Coefficient of Variation Comparison

Problem Statement : Three groups A, B, and C have the same mean value but different standard deviations.
Given:
Mean (μ) = 55
Standard Deviation of A (σA) = 4
Standard Deviation of B (σB) = 10
Standard Deviation of C (σC) = 15

Determine which group is better using statistical analysis.

Concept Used

The Coefficient of Variation (CV) is used to compare consistency between datasets.

Formula

CV = (Standard Deviation / Mean) × 100

Lower CV indicates:

- Less variation
- Higher consistency
- Better performance

Calculations

- Group A

CV = (4 / 55) × 100
CV = 7.27%

- Group B

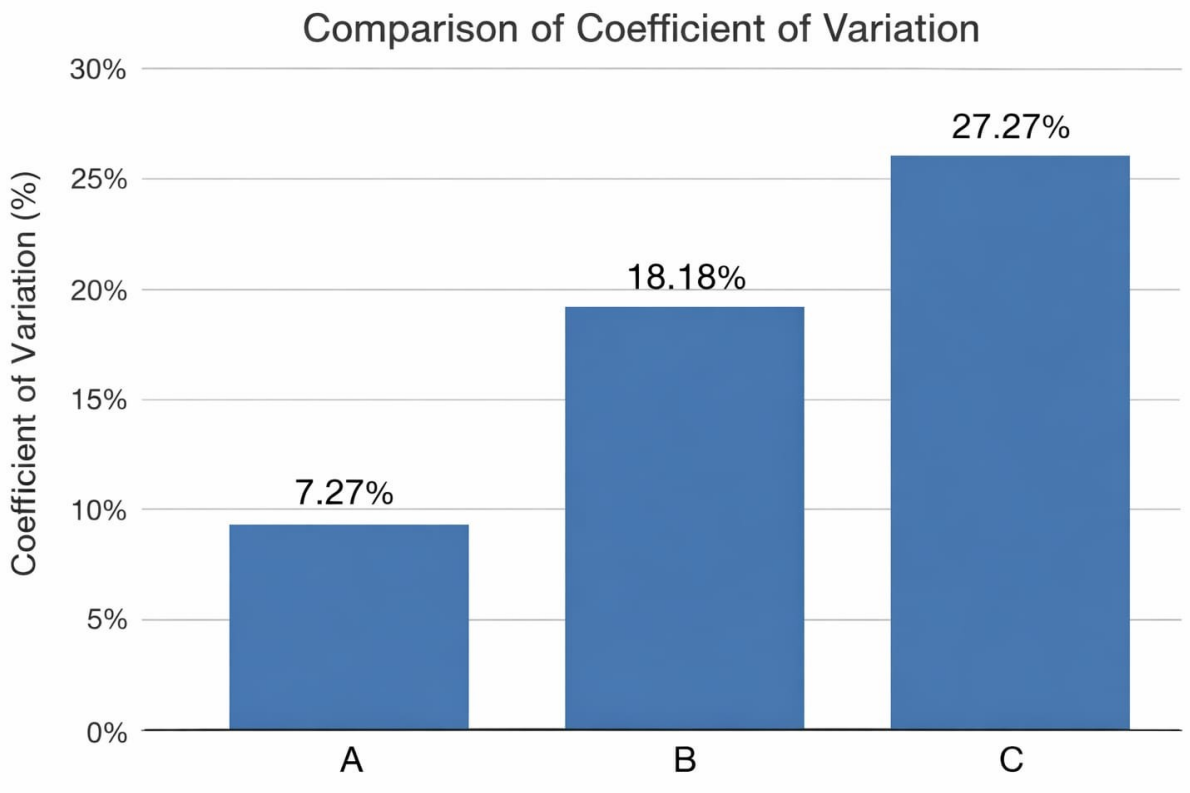
CV = (10 / 55) × 100
CV = 18.18%

- Group C

CV = (15 / 55) × 100
CV = 27.27%

Visualization

The following graph shows comparison of coefficient of variation.



Conclusion

Group A has the lowest coefficient of variation.

Therefore, Group A is better because it shows the highest consistency and minimum variation.

Machine Learning Connection

In Machine Learning and Data Analysis:

- Lower variance datasets are more stable
- Helps in feature comparison
- Used in statistical evaluation
- Improves model reliability