What is the process for finding the Interquartile Range (IQR) of a Box Plot?

Authored by

stats writer

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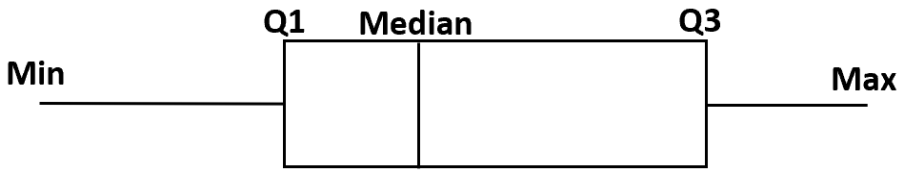
The Interquartile Range (IQR) is a measure of variability in a data set that is represented by a Box Plot. It is the difference between the upper and lower quartile values of the data. To find the IQR of a Box Plot, the first step is to arrange the data in ascending order. Then, the lower quartile (Q1) is found by taking the median of the lower half of the data, and the upper quartile (Q3) is found by taking the median of the upper half of the data. The IQR is then calculated by subtracting Q1 from Q3. This process helps to identify the middle 50% of the data and provides a measure of the spread of the data. The IQR is a useful tool in identifying outliers and understanding the distribution of the data in a Box Plot.

Find the Interquartile Range (IQR) of a Box Plot

A box plot is a type of plot that displays the five number summary of a dataset, which includes:

The minimum valueThe first quartile (the 25th percentile)The median valueThe third quartile (the 75th percentile)The maximum value

To make a box plot, we draw a box from the first to the third quartile. Then we draw a vertical line at the median. Lastly, we draw "whiskers" from the quartiles to the minimum and maximum value.

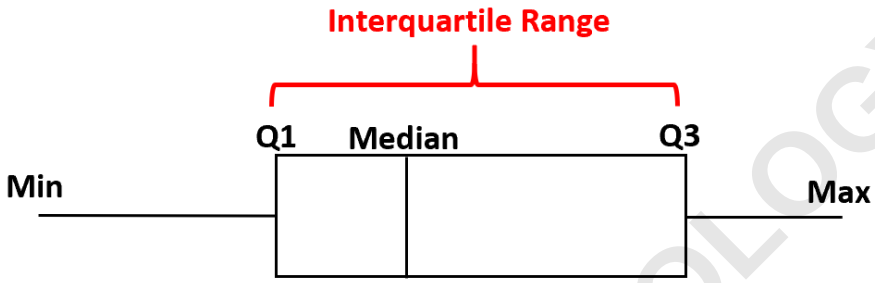


The interquartile range, often abbreviated IQR, is the

difference between the third quartile and the first quartile.

IQR = Q3 - Q1

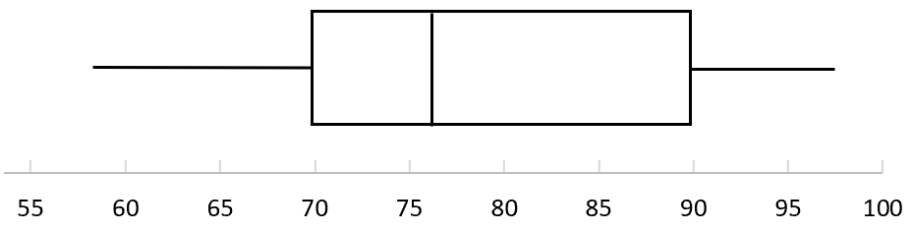
This tells us how spread out the middle 50% of values are in a given dataset.



The following examples show how to find the interquartile range (IQR) of a box plot in practice.

Example 1: Exam Scores

The following box plot shows the distribution of scores on a certain college exam. What is the interquartile range of the exam scores?



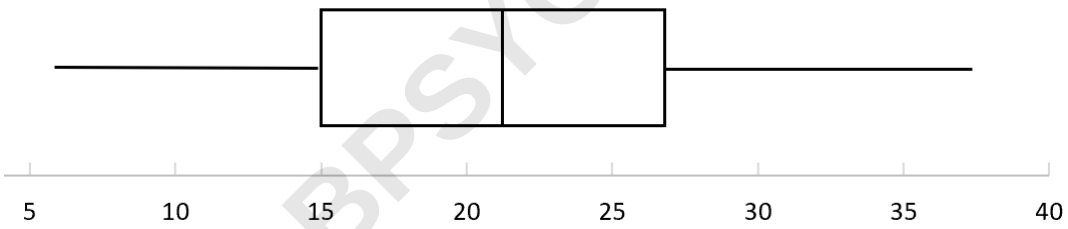
We can find the following values on the box plot to answer this:

Q3 (Upper Quartile) = 90Q1 (Lower Quartile) = 70Interquartile Range (IQR) = 90 - 70 = 20

The interquartile range of the exam scores is 20.

Example 2: Points Scored

The following box plot shows the distribution of points scored by basketball players in a certain league. What is the interquartile range of the distribution?



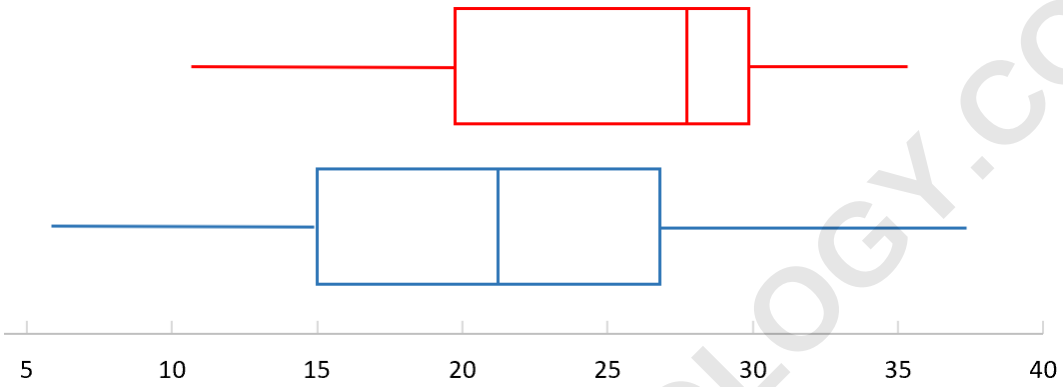
We can find the following values on the box plot to answer this:

Q3 (Upper Quartile) = 27Q1 (Lower Quartile) = 15Interquartile Range (IQR) = 27 - 15 = 12

The interquartile range of the distribution is 12.

Example 3: Comparing Plant Heights

The following box plots show the distribution of heights for two different plant species: Red and Blue. Which distribution has a larger interquartile range?



First, let's find the interquartile range of the red box plot:

Q3 (Upper Quartile) = 30Q1 (Lower Quartile) = 20Interquartile Range (IQR) = 30 - 20 = 10

Next, let's find the interquartile range of the blue box plot:

Q3 (Upper Quartile) = 27Q1 (Lower Quartile) = 15Interquartile Range (IQR) = 27 - 15 = 12

The interquartile range for the Blue species is larger.

The following tutorials provide additional information about box plots: