List of Choices for Term Projects

Note: All of the projects will involve data from actual studies. (For some of the choices below you will do your own study.)

1. How is a person’s age related to the ability to maintain one’s balance? Nine elderly (6 men and 3 women) and eight young men were subjects in this experiment. Each subject stood barefoot on a “force platform” and was asked to maintain a stable upright position and to react as quickly as possible to an unpredictable noise by pressing a hand held button. The platform automatically measured how much each subject swayed in millimeters in both the forward/backward and the side-to-side directions when the noise came.

2. An educator conducted an experiment to test whether new directed reading activities in the classroom will help elementary school pupils improve their reading ability. She arranged for a third grade class of 21 students to follow these activities for an 8-week period. A control classroom of 23 third graders followed the same curriculum without the activities. At the end of the 8 weeks, all students took a Degree of Reading Power (DRP) test.

3. Over a one month period two researchers recorded when residents (nearly always men) of the Gwaimasi village in a rain forest in New Guinea left on a hunting trip. One of the foods they hunted was fish, using spears, hooks or other means. Which method resulted in the greatest amount of fish caught? And who were the more effective hunters, the younger or the older tribespeople?

4. The voice parts of a chorus in order from highest pitch to lowest pitch are Soprano, Alto, Tenor, Bass. The first two are typically sung by female voices and the last two by male voices. Is there a relationship between height and voice parts? The data is the self-reported heights to the nearest inch of each singer in the NY Choral Society.

5. Cuckoos are strange birds in that they lay their eggs in the nests of other (host) birds. The eggs are then adopted and hatched by the host birds. Is the species of the host bird related to the sizes of the eggs the cuckoos lay?

6. Management of the growing mustang population on federal lands has been a controversial issue. A suggested method for controlling overpopulation is to sterilize the dominant male in each group. An experiment was conducted to evaluate the effectiveness of sterilizing the dominant males as a way to reduce foaling (birth) rates in Herd Management Areas in northwestern Nevada and southeastern Oregon. The variable to be compared between the groups of horses containing a sterilized male (treated groups) and the groups without a sterilized male (untreated groups) is the number of foals per 100 adults in each group.
7. Does increasing calcium intake reduce blood pressure? Observational studies suggest that there is a link, and that it is strongest in African-American men. Twenty-one African-American men participated in an experiment in which ten of the men took a calcium supplement for 12 weeks while the remaining 11 men received a placebo. Researchers measured the blood pressure of each subject before and after the 12-week period.

8. Four measurements were made of male Egyptian skulls from five different time periods ranging from 4000 B.C. to 150 A.D. Researchers wished to determine if there are any differences in the skull sizes between the time periods. The researchers theorize that a change in skull size over time could provide evidence of the interbreeding of the Egyptians with immigrant populations over the years.

9. Have you ever tried to visualize an object by fusing the images in random dot stereograms, such as the one shown below? Both images appear to be composed entirely of random dots, however the fused image shows a 3D picture of a diamond. The way to fuse the images is to fixate on a point between them and defocus they eyes, but this technique takes some time and effort. An experiment was performed to determine whether knowledge of the form of the embedded image affected the time required for subjects to fuse the images.

10. Is it possible to increase rainfall in a given area by using cloud seeding? Although seeding has been used for many years, the question of its effectiveness remains controversial to this day. In the experiment involved here, clouds were randomly seeded or not with silver nitrate and the resulting rainfall amounts from the clouds were recorded. *You will need to see me for special (but relatively simple) instructions for handling the data for this problem.

11. Have you ever had your %body fat measured? The questions in this data set are: (i) how are peoples’ body fat percentages related to their ages, and (ii) is there a relation between body fat percentage and height?

12. We all know that men tend to be bigger than women. The same is true for most but not all animal species. For instance, the average adult male gorilla weighs 800 lbs while the average adult female weighs only around 200 lbs. But how does it go for abalone? The variables here are the diameters, lengths and heights of the abalone specimens.

13. Does a football filled with helium tend to travel farther when kicked than one filled with ordinary air?
For the following projects you will need to collect your own data:

14. Obtain volunteers one by one (the sample), and have them stand at a certain point and estimate the distance (number of steps it will take them to walk) to a certain point in the distance. Then have them walk it and count the steps. Compare their estimates to their actual counts. Before doing the experiment, see if you have a feeling about whether your subjects will tend to underestimate the actual distance or overestimate it. If you don’t have a strong opinion that’s OK too.

15. Design two versions of a paper helicopter (I will provide templates), drop them repeatedly from the same height, and compare the descent times of the two designs.

16. Compare the average length of sentences, or words, in randomly chosen passages from the works of two different well known authors.

17. Ask women at the student union (for example), “On a scale of 1 to 10, how likely would you be to accept if you were approached by a male stranger and invited to have a drink?” For some of the women, say “…if you were approached by an attractive male stranger…”

18. Ask other students either: (1) On a scale of 1 to 10, how likely would you be to recommend the counseling service for a friend who was depressed? or (2) On a scale of 1 to 10, how likely would you be to go to the counseling service if you were depressed?

19. Ask friends and other students how persuasive, on a scale of 1 to 10, they find a particular argument from a textbook (say, a history book). For some subjects present the argument with a table of supporting data, for other subjects present the argument without the table.

20. If one or more of your group works at, say, a fast food outlet, you could study the effect of two choices of wording on what people will order. For example, a group member who works in an ice cream shop could ask customers ordering an ice cream cone (1) whether they want a regular cone or waffle cone or (2) whether they want a regular cone or freshly made waffle cone.

Or:

21. Come up with your own project idea and bring it to me for approval. The problem must be interesting, it must involve a comparison between two groups of a quantitative variable, and it must not have an obvious answer (e.g., do men weigh more than women).