Lattice Package

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Lattice Plots in R

- Barchart, dotplot, histogram, densityplot, bwplot, splom and xyplot
- Time series plots with lattice
- 3D plots with lattice

Base graphics and lattice graphics cross-reference

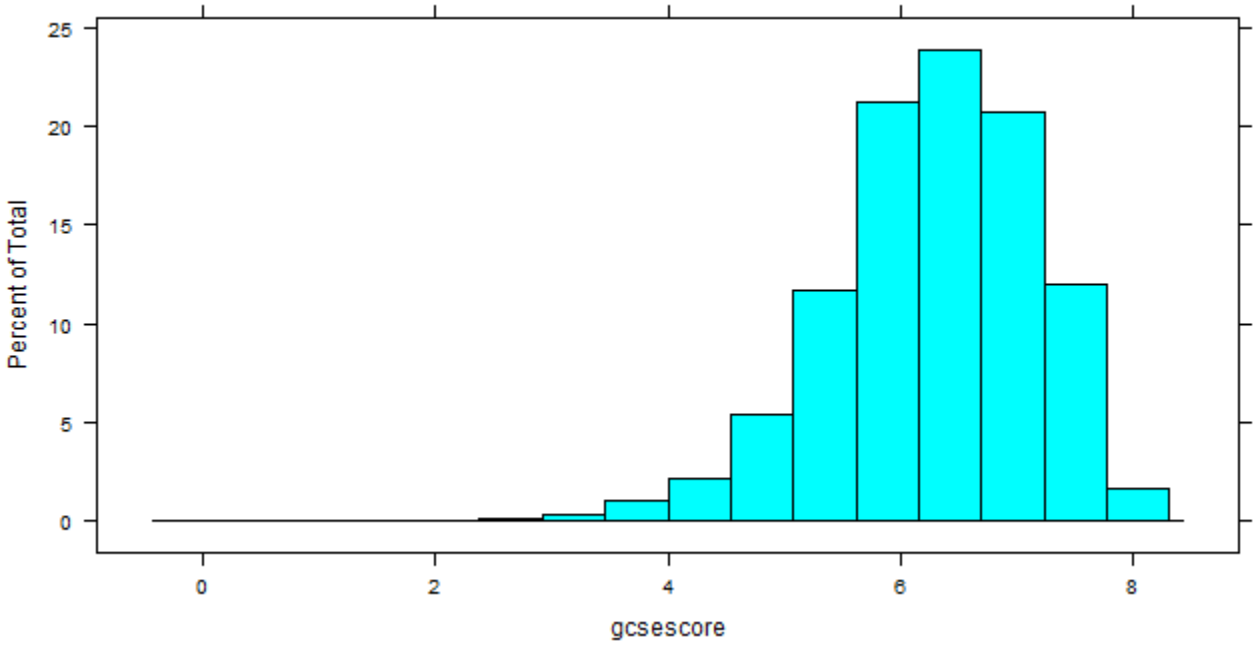
Graphics package function	Trellis package function	Description
barplot	barchart	Bar and column charts
dotchart	dotplot	Cleveland dot plots
hist	histogram	Histograms
density/plot.density	densityplot	Kernel density plot
stripchart	stripplot	Strip charts
qqnorm	qqmath	Quantile-quantile plots
xplot	xyplot	Scatter plots
qqplot	qq	Quantile-quantile plots
pairs	splom	Scatter plot matrices
image	levelplot	Image plots
contour	contourplot	Contour plots
persp	could/wireframe	Perspective charts of 3D data

