



Data Glacier

Your Deep Learning Partner

Week #10 Deliverables PDF Document

Team member's details:

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Problem description

The project entails analyzing a dataset to determine what factors influence subscription rates. The goal is to use Exploratory Data Analysis (EDA) to identify key variables influencing consumer decisions and provide actionable insights to optimize marketing strategies.

EDA Performed on the Data:

Data Cleaning and Preprocessing: Initial steps involved handling missing values, outliers, and encoding categorical variables.

Key Findings:

- Distribution and relationships between variables such as age, job type, marital status, education, and financial status were explored.
- Correlation analysis was performed to identify relationships between numerical variables.
- Categorical variables were analyzed in relation to the target variable to understand their impact on subscription rates.

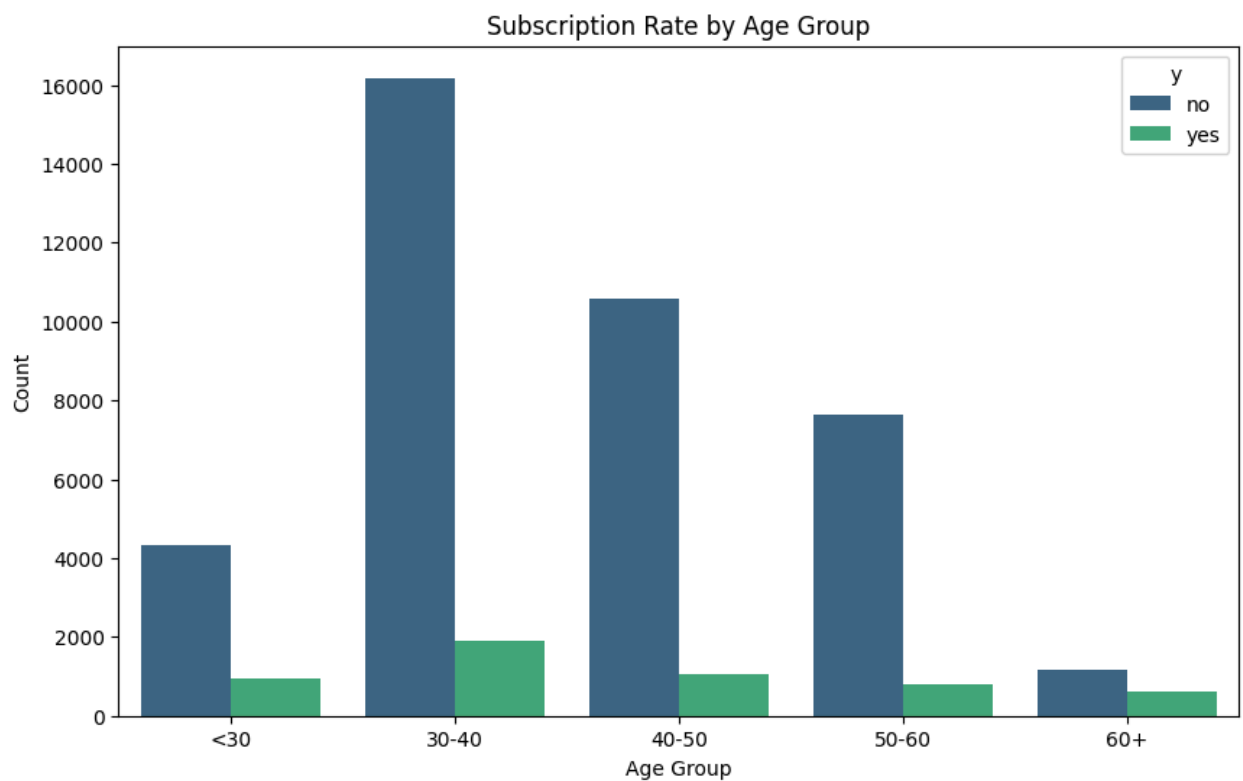
Github Repo Link:

<https://github.com/cralph31/Data-Glacier-Final-Group-Project-Weeks-7-12-Deliverables>

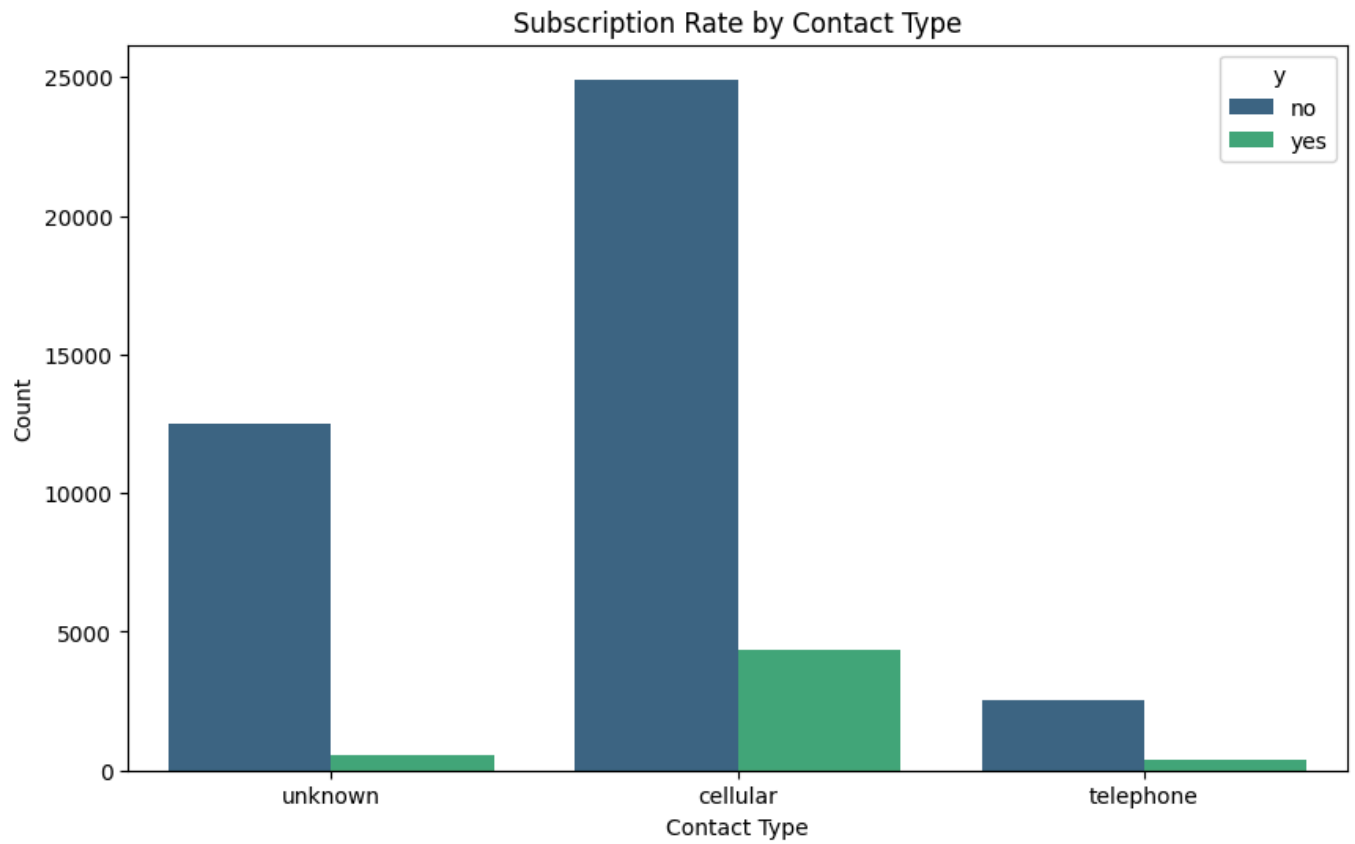
Hypotheses Tested:

