



What is special about JMP®?

JMP is the standard for visual data analysis on the desktop. It links statistics with graphics, making information accessible in ways a spreadsheet never could. JMP excels at data importing, preprocessing and reshaping, no matter where your data comes from. Provisions for making compelling visualizations, performing comprehensive analytics, modeling and data mining are tenets of the software. You can quickly create customized analytical applications that can be shared, allowing everyone to interact with your data and the information it contains. Using JMP as your analytic hub, you can easily work with SAS®, Microsoft Excel and R from within JMP itself.

Why is JMP® important?

JMP is a powerful 32- or 64-bit application, depending on your hardware, with in-memory processing for fast statistical analysis of millions of records. JMP is well-suited to your most complex data analysis and modeling tasks. Its drag-and-drop flexibility lets you do analytics and complex data visualization – no coding required.

Who should use JMP®?

Anyone who likes to explore data to uncover hidden stories and gain insights that fuel informed decisions. Anyone who wishes to analyze data through a visualization paradigm that dynamically links data, graphics and statistics.

jmp.com/jmp10

Why JMP® ?

For dynamic data visualization and deep analytics on the desktop

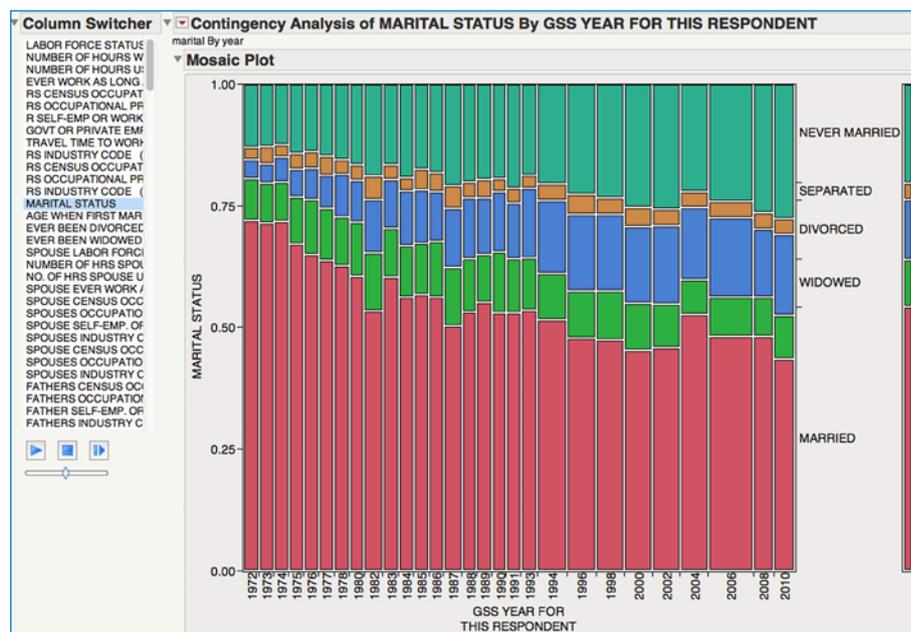
For more than 20 years, statisticians, engineers, data analysts, researchers, marketers and decision makers in almost every industry have relied on JMP to reveal the stories hidden in their data.

This visual discovery software from SAS sets itself apart by linking robust statistics with graphics on the desktop, producing visual representations of data that reveal context and insight impossible to see in a table of numbers. JMP allows you to be more efficient, tackle difficult statistical problems and bring your data analysis to a whole new level.

Data and information visualization, design of experiments, and statistical modeling techniques from simple to advanced are all within your grasp with this powerful platform. And when you make JMP your analytic hub, you can work with your other favorite tools: SAS, Excel and R.

New in JMP® 10

JMP 10, the newest version of JMP, is faster, even with big data. It adds features that make the software more dynamic, powerful and intuitive in the following areas:



Column Switcher lets you swap out many columns in a wide data set without leaving the report.

Data visualization

- Make more informative graphs quickly and easily through improvements to the drag-and-drop Graph Builder.
- Communicate and share statistical discoveries more easily with powerful new customization options and improvements to graphical output functions.

