

# A Gentle Introduction to R

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# Pop Quiz

We will review these *at the end*, so you can see how much you have learned.

- What does 'CRAN' stand for?
- Why is it called 'R'?
- How can you use R *interactively*?
- How do you find out what a function does & how to use it?
- How do you store values to re-use later?
- True or False: Warnings can be ignored, but an Error means I made a mistake.
- True or False: Error messages will tell me how to fix the problem.

# Learning Objectives

- Get familiar with the  *interface*
- Enter *commands*
  - ▶ input & output: using R interactively
  - ▶ use some common *functions*
- Understand *Errors & Warnings*
- Use technical *terms* for R concepts
- How to get Help

# Why is it called ?

- R started as an *open-source* implementation of the S statistical computing language (S-PLUS)
  - ▶ S was created at Bell Laboratories in 1976
  - ▶ R was based on the S syntax (mostly v3), but works very differently “under the hood”.
- R was created by **R**oss Ihaka and **R**obert Gentleman at the University of Auckland in the early 1990s.

- R has a slightly different interface for each **O**perating **S**ystem (OS)
- GUI = **G**raphical **U**ser **I**nterface
- In every case, you interact with R primarily using a *command line*
  - ▶ aka “Question-and-Answer Model”
  - ▶ You ask R to do something (a *command*),  
and R tells you the answer (*result*).
  - ▶ Instructions are given to R using the *R language*.

# Symbolic Variables

- You can store values (*objects*) in symbolic variables (*names*) using an *assignment operator*

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<-	assign the <i>value</i> on the <b>right</b> to the <i>name</i> on the <b>left</b>
->	assign the <i>value</i> on the <b>left</b> to the <i>name</i> on the <b>right</b>
=	assign the <i>value</i> on the <b>right</b> to the <i>name</i> on the <b>left</b>

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- You can also use the `assign` function

```
assign('x', 3)      # assign the value 3 to the variable 'x'
```

# Variable Names

- Variable names can include:

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letters	a-z A-Z
numbers	0-9
periods	.
underscores	_

---

- Variable names *should begin with a letter*

```
A <- 10
B = 10 * 10
log(A) -> A_log
B.seq <- 1:B
assign('x' , 3)
```

# Slide with R 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
```

```
1 + 2
```

```
## [1] 3
```



# Slide with Plot

```
plot(pressure)
```

