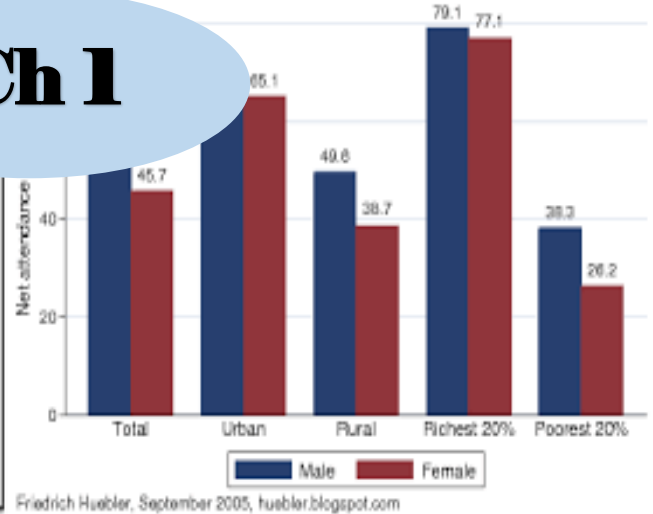
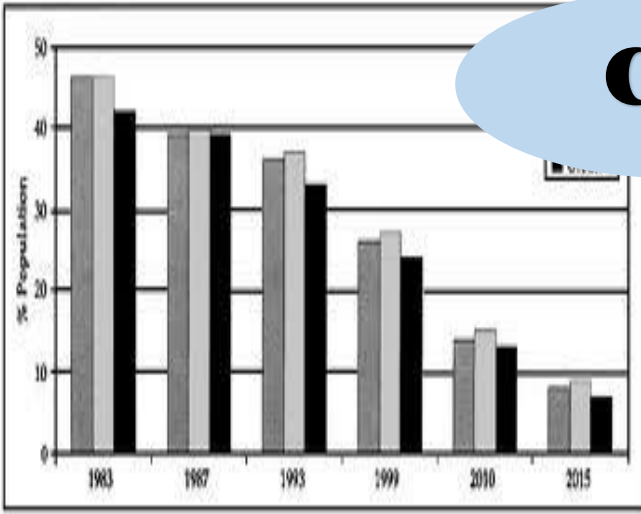


Stat

110

Ch 1



Friedrich Huebler, September 2005, huebler.blogspot.com

www.3mran2016.wordpress.com

محمد عمران

السنة التحضيرية

رياضيات واحصاء

0507017098-0580535304

تعريف ومصطلحات هاءاه

Statistics الإحصاء	<p>Is the science of conducting studies to collect, organize, summarize, analyze, and draw conclusions from the data</p> <p>الإحصاء هو العلم الذي يهتم بجمع وتلخيص وتحليل ومن ثم وضع الاستنتاجات</p>
Variable المتغير	<p>Characteristics or attribute assume different values</p> <p>المتغير خصائص تأخذ عدة قيم</p>
Random variable المتغير العشوائي	<p>Have values that are determined by chance</p> <p>المتغير العشوائي هو مقدار يأخذ قيما مختلفة حسب نتيجة التجربة العشوائية</p>
Population المجتمع	<p>Consist of all subject that are being studied</p> <p>المجتمع يتكون من جميع العناصر قيد الدراسة</p>
Sample العينة	<p>Is a group of subjects selected from population</p> <p>العينة هي مجموعه جزئية من المجتمع وتمثل المجتمع</p>
Data set مجموعه البيانات	<p>Is collection of data values</p>
Data البيانات	<p>are the values that variables can assume</p> <p>Each value in the data set is called data value</p>

type of statistics

1-descriptive statistics
 consists of the collection
 organization, summarization, and
 presentation of data
 الاحصاء الوصفي هي جمع وتنظيم
 وتلخيص وعرض البيانات في
 الماضي والحاضر كلمات مصاحبه
 للاحصاء الوصفي - is-was-were-
 average-mean -median -mode
 تاريخ من الماضي -1990-2000-
 2010....

