Data Glacier Intern Project Report

Project: Bank Marketing (Campaign)

Group: Model Maestros

Group Member 1

Name: Nrusimha Saraswati Sai Teja Jampani

Email: njampani@buffalo.edu

Country: United States

College: State University of New York at Buffalo

Specialization: Data Science

Group Member 2

Name - Purvesh Mehta

Email - mpurvesh007@gmail.com

Country - United Kingdom

University - University of Sussex

Specialization - Data Science

Group Member 3

Name: Aysha Abdul Azeez

Email: ayshaabdulazeez41@gmail.com

Country: United Kingdom

College/Company: University of Central Lancashire

Specialization: Data Science

Problem Description

ABC bank aims to launch a new term deposit scheme and wants to sell this product to customers. Prior to the launch, the bank plans to start a marketing campaign for the product through various marketing channels like Telephone, SMS, Emails, etc. To save time and to minimize the costs associated with this process, the bank wants to shortlist all the potential customers who have a greater possibility of buying the term deposit product.

This will help the marketing team to start a campaign on a set lot of customers without wasting their resources on any unlikely buyers. To achieve this outcome, we will need to develop a classification model with high accuracy to determine if a customer will subscribe to the term deposit or not based on the available marketing data.

EDA

Most of the customers part of the campaign are into administration and are followed by blue collar workers and technicians. The ratio of those who chose the plan to those who did not choose seems to be nearly the same for all employment categories. Most of the housemaids, entrepreneurs and umemployed customers did not choose the plan
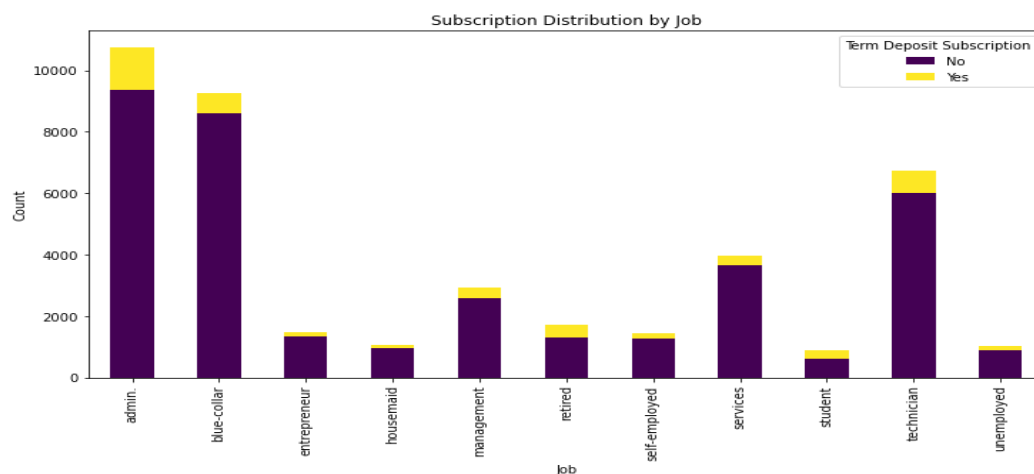
It is also observed that more than 30 percent of the student customers have subscribed to the plan and the bank might need to focus more on the students and retired individuals to sell the term deposit.


