



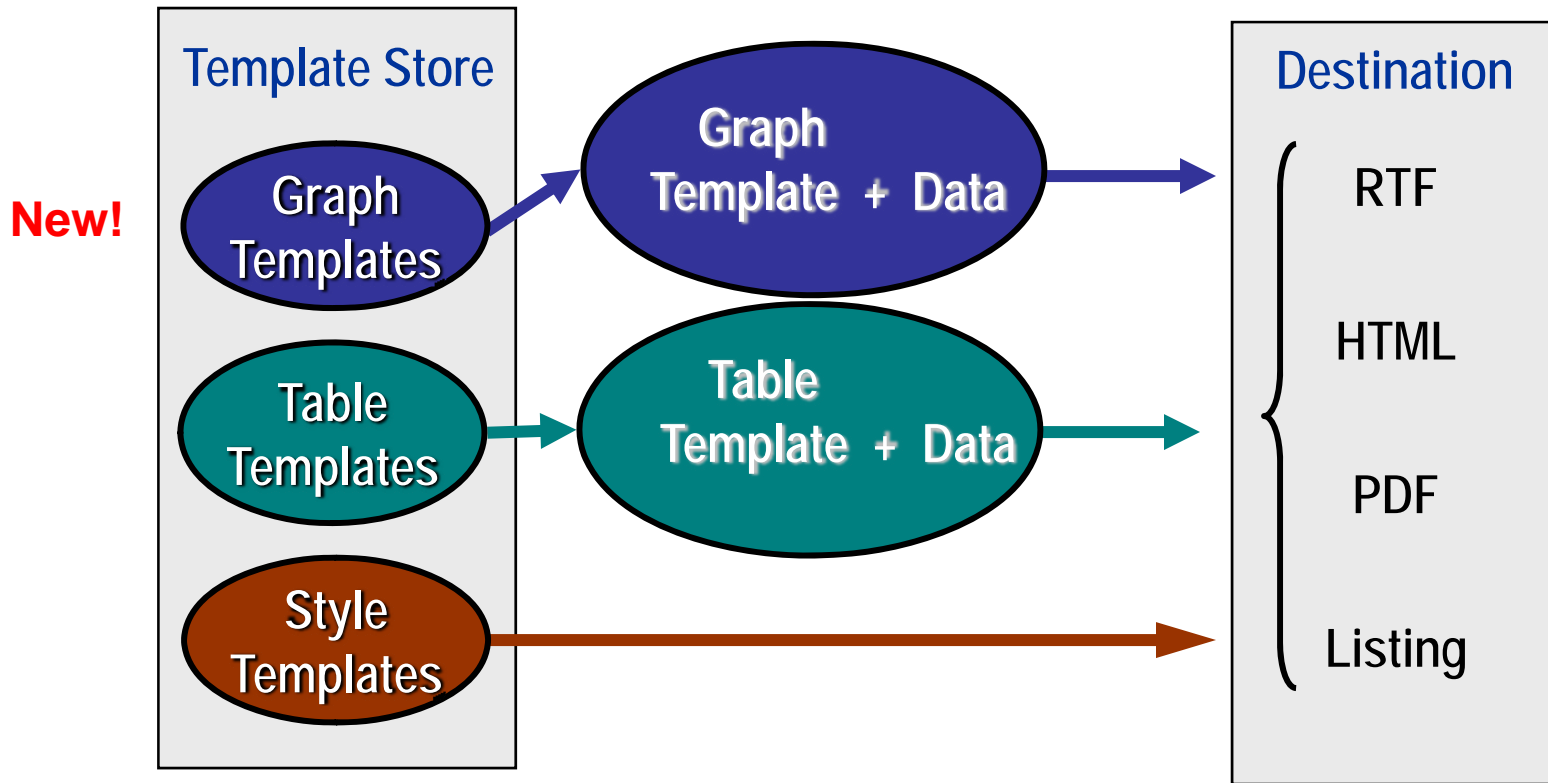
ODS Statistical Graphics

**THE
POWER
TO KNOW.®**

ODS Statistical Graphics

- Many statistical procedures can now create graphs as automatically as they create tables.
- New SAS/GRAPH procedures streamline the process of making graphs.
- The graphics have ODS styles designed for statistical work.
- A SAS/GRAPH license is required for ODS Graphics functionality.

