ASSIGNMENT GUIDELINES

- Make the changes in the PPT as you solve the parts

- This file contains the template for the **EDA part** of the project.

- Check the instructions added in the note section of every slide for clarity.

- Don't move around any image or text box

- If you require more/lesser elements, be careful when you copy/delete the existing ones.

ASSIGNMENT

Name: Santhosh R

Problem Statement

Bank of Corporate conducted a telemarketing campaign for one of its financial products, 'Term deposits', to build a long-term relationship with the existing customers. Your goal is to identify the target customers for the term deposits from the pool of the bank's existing customers. You should also capture the key driving factors (or driver variables) behind the successful conversion of a customer, i.e., the customer opening a term deposit account with the bank.
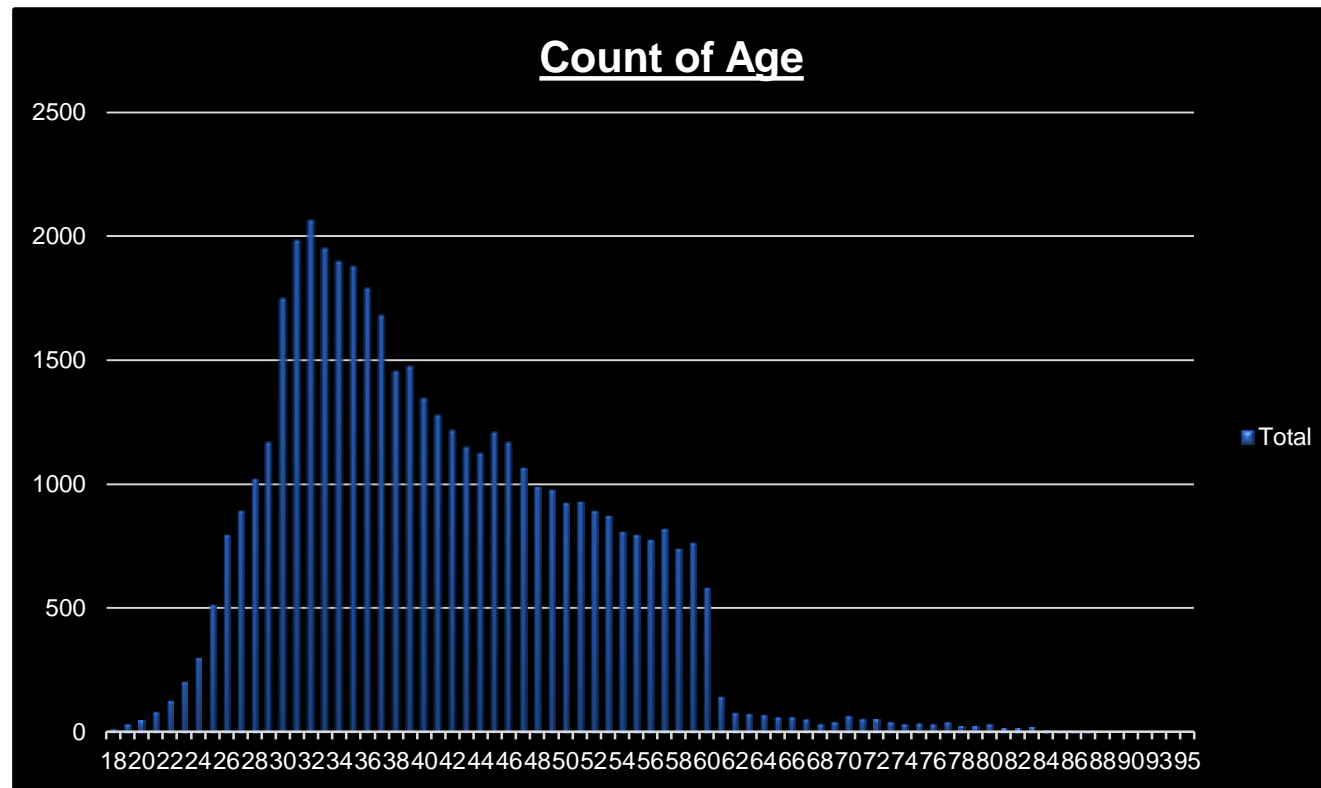
Assignment Objective

To identify the target customers and the driving factors behind a successful customer conversion for future marketing campaigns.

PART I : Univariate Analysis

Variable under consideration: *Age*
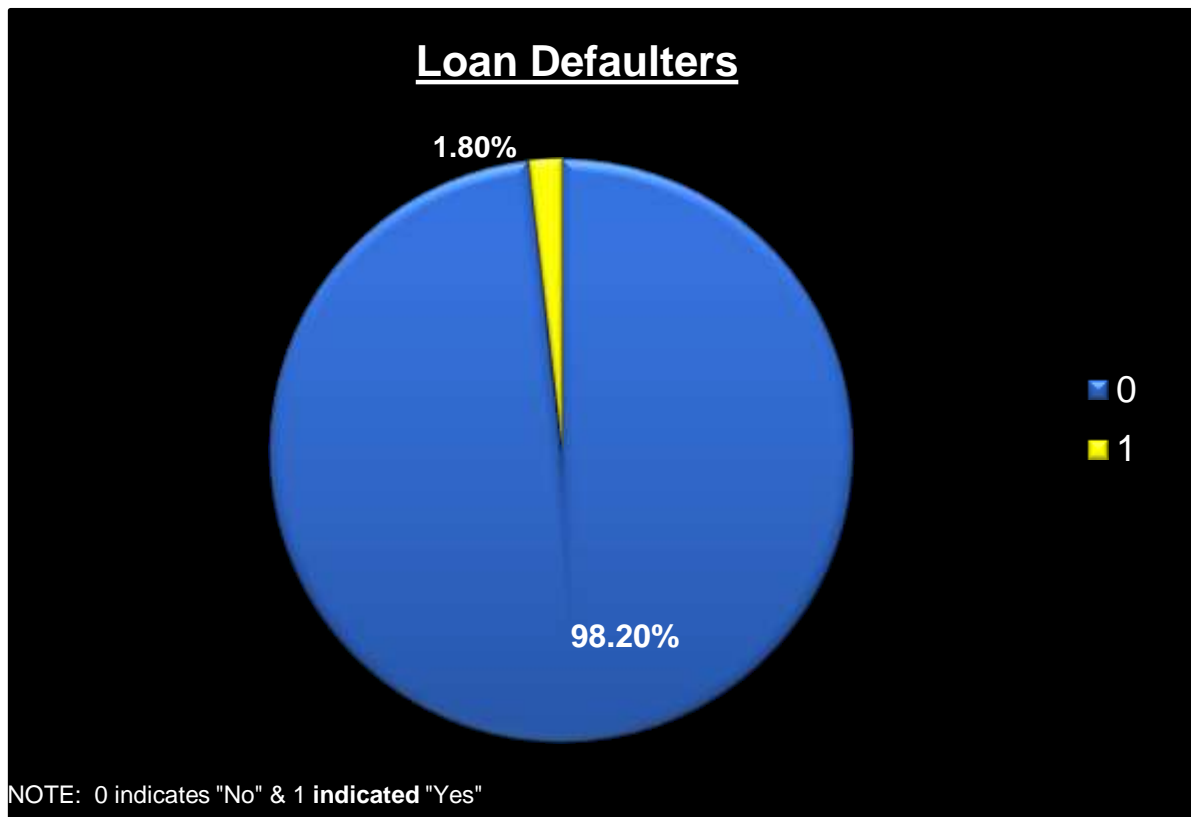

Count of Age

- Significantly , there are more number of customers/people in marketing campaign for the *age* ranging between *26 to 48.*

- The age between *18-24 and 60+* consists of rear number and very less number of customers.

PART I : Univariate Analysis

Variable under consideration: _Loan Default_

Loan Defaulters

1.80%

98.20%

■ 0
■ 1

NOTE: 0 indicates "No" & 1 **indicated** "Yes"

- Around **45K** customers, almost **1.8%** of customers are **loan defaulters**,indicating approximately **1,200** customer having loan pending.

- **_NOTE:_** Careful consideration ,whether to contact the loan defaulters based on bank's decision