Students Details dataset

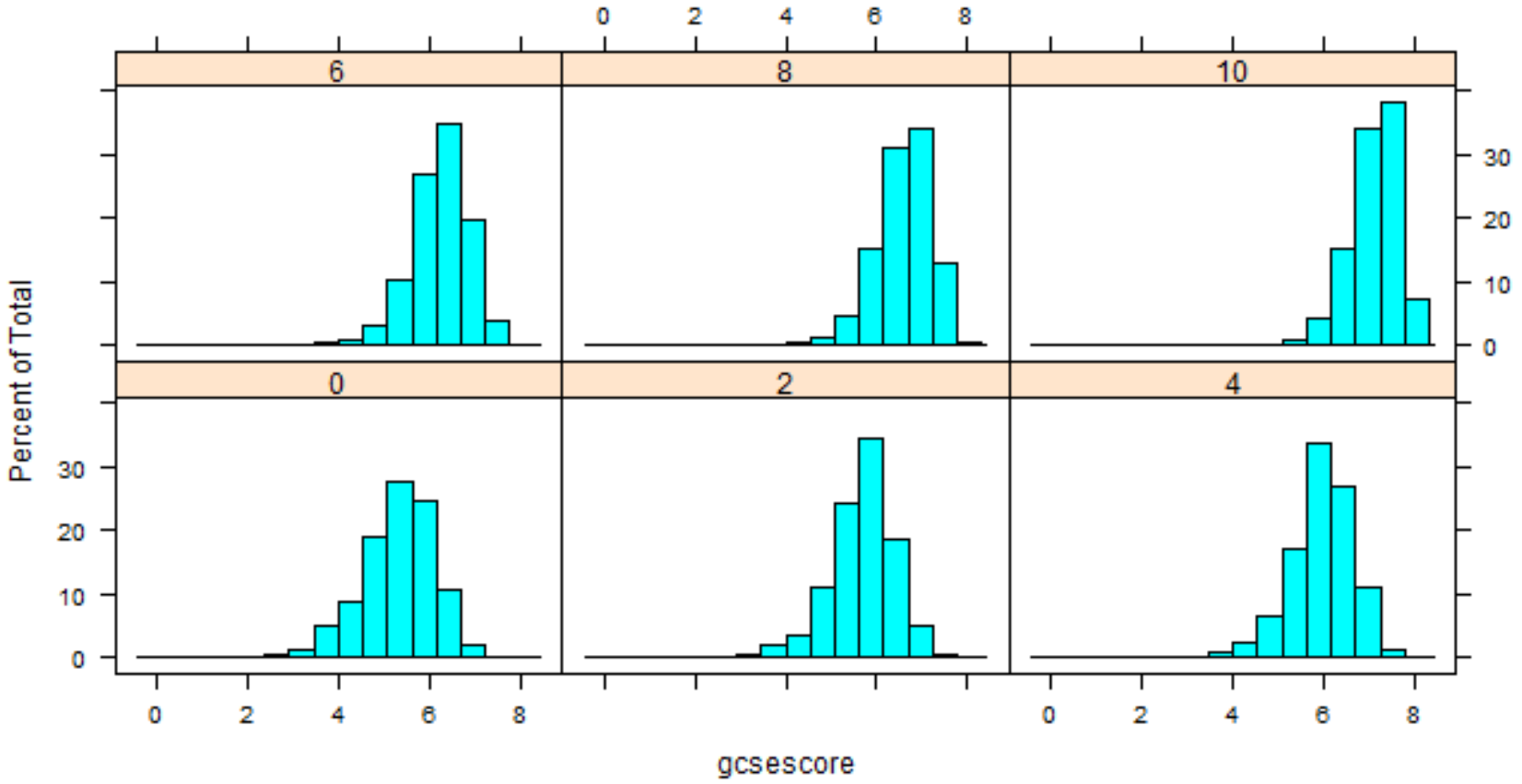
- The data file called ***hsb2* , (**high school and beyond) is used to show the demo on all Lattice plots.
- This data file contains 200 observations from a sample of high school students with demographic information about the students, such as their gender (**female**), socio-economic status (**ses**) and ethnic background (**race**). It also contains a number of scores on standardized tests, including tests of reading (**read**), writing (**write**), mathematics (**math**) and social studies (**socst**).
- you will need to load the package "lattice" before you start. You can download "lattice" from the CRAN website from within R by clicking on "Packages" and then "Install package(s) from CRAN".

The first type of graph is a histogram plot.

