

The New Features in SigmaPlot Version 14



Below are some of the many new features in SigmaPlot Version 14.

New Graph Features

- Arrows with solid arrowheads
- Added a right mouse menu command for pasting copied graph primitives (arrow, box, etc.) on the page
- A common operation on a graph is to zoom in, make a modification and then zoom out. A toggle was added, Ctrl+3, between your current zoom level and 100%.
- Data sampling dropdown now shows the maximum number of rows in the column
- Mini-toolbars for left mouse selection may be turned off
- An Anti-aliasing button has been added to the Graph Page Tab, Format Group
- Improved user interface for the Color Schemes dialog
- The "Each Curve" option is automatically turned on when performing a linear regression on one plot
- Additional Plot Regression Statistics
- Improved access to result graphs following statistical analysis - obtained by right clicking either a statistical report or another result graph
- The scatter matrix graph, used to display results of some statistical tests such as correlation, has increased support from 10 variables previously up to 40 variables now
- Graph Properties can now be obtained by right clicking a graph or plot
- Renamed the Linear Regression command in the Graph Analysis group of the Analysis tab to Plot Regression
- Text and special symbols options are now shown directly on the symbols dialog
- The Graph Additions Group Name has been changed to Manage Plots
- Multiple Result Graph Types May Now Be Simultaneously Selected from the Create Result Graph Dialog
- The default appearance of all Result Graphs has been improved
- Added TIFF gray scale export option for graphs and graph pages

New Worksheet Features

- Sorting data in the worksheet now supports multiple key columns
- Coefficient of Variation and 90% Confidence Interval added to Column Statistics
- Formatted text can now be used in statistical analyses
- A Graph Templates button has been added to the Format group of the Graph Page ribbon tab
- Custom Column Statistics Items and Order May Now be Specified
- Statistical procedures may now use data from over 4000 worksheet columns

New Analysis Features

- The One-Way Frequency Tables method has been added
- The unpaired (aka 2-independent samples) t-test has been enhanced to provide options to test the equality of the populations means of the two groups without assuming equal variances (Welch's t-test)
- Ctrl-A now selects all program lines in user defined transforms
- More nonlinear regression application examples have been added that can now be accessed from the Help menu
- Improvements to the transforms examples that can now be accessed from the Help menu
- Improvements to some ape (automatic parameter estimate) functions in the Transform Language
- The number of groups for computing dummy variables has been extended from 100 to 1000
- Increased the maximum character length of labels in statistical tables from 30 to 255
- Error Message and Partial Save Nonlinear Regression Improvements
- The User-Defined Transform and Regression Dialogs are Now Resizable and can be Saved
- Improved User Interface for the Quick Transforms dialog

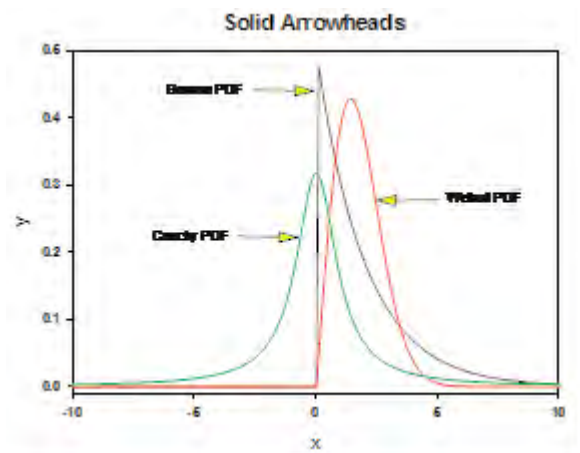
New Miscellaneous Features

- Unicode is now supported
- User settings are now preserved for new versions of SigmaPlot
- Added new ribbon layouts for different types of workflows
- The Export button is also on the Main button
- New Macro Method for Exporting any Graph Page Selection
- Added a Save All command to the Main Button
- Two New Macros Using Indexed Data for Graphing
- Sample Data Sets Available from Help
- New Macro Automation Method to Determine a Worksheet Column Length
- Added File Import and Import Database to the Main Button panel for more visible access
- Data Can Now be Extracted from a Result Graph

