Untitled

R Markdown

This is an R Markdown presentation. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document.

Slide with Bullets

- Bullet 1
- Bullet 2
- Bullet 3

Read in the iris dataset

```
#This step is not necessary as "iris" is installed automatically in "R".
#iris2 <- read.csv("iris.csv",header=T)
```

[A1] Using Help Functions

- Suppose you want to find out more about a command (for example `lm`).
- At the command line, type `help(lm)`
- Question: What does the command `fivenum` do?
- Question: What does the command `runif` do?

[A2] The iris data set

Famous Data Set commonly used in Introductory Stats Courses

Measurements on 4 variables for 150 iris flowers.

Pre-installed in R (just type in " `iris` " and it is there)

For more information, type `help(iris)` at the command line

[A3] The mtcars data set

Another famous Data Set commonly used in Introductory Stats Courses

Pre-installed in R (just type in " `mtcars` " and it is there)

For more information, type `help(iris)` at the command line

The iris and mtcars data sets

```
#What are the iris data set column names?
colnames(iris)
```

```
## [1] "Sepal.Length" "Sepal.Width"  "Petal.Length" "Petal.Width"
## [5] "Species"
```

```
#What are the mtcars data set column names?
colnames(mtcars)
```

```
##  [1] "mpg"  "cyl"  "disp" "hp"   "drat" "wt"   "qsec" "vs"   "am"   "gear"
## [11] "carb"
```

The iris and mtcars data sets

```
#What are the mtcars data set row names?
rownames(mtcars)
```

```
##  [1] "Mazda RX4"           "Mazda RX4 Wag"       "Datsun 710"
##  [4] "Hornet 4 Drive"      "Hornet Sportabout"   "Valiant"
##  [7] "Duster 360"          "Merc 240D"           "Merc 230"
## [10] "Merc 280"            "Merc 280C"           "Merc 450SE"
## [13] "Merc 450SL"          "Merc 450SLC"         "Cadillac Fleetwood"
## [16] "Lincoln Continental" "Chrysler Imperial"   "Fiat 128"
## [19] "Honda Civic"         "Toyota Corolla"      "Toyota Corona"
## [22] "Dodge Challenger"    "AMC Javelin"         "Camaro Z28"
## [25] "Pontiac Firebird"    "Fiat X1-9"           "Porsche 914-2"
## [28] "Lotus Europa"        "Ford Pantera L"      "Ferrari Dino"
## [31] "Maserati Bora"       "Volvo 142E"
```

Setting up sequences using the ":" operator

```
1:4
```

```
## [1] 1 2 3 4
```

```
0:10
```

```
##  [1]  0  1  2  3  4  5  6  7  8  9 10
```

```
10:1
```

```
##  [1] 10  9  8  7  6  5  4  3  2  1
```

```
-1:5
```

```
## [1] -1  0  1  2  3  4  5
```

N.B. R is a "1-index" programming language. As a counter-point, Python is a "0-index" language

The iris data set

```
#Extract the first two rows of the irisset and print them.
iris[1:4,]
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
## 2          4.9         3.0          1.4         0.2  setosa
## 3          4.7         3.2          1.3         0.2  setosa
## 4          4.6         3.1          1.5         0.2  setosa
```

The iris data set

```
#How many rows are in the irisset?
nrow(iris)
```

```
## [1] 150
```

The iris data set

```
#Extract the last two rows of the iris set and print them.
rows <- nrow(iris)
iris[(rows-1):rows,]
```

```
##     Sepal.Length Sepal.Width Petal.Length Petal.Width   Species
## 149          6.2         3.4          5.4         2.3 virginica
## 150          5.9         3.0          5.1         1.8 virginica
```

The iris data set

```
#What is the iris value in the 47th row?
iris[47,1]
```

```
## [1] 5.1
```

Ozone

```
#What is the iris type of the Month column?
class(iris[,5])
```

```
## [1] "factor"
```

Ozone

```
#What is the mean of Temp when Month is 6?
mean(subset(iris, iris[,5]==6)[,4])
```

```
## [1] NaN
```

Ozone

```
#How many missing values are in the Ozone column?
sum(!complete.cases(iris[,1]))
```

```
## [1] 0
```

Ozone

```
#What is the mean value of the Ozone column (excluding missing values)?
mean(iris[complete.cases(iris),1])
```

```
## [1] 5.843
```

Slide with R Code and Output

```
summary(cars)
```

```
##      speed           dist       
##  Min.   : 4.0   Min.   :  2.00  
##  1st Qu.:12.0   1st Qu.: 26.00  
##  Median :15.0   Median : 36.00  
##  Mean   :15.4   Mean   : 42.98  
##  3rd Qu.:19.0   3rd Qu.: 56.00  
##  Max.   :25.0   Max.   :120.00
```

Slide with Plot