Outlier Detection: IQR and Z-score

Notes for SHS • Topic 83 • Fictional data only • 25 November 2026

Median-of-halves method

Data: 4,5,6,7,8,9,40. Median 7; Q1=5, Q3=9, IQR=4.

Fences: 5-1.5x4=-1 and 9+1.5x4=15. Flag 40, but do not presume it is incorrect.

Z-score caution

z=(x-mean)/sample standard deviation. Mean and SD are themselves influenced by extremes.

Thresholds such as absolute z>3 are context-dependent heuristics.

Robust statistics

Raw MAD = median absolute deviation from the median. Modified z can use 0.6745*(x-median)/raw MAD when raw MAD>0.

Do not conflate raw and normal-consistent scaled MAD.

Decision process

Check business validity, units, source evidence, subgroup meaning and sensitivity of conclusions; retain, correct, quarantine or exclude with logs.