Graph Features

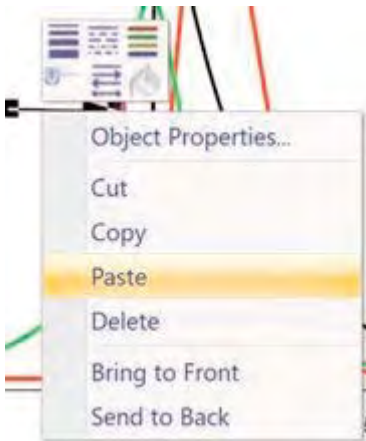
Arrows with Solid Arrowheads

The solid arrowhead is much more aesthetic than an arrowhead consisting of intersecting lines.



Right Mouse Graph Primitive Paste

A graph primitive object can now be both copied and pasted from the right click menu. This saves editing steps. These objects include the graph, boxes, circles, arrows, lines and text.



Toggle between Zoom Levels

One of the goals of this release is to make some procedures simpler. This is one of them. You frequently zoom in to make fine modifications but then you want to zoom out to see the overall effect. A toggle Ctrl+3 has been added. It will toggle between your current zoom level and 100% enabling you to easily make the changes and then see the result.

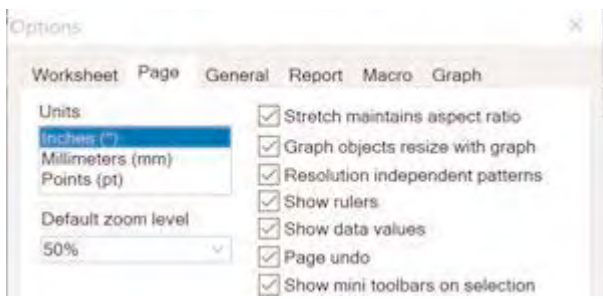
Data sampling dropdown now shows the maximum number of rows in the column

Data sampling in Graph Properties allows you to select the "from, to, by" rows for your graph. It also shows a sampling of the data rows but not every row and, in particular, not necessarily the last row. The "to" label now shows the numerical length of the column. This is a small feature but may help the user by catching a mis-selected column and also help you select the "by" number of rows.

Turn Off Left Mouse Selection Mini-toolbars

Some users only want right mouse selection mini-toolbars.

The Main Button, Options, Page has a new checkbox: "Show mini toolbars on selection". If you turn this off, mini toolbars will not appear when you select (left mouse) an object on the Page, but will still appear if you right click.



New Anti-aliasing Button

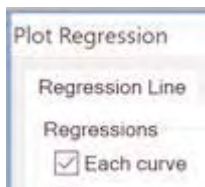
Use of anti-aliasing will smooth lines on your graph. This presently exists but was somewhat hidden under a right click on the page. This new button on the ribbon makes the feature obvious.

Improved User Interface for the Color Schemes Dialog

An unnecessary mouse click was removed. The color scheme dialog is displayed immediately. This feature and the next are examples of removing unnecessary mouse clicks.

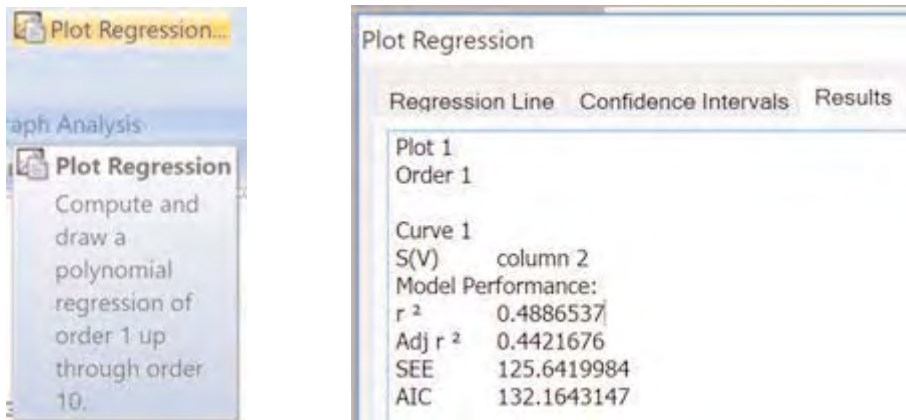
"Each Curve" Option is Automatically Turned On when Performing a Linear Regression on One Plot

It is enabled in the Plot Regression dialog. This saves one step for a commonly used procedure.



