintenance, training and support, and ensures that consistent information is available across the enterprise.
- Achieve corporate and governmental compliance.** Produce repeatable results that are easily documented and verified to meet the requirements of auditors and regulators.
- Move the discovery process forward by applying the latest statistical techniques.** SAS statistical capabilities are constantly being updated to reflect the latest advances in statistical methodology. And, SAS technical support delivers a level of service not often found with other software vendors.



## Product overview

SAS Visual Data Discovery provides point-and-click access to the most needed data preparation, graphical and analytic functions from SAS. This means that users can realize interactive, analytic excellence with the right data and the best analytic techniques that are available.

This product is targeted to those who need interactive data analysis and visualization capabilities, broad data preparation features and advanced analytics. These users may have SAS programming skills or will be using plug-ins that bring the power of SAS to nonstatisticians through the JMP environment. These users also include current users of SAS who want to upgrade to the most complete analytic software bundle.

SAS Visual Data Discovery is easily augmented for specialized users by adding SAS/ETS® for forecasting, SAS/OR® for optimization, SAS/QC® for quality improvement or SAS/IML® for matrix programming.

## Highly interactive statistical graphics

When users can interact visually with data and analysis results, they can explore information and glean new insights more easily. With SAS Visual Data Discovery, users can grab, spin and slice their data, viewing it from multiple-direction dimensions. Interactive graphs range from 3-D scatter plots to trellis plots, needle plots and summary charts. Animated bubble plots let you put graphs in motion for a more engaging experience. Interactive Adobe Flash animations can be exported to insert into presentations, Web pages or other documents.

## Visual querying and data filtering

With SAS Visual Data Discovery, you don't have to develop complex SQL queries because querying data is visual, intuitive and dynamic, and results are displayed immediately. SAS Visual Data Discovery can handle virtually unlimited amounts of data. Users can interactively filter and query data, browsing and rearranging data at will. It is all point and click to visually subset data, animate

reports or drill down to underlying data. Any number of columns can be added to the data filter, including continuous, categorical and hierarchical variables. You can preview a fixed number of rows, choose columns, generate SQL or write custom code—all through an intuitive point-and-click interface. All graphs and reports are dynamically linked and updated automatically.

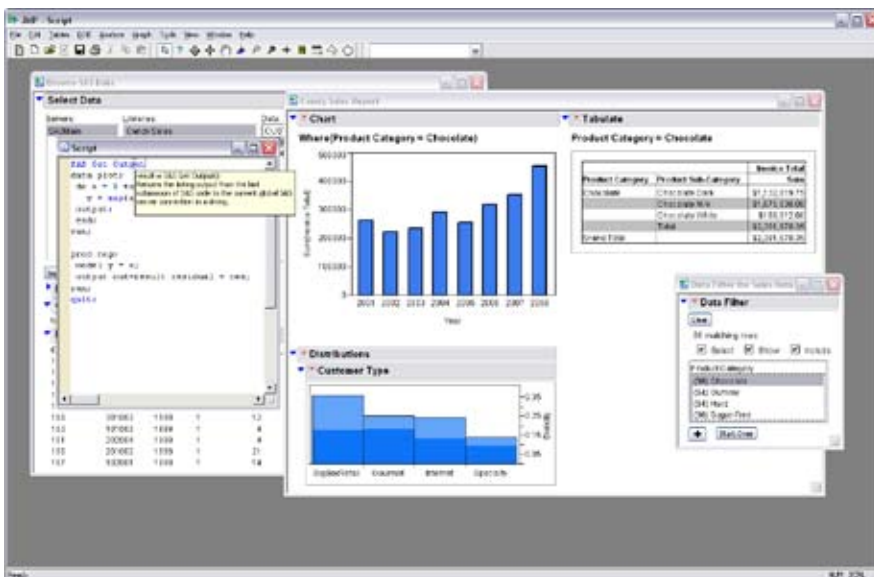
## Extensible visual analytics

SAS Visual Data Discovery brings an interactive exploration environment to SAS software's advanced analytics. You can point and click your way through the interface and customize analyses with your own SAS programs. SAS functionality can be called through the JMP Scripting Language or SAS Stored Services (also known as SAS Stored Processes), or it can be coded in a SAS aware program editor. Custom GUIs to SAS Analytics are easily created, enabling SAS programmers to further leverage their SAS skills and make interactive, analytic results available to others in the organization.

