

Why 1.5 is used:

The number 1.5 is used in the IQR method to strike a good balance between sensitivity and specificity. Sensitivity is the ability of the method to correctly identify true outliers, while specificity is the ability of the method to correctly identify non-outliers.

A higher factor than 1.5 would make the method more sensitive, but it would also make it more likely to identify false positives (non-outliers that are mistakenly flagged as outliers). A lower factor than 1.5 would make the method more specific, but it would also make it more likely to miss some true outliers.

The number 1.5 has been found to be a good balance between sensitivity and specificity in practice. It helps to identify most outliers without labeling too many non-outliers as outliers.

	Min	Q1	Median	Q3	Max
Day	82	56	78.5	82.5	99
Night	25.50	78	81	89	98

  

Day

$IQR = 82.5 - 56 = 26.50$

$26.50 \times 1.5 = 39.75$

Lesser =  $56 - 1.5 \times 26.50$

Outlier =  $56 - 39.75$

$= 16.25$

Greater =  $82.5 + 1.5 \times 26.50$

Outlier =  $82.50 + 39.75$

$= 122.25$

Min 82 } both within the range

Max 99 } No outlier found

  

Night

$IQR = 89 - 78 = 11$

$11 \times 1.5 = 16.5$

Lesser =  $78 - 1.5 \times 11$

Outlier =  $78 - 16.5$

$= 61.50$

Greater =  $89 + 1.5 \times 11$

Outlier =  $89 + 16.5$

$= 105.50$

Min = 25.50 - outlier

Max = 98 - within the range

No outlier found in Day classes but for Night classes Lesser Outlier found= Min 25.50 it's out of the range (61.50-105.50)