Rats or Cats which sleeps longer?

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Introduction

In this analysis, we will address the question of which has the longer average sleeping patterns: rats (Rodentia) or cats (Carnivora).

Data

The line has *bold* words and also **italic** words.

R commands

bleh

mean

bleh

stdev

bleh

summary

bleh

The data is contained in the `msleep` dataset in the `tidyverse` package. This is loaded:

```r
library(tidyverse)
data("msleep")
```

The data consists of 83 Species with 11 variables measured on it.

Cleaning of data

We are only interested in the variables:

- **order:** which is a categorical nominal variable and gives the Order of the Species.
- **sleep_total:** which is a quantitative continuous variable and gives the total amount of sleep in hours.

As well, we are only interested in Species that are in the order Carnivora or Rodentia. The following code cleans the dataset:

```
rats_cats  <- msleep %>%
  filter(order %in% c("Carnivora", "Rodentia")) %>%
  select(order, sleep_total)
```

order	sd
Carnivora	3.50
Rodentia	2.81

Basic summary statistics

Table 2 gives the summary statistics for each group.

Table 2: Summary statistics for each Order

order	n	mean
Carnivora	12	10.11667
Rodentia	22	12.46818

Figuretoldtomake

$$T = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} cov\left(\sum_{i=1}^{n} a_i Y_i, \sum_{j=1}^{n} b_j Y_j\right) = \sum_{i=1}^{n}\sum_{j=1}^{n}$$

\# Side-by-side boxplots

Figure 1 gives the side-by-side boxplots of sleep total for each order.

Two-sample t-test

The sample mean for each group was used. To recap the sample mean for each group is

$$\bar{Y}_i = \sum_{i=1}^{n_i} Y_{ij},$$

where n_i is the number in the ith group, and Y_{ij} is the jth observation in the ith group.

The appropriate null and alternative hypotheses are

$$H_0 : \mu_1 - \mu_2 = 0,$$
$$H_a :?? \neq ??,$$

where ??.

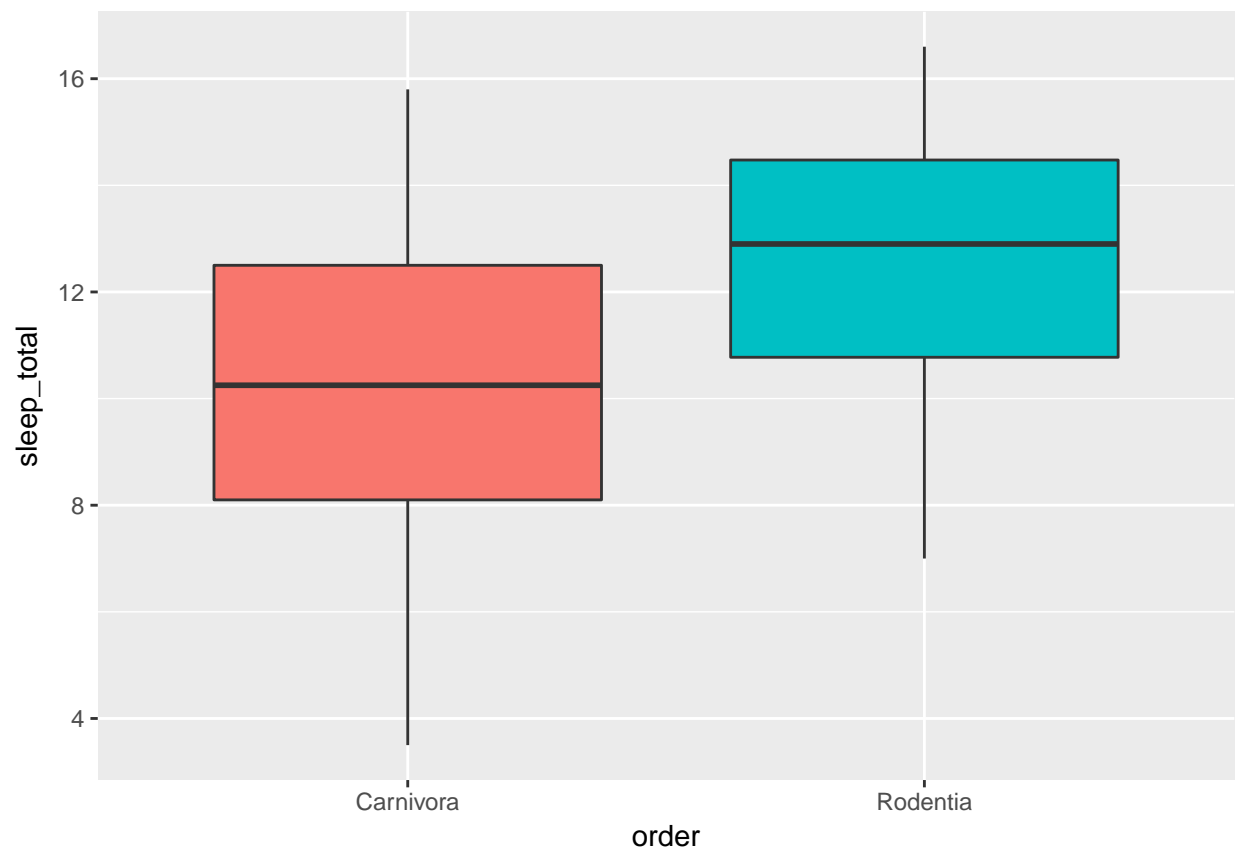We perform a two-sample t-test with

Figure 1: Side-by-side boxplots of total sleep for each order.

```
## Insert correct code here for t.test
```