Basics

Tuesday, November 21, 2023 9:14 AM

Means :- a, b

1) Arithmetic mean $\frac{a+b}{2}$

2) Geometric mean $(ab)^{1/2} = \sqrt{ab}$

3) Harmonic mean $\frac{1}{\frac{\frac{1}{a}+\frac{1}{b}}{2}} = \frac{2ab}{a+b}$

56 78 80 85 90 94 104 154 200 203 342 389 400 450 500 540 550 560 600 700

(5/20)%

= 25% Less than 1st Quartile

median	273
1st quartile	93
2nd Quartile	273
3rd Quartile	510

(5/20)%

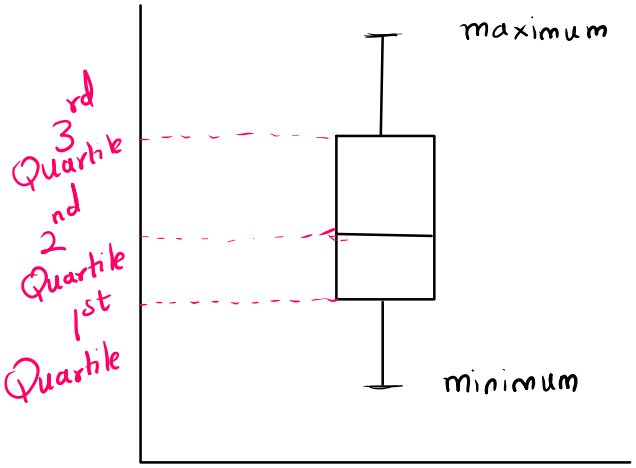
= 25% greater than 3rd Quartile

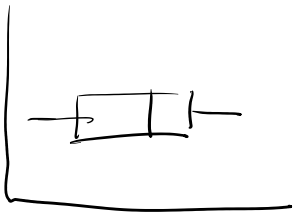
many times $3^{rd}Q - 2^{nd}Q \neq 2^{nd}Q - 1^{st}Q$