PART I : Univariate Analysis

Variable under consideration: *Days*
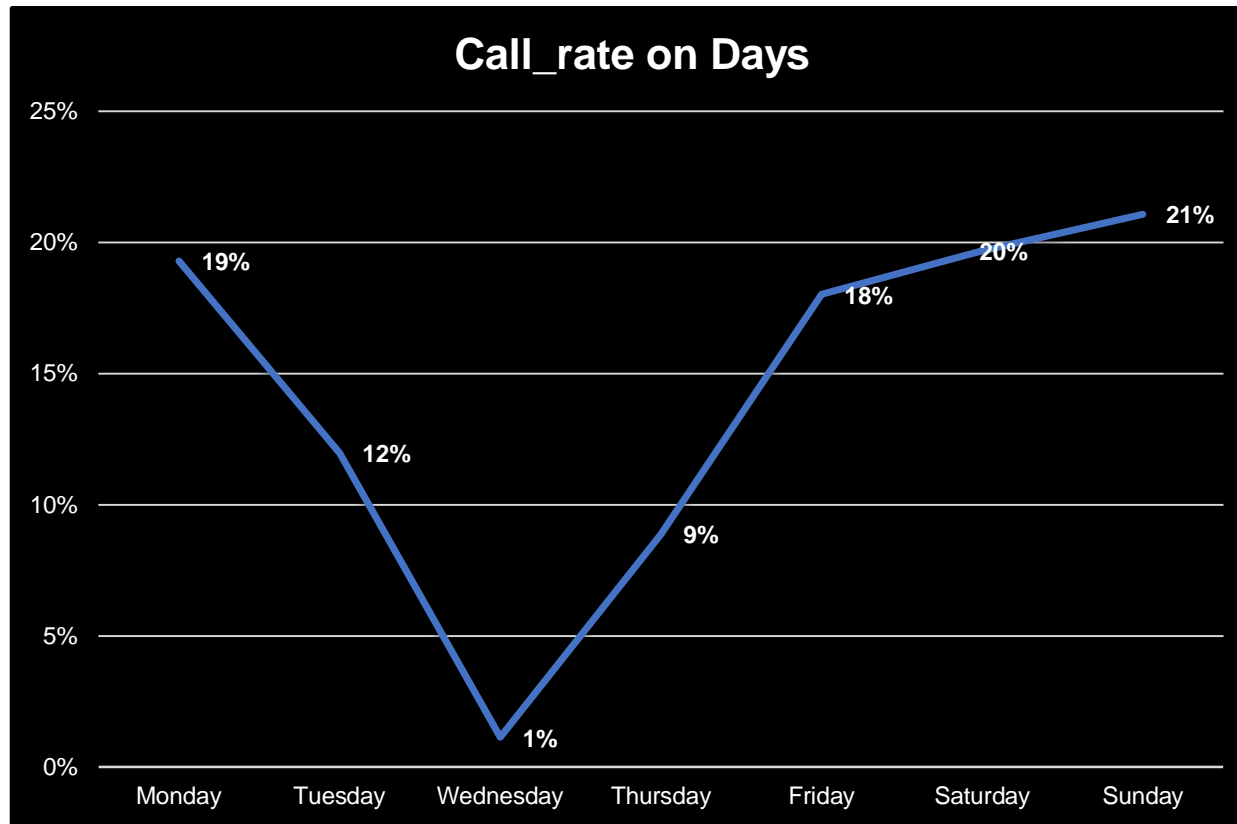
Call_rate on Days

Days	Call rate
Monday	19%
Tuesday	12%
Wednesday	1%
Thursday	9%
Friday	18%
Saturday	20%
Sunday	21%

- The highest conversion of calls/rate is More on *Weekends(Friday, Saturday, Sunday)* with a **Surprising Extreme** on *Monday* as well.

- The *Weekdays conversion is less Considering Tuesday, Wednesday, Thursday*.

- There is Marginal Increase from *Wednesday to Thursday* **indicating higher call conversion rate** and so on.
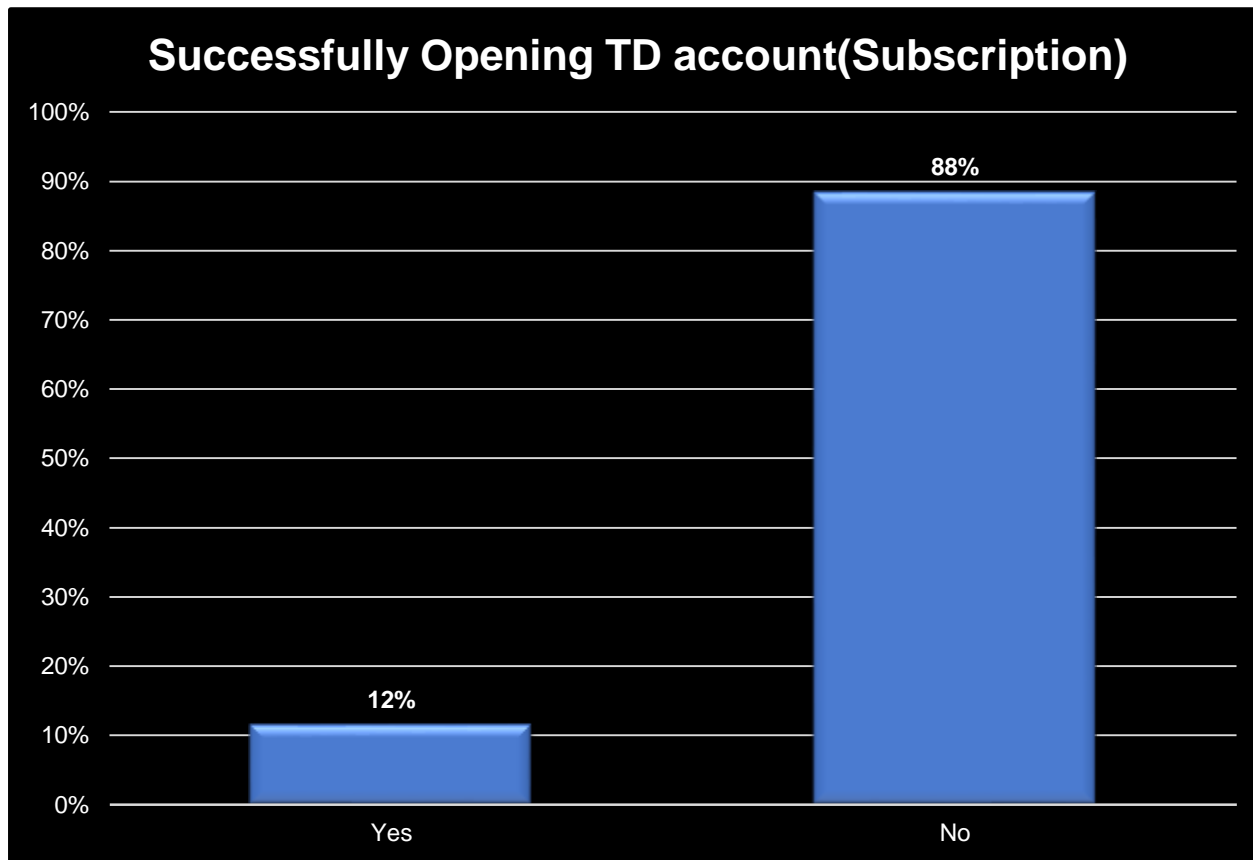
PART I : Univariate Analysis

Variable under consideration: _Poutcome_

Outcome rate

■ failure   ■ other   ■ success   ■ unknown

failure
11%

other
4%

success
3%

unknown
82%

- The Previous Campaign(rather than product term deposit) has a **_success rate of 3%_** of overall campaign.

- The **_Unknown factor of 82%_** can a play a major role in higher conversion rate, the upcoming campaign can be utilized in conversion of **success rate**.

