

PERTEMUAN 4
STATISTIKA DAN PROBABILITAS
SLIDE 15, 17, & 18



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2022320018

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BEKASI

2022

SOAL

- **Slide 15 (Desil)**

Tentukan desil ke-3 (D_3), desil ke-5 (D_5), dan desil ke-7 (D_7) dari data :

23, 34, 38, 32, 41, 43, 40, 30, 39, 38, 44, 45, 46

- **Slide 17 (Persentil)**

Tentukan persentil ke-30 (P_{30}), persentil ke-50 (P_{50}), dan persentil ke-75 (P_{75}) dari data : 23, 34, 38, 32, 41, 43, 40, 30, 39, 38, 44, 45, 46

- **Slide 18 (Case Study)**

Berikut ini adalah sebaran nilai ujian matakuliah Statistika untuk 60 orang mahasiswa.

11	18	30	7	19	10	17	21	39	15
18	13	29	20	25	31	8	19	20	17
14	18	17	15	27	21	23	13	17	19
14	16	26	22	30	25	14	19	10	13
5	15	25	31	21	23	18	17	19	10
24	28	21	24	17	12	11	20	31	35

Tentukan mean, median, modus, kuartil atas, kuartil tengah dan kuartil bawah!

JAWABAN :

- **Slide 15 (Desil)**

Data diurutkan dari terkecil hingga terbesar:

23, 30, 32, 34, 38, 38, 39, 40, 41, 43, 44, 45, 46

$$D_i = \frac{i(n+1)}{10}$$

$$D_3 = \frac{3(13+1)}{10} = 4.2$$

$$D_3 = X_4 + 0.2(X_5 - X_4)$$

$$D_3 = 34 + 0.2(38 - 34)$$

$$D_3 = 34 + 0.2(4) = \mathbf{34.8}$$

$$D_i = \frac{i(n+1)}{10}$$

$$D_5 = \frac{5(13+1)}{10}$$

$$D_5 = X_7$$

$$D_5 = \mathbf{39}$$

$$D_i = \frac{i(n+1)}{10}$$

$$D_7 = \frac{7(13+1)}{10} = 9.8$$

$$D_7 = X_9 + 0.8(X_{10} - X_9)$$

$$D_7 = 41 + 0.8(43 - 41)$$

$$D_7 = 41 + 0.8(2) = \mathbf{42.6}$$

- **Slide 17 (Persentil)**

Data diurutkan dari terkecil hingga terbesar:

23, 30, 32, 34, 38, 38, 39, 40, 41, 43, 44, 45, 46

$$P_i = \frac{i(n+1)}{100}$$

$$P_{30} = \frac{30(13+1)}{100} = 4.2$$

$$P_{30} = X_4 + 0.2(X_5 - X_4)$$

$$P_{30} = 34 + 0.2(38 - 34)$$

$$P_{30} = 34 + 0.2(4) = \mathbf{34.8}$$

$$P_i = \frac{i(n+1)}{100}$$

$$P_{50} = \frac{50(13+1)}{100}$$

$$P_{50} = X_7$$

$$P_{50} = \mathbf{39}$$

$$P_i = \frac{i(n+1)}{100}$$

$$P_{75} = \frac{75(13+1)}{100} = 10.5$$

$$P_{75} = X_{10} + 0.5(X_{11} - X_{10})$$

$$P_{75} = 34 + 0.5(44 - 43)$$

$$P_{75} = 34 + 0.5(1) = \mathbf{34.5}$$

- **Slide 18**

Data diurutkan dari terkecil hingga terbesar:

5	7	8	10	10	10	11	11	12	13
13	13	14	14	14	15	15	15	16	17
17	17	17	17	17	18	18	18	18	19
19	19	19	19	20	20	20	21	21	21
21	22	23	23	24	24	25	25	25	26
27	28	29	30	30	31	31	31	35	39

1. Mean

$$\bar{x} = \frac{\sum x_i}{n}$$

$$\begin{aligned} &5 + 7 + 8 + 10 + 10 + 10 + 11 + 11 + 12 + 13 + 13 + 13 + 14 + 14 \\ &+ 14 + 15 + 15 + 15 + 16 + 17 + 17 + 17 + 17 + 17 + 17 + 18 + 18 \\ &+ 18 + 18 + 19 + 19 + 19 + 19 + 19 + 20 + 20 + 20 + 21 + 21 + 21 \\ &+ 21 + 22 + 23 + 23 + 24 + 24 + 25 + 25 + 25 + 26 + 27 + 28 + 29 \\ &+ 30 + 30 + 31 + 31 + 31 + 35 + 39 \end{aligned}$$

$$\bar{x} = \frac{\quad}{60}$$

$$\bar{x} = \frac{1167}{60} = \mathbf{19.45}$$

2. Median

$$\begin{aligned}Me &= \frac{X \frac{n}{2} + X \left(\frac{n}{2} + 1 \right)}{2} \\Me &= \frac{X \frac{60}{2} + X \left(\frac{60}{2} + 1 \right)}{2} \\Me &= \frac{X_{30} + X_{31}}{2} \\Me &= \frac{19 + 19}{2} \\Me &= \frac{38}{2} = \mathbf{19}\end{aligned}$$

3. Modus

Berdasarkan data yang sudah diurutkan di atas, maka didapat $Mo = \mathbf{17}$

4. Kuartil Bawah

$$\begin{aligned}Q_1 &= X \frac{(n+2)}{4} \\Q_1 &= X \frac{(60+2)}{4} \\Q_1 &= X \frac{62}{4} \\Q_1 &= X_{15.5} \\Q_1 &= \frac{14 + 15}{2} = \mathbf{14.5}\end{aligned}$$

5. Kuartil Tengah

$$\begin{aligned}Q_2 &= \frac{X \frac{n}{2} + X \left(\frac{n}{2} + 1 \right)}{2} \\Q_2 &= \frac{X \frac{60}{2} + X \left(\frac{60}{2} + 1 \right)}{2} \\Q_2 &= \frac{X_{30} + X_{31}}{2} \\Q_2 &= \frac{19 + 19}{2} \\Q_2 &= \frac{38}{2} = \mathbf{19}\end{aligned}$$

6. Kuartil Atas

$$Q_3 = X \frac{(3n + 2)}{4}$$

$$Q_3 = X \frac{(3 * 60 + 2)}{4}$$

$$Q_3 = X \frac{(180 + 2)}{4}$$

$$Q_3 = X \frac{182}{4}$$

$$Q_3 = X_{45.5}$$

$$Q_3 = \frac{24 + 24}{2} = \mathbf{24}$$