Quality and reliability

- Create control charts with drag-and-drop ease using Control Chart Builder.
- Perform measurement systems analyses with a powerful, all-in-one platform that supports multiple approaches.
- Enhance reliability analysis using new growth and forecast models.

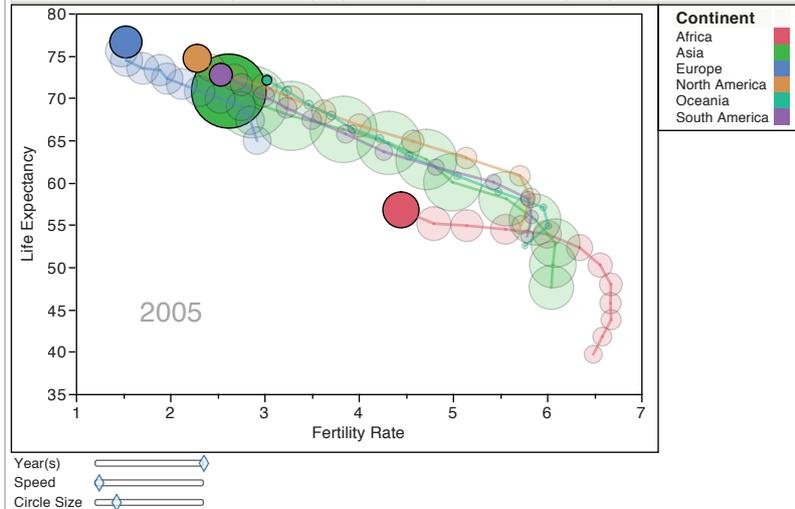
Model fitting

- Perform partial least squares (PLS) regression in a new platform that includes informative graphs and reports.
- Enjoy more efficient nonlinear model fitting with an enhanced library of models and robust parameter start estimates.

Extensibility through scripting

- Develop custom analytical applications with the Application Builder.
- Finish and share custom add-ins more efficiently with the Add-In Builder.
- Improve the efficiency of developing scripts with a new debugger and editor with built-in log.
- Greatly enhanced Scripting Index.

Bubble Plot of Life Expectancy by Fertility Rate Sized by Population Across Year(s) ID Continent



Bubble Plot lets you create animated data movies to show changes in many dimensions over time.

General enhancements

- Faster programwide, especially with large data.
- Local data filter and column switcher.
- Improved file imports.
- Compare two data tables.
- Filter hierarchical data.

Core capabilities of JMP®

Efficiently import and process data

The most time-consuming part of any analytics process is importing and reshaping data, which can come from a variety of sources. JMP excels at preprocessing, even with large data, and can import data from popular file formats and locations. JMP makes it easy to reshape, recode and regroup data to prepare it for tackling specific analytic questions.

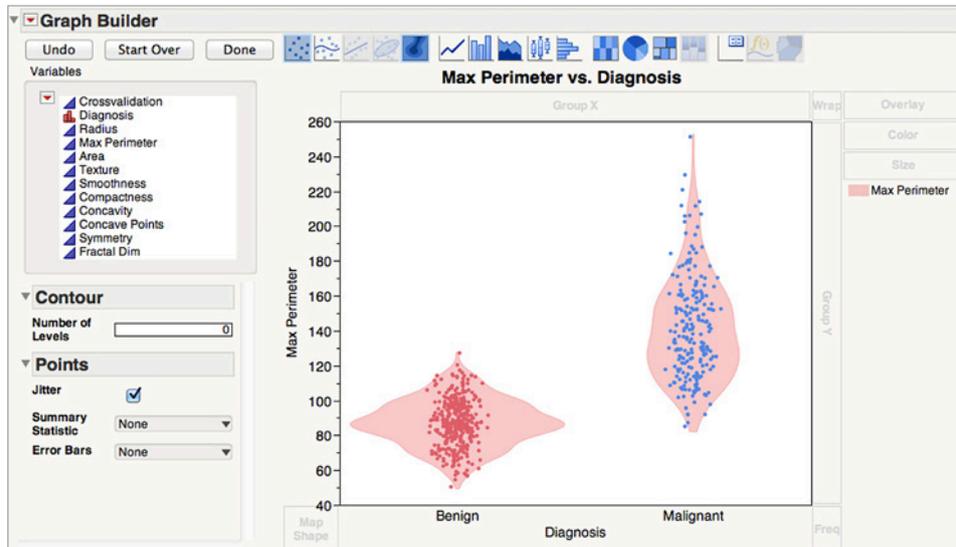
Data manipulation, organization and partitioning are almost always a neces-

