TOPIC: VARIATION;

Objective

To investigate the variation of certain characteristics among students of class M04G

Introduction

Certain characteristic are varied and differed for each person. This might be caused by the genotypes independently, like the blood group, and also caused by both factors; genotypes and the environmental factors, such as skin colors and height. Some of the characteristic have clear different which can be determined in discrete value but some could only be measured as continuous data. In this experiment, a certain characteristics were observed on the students to determine the variation pattern.

Research Question

Which characteristics are determined by genetic factor, by environmental factor, and which are by both (genetic and environmental factor)?

Hypothesis

Type of blood groups, ability to roll tongue, presence of ear lobes, hair color, iris color, left or right handed, and hair colors are determined by genetic factor independently. Weight and height are determined by both genetic and environmental factors.

Subject of Study

20 students of class M04G.

Methods

1. A survey was carried on the 20 students based on certain characteristics
    a) Ability to roll tongue
    b) Presence of ear lobes
    c) Hair color
    d) Iris color
    e) Right or left handed
    f) Weight

g) Height
h) Type of blood group

2. The data was recorded, analyze and summarized.

Results

A. Data Collection

Characteristics	Male				Female				Total			
Ability to roll tongue	Yes		No		Yes		No		Yes	**17**	No	**4**
Presence of ear lobes	Yes		No		Yes		No		Yes	**16**	No	**5**
Right or left handed	Right	**5**	Left	**1**	Right	**15**	Left	**0**	Right	**20**	Left	**1**
Hair color	Black		Others		Black		Others		Black	**20**	Others	**1**
Iris color	Brown		Others		Brown		Others		Brown	**6**	Others	**15**

Table1: The number of students (according to sex) in different characteristic

Blood Group	A	B	AB	O
Number of students	**5**	**7**	**1**	**8**

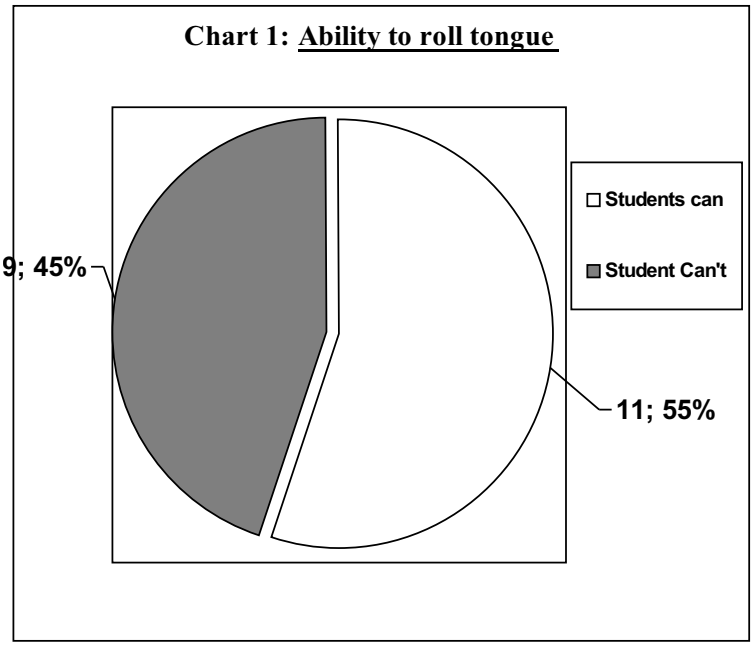
Table 2: The number of students in different blood group type

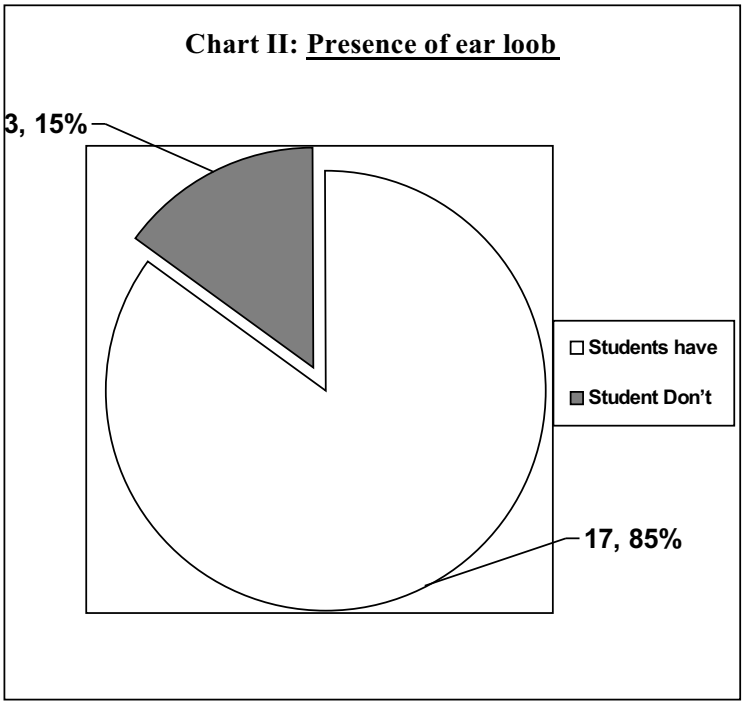
Weight intervals (± 0.25 kg)	Number of students	Height intervals (± 0.05 cm)	Number of students
40-44	1	145-149	1
45-49	6	150-154	4
50-54	5	155-159	5
55-59	5	160-164	6

