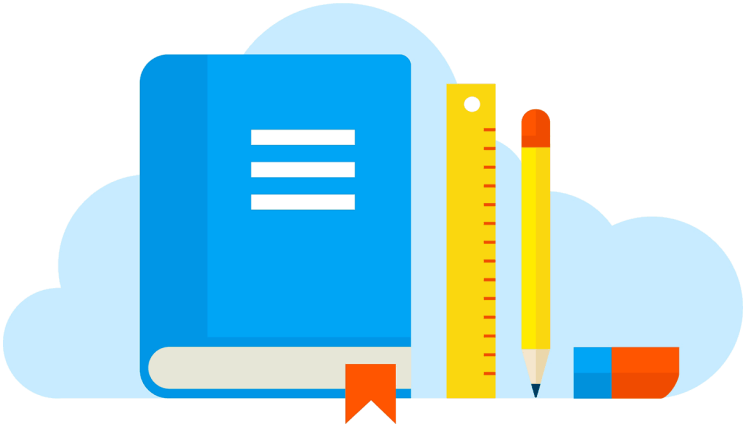


Data Science Notes by Sarowar Ahmed

📊 Chapter: Descriptive Statistics

📊 Topic: Range, Interquartile Range

🔎 Hello, GitHub community! Ever wonder how statisticians talk about the spread or diversity in data? Let's unravel this mystery together with two simple concepts: Range and Interquartile Range (IQR), explained so that anyone can grasp them, no matter your age or background!

🚀 What's the Range?

Range is like looking at the tallest and shortest trees in a forest and measuring the space between them. It’s the difference between the maximum and minimum values in your data. Simple, right?

▪ Formula: Range=Maximum Value−Minimum Value

🌟 And, What About Interquartile Range (IQR)?

IQR helps us to understand the middle spread of our data, essentially telling us where the bulk of our values lie without getting distracted by outliers or extreme values. Imagine if we only considered the height of trees from the 25th tallest to the 75th tallest, ignoring the very tallest and shortest. That's IQR!

▪ Formula: IQR=Q3−Q1

Where Q3 is the third quartile (the value below which 75% of the data fall) and Q1 is the first quartile (the value below which 25% of the data fall).

📊 Example Time!

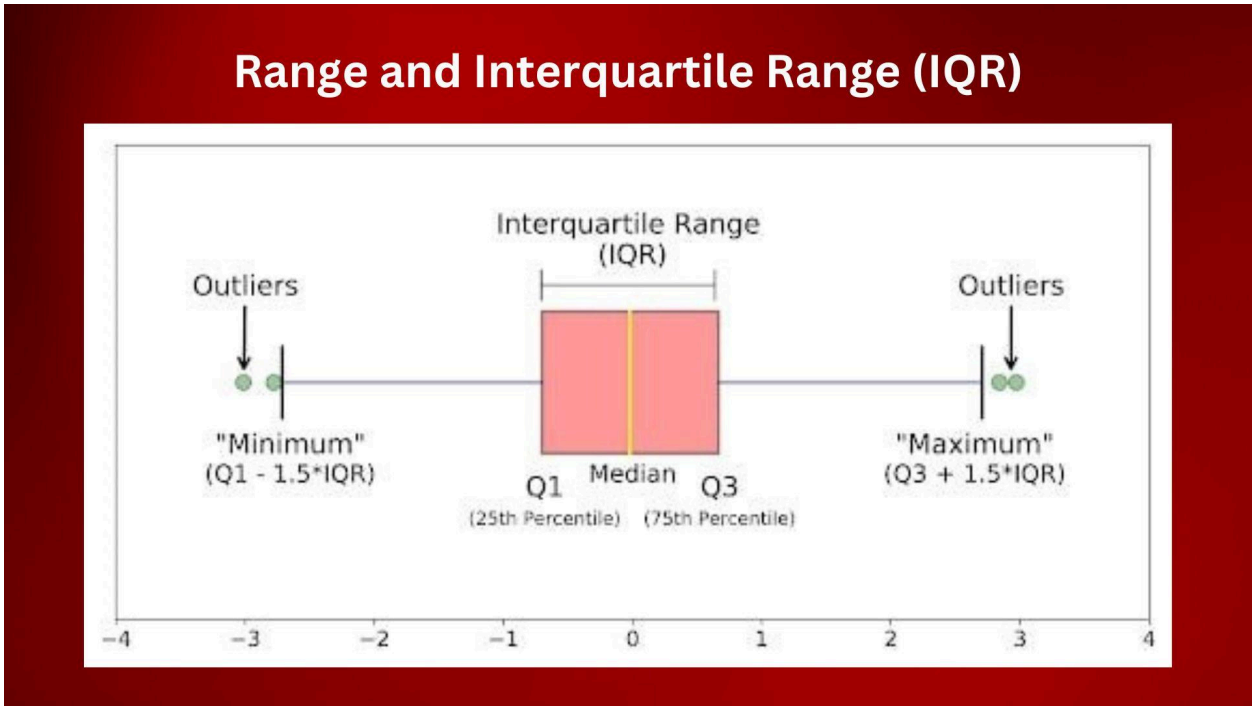
Imagine you have the following set of test scores: 55, 60, 65, 70, 75, 80, 85.

▪ Range: The highest score is 85, and the lowest is 55. So, the range is 85−55=30. This tells us the overall spread of the scores.

▪ Finding IQR:
▪ First, we arrange the scores in order: Already done!
▪ Q1 (the first quartile) is 65 (25% of the way into the list).
▪ Q3 (the third quartile) is 80 (75% of the way into the list).

▪ So, the IQR is 80−65=15. This gives us the spread of the middle 50% of our scores, offering insight into where the majority of students stand, excluding any extreme performances.

🌈 Visualization:



🌍 Why Does This Matter?
Understanding range gives you a quick snapshot of the diversity in your data, while IQR offers a deeper dive into the central spread, filtering out extremes that might skew your perception.

Whether you’re a student analyzing exam scores, a business analyst looking at sales data, or just a curious mind exploring the world through numbers, grasping these concepts can illuminate the stories hidden within your data..

Got any questions about Range and Interquartile Range (IQR)! ?
Feel free to ask me via Linkedin! Let's keep learning together.

My LinkedIn Date: 04/04/2024