sary part of any analysis. JMP supports many ways to separate a large data set into multiple files, or simply focus on specific data within a set. You can easily join, concatenate, transpose, split, compare, stack, sort or create a subset of data.

JMP can perform joins and updates with multiple data tables. The drag-and-drop Tabulate tool allows you to quickly group and summarize data with an automatically updating preview of the output.

Make compelling data visualizations

Spreadsheets don't easily reveal trends in large data sets. JMP provides rich data visualization tools, making statistical discovery easier and more efficient. In nearly every platform, JMP provides diverse graphical output that lets you convey findings to decision makers with clear, concise and compelling visualizations.



Graph Builder is the revolutionary and interactive drag-and-drop tool for creating a graphical analysis.

The Graph Builder platform is the best way to begin your exploratory data analysis. This revolutionary tool lets you interactively build a graphical analysis by dragging and dropping. JMP 10 greatly augments Graph Builder functionality, letting you choose from an array of graph elements through an icon panel and allowing customizations for each element in a visible window.

You can add geographic maps to all relevant JMP graphs, using high-quality, built-in image maps and polygon region maps. With Bubble Plot, you can create animated data movies, showing changes in many dimensions over time.

Large data sets can be difficult to quickly scan and understand. The magic of JMP is perhaps best demonstrated by its ability to link your data selections dynamically to any other piece of data and incorporate those selections on the fly into all related reports and graphs. Dynamic

linking lets you see instantly the overall effect of changes to any variable, yielding insights that other software simply can't reveal.

Group and filter data with ease

In any business, the quicker you can learn and adapt to an ever-changing consumer landscape, the quicker you can get ahead of your competition. To speed up this learning cycle, you need to be able to notice patterns in your data, focus on the most important sections for the problem at hand, and act quickly. You can't waste time generating a stack of reports to weed through, or worse, being forced to write code, and then wait for output before acting.

JMP has a radically different approach to the daily tasks of slicing and dicing data. Its grouping and filtering paradigm allows for instant in-memory recasting of report output in a single window. Imagine how quickly you can focus on specific clusters of data when you can create new reports on the fly just by

clicking through levels of a categorical variable. With one click, you can even switch the analysis focus to a new metric entirely.

