

1. Solution

The sample size, n , is 30. We determine the indices and values of Q1, Q2, and Q3.

Quartile	Formula for i	i	x
Q1	$\lceil 0.25 \times 30 \rceil$	8	53.42
Q2	$\lceil 0.5 \times 30 \rceil$	15	54.03
Q3	$\lceil 0.75 \times 30 \rceil$	23	54.72

We determine the IQR.

$$\begin{aligned} \text{IQR} &= Q3 - Q1 \\ &= 54.72 - 53.42 \\ &= 1.3 \end{aligned}$$

We determine the outlier boundaries.

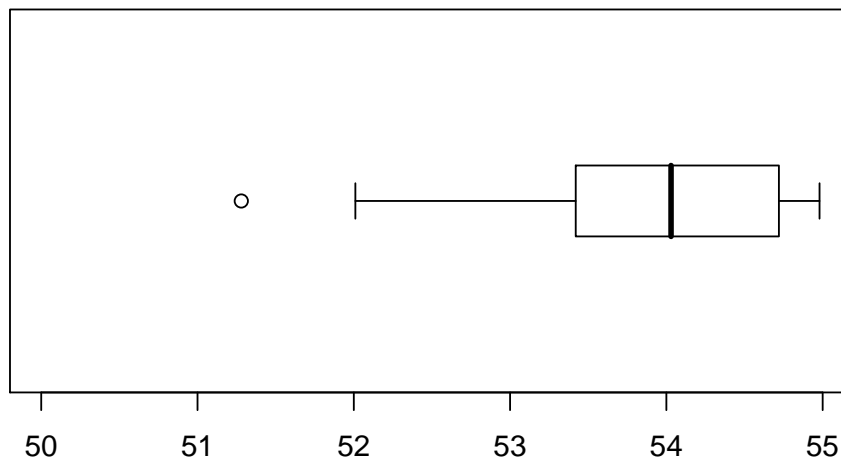
$$\begin{aligned} \text{lower boundary} &= Q1 - 1.5 \times \text{IQR} \\ &= 53.42 - 1.5 \times 1.3 \\ &= 51.47 \end{aligned}$$

$$\begin{aligned} \text{upper boundary} &= Q3 + 1.5 \times \text{IQR} \\ &= 54.72 + 1.5 \times 1.3 \\ &= 56.67 \end{aligned}$$

We determine the outliers.

$$\text{outliers} = \{51.28\}$$

We identify the ends of the whiskers: 52.01 and 54.98. We plot the boxplot.



2. Solution

The sample size, n , is 54. We determine the indices and values of Q1, Q2, and Q3.

Quartile	Formula for i	i	x
Q1	$\lceil 0.25 \times 54 \rceil$	14	12.24
Q2	$\lceil 0.5 \times 54 \rceil$	27	12.49
Q3	$\lceil 0.75 \times 54 \rceil$	41	12.75

We determine the IQR.

$$\begin{aligned} \text{IQR} &= Q3 - Q1 \\ &= 12.75 - 12.24 \\ &= 0.51 \end{aligned}$$

We determine the outlier boundaries.

$$\begin{aligned} \text{lower boundary} &= Q1 - 1.5 \times \text{IQR} \\ &= 12.24 - 1.5 \times 0.51 \\ &= 11.475 \end{aligned}$$

$$\begin{aligned} \text{upper boundary} &= Q3 + 1.5 \times \text{IQR} \\ &= 12.75 + 1.5 \times 0.51 \\ &= 13.515 \end{aligned}$$

We determine the outliers.

$$\text{outliers} = \{11.32\}$$

We identify the ends of the whiskers: 11.83 and 13.26. We plot the boxplot.