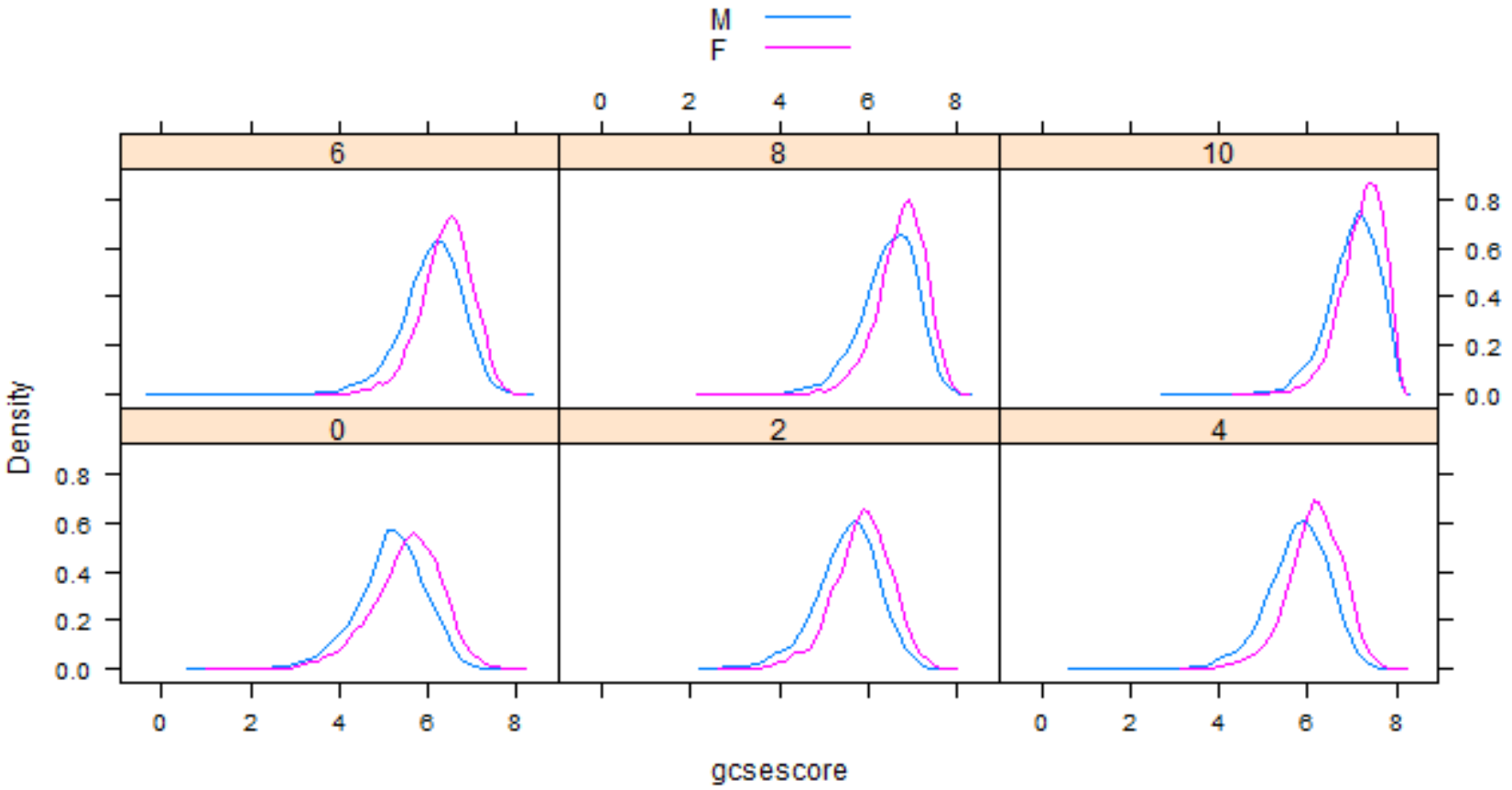
```
hsb2 <- read.table('http://www.ats.ucla.edu/stat/r/modules/hsb2.csv', header=T, sep=",")
attach(hsb2)
library(lattice)
#defining ses.f to be a factor variable
hsb2$ses.f = factor(hsb2$ses, labels=c("low", "middle", "high"))

#histograms
histogram(~write, hsb2)
```



#conditional plot
histogram(~write | ses.f, hsb2)



densityplot(~ gcsescore | factor(score), Chem97,
groups = gender,
plot.points = FALSE, auto.key = TRUE)



Check yourself

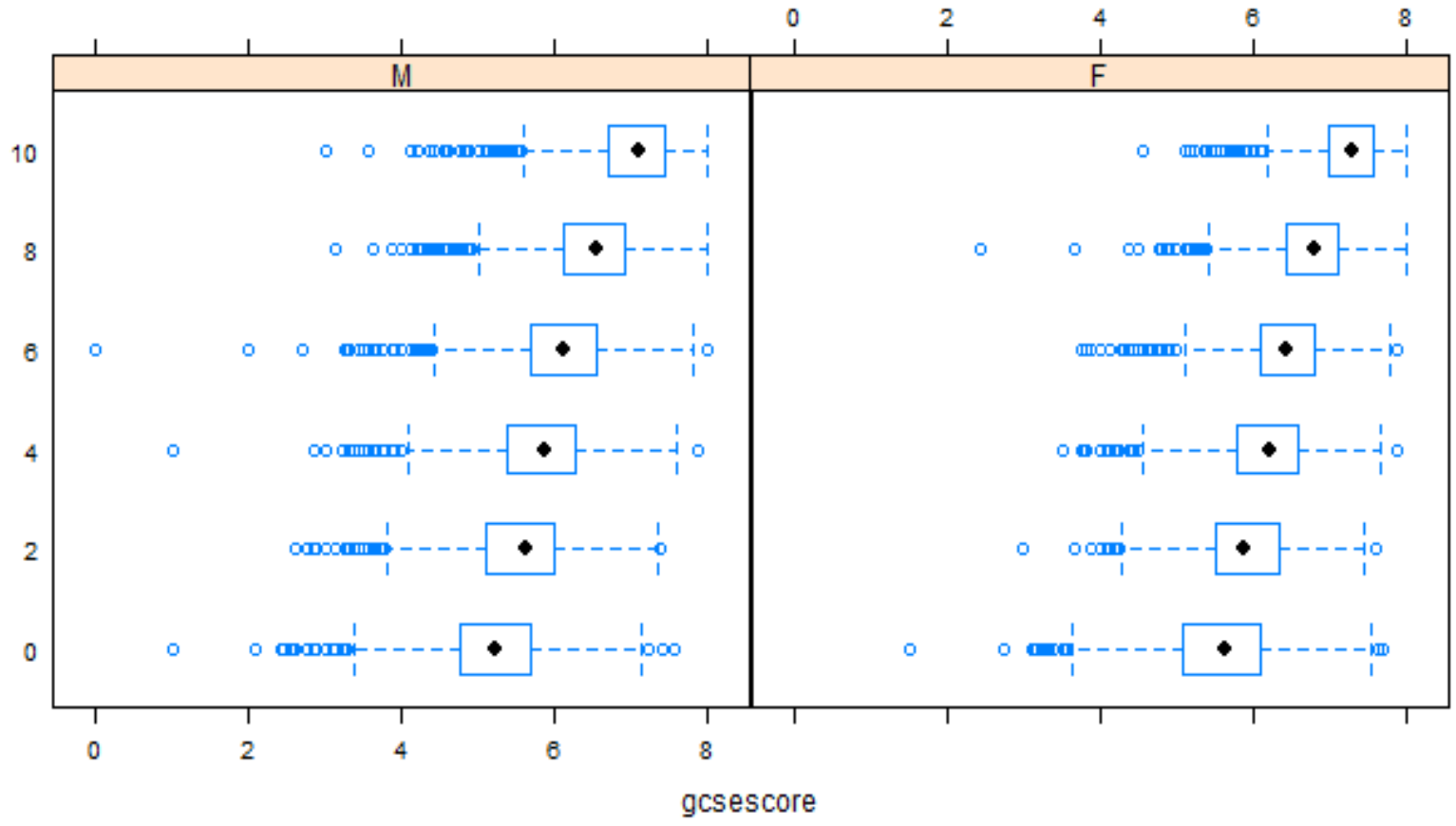
- Check the following one by one
- Remove Factor()
- Make polt.points = True
- Auto.key = False
- What happens if the extra arguments plot.points and auto.key are omitted? What happens if the inline call to factor() is omitted?