14 hypotheses were formulated and tested, each exploring different aspects of customer behavior and subscription likelihood, such as the influence of age, job type, contact methods, and seasonality.

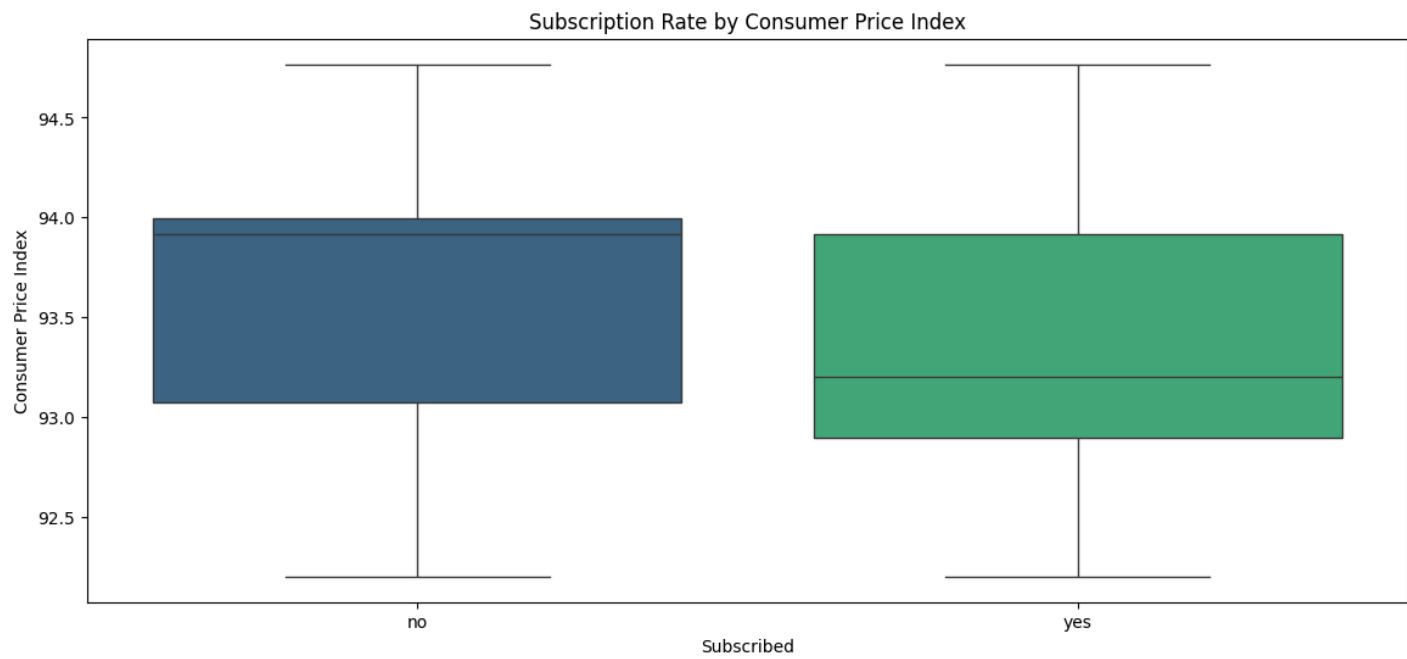
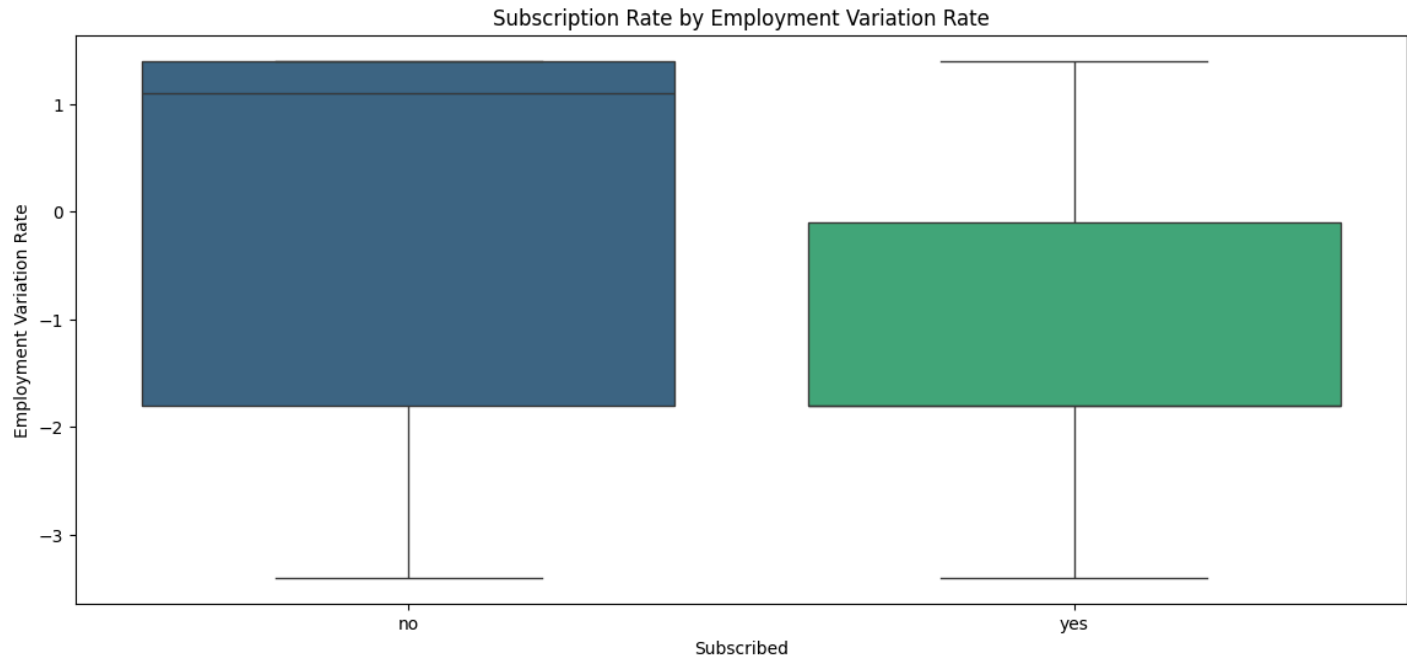
1. Subscription rate decreases as age increases