Percentage of Term Deposit Subscription by Job
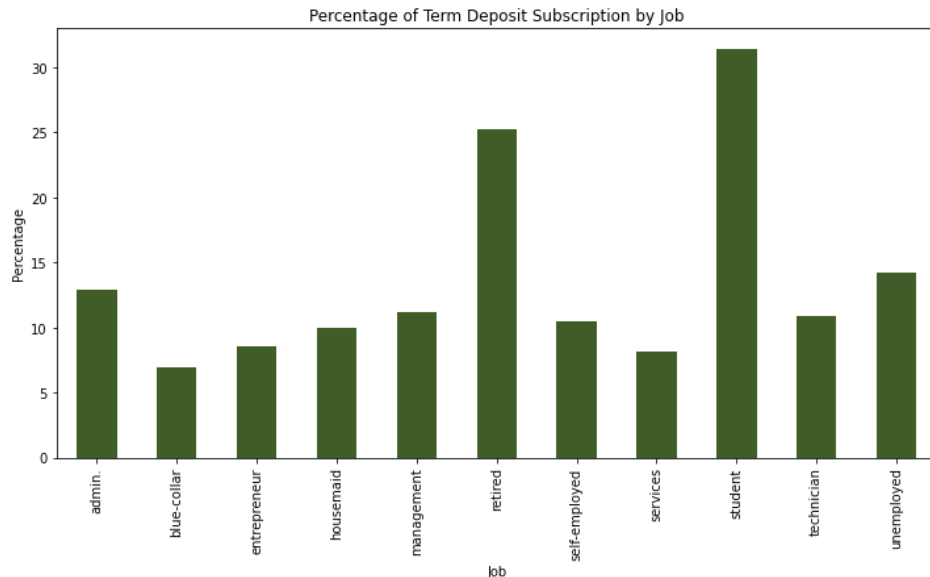
Age is also contributing to the subscription. Young customers seem to be disinterested in the plan. It is interesting to see that 20 percent of the clients aged 18-25 subscribed to the plan and the results seem poor for middle aged group. 40-50 percent of the older people aged 66 and above have subscribed to the plan and the bank needs to do better in young people.

Percentage of Term Deposit Subscription by Age Category

A trend can be found in the way the clients are contacted. Cellular ways seem to provide a better outcome compared to telephone. It can be due to increased usage of mobile phone compared to telephone along with the portability.

Percentage of Term Deposit Subscription by contact
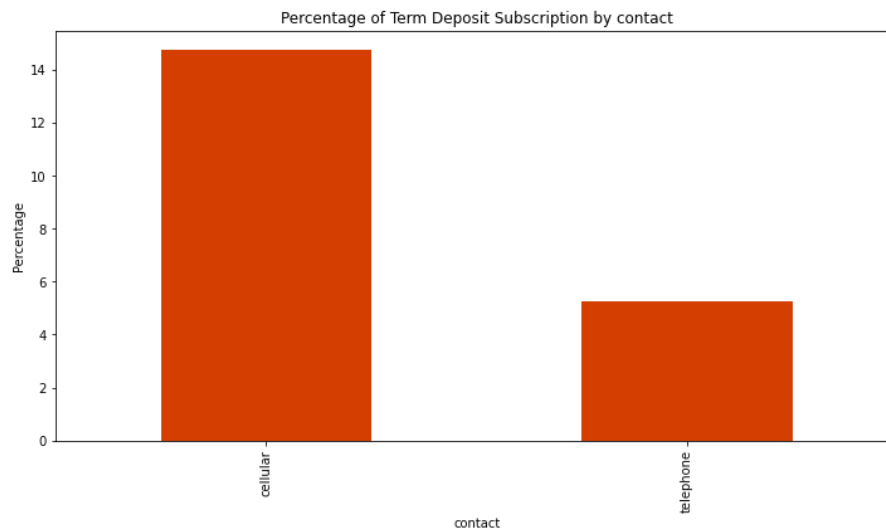
From our analysis we have also seen that existing customers who have chosen a previous plan are the major subscribers of the current plan. So, it is evident that the bank was successful in customer retention to a large extent.