Types of plots in Lattice Package

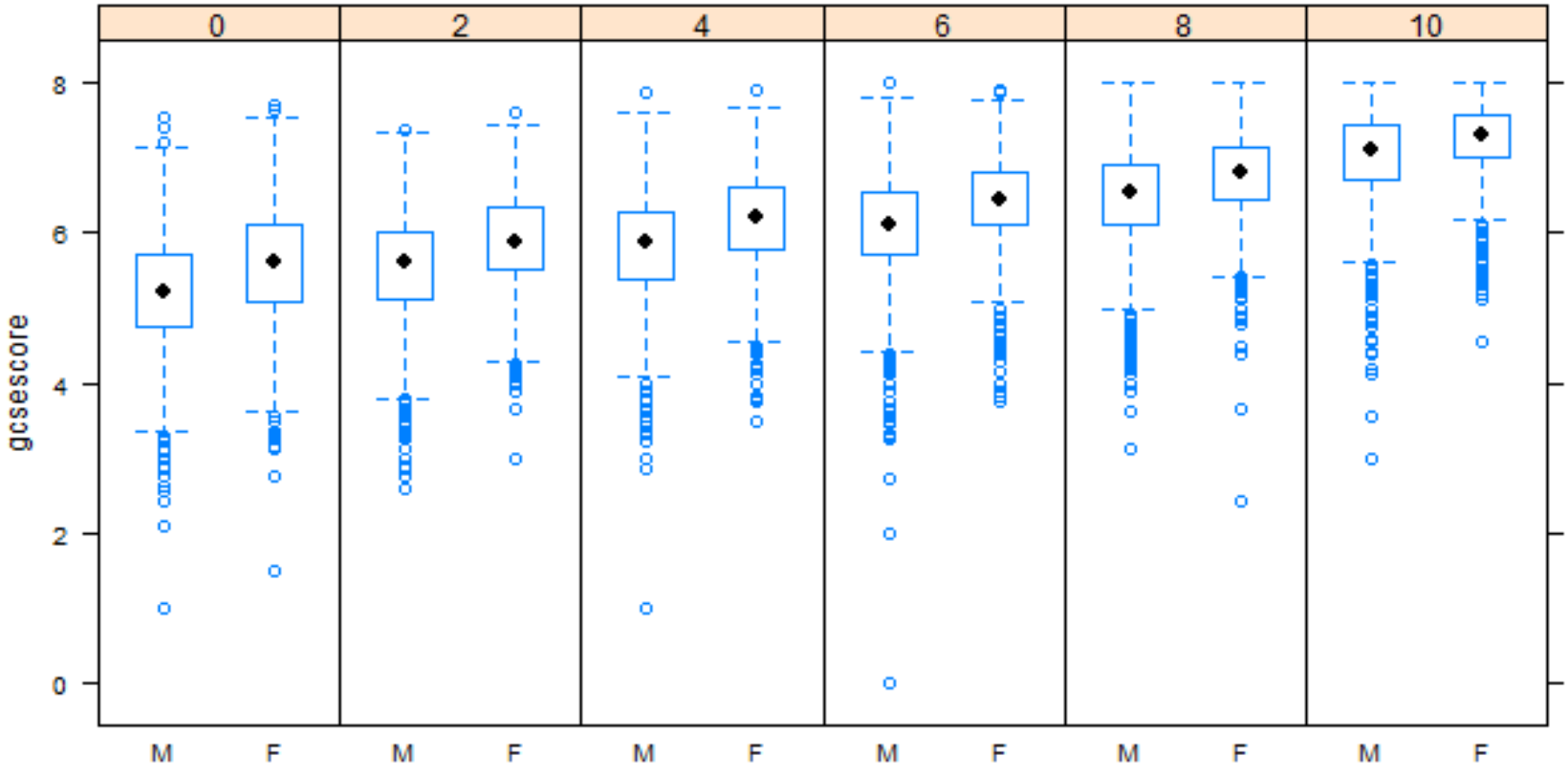
The following display types are available in lattice.

