Data Science for Social Impact
Assignment 1: Randomization

Tong Jin
NYU Steinhardt A3SR
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Memorandum
To: "We Love Kids" TV Program Director
From: Tong Jin
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Subject: Strategies for Program Impact Assessment

I write to suggest using randomized selection process for determining group of students who will be offered our TV programs. I also highlight some key features in the process. Moreover, I address ethical and practical concerns related to the selection procedure.

Randomized selection process is to randomly pick up students from different classrooms into two groups. These two groups have similar number of students. Students have similar characteristics between groups. We offer the TV program only to one group while keeping the other as reference. There are several advantages of applying randomized selection. Unlike assignment, randomized selection does not include selectors' subjective preferences. Nor does it include any favoritism in terms of group selection. This ensures the baseline of the assessment to be well balanced and the assessment results to be fair. Moreover, with assurance of fairness, the assessment can be validly implemented. We can also claim the assessment results with confidence.

I notice that there exist ethical concerns related to the implementation of randomized selection. People are concerned that if we offer the TV program only to half of the student population, those who are not enrolled in would feel disadvantaged. I believe that the correctness of this statement is solely based on the assumption that being offered the TV program is a benefit, that the program is beneficial to those who are enrolled in. To address this, we need to implement alternative strategies in terms of assessment design in order to expand the benefit of taking the program to all students. One solution is to offer TV programs to all participating students at the same time. Students are told that they are all selected to the program. Those who are not actually selected are offered with a different TV program which content has

less or no impact on the results of this assessment. For example, a group of students is offered We Love Kids while the other is offered the Animal World. In this way, all students have the feeling that this assessment is a benefit to them. The morality of this assessment will then be ensured.

Another concern lies on the cost of randomized selection. I agree that implementing a randomized selection cost more than select-by-classroom approach. However, practically, the amount of the increased cost is controllable. Similar to the assignment approach, randomized selection method fully utilizes the convenience of established class schedule, preschool infrastructures and human resources. The only addition is the cost of forming students into two new groups. I believe this cost is reasonable. Moreover, I also believe this is a good investment because randomized selection gives more accuracy assurances to the result than any type of preferred selection methods.

Furthermore, there is a concern about whether we should provide additional contents to students who are not selected. First, I think that giving a different program to students who are not selected would ease their moral stressfulness as being disadvantaged. Moreover, offering programs to both groups would benefit all students, including those who are selected, because the balance of learning path between two groups would not be disturbed by the assessment.

Second, I do agree that offering programs to students who are not selected would challenge the accuracy of the results. The impact assessment is largely based on students' performance difference whether or not they are offered the program. The results will somewhat weaken if we offer programs to both groups, given that the one to the non-selected group is irrelevant to the assessment. Another reason is that the irrelevance of two different programs cannot be easily concluded. Many "irrelevant" TV programs targeting 3 to 5-year-old kids contain instructional contents that are influential. If we choose these programs as alternative references, we cannot confidently claim the impact of our program based on the results.

Therefore, I suggest we use randomized selection process to determine student groups. I also recommend we implement a well-balanced assessment strategy that covers both the ethics and the accuracy of impact assessment.

We will further discuss this in our next meeting.