ODS Process Overview



General Syntax of ODS Graphics

```
ODS GRAPHICS ON;
```

```
statistical procedure code
```

```
ODS GRAPHICS OFF;
```

ODS Graphics Output

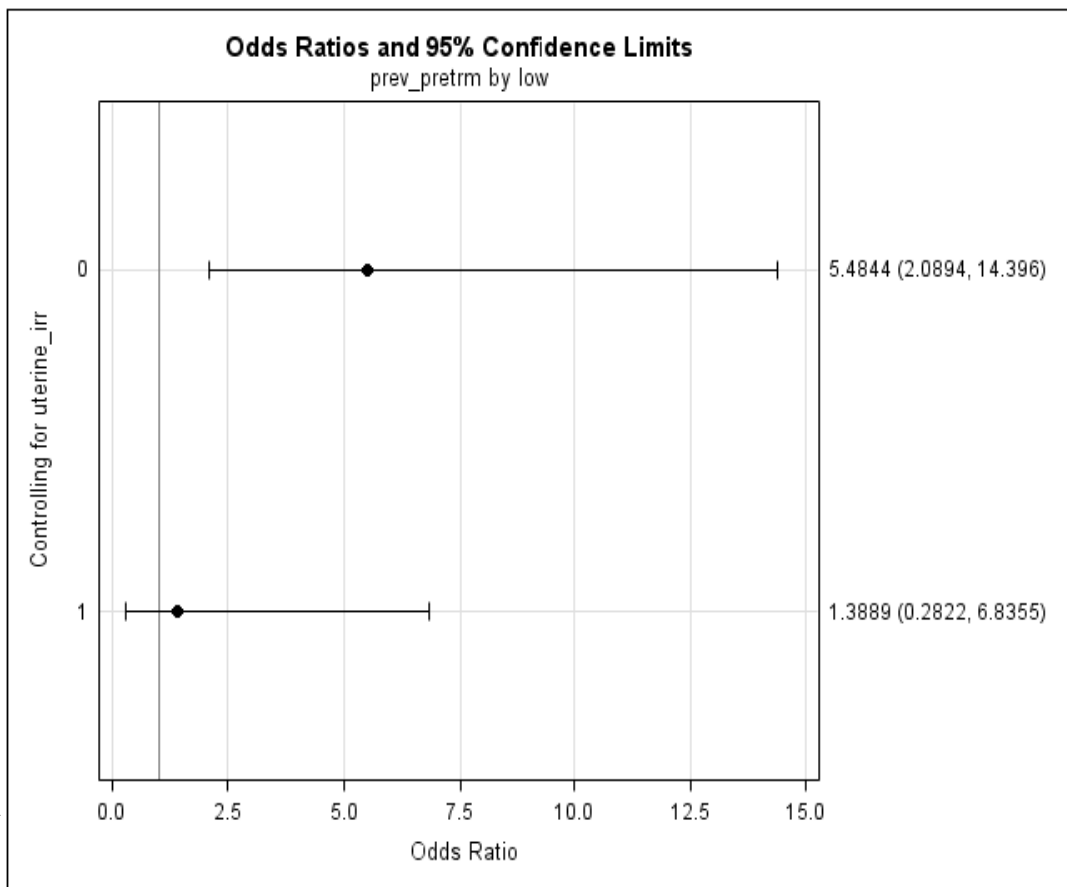
- Some graphs are created by default.
- Procedure options (such as PLOTS=) are used to specify which graphs to create.
- You can specify where you want your graphs displayed by using ODS destination statements.
- ODS SELECT and ODS EXCLUDE statements can be used to select and exclude graphs from your output.