Percentage of Term Deposit Subscription by outcome of the previous marketing campaign
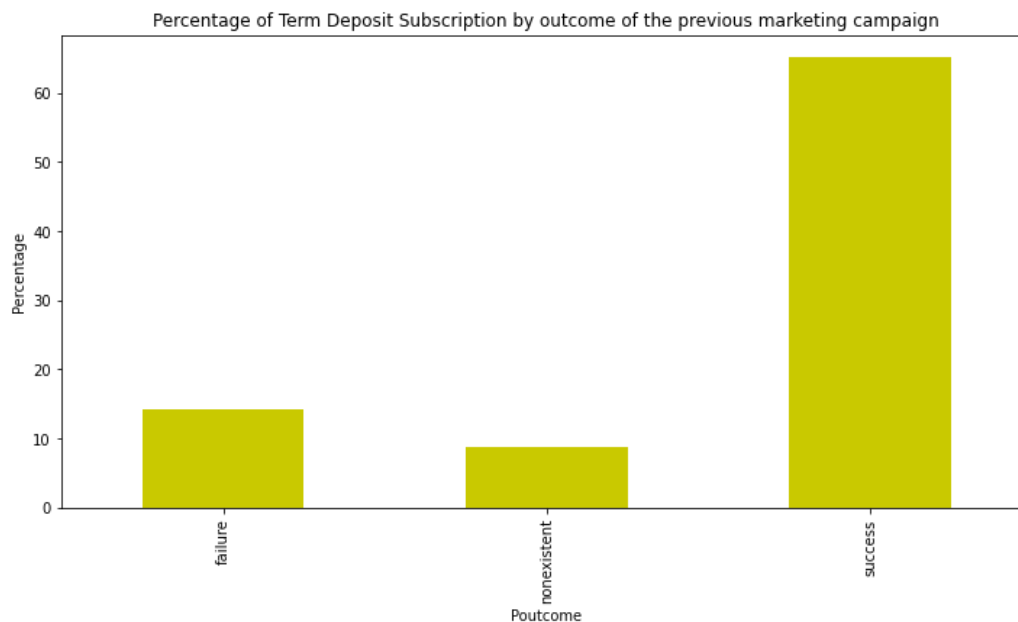
March, September, October, and December months contribute to the major portion of deposit subscriptions. This could be due to some underlying reasons like start of financial year, end of quarter or end of year which should be analyzed further to take wise decisions.
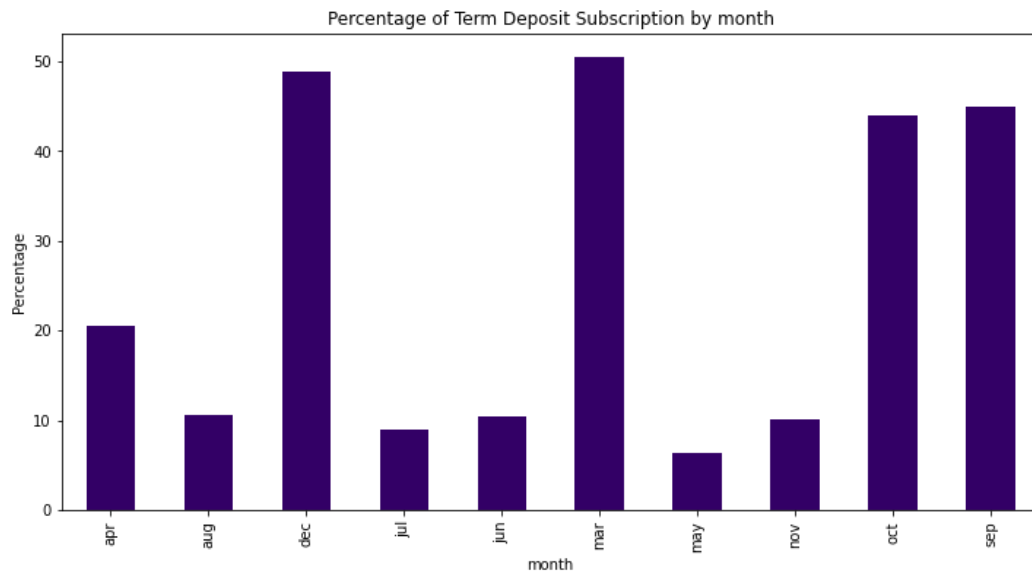

