IQR-Inter Quartile Range

What is the reason for IQR 1.5 * (multiplication)?

The interquartile (IQR) method of outlier detection uses **1.5** as its scale **to detect outliers because it most closely follows Gaussian distribution**. As a result, the method dictates that **any data point that's 1.5 points below the lower bound quartile or above the upper bound quartile is an outlier.**

By using a multiplier of 1.5, the IQR method strikes a balance between sensitivity and stringency. **It identifies outliers that deviate approximately 1.5 times the IQR away from the upper or lower quartiles,**

Based on **Gaussian Distribution** the whole data lies within 3 standard deviation (<3). Standard Deviation 3 is very important in this calculation Let's calculate the IQR decision range in terms of standard deviation:

First, we taking scale=1 Q1-1 *(Q3-Q1) using this formula. We get a value 2. 025.This make the decision range too exclusive so it makes too much outliers. So, it is not applicable

Then we take scale=2 Using the same formula We get a value 3.375. This make the decision range too inclusive so it makes too fewer outliers. So, this also not applicable.

Then we take **scale=1.5 Using the same formula We get a value 2.7. This make the decision range is close to the Gaussian distribution, so we consider this for outlier detection.**