PART I : Univariate Analysis

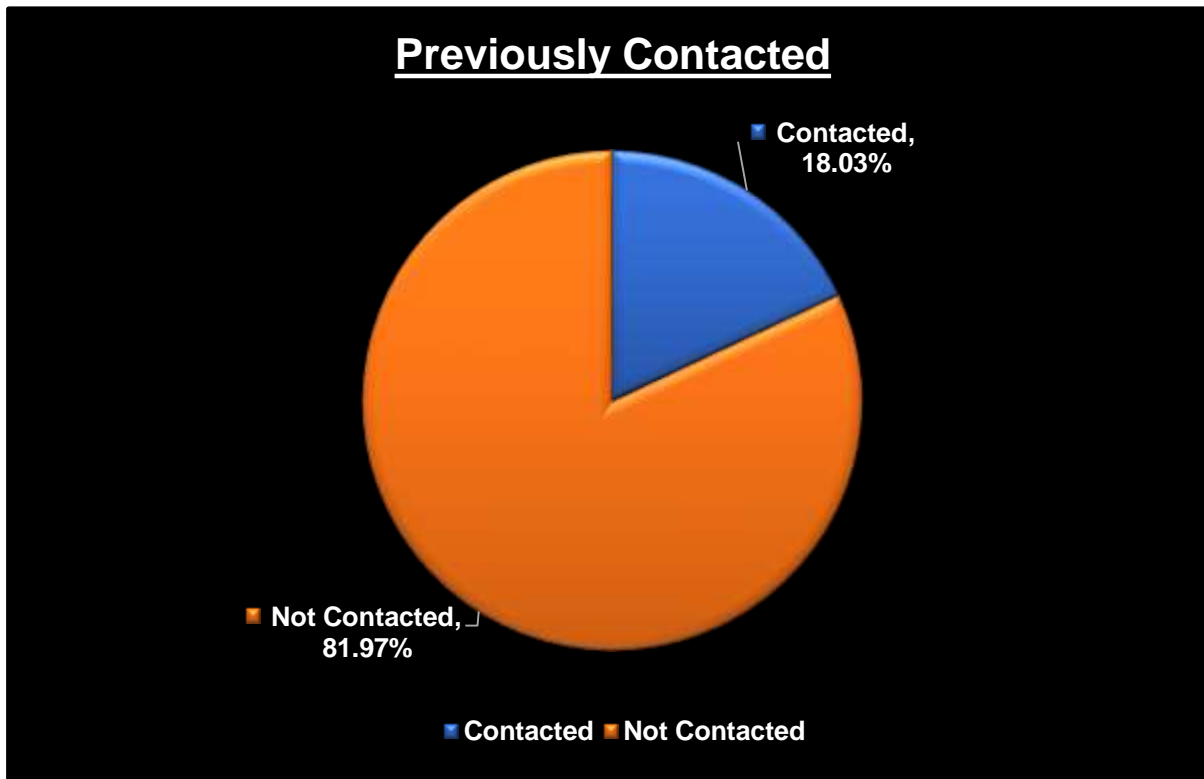**Variable under consideration: *Subscription***

TD Account Open	Rate
Yes	12%
No	88%

- **Subscription on Term Deposit Account Opening success rate is 12% .**

PART I : Univariate Analysis

Variable under consideration: *Previous Contacted/Previous*

Previously Contacted

Contacted, 18.03%

Not Contacted, 81.97%

■ Contacted ■ Not Contacted

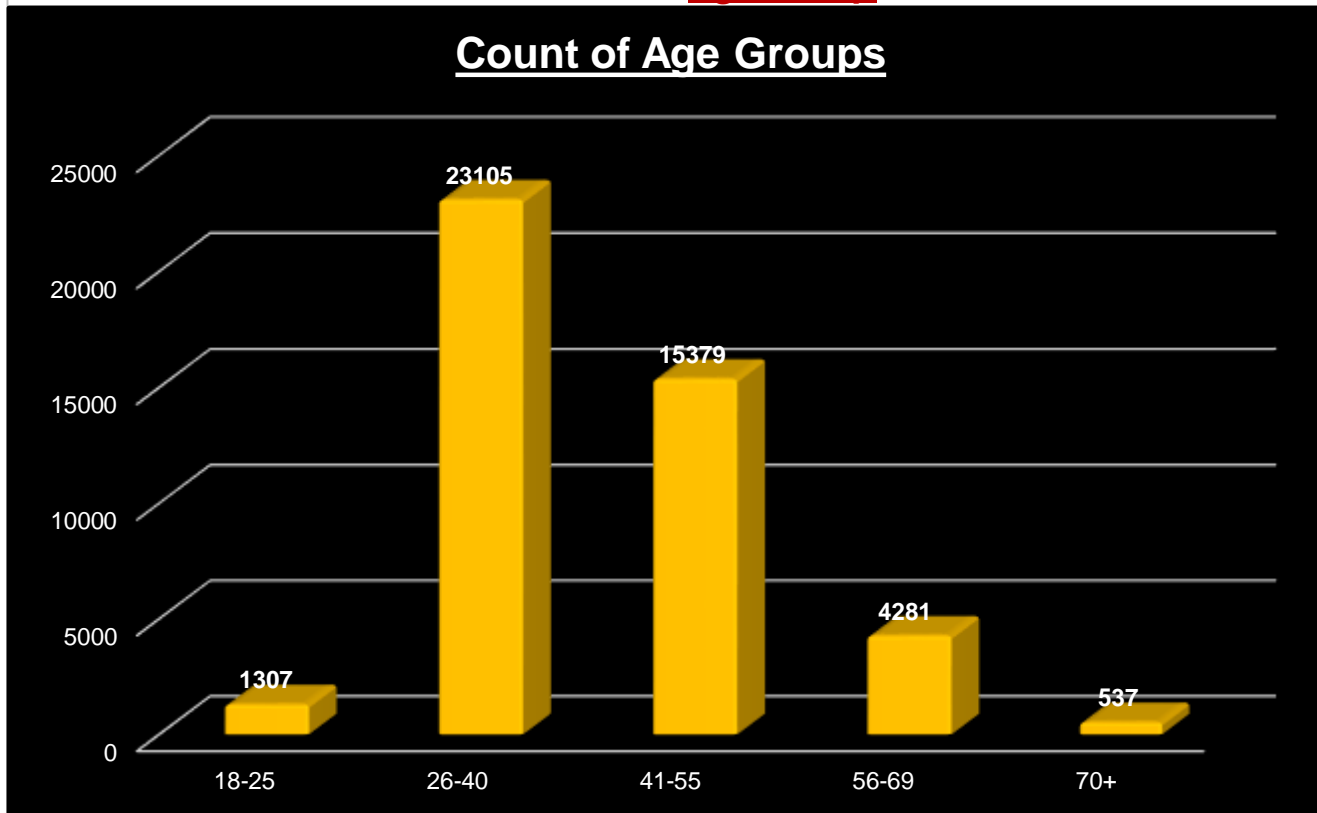| contacted	Count
Contacted	18.03%
Not Contacted	81.97%

