

1. Solution

The sample size, n , is 24. We determine the indices and values of Q1, Q2, and Q3.

| Quartile | Formula for i | i | x |
|----------|--------------------------------|-----|-------|
| Q1 | $\lceil 0.25 \times 24 \rceil$ | 6 | 51.45 |
| Q2 | $\lceil 0.5 \times 24 \rceil$ | 12 | 51.57 |
| Q3 | $\lceil 0.75 \times 24 \rceil$ | 18 | 51.71 |

We determine the IQR.

$$\begin{aligned} \text{IQR} &= Q3 - Q1 \\ &= 51.71 - 51.45 \\ &= 0.26 \end{aligned}$$

We determine the outlier boundaries.

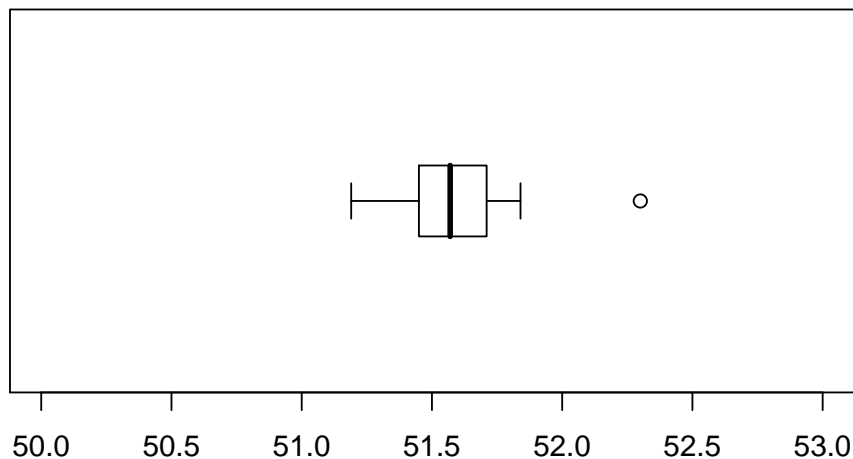
$$\begin{aligned} \text{lower boundary} &= Q1 - 1.5 \times \text{IQR} \\ &= 51.45 - 1.5 \times 0.26 \\ &= 51.06 \end{aligned}$$

$$\begin{aligned} \text{upper boundary} &= Q3 + 1.5 \times \text{IQR} \\ &= 51.71 + 1.5 \times 0.26 \\ &= 52.1 \end{aligned}$$

We determine the outliers.

$$\text{outliers} = \{52.3\}$$

We identify the ends of the whiskers: 51.19 and 51.84. We plot the boxplot.



2. Solution

The sample size, n , is 28. We determine the indices and values of Q1, Q2, and Q3.

| Quartile | Formula for i | i | x |
|----------|--------------------------------|-----|-------|
| Q1 | $\lceil 0.25 \times 28 \rceil$ | 7 | 53.31 |
| Q2 | $\lceil 0.5 \times 28 \rceil$ | 14 | 56.66 |
| Q3 | $\lceil 0.75 \times 28 \rceil$ | 21 | 62.35 |

We determine the IQR.

$$\begin{aligned} \text{IQR} &= Q3 - Q1 \\ &= 62.35 - 53.31 \\ &= 9.04 \end{aligned}$$

We determine the outlier boundaries.

$$\begin{aligned} \text{lower boundary} &= Q1 - 1.5 \times \text{IQR} \\ &= 53.31 - 1.5 \times 9.04 \\ &= 39.75 \end{aligned}$$

$$\begin{aligned} \text{upper boundary} &= Q3 + 1.5 \times \text{IQR} \\ &= 62.35 + 1.5 \times 9.04 \\ &= 75.91 \end{aligned}$$

We determine the outliers.

$$\text{outliers} = \{76.64, 77.13\}$$

We identify the ends of the whiskers: 50.45 and 70.42. We plot the boxplot.

