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CSCI 497H / 597H
Assignment 4 - Experiment Design

Subject:
I.   The audience for our Sci-Fi adventure game are targeted towards Twitter users and gamers. Since our game requires tweets, the user must be active on Twitter in order to send actions for the bot to perform in-game. Also gamers who enjoy playing text-based space adventure games with a democracy system would enjoy playing this game similar to the concept of Twitch Plays Pokemon.

II.   We used the cluster sampling technique since this game can be accessed anywhere as long as the users establish a connection onto Twitter. The clusters are divided into cities of where the subjects were currently located during the time when we interviewed them. This gives a more realistic sampling of the subjects who will play the game since the game is not restricted to a local area. And the sample population can theoretically be anywhere during the time when they are using our system.

III.   We only want to include Twitter users, and exclude people that don't use Twitter.

Variables:
I.   Dependent variable : User interaction of the game via commands/tweets sent.

II.   Independent variable : The quantity of tweets/posts the bot can send. The bot's ability to be aware of no incoming tweets.

III.   Control variable : All users will play the same game with the same functionalities.

Hypothesis:
I.   We are trying to learn if playing our game will lead to the increased use of Twitter. Our hypothesis is that if a user starts playing our game, their overall Twitter usage will increase. This can be measured by the amount of tweets divided by the average duration between the tweets over a day.

Experiment Design:
I.   We will use the counterbalance technique for our experiment.

II.   Users in group A will play our game, while the users in group B will not. After three days the users will swap. That is that the users who were playing our game will no longer play, and the users who weren't playing will start.

III. A group size of 10 each should be very manageable, but could possibly yield less conclusive results. Ideally we could have 100+ users in each group, but that would be very difficult to get that many users.

IV. We plan to measure the quantity of tweets and the duration in between them for each group.

V. This technique was chosen because it will give us a baseline for comparison, and a possible example of growth/decline of the groups changing scenarios.

Data Analysis:

I. Because we have a sample size less than 100 and don't know σ, we plan to use the t-test.

II. Our null hypothesis (H_0) is that the game *will not* affect the amount of Twitter usage. Our alternative hypothesis (H_1) is that the game *will* affect the amount of Twitter usage. Our confidence level (α) is 0.05, or 95% accuracy, while our degrees of freedom (df) is 20 subjects - 1, or 19. S will need to be calculated, but will be based on the "number of tweets" / "duration between tweets." Where the duration is an average of each of the durations between tweets throughout the day.

Actual Experiment:

Our actual experiment will be the same as described above, except with less subjects. The experiment will be conducted in the user's environment since they can access the game whenever they want. This provides an accurate usage of our system as the user will be comfortable when using it on their own time and terms. The main disadvantages would be not getting their immediate reaction to the game along with enforcing the usage of our system (i.e. they can't be made to play the game while in that experiment group). We will collect the data from Twitter because the API provides the timestamps along with each tweet the user sent (either for the game or otherwise).