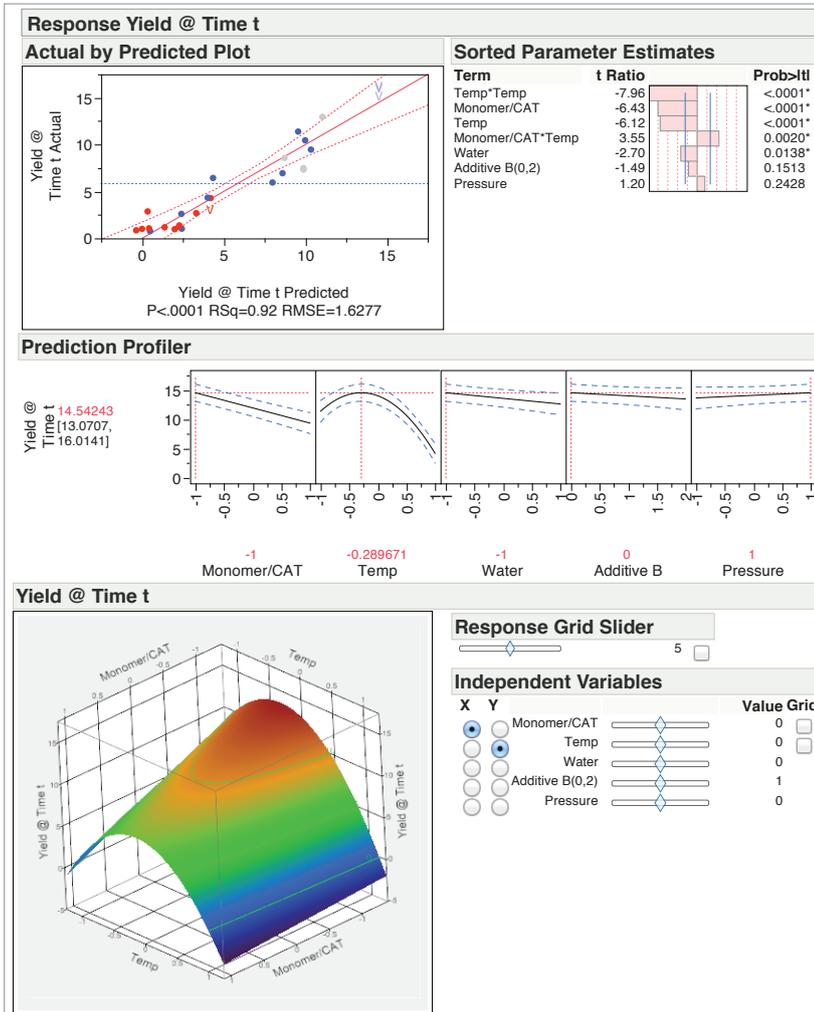
Use leading-edge tools for design of experiments

Most organizations rely on A/B testing for experimental design, a method for improvement that requires testing one situation against another with many factors in flux. This is a very slow way to learn about your business.

Design of experiments (DOE) offers a practical approach for exploring multifactor opportunity spaces that exist in almost all real-world situations. Using multifactor experiments, you can tease out the effect of an individual factor and hence learn more quickly at minimum cost. JMP offers leading-edge capabilities for optimal design of experiments. JMP also offers analysis in a form you can easily use and includes a rich set of modeling methods.

When you wish to create a design that also takes into account specific parameters like time, budget and other experimental limitations, the unique Custom Designer in JMP constructs a design to fit your problem (using an optimal design), so you don't have to fit your problem to a textbook design.

Hard-to-change variables, such as the temperature of an industrial oven or the location of a cornfield, exist in the real world. A completely randomized design might require such factors to be reset with each run. Clearly, this would be impractical or cost-prohibitive. The designed experiment most appropriate for such situations is called a split plot. JMP produces I-optimal split-plot,



JMP offers world-class capabilities for design of experiments.

split-split and strip-strip designs. JMP generates the design and includes the appropriate random-effect restricted maximum likelihood (REML) model as part of the table that contains the experimental design. No other software package on the market offers this level of flexibility with split-plot designs.

JMP also supports classical screening (e.g., fractional factorial), response surface, full factorial, nonlinear and mixture designs, as well as advanced designs

such as space-filling, accelerated life tests and choice.

Find the best fit

Statistical models clarify central trends and patterns so you can learn about your business, your competition and your customers. That knowledge empowers you to take the best course of action and more easily grow your business.

Building useful models is part science and part art, and JMP includes an array of statistical platforms that help

you build robust models of your data. With methods for revealing relationships among variables in a process, JMP allows you to not only make predictions but also to identify settings for factors that yield optimal performance. JMP includes a variety of different linear and nonlinear ways to fit models, and these diverse fitting tools help you make data-driven decisions.

At the heart of JMP software's model-fitting toolkit is the Fit Model platform. Fit Model allows you to construct model terms and select from a library of methods, including standard least squares fitting, stepwise, MANOVA, generalized linear, loglinear variance or logistic regression (nominal and ordinal). JMP also fits models with REML and includes advanced multivariate modeling techniques: principal components, partial least squares, cluster, item analysis, partition models and more.

The Fit Y by X platform is a powerful tool for model dependencies between a single input and a single response or outcome. This platform supports simple linear regression, logistic regression, ANOVA and contingency analyses, and recognizes the options available based on the type of data that is being analyzed.