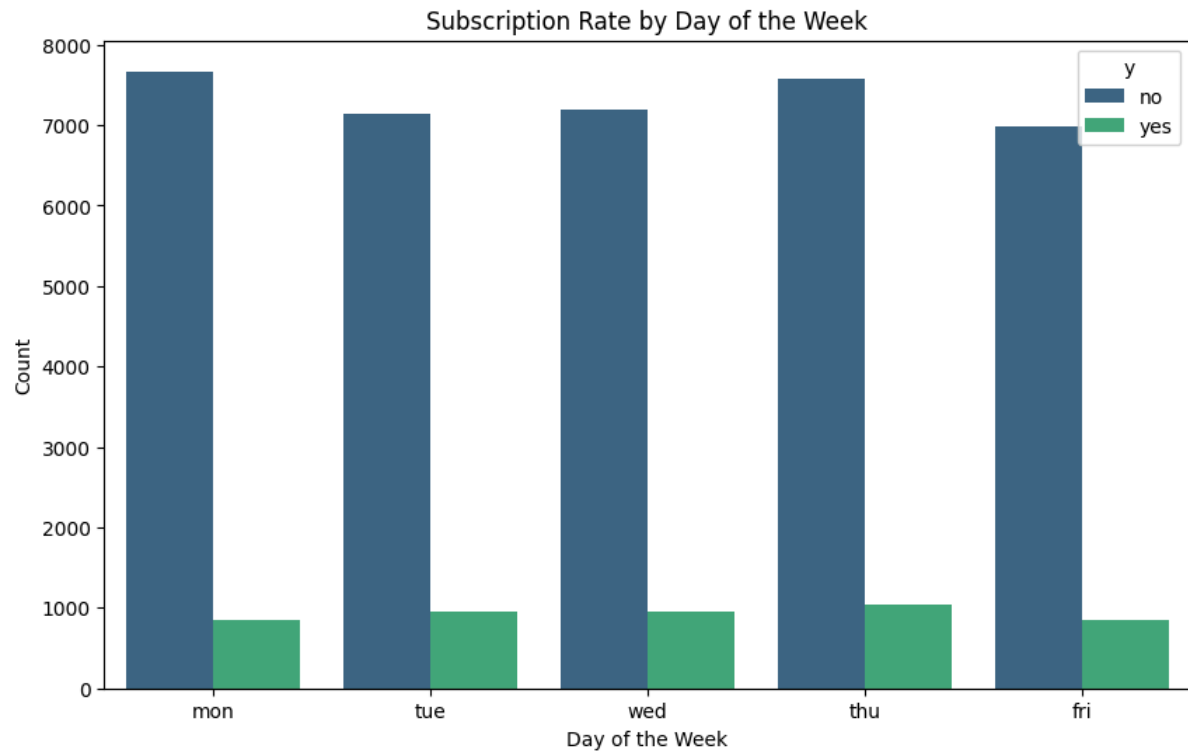
2. Subscription rate increases with various forms of contact types.



