

Graph Additions

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These examples demonstrate how to add features to an existing graph. Adding a plot or a title to an existing graph is discussed in the `graphsetup` vignette. These general procedures apply to most high-level graphics functions within the `USGSwsGraphs` package. All of the examples use randomly generated sets of data. **NOTE:** to use any high-level graphics function in the `USGSwsGraphs` package, you must first call a function to set up the graphics environment like `setPage` or `setPDF`, but these are not included here to use the graphics tools in `Sweave`.

```
> # Load the USGSwsGraphs package
> library(USGSwsGraphs)
> # Generate the random data
> set.seed(3636)
> X <- rnorm(32)
> Y <- X + rnorm(32)
```

1 Reference Line with Annotation

This example draws a simple scatter plot, then adds a line representing the median y value and annotates that line. Adding annotation generally requires a trail and error approach to placement of the annotation. The simple method used in this example works because X and Y are correlated.

```
> # Set up the graphics environment, the equivalent call for an on screen
> # device would be setPage("square")
> setSweave("graph01", 6 ,6)
> #
> AA.pl <- xyPlot(X, Y)
> # Add the median line of Y and annotation
> refLine(horizontal = median(Y), current=AA.pl)
> addAnnotation(min(X), median(Y), "Median Y", current=AA.pl)
> graphics.off()
```

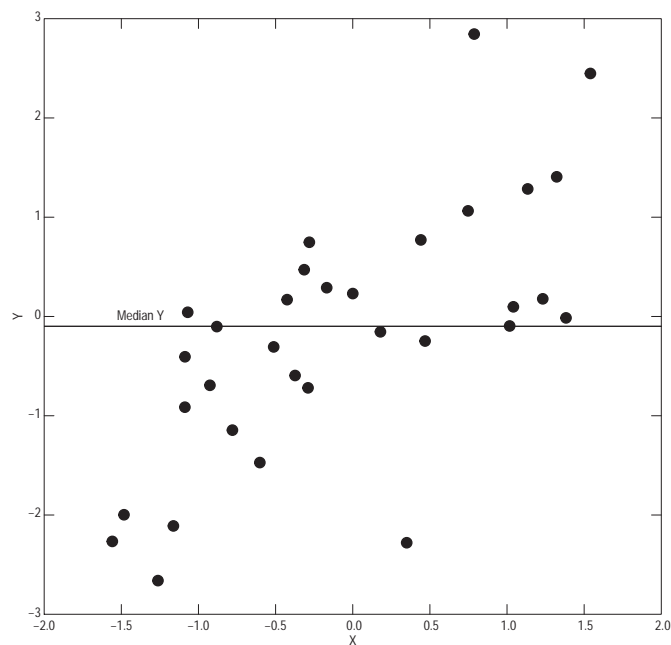


Figure 1. Scatter plot with reference line and annotation.

2 Grid Lines

Adding grid lines is a 3-step process—1 create the graph with nothing plotted, 2 add the grid lines, and 3 then add the plotted data. This process guarantees that the data will overplot the grid lines.

```
> # Set up the graphics environment, the equivalent call for an on screen  
> # device would be setPage("square")  
> setSweave("graph02", 6 ,6)  
> # Step 1  
> AA.pl <- xyPlot(X, Y, Plot=list(what="none"))  
> # Step 2  
> addGrid(AA.pl)  
> # Step 3  
> AA.pl <- addXY(X, Y, Plot=list(what="points"))  
> # Required call to close PDF output graphics  
> graphics.off()
```

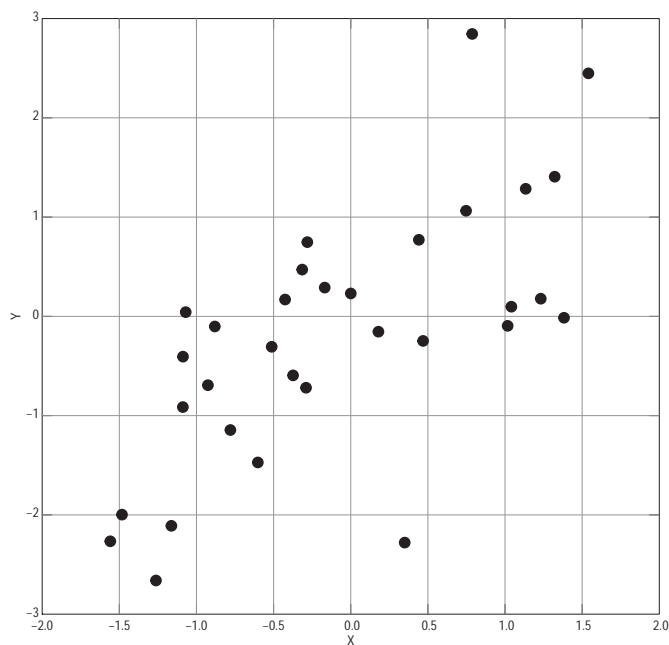


Figure 2. Scatter plot with grid lines.

3 Adding a Smoothed Lined

It is sometimes desirable to add a smoothed line to a scatter plot to show the general trend or relation between the data.

```
> # Set up the graphics environment, the equivalent call for an on screen
> # device would be setPage("square")
> setSweave("graph03", 6 ,6)
> # Create a scatter plot from the X and Y data. The name of the output (AA.pl)
> # is completely arbitrary, but consistently used through these examples.
> AA.pl <- xyPlot(X, Y)
> # The addSmooth function will compute the smoothed line and add the plot to the
> # graph. Accept all defaults for this example. A very useful additional
> # argument would be span for the loess.smooth
> AA.pl <- addSmooth(X, Y, current=AA.pl)
> # Required call to close PDF output graphics
> graphics.off()
```

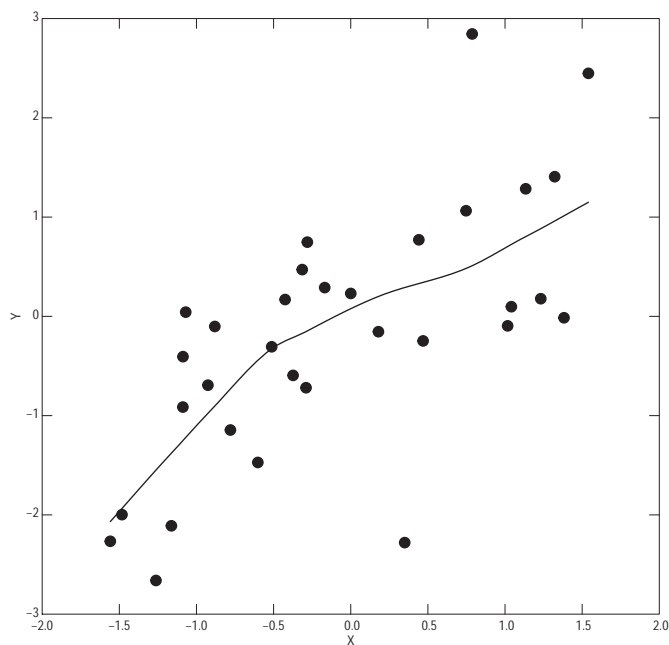


Figure 3. Scatter plot with smooth line.

4 Add a Regression Line and Table

Sometimes a table needs to be added to a graph. That table may represent some statistical summary or other additional data.

```
> # Set up the graphics environment, the equivalent call for an on screen
> # device would be setPage(layout=list(width=6, height=4)).
> setSweave("graph04", 6 ,4)
> # Create a scatter plot from the X and Y data.
> AA.pl <- xyPlot(X, Y, Plot=list(what="points", color="darkblue"))
> # Create a linear regression model
> AA.lm <- lm(Y ~ X)
> # Add the regression line
> AA.pl <- refLine(coef=coefficients(AA.lm))
> # Create the table and add it to the graph
> # Note may actually want to reformat the last p-value
> AA.tbl <- format(round(summary(AA.lm)$coefficients, 4))
> AA.tbl <- cbind(" "=c("Intercept", "X"), AA.tbl)
> addTable(AA.tbl, where="ul")
> # Required call to close PDF output graphics
> graphics.off()
```

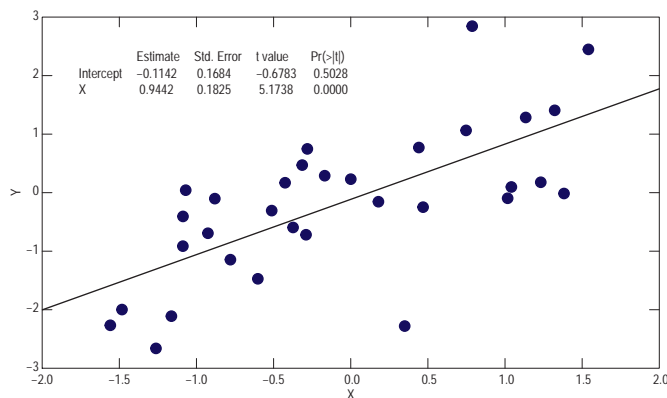


Figure 4. Scatter plot with simple linear regression.