Most of the customers are campaigned only once and yet they are major subscribers of the term deposit. A trend can be seen that even though many contacts were made to the clients, there is a decline in the percentage of people subscribing to the deposit.
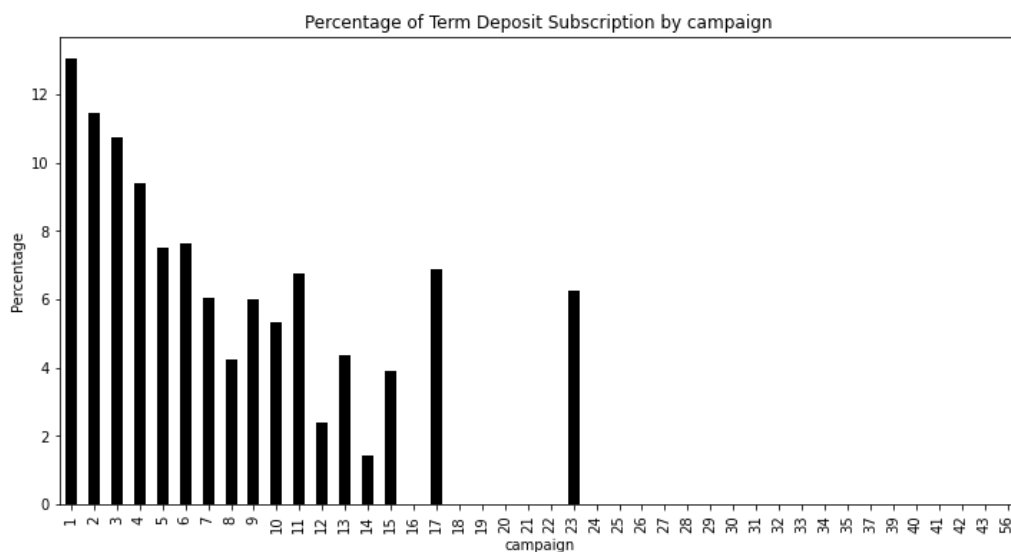
A large percentage of the single clients are subscribing to the term deposit compared to married and widowed. The bank should be exploring ways to attract married and widowed customers and also do more campaign on single clients.

Percentage of Term Deposit Subscription by marital
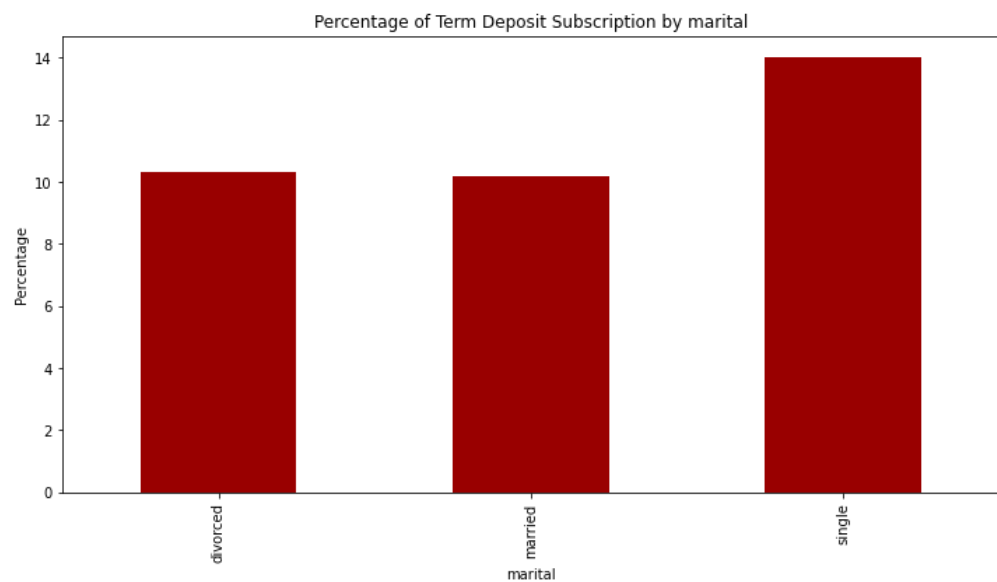
In our analysis, we have observed that many of the clients who have obliged to the previous campaign seem to have subscribed to current plan as well. Most of the customers who were not part of the previous campaign did not subscribe to the term deposit. Customers who have a failed outcome despite a campaign previously seem to stick to their principles and many did not subscribe to the term deposit on this campaign as well. The Bank needs to do better to attract new customers.