If you can express a formula you can fit data to it in JMP software's advanced Nonlinear platform. You can fit your data with a choice of popular models from the JMP library, including those for bioassay and pharmacokinetics.

Advanced nonlinear model-fitting capabilities in JMP include fitting neural network models in the Neural platform and decision trees in the Partition platform.

No matter what modeling techniques you use, you can build the optimal fit for your data in JMP.

Explore your opportunity space

After building a model, it is important to be able to understand how each factor affects your predicted response. In JMP, you explore this opportunity space visually and easily through the Profiler, a dynamic tool for interacting with your model. The Profiler lets you grab a factor, dynamically adjust its level, and immediately see the impact on the rest of the factors in a way that a table of statistical coefficients could never do.

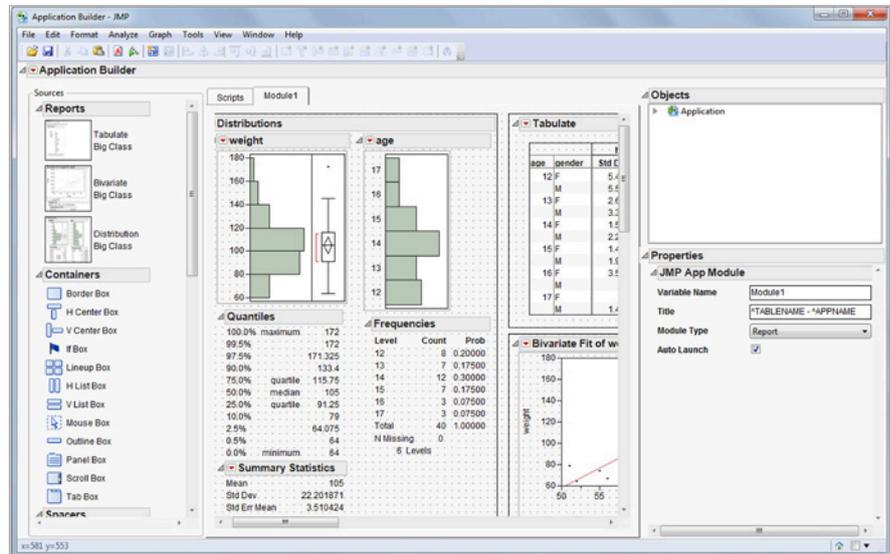
With JMP, you can also:

- Set up desirability functions for responses and then find the optimal settings of factors that maximize your results across the responses.
- Fill an opportunity space that you can then filter to show the feasible region.
- Simulate the effect of variability in your factors to analyze transmitted variation.

Predict product reliability

Preventing failure and improving warranty performance are two of the most important reasons for using proven techniques to fully understand the performance of your products over time. JMP pinpoints defects in materials or processes and finds design vulnerabilities so you can understand how best to correct them.

The new Reliability Forecast platform in JMP 10 lets you predict replacement and warranty costs in a continuous production setting, using historical product failure data to forecast warranty



Application Builder lets you build custom applications instantly by dragging and dropping reports onto a canvas.

returns with visual and interactive plots. The Reliability Forecast platform also supports data tables in the popular Nevada format.

The Reliability Growth platform, also new, allows users to perform Crow-AMSAA analysis of repairable systems and see how reliability is changing over time in phases.

JMP includes the following capabilities for reliability analysis:

- Fitting of life distributions.
- Fitting life distributions with one factor (e.g., accelerated failure models).
- Performing recurrence analysis.
- Modeling product degradation.
- Estimation of survival, parametric survival, proportional hazards models.

Optimize quality and process engineering

The market demands continual improvement, which is why you strive to accelerate time to market, protect your brand by minimizing customer complaints, and deliver products and services that consistently meet or exceed customer expectations. JMP has the necessary tools to be the software at the heart of your quality program, incorporating a wide range of statistical and graphical techniques.

JMP 10 enhances quality and process engineering capabilities with two new platforms: Control Chart Builder and Measurement Systems Analysis.