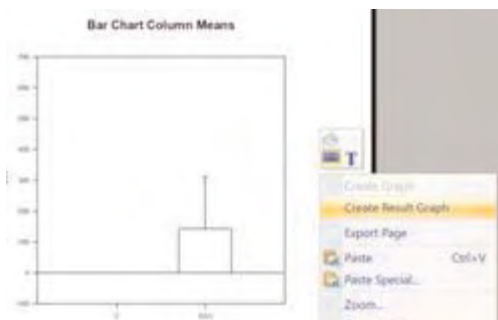
Additional Plot Regression Statistics

More statistics have been added to the results in the Plot Regression dialog that is used for polynomial fitting to graph data. The statistics include the model performance measures R², Adjusted R², Standard Error of the Estimate and the Akaike Information Criterion. These are in addition to the standard errors for parameters and confidence intervals for the parameters. A control has also been added to change the number of results decimal places.



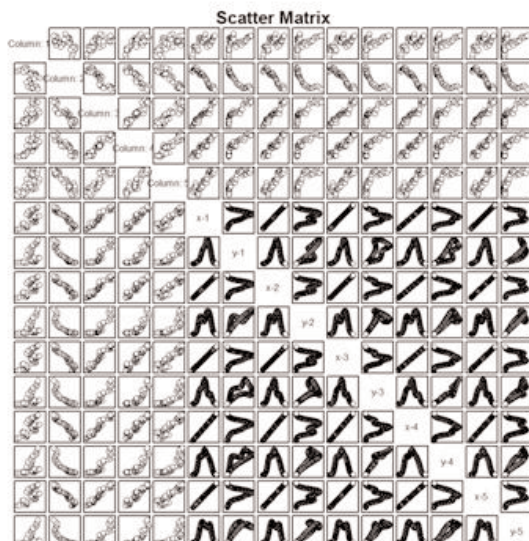
Improved Access to Result Graphs Following Statistical Analysis

Result graphs following a statistical analysis can now be obtained by right clicking either a statistical report or the page outside another result graph as shown below.



Scatter Matrix Graph Dimension is Increased to 40 Variables

The scatter matrix graph dimension have been increased to 40 variables as demonstrated below:

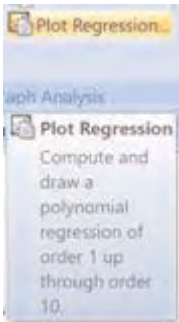


Graph Properties Can Now Be Obtained by Right Clicking a Graph or Plot

The Graph Properties panel can be obtained from the Home tab or by double clicking a graph or plot on a graph. To make this even more visible, Graph Properties can now be obtained by right clicking on a graph or plot.

Renamed Linear Regression command in the Graph Analysis group of the Analysis tab to Plot Regression

This is to emphasize that this regression is obtained from a plot on a graph and not from the worksheet. The name change is also made to the dialog and tooltip text.

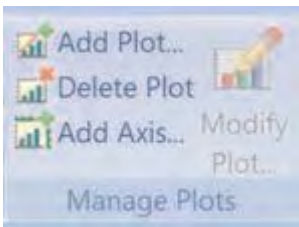


Text and Special Symbols Options are Now Shown Directly on the Symbols Dialog

A Symbol Font button has been added to the Symbols dialog. This makes it easier to change the font and visualize directly what it will look like on the graph. A Special Symbols button has been added which contains 120 additional symbols.

