

# Diamond Plot



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## Summary

The **Diamond Plot** procedure creates a plot for a single quantitative variable showing the  $n$  sample observations together with a confidence interval for the population mean.

**Sample StatFolio:** *diamond plot.sgp*

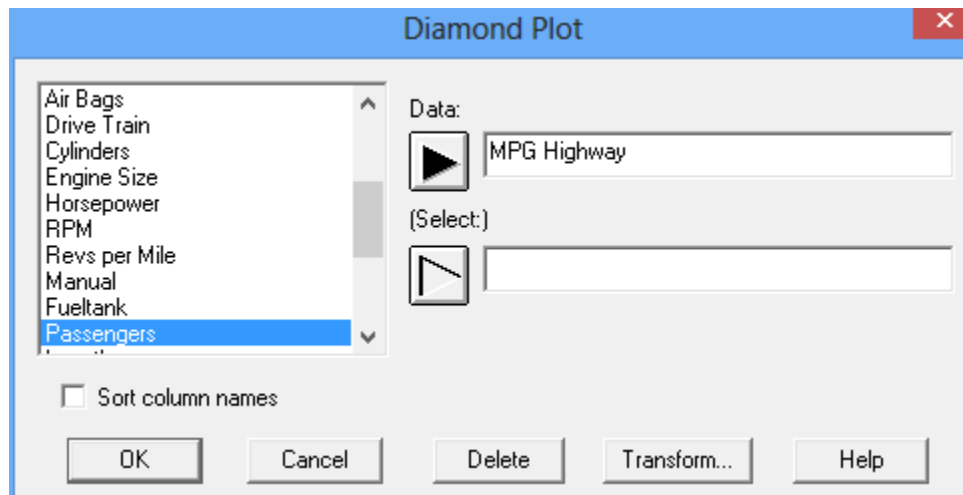
## Sample Data

The file *93cars.sgd* contains information on 26 variables for  $n = 93$  makes and models of automobiles, taken from Lock (1993). The table below shows a partial list of 3 columns from that file:

<i>Make</i>	<i>Model</i>	<i>MPG Highway</i>
Acura	Integra	31
Acura	Legend	25
Audi	90	26
Audi	100	26
BMW	535i	30
Buick	Century	31
Buick	LeSabre	28
Buick	Roadmaster	25
Buick	Riviera	27
Cadillac	DeVille	25
Cadillac	Seville	25
Chevrolet	Cavalier	36
...	...	...

## Data Input

The data to be analyzed consist of a single numeric column containing  $n = 2$  or more observations.



- **Data :** numeric column containing the data to be summarized.
- **Select:** subset selection.

## Analysis Summary

The *Analysis Summary* displays selected sample statistics.

<b><u>Diamond Plot - MPG Highway</u></b>	
Data variable: MPG Highway (miles per gallon in highway driving)	
<b>Analysis Summary</b>	
Count	93
Average	29.086
Standard deviation	5.33173
Minimum	20.0
Maximum	50.0
Lower 95% confidence limit for mean	27.988
Upper 95% confidence limit for mean	30.1841

The output includes:

- **Count** - the sample size  $n$ , the number of non-missing entries in the column.
- **Average** or arithmetic **mean** (measure of central tendency) - the center of mass of the data, given by:

$$\bar{x} = \frac{\sum_{i=1}^n x_i}{n} \quad (1)$$

- **Standard deviation** (measure of dispersion) - the square root of the sample variance:

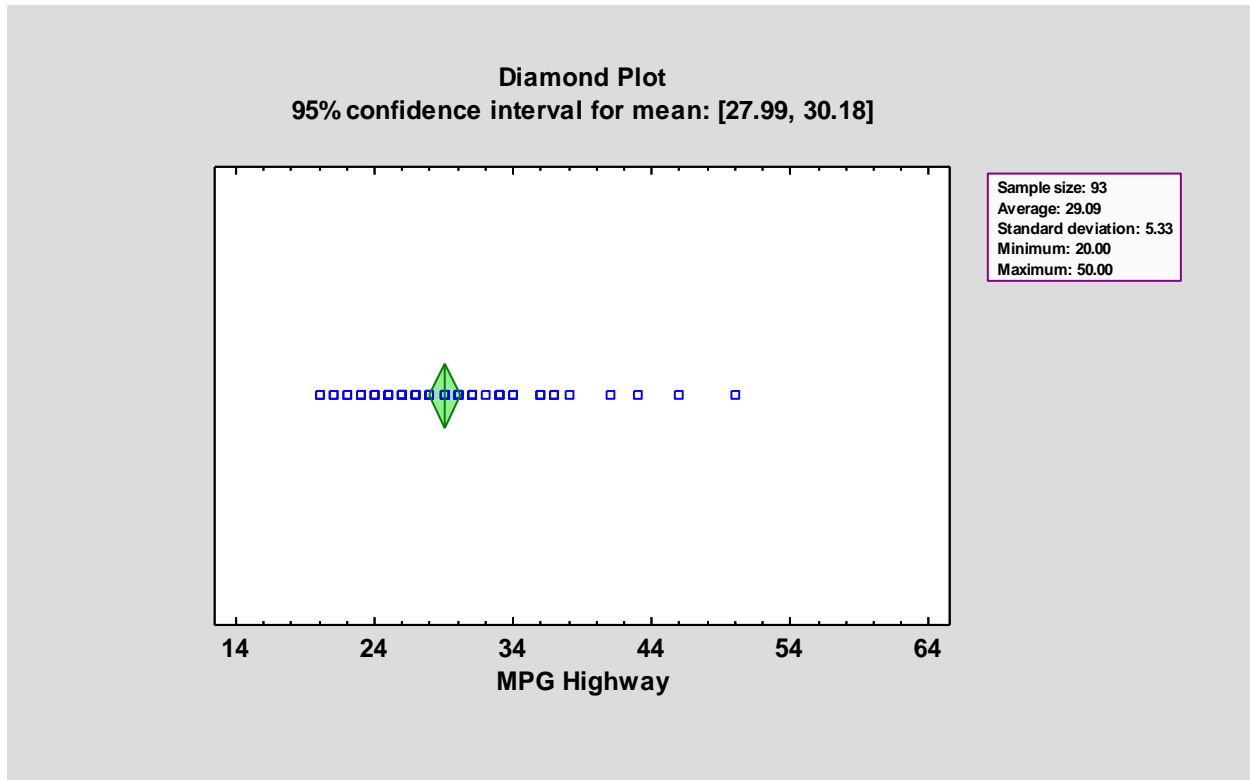
$$s = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1}} \quad (2)$$

- **Minimum** - the smallest data value.
- **Maximum** - the largest data value.
- **Confidence limits for the mean** (based on Student's t distribution with  $n-1$  degrees of freedom):

$$\bar{x} \pm t_{\alpha/2, n-1} \frac{s}{\sqrt{n}} \quad (3)$$

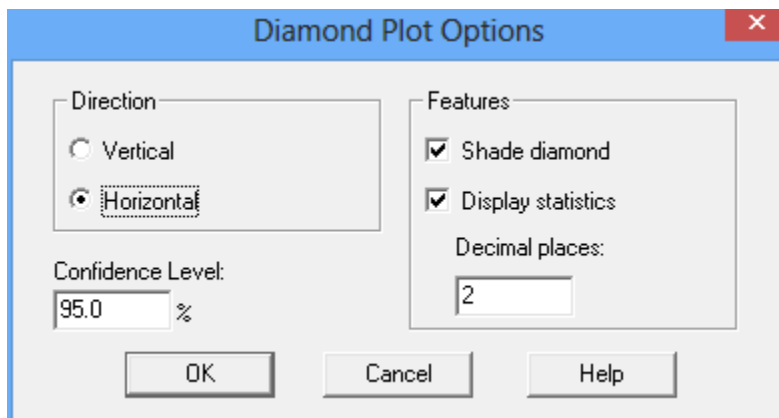
## Diamond Plot

This pane displays the diamond plot:



Each of the observations is plotted using point symbols. The diamond extends from the lower confidence limit to the upper confidence limit.

### Pane Options



- **Direction:** the orientation of the plot.
- **Confidence level:** the confidence level used to determine the size of the diamond.

- **Shade diamond:** if selected, the interior of the diamond will be shaded.
- **Display statistics:** if selected, sample statistics will be displayed in the margin of the plot.
- **Decimal places:** the number of decimal places shown in the sample statistics.