# [Creating graphs in Stata](#creating-graphs-in-stata)

Below we review some diagnostic plots available in Stata, and we demonstrate how to overlay plots. We use auto.dta, which contains pricing and mileage data for 1978 automobiles.

## [Plotting predictions](#plotting-predictions)

We are interested in modeling the mean of **mpg**, miles per gallon, as a function of **weight**, car weight in pounds. We can use **twoway lfitci** to graph the predicted miles per gallon from a linear regression, as well as the confidence interval:

 sysuse auto, clear

 twoway lfitci mpg weight

To see how these predictions compare to our data, we can overlay a scatterplot of the actual data

twoway lfitci mpg weight || scatter mpg weight, title(MPG as a function of weight)

which produces the following graph:



We could have also created separate graphs for domestic and foreign cars with the **by()** option. See [graph twoway lfitci](https://www.stata.com/manuals/g-2graphtwowaylfitci.pdf) in the Stata Graphics Reference Manual for details.

## [Diagnostic plot](#diagnostic-plot)

There are multiple diagnostic plots available for use after **regress**. Here, we use **rvfplot** to graphically check for a relationship between the residuals and fitted values from our model. We regress **mpg** on **weight** and then issue **rvfplot**.

regress mpg weight

rvfplot, yline(0) title(Residuals versus fitted values)

The commands above produce the following graph:

