

1. Problem

The daily expenses of summer tourists in Vienna are analyzed. A survey with 132 tourists is conducted. This shows that the tourists spend on average 168.8 EUR. The sample variance s_{n-1}^2 is equal to 230.6.

Determine a 95% confidence interval for the average daily expenses (in EUR) of a tourist.

- (a) What is the lower confidence bound?
- (b) What is the upper confidence bound?

Solution

The 95% confidence interval for the average expenses μ is given by:

$$\begin{aligned} & \left[\bar{y} - 1.96\sqrt{\frac{s_{n-1}^2}{n}}, \bar{y} + 1.96\sqrt{\frac{s_{n-1}^2}{n}} \right] \\ &= \left[168.8 - 1.96\sqrt{\frac{230.6}{132}}, 168.8 + 1.96\sqrt{\frac{230.6}{132}} \right] \\ &= [166.209, 171.391]. \end{aligned}$$

- (a) The lower confidence bound is 166.209.
- (b) The upper confidence bound is 171.391.