Modes

Type	Description	Examples
logical	true or false	TRUE, FALSE
numeric	an integer or real number	1, 0, 2.5, 1/3
character	a word or words	"blue", "ID", "5", "722 West 168th St"

Basic Types

Type	Description	How to Index
vector	one-dimensional, atomic	myVector[index]
matrix	two-dimensional, atomic	myMatrix[row, column]
array	three-or-more-dimensional, atomic	myArray[row, column, depth, ...]
data frame	two-dimensional, atomic columns	myDataFrame[row, column] or myDataFrame$columnName
list	one-dimensional, recursive	myList[[index]] or myList$name

Indexing

Index Type	Refers To	Description
numeric vector	position	numbers indicate position in vector
logical vector	all items	gets item(s) at position(s) where index is TRUE
character vector	position	characters indicate named items in vector

Loading Data

- Read a CSV: *dataFrame <- read.csv("pathToFile.csv", stringsAsFactors=F)*
- Read a SAS file: *read.sas7bdat()* in sas7bdat package
- Read a Stata file: *read.dta()* in foreign package
- Read an SPSS file: *read.spss()* in foreign package
- Read most plaintext formats: *read.table()*

Vectors

- *c()* - create a vector or add elements to a vector

- *cbind()* - combine vectors by column
- *rbind()* - combine vectors by row
- *length()* - no. of elements in vector
- *range()* - minimum and maximum
- *fivenum()* - five number summary
- *mean()* - get the mean
- *median()* - get the mean
- *sort()* - sort the vector
- *order()* - list the sorted *element numbers*
- *unique()* - remove duplicate entries from vector

Analysis

- *table(dataFrame$y, dataFrame$x)* - 2x2 table
- *prop.table(table)* - table proportions
- *t.test(), wilcox.test()* - t-test and wilcoxon rank-sum test
- *tapply()* - stratified analysis
- *lm(y x, data=dataFrame)* - linear regression
- *glm(y x, data=dataFrame, family=binomial)* - logistic regression
- Use *summary()* to get more details about the model:

```
model <- glm(y~x, data=dataFrame, family=binomial)
summary(model)
```

Packages

- Install: *install.package("packageName")*
- Load: *library(packageName)*
- Documentation: *library(help=packageName)*
- Vignette: *vignette(package="packageName")*