

PROJECT MILESTONE 4

PACE: Plan Stage

- What is the main purpose of this project milestone?

The main purpose of this project milestone is to demonstrate knowledge of descriptive statistics and hypothesis testing to conduct an A/B test.

- What is the research question for this project milestone?

"Do the customers who use a credit card pay higher fare amounts than those who use cash?"

- What is the importance of random sampling?

Random sampling reduces bias, ensures representativeness, enables valid inferences, facilitates generalization, reduces sampling error, supports probability theory, enables unbiased estimates, is essential for experimental design, promotes transparency and reproducibility, and enables efficient resource use.

- Which are the types of sampling bias should I avoid?

Types of sampling bias include:

- Convenient sampling: a non-probability sampling method where individuals are selected based on their easy accessibility or availability.
- Survivorship bias: Focusing on the successes and ignoring the failures.
- Non-response bias: When individuals who are more likely to have a particular opinion are more likely to respond to the survey.
- Volunteer bias: When volunteers participate in a study, they may have different characteristics than the general population.

PACE: Analyze & Construct Stages

- How did computing descriptive statistics help me analyze the data?

Computing descriptive statistics helps understanding data distribution, identifying outliers and anomalies, summarizing data, guiding further analysis, improving data visualization and ensuring data quality.

- How did I formulate my null hypothesis and alternative hypothesis?

Do the customers who use a credit card pay higher fare amounts than those who use cash?

Null hypothesis: There is no difference in the average fare amount between customers who use credit cards and customers who use cash.

Alternative hypothesis: There is a difference in the average fare amount between customers who use credit cards and customers who use cash.

- What conclusion can be drawn from the hypothesis test?

There is a statistically significant difference in the average fare amount between customers who use credit cards and customers who use cash.

PACE: Execute Stage

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

The key business insight is that encouraging customers to pay with credit cards can generate more revenue for taxi cab drivers.

- What recommendations do I propose based on the results?

I propose the taxi company to encourage customers to pay with credit cards, and create strategies to promote credit card payments. For example, the taxi company can install signs that read "Credit card payments are preferred" in their cabs, and implement a protocol that requires cab drivers to verbally inform customers that credit card payments are preferred.