Aula 10 - Inferência Bayesiana

Inferência Bayesiana

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```
if (!require(pacman)) install.packages("pacman")
pacman::p_load(tidyverse,LearnBayes)
```

Hipóteses

$$\begin{cases} H_0: = 170 \\ H_1: \neq 170 \end{cases}$$

Distribuição a priori

$P(\mu = 170) = 0.5$

$\mu \sim N(170, \tau)$ com peso 0.5

Bayes Factor

Razão de chances da priori pela razão de chances da posteriori

$$BF = \frac{P(x|H_0)/P(x|H_1)}{P(H_0)/P(H_1)}$$

$$BF = \frac{\frac{n^{1/2}}{\sigma} exp\left[-\frac{n(\bar{y}-\mu_0)^2}{2\sigma^2}\right]}{(\frac{\sigma^2}{n+\tau^2})^{1/2} exp\left[-\frac{1}{2\frac{\sigma^2}{n+\tau^2}(\bar{y}-\mu_0)^2}\right]}$$

Exemplo

```
y <- c(182,172,173,176,180,173,174,179,175)
data<- c(mean(y),length(y),3)
t<- c(.5,1,2,4,8)
mnormt.twosided(170,.5,t,data)
```

```
$bf
[1] 3.054885e-02 1.745278e-04 1.246363e-06 1.810360e-07 1.619654e-07

$post
[1] 2.964328e-02 1.744974e-04 1.246361e-06 1.810360e-07 1.619653e-07
```