

# Probability and Statistics Project

## Project Topic

In this project, you have to design your own small study where you think about/ask a question for which you can collect data and for which a hypothesis test would be appropriate.

- **Project Topic** You are free to choose your own questions. Given that we have a very short window for data collection, it is important that the question is more relevant to target respondents. The topic must be so that it will be straightforward to gather sample data. For example, you might strongly feel that most of Ashoka students are happy with **Absolute Grading in their Courses** or **Not-compulsory Class Attendance Policy**.
- **Teams:** For the class projects, you will work in groups of 3 members. It is up to the members of the group to make sure everyone contributes equally. Teams should be formed by tomorrow, November 25.
- **Submission Guidelines:** You must upload the following as part of your project submission:
  1. Sample Data (without the respondent identities).
  2. Code(s) that you have used for analysing the collected data.
  3. A 2-3 page report. The report must adhere to the format given below.

## 1 Report Format

### 1. Project Topic

- Statement:
- Null Hypothesis  $H_0$  :
- Alternate Hypothesis  $H_1$  :

### 2. Data Collection: Provide information on the following:

- How did you collect data? Give link of the online form that you might have used to collect data. If you have used printed forms to collect data in person, share a soft copy of the same.
- **Randomness of Sample:** This is the most important step in your study as it emphasises on the importance of drawing a near random sample from the population. Discuss what strategies your group adopted to ensure that the sample data collected is close to random, and remove obvious biases. For example, with respect to the no-compulsory-attendance-policy, you must ensure that your sample data should not

have majority of responses coming from a specific major while your hypothesis is about the Ashoka students in general.

While class assignments are usually beyond the purview of IRB, it is still advisable that you refer to these guidelines (<https://ashoka.edu.in/page/institution-review-board-39>) while preparing for your data collection.

- You might also want to plot a summary of the data that you have collected.
- Discuss what method you have used to accept/reject  $H_0$ . In particular, prepare and share the statistics and other quantities that you have computed in reaching a conclusion using a table such as the following:

Sample Statistics 1 (? $\bar{X}$ )	Sample Statistics 2 (?)	Sample Statistics 3 (?)	$p$ -value	Significance Level	Power of Test	Accept or Reject
				90%	?	?
				95%	?	?
				?	?	?
				?	?	?