You can monitor processes with the full set of control chart types included in JMP, but feeding your data to a control chart chosen from a library can hide as much as it reveals. Control Chart

Builder lets you create control charts interactively through a drag-and-drop workflow analogous to Graph Builder and then explore many subgroup variables and their effects on your process. You see problems in ways that are impossible using static control charts.

The new Measurement Systems Analysis platform supports multiple analysis methods, including Donald J. Wheeler's evaluating the measurement process (EMP). JMP also includes other tools for performing quality analyses, including provisions to generate variability/gauge charts, Pareto charts, and a categorical platform to create share charts from customer surveys.

Provide extensibility through scripting

Buying software that cannot grow past your initial needs leads to early obsolescence and expensive replacements. JMP includes a diverse set of basic and advanced tools that let you customize the software to address unique problems that change as your organization evolves.

The rich JMP Scripting Language (JSL) lets you work interactively and then save results for reuse. Using JSL, power users can develop new functionality to solve problems that core JMP does not address. These custom scripts can even integrate capabilities from SAS, R and custom DLL.

The Instant App tool in Application Builder, another feature added in JMP 10, lets you create custom displays from multiple reports and graphs in a drag-and-drop interface. Application Builder's design time development environment also lets you create complex analytic applications by simply dragging and dropping.

After writing scripts, use the new full-featured JSL debugger to interactively step through each line of code, examining variables to determine what might be preventing a script from performing its intended function. The log window is now integrated into the Script Editor.

Make JMP® your own

It's easier to work productively if you can configure your software to work the way you think. Consistent settings, graph output and even color palettes mean fewer steps to understanding data. JMP gives you a comprehensive set of preferences that enable you to control fonts, graphic options and detailed settings within platforms.

In addition to customizing the look and feel of JMP according to your preferences, you also can choose to display only those analytic tools as well as menus you use routinely.

Your analytic hub

As a member of the SAS family, JMP offers a seamless interface to the unparalleled richness of SAS. The deep analytics, reporting and data management capabilities of SAS extend attributes of desktop JMP software to the

server and beyond. You can also use JMP with other analytic tools, including the rich set of specialized libraries in R. JMP makes it easy to reach out to these resources and bring back results for dynamic data visualization and analysis.

Does your data live in spreadsheets? With the JMP Add-In for Microsoft Excel, you can easily move data from Excel into JMP or bring the power of the JMP Profiler to your spreadsheet models, enhancing the data with the advantages of JMP visualization tools.

Operating system guidelines

JMP runs on Microsoft Windows and Mac OS. JMP includes support for both 32- and 64-bit systems. See jmp.com/system for complete system requirements.

Curious about all of the capabilities of JMP®?

JMP includes numerous capabilities not highlighted here. To find out about all that JMP offers, visit jmp.com/software.

New Features in JMP® 10

Graph Builder

- User interface improvements make more changes available directly from the Graph Builder window.
- New elements are available: Line of Fit (regression line), Density Ellipse, Violin Plot, Pie Chart, Shaded Area, Heatmap, Treemap, Caption Box, Function.
- Multiple nested categorical X variables, resulting in nested X axes.
- Map shapes maintain aspect ratio.
- Map shapes support Asian world map view.
- Points and Map regions can be colored by size.
- Analyze command directly launches Fit Model.
- Improved performance allows processing of even large tables, with millions of records, in a few seconds.

Bubble Plot

- Geographic map data is retained in output when exporting to Flash (SWF).
- Supports color themes.
- Includes new shapes and the addition of arrows.

Column Switcher

- Use Column Switcher to swap out a column within a report, allowing you to interchange and reconstitute the analysis with the new column.

Local Data Filter

- Local Data Filter is a contextual data filter embedded within a report, localized so it doesn't affect the states of other reports or data tables.

General Enhancements

- Graph preference pane includes a preview that lets you visualize how custom-graphing parameters will look in reports.
- Drag-and-drop replacement of variables is available in many platforms.
- 300 DPI graphical output options are available.
- Ability to compare two data tables, highlighting differences.