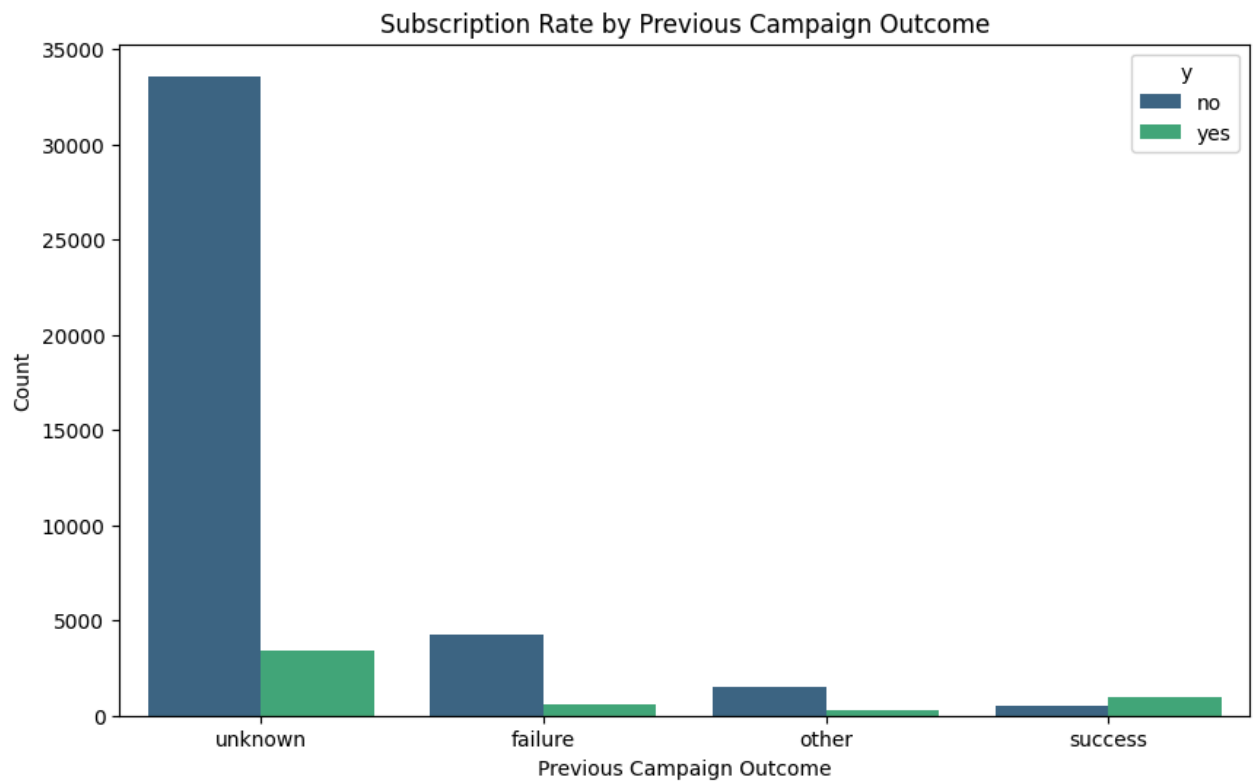
3. Subscription rate will increase according to different economic indicators.



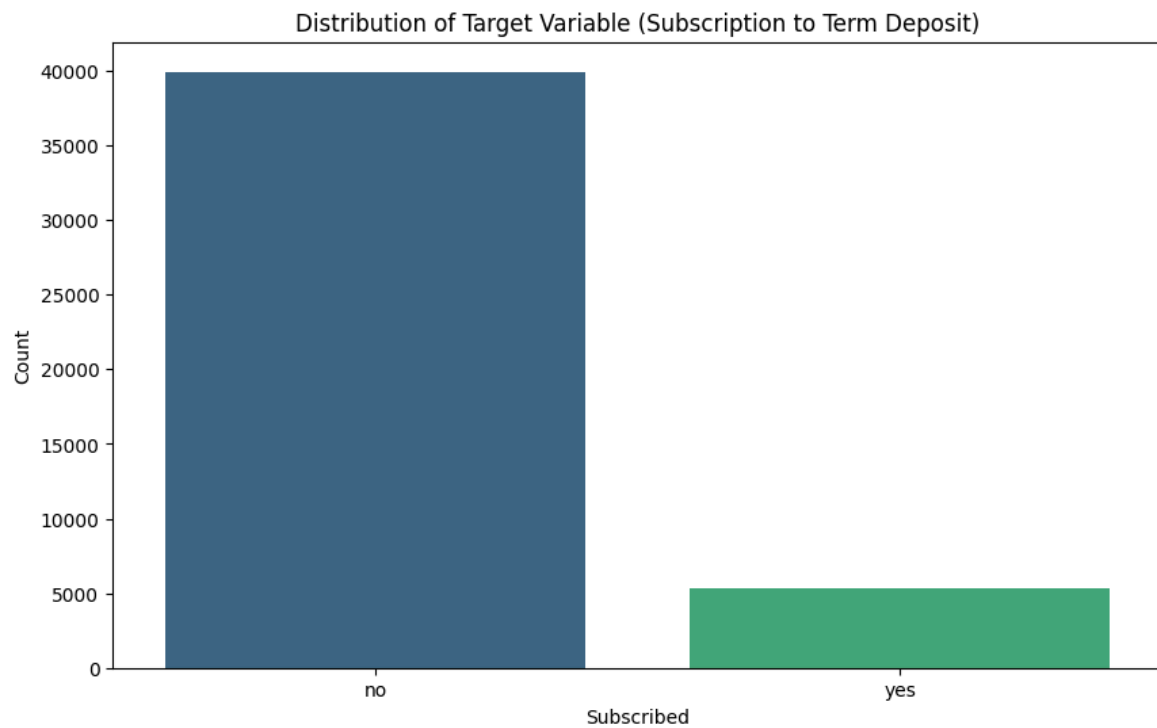
4. Hypothesis 4: Success rate increases during different days of the week.



