

BOXPLOT ANALYSER PRIVATE LIMITED

(PROFICIENCY TESTING PROVIDER DIVISION)

Robust estimation of standard deviation through nIQR (Normalized Interquartile Range) during for proficiency testing data analysis.

Boxplot Analyser Private Limited - Proficiency Testing Div. has derived various ways to identify standard deviation which are alternatively called as a robust estimator for proficiency testing data analysis. One such way of estimation of standard deviation is normalized interquartile range, shortly we write as, **nIQR**.

Below easier example is an attempt to educate interested readers from proficiency testing (PT) participant communities to know how we use **nIQR** to estimate robust standard deviation whenever we require to use so. (We also use other estimation as well as per applicability)

Readers should understand that, more the data in the data set, better the estimation of standard deviation using **nIQR**.

A robust estimator of the standard deviation can be obtained from the difference between the 75th percentile (i.e., 3rd quartile) and 25th percentile (i.e., 1st quartile) of the data set we have chosen.

Below example is used to know about using **nIQR** which is used as standard deviation:

	A	B	C	D	E	F	G	H	I	J
1										
2		Sr. No.	Value		Sr. No.	Value				
3		1	20.5		1	20.5		1st quartile, =QUARTILE(F3:F22,1)		
4		2	21.1		7	20.9				
5		3	21.5		2	21.1		22.10		
6		4	22.3		8	21.4				
7		5	22.7		3	21.5				
8		6	23.6		4	22.3				
9		7	20.9		10	22.3				
10		8	21.4		12	22.5		3rd quartile, =QUARTILE(F3:F22,3)		
11		9	23.5	>>>>>>>	13	22.5				
12		10	22.3	sorting	5	22.7		24.13		
13		11	23.5	lowest yo	14	23.4				
14		12	22.5	highest	9	23.5				
15		13	22.5		11	23.5		So, nIQR is =0.7413 x (Q3(x) - Q1(x)) =0.7413 x (24.13-22.10) =1.505		
16		14	23.4		6	23.6				
17		15	24		15	24				
18		16	24.5		16	24.5				
19		17	24.8		18	24.7				
20		18	24.7		17	24.8				
21		19	24.9		19	24.9				
22		20	27.2		20	27.2				
23										

Note: 0.7413 is a factor

Reference: ISO 13528:2022

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