- The **Overall Response rate** *Previously Contacted* is *18.03%* for other products (not term deposit).

PART I : Univariate Analysis

Variables under consideration: *Age Group*


Count of Age Groups

- The age group **26-40** has nearly **51%** of customers that have previously contacted/not-contacted list.

- **Adult(18-25)** has around **1307** customers with 2% overall.

- **70+** age group customers are less than 1% and **hence target audience generation is very low** (*Priority can be specified if to target that customer, recommend low priority*).

PART I : Univariate Analysis

Variables under consideration: *Job Categories*

% count of Job Categories
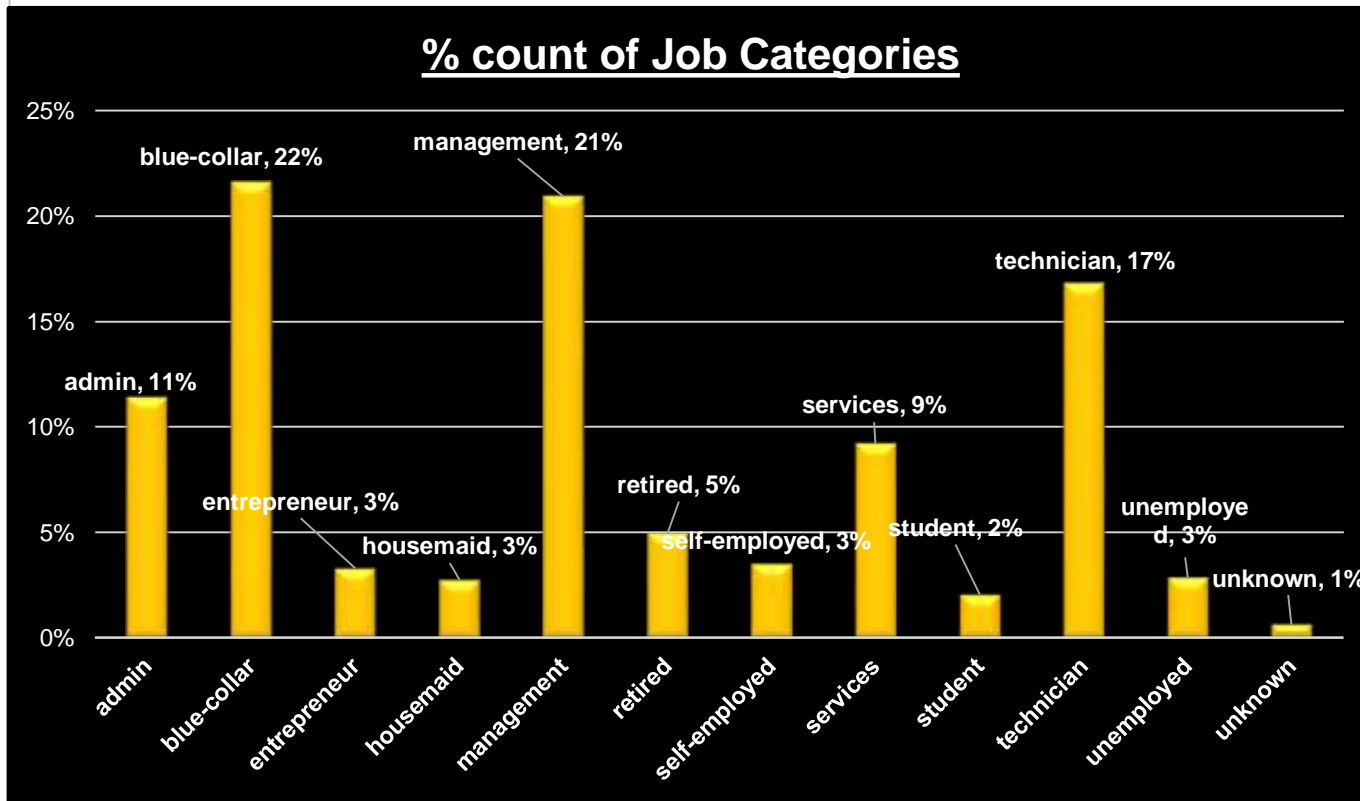
- There are more % of *Blue-collar* Job Category customers with **22%** ,followed by *Management* **21%**.