34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

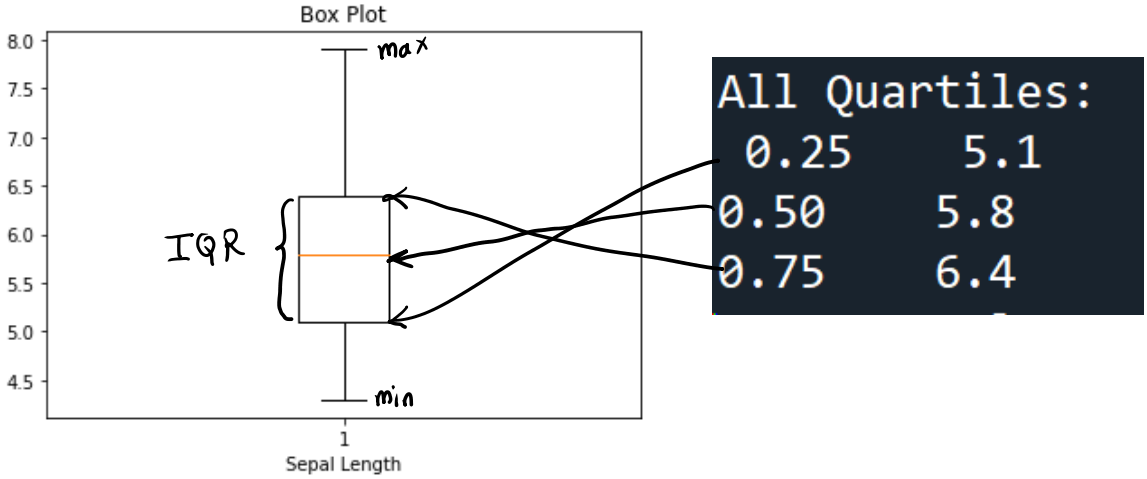
Equally placed

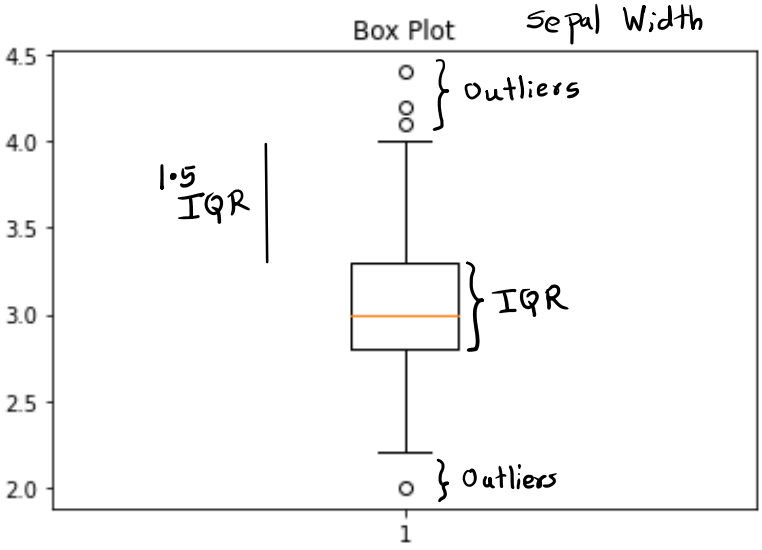
1st Q	44
2nd Q	53
3rd Q	63



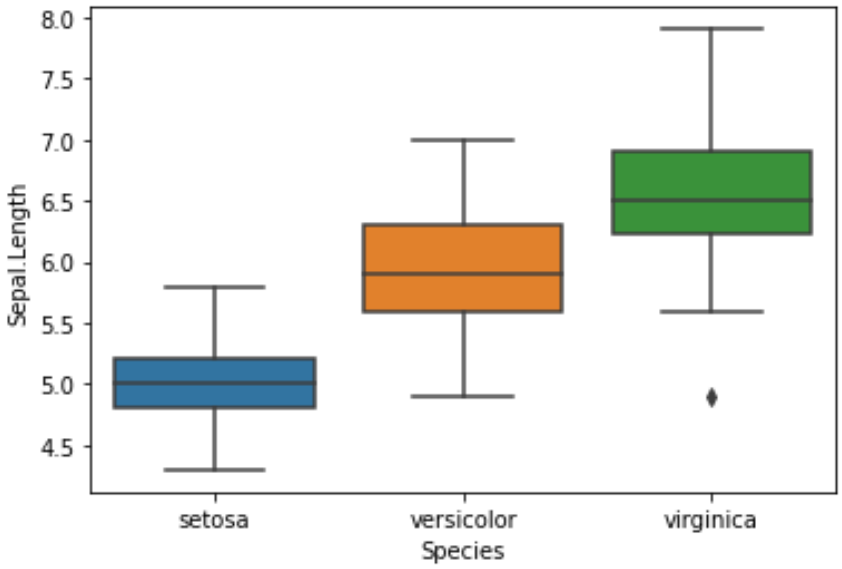


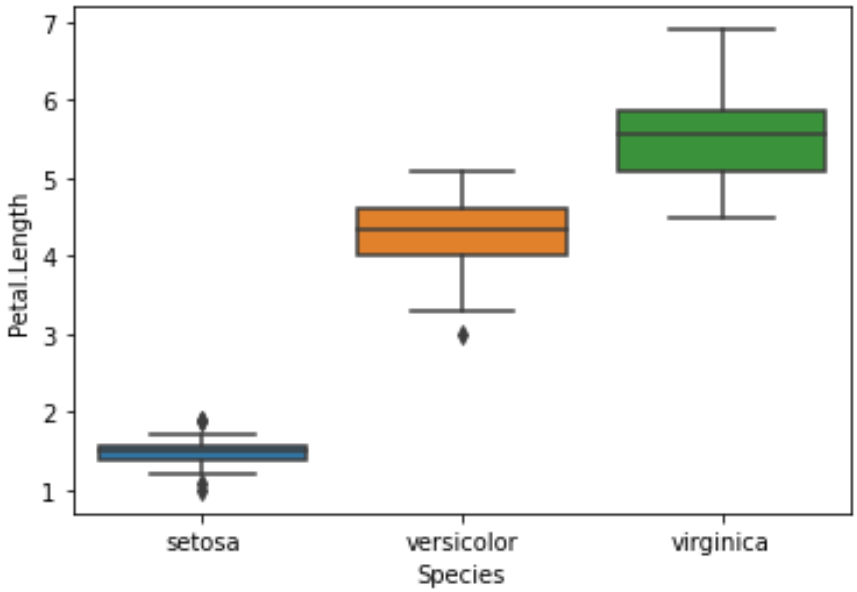
$IQR = 3^{rd}Q - 1^{st}Q.$





Point lying 1.5*IQR away from the edge of the box is shown as outlier





Mean $\mu = \frac{\sum_{i=1}^{N} x_i}{N}$

$x_i - \mu$: Deviation from mean

μ : Population mean

N : Population Size

MD about mean $= \frac{\sum_{i=1}^{N} |x_i - \mu|}{N}$

Variance $\sigma^2 = \frac{\sum_{i=1}^{N} (x_i - \mu)^2}{N}$: Population Variance

Standard Deviation $\sigma = \sqrt{\sigma^2}$: Population Standard Deviation

σ

										mean	Max	Min	Range	MD	Variance	SD
A	34	67	0	2	139	9	53	1		38.125	139	0	139			
Dev from mean	-4.125	28.875	-38.125	-36.125	100.875	-29.125	14.875	-37.125								
Abs(Dev)	4.125	28.875	38.125	36.125	100.875	29.125	14.875	37.125						36.156		
Sqr(Dev)	17.016	833.77	1453.52	1305.02	10175.8	848.266	221.27	1378.27							2029.1	45.04564
B	45	67	23	29	20	38	37	30		36.125	67	20	47			
Dev from mean	8.875	30.875	-13.125	-7.125	-16.125	1.875	0.875	-6.125								
Abs(Dev)	8.875	30.875	13.125	7.125	16.125	1.875	0.875	6.125						10.625		
Sqr(Dev)	78.766	953.27	172.266	50.7656	260.016	3.51563	0.7656	37.5156							194.61	13.95025

n : Sample size $\quad \bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$: Sample mean

Variance $s^2 = \frac{\sum_{i=1}^{N} (x_i - \bar{x})^2}{n-1}$: Sample Variance

Standard Deviation $s = \sqrt{s^2}$: Sample Standard Deviation