Causal Inference Essay 2: Experimental Research Proposal
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Research Question: Does giving reminders have a causal relationship to completion of a task?

Research Motivation: After virtual semester became a reality, I've been spending more time trying to figure out ways that will assist boost productivity, focus more on the current tasks, and further efficiently complete tasks within a limited environment. One solution was to set calendar reminders that would remind me of a deadline 5 days and 3 days in advance. Through these frequent reminders I aimed to constantly nudge myself of existing tasks, approaching deadlines, and thus be able to find time on completing a task faster, with efficiency. However, is it really the case? On the flip side of reminders exist possibilities of interfering on focus, making people anxious, and thus may result in less productivity. In order to solve this curiosity, I would like to conduct an experiment that tests whether or not there is a causal relationship between reminders and completion of a task. Experiment related to this topic will not only give me an insight into options in efficient time management and task completion, but also help the initial research and brainstorming on my capstone project that will focus on attention allocation and productivity for students and young professionals.

Research design: The experiment will be all done via online for 2 weeks. Considering the current pandemic and social distancing protocols, recruitment of subjects will be conducted through social media and further communication and management done via slack. The demographics of subjects will mainly be college students who are virtually taking an online semester or young professionals who work from home – since these groups of people share common challenges that I've been having of completing tasks remotely and having to self manage their schedules.

The number of people recruited will be at least 100 which will further be randomly divided up into smaller groups so that the experiments are done in a manageable size. Blocking will be considered between young professionals and university students since the two groups' daily schedules are slightly different and could become an underlying factor for the experiment if not blocked(young professionals have a set 9 to 5 working hours while students have a more flexible schedule throughout the day). Clustering will not be needed because it is easy to assign a treatment to an individual thus group assignments will not be needed.

After recruitment and blocking, each group will be randomly assigned to a treatment or a control group. The randomized selection will be done through shuffling via excel sheet or any other software program. The treatment group will further be invited into a slack channel where after they get their task, will start getting daily reminders on the due date. The control group will also be invited to another slack channel, but there will be no daily reminders – just an announcement at the beginning of the experiment that there is a deadline two weeks away.

There will be possible variations of the kind of tasks that are given to an individual. Two groups will get a creative task(i.e a subjective task that asks for creativity and opinion such as a philosophical essay), the other two groups will get a relatively more objective task that seeks for a hard answer(i.e. Mathematical, grammar, or coding). Who gets a creative task and not, will also be randomly selected. Variation of tasks is an effort to eliminate the underlying factor of individuals' preference of either creative task or objective task.

Experiment Outcome: The main outcome this experiment aims to collect is whether or not the task given was completed. Secondary outcome measures and covariates could be the quality of the task completed – how well were the tasks done, and conducting after-experiment surveys to collect data on how each subjects were able to allocate their attention and hours on completing a task and their emotional changes. These measures will enable further studies that expand from this experiment – on whether or not reminders actually have an effect on people completing a task on time, with quality.

Challenges: While the experiment will be designed to eliminate possible underlying factors as much as possible, it will still exist. The randomized assignment will not be able to randomize between people who are intrinsically motivated to complete a task and those who are not. There is a possibility that more motivated people are assigned to either the treatment or control group which will affect the outcome measured. Moreover, an individual's familiarity to the subject of a given task also will be something that we won't be able to account for. The level of given task(s) will be all different for individuals and this will further may play as a factor on the completion of task(s) for subjects. Moreover, since the experiment will be conducted via Slack there will also be peer pressure that other participants may be completing a task which could be a factor on completion of a task.

In order to identify details of these challenges and the level of tasks given to the subjects, a pilot study will be done through a small group of students that will be

recruited within current MIMS community. The time spent for recruitment will be faster than recruiting from the general population.