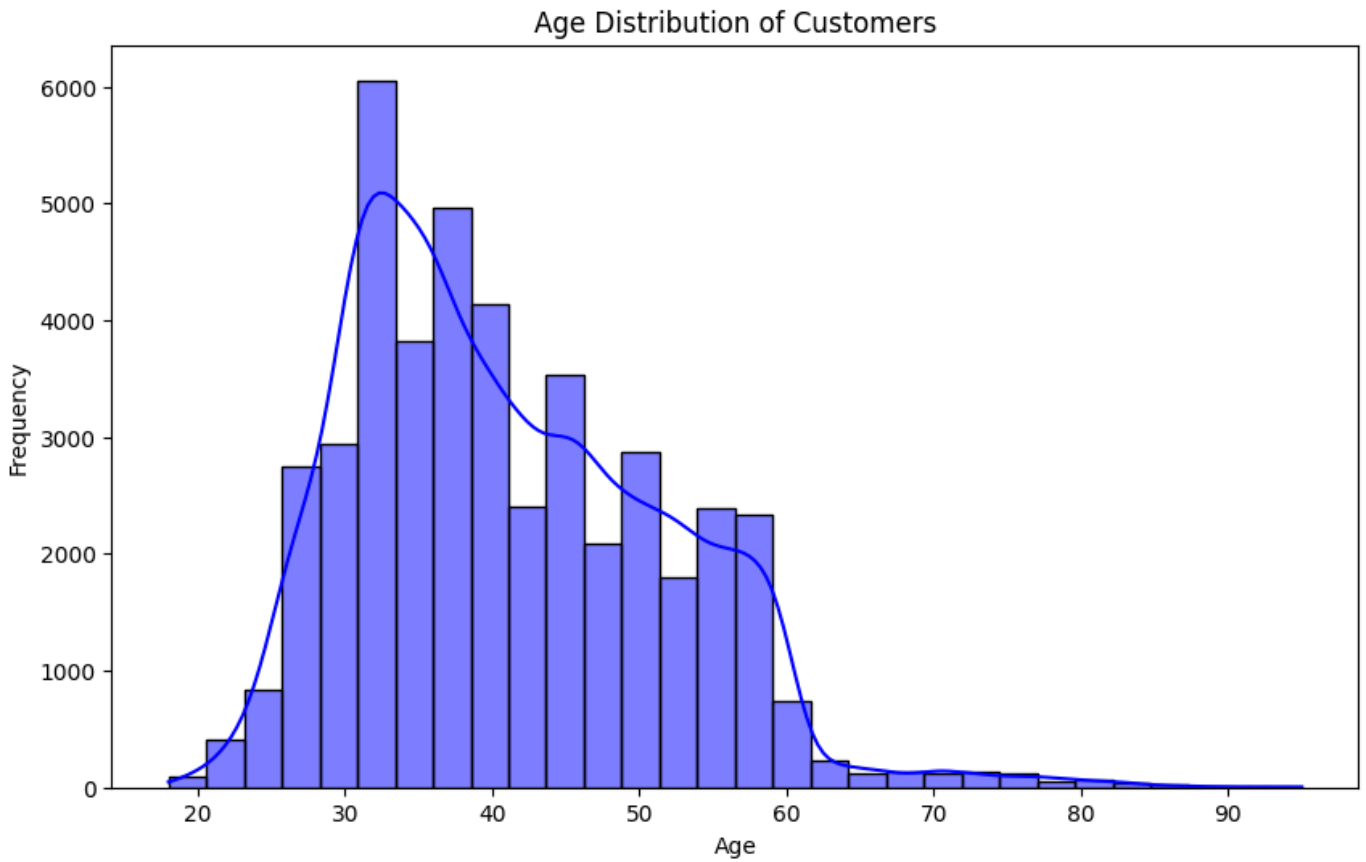
5. Customers who had a positive outcome in previous campaigns are more likely to subscribe.



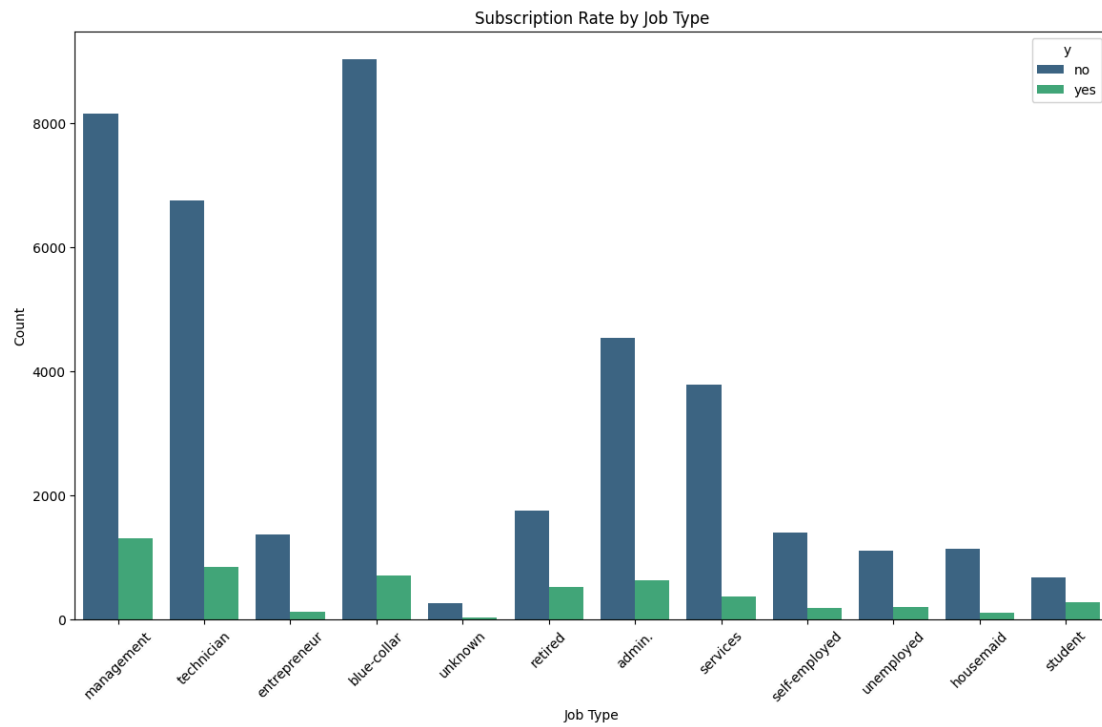
6. The distribution of subscription outcomes (target variable) follows a specific pattern influenced by key factors.



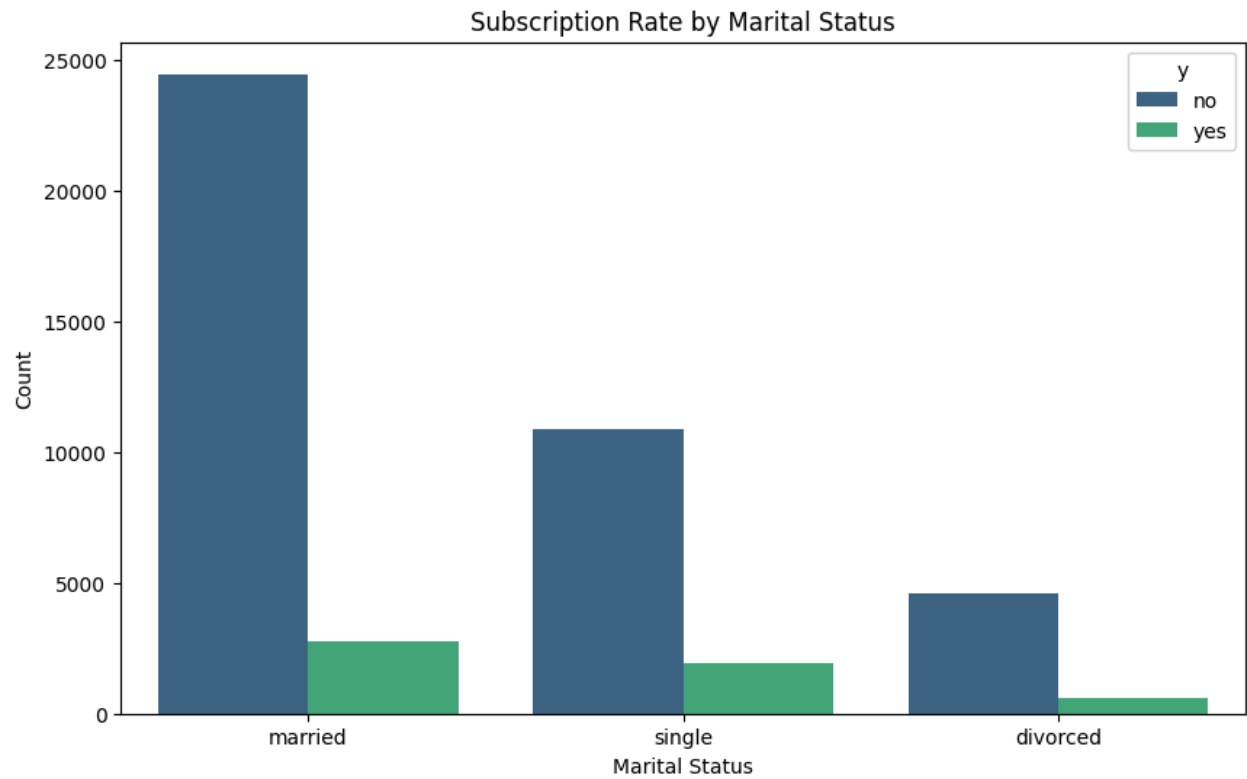
7. The age distribution of customers shows distinct patterns that affect their likelihood to subscribe.



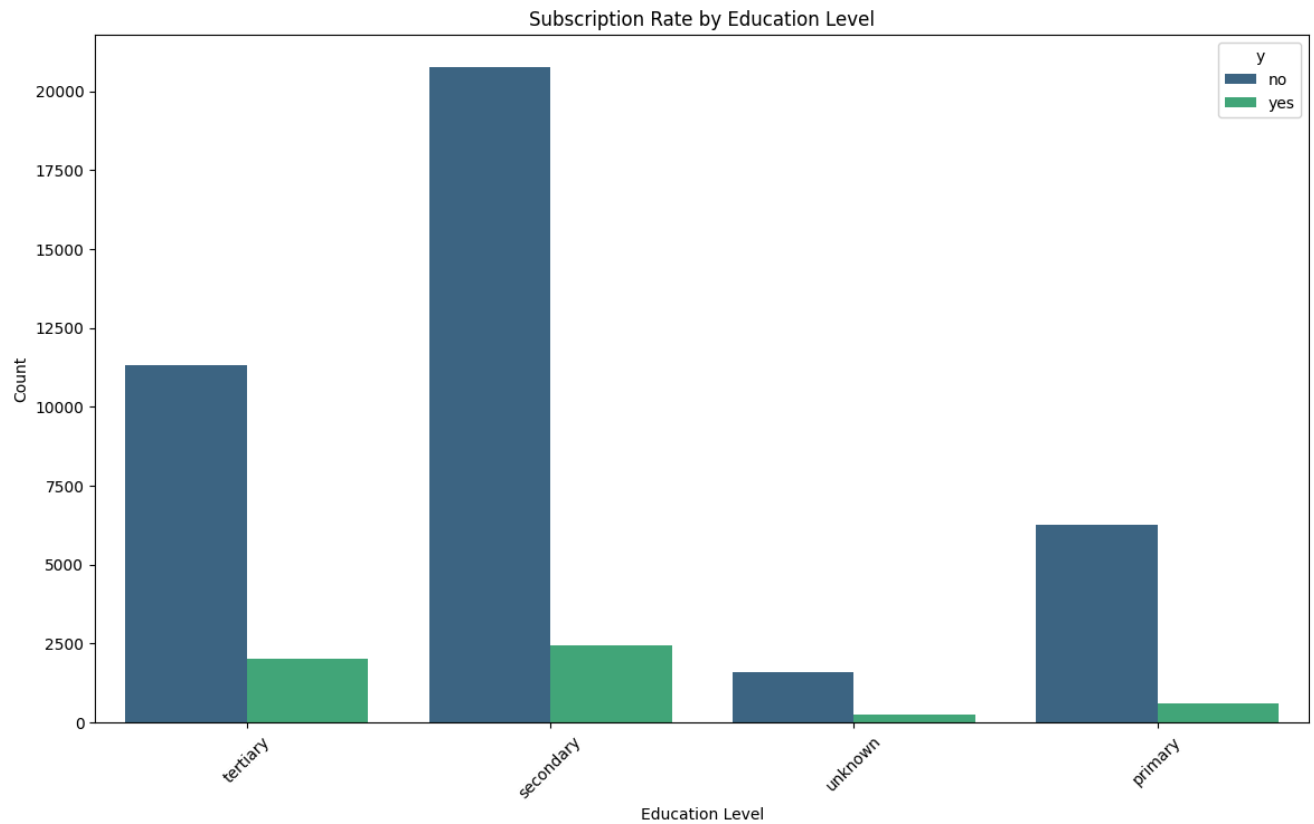
8. Certain job types are associated with higher subscription rates.



