

- 10.71 Under normal conditions, is the average body temperature the same for men and women? Medical researchers interested in this question collected data from a large number of men and women, and random samples from that data are presented in the accompanying table.¹⁴ Is there sufficient evidence to indicate that mean body temperatures differ for men and women?

Body Temperatures (°F)	
Men	Women
96.9	97.8
97.4	98.0
97.5	98.2
97.8	98.2
97.8	98.2
97.9	98.6
98.0	98.8
98.6	99.2
98.8	99.4

- a Bound the p -value, using a table in the appendix.

$$H_0: \mu_M - \mu_W = 0$$

$$H_a: \mu_M - \mu_W \neq 0$$

$$t = \frac{\hat{\mu}_M - \hat{\mu}_W - 0}{S_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$S_p = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

$$= -2.37$$

$$p\text{-value} = P(|t| > 2.37)$$

$$= 2P(t > 2.37)$$

$$v = 16 = n_1 + n_2 - 2$$

$$0.02 < p\text{-value} < 0.05$$

$$\alpha > 0.05 \Rightarrow \text{reject } H_0$$

$$\alpha < 0.02 \Rightarrow \text{do not reject } H_0$$