Current client subscription outcome with respect to previous campaign outcome
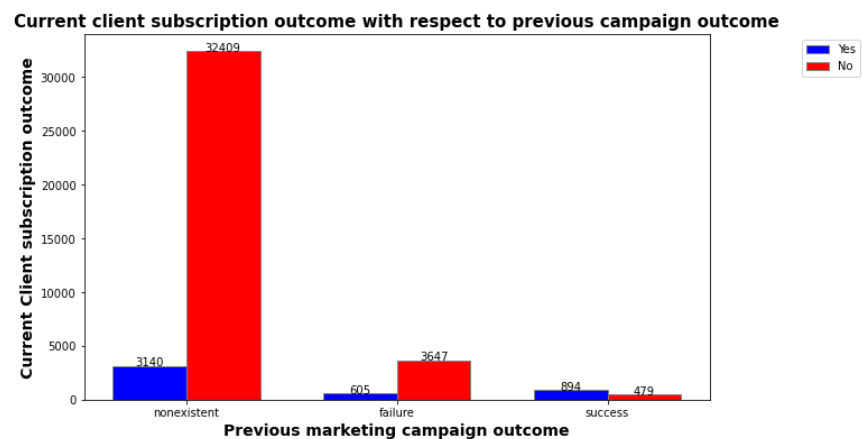
It is clear from the chart that 0 to 7 contacts were made with the client previously. Most of the clients were never contacted previously and most of those clients did not subscribe to the plan even now. One previous contact did not help greatly either. Two contacts made previously started to make a difference where nearly half of them subscribed to term deposit now. Similar is the case with 3 contacts made in which more than half of them made the subscription now. 4 or more calls made previously are a lot lower in number, but still half of the clients subscribed to the current plan. This shows that the company needs to make more calls to attract customers.
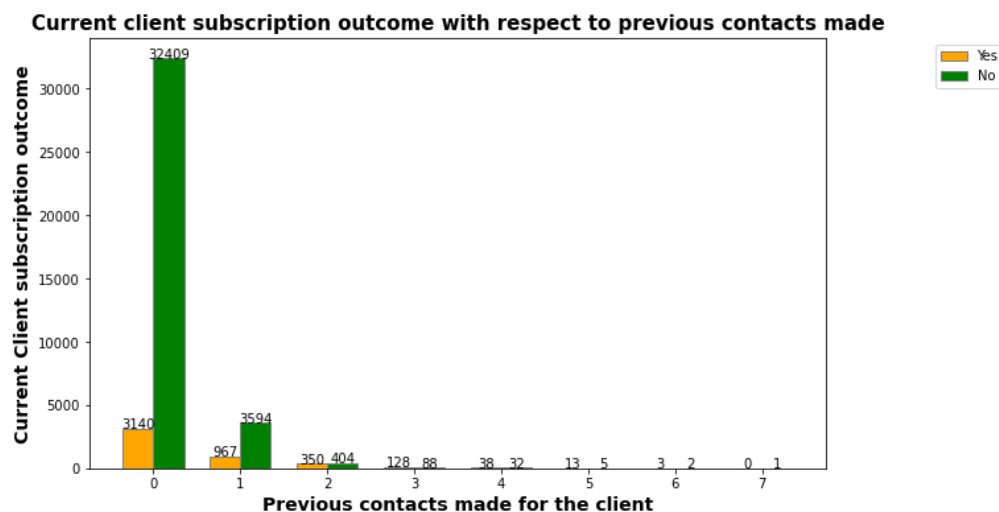

There are 7 categories of educational qualification accomplished by the customers. It includes University degree, Professional course, basic 4 year, basic 9-year, high school and no qualification or illiterate. Out of this there are more people with a university degree. Interestingly most of these people are not subscribing to the plan. Most of the High school qualified clients too are not subscribing to the plan. This trend can be seen among all the classes, including professional degree and basic qualified customers. Overall, the pattern suggests that only 1/5 of the customers are subscribing to the plan irrespective of the educational qualification.