- Only **3%** of customers from job: *Self-employed, entrepreneur ,housemaid & Unemployed* respectively.

- *Students* (i.e., **Age Group 18-25**) are almost **2%**.

PART I : Univariate Analysis

SEGMENTED UNIVARIATE ANALYSIS

Variables under consideration: *Martial Status*

% count of Marital Status Contacted

Divorced; 11.5%

Single; 28.2%

- Divorced
- Married
- Single
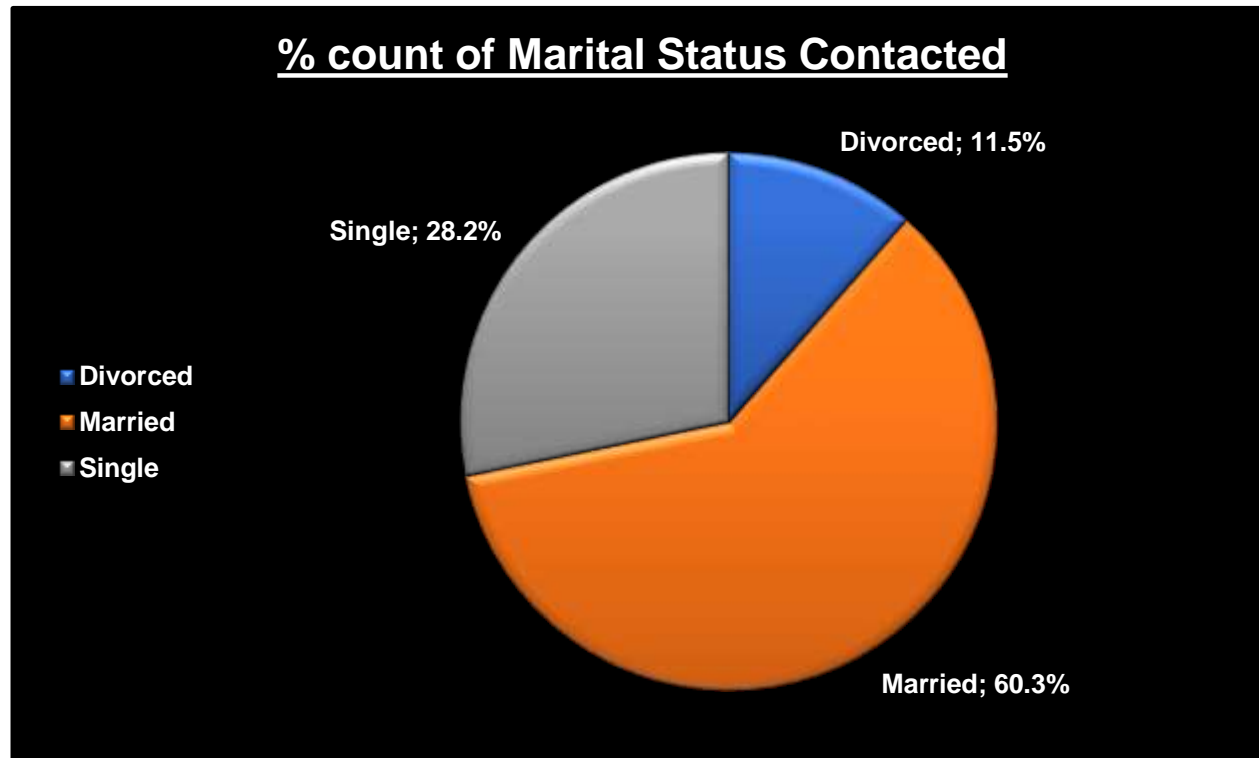
Married; 60.3%

Marital Status	% count
Divorced	12%
Married	60%
Single	28%

- Over **3/5** Customers are ___Married___ customers, around **28%** are ___single___ and almost **12%** people are ___Divorced___ out of. **44609 customers** .