Function	Default Display
histogram()	Histogram
densityplot()	Kernel Density Plot
qqmath()	Theoretical Quantile Plot
qq()	Two-sample Quantile Plot
stripplot()	Stripchart (Comparative 1-D Scatterplots)
bwplot()	Comparative Box-and-Whisker Plots
dotplot()	Cleveland Dot Plot
barchart()	Bar Plot
xyplot()	Scatterplot
splom()	Scatterplot Matrix
contourplot()	Contour Plot of Surfaces
levelplot()	False Color Level Plot of Surfaces
wireframe()	Three-dimensional Perspective Plot of Surfaces
cloud()	Three-dimensional Scatterplot
parallel()	Parallel Coordinates Plot

bwplot(factor(score) ~ gcsescore | gender, Chem97)



bwplot(gcsescore ~ gender | factor(score), Chem97, layout = c(6, 1))



Depth of earthquake epicenters by magnitude

- stripplot(depth ~ factor(mag), data = quakes,

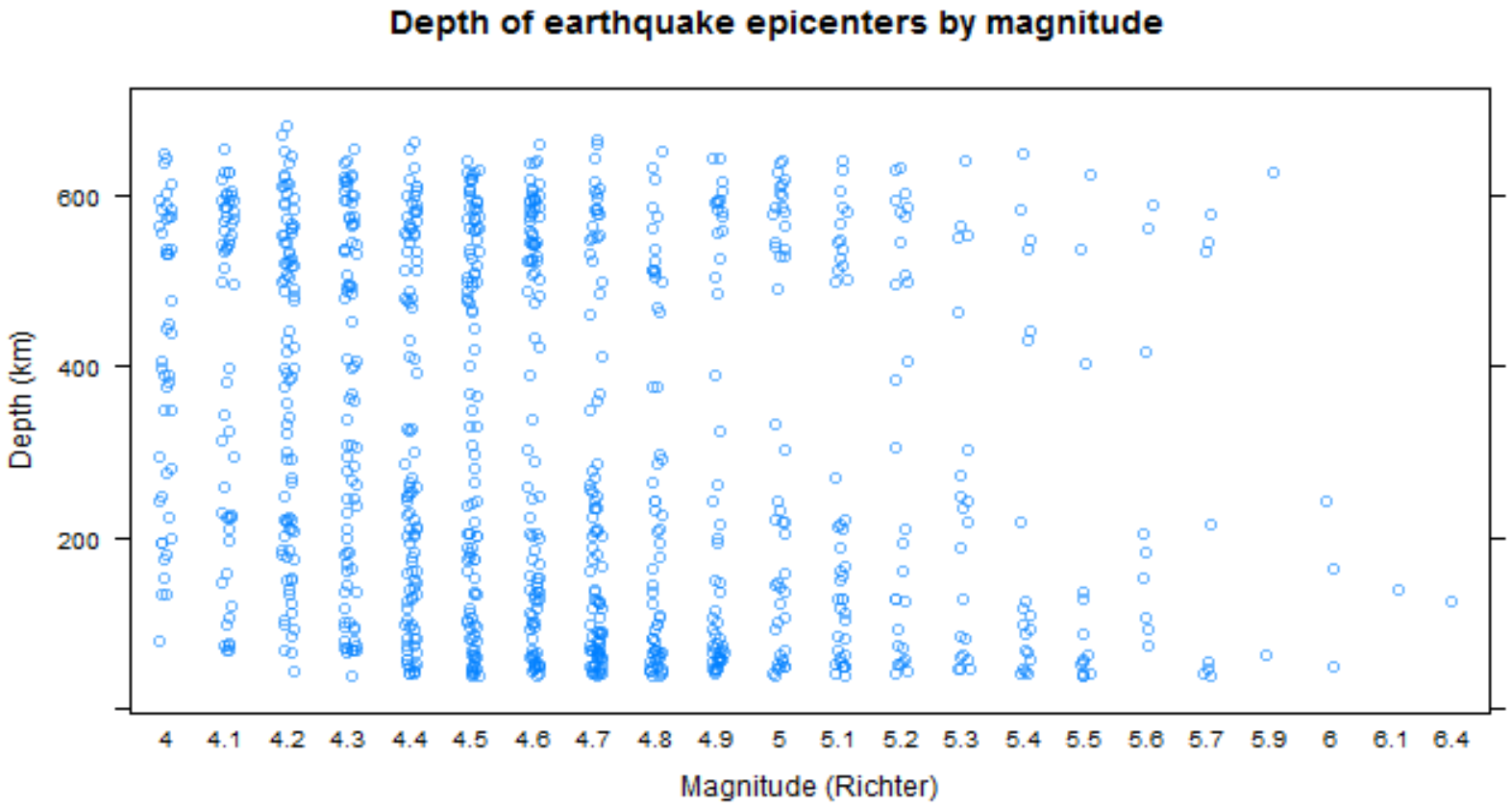
jitter.data = TRUE, alpha = 0.6,

main = "Depth of earthquake epicenters by magnitude",

xlab = "Magnitude (Richter)",

ylab = "Depth (km)")

