PART B

CAUSAL ANALYSIS: DOES SEX EDUCATION REDUCE STUDENTS' ATTITUDES OF RAPE CULTURE?

1. INTRODUCTION

This study aims to find a causal relationship between a progressive sex education program and rape culture attitudes. We hypothesise that enrolling in sex education will decrease the level of rape culture attitudes.

The intention behind this study is driven by the alarming increase in sexual violence and abuse in Indonesia's education systems (eg. high schools and universities) (Harsono, 2022). Sexual violence and abuse have become more prevalent not only in the physical form (eg. rape, unwanted touching, etc.) but also in digital form (eg. leaking nudes). Given the sensitivity of these problems, it becomes very complicated to gather data on each of the following types of sexual abuse and violence. Resultantly, this study will instead focus on the root of the problem: rape culture. Rape culture allows these problems to repeat and exacerbate harm to victims.

This study was inspired by a 2018 paper by Santelli et al., "Does sex education before college protect students from sexual assault in college?" and aims to find similar conclusions in terms of rape culture attitudes.

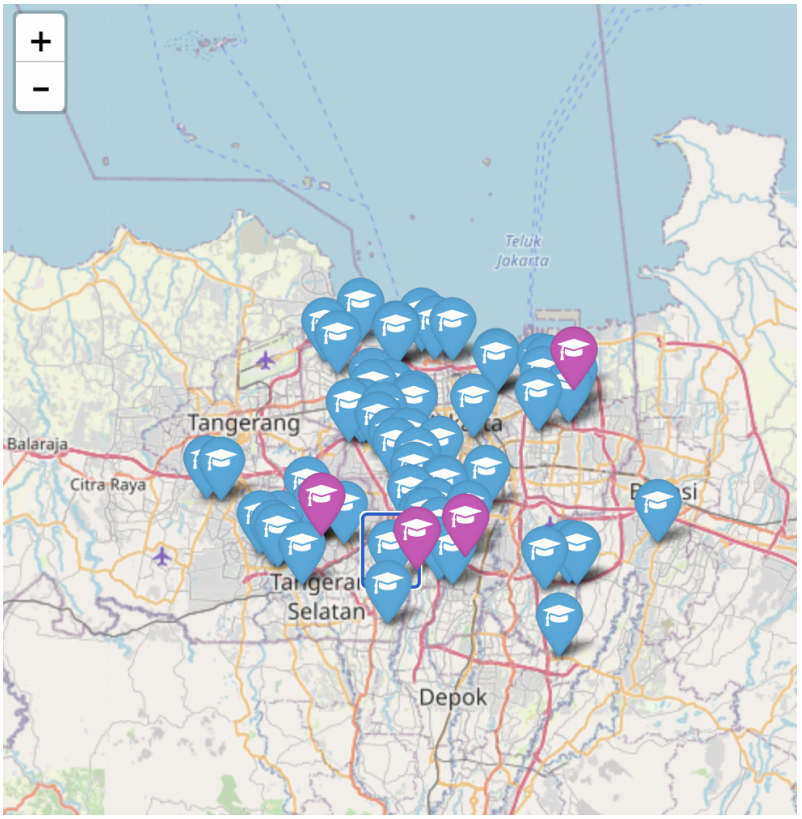
2. METHODOLOGY

2.1 Selection of study groups

This study will be using students from grade 11 from international schools in the province of DKI Jakarta. According to the International Schools Database, there are 52 international high schools in Jakarta, of which (assuming that all consent to this study) 26 will be in the treatment group and the other 26 will be in the control group. Their assignment to treatment and control will be based on a non-random criterion of availability. We expect that not all the schools will consent to adopt sex education into their curriculum even though they might consent to be in the controlled group given that sex is a taboo topic for many traditional Indonesian families.

Image: Map of International High Schools in Jakarta

(International Schools Database)



The reason behind implementing sex education only for students in international schools is that these schools have similar demographics (e.g. parental income of students, curriculum enrollment, the number of students per class, and the annual rate of these schools) thus schools will have students with similar baseline characteristics. Furthermore, we will only be implementing this study for those in grade 11 so that units will be more similar in age and thus serve as a better counterfactual for each other. Lastly, we avoided using public school students as our study groups since public schools are more vulnerable to government funding and regulation, and the demographics are more varied in comparison to private schools.

2.2 Data collection

I. Research Question and Variables

A. Research Question

Given the non-random assignment of treatment and control groups, we will be conducting a difference-in-difference(DiD) experiment to answer the research question: How does sex education affect rape culture attitudes among students at the school level?

