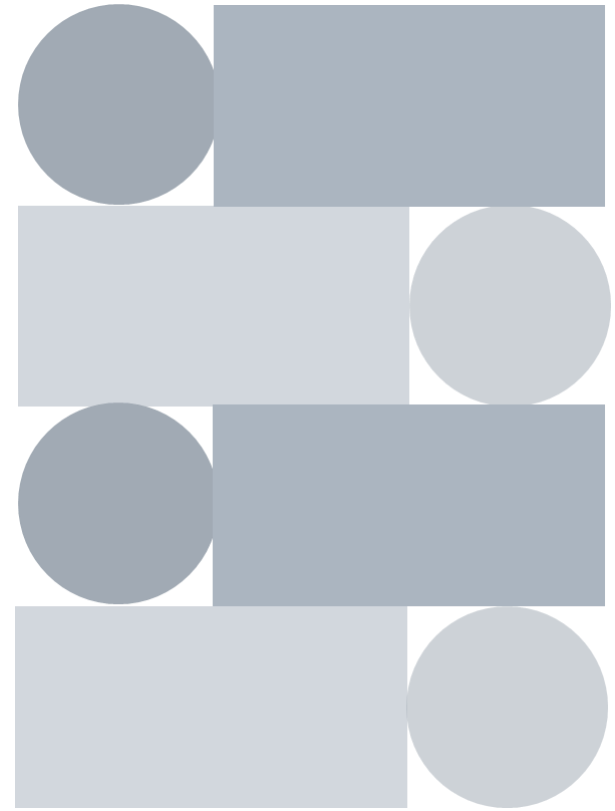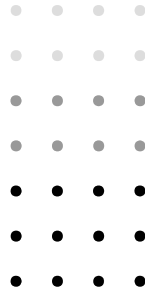# STATISTICAL COMPUTATION

WEEK 2 – DESCRIPTIVE STATISTICS

Annisa Auliya
I Melda Puspita
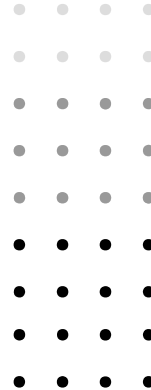
GET TO KNOW US

ANNISA AULIYA R.

082334174749

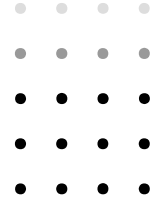## I MELDA PUSPITA L.

085257113961

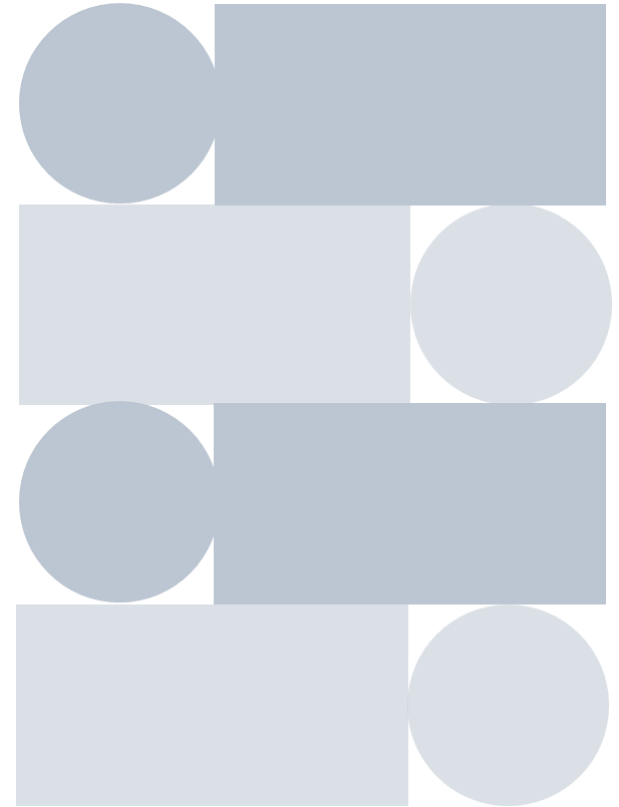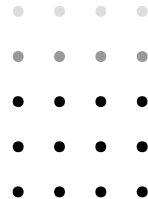https://intip.in/KomstatC2023
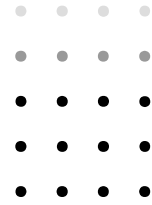
MATERIALS

- Descriptive Statistics

01

DESCRIPTIVE STATISTICS

DESCRIPTIVE STATISTICS

- Mean

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

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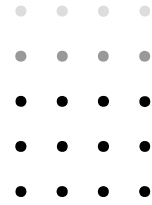
$$s^2 = \frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}$$

- Covariance

$$\text{cov}(x,y) = \frac{\sum_{i=1}^{n} (x_i - \bar{x})(y_i - \bar{y})}{n-1}$$

- Correlation

$$\text{cor}(x,y) = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$$
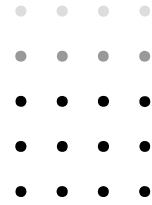
MEAN

- Formula

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

- Algorithm
  1. Add all value of x $\left(\sum_{i=1}^{n} x_i\right)$
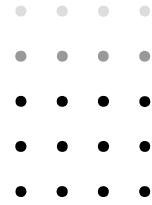 2. Divide the output of step 1 with n

VARIANCE

- Formula

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

- Algorithm
  1. Calculate each $x_i - \bar{x}$
  2. Add all value of $(x_i - \bar{x})^2$
  3. Divide the output of step 2 with $n - 1$
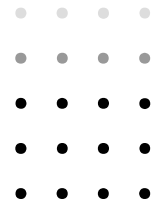
COVARIANCE

- Formula

$$\text{cov}(x, y) = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{n - 1}$$

- Algorithm

1. Calculate each $x_i - \bar{x}$ and $y_i - \bar{y}$
2. Multiply $x_i - \bar{x}$ and $y_i - \bar{y}$
3. Add all value of $(x_i - \bar{x})(y_i - \bar{y})$
4. Divide the output of step 3 with $n - 1$

CORRELATION

- Formula

$$\text{cor}(x, y) = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2}\sqrt{n \sum y^2 - (\sum y)^2}}$$

- Algorithm
  1. Calculate each x^2, y^2, and xy,
  2. Add all value of x, y, x^2, y^2, and xy
  3. Calculate s_{xy}, s_{xx}, and s_{yy}
  4. Multiply s_{xx} and s_{yy}
  5. Divide the s_{xy} with square root of step 4

THANKS

https://intip.in/KomstatC2023