SAS Visual Data Discovery supports both the information producer and the information consumer with the ability to surface information and share visual results in an easy-to-understand manner. By distilling complex data structures into succinct, dynamic graphs and reports, more users across the organization can quickly assess and realize the value in information assets.

## Comprehensive set of tools for exploratory and advanced statistical analysis

With SAS Visual Data Discovery, the broad and deep range of SAS software's advanced analytics are available from an interactive, point-and-click interface.



**SAS Visual Data Discovery provides point-and-click access to the most needed data preparation, graphical and analytic functions.**

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## Analysis of variance

Analysis of variance is a technique for analyzing experimental data. With SAS Visual Data Discovery, users can perform analysis of variance for balanced or unbalanced designs, multivariate analysis of variance and repeated measurements analysis of variance. Users can also fit general linear models and mixed models for a variety of data situations.

## Regression

Regression analysis examines the relationship between a response variable and a set of explanatory variables. SAS Visual Data Discovery uses least squares to estimate parameters, includes nine different model selection methods and produces a variety of diagnostic measures. More specialized procedures fit generalized linear models, mixed linear models, nonlinear models and quadratic response surface models.

## Categorical data analysis

In categorical data, the outcome of interest reflects categories with data often presented in tabular form, known as contingency tables. Users can investigate the association in a contingency table as well as produce measures that indicate the strength of that relationship. Parametric models can be used to investigate the variation of a function of the outcome variable across levels.

## Multivariate analysis

Multivariate analyses encompass a variety of methods for modeling data with two or more response variables or for identifying relationships among several variables without designating particular variables as response or explanatory variables. Common factor analysis can be used to explain the correlations among a set of variables in terms of a limited number of unobservable, or latent, variables. Principal component

analysis summarizes a large number of variables with a small number of linear combinations.

## Survival analysis

Survival analysis concerns data that measures lifetime or time until an event. In many cases, only upper or lower bounds are available for some observations. This is known as censoring. Survival analysis methods correctly use both censored and uncensored observations. SAS Visual Data Discovery compares survival distributions for the event-time variable, fits accelerated failure time models to event-time data and performs regression analysis based on the proportional hazards model.

## Psychometric analysis

Psychometric methods are well-suited for analyzing data on human judgment and perception, such as market research data, but can be used for many other types of data. Multidimensional scaling estimates the coordinates of a set of objects and is often used to analyze judgments of product similarity.

## Cluster analysis

Cluster analysis places observations into groups based on similarity. SAS performs hierarchical clustering of multivariate data or distance data with graphical tree diagrams, disjoint clustering of large data sets, and nonparametric clustering with hypothesis tests for the number of clusters.

## Nonparametric analysis

Nonparametric analysis analyzes data not requiring specific distributional assumptions such as normality. SAS performs nonparametric analysis of variance as well as other rank tests for balanced or unbalanced one-way or two-way designs. Exact probabilities are computed for many nonparametric statistics.

## Survey data analysis

Researchers often use sample survey methodology to obtain information about a large population by selecting and measuring a sample from that population. SAS Visual Data Discovery provides tools for selecting probability-based random samples from a study population and analyzing the sample survey data. Procedures for computing summary statistics, analyzing contingency tables and building linear and logistic regression models enable users to incorporate the sample design into analysis.

## Multiple imputation

Missing values are an issue in many analyses. SAS Visual Data Discovery enables you to fill in missing values multiple times to generate a series of complete data sets, analyze the data sets using standard statistical analyses and combine the results to produce valid statistical inferences.

## Power and sample size computation

Study planning procedures enable you to optimize your resource usage during the design of a study, aid in determining the sample size required to get statistically significant results and help you to detect a meaningful effect.

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## Leverage core SAS® capabilities

With SAS Visual Data Discovery, you get dynamic statistical analysis capabilities that are integrated with the industry's most comprehensive software platform. It provides the ability to leverage core SAS capabilities, including analytics, stored services/processes, centralized metadata, SAS code, SAS reports and SAS output. Users can explore data on their own and do not have to depend on IT to fulfill their ad hoc requests.