Some ODS Destinations

Destination	Viewer	Graphics File Types
HTML	Web Browser	PNG (default), GIF, JPEG, ...
RTF	Word Processor, such as Microsoft Word	Contained in RTF file
PS	PostScript viewer, such as GSview	Contained in PostScript file
PDF	PDF viewer, such as Adobe Reader	Contained in PDF file
LATEX	PostScript or PDF viewer after compiling LaTeX file	PostScript (default), EPSI, GIF, JPEG, PDF, PNG
LISTING	Default viewer in your system for file type	PNG (default), GIF, BMP, DIB, EMF, EPSI, JFIF, JPEG, ...

Accessing Individual Graphs

- Results
 - Freq: Contingency Table Analysis Assessing PREV_PRETRM and UTERINE_IRR
 - Table prev_pretrm
 - One-Way Frequencies
 - Distribution Plots
 - Frequency Plot
 - One-Way Chi-Square Test
 - Deviation Plot
 - Table low
 - One-Way Frequencies
 - Distribution Plots
 - Frequency Plot
 - One-Way Chi-Square Test
 - Deviation Plot
 - Table prev_pretrm * low
 - Cross-Tabular Freq Table
 - Frequency Plot
 - Chi-Square Tests
 - Fisher's Exact Test
 - Measures of Association
 - Relative Risk Estimates
 - Table 1 of prev_pretrm * low
 - Cross-Tabular Freq Table
 - Measures of Association
 - Relative Risk Estimates
 - Table 2 of prev_pretrm * low
 - Cross-Tabular Freq Table
 - Measures of Association
 - Relative Risk Estimates
 - Summary for prev_pretrm * low
 - Odds Ratio Plot



Some Recommended ODS Styles

Style	Description
DEFAULT	Color style intended for general-purpose work. This is the default for the HTML destination.
STATISTICAL	Color style recommended for output in Web pages or color print media. This is the style used in the SAS/STAT 9.2 documentation.
ANALYSIS	Color style with a somewhat different appearance from STATISTICAL.
JOURNAL and JOURNAL2	Gray-scale and pure black-and-white styles, respectively. Recommended for graphs in black-and-white publications.
RTF	Used to produce graphs to insert into a Microsoft Word document or a Microsoft PowerPoint slide.

Modifying Your Graphs

- Use the ODS Graphics Editor, a point-and-click interface
 - for data and graph-specific changes
 - to customize titles and labels, annotate data points, add text, and change the properties of graph elements.
- Make persistent changes by modifying the ODS graph template for a particular plot.

ODS Graphics Editor

- You can enable editing for the duration of your SAS session by first selecting the Results window and then issue the SGEDIT ON command from the command line.
- You can disable editing by issuing the SGEDIT OFF command.
- To invoke the ODS Graphics Editor, submit your SAS program and then right-click in the Results window on the plot you want to edit and select **Edit**.

Graph Templates

- Graph templates are programs, written in the Graph Template Language, that describe individual graphs.
- SAS provides a default template for every graph produced by a procedure, so you never need to write a template.
- You can modify the default templates to make persistent changes that apply every time you run your program.

Graph Templates versus ODS Graphics Editor

Graph Template Changes

ODS Graphics Editor

Appropriate for	SAS programmer familiar with the Graph Template Language	Statistical end user
Approach	Programming	Point-and-click
Type of change	Persistent	Immediate
Duration	Whenever program is re-run	Current graph only
Application	Batch processing of graphs	Papers, presentations
File saved	Modified graph template	PNG or SGE

ODS Statistical Graphics in PROC FREQ

1. CUMFREQPLOT – a plot of cumulative frequencies for a one-way frequency table.
2. DEVIATIONPLOT - a plot of relative deviations from expected frequencies for a one-way table.
3. FREQPLOT - a frequency plot that are available for frequency and crosstabulation tables.
4. KAPPAPLOT - a plot of kappa statistics and confidence limits for a multiway table.
5. ODDSRATIO PLOT - a plot of odds ratios and confidence limits for a multiway table.
6. WTKAPPAPLOT - a plot of weighted kappa statistics and confidence limits for a multiway table.



