STA305 Mini Project Notes

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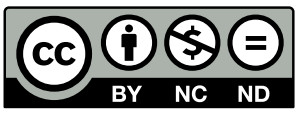


1 First Discussion

Our topic will be "If you shave hair, it comes back thicker." An experiment needs to be carried out with realistic situation and plan. The target population for our experiment design will be the hair on the lower leg of female populations within the age group of 15-49 in the world because males and upper age groups tend not to shave their leg hairs mostly, the sample can be 100 females with different races (sample size). The experimental unit will be the female selected for sample purposes of our experiment. Different treatment for two groups (2 groups):

- Treatment Group: Females shave their lower leg hairs using the razor ;
- Control Group: Females do not shave the hair.

Note that treatment groups and control groups are identical in every possible way, except for the treatment. I.e., minimize the confounding variables.

Questions raised during the beforehand discussion:

1. How do you define "thicker"? Speed of growing, or others?
2. Does the "shave" mean totally shaved, or shave a little bit?
3. Does only nominal variable count as "Factors"?
4. Should we consider the race in our experimental design?

Variables during the experiment: response variables will be (See Question 1), the independent variables will be ages, genders, diet habits, races, ... The response variable is an Objective Response (If we do measurements). The factors of experiment includes: Gender, with levels of males and females; Races, with levels of Black, Caucasian, Asian, Hispanic, etc. The experiment lies under a Between-Subjects design since we only decide about if the experimental unit shaves or not.

We plan to take this experiment as a non-repeated measure design. The nuisance variables might occur in the experiment has:

- Sleeping hours
- Vitamin consumption
- Diet habits

Principles of the experiment:

- Control: We have equally distributed number of different genders, they all have great health conditions, same everyday eating habits, no extra nutritions intake.

- Blocking: We will treat age groups as our blocks, two types of daily pressure (self identified high-pressure, or low-pressure)
- Randomization: After, we randomly assign who have different sleeping habits to different groups because we cannot control or block their sleeping habits.
- Replication: Treatment Level: We take many participants with same races in each group, Experiment Level: We can replicate the experiment in other regions.

1.1 Blinding, by Jiaqi Bi & Lanruo Li

Possible scheme 1: No blindings

Since the researchers and participants both will know if their hairs are shaved obviously, and after one month, researchers will measure the thickness. The measurement is an objective measures, therefore knowing the treatment does not effect the responses.

Possible scheme 2: Single blinding

Our participant is going to know whether he/she is about to take the treatment, i.e., shave their hairs. However, our researchers that are going to measure the thickness will not know whether the participant has shaved hairs before or not because the measurement is a subjective measures, such that if they know the treatment beforehand, it might affect their judgments.

1.2 Balance, by Lei Cao & Le Shen

Our experiment is balanced since there are two treatment groups in our experiment, one treatment group will shave their hair and the other treatment group will not.

Since our sample size is 60, each treatment group will have 30 subjects respectively.

1.3 Some new ideas added by Yuika Cho

Give them same food for each treatment group

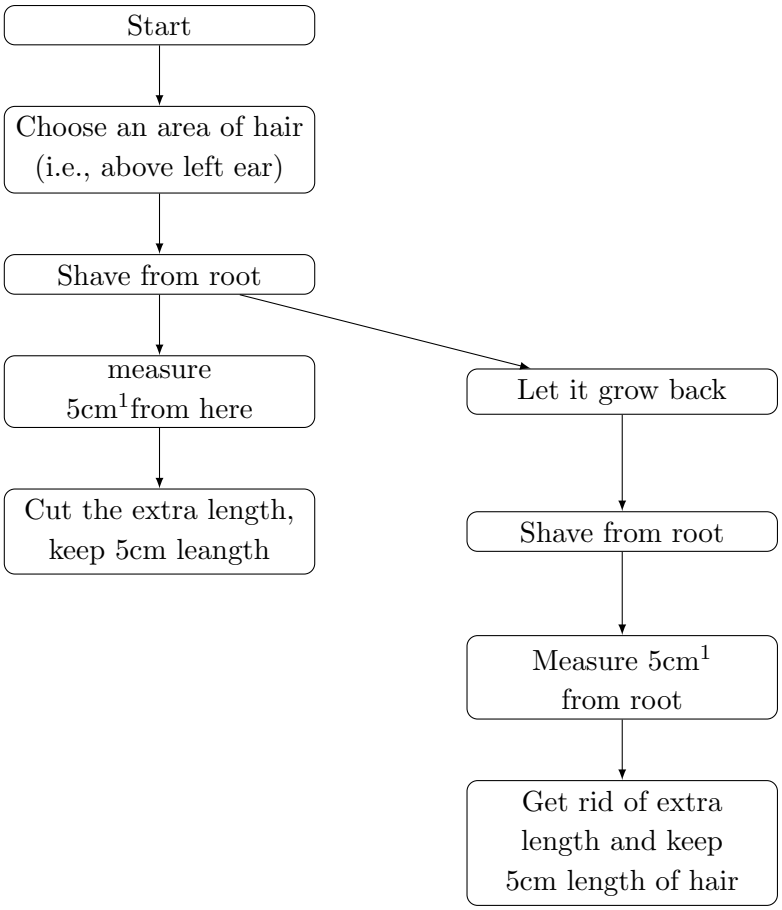
Shave a specific area of hair where hair growth is more consistent comparing to front hairline and vertex (where baldness usually starts to occur)

We can choose hair above one side of ear

Size of the area being shaved (ie. 3 cm by 3 cm)

Length of hair strand: starting from root and measure 5 cm down for both before and after

Before samples: we shave the original hair from the root and keep it with a length of 5 cm After samples: when the shaved area of hair grows back, we do the same thing as the before samples.



1.4 Control & Treatment Group, Mengyu Lei, Yirun Mao

We consider the group of "shaving the hair" to be the treatment group as it is the fundamental of this experiment, and we consider the group of "not shaving the hair" to become the control group to contrast the data between these groups. Because we would like to measure their difference of the thickness. In this experiment, we do not need the placebo since our measurement will be objective. (Or we need the placebo since our measurement will be subjective)

[1]The length is subject to change if males have shorter hair in average

2 Final Draft

Background: Test the effect of the treatment on the thickness of the hair between shaved group and non-shaved group.

Objective: Test whether the hair becomes thicker after shaving.

Limitation: Before the experiment, we cannot control their nutritions intake that it may lead to some biased results.

3 Reminders

Office hours: Thursday 9:30-10:30AM EDT (Toronto Time)

3.1 Work Assign

Jiaqi Bi, Lanruo Li, Yuika Cho: Blinding DONE!

Lei Cao, Le Shen: Balance DONE!

Mengyu Lei, Yirun Mao: Control Group DONE!

~~**Deadline: 8:30PM Wed. (Toronto Time); 8:30AM Thur. (Beijing)**~~

Meeting before office hour: 8:00AM Thurs. (Toronto Time); 8:00PM Thurs. (Beijing)

Deadline of Mini Project Group Work: Before Sunday!