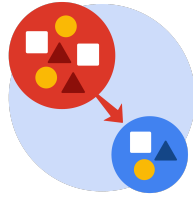


Course Four

From Data to Insight: The Power of Statistics



Instructions

Use this PACE strategy document to record decisions and reflections as you work through this end-of-course project. As a reminder, this document is a resource that you can reference in the future, and a guide to help you consider responses and reflections posed at various points throughout projects.

Course Project Recap

Regardless of which track you have chosen to complete, your goals for this project are:

- ☐ Complete the questions in the Course 4 PACE strategy document
- ☐ Answer the questions in the Jupyter notebook project file
- ☐ Compute descriptive statistics
- ☐ Conduct a hypothesis test
- ☐ Create an executive summary for external stakeholders

Relevant Interview Questions

Completing this end-of-course project will empower you to respond to the following interview topics:

- How would you explain an A/B test to stakeholders who may not be familiar with analytics?
- If you had access to company performance data, what statistical tests might be useful to help understand performance?
- What considerations would you think about when presenting results to make sure they have an impact or have achieved the desired results?
- What are some effective ways to communicate statistical concepts/methods to a non-technical audience?
- In your own words, explain the factors that go into an experimental design for designs such as A/B tests.



Reference Guide

This project has four tasks; the visual below identifies how the stages of PACE are incorporated across those tasks.



Data Project Questions & Considerations



PACE: Plan Stage

- What is the main purpose of this project?

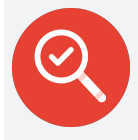
The main purpose of this project is to determine whether the video contains an actual claim supported by evidence or if it is simply an opinion without factual backing.

- What is your research question for this project?

- What is the importance of random sampling?

Random sampling is important because it reduces bias and ensures that every member of the population has an equal chance of being selected. This leads to more accurate, fair, and reliable results.

- Give an example of sampling bias that might occur if you didn't use random sampling.



PACE: Analyze & Construct Stages

- In general, why are descriptive statistics useful?

Descriptive statistics help summarize and understand datasets by showing patterns such as averages, variation, and trends. They turn raw data into meaningful information, making it easier to interpret.

- How did computing descriptive statistics help you analyze your data?

Computing descriptive statistics helped me quickly identify the central tendency (mean), the spread (standard deviation), and overall behavior of the dataset. This allowed me to determine whether the values supported or contradicted the claim/opinion in the video.

- In hypothesis testing, what is the difference between the null hypothesis and the alternative hypothesis?

Null hypothesis (H_0): Assumes there is *no effect, no difference, or no relationship*.

Alternative hypothesis (H_1): Assumes there *is an effect, a difference, or a relationship*.

- How did you formulate your null hypothesis and alternative hypothesis?

I formulated my hypotheses based on the claim made in the video. The **null hypothesis** assumed the claim was *not true* or that there was *no difference*. The **alternative hypothesis** assumed the claim was *true* and that there was a *measurable difference*.

- What conclusion can be drawn from the hypothesis test?



If **p-value < Significance value**, you *reject the null hypothesis* → evidence supports the claim.

If **p-value > Significance value**, you *fail to reject the null hypothesis* → evidence does NOT support the claim.



PACE: Execute Stage

- What key business or organizational insight(s) emerged from your A/B test?

The A/B test helped identify which version (A or B) performed better and provided insights about user behavior, engagement, and preferences. It showed which approach leads to more effective communication or better response from the audience.

- What recommendations do you propose based on your results?