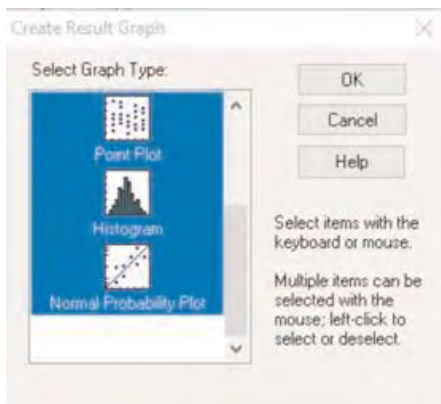
The Graph Additions Group Name Has Been Changed to Manage Plots

For clarity, the name of the Graph Additions panel on the Graph Page tab has been changed to Manage Plots since this is what these functions do.



Multiple Result Graph Types May Now be Simultaneously Selected from the Create Result Graph Dialog

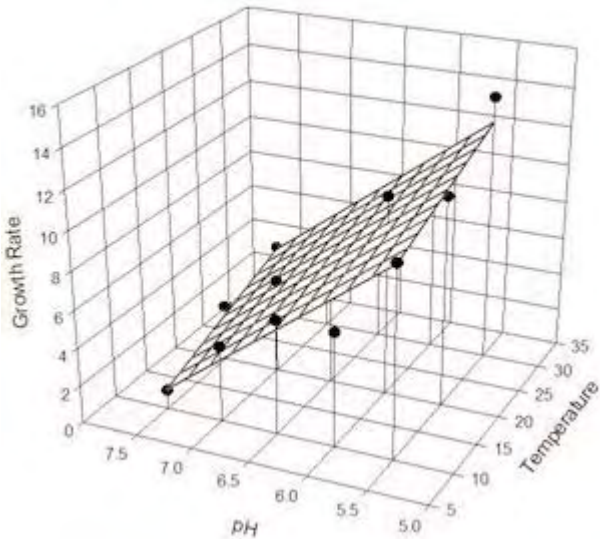
Multiple Result Graph types may be selected using the mouse Shift+Click. This enables the user to perform in one step what before required multiple dialog openings. The keyboard behavior of selecting one graph using the arrow keys has not changed.



The Default Appearance of Result Graphs Improved

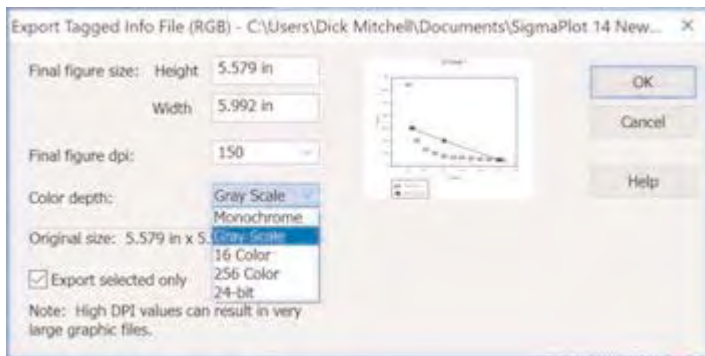
The default Result Graph appearance has been improved by modifying graph attributes that include axis line thickness, tick mark thickness, plot line thickness and color schemes for lines, line styles, symbol size and symbol edge thickness. The various line thicknesses and color schemes have been set to more visually pleasing values.

3D Scatter & Mesh



Gray Scale TIFF Option Added

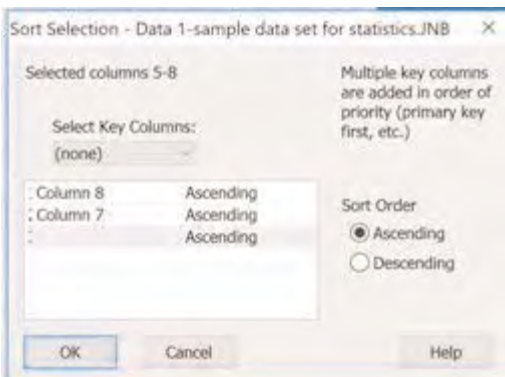
A Gray Scale option has been added to TIFF RGB export (compressed or not).



Worksheet Features

Sorting Data in the Worksheet Now Supports Multiple Key Columns

Use the Sort feature from the Worksheet tab Edit group to sort using multiple key columns.



