

Package ‘lvplot’

April 17, 2009

Type Package

Title Level value plots for R

Version 0.1

Date 2006-09-16

Author Heike Hofmann <hofmann@iastate.edu>

Maintainer Hadley Wickham <hadley@iastate.edu>

Description This package implements letter value boxplots which extend the standard boxplot to deal with larger data.

Depends RColorBrewer

License MIT

Repository CRAN

Date/Publication 2006-09-18 08:06:56

R topics documented:

LVboxplot.formula	1
LVboxplot.numeric	3
Index	4

LVboxplot.formula *Side-by-side LV boxplots*

Description

An extension of standard boxplots which draws k letter statistics

Usage

```
LVboxplot.formula(formula, alpha=0.95, k=NULL, perc=NULL, horizontal=TRUE, col="grey",
```

Arguments

<code>formula</code>	the formula has to be of the form $y\tilde{x}$, where x is a qualitative variable. The values of y will be split into groups according to their values on x and separate letter value box plots of y are drawn side by side in the same display.
<code>alpha</code>	significance level, if neither <code>k</code> nor <code>perc</code> is specified, <code>alpha</code> is used to determine how many letter values are to be used.
<code>k</code>	percentage of data points to be shown individually (as outliers) outside the letter-value boxes. <code>perc</code> is only used, if <code>k</code> is not specified. If used, k is determined in such a way, that confidence intervals around each letter value statistics will not include neighboring letter value statistics at a significance level of <code>alpha</code> .
<code>perc</code>	number of letter statistics to compute and draw
<code>horizontal</code>	if defined, aim for <code>perc</code> percent outliers
<code>col</code>	display horizontally (TRUE) or vertically (FALSE)
<code>...</code>	specify base colour to use
	unused

Details

Conventional boxplots (Tukey 1977) are useful displays for conveying rough information about the central 50% of the data and the extent of the data.

For moderate-sized data sets ($n < 1000$), detailed estimates of tail behavior beyond the quartiles may not be trustworthy, so the information provided by boxplots is appropriately somewhat vague beyond the quartiles, and the expected number of “outliers” and “far-out” values for a Gaussian sample of size n is often less than 10 (Hoaglin, Iglewicz, and Tukey 1986). Large data sets ($n \approx 10,000 - 100,000$) afford more precise estimates of quantiles in the tails beyond the quartiles and also can be expected to present a large number of “outliers” (about $0.4 + 0.007n$).

The letter-value box plot addresses both these shortcomings: it conveys more detailed information in the tails using letter values, only out to the depths where the letter values are reliable estimates of their corresponding quantiles (corresponding to tail areas of roughly 2^{-i}); “outliers” are defined as a function of the most extreme letter value shown. All aspects shown on the letter-value boxplot are actual observations, thus remaining faithful to the principles that governed Tukey’s original boxplot.

Author(s)

Hadley Wickham <h.wickham@gmail.com>

See Also

[LVboxplot.numeric](#)

Examples

```
n <- 10
oldpar <- par()
par(mfrow=c(4,2), mar=c(3,3,3,3))
for (i in 1:4) {
  x <- rexp(n*10^i)
  boxplot(x,col="grey", horizontal=TRUE)
  title(paste("Exponential, n=",length(x)))
  LVboxplot(x,col="grey", xlab="")
}
```

LVboxplot.numeric *Single LV boxplot*

Description

Produces a single lettervalue boxplot for the specified data.

Usage

```
LVboxplot.numeric(x,alpha=0.95, k=NULL, perc=NULL, horizontal=TRUE, col="grey", ...)
```

Arguments

x	alpha level for significance level: alpha 100% confidence intervals do not touch neighboring LV statistics
alpha	number of letter statistics to compute and draw
k	if defined, aim for perc percent outliers
perc	display horizontally (TRUE) or vertically (FALSE)
horizontal	specify base colour to use
col	unused
...	

Author(s)

Hadley Wickham <h.wickham@gmail.com>

See Also

[LVboxplot.formula](#)

Index

*Topic **hplot**

LVboxplot.formula, [1](#)

LVboxplot.numeric, [3](#)

LVboxplot.formula, [1](#), [3](#)

LVboxplot.numeric, [2](#), [3](#)