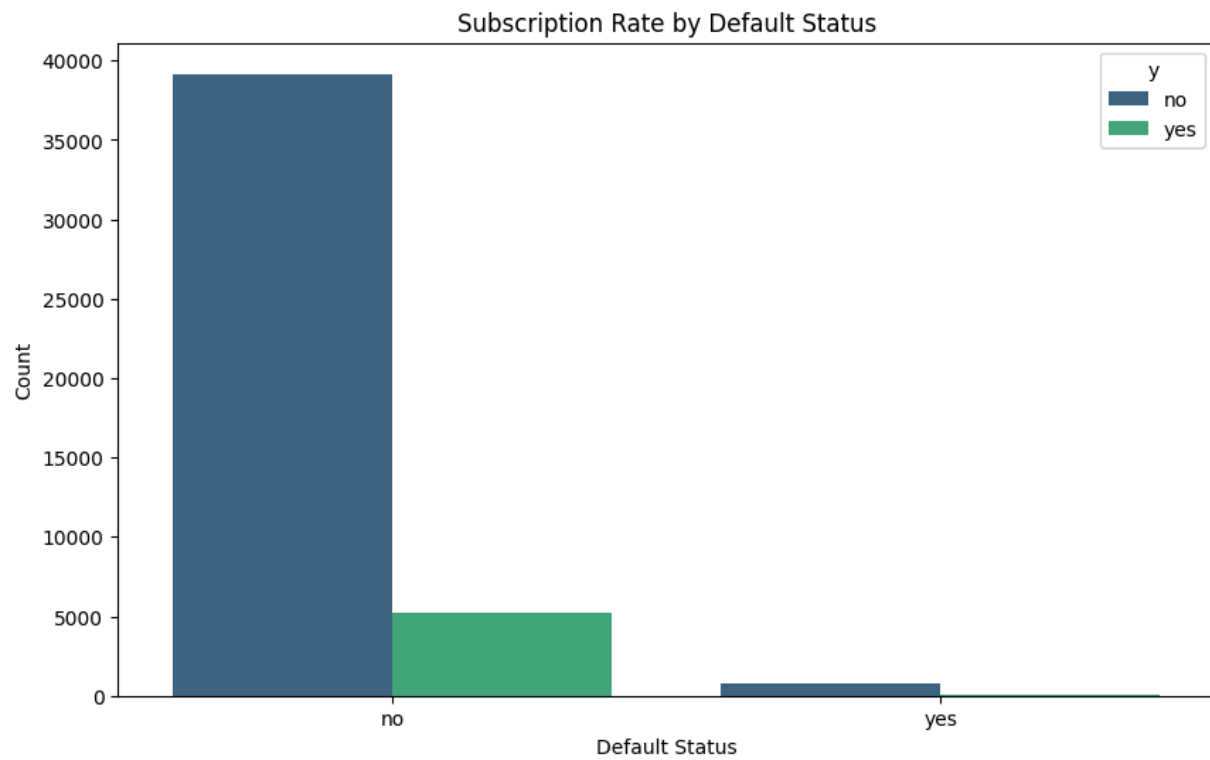
9. Marital status influences the likelihood of subscribing, with some statuses being more inclined to subscribe than others.



10. Higher levels of education correlate with an increased likelihood of subscription.



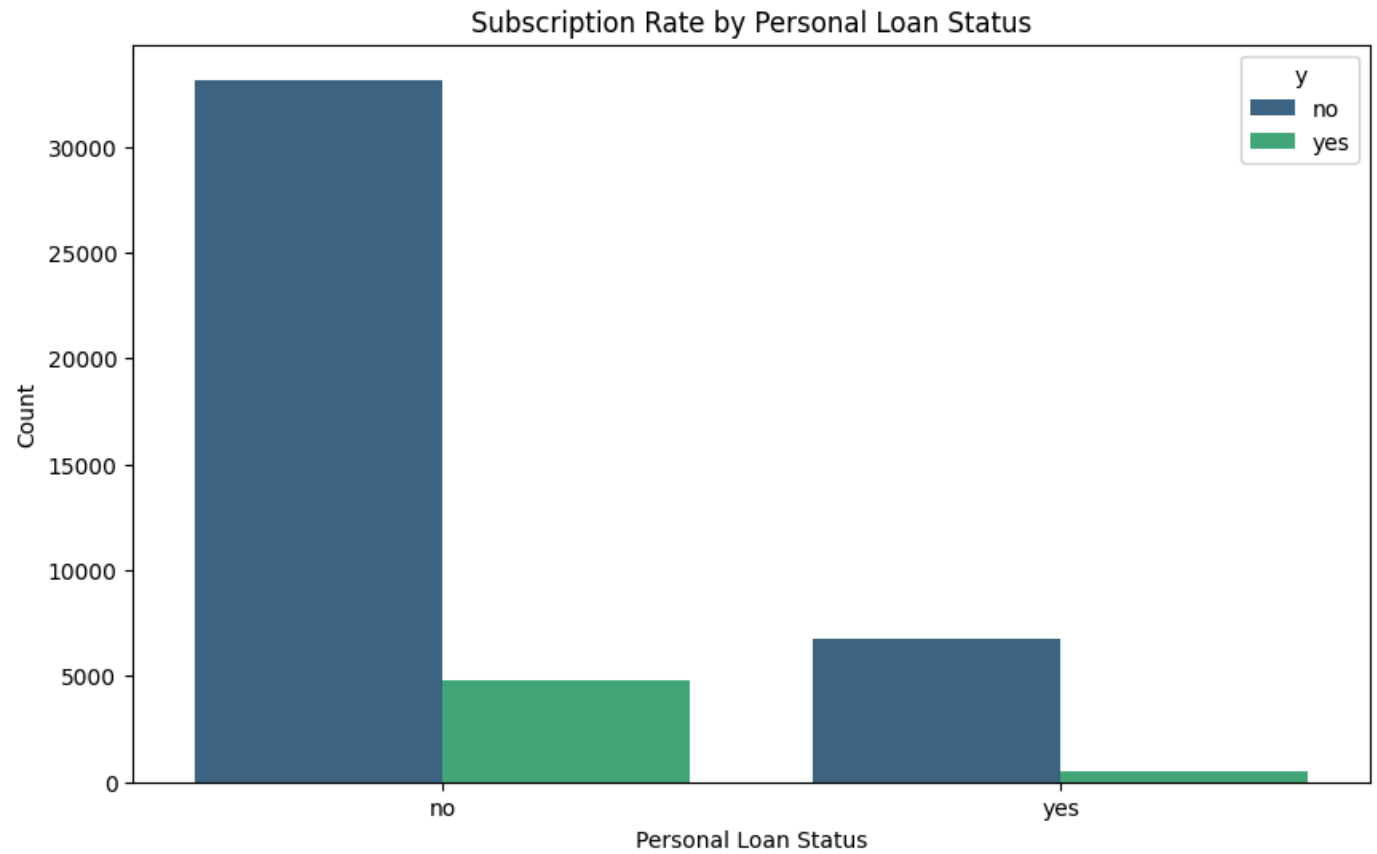
11. Customers with a history of default are less likely to subscribe.