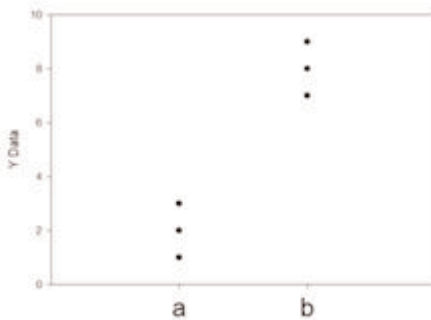
Coefficient of Variation and 90% Confidence Interval added to Column Statistics

Use the Worksheet tab and View group to select View Column Statistics (or press F6). The image below shows the addition of % CV and 90%Conf.

	1-V	2-S(V)	3	4
Mean	0.2538	142.0000	0.2400	183.3333
Median	0.2500	70.0000	0.2000	200.0000
Std.Dev	0.1828	168.2221	0.2425	125.8306
Std.Err	0.0507	46.6564	0.1400	72.6483
% CV	72.0182	118.4663	101.0363	68.6349
90% Conf	0.0904	83.1634	0.4086	212.0124
95% Conf	0.1105	101.6578	0.6011	311.9263
99% Conf	0.1549	142.5261	1.3693	710.5650
Size	13.0000	13.0000	3.0000	3.0000
Total	3.3000	1846.0000	0.7200	550.0000
Min	0.0000	45.0000	0.0200	50.0000
Max	0.5250	645.0000	0.5000	300.0000
Min.Pos	0.0250	45.0000	0.0200	50.0000
Missing	0.0000	0.0000	0.0000	0.0000
Other	0.0000	0.0000	0.0000	0.0000

Formatted Text Can Now be Used in Statistical Analyses

Three formatted "a"s and three formatted "b"s are entered into a worksheet to identify groups for a statistical test. The small square in the upper right corner of the worksheet indicates that that text is formatted. Then, in the example below, the formatted text in the graph is increased in size. SigmaPlot now recognizes formatted text for statistical tests as it did in the past for plain text. A graph using these two groups and the t-test report are shown below.



Equal Variances Not Assumed (Welch's t-test):

t = -7.348 with 4.000 degrees of freedom.

95 percent two-tailed confidence interval for difference of means: -8.267 to -3.733

Two-tailed P-value = 0.00183

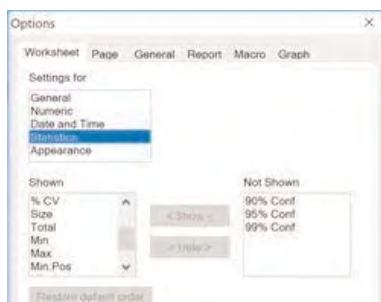
The difference in the mean values of the two groups is greater than would be expected by chance; there is a statistically significant difference between the input groups (P = 0.002).

Added a Page Templates Button on the Graph Page Ribbon Tab

Page templates are more easily accessible from the ribbon with a Templates button in the Format group of the Graph Page tab.

Custom Column Statistics Items and Order May Now Be Specified

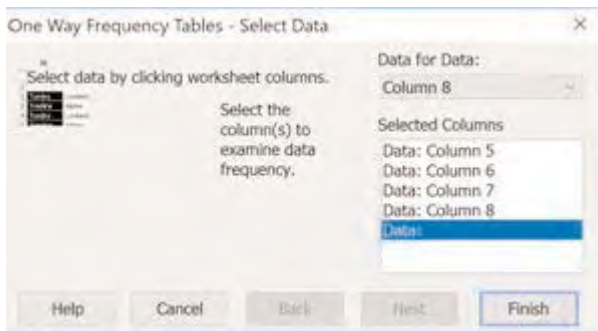
Specific Column Statistics items may now be selected and their order specified. Do this from the Main button, Options, Worksheet tab, Statistics when a Column Statistics worksheet is the current window. The two list box interface is shown below.



Analysis Features

One-Way Frequency Tables Method

The one-way frequency tables method is new. It is applicable to multiple worksheet columns. It computes the number of times independent variable values occur.