B. Dependent Variable

The dependent variable is attitudes towards rape culture. This will be measured by the survey given to students. The survey aims to ask relevant questions that would strongly reflect the attitudes of students concerning rape culture. These may include, but are not limited to:

1. Prevalence of rape culture attitudes
2. Attitudes towards consent
3. Knowledge about sexual health
4. Perceptions of sexual violence
5. Perceptions of victim blaming and passive bystander

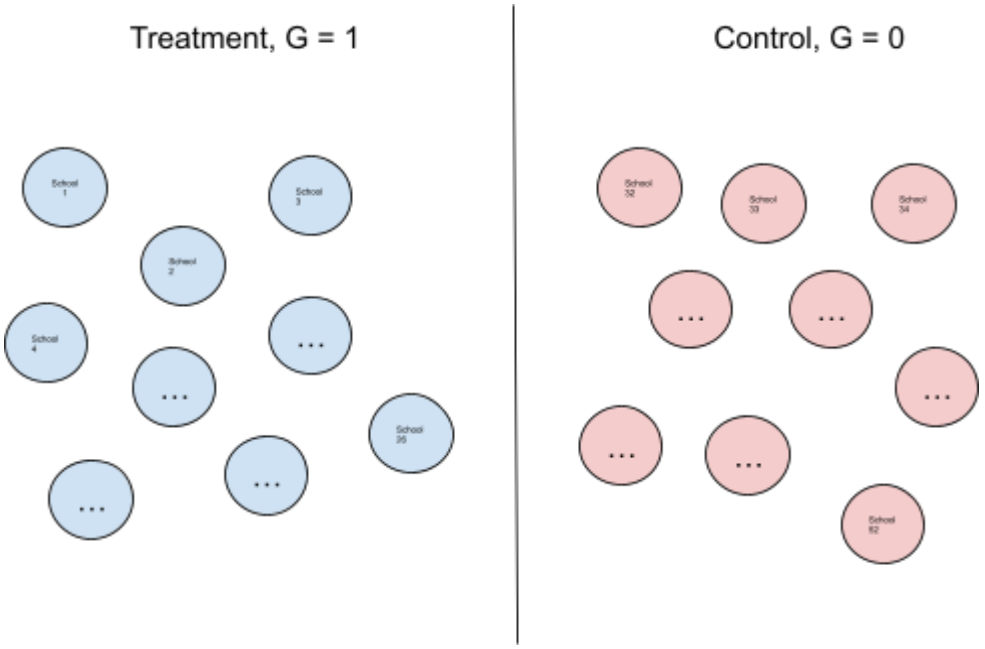
The survey will adopt a five-point Likert scale with response categories ranging from strongly disagree (1) to strongly agree (5). This will be converted to a continuous variable, Y_i, in which we take the average points of all the students in a school (strongly disagree is 1 point, disagree is 2 points, up until strongly agree with 5 points).

C. Treatment Variable

The treatment variable is a binary variable to whether or not a school adopts the sex education program into their grade 11 curriculum. This means that all treatment schools will have to include one session of sex education class per week, which will run over the course of nine months.

The diagram below assumes that all 52 schools consent to this quasi-experiment, meaning that all the treatment schools consent to adopting sex education into their curriculum and having their students surveyed and all the control schools consent to have their students surveyed. Additionally, this model also assumes that if the school consents to the treatment, then all the students in grade 11 will be enrolled in the sex education program. Any failures to satisfy this assumption will be addressed in the evaluation point.

Diagram 1: Treatment and control groups



II. Data collection methods

We will be conducting survey experiments to measure the outcome variable. All students in the experiment will be required to fill out the survey pre-treatment, around the first week of school, and post-treatment, around the last week of school.

As previously said, the outcome variable will be measured by a Likert scale. The survey will also include questions relating to possible time-varying confounders which will be further explored in part three.

Lastly, to analyse noncompliance among students, the survey will ask whether or not the students are enrolling in sex education beyond our curriculum and the absenteeism rate in sex education classes throughout the year (the latter will be asked only at t = 1).