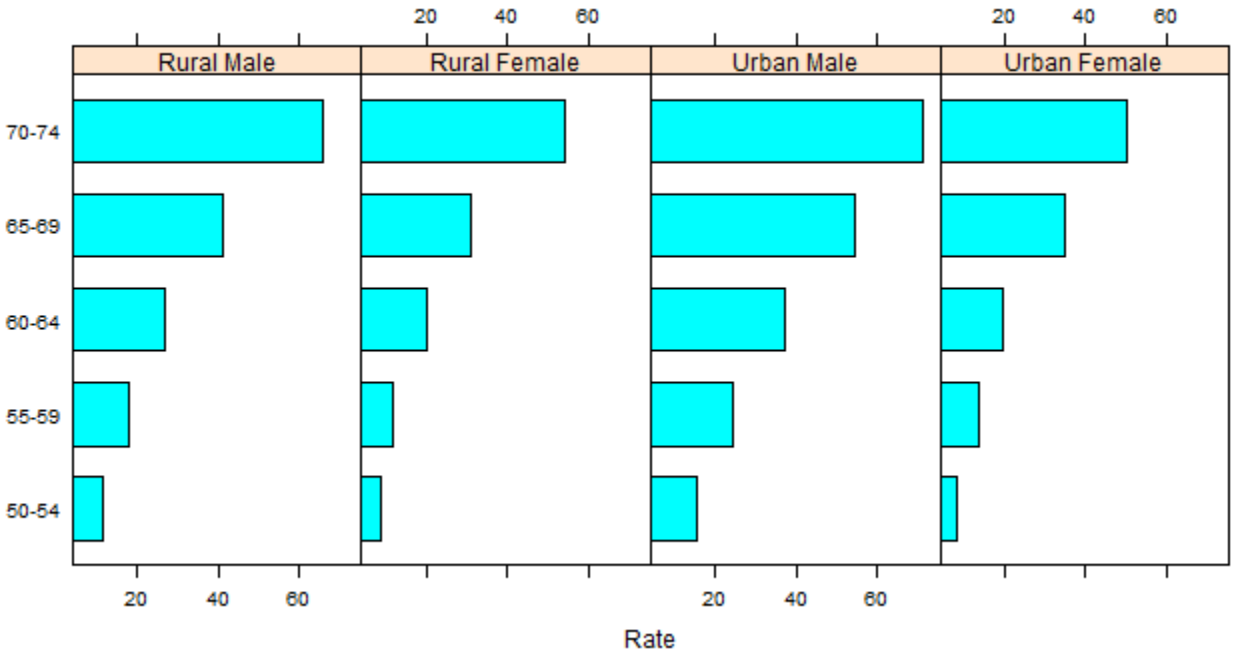
Stripplot()


Depth of earthquake epicenters by magnitude
Depth (km)
600
400
200
4
4.1
4.2
4.3
4.4
4.5
4.6
4.7
4.8
4.9
5
5.1
5.2
5.3
5.4
5.5
5.6
5.7
5.9
6
6.1
6.4
Magnitude (Richter)

Barplot

- VADeaths
- VADeathsDF <- as.data.frame.table(VADeaths, responseName = "Rate")
- VADeathsDF