Enhancement of the Unpaired T-test

The unpaired (aka 2-independent samples) t-test has been enhanced to provide the option to test the equality of the population means of the two groups without assuming equal variances (Welch's t-test).

Equal Variances Not Assumed (Welch's t-test):

$t = 4.582$ with 3.014 degrees of freedom.

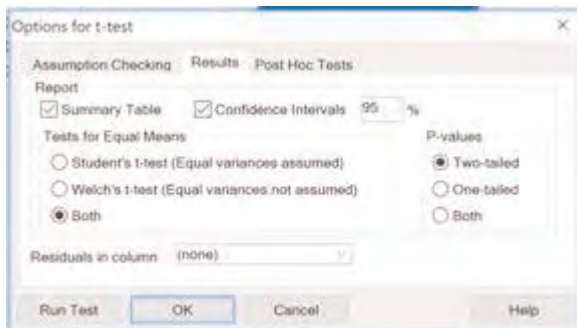
95 percent two-tailed confidence interval for difference of means: 0.910 to 5.012

Two-tailed P-value = 0.0193

The difference in the mean values of the two groups is greater than would be expected by chance; there is a statistically significant difference between the input groups ($P = 0.019$).

Improved T-test Reports

The option of selecting P-values from either a two-tailed or a one-tailed t-test has been added. This simplifies the appearance of the report giving the most useful results.



Text has been added to explain the possible use of Welch's test: *"Use the results of Welch's test, where equal variances are not assumed, if the equality of the population variances of the two groups is in doubt."*

More Nonlinear Regression Application Examples Added to Nonlin.jnb

Nonlinear regression examples are found in Help, SigmaPlot Samples and Nonlinear Regression. The file is located in the Samples subfolder of the user's profile folder.



Improvements to the Transforms Examples Xfms.jnb

Several new transforms have been added with example worksheets and graphs. In SigmaPlot 13, this file contained 25 transforms. Some of these have been removed because a corresponding macro gives better results, but several more were added, with descriptions, worksheets and graphs so that this file now contains 55 transforms. Also, this file is now copied to the user profile folder during installation and is accessible from the Help menu in SigmaPlot (Help, SigmaPlot Samples and Transforms).

Improvements to Some APE Functions in the Transform Language

APE (automatic parameter estimate) functions are used by SigmaPlot's nonlinear regression feature. They determine good starting values for the fitting function's parameters. The ape functions for polynomial and rational polynomial functions have been improved to avoid ill-conditioned or singular solution for the parameter estimates. Also, for power users, the ape function and the polynomial function used together in a user-defined transform provide a quick way of doing Polynomial Regression.

Number of Groups for Dummy Variables has been Extended From 10 to 1000

This is for users who want to use dummy variables for coding categorical variables for specific procedures in SigmaPlot's statistics, like logarithmic regression, or covariates for Cox regression and ANCOVA. The advanced user can also use them to extend SigmaPlot's multi-factor ANOVA by again converting the categorical variables to dummy variables and using multi-linear regression (GLM).

As an example of the number of dummy variables required, a 5x5x5 3-Way ANOVA requires 124 dummy variables to describe it as a regression model, which is done internally in SigmaPlot. The dummy variable interface has been used with multi-linear regression to verify examples of SigmaPlot's ANOVA results, but this could not have been done for the ANOVA design above in the previous version of SigmaPlot since the old limit was 100 dummy variables.

Error Message and Partial Save Nonlinear Regression Improvements

Increased the types of nonlinear regression error messages reported when using the Function Edit dialog to create fit equations. The ability to save partially complete equations so that the user can return to them later for completion has been added.

Improved the Histogram and Polynomial Transform Language Functions and the Exponential Operator to Handle the nth Root of Negative Numbers

The Transform Language function histogram was modified to add an optional third argument whose default value is zero. If the value of this argument is zero, the function behaves as before, assigning data to a bucket whose value equals the bucket's right edge. If the value of the argument is not zero, then data is assigned to a bucket if its value equals its left edge instead. The behavior with a non-zero argument is more conventional.

