
boxplot

syntax: `boxplot(data)`
`boxplot(data1,data2,...)`
`boxplot(data1, 'title1', data2, 'title2', ...)`

purpose: Draws a boxplot of a vector of data, or two or more boxplots side by side. The boxplot provides a fast visual comparison of means and inter-quartile intervals, and indicates possible outliers in the data.

example: We'll make up some data with some outliers. (See `URN` and `SAMPLE` for explanations of what these commands do.)

```
dist1 = urn(.99, normal(10,1), .01, normal(12,1));  
data1 = sample(1000,dist1);  
dist2 = urn(.95, uniform(7,9), .05, normal(10,1));  
data2 = sample(1000,dist2);
```

The boxplot comparing the two data sets is made with the following command:

```
>> boxplot(data1,'Dist one', data2, 'Dist two');
```

For each data set, the boxplot has a box whose top is at the 75th percentile and bottom is at the 25th percentile. The median is plotted as a horizontal line inside the box. Lines extend from the box to the maximum and minimum values of the data, except when outliers are detected. An outlier is defined, for the purposes of `boxplot`, as any point that is above the 75th percentile by 1.5 times the interquartile interval, or similarly below the 25th percentile. When there are outliers, the outlying points are plotted with diamonds and the lines extend only to the cutoff value for defining an outlier. Note that in the above figure, for “Dist two” there are no outliers at the bottom end of the distribution.

For MATLAB experts: The MATLAB statistics toolbox includes a function `boxplot` that produces equivalent plots. The function `boxplot` has been included in Resampling Stats because the statistics toolbox is not a standard part of the MATLAB student distribution.

This document is an excerpt from

Resampling Stats in MATLAB

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