2-inferenational statistics

consist of generalizing and
 hypothesis test,
 determinerelationships
 among variable, and making
 predpiction

الاحصاء الاستدلالي

هو عمليه التعميم من العينه للمجتمع
 في الاحصاء الاستدلالي نقوم باختيار
 الفروض وتحديد العلاقات بين
 المتغيرات ووضع التنبؤات

كلمات مصاحبه للاحصاء الاستدلالي
 soon -maybe-next-can-will
 الحديث عن المستقبل

2020-2100.....

Example

In each of these statements. Tell whether descriptive or inferential statistics

1	In the year <u>2020</u> , 148 million American will be enrolled in an HMO	inferential
2	<u>Nine out of ten one-the-job</u> fatalities are men	descriptive
3	Expenditures for the cable industry <u>were</u> 5.66\$ billion in <u>1966</u>	descriptive
4	<u>The median</u> household income for people aged 25-34 is 35.888\$	Descriptive
5	Drinking decaffeinated coffee <u>can</u> raise cholesterol by 7%	Inferential
6	The nation <u>average</u> annual medicine expenditure per person is 1052\$	Descriptive
7	Experts say that mortgage rates <u>may soon</u> hit bottom	Inferential

type of sample

1-random sample

العينه العشوائيه

all units of
population has
thesame chance
of selecting

تكون فيها كل حاله من
حالات المجتمع لها
نفس فرصه الاختبار
(اختيار عشوائى بدون
شرط)

2-systematic sample

العينه المنتظمه

-فيها يقسم المجتمع
مجموعات عددها يساوى
افراد العينه المختاره

-يتم اختيار حاله من
المجموعه الاولى
عشوائيه فاذا كان تربيتها
Aمثلا نختار حاله التى
تربيتها A

-بعض الكلمات الداله
10th.....seventh

3-stratified sample

العينه الطبقيه

فيها يقسم المجتمع الى
مجموعات غير
متقاطعه ومستقله
تسمى طبقات غير
متداخله طبقا للنوع
(ذكر-انثى) او الجنسيه
(مصرى -سعودى -
هندي)

4-cluster sample

العينه العنقوديه
فيها يكون المجتمع
مقسم الى مجموعات
رئيسيه نختار من
هذه المجموعات
بعض المجموعات ثم
نستخدم جميع
عناصر المجموعه
المختاره

Example

Classify each sample as random, systematic, stratified, or cluster

1-in a large school district , all teachers from two buildings are interviewed to determine whether they believe the students have less homework to do now than in previous year

(cluster)



2-every seventh customer entering a shopping mall is asked to select her or his favorite store

(systematic)



3-nursing supervisors are selected using random numbers in order to determine annual salaries

(random)