The Transform Language function polynomial was modified to replace its method for evaluation to use the Horner algorithm which is faster and more accurate. Also increased the maximum degree of the polynomial you can evaluate to 1000.

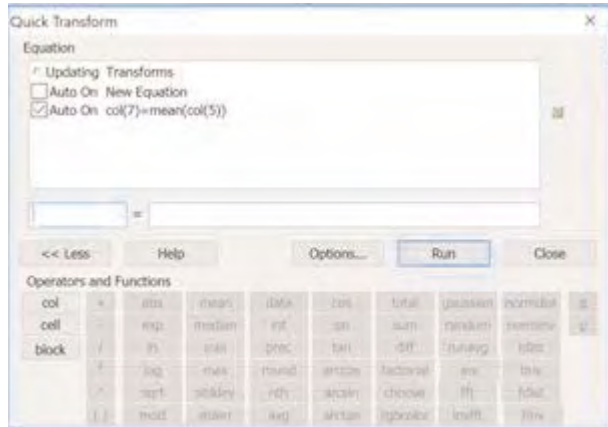
Added the ability to compute nth roots of negative numbers when n is an odd integer. Before, this resulted in missing values. So, for example, $(-8)^{1/3}$ or $(-8)**(1/3)$ should now yield -2. Also, if you were to graph the equation $y=x^{1/3}$ for negative values of x before this change, you would get nothing.

User-Defined Transform and Regression Dialogs are Now Resizable

The User-Defined transform dialog for defining transforms and the Function Edit dialog for defining regression models can now be resized and have their new sizes saved between sessions of SigmaPlot. This makes them more convenient to use by preventing frequent scrolling to make editing changes.

Improved User Interface for the Quick Transforms Dialog

Two Quick Transforms windows have been combined making the combined window much easier to handle. Additional transform functions were also added as buttons: median, nth, avg, choose, rgbcolor, runavg, fft, invfft, normdist, norminv, tdist, tinv, fdist and finv. Also, the constants "π" and "e" were added.

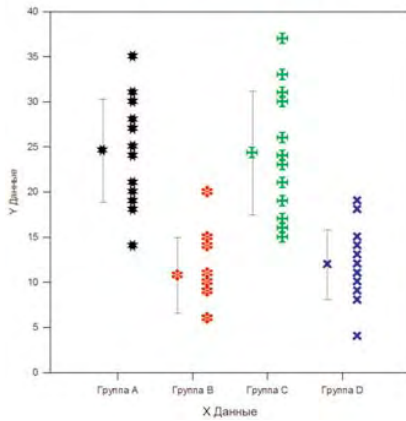


Miscellaneous Features

Using Unicode Characters in the Worksheet on the Graph Page and in Reports

Here is an example of Unicode Russian characters in the graph:

Статистический график



User Settings are now Preserved for New Versions of SigmaPlot

Every change that the user makes in SigmaPlot is saved as a setting (saved in the spwUserSettings.ini file). From SigmaPlot 14 on, a new version of SigmaPlot will use the previous file of settings so that the user will "see" SigmaPlot exactly as it was before.

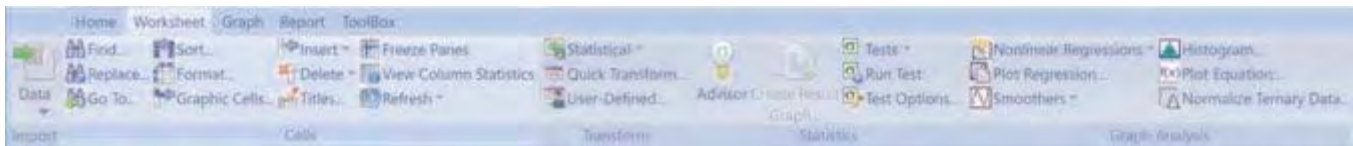
New Ribbon Layouts for Different Types of Workflows

There are now four different ribbon layouts for users that have specific uses:

- Default
- Compact
- Graphing
- Analysis

A good example of using the new configurations to speed up the workflow is in the Compact configuration. Here, the Worksheet tab has both worksheet and analysis commands and the Graph tab has both graph creating and editing commands. This shows the power of the new configurations as it saves a lot of switching back and forth between tabs.