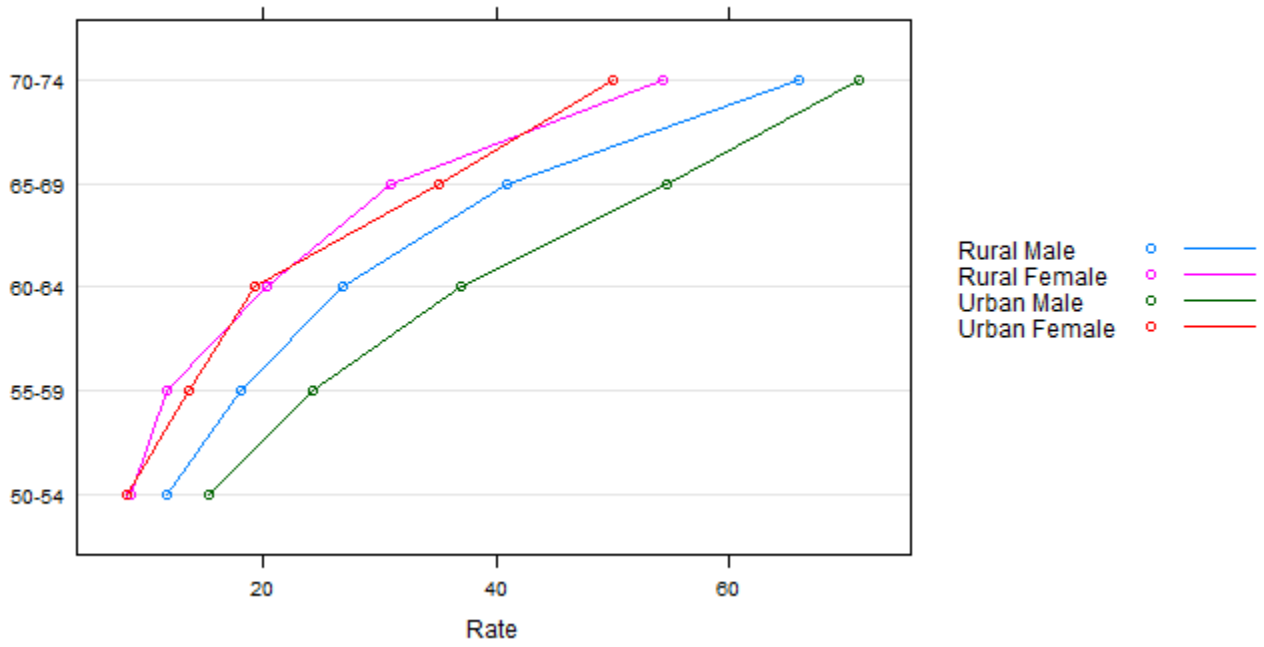
barchart(Var1 ~ Rate | Var2, VADeathsDF, layout = c(4, 1))



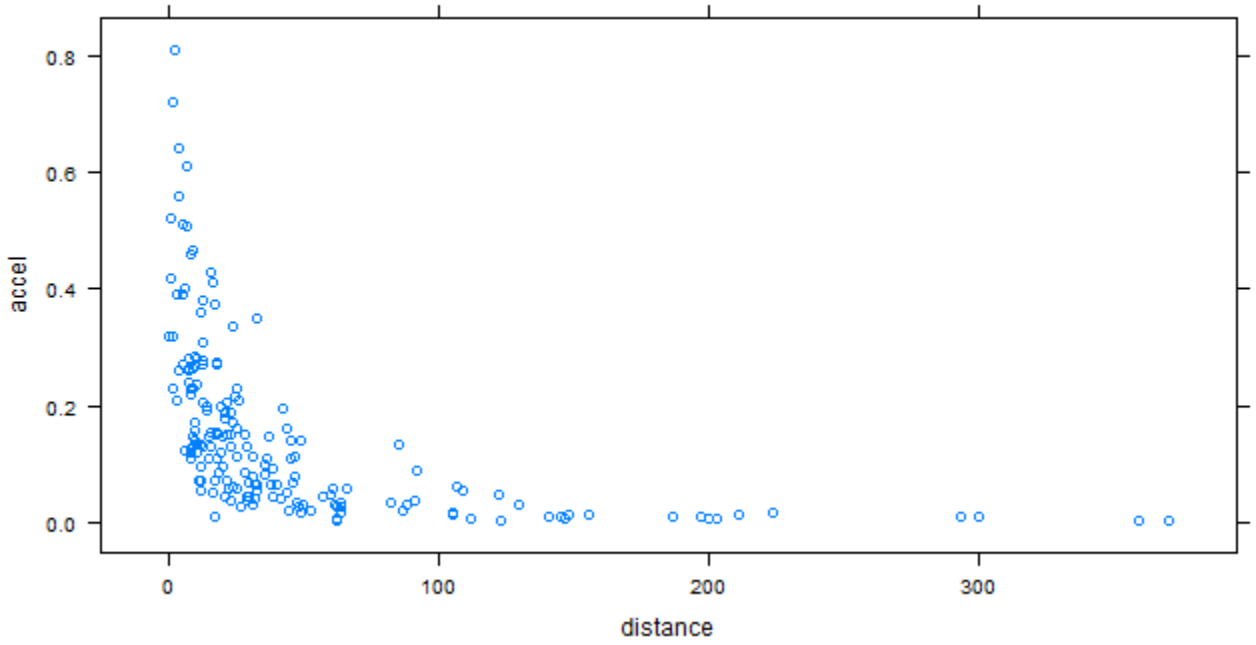
Try this

- barchart(Var1 ~ Rate | Var2, VADeathsDF, layout = c(4, 1), origin = 0)
- dotplot(Var1 ~ Rate | Var2, VADeathsDF, layout = c(4, 1))
- What is the difference between two Diagrams??

```
dotplot(Var1 ~ Rate, data = VADeathsDF, groups =
Var2, type = "o",
auto.key = list(space = "right", points = TRUE, lines =
TRUE))
```