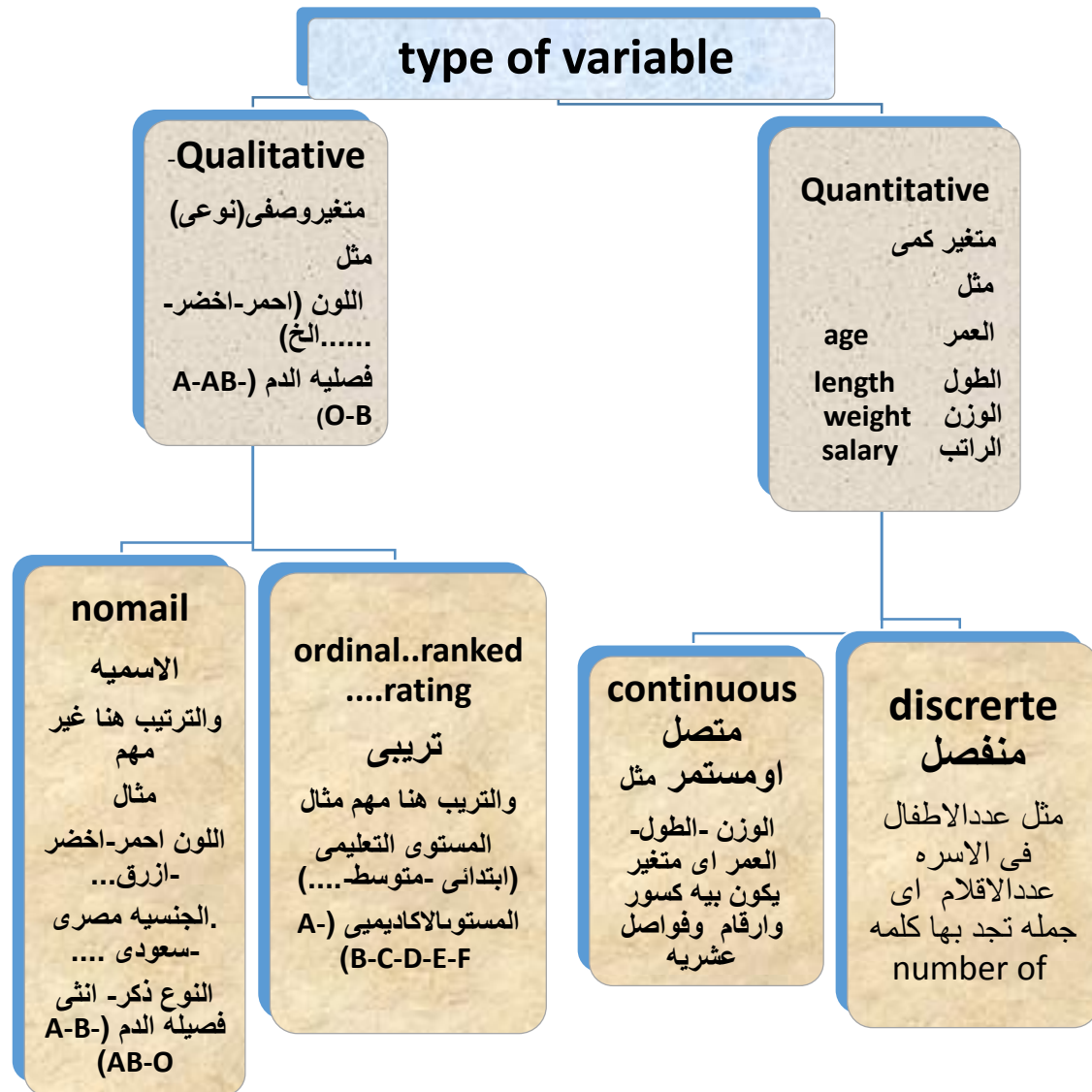
4-every 100th hamburger manufactured is checked to determine its fat content

(systematic)



5-mail carriers of a large city are divided into four groups according to gender (male or female) and according to whether they walk or ride on their routes .then 10 are selected from each group and interviewed to determine whether they have been bitten by a dog in the last year

(stratified)



Ex

Classify each variable as qualitative or quantitative

1	<u>number of</u> bicycle sold in 1 year by a large sporting goods store	quantitative
2	<u>colors</u> of baseball caps in a store	qualitative
3	<u>time</u> it takes to cut a lawn	quantitative
4	<u>capacity</u> in cubic feet of six truck beds	quantitative
5	<u>classification</u> of children in a day-car center (infant-toddler-preschool)	qualitative
6	weights of fish caught in lake George	quantitative
7	<u>marital status</u> of faculty members in a large university	qualitative

Ex

Classify each variable as discrete or continuous

1	<u>number of doughnuts</u> sold each day by doughnut heaven	discrete
2	<u>water temperatures</u> of six swimming pools in Pittsburgh on a given day	continuous
3	<u>lifetime</u> in hours of 12 flashlight batteries	continuous
4	<u>number of</u> cheeseburgers sold each day by a hamburger stand on a collage campus	discrete
5	<u>number of</u> DVD rented each day by a video store	discrete
6	<u>capacity</u> (in gallons) of six reservoirs in Jefferson county	continuous

level measurement of the data

nomail
level data

ex
bloodtype
(A-B-AB-O)
gender
(male-
female)
بيانات اسميه
الترتيب فيها مهم

ordinal level
data

ex
grade of course(a-
b-c-d-f)
rating scale (poor-
fiar-good-
excellent) ranking
of tennis player
وهي بيانات وصفيه
(نوعيه) الترتيب فيها
مهم

ratio level
data

ex
height-
weigt
,age
وهي بيانات
النسبه اى كل
البيانات التى
تحتوى على اعداد
موجبه او صفر

interval level
data

ex
temperature
IQ test
وهي بيانات كميه
تكون فيها الاعداد
الموجبه والسالبه

Ex

Classify each as nominal – level, ordinal – level, interval – level, or ratio – level measurement