60-64	4	165-169	2
65-69	-	170-174	2
70-74	-	175-179	1

Table 3: The weight and height of the students

B. Data Analysis





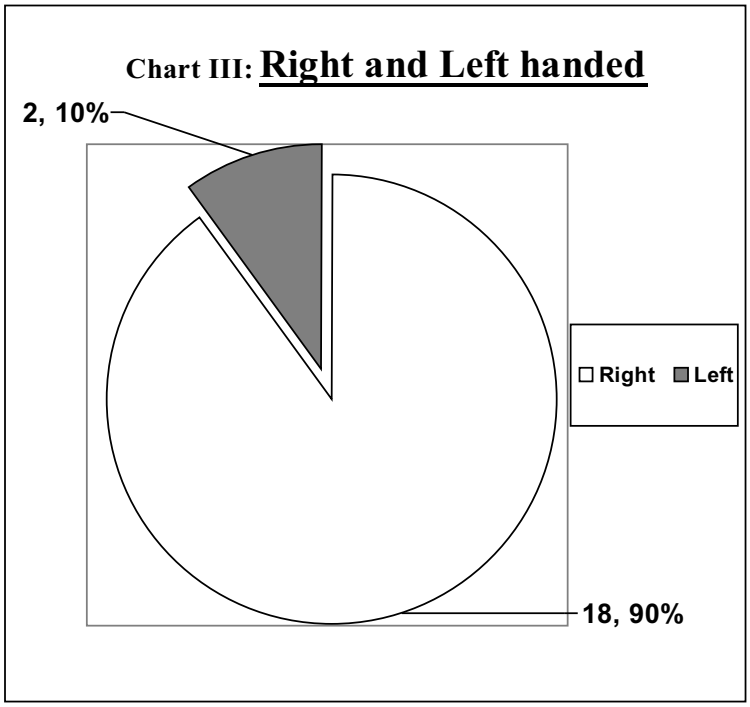


Chart IV: Hair colour

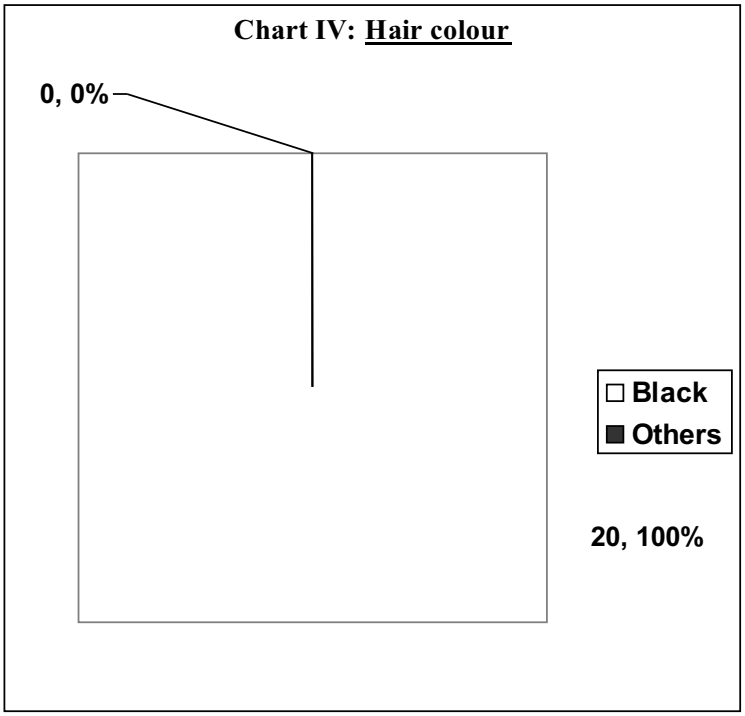


Chart V: Iris Colour

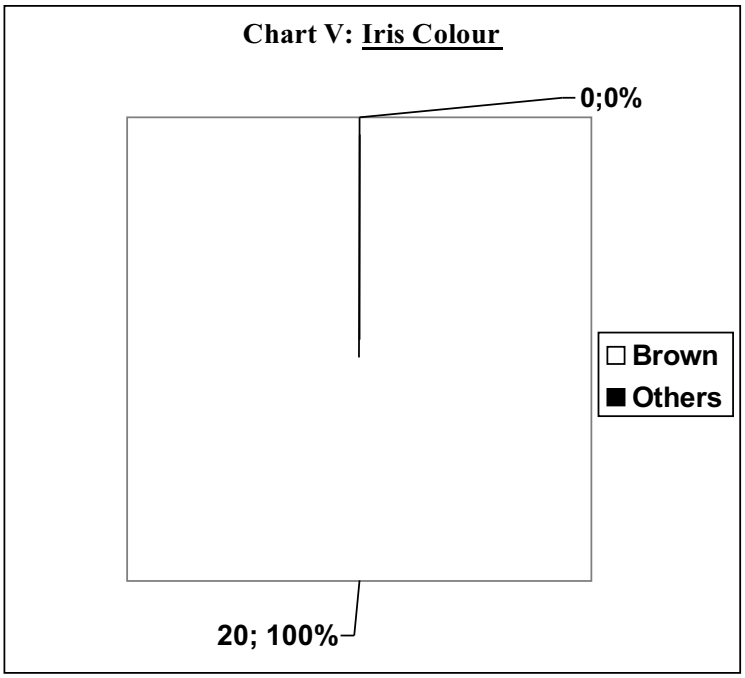


Chart VI: Blood Type

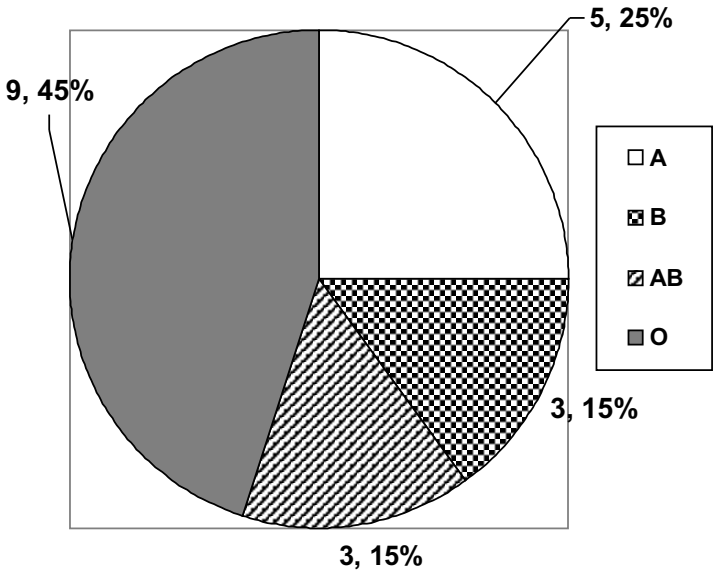
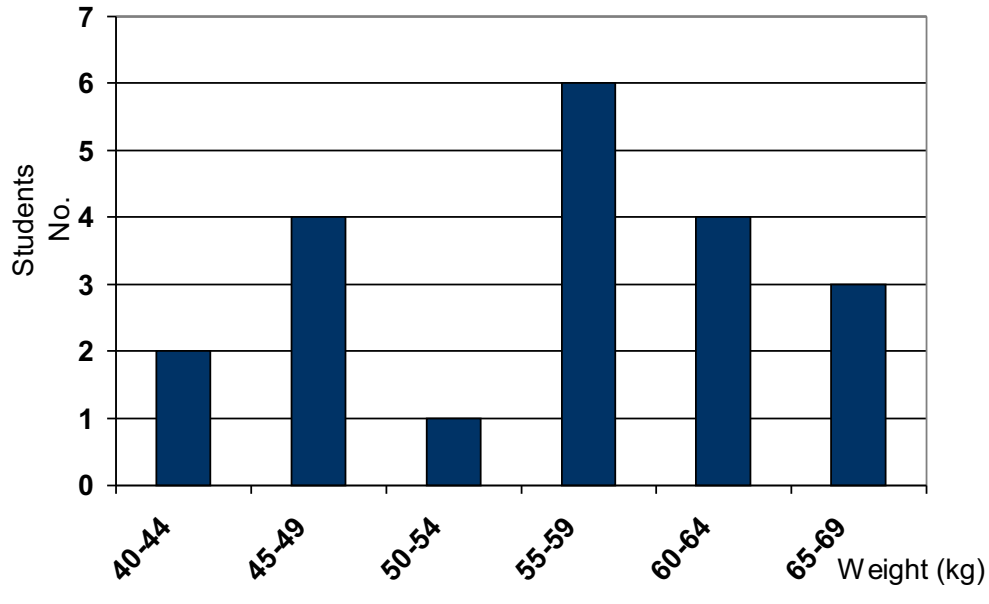
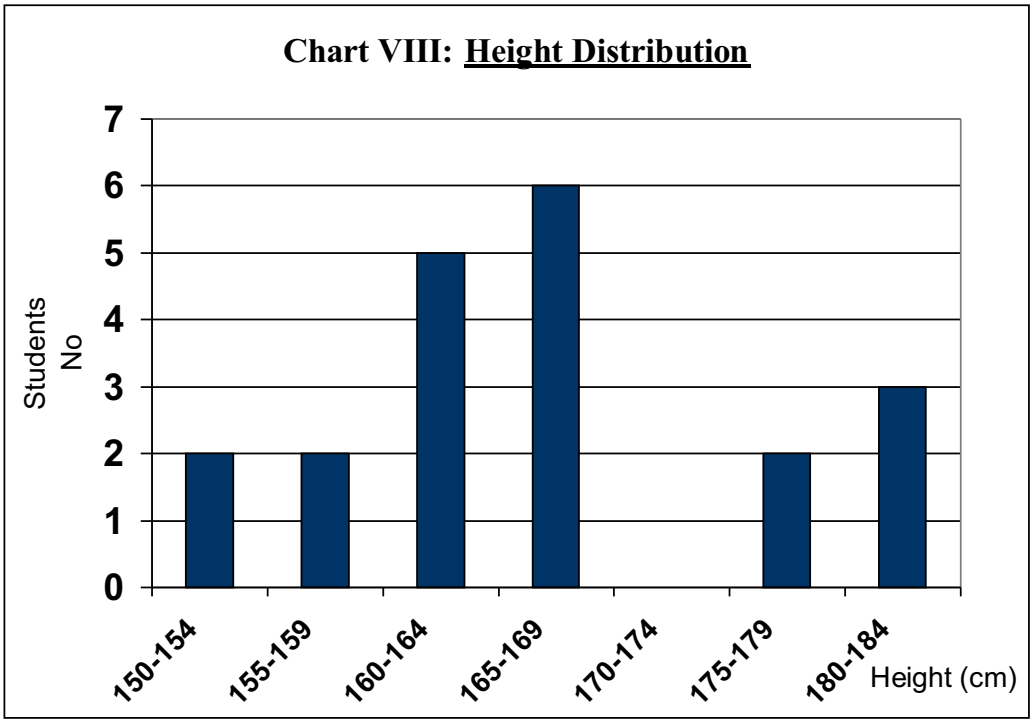


Chart VII: Weight Distribution





Discussion

1. Variation is differences that occurred in members of population. Variation causes differences in human population.

2. There are 2 forms of variations; continuous variation and discontinuous variation.

3. Continuous variation; variation involves a slight difference in characteristics with a broad range with many intermediate values. Example; height and weight.

4. Continuous variation is caused by genetic factor or environment factor of influenced by interaction of this both factor.

5. Discontinuous variation; variation that obviously distinguish and have a few distinct classes. Example; left or right handed and ability to roll tongue.

6. Discontinuous variation is solely caused by genetic factor. There are no environmental influences affecting the existence of this variation in human.

7. The factor which controlled by genetic factor can be inherited but the others factors cannot be passed to the offspring by sexual production.

8. For hair and eyes colour, there is no variation happened within the samples. This due to students/ sample share the same culture and ethnic seems not showing a big difference in variation.

Limitation and Suggestion

1. The sample used is not big enough to show appropriate variation in certain characteristics among the students. The small sample may cause same characteristics varied slightly among the sample. So, it is suggested to take a larger sample to give wider variation. So, the variation can be traced more easily and distinctly.
2. The apparatus and devise used in measuring the weight and height is not precise. The result may not accurate. It is suggested that device should be check and adjust properly. The device also should be in good condition to give appropriate results.

Conclusion :

Variation in human population controlled by genetic factors, environmental factors and interaction of this 2 factors. Students of M04G showed the variation among each other. Hypothesis is accepted