

INFERENCEAL STATISTICS I: TESTING HYPOTHESIS ABOUT ONE SAMPLE MEAN

Learning Objectives:

- Testing Hypothesis about One Sample Means by using Microsoft Excel:
 - One-Sample Z-Test
 - One-Sample t-Test

Problem

A study was conducted in order to assess two different therapeutic schemas for treatment of ferriprive anemia in newborn child. There were included into the study newborn from rural and urban environments. Two different schema were studied: a daily schema (one a day the mother must to give to her child the treatment, every day on week), and a biweekly schema (in Monday and Thursday mother must to give to her child the treatment). The data from the **Anemia.xlsx** were collected.

A. TESTING HYPOTHESIS ABOUT ONE SAMPLE MEANS: Z-TEST (THE POPULATION MEAN AND STANDARD DEVIATION KNOWN)

It is known that the mean of the haemoglobin of newborn child is equal with 13 mg/dl and the standard deviation is 1.16.

Is the mean haemoglobin level at 6 months for child that follow the daily therapeutic schema significant different from the population mean (13 mg/dl)?

Requests

1. Download the **Anemia.xlsx** file and save it in **Lab09** folder. All the analysis that are conducted in this practical activities are done under assumption of normal distribution of quantitative variables.
2. Create a new sheet named Z-test. Copy in this sheet the value of "Haemoglobin (mg/dl) 6 months" for children that follow the daily therapeutic schema.
3. Create in the Z-test file the following tabular structure:

E	F
One sample Z-test	
H ₀ hypothesis	
H _a hypothesis	
Population mean	13
Population standard deviation	1.16
Sample size	
Standard error of the sample mean	
Z	
alpha	0.05
Probability one-tailed	
Z critical one-tailed	
Probability two-tailed	
Z critical two-tailed	
Statistical conclusion	
Clinical conclusion	

4. By using functions (predefined or defined by you) complete the table with corresponding values.
5. In the same sheet state:
 - a. Statistical conclusion.
 - b. Clinical conclusion.

B. TESTING HYPOTHESIS ABOUT ONE SAMPLE MEAN: T-TEST

It is known that the mean of the haemoglobin of newborn children at 6 month is equal with 13 mg/dl (if they are breastfeed) but the variance is.
 Under assumption of normality, is the mean of haemoglobin at 6 months for children that were breastfeed significant different from the population mean (13 mg/dl)?

Requests

1. Create a new sheet named t-test. Copy in this the value of "Haemoglobin (mg/dl) 6 months" and "Type of milk".
2. Sort data ascending by *Type of milk* and delete data for all patient whose where not breastfeed. At the end, delete the *Type of Milk* column.
3. In the t-test sheet prepare the output table as in the image bellow:

E	F
One sample t-test	
H ₀ hypothesis	
H ₁ hypothesis	
Population mean	
Sample mean	
Sample size	
Standard error of the sample mean	
t	
alpha	0.05
df (degrees of freedom)	
Probability two-tailed	
t critical two-tailed	
Statistical conclusion	
Clinical conclusion	

4. By using functions (predefined or defined by you) complete the table with corresponding values.
5. In the same sheet state:
 - a. Statistical conclusion.
 - b. Clinical conclusion.

C. SUMMARIZING THE RESULTS ON TESTING ONE-MEAN BY POWERPOINT

Create a **PowerPoint show** named TestingOneMean and present the results obtained previously.

Requests

- 1st slide:
 - Title: TESTING HYPOTHESIS ABOUT ONE SAMPLE MEAN USING MICROSOFT EXCEL
 - Subtitle: your first and second name, university, faculty and year of study
- 2nd slide: Outline
 - **Testing Hypothesis about One Sample Mean: Z-test**
 - **Testing Hypothesis about One Sample Mean: T-test**
- 3rd slide: **Testing Hypothesis about One Sample Means: Z-test**
 - Copy the table with the results. Include here also statistical and clinical conclusion.
 - Include also an action button to link the presentation with Excel file. The name of the button will be Z-Test.
- 4th slide **Testing Hypothesis about One Sample Mean: T-test**
 - Copy the table with the results. Include here also statistical and clinical conclusion.
 - Include also an action button to link the presentation with Excel file. The name of the button will be Z-Test.
- 5th slide: **Ending slide.**
 - Include here a picture (search the picture using <http://images.google.com/>).