STATS 330: Lecture 4
Graphics in R
29.07.2014
Contact details

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<thead>
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<tr>
<td>Steffen Klaere</td>
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Class representatives

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>330</td>
<td>wlia884</td>
</tr>
<tr>
<td>762</td>
<td>jma077</td>
</tr>
</tbody>
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Assignment 1 is due August 7

Discussion forum on CECIL.
Tutorial

► These will cover computing details

► Held in Room 303S.G75
  ► First Tutorial: Fri 10-11
  ► Second Tutorial: Fri 1-2
  ► Third Tutorial: Fri 4-5

► Start FRIDAY, AUGUST 1.
Getting RStudio

http://www.rstudio.com/

http://r-project.org/
Welcome to the STATS 330/762 Homepage

This web page is designed to keep you informed about the course. It contains copies of the assignments (including the data required) and model answers, together with tests, assignments and exams from past years. To supply feedback on any aspect of the course, including these web pages, email Steffen or Alan.

Taught by:

![Steffen Klaere](image1.jpg)  ![Alan Lee](image2.jpg)

Steffen Klaere  Alan Lee

Contact details:

Steffen: Stop by my office, Room 303-219, call me on 373-7599 Extn 85237 or send me an email.

Alan: Stop by my office, Room 303S-265, call me on 373-7599 Extn 88749 or send me an email.
Today’s Lecture: Graphics in R

Given: diameter

![Graph showing data points and a histogram.](image-url)
# Install.packages("R330")
# library(R330)
# update.packages("R330")

### Or simply use the drop down menu

### Help and syntax

### Demo of packages

### Some packages come with a demo on how to use them.

demo(graphics)

### Data - cherries

# Data - cherries

?barchart

?barchart

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?barchart
Package management

# install.packages("R330")
# library(R330)
# update.packages("R330")
## Or simply use the drop down menu

Help and syntax

?barchart;

Demo of packages

# Some packages come with a demo on how to use them.

demo(animation)

Common Bivariate Trellis Plots

Description

This help page documents several commonly used high-level Lattice functions. xysplot produces bivariate scatterplots or time-series plots, bwplot produces box-and-whisker plots, dotplot produces Cleveland dot plots, barchart produces bar plots, and stripplot produces one-dimensional scatterplots. All these functions, along with other high-level Lattice functions, respond to a common set of arguments that control conditioning, layout, aspect ratio, legends, axis annotation, and many other details in a consistent manner. These arguments are described extensively in this help page, and should be used as the reference for other high-level functions as well.

For control and customization of the actual display in each panel, the help page of the respective default panel function will often be more informative. In particular, these help pages describe many arguments commonly used when calling the corresponding high-level function but are specific to them.
# INSTALL.packages("R330")
# library(R330)
# update.packages("R330")
## Or simply use the drop down menu

### Help and syntax

?barchart

### Demo of packages

## Demo of packages

# Some packages come with a demo on how to use them.

demo(graphics)

### Data - cherries

## Data - cherries

```r
> points(X, bg = "limegreen", pch = 21)

> title(main = "Simple Use of Color In a Plot",
+ xlab = "Just a Whisper of a Label",
+ col.main = "blue", col.lab = gray(.8),
+ cex.main = 1.2, cex.lab = 1.0, font.main = 4, font.lab = 3)

> ## A little color wheel. This code just plots equally spaced hues in
> ## a pie chart. If you have a cheap SVGA monitor (like me) you will
> ## probably find that numerically equispaced does not mean visually
> ## equispaced. On my display at home, these colors tend to cluster at
> ## the RGB primaries. On the other hand on the SGI Indy at work the
> ## effect is near perfect.
> 
> par(bg = "gray")

> pie(rep(1,24), col = rainbow(24), radius = 0.9)
Hit <Return> to see next plot:
```

Just a Whisper of a Label

Simple Use of Color In a Plot
Loading data into \texttt{R}

\begin{verbatim}
my.df <- read.table(file.choose(),header=T,sep="\t",fill=T)
\end{verbatim}

\begin{itemize}
  \item \texttt{R} expects data such that rows are sample points and columns are variables.
  \item Columns can be separated by different symbols, " " for space, "\t" for tab delimited, or ",," for comma separated.
  \item \texttt{Excel} spreadsheets need to be exported to any of the above types before imported into \texttt{R}.
  \item If import into \texttt{R} fails, attempt importing into \texttt{Excel} to test integrity of document.
  \item Once this works do data manipulations in \texttt{R}!
\end{itemize}
Data manipulation in R

- Use the command `attach` if you are looking at only one dataset.
  ```r
  attach(cherry.df)
  ```
- If you have more datasets to deal with, use the full notation, e.g.
  ```r
  cherry.df$diameter
  ```
- Use TAB completion to write the command.
A variable can have a different type, e.g., integer, double, date, or character. The type determines how R treats the variable. Use command typeof to check type.

Transforming variables to new values is simple in R. E.g., cylindrical volume of cherry trees:

```r
cylinder.volume <- pi*cherry.df$diameter^2 *cherry.df$height/4.
```

What is the unit?
Plotting in **R**

In the following we will use the examples from the previous lectures to look at the different forms of visualising data.

- Either use the **base** package function **plot**
- or load the library **lattice** for some great **trellis** graphics.

- Over to **RStudio**
Scatterplots
Trellis vs. Coplot

Given: diameter

height

volume

20

40

60

80

65 70 75 80 85

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65 70 75 80 85

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●●●

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65 70 75 80 85

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10 20 30 40 50 60 70

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●

Given: diameter
Going 3D

- Package **scatterplot3d**
- contour, persp for contour and surface plots
- pairs for pairwise comparisons
- cloud for **lattics**
- reg3d for rotating plots from R330