Pie plot for customer educational representation and Plan subscription
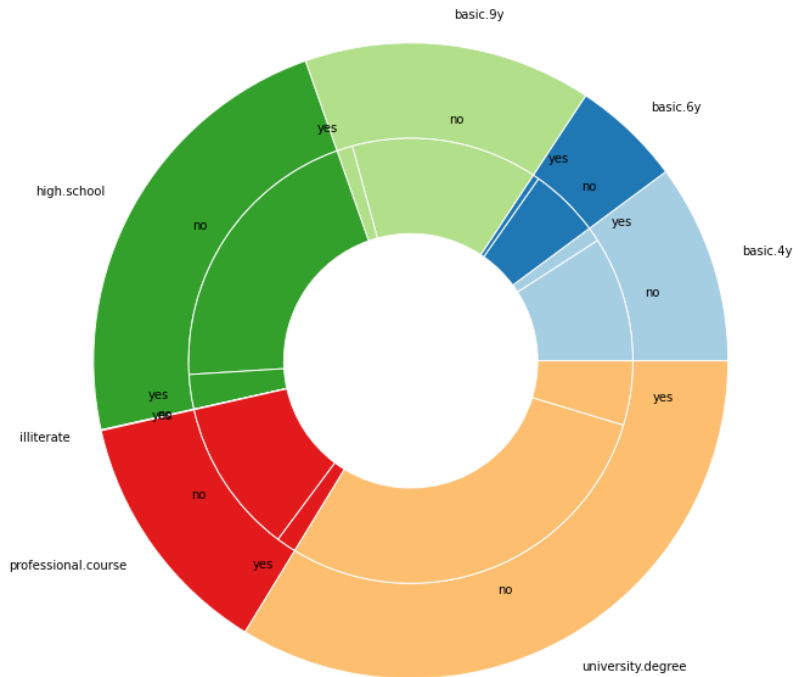
There clearly seemed to a very little effect of the day when the contact was made with the client in determining if the customer would subscribe to the deposit plan. Interestingly Tuesday, Wednesday and Thursday have a little better chance of customers subscribing than Monday and Friday. It could be that customers are a little busy on Mondays and more relaxed on Fridays to consider for a term deposit subscription. However, the variations are marginal.
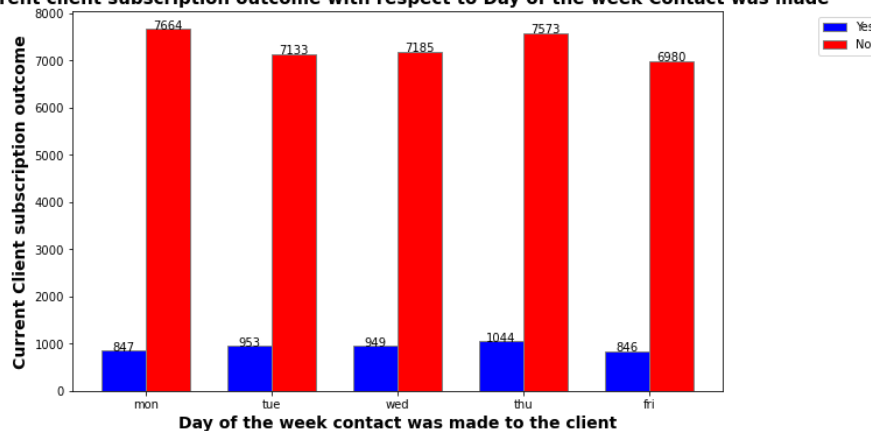
With more previous contacts made with the customer, the duration of the call is largely getting reduced. Clients with no previous calls are extending the call duration to until 4000 seconds and most of the customer lot falls in this place. However, customers with more previous calls are subscribing to the plan a lot better even though the number is less.
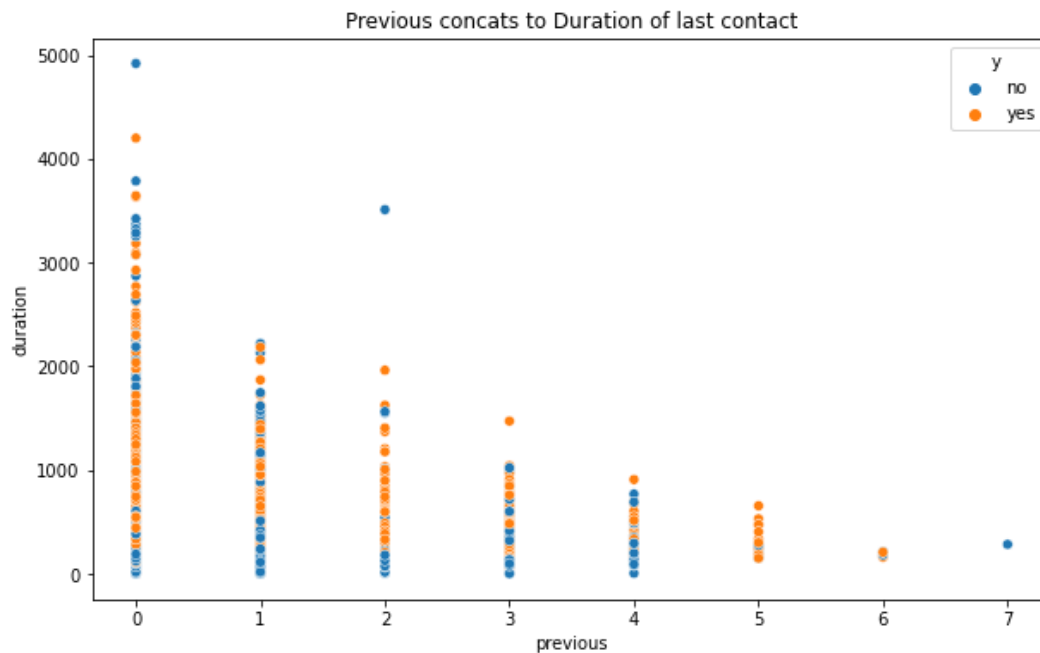
After mode imputation of unknown values, we see that most of the customers do not have a loan under their name. The outer pie chart represents the loan status and inner pie chart shows the corresponding plan subscription outcome. Loan status, however, is not making any difference because, most of the customers without loan too have not subscribed to the plan. A few lot of customers who have a loan subscribed to the plan. In a larger view, the ratio between customers who subscribed and customers who did not subscribe with respect to having or not having a loan remains to be the same.

