

UKURAN SIMPANGAN (DISPERSI)

➤ RENTANG

➤ RENTANG ANTAR KUARTIL

➤ SIMPANGAN KUARTIL

➤ RERATA SIMPANGAN (RS)

➤ SIMPANGAN BAKU (STANDAR DEVIASI)

➤ SIMPANGAN BAKU GABUNGAN

➤ VARIANS

➤ ANGKA BAKU (z)

➤ KOEFISIEN VARIASI

UKURAN SIMPANGAN (DISPERSI)

“derajat berpencarnya data kuantitatif”

RENTANG: $R = \text{data terbesar} - \text{data terkecil}$

RENTANG ANTAR KUARTIL: $RAK = K_3 - K_1$

SIMPANGAN KUARTIL : $SK = \frac{1}{2} RAK$

Hubungan Empirik

$$SK = \frac{2}{3} s$$

s : Standar Deviasi

Rata-rata Simpangan (RS):

$$\frac{\sum |x_i - \bar{x}|}{n}$$

Simpangan Baku (Deviasi Standar)

$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$$

$$s = \sqrt{\frac{n \sum x_i^2 - (\sum x_i)^2}{n(n-1)}}$$

$$s = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n-1}}$$

$$s = \sqrt{\frac{n \sum f_i x_i^2 - (\sum f_i x_i)^2}{n(n-1)}}$$

$$s = p \sqrt{\frac{n \sum f_i c_i^2 - (\sum f_i c_i)^2}{n(n-1)}}$$

Simpangan Baku Gabungan

$$s_{gab} = \sqrt{\frac{\sum (n_i - 1) s_i^2}{\sum n_i - k}}$$

Varians s^2

Angka Baku (z)

$$z_i = \frac{x_i - \bar{x}}{s}$$

Koefisien Variasi

$$KV = \frac{\text{simpangan baku}}{\text{rata - rata}} \times 100\%$$

Data Interval	f_i	x_i	$f_i x_i$
31 - 40	2	35,5	71
41 - 50	3	45,5	136,5
51 - 60	5	55,5	277,5
61 - 70	14	65,5	917
71 - 80	24	75,5	1812
81 - 90	20	85,5	1710
91 - 100	12	95,5	1146
	80		6070

$$\bar{x} = \frac{6070}{80} = 75,875$$

$$K_i = b + p \left(\frac{\frac{in}{4} - F}{f} \right)$$

$$K_1 = 67,64$$

$$K_2 = 77,17$$

$$K_3 = 86,5$$

Rentang Antar Kuartil

$$RAK = K_3 - K_1 = 86,5 - 67,64 = 18,86$$

Simpangan Kuartil

$$SK = \frac{1}{2} (RAK) = \frac{1}{2} (18,86) = 9,43$$

$$\bar{x} = \frac{6070}{80} = 75,875 = 75,88$$

$$s = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n - 1}}$$

Data Interval	f_1	x_i	$X_i - \bar{X}$	$(X_i - \bar{X})^2$	$f_i (X_i - \bar{X})^2$
31 - 40	2	35,5	-40,38	1630,5	3261
41 - 50	3	45,5	-30,38	922,9	2768.7
51 - 60	5	55,5	-20,38	415,3	2076.5
61 - 70	14	65,5	-10,38	107,7	1507.8
71 - 80	24	75,5	-0,38	0,14	3.36
81 - 90	20	85,5	9,62	92,5	1850
91 - 100	12	95,5	19,62	384,9	4618,8
	80				16086.16

VARIANS

$$s^2 = \sum \frac{f_i (x_i - \bar{x})^2}{n-1}$$

$$s^2 = 203,622$$

Standar Deviasi

$$s = 14,27$$

$$s = \sqrt{\frac{n \sum f_i x_i^2 - (\sum f_i x_i)^2}{n(n-1)}}$$

VARIANS

$$s^2 = \frac{n \sum f_i X_i^2 - (\sum f_i X_i)^2}{n(n-1)}$$

$$s^2 = \frac{80(476650) - (6070)^2}{80(79)}$$

$$s^2 = \frac{38132000 - 36844900}{6320}$$

$$s^2 = 203,66$$

Standar Deviasi

$$s = 14,27$$

Data Interval	f _i	X _i	f _i x _i	X _i ²	f _i X _i ²
31 - 40	2	35,5	71	1260,25	2520,5
41 - 50	3	45,5	136,5	2070,25	6210,75
51 - 60	5	55,5	277,5	3080,25	15401,25
61 - 70	14	65,5	917	4290,25	60063,5
71 - 80	24	75,5	1812	5700,25	136806
81 - 90	20	85,5	1710	7310,25	146205
91 - 100	12	95,5	1146	9120,25	109443
	80		6070	32831,75	476650