2.3 Analysis: Difference-in-difference

A. DiD Regression

To measure the causal effect of sex education towards students' attitudes toward rape culture on a school level, the experiment will conduct a difference-in-difference estimation. The reason is that the experiment only has two time periods and a binary treatment variable. We will calculate the DiD estimate using the following regression:

$$Y_i = \mu + \gamma G_i + \delta T_i + \tau G_i T_i$$

Table 1: Elements of regression

i	Units within the groups, which will be schools
Y_i	Outcome variable, attitudes to rape culture
μ	Error term
γ	Gamma coefficient which measures the difference in the outcome variable between the treatment and control group at T = 0 (i.e., pre-treatment)
G_i	A dummy variable indicating whether unit i is in the treatment or control group. G = 0 refers to schools with no treatment and G = 1 refers to schools with treatment, sex education.
δ	Delta coefficient which measures the difference in observed outcome for the control group between pre- and post-treatment
T_i	This is a dummy variable indicating whether unit i is observed in the pre- or post-period. T = 0 is the first day of grade 11 and T = 1 is the last day of grade 11.
τ	The difference-in-difference estimate, which measures the causal effect of the treatment to the dependent variable. In other words, it measures the causal effect of sex education to rape culture attitudes among students at the school level.

3. EVALUATION

3.1 Internal Validities

I. Parallel Trends Assumption

A DiD experiment requires that the parallel trends assumption is met. To investigate this, we will conduct a placebo difference-in-differences test. This can be done by surveying the students before the first day of grade 11, t = -1, which ideally would be when students are in grade 10. Furthermore, we will also need to check if the assumption has been violated by time-varying confounders or attrition.

A. Time-varying confounder

Possible time-varying confounders in this study include socioeconomic status (parental income), exposure to social media, religious and political beliefs, and exposure to the news.

To solve this, we will combine DiD with matching, whereby we restrict our sample to only control and treatment units that are similar to each other in terms of pretreatment characteristics. This is possible given that most students will already share similar baseline characteristics. Moreover, the survey will adopt relevant questions(e.g. enquire on religious and political beliefs) to take account of the possible time-varying covariates.

B. Attrition or sampling differences

Attrition could occur when students move schools or drop out of the program mid-way (possibly due to parental concern) or when a school drops out from the experiment mid-way. We can expect attrition to occur minimally as international eleventh graders most likely enrol in a two-year curriculum such as A-levels or the IB. Thus, since attrition occurs minimally, we can conduct a balance test for periods 1 and 2 between controlled and treated units. This assists in identifying attrition patterns between the two groups.

II. The Ethics of Experimentation

Ethics will most likely be of concern in this experiment, given that rape culture is a very sensitive and taboo topic in Indonesia. To ensure that the experiment will be conducted ethically, we will need to check the following: Firstly, we will need full and informed consent from schools (i.e. principals or headmasters), parents of students, and students themselves. This would need thorough consultation with teachers, parents and students regarding what the program entails and what its aims are. Secondly, all the data collected will be fully anonymised, including the school names. Lastly, to minimise the harm in the experiment, the control group should not be left worse off than they would have been outside of the experiment. This could be done by administering the treatment in two phases, where the controlled schools will eventually receive sex education after $t = 1$.

3.2 External Validities

There are three ways to ensure that the study is externally valid. Firstly, the study uses representative samples. This might not be the case since international schools are not representative of all Indonesian schools as it does not take into account public, Islamic, or other religion-based schools.

Secondly, the study uses representative experimental settings. This might vary in the real world as some countries such as the Netherlands introduce sex education from the age of

four whereas other countries introduce sex education from a certain age or do not have sex education at all. Nonetheless, the implementation of the treatment as part of the schools' curriculum is a realistic approach to sex education.

Lastly, there should be no impact of being studied or the "Hawthorne Effect". The best way to approach this issue is to introduce the experiments to students without specifying the exact outcome variable (i.e., rape culture) as the aim of the study. However, this would sacrifice the ethics of full and informed consent. A possible way to get around this is that given students are below 18, parental consent would be an adequate substitute.

3.3 Reflection: Strengths and weaknesses

Throughout the previous points, we found the following strengths and weaknesses: For strengths, we found that the experiment can achieve parallel trends assumption for both time-varying confounders and attrition. Secondly, the experiment can also achieve full and informed consent from participants, the anonymity of participants and ensure that the control group is not left worse off. Lastly, the experiment can be said to achieve high external validity when it comes to having realistic experimental settings.

Nonetheless, there are some drawbacks to consider. Full and informed consent from students may be sacrificed to ensure the 'Hawthorne effect' does not occur. Additionally, students in international schools may not be representative of students in Indonesia or worldwide as it only makes up a small portion of students in the country and the global student population. Lastly, there is a big likelihood that the process of earning consent from parents will be extremely hard as rape culture is an extremely taboo topic in the country and also from principals as it may taint the school's reputation.

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