

# **Research Planning and Methodology in Animal Welfare**

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Invalid Date

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# **1 Research Planning and Methodology in Animal Welfare**

## **1.1 Preface**

This book accompanies the Research Planning and Methodology in Animal Welfare course on the International Animal Welfare Ethics and Law MSc at the Royal (Dick) School of Veterinary Studies.

It is a companion document to the course

# 2 Week 1

## 2.1 Lecture 5

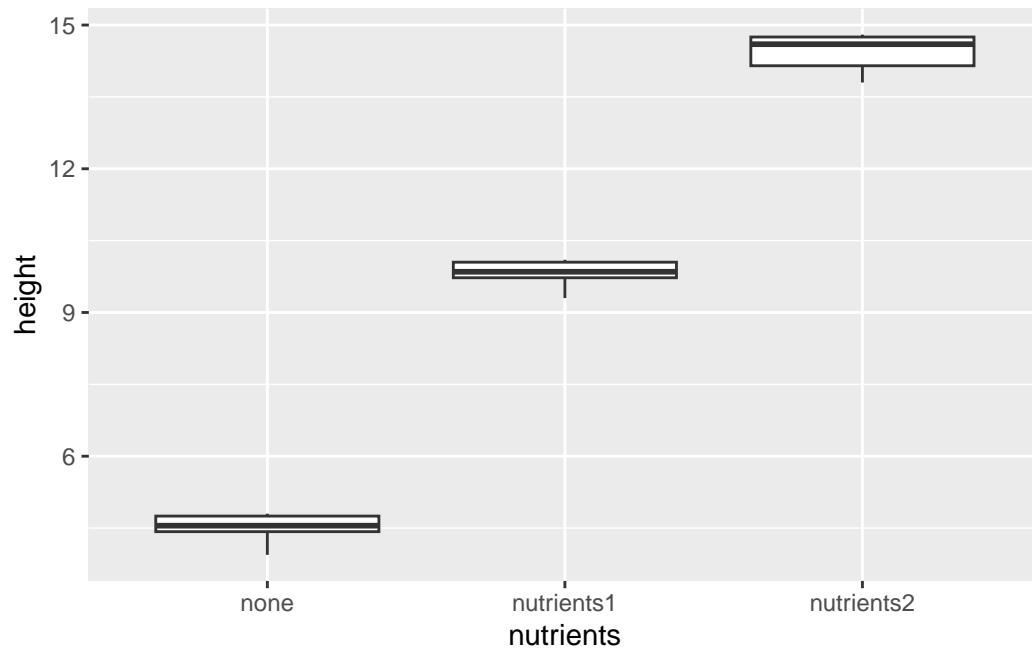
This code will help you recreate the charts and analyses in Lecture 5: “Introduction to Research Methods”

### 2.1.1 Create data and plot

```
library(tidyverse)

plants <- tibble(none = c(4.8, 4.8, 3.94, 4.4,4.5,4.6),
                 nutrients1 = c( 10.1, 9.7, 9.8, 9.9, 9.3, 10.1),
                 nutrients2 = c(14.8, 14.6, 14.8, 14, 13.8, 14.6))

plants |>
  pivot_longer(cols = c(none, nutrients1,nutrients2),
               names_to = "nutrients",
               values_to = "height") |>
  ggplot(aes(x = nutrients, y = height)) +
  geom_boxplot()
```



## 2.1.2 Run an ANOVA on Plant data

```
longplants <- plants |>
  pivot_longer(cols = c(none, nutrients1, nutrients2),
               names_to = "nutrients",
               values_to = "height")

plant_model <- aov(height ~ nutrients, data = longplants)

summary(plant_model)
```

|           | Df | Sum Sq | Mean Sq | F value | Pr(>F)     |
|-----------|----|--------|---------|---------|------------|
| nutrients | 2  | 296.10 | 148.05  | 1184    | <2e-16 *** |
| Residuals | 15 | 1.88   | 0.13    |         |            |

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