$$s = p \sqrt{\frac{n \sum f_i c_i^2 - (\sum f_i c_i)^2}{n(n-1)}}$$

Data Interval	f_i	C_i	$f_i C_i$	C_i^2	$f_i C_i^2$
31 - 40	2	-4	-8	16	32
41 - 50	3	-3	-9	9	27
51 - 60	5	-2	-10	4	20
61 - 70	14	-1	-14	1	14
71 - 80	24	0	0	0	0
81 - 90	20	1	20	1	20
91 - 100	12	2	24	4	48
Jumlah			3		161

VARIANS

$$s^2 = p^2 \frac{n \sum f_i c_i^2 - (\sum f_i c_i)^2}{n(n-1)}$$

$$s^2 = (10^2) \frac{80(161) - (3)^2}{80(79)}$$

$$s^2 = (10^2) \frac{80(161) - (3)^2}{80(79)}$$

$$s^2 = 100 \frac{12880 - 9}{6320}$$

$$s^2 = 203,66$$

Standar Deviasi

$$s = 14,27$$

Data Interval	f_i	x_i	$f_i x_i$
31 - 40	2	35,5	71
41 - 50	3	45,5	136,5
51 - 60	5	55,5	277,5
61 - 70	14	65,5	917
71 - 80	24	75,5	1812
81 - 90	20	85,5	1710
91 - 100	12	95,5	1146
	80		6070

$$\bar{x} = \frac{6070}{80} = 75,875$$

$$K_i = b + p \left(\frac{\frac{in}{4} - F}{f} \right)$$

$$K_1 = 67,64$$

$$K_2 = 77,17$$

$$K_3 = 86,5$$

Rentang Antar Kuartil

$$RAK = K_3 - K_1 = 86,5 - 67,64 = 18,86$$

Simpangan Kuartil

$$SK = \frac{1}{2} (RAK) = \frac{1}{2} (18,86) = 9,43$$

Hubungan Empirik

SIMPANGANKUARTIL

$$SK = \frac{2}{3} s$$

$$SK = \frac{2}{3} (14,27)$$

$$SK = 9,51$$

Data Interval	f_i	x_i	$x_i - \bar{X}$	$z_i = \frac{x_i - \bar{X}}{s}$
31 - 40	2	35,5	-40,38	-2,83
41 - 50	3	45,5	-30,38	-2,13
51 - 60	5	55,5	-20,38	-1,43
61 - 70	14	65,5	-10,38	-0,73
71 - 80	24	75,5	-0,38	-0,03
81 - 90	20	85,5	9,62	0,67
91 - 100	12	95,5	19,62	1,37
	80			

$$\bar{X} = 75,875$$

$$s = 14,27$$

KOEFISIEN VARIASI

$$KV = \frac{s}{\bar{X}} \cdot 100\%$$

$$KV = 18,81\%$$

TUGAS-3

25	93	56	39	42	87	45	65	77	30
58	84	88	72	43	56	63	91	89	54
99	60	67	28	39	86	45	58	33	60
67	56	74	58	62	80	94	65	38	75
55	75	86	78	76	53	68	76	49	64
78	90	94	57	43	77	81	65	48	70
28	92	76	41	54	78	67	38	58	65
65	68	72	66	87	75	73	59	64	51
23	54	63	75	62	85	53	76	91	72
52	41	78	64	58	73	82	49	74	53

HITUNG

1. Rentang Antar Kuartil
2. Simpangan Kuartil
3. Rerata Simpangan
4. Varians
5. Simpangan Baku (Deviasi Standar)
6. Angka Baku masing-masing tanda kelas
7. Koefisien Variasi
8. Koefisien kemiringan kurva