

Vanguard A/B Test Project

About Vanguard

Vanguard is one of the world's most respected investment management companies, offering a broad selection of investments, advice, retirement services, and insights to individual investors, institutions, and financial professionals

The Digital Challenge

The digital world is evolving, and so are Vanguard's clients. Vanguard believed that a more intuitive and modern User Interface (UI), coupled with timely in-context prompts (cues, messages, hints, or instructions provided to users directly within the context of their current task or action), could make the online process smoother for clients. The critical question was: Would these changes encourage more clients to complete the process?

Project Overview

In this project, we aim to evaluate the effectiveness of a new digital interface introduced by Vanguard through an A/B test. We will analyze client behavior data, demographic information, and experiment results to draw insights and conclusions about the performance of the new design compared to the traditional interface. This was done based on three KPI's: Completion rates, time spent, and error rates.

EDA & Data Cleaning

- Explored datasets and identified key variables.
- Cleaned data to merge the datasets based on client ID, remove duplicates, drop values such as the unknown gender within the gender variable and handle missing values throughout all 4 datasets.
- Conducted client behavior analysis to understand user interactions. this was done based on variables such as age, gender, and client tenure with Vanguard.

Performance Metrics

- Defined success indicators to measure the performance of the redesign. These were completion rate, time spent, and error rates.
- Assessed the outcome of the redesign based on predefined metrics.

Hypothesis Testing

- Conducted hypothesis testing to validate the effectiveness of the new design.
- Tested completion rates and compared them between the control and test groups.
- Further delved into assessing the cost effectiveness of completion rates given a 5% threshold.
- Assessed the statistical significance of the results using appropriate tests including 2-sample proportion z-test and one-sided two-proportion z-test.

Experiment Evaluation

- Evaluated the experiment design for its effectiveness and fairness.

- Assessed the duration of the experiment and its adequacy for gathering meaningful insights.
- Identified additional data needs to enhance the analysis and provide more comprehensive conclusions.

Tableau Visualization

- Created interactive visualizations using Tableau to present key findings.
- Visualized client demographics, user behavior patterns, and experiment outcomes.
- Provided insights into client engagement and the impact of the redesign.
- [Tableau workbook](#)

Repository Contents

- Jupyter Notebooks: Contains notebooks for data cleaning, data analysis(EDA, hypothesis testing, and visualization)
- Python cleaning Script: Includes functions used in data cleaning.
- Tableau File: Visualization and interactive dashboards created using Tableau.
- README.md: Detailed documentation of the project, including setup instructions, project overview, and repository contents.
- Slides: Presentation slides for the project.

Additional Resources

- [Rubric](#) : Evaluation criteria for project assessment