

PROBLEMS BY EXAMPLES

An anthropometric study was conducted on the newborn children born in 1st Gynecological Clinic in Cluj-Napoca between 1st January and 31 March 2005. The following variables were collected: sex, ethnicity, the living place (rural or urban), weight (g), length (cm), cranial perimeter (cm), and thoracic perimeter (cm). Data were stored into the **Antro.xlsx** Excel file.

Compute for each patient the energy needs (estimated energy requirements based on basic body metabolism, growth and activity; units of measurements kcal). Use the following formula:

$$(89 \cdot \text{weight}[\text{kg}] - 100) + 175$$

Compute descriptive statistics parameters for the quantitative variables.

Represent the relation between thoracic perimeter and cranial perimeter graphically. Interpret the obtained graphic.

Represent each qualitative variable graphically.

Create the histogram for the **Energy needs** variable. Interpret the obtained graph.

Is there a correlation between the Weight of the newborns (grams) and Length (cm)?

Is there a statistically significant difference between the mean of the weight at birth in patients from urban and rural? Use the 95% confidence intervals for mean in order to answer this question.

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Is there a statistically significant difference between the mean of the weight at birth in patients from urban and rural?

State the null and alternative hypothesis. & Interpret the results from statistical point of view

Is there a statistically significant difference between the mean of the male and female thoracic perimeter?

State the null and alternative hypothesis. & Interpret the results from statistical point of view

Is there a significant difference between Body Mass Index of patients from rural compared with the patients from urban?

State the null and alternative hypothesis. & Interpret the results from statistical point of view

The formula for body mass index is:

$$\text{BMI} (\text{kg}/\text{m}^2) = (\text{weight}(\text{kg})) / (\text{height}(\text{m}^2))$$

Is the gender dependent by living place?

State the null and alternative hypothesis. & Interpret the results from the statistical point of view

Is sex a risk factor for underweight?

A newborn is considered underweight if weight at birth is less than 2.2 kg.

State the null and alternative hypothesis. & Interpret the results statistically.