1	pages in the city of Cleveland telephone book	Ordinal
2	ranking of tennis players	ordinal
3	weights of air conditioners	ratio
4	Temperatures inside 10 refrigerator	interval
5	salaries of top five CEO in the united states	Ordinal
6	rating of eight local plays (poor, fair, good, excellent)	Ordinal
7	time required for mechanics to do a turn –up	ratio
8	ages of students in a classroom	ratio
9	marital status of patients in physician's office	Nominal
10	horsepower of tractor engines	ratio

studies

observational study

دراسة مشاهده

تتم دون تدخل الباحث مثال عدد
المرضى الذين تم شفاؤهم من
مرض معين
كلمات داله عليه

see-find.....

Experiment study

دراسة تجريبية

يحدث فيها تدخل للباحث في الظاهره
محل الدراسه ثم ملاحظه مدى تأثير
هذا التدخل على النتائج مثال اعطاء
المرضى عقار معين ثم ملاحظه
تأثير هذا العقار على عدد تم شفاؤهم
الكلمات الداله عليه هي

placedon-given

The independent variable or explanatory variable

المتغير المستقل (المؤثر)

Is the one that is being manipulated by the researcher

EX

- Drug
- Method of study

**The dependent variable or outcome variable**

المتغير التابع (المتأثر) وهو ناتج عن المتغير المؤثر

Is the resultant variable

Ex

- Blood pressure
- Level of sugar in blood

Ex

For the following studies, define the type of study, the independent and dependent variable

1-subjects were randomly assigned to two group and one group was given an herb and the other group a placebo. After 6 months, the numbers of respiratory tract infections of the groups were compared

Type of study..... experement

Independent variables.....herb

Dependent variables.....group of subject



2-a researcher stood at a busy intersection to see if the color of the automobile that a person drives is related to running red lights

Type of study.....observational

Independent variables.....researcher

Dependent variables.....



3-a researcher finds that people who are more hostile have higher total cholesterol levels than those who are less hostile

Type of study.....observational

Independent variables.....reseacher

Dependent variables.....



4-subjects are randomly assigned four groups. Each group is placed on one of four special diets- a law-fat diet, a high- fish diet, a combination of low-fat diet and high- fish diet , and a regular diet . after 6 months , the blood pressures of . the groups are compared to see if diet has any effect on blood pressure

Type of study.....expermanet

Independent variables.....type of diet

Dependent variables.....blood presser

Test bank**1. Classify each variable as qualitative or quantitative**

- a. Number of bicycles sold in one year by a large sporting goods store
- b. Colors of baseball caps in a store
- c. Times it takes to cut a lawn
- d. (Classification of children in a day-care center (infant, toddler, preschool
- e. Weights of fish caught in the red sea
- f. Marital status of faculty members in a large university

2. Classify each variable as discrete, continuous, ordinal or nominal

- a. Number of doughnuts sold each day by a doughnuts store
- b. Water temperatures of six swimming pools in Jeddah on a given day
- c. Weights of cats in a pet shelter
- d. Lifetime (in hours) of 12 flashlight batteries
- e. Number of cheeseburgers sold each day by a hamburger stand on a college campus
- f. Number of DVDs rented each day by a video store
- h. Capacity (in gallons) of six dams in Saudi Arabia
- I. Ages of people working in a large factory
- J. Number of cups of coffee served at a restaurant
- k. The time it takes a student to drive to school
- L. Nationality of people who are living in Saudi Arabia
- M. Rankings of tennis players
- N. Weights of air conditioners
- O. Temperatures inside 9 refrigerators
- P. Ratings of eight local plays (poor, fair, good, and excellent)
- Q. Times required mechanics to do a tune-up
- R. Ages of students in a classroom
- S. Levels of services
- T. Number of bags
- u. Classification of automobiles as subcompact, compact, standard, and luxury

3. Classify each sample as random, systematic, stratified, or cluster

- A-In a large school district, all teachers from two buildings are interviewed to determine whether they believe the students have less homework to do now than in previous years.
- B. Every seventh customer entering a shopping mall is asked to select her or his favorite store
- C-Nursing supervisors are selected using random numbers in order to determine annual salaries
- D-Every 100th hamburger manufactured is checked to determine its fat content
- E-Mail carriers of a large city are divided into four groups according to gender (male or female) and according to whether they walk or ride on their routes. Then 10 are selected from each group and interviewed to determine whether they have been bitten by a dog in the last year

4-For the following studies, define the independent and dependent variables

A-Subjects were randomly assigned to two groups and one group was given an herb and the other group a placebo. After 6 months, the numbers of respiratory tract infections of the groups were compared

Independent variables.....

