

# Lecture 1.8 – Lists and Data Frames

## Specific Learning Objectives:

**1.1.10 – Create vectors, arrays, matrices, lists, and data frames.**







**1.1.11 – Understand vectors and vectorized calculations.**

**1.1.12 – Learn how to index vectors, arrays, matrices, lists, and data frames.**

# Check Your Understanding

Which class of object would you use if you needed:

- a) Members of different sizes
- b) Members of different classes
- c) Both a and b

List	Data frame
	
	
	

# Check Your Understanding

**Create a list in which each member contains one of each data types you've learned so far in the course!**

# Check Your Understanding

**In the `ToothGrowth` data set, how can you print out all the measured tooth lengths from their study?**

**How can you find the mean and standard deviation of these lengths?**

# Check Your Understanding

**In the `ToothGrowth` data set, how can you print out all the measured tooth lengths from their study that were only given a dose of 1.0?**

**How can you find the mean and standard deviation of these lengths?**

**Can you find the mean of the tooth lengths for animals given an OJ dose of 1.0?**

# Using GenAI – have healthy skepticism

Load the Harman23.cor data set into R using:

```
> data("Harman23.cor")
```

Try this:

```
> mean(Harman23.cor$forearm)
```

It returns NA, but isn't suppose to be. The answer is 0.596.

Work with a partner and ask ChatGPT how to fix this. Try to figure out the right line of code that returns the correct answer.

# Using GenAI – have healthy skepticism

Were you all able to figure it out?

How difficult was it?

Once you have the relevant data, you can compute the mean of the `forearm` values:

```
r
```


[Copy code](#)







```
mean(forearm_data, na.rm = TRUE)
```

### Important: Covariance Matrix Context


It's important to note that what you're extracting is not the raw data for `forearm`, but its covariance with other variables like `height`, `arm.span`, etc. If you are actually looking for the raw data of `forearm`, you would need the original dataset, not the covariance matrix.

If you're only working with the covariance matrix and still want to get something useful from it, consider that

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# In-class Exercises

1. Catchup with assignments. Any questions on these?
2. Assignment 1.10
3. Assignment 1.11



# Action Items

- 1. Complete Assignments 1.10 and 1.11.**
- 2. Read Davies Ch. 6 for next time.**