Statistical Review and A/B Testing for New York City TLC Project

Executive summary report
Commission Prepared by **Automatidata**

Overview

This project aims to predict taxi cab fares for each ride while focusing on increasing revenue for New York City taxi drivers. Specifically, it investigates the relationship between the total fare amount and the payment type.

Problem

Taxi cab drivers receive varying amounts in tips, and this study explores whether customers who pay with credit cards tend to incur higher total fare amounts compared to those who pay with cash.

Solution

The Automatidata team conducted an A/B test to analyze the correlation between credit card payments and fare amounts, leading to a key business insight: encouraging credit card payments is likely to boost revenue for taxi drivers.

Details

Steps conducted in the A/B test

1. Collected sample data from an experiment in which customers are randomly selected and divided into two groups:

    a. Customers who are required to pay with credit card.

    b. Customers who are required to pay with cash. This enables us to draw causal conclusions about how payment method affects fare amount.

2. Computed descriptive statistics to better understand the average total fare amount for each payment method available to the customer.

3. Conducted a two-sample t-test to determine if there is a statistically significant difference in average total fare between customers who use credit cards and customers who use cash.

A/B test results

There is a statistically significant difference in the average total fare between customers who use credit cards and customers who use cash. Customers who used credit cards showed a higher total amount compared to cash.

Next Steps

The Automatidata data team recommends that the New York City TLC encourages customers to pay with credit cards, and create strategies to promote credit card payments. For example, the New York City TLC 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.