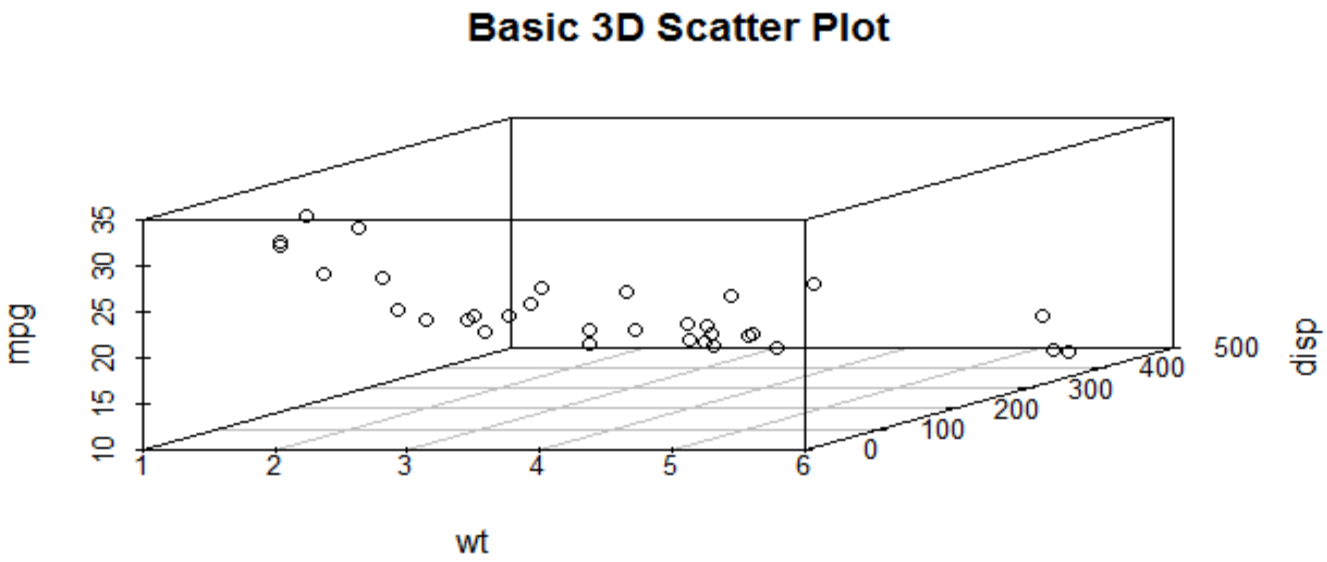


```
data(Earthquake, package = "nlme")
> xyplot(accel ~ distance, data =
Earthquake)
```

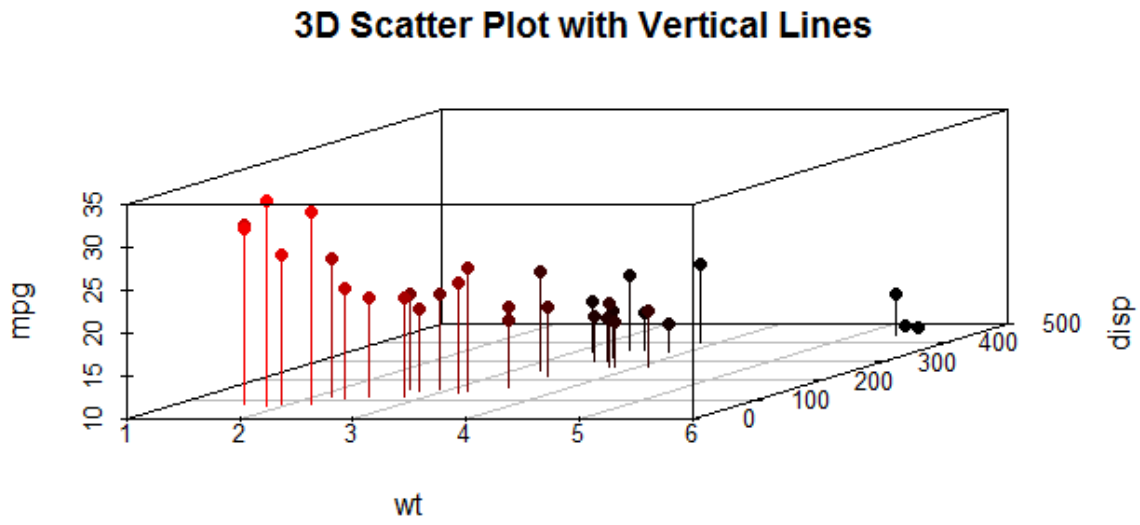


3 D View

```
library(scatterplot3d)
attach(mtcars)
scatterplot3d(wt, disp, mpg,main="Basic 3D
   Scatter Plot")
```


Basic 3D Scatter Plot
mpg
10
15
20
25
30
35
wt
1
2
3
4
5
6
disp
0
100
200
300
400
500

```
scatterplot3d(wt, disp, mpg,
pch=16,
highlight.3d=TRUE,
type="h",
main="3D Scatter Plot with Vertical Lines")
```



Mosaic Graph

View(Titanic) > mosaic(Titanic, shade=TRUE, legend=TRUE) (OR)

mosaic(~Class+Sex+Age+Survived, data=Titanic, shade=TRUE, legend=TRUE)