PROBLEMS BY EXAMPLES

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OBJECTIVES

- Variables & data
- Frequencies tables
- Descriptive statistics
- Probabilities

VARIABLES & DATA

5)* A study was conducted to measure the effect of smoking upon the oral cancer. The following variables were measured for each patient included in the study: smoking status (yes/no), number of white blood cells (/L), and oral cancer (present/absent). The scales of these variables are:

a) Nominal, ratio, ratio

b) Ordinal, ratio, interval

c) Nominal, interval, ordinal

d) Nominal, ratio, nominal

e) Nominal, ratio, ordinal

VARIABLES & DATA

6)* All of the following are variables, EXCEPT:

a) Maximum value of teeth for one patient

b) The number teeth extraction during life-time

c) The age of patients diagnosed with oral cancer

d) The number of consultations in a dental office

e) The dimensions of extracted tooth

FREQUENCY TABLES

Absolute frequency

Relative frequency

Diagnosis	No. patients	Percent (%)
Asphyxia at birth	527	26.1
Obstetrical injuries	92	4.6
Septic status	7	0.3
Pneumonia	181	9.0
Diarrhea	8	0.4
Congenital malformations	598	29.6
Other causes	606	30.0
Total	2019	100

FREQUENCY TABLES

The sum of absolute frequencies of all values in the series that are less than or equal to x/n

The sum of absolute frequencies of all values in the series that are less than or equal to x

Diagnosis	**f_a**	**f_r**	**f_a cumulat ↑**	**f_r cumulat ↑**
Asphyxia at birth	527	26.10	527	26.10
Obstetrical injuries	92	4.56	619	30.66
Septic status	7	0.35	626	31.01
Pneumonia	181	8.96	807	39.97
Diarrhea	8	0.40	815	40.37
Congenital malformations	598	29.62	1413	69.99
Other causes	606	30.01	**2019**	**100**
Total	**2019**	**100**		

FREQUENCY TABLES

18) * The statistical series of incubation (expressed in days) for a infecto-contagious disease contains the following data: 7; 3; 4; 7; 6; 6; 4; 5; 3; 7; 5; 4; 7; 6; 2; 3; 5; and 6. The ascending cumulative absolute frequency of 7 corresponds to:

a) 2 days
b) 3 days
c) 4 days
d) 6 days
e) 7 days

FREQUENCY TABLES

16) * The statistical series of incubation (expressed in days) for a infecto-contagious disease contains the following data: 7; 3; 4; 7; 6; 6; 4; 5; 3; 7; 5; 4; 7; 6; 2; 3; 5; and 6. The relative frequency of 0.06 corresponds to:

a) 2 days
b) 3 days
c) 4 days
d) 6 days
e) 7 days

FREQUENCY TABLES

17) * Let be a statistical series with the following data: 40, 60, 20, 20, 60, 80, 80, 40, 60, and 80. The ascending cumulative relative frequency of 0.4 corresponds to:

a) 20
b) 40
c) 60
d) 80
e) None is correct

DESCRIPTIVE STATISTICS

- The following are days of illness in tooth abscesses since consulting a dentist: 1, 3, 5, 4, 5, 3, 3, 3, 3, 5, 5, 5, 2, 3, 4, 3, 2, and 4.
  - Compute for this series the mean, median, mode, standard deviation, variance, range (amplitude) and coefficient of variation.
  - Which of the following parameter characterize better the series of data: median, mean or mode?

PROBABILITIES

11) The following are compatible events (can be achieved simultaneously):

a) A = {Systolic blood pressure < 140 mmHg}, B = {Diastolic blood pressure < 90 mmHg}

b) A = {Systolic blood pressure < 140 mmHg}, B = {140 ≤ Systolic blood pressure < 200 mmHg}

c) A = {Diastolic blood pressure < 95 mmHg}, B = {95 ≤ Diastolic blood pressure < 120 mmHg}

d) A = {Systolic blood pressure < 130 mmHg}, B = {95 ≤ Diastolic blood pressure < 120 mmHg}

e) A = {Systolic blood pressure < 160 mmHg}, B = {135 ≤ Systolic blood pressure < 180 mmHg}

PROBABILITIES

- Let A be the event that the first child in a family with two children has hyperdontia (supernumerary teeth). Let B be the event that the second child in a family with two children to has hyperdontia. It is known that Pr(A) = 0.03, Pr(B) = 0.05 and Pr(A and B) = 0.015. The A and B events are:

a) Dependent

b) Independent

c) Could not be determined based on provided data

d) Mutually exclusive

e) None is correct

PROBABILITIES

A sample of 15 oral cancer-cases and 12 controls, aged between 35 and 45 years old was investigated. 12 of the oral cancer-cases and 10 of the controls had at least one *Capnocytophaga gingivalis* infection (considered as risk factor for oral cancer).

1. Construct the observed contingency table.
2. Identify in the observed table the following values: TP-FP-FN-TN
3. Compute the following parameters: prevalence, probability that a person with oral cancer to had at least one infection with *Capnocytophaga gingivalis*, probability that a person without oral cancer to had at least one infection with *Capnocytophaga gingivalis*, … , the odds of having oral cancer when *Capnocytophaga gingivalis* infection occurred