

Exploratory plotting overview

<i>Univariate</i>	<i>Bivariate</i>	<i>Trivariate</i>
<p><i>labeled:</i></p> <ul style="list-style-type: none"> bar plot (values) <li style="padding-left: 2em;"><code>barplot()</code> dot plot <li style="padding-left: 2em;"><code>dotchart()</code> <p><i>unlabeled:</i></p> <ul style="list-style-type: none"> one continuous variable: <ul style="list-style-type: none"> histogram <li style="padding-left: 2em;"><code>hist()</code> single box plot <li style="padding-left: 2em;"><code>boxplot()</code> one discrete variable: <ul style="list-style-type: none"> bar plot (counts) <li style="padding-left: 2em;"><code>barplot(table())</code> 	<ul style="list-style-type: none"> two continuous variables: <ul style="list-style-type: none"> scatter plot <li style="padding-left: 2em;"><code>plot()</code> line plot <li style="padding-left: 2em;"><code>plot()</code> one continuous, one discrete: <ul style="list-style-type: none"> multi box plot <li style="padding-left: 2em;"><code>boxplot()</code> two discrete variables: <ul style="list-style-type: none"> mosaic plot <li style="padding-left: 2em;"><code>mosaicplot()</code> 	<ul style="list-style-type: none"> three continuous variables: <ul style="list-style-type: none"> 3-d scatter plot <li style="padding-left: 2em;"><code>scatterplot3d::scatterplot3d()</code> heat map <li style="padding-left: 2em;"><code>heatmap()</code> surface plot <li style="padding-left: 2em;"><code>persp()</code> <li style="padding-left: 2em;"><code>lattice::wireframe()</code> contour/level plot <li style="padding-left: 2em;"><code>contour()</code> mixed continuous and discrete: <ul style="list-style-type: none"> heat map <li style="padding-left: 2em;"><code>heatmap()</code> (use facets) <li style="padding-left: 2em;"><code>par(mfrow=c(nrow,ncol))</code> three discrete variables: <ul style="list-style-type: none"> mosaic plot <li style="padding-left: 2em;"><code>mosaicplot()</code>

Generally useful plot stuff

arguments that apply to many plot commands:

`col="aColorName"` (*set colors; see colors() for complete list*)

`xlab="xAxisLabel"`

`ylab="yAxisLabel"`

`main="mainPlotTitle"`

`xlim=c(0,75)` (*set x-axis high & low*)

`ylim=c(50,250)` (*set y-axis high & low*)

`pch=20` (*set plotting character; see ?points for complete list*)

misc:

`par(mar=c(bottom, left, top, right))` (*change margins*)

`options(scipen=8)` (*turn off scientific notation*)

Univariate analysis – labeled

```
barplot(a.vector, names.arg=the.labels)
```

```
barplot(a.matrix, beside=TRUE, legend.text=TRUE)
```

other settings:

```
col=a.factor (set colors)
```

```
horiz=TRUE (use horizontal bars)
```

```
las=2 (pivot axis labels)
```

```
cex.names=.5 (resize labels)
```

```
dotchart(a.vector, labels=the.labels)
```

```
dotchart(a.vector, labels=the.labels, groups=a.factor)
```

```
dotchart(a.matrix, beside=TRUE, legend.text=TRUE)
```

other settings:

```
cex=.5 (resize labels)
```

misc:

```
par(mar=c(bottom, left, top, right)) (change margins)
```

```
options(scipen=8) (turn off scientific notation)
```

Univariate analysis – unlabeled

continuous:

```
summary(a.vector)
```

```
hist(a.vector)
```

other settings:

```
breaks=50 (set number of bins)
```

```
breaks=seq(...) (set specific bins)
```

```
xlim=c(0,75) (set x-axis high & low)
```

```
boxplot(a.vector)
```

other settings:

```
ylim=c(0,75) (set y-axis high & low)
```

discrete:

```
table(a.vector)
```

```
barplot(table(a.vector))
```

Bivariate analysis - two continuous variables

```
cor(vector.1, vector.2)
cor.test(vector.1, vector.2)
```

```
plot(vector.2 ~ vector.1)
```

other settings:

```
type="l" (make line plot instead of scatterplot)
pch="x" (set plotting character; see ?points)
col=a.factor (color points by group)
xlim=c(0,75), ylim=c(50,60) (set axis limits)
```

adding to a plot:

```
text(vector.2 ~ vector.1, labels=a.vector)
abline(lm(vector.2 ~ vector.1))
lines(lowess(vector.2 ~ vector.1))
```

Bivariate analysis - one continuous, one discrete

```
boxplot(continuous.var ~ discrete.var)
boxplot(cont.var ~ interaction(disc.var.1, disc.var.2))
```

other settings:

`ylim=c(0,100)` (*set y-axis limits*)

`col=a.vector` (*add color*)

`notch=TRUE` (*show notches for significance*)

Bivariate analysis - two discrete variables

```
mosaicplot(table(vector.1, vector.2, ...))  
mosaicplot(a.matrix.of.counts)
```

other settings:

`col=a.vector` (*color by values of 2nd variable*)

`shade=TRUE` (*flag disproportionate counts*)

`sort=c(2,1,3)` (*set the order to consider variables*)

Trivariate analysis

```
scatterplot3d(vec.1, vec.2, vec.3, type="h", angle=40)
```

```
heatmap(a.matrix, Rowv=NA, Colv=NA)
```

other settings:

```
scale="none" (show raw values)
```

```
scale="row" (show values relative to row's range)
```

```
scale="col" (show values relative to column's range)
```

```
persp(a.matrix, theta=30)
```

```
contour(a.matrix)
```

facets:

```
par(mfrow=c(2,2)) (set # of rows & cols)
```

```
a.data.frame[col1=="value", "col2"] (select one facet)
```

```
for (facet.value in c("val1", "val2", ...)) { ... }
```