Biostat(109) chapter1: introduction in Biostatistics Done by: @RazanAlRabah

If it's related to biology and medicine ← **Biostatistics**

- Descriptive statistics
- Inferential statistics
- Data
  - Quantitative
  - Qualitative

Source?

1-Kept records

2-surveys

3-experiments

4- external sources

Population (N): largest collection of elements

Sample (n): part of the population

Variable (what is measured in the elements?)

- Quantitative (numbers)
  - Continuous (no gabs)
  - Discrete (gabs)
- Qualitative (words)
  - Nominal (non ranked)
  - Ordinal (ranked)

Sampling Techniques

- simple random sampling
- stratified random sampling

KEY WORDS FOR THE EXCERSICES:

Level→ Qualitative ordinal

Yes or No questions→ Qualitative nominal

Age , Weight → Quantitative continuous

Biostat(109) chapter2: strategies for understanding the meaning of the data Done by: @RazanAlRabah

Frequency Distribution

1- Order array (smallest→largest)
2- Class intervals (lower limit (L) – upper limit (U))
3- Mid-point = $\frac{U+L}{2}$
4- True class interval
   d= $L - U\ (preceding\ class\ interval)$
   true upper limit = $U + \frac{d}{2}$
   true lower limit = $L - \frac{d}{2}$
5- Frequency → relative frequency = $\frac{f}{n}$
   Precantage frequency = $\frac{f}{n} \times 100\%$
6- Cumulative frequency → cumulative relative frequency= $\frac{Cf}{n}$
   cumulative recantage frequency= $\frac{Cf}{n} \times 100\%$
7- Width = 2nd lower limit – 1st lower limit
8- To present the frequency distirbutions

Histogram (class interval or mid point) polygon (mid point)

descriptive measures

Measure of central tendency:
1- Mean
   population (μ) sample ($\overline{X}$)
2- Median نعتمد الترتيب ثم الشطب
3- Mode

Measure of dispersion(variation)
1- Range = Max - Min
2- Variance (connected to the mean)
   population (σ^2) Sample (S^2) ($unit^2$)
3- Standard Deviation (square root of the variance)
   population (σ) Sample (S)
4- coefficient of variation (unit-less) (free of unit)
   $C.V = \frac{S}{\bar{X}} \times 100\%$

Population	Sample
- Parameter - Unknown	- Statistic - Known - Used to approximate parameters

Probability→ $P(E) = \frac{n(E)}{n(\Omega)}$, $P(\Omega) = 1$, $P(\phi) = 0$

Union → key word: (or) (+) , $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

Intersection→ key word: (and) (×) , $P(A \cap B)$

Complement → key word: (not) , (A^c) $(\bar{A})$, $P(A^C) = 1 - P(A)$

Conditional probability→ key word: (given) , $P(A|B) = \frac{P(A \cap B)}{P(B)}$

Exhaustive events → $P(A \cup B) = 1$

Disjoint (Mutually exclusive) → $P(A \cap B) = 0$

Independent → $P(A|B) = P(A)$, $P(A \cap B) = P(A)\,P(B)$