* pattern of distribution of data:

- multimodal ⟶ some distributions have more than one point of concentration.

- unimodal ⟶ some distribution have single point of concentration.

* when multimodal distributions occure ⟶ it is likely that portions of the out put were produced under different conditions.

* يتوقع انه يكون (symmetrical):

the mean + median + mode at in the same location on. mean = median = mode.

⟶ important:

* the symmetry of variation is indicated by:

Skewness

* and distribution is A symmetrical ≡ skewed.

but the symmetrical distribution ⟶ has no skewness.

* by the tail can we know the type of the skewnes:

1) if the tail goes to the right, the distribution is skewed to the right and is positivly skewed.

2). = = = = = = left , =

= = = = = left = =

negativly = .

↙

Skewed ⟶ symmetrical + has no Skewness.

* kurtosis ⟶ the state on quality of flatness or peakedness of a distributions.

(+) large kurotosis ⟶ 1) high concentration of data in the middle.

2) out on the tails (data).

3) little data in between.

(-) little kurotosis ⟶ 1) flat in the middle

2) thin in tails.

* form of the cumulative frequency distributions:

if the frequency of occurens of a frequency distribution are cumulated from the lower end to the higher end.

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under different

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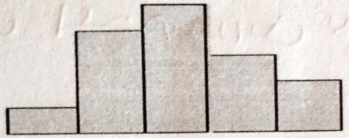
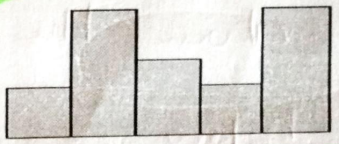
SHAPES OF DISTRIBUTIONS

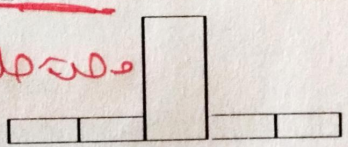
Unimodal



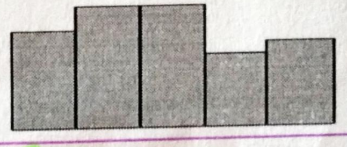
Bimodal



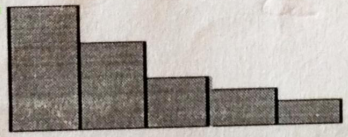
Small Variability



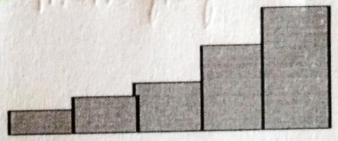
Large Variability



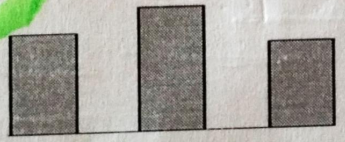
Positively Skewed



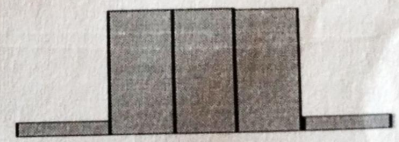
Negatively Skewed



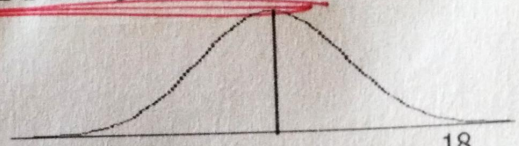
Large Kurtosis



Little Kurtosis



metrical and possibly Normal



* type of variable:

- categorical (qualitative) variable.
  - nominal
    - الإسمي
    - without unit + without order (completely)
  - ordinal.
    - without unit. + order meaningful.
    - not mean.
- metric (quantitative) variable.
  - continuous.
    - integers + أعداد كسرية
    - mean.
    - القيا.
  - discrete.
    - just integers.
    - count
    - العد

* the way for (presentation the data).

- table
- graph.
- Enumirical summarization.

* the table : ⟶ simple frequency table.

↓

used for nominal / ordinal

* grouped frequency table ⟶ to continuous metric variable.

) relative frequency = $\frac{\text{frequency for each category.}}{\text{total frequency.}}$

percentage frequency = $\frac{\text{frequency of each category.}}{\text{total frequency}} \times 100$.

(3) $k = 1 + 3{,}322 (\log N)$. → sample size.

↓
= number of class interval.