Worksheet Tab



Graph Tab



Export Button is now also on the Main Button

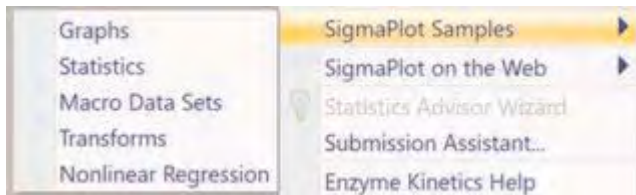
The user can use the Main button and not repeatedly return to the Home tab to export.

New Macro Method for Exporting any Graph Page Selection

A new macro method has been added for the Auto Graph Item data type called ExportGraph and is used to export any selection on a graph page to a file. The method has seven arguments. From left to right, the arguments are filename, image file format and dpi, color resolution in bits, selection flag, height and width. This is used for both writing macros and in macro recording when running the Graph Export Dialog.

Added Save All command to the Main Button

You Can now save all open notebooks with one click.



Two New Macros Using Indexed Data for Graphing

Two new macros have been added to Macro Data Sets.jnb and SigmaPlot Macro Library.jnb. These macros (Box Plot Using Indexed Data, Error Bar Plots Using Indexed Data) show how indexed data is used in graphing, expanding what SigmaStat does in result graphs.

Sample Data Sets Available from Help

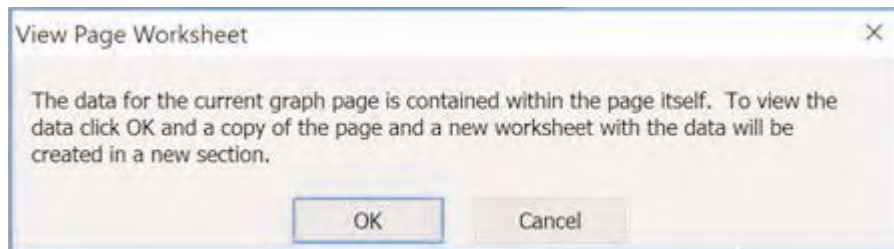
Help now has a SigmaPlot Samples item from which sample data sets can be opened. Notebooks for Graphs, Statistical Tests, Macro Data Sets, Transforms and Nonlinear Regression are available.

New Macro Automation Method to Determine a Worksheet Column Length

A new automation method has been added on the automation DataTable object given by long ColumnLength (long col). This method finds the length of a column defined from the first row to the last non-empty row. A return value of zero shows that the column is empty.

Data Can Now be Extracted from a Result Graph

Data for a Result Graph is contained internally and not in a worksheet. You can now extract the data from a Result Graph by selecting the Data button in the Navigate group of the Home tab. A Result Graph must be in focus. The tooltip for the Data button will say "View Graph Data." A new section will be created with a worksheet containing the data. This allows extracting the data for a Result Graph and placing it into a worksheet.



Corporate Headquarters
North, Central & South America
Systat Software, Inc.
2107 North First Street, Suite 360
San Jose, CA 95131-2026 USA
Phone : 800-797-7401
Fax : 800-797-7406
Email : info-usa@systat.com

UK and Ireland
Systat Software Inc
4th Floor, Block B, Vista Centre,
50, Salisbury Road,
Hounslow, - TW4 6JQ, London, UK.
Phone : +44-(0)208-538 0128
Fax : + 44-(0)208-538 0273
Email : info@systat.co.uk

Germany and Austria
Systat Software GmbH
Schimmelbuschstrasse 25
D-40699 Erkrath
Germany
Phone: +49.2104.9540
Fax: +49.2104.95410
E-mail: kontakt@systat.de

Europe and Asia-Pacific
Starcom Information Technology Ltd.
Times Square, 88, MG Road
Bangalore – 560 001, INDIA
Phone : +91 – 80 – 6765 0000
Email: apac.sales@starcominfotech.com
Support: techsupport@starcominfotech.com
India: info@starcominfotech.com