## SAS® Visual Data Discovery Technical Requirements

### Desktop version

#### Client environment

- Windows (x86-32): Windows NT and Windows Vista (Enterprise, Business and Ultimate editions)
- Internet Explorer 5.5 and 6

#### Software included

- Base SAS, SAS/GRAPH, SAS/STAT, SAS Enterprise Guide and JMP

### Enterprise version

#### Client environment

- Windows (x86-32): Windows NT and Windows Vista (Enterprise, Business and Ultimate editions)
- Internet Explorer 5.5 and 6

#### Server environment

- AIX: Release 5.1, 5.2, 5.3 on POWER
- HP-UX PA-RISC: Release 11i Version 1, 2 and 3
- HP-UX Itanium: Release 11i Version 1, 2 and 3
- Linux for x86 (x86-32): Red Hat Linux 8.0, RHAS 2.1, RHEL 3.0 and 4.0, SuSE SLES 8 and 9
- Solaris on SPARC: Version 8, 9, 10
- Solaris on x64: Version 10
- Windows (x86-32): Windows NT 4 Server, Windows 2000 Server, Windows Server 2003
- Windows (on Itanium): Windows Server 2003 for Itanium-based systems

#### Software included

- Base SAS, SAS/GRAPH, SAS/STAT, SAS Enterprise Guide, one SAS/ACCESS engine of choice, SAS Integration Technologies and JMP

## Key Features

### Highly interactive statistical graphics

- Animated bubble plots show data with sized bubbles that move over time.
- 3-D scatter plots with categorical and continuous data.
- Scatter plot matrix with categorical and continuous data.
- Trellis plots, summary charts, line plots and needle charts.
- Creation of new graphics via the JMP Scripting Language.
- All graphics interact via the data table with brushing, highlighting, hiding and other capabilities.
- Interactive Adobe Flash animation can be exported for use in presentations, Web pages and other documents.

### Visual querying, data filtering and extensible visual analytics

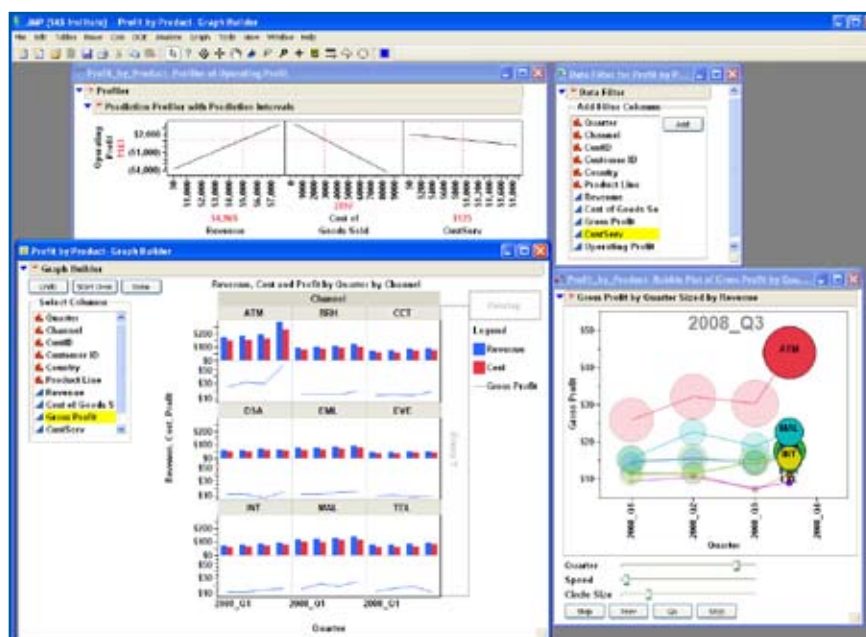
- Handle virtually unlimited data and rearrange data at will.
- View and interact with dynamically linked statistics, tables and graphics.
- Extend beyond built-in analytics capabilities by adding custom analyses with the SAS programming language.

### Comprehensive set of tools for advanced statistical analysis

- Analysis of variance, regression and categorical data analysis.
- Multivariate analysis, survival analysis and psychometric analysis.
- Cluster analysis, nonparametric analysis and survey data analysis.
- Multiple imputation for missing values.
- Power and sample size computation.
- Time series analysis, design of experiments, nonlinear modeling and decision trees.

### Leverage core SAS® capabilities

- SAS Analytics.
- SAS Stored Services (also known as SAS Stored Processes).
- SAS code, reports, output and integrated metadata.



With SAS Visual Data Discovery you can incorporate multiple visuals to find trends and relationships in your data to drive better decision making.



THE  
POWER  
TO KNOW.

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