ODS Statistical Graphics in PROC FREQ

This demonstration illustrates how to produce
ODS Statistical Graphics in PROC FREQ.

ODS Statistical Graphics in PROC LOGISTIC

1. Effect Plots – illustrates the predicted probability of an event by a predictor variables controlling for the other predictor variables.
2. Odds Ratio Plots – illustrates odds ratios with confidence intervals.
3. ROC Plot – displays the ROC curve. You can also display predicted probabilities or observation numbers of certain points along the ROC curve.
4. Diagnostic Plots – displays influential diagnostic statistics by case number or predicted probabilities.



ODS Statistical Graphics in PROC LOGISTIC

This demonstration illustrates how to produce
ODS Statistical Graphics in PROC LOGISTIC.

ODS Statistical Graphics in PROC CORR

1. Scatter Plots – displays scatter plots for pairs of variables. You can also display prediction ellipses and confidence ellipses.
2. Scatter Plot Matrix – illustrates a scatter plot matrix for the variables. You can also display histograms of the variables in the matrix.



ODS Statistical Graphics in PROC CORR

This demonstration illustrates how to create
ODS Statistical Graphics in PROC CORR.

ODS Statistical Graphics in PROC REG

1. Fit Plots – displays a scatter plot of the data overlaid with the regression line, as well as confidence and prediction limits, for models with one predictor variable.
2. Prediction Plots - shows the data overlaid with the regression line, confidence band, and prediction band for polynomial models.
3. Variable Selection Plots – displays plots of fit criteria for several models.
4. Influential Diagnostic Plots – illustrates various plots of the residuals, Cook's D, Dfbetas, and Dffits.



ODS Statistical Graphics in PROC REG

This demonstration illustrates how to create
ODS Statistical Graphics in PROC REG.

ODS Statistical Graphics in PROC LIFETEST

1. Survival Plots – displays the estimated survival functions. You can also display the numbers of subjects at risk at given times and the confidence bands.
2. Hazard Plots – displays the estimated hazard function. Kernel-smoothed estimates are produced for the product-limit method.
3. Diagnostic Plots – you can specify the negative log of the estimated survivor function and the log of negative log of the estimated survivor function.



ODS Statistical Graphics in PROC LIFETEST

This demonstration illustrates how to create
ODS Statistical Graphics in PROC LIFETEST.

The SGPLOT Procedure

- Is used to create individual plots and charts with extensive overlay capabilities.
- Supports 19 plot types which includes scatter plots, needle plots, horizontal and vertical box plots, histograms, dot plots, horizontal and vertical bar charts, and horizontal and vertical line charts.
- Over 20 statements are available to customize the plot.

The SGPANEL Procedure

- Is designed to produce a paneled plot based on classification levels.
- The plots contained within the cell of each panel are defined much like the plots in PROC SGPLOT.
- Two types of paneling are supported: panel (default) and lattice.
- Over 20 statements are available to customize the plot.

The SGSCATTER Procedure

- Is designed to create panels of scatter plots, from independent scatter plots to scatter plot matrices.
- Only has 3 statements.
- PLOT statement creates independent plots for each Y*X pair in a panel.
- COMPARE statement creates a matrix that crosses a list of X variables with a list of Y variables.
- MATRIX statement creates a scatter plot matrix of a list of variables.



Creating Statistical Graphics in SAS/GRAPH

This demonstration illustrates creating statistical graphics in SAS/GRAPH.