Dependent variable.....

B-Subjects are randomly assigned to four groups. Each group is placed on one of four special diets—a low-fat diet, a high-fish diet, a combination of low-fat diet and high-fish diet, and a regular diet. After 6 months, the blood pressures of the groups are compared to see if diet has any effect on blood pressure

Independent variables.....

Dependent variable.....

5-Determine whether each statement is true or false. If the statement is false, explain why

- A-When the population of college professors is divided into groups according to their rank (instructor, assistant professor, etc.) and then several are selected from each group to make up a sample, the sample is called a cluster sample
- B- The variable age is an example of a qualitative variable
- C. The weight of pumpkins is considered to be a continuous variable



Select the best answer

1-The number of absences per year that a worker has is an example of what type of data

- a) Nominal
- B) Ordinal
- c) Discrete
- d) Continuous

2-A researcher divided subjects into two groups according to gender and then selected members randomly from each group for his sample. What sampling method was the researcher using?

- a). Cluster
- b) Random
- c) Systematic
- d) Stratified

3-Data that can be classified according to color are example of what type of data

- a)Nominal
- b) Discrete
- c) Ordinal
- d) Continuous

4-The number of minutes needed for a student to reach KAU from his home is variable ...

- a) ordinal
- b) Nominal
- c) Continuous
- d)discrete

5-Students' registration numbers (Identification numbers) are example of ... data

- a) Ordinal
 - b) Nominal
 - c) Continuous
 - d) Discrete
-

6-Which of the following correctly describes the relationship between a sample and a population?

- a) A population and a sample are not related
 - b) A sample is a group of subjects selected from a population to be studied
 - c) A sample is a group of populations that are subject to observation
 - d) A population is a group of samples that may or may not be included in a study
-

7-An auto analyst is conducting a satisfaction survey, sampling from a list of 10,000 new car buyers. The list includes 2,500 Ford buyers, 2,500 GM buyers, 2,500 Honda buyers, and 2,500 Toyota buyers. The analyst selects a sample of 400 car buyers, by randomly sampling 100 buyers from each brand. Is this an example of a simple random?

- a) Yes, because each buyer in the sample had an equal chance of being sampled
 - b) Yes, because car buyers of every brand were equasally represented in the sample
 - c) No, because every possible 400-buyer sample did not have an equal chance of being chosen
 - d) No, because the population consisted of purchasers of four different brands of car
-

8-Researchers obtain stratified samples by dividing the population into ...

- a) Subjects
 - b) Groups
 - c) Variables
-

9 .Temperature in Saudi Arabia is a (an) ... variable

- a) Discrete
- b) Continuous
- c) nominal
- d)ordinal

10-Salaries of the staff in King Abdul-Aziz University are a (an) ... variable.

- a) Discrete
 - b) Continuous
 - c) nominal
 - d)ordinal
-

.11-Lifetime of an electronic device is a (an) ... variable

- a) Discrete
 - b) Continuous
 - c) nominal
 - d)ordinal
-

12 - ... A variable that takes whose values in an interval

- .a) Discrete
 - .b) Continuous
 - .c) nominal
 - d)ordinal
-

13-A high school counselor uses a computer to generate 50 random numbers and then picks students whose names correspond to the numbers.

This is an example of ...

- .a) Random sampling
 - .b) Cluster sampling
 - .c) Stratified sampling
 - d)systematic sampling
-

14- Listing discharged hotel customers, numbering the customers and using random number table to obtain sample is an example of ...

- . a). random sampling
 - b).Cluster sampling
 - .c) Stratified sampling
 - D) systematic sampling
-

.Use the best answer to complete these statements

1- Two major branches of statistics are and.....

2- The group of all subjects under study is called a(an).....

3-A group of subjects selected from the group of all subjects under study is called a(an).....