Pie plot for customer loan status with respect to Term Deposit subscription
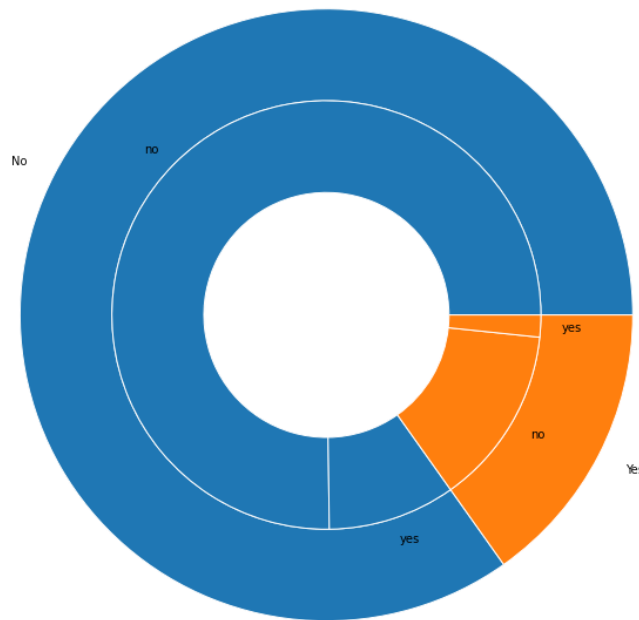
Final Recommendations

- Students and retired individuals are greatly subscribing to the deposit, bank should focus to improve on customers with other employment types as well.
- Elder people are greatly subscribing to the deposit and the bank should invest to attract young people.
- Cellular way of contact is getting more attention from public, and telephone should be targeted only to selected individuals.
- The bank is successful to some extent in retaining customers but should focus on bringing in new customers.
- Months like March, October, September, and December are attracting more customers. The bank should do more campaigns in these months.
- More campaigning and more contacts did not greatly help. The bank should focus on making a better first impression.

- More singles are subscribing to the plan and the bank needs to attract the other set of customers like divorced and married.
- More than half of the customers who have subscribed through a previous campaign have subscribed to the current plan too. The bank needs to focus more on these people.
- Most of the clients contacted had a university degree. The bank should provide more incentives to attract these customers.
- There is a slight edge to attract customers on Tuesday, Wednesday, and Thursday. Therefore, the bank might need to focus more on core weekdays.
- Customers are spending less time on call when contacted more than once. The bank should try to maximize the possibilities in subscribing to the deposit on the first call.
- The bank should not discriminate against clients having a loan because the data clearly shows no difference on the possibilities for people with or without a loan.