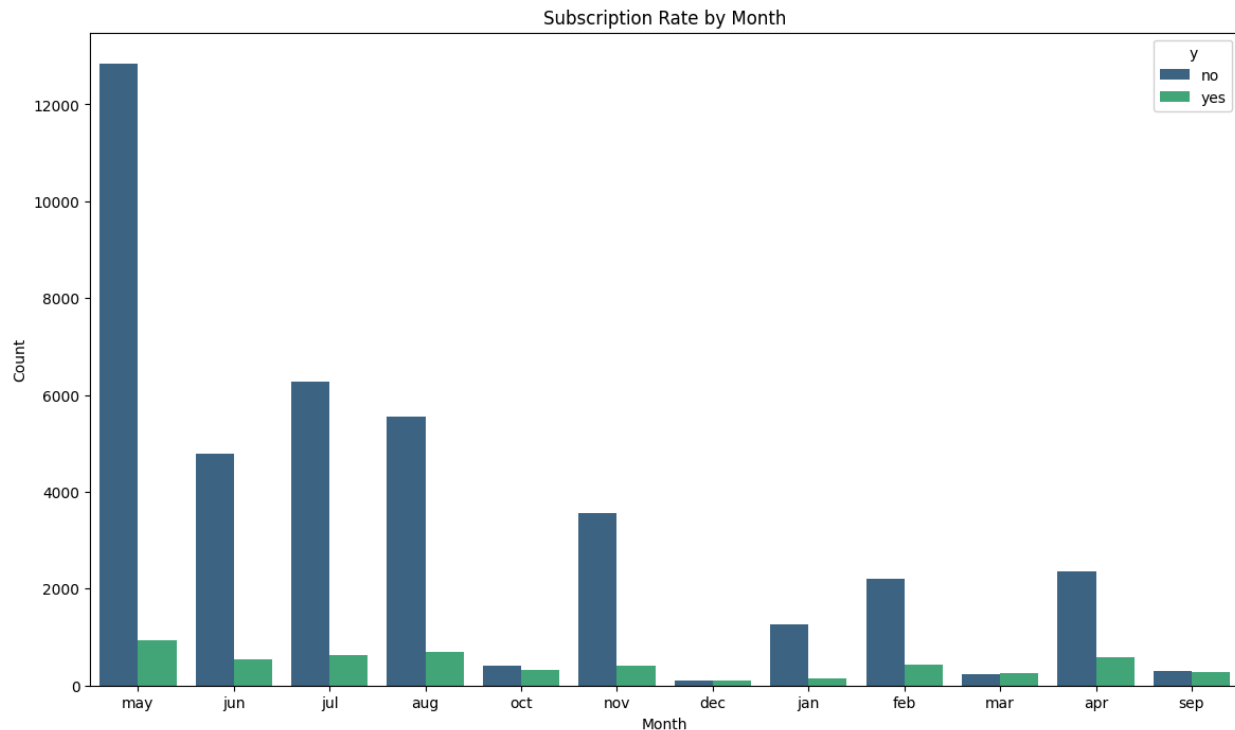
12. Customers with an existing housing loan are less likely to subscribe.



13. Holding a personal loan affects the likelihood of subscribing to new services.



14. Subscription rates vary across different months, indicating seasonal trends.



Final Conclusions from the 14 Hypotheses:

1. Customer Demographics Matter:

Age, job type, education, and marital status significantly influence subscription rates. These demographic factors should be used to segment the customer base and tailor marketing strategies accordingly.

2. Financial Status Influences Decisions :

The presence of housing and personal loans, as well as default history, affect a customer's likelihood to subscribe. Marketing

messages that address financial concerns or offer related products may improve conversion rates for these groups.

3. Communication Strategy is Key:

The method and timing of contact, including the day of the week and month, play a crucial role in subscription outcomes. Optimizing these factors based on past performance can enhance engagement and increase subscription rates.

4. Campaign Frequency and History Impact Results:

The number of contacts in a campaign and the outcomes of previous campaigns influence current subscription behavior. It's important to find the right balance in contact frequency and to build on the successes of past campaigns.

5. Economic Conditions Affect Behavior:

Broader economic indicators like employment variation rates also play a role in subscription decisions. Adjusting marketing strategies to align with current economic conditions can make campaigns more effective.

6. Seasonality Should Be Considered:

Subscription rates vary by month, indicating seasonality in customer behavior. This trend should inform the timing of campaigns, with strategic offers or promotions during low-performing months to smooth out performance across the year.

Final Recommendation

The hypotheses reveal that both customer-specific factors (like demographics and financial status) and external factors (such as economic conditions and seasonality) significantly affect subscription behavior. To maximize subscription rates, businesses should adopt a data-driven approach that segments customers effectively, tailors communication strategies, and adjusts campaigns based on the timing and broader economic context. This comprehensive strategy will likely lead to more successful outcomes and optimized marketing efforts.