(4) width of class interval (w) = $\frac{R}{N}$ = $\frac{\text{highes} - \text{lowest}}{\text{number of class interval}}$

(5) mid point = $\frac{\text{upper} + \text{lower}}{2}$

) range (R) = $\frac{\text{upper} - \text{lower}}{2}$.

to presentation of data / ~~ffs~~
according to the type of variable

* categorical (nominal + ordinal) variable ⟶ when
- we used the table (simple frequency table).

- graph ⟶ pie chart.

- = ⟶ simple bar chart (bar chart)

* continuous metric variable ⟶ table (grouped frequency distribution table.

graph: (1) histogram (2) frequency polygon (3) dot plot.

-types of graphical techniques:

- pie chart → ordinal + nominal.
- bar chart → nominal + ordinal + discrete.
- histogram → continuous
- the frequency polygon → continuous + -simple + complex table
- dotplot → continuous.
- the line graph → contin → time

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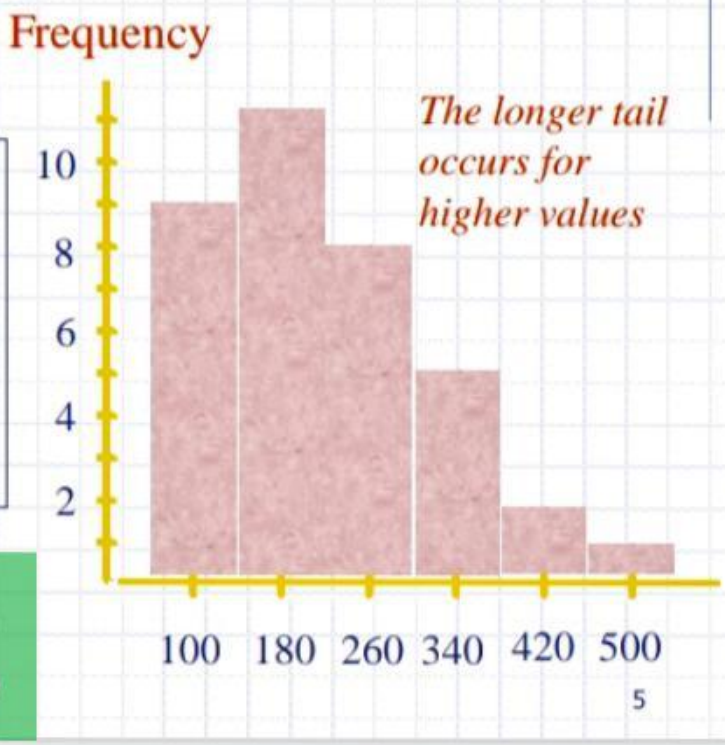
⟶ important:

Shapes of Histograms III

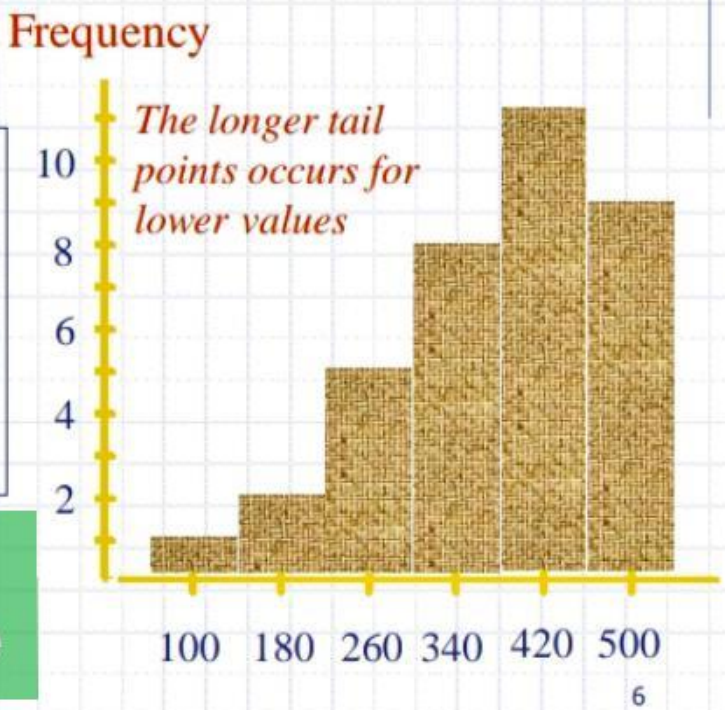
Skewed right
or
Positively
skewed



tail: higher value
peak: lower value

Shapes of Histograms IV

Skewed left
or
Negatively
skewed



tail:lower value
peak: higher value