New Windows Environment Enhancements

- User interface for Microsoft Windows offers improvements for easier customization.
- Better integration with the Windows 7 taskbar.

Nonlinear

- New Fit Curve personality fits nonlinear data to a number of models without needing to pre-impute a formula or values.
- Includes popular bioassay and pharmacokinetic models for data analysis.
- Tests multiple model estimates, parallelism and comparison of fits.

Partial Least Squares

- Improved PLS platform with refined graphs and reports.
- Study Distance, T-Square, Diagnostics, and Variable Importance Plots.
- Allows variable clustering, creates representative variables for groups of closely related variables.

Design of Experiments (DOE)

- New Discrete Numeric Factors specify trials at prescribed numeric stops.
- Power analysis is computed using contrasts between treatment levels.
- Variance inflation factors determine relative variances of factors in reference to a hypothetical orthogonal design.
- Evaluate Design command evaluates any table treated as a design. You can change model and alias terms and see the updated diagnostics.
- Center points and replicates are available before number of runs is selected.

Control Chart Builder

- Build control charts interactively through drag-and-drop process.
- Intelligent control chart building based on what chart you want to see.
- Nest categories on the fly or append and replace data for exploration of other natural groups.
- Use for initial problem solving in process data to visualize where problems are.

Measurement Systems Analysis

- Supports Wheeler's EMP approach.
- Assess variation in your measurement systems and gauges.
- Study parallelism, bias, variance components.
- Use the Profiler to study your system, perform trade-off analysis and optimize number of measurements for cost savings.

[Continued on back page](#)

New Features in JMP® 10, continued

Reliability Growth

- Use Crow-AMSAA analysis of repairable systems.
- Analyze mean time between failure (MTBF) and cumulative failure counts for systems with multiple stages.
- Use piecewise change-point detection to find a time point where reliability model shifts.

Reliability Forecasting

- Use historical warranty repair costs to create warranty forecasts.
- Interactively and visually explore combinations of service terms and production volumes to see their impact on forecasted repairs.

Life Distribution

- Weibull with latent causes, as well as mixtures of several types.
- Mean remaining life.

JMP® Scripting Language

- New unified scripting index includes a search function, log and sample scripts.
- JSL debugger includes step-in, step-out, pause and break functions.
- Drag-and-drop support in the Script Editor.
- Split pane for embedded log.

Application Builder

- Create instant applications for custom reporting by dragging and dropping output from platforms.
- Visually design custom applications by positioning objects and filling in action handler scripts.
- Share applications, which can be tailored to run customized analytics.

Add-In Builder

- New interface simplifies the process of creating a JMP add-in. Specify an add-in name, menu title, JSL script and other options.

Interfaces

- Support for SAS 9.3.
- Improvements to Excel interface.
- Support for MacOS Lion.
- Import SPSS files with values labeled and missing value codes intact.
- Ability to open Minitab 16 files.
- Support for WIP interface to SAS middle tier in addition to the current IOM interface.

Are you an analytics pro?

JMP® Pro includes all the visual interactivity and comprehensive analyses that are hallmarks of JMP, plus techniques for modern predictive modeling with cross-validation, exact measures of association, one-click bootstrapping, and model comparison features. To learn more, visit jmp.com/pro.



SAS Institute Inc. World Headquarters

+1 919 677 8000

JMP is a software solution from SAS. To learn more about SAS, visit: www.sas.com

For JMP sales in the US and Canada, call 877 594 6567 or go to www.jmp.com

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies.103707_S86931.0212

The results illustrated in this article are specific to the particular situations, business models, data input, and computing environments described herein. Each SAS customer's experience is unique based on business and technical variables and all statements must be considered non-typical. Actual savings, results, and performance characteristics will vary depending on individual customer configurations and conditions. SAS does not guarantee or represent that every customer will achieve similar results. The only warranties for SAS products and services are those that are set forth in the express warranty statements in the written agreement for such products and services. Nothing herein should be construed as constituting an additional warranty. Customers have shared their successes with SAS as part of an agreed-upon contractual exchange or project success summarization following a successful implementation of SAS software.