Teste_t_notebook

May 24, 2021

```
[12]: library(tidyverse)
      options(repr.plot.width=5, repr.plot.height=5)
```

1 Distribuição t de Student: Biometrika. 1908, vol. 6, 1-15

1.0.1 Teste t de *Student* para uma média

```
[2]: set.seed(839)
     mu = 2.65
     sigma = 0.5
     n = 10
     amostra = rnorm(n = n, mean = mu, sd = sigma) %>% round(2)
     amostra
```

1. 2.92 2. 2.69 3. 2.99 4. 3.6 5. 2.83 6. 2.64 7. 2.53 8. 2.99 9. 2.67 10. 2.55

```
[3]: (xb = mean(amostra))
     (dp = sd(amostra))
     (ep = dp / sqrt(n))
```

2.841

0.316348963435423

0.100038325988926

```
[4]: (tc = (xb - mu) / ep)
```

1.90926825406038

```
[5]: (valor_p = pt(q = tc, df = n - 1, lower.tail = FALSE) * 2)
```

0.0885652565561912

```
[6]: t.test(amostra, mu = mu, alternative = "two.sided")
```

```
        One Sample t-test

data:  amostra
t = 1.9093, df = 9, p-value = 0.08857
```

```
alternative hypothesis: true mean is not equal to 2.65
95 percent confidence interval:
 2.614698 3.067302
sample estimates:
mean of x
    2.841
```

1.0.2 Teste t de *Student* para duas amostras: Chacais dourados

```r
[7]: jackal <- read.csv('datasets/jackal.csv', sep = ';', header = TRUE)
     (jackal)
```

Comprimento	Sexo
120	Macho
107	Macho
110	Macho
116	Macho
114	Macho
111	Macho
113	Macho
117	Macho
114	Macho
112	Macho
110	Femea
111	Femea
107	Femea
108	Femea
110	Femea
105	Femea
107	Femea
106	Femea
111	Femea
111	Femea

```r
[8]: jackal %>% group_by(Sexo) %>%
         summarize(Medias = mean(Comprimento))
```

Sexo	Medias
Femea	108.6
Macho	113.4

```r
[9]: jackal %>% group_by(Sexo) %>%
         summarize(Desvio = sd(Comprimento))
```

Sexo	Desvio
Femea	2.270585
Macho	3.717825

```
[10]: ggplot(jackal, aes(x = Sexo, y = Comprimento)) +
          geom_boxplot()
```
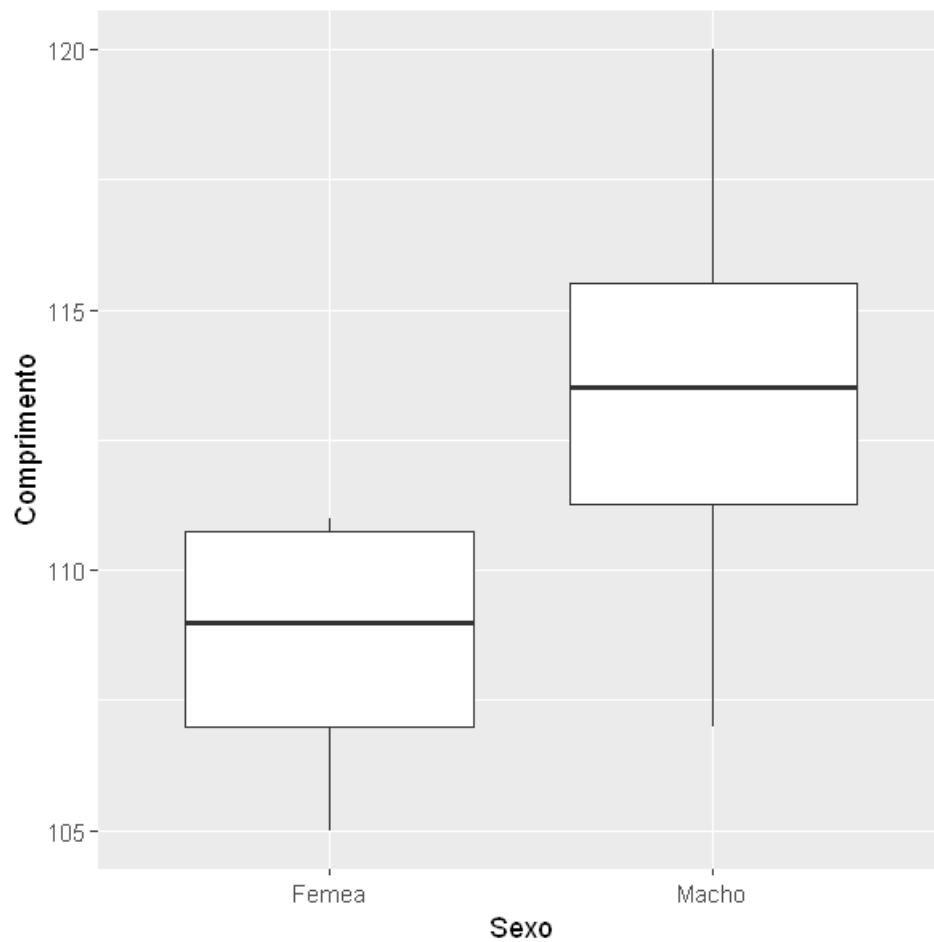


```
[11]: t.test(Comprimento ~ Sexo, data = jackal, alternative = 'two.sided', var.equal␣
      ↪= TRUE)
```

          Two Sample t-test

    data: Comprimento by Sexo
    t = -3.4843, df = 18, p-value = 0.002647
    alternative hypothesis: true difference in means is not equal to 0
    95 percent confidence interval:
     -7.694227 -1.905773
    sample estimates:
    mean in group Femea mean in group Macho
                  108.6   113.4