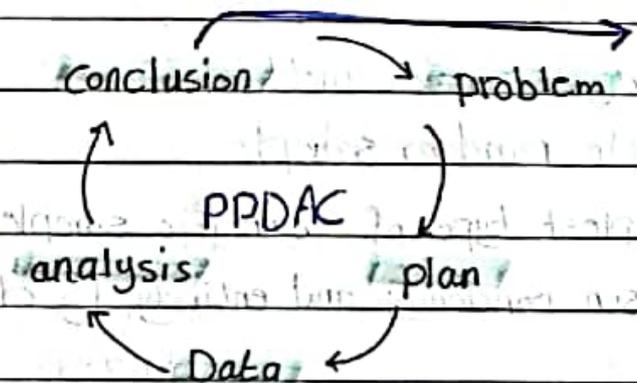# Statistics

Subject: Lecture 1

Statistics:-

1. Collection, organization, summarisation and analysis of data.
2. drawing inferences "conclusions"

fields of statistics :-

1. Pharmacy ⎤→ Biostatistics
2. Medicine ⎦
3. Education
4. Psychology
5. Business

Conclusion ⟶ problem

PPDAC

analysis   plan

Data

Issues of Pharmaceutical industry: "Statistical Cycly"

1. experiment design
2. analysis of drug trials
3. commorcialisation of medicine.

Branches of Statistics :-

1. descriptive   2. inferential "draw conclusions"

Sample should be :   1. representative   2. unbiased

parameter :- descriptive measure that describe a population
Statistics : descriptive measure that describe a sample.

Why we study a sample rather than a population ?

1. less cost
2. preservation from loss
3. save time
4. more accuracy
5. population is so huge.
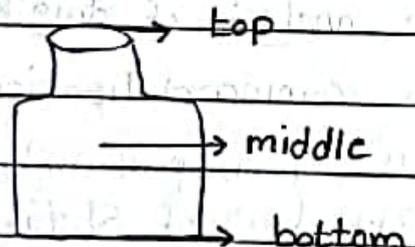
Choosing sample methods :-

1. Simple random sample
- Simplest type of scientific samples
- Chosen randomly and entirely by chance.

2. Stratified Sample
- divide population into seperate groups with similar characteristics
- select randomly from each group

3. cluster sampling "multistage" sampling

4. Systematic Sample
- a sample is selected by listing a population sequentially and choosing members at regular intervals or according to a set schedule or plan.

top
middle
bottom

two Kinds of numbers in statistics :-
1. generated from measurements   ex: temperature
2. generated from counting   ex: # of patients

Sources of data :-
1. Surveys   2. experiments   3. routinely kept records

4. external resources.

Variables :- a characteristic monitored " high , weight , length "

Type of variables according to their measurability :-
1. Qualitative.   2. Quantitative.
   ↓ not measurable   ↓ measurable

ex: Blood groups   ex: weight

Statistical Studies :-
1. Observational study   2. Experimental study
No intervention to the   intervention to the
   Sample   Sample

Dependency :-

1. independent. called: experimental or predictor variable
              * Can be controllable (manipulated)
2. dependent called: outcome variable
              * effect by independent

independent variables ———→ dependent result
                    Controll

مثال آخر :- مهم بالدراسات أو تجارب أو تحتاج بتنزيل العلاقة (اختيار)
The most commonly used statistical " Computers and Calculators " are :-
1. GraphPad prism   2. SPSS   3. STATA
4. SAS   5. MINITAB