PART I : Univariate Analysis

SEGMENTED UNIVARIATE ANALYSIS

Variables under consideration: *Education*
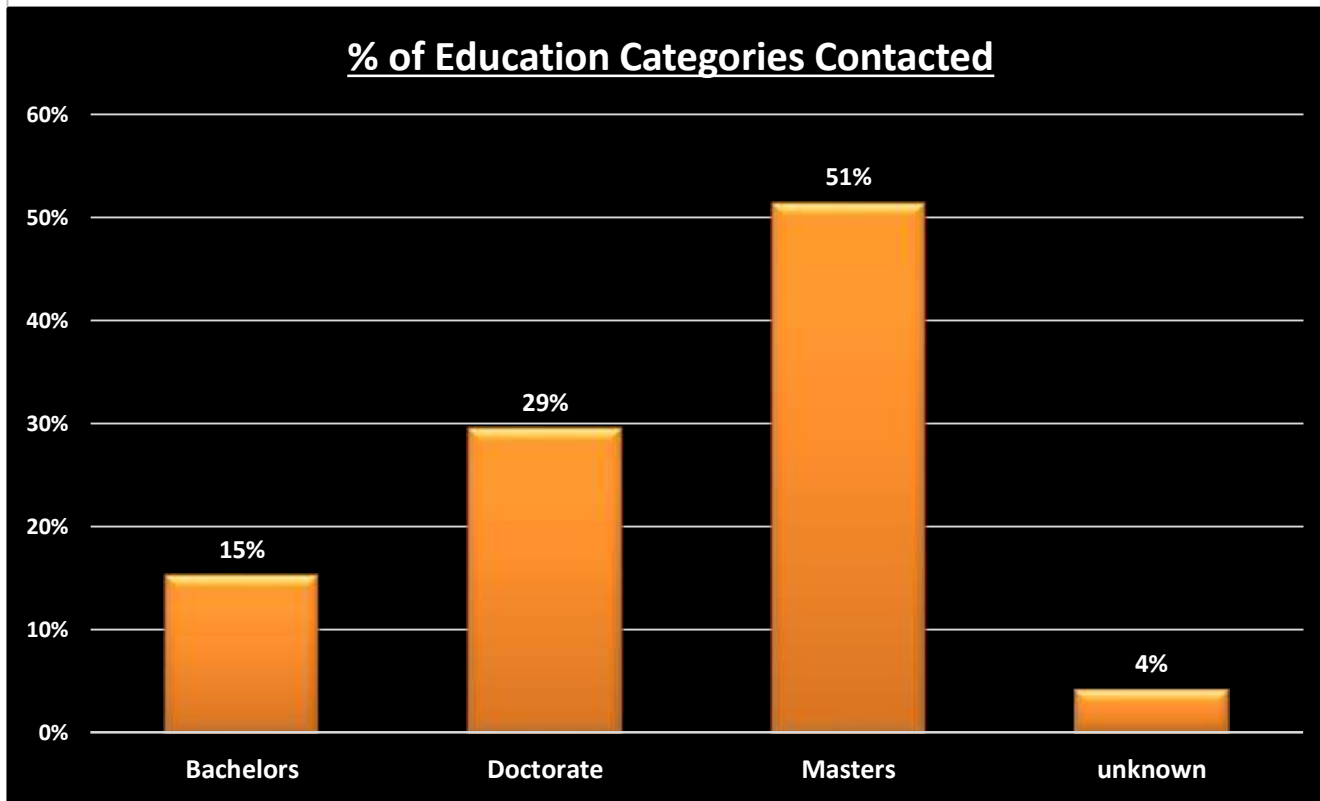
Education	%
Bachelors	15%
Doctorate	29%
Masters	51%
unknown	4%

- **50%** of customers are *Masters* education category

- Whereas, *Doctorate & Bachelors* are *29% & 15%* of overall.

PART I : Univariate Analysis

Variables under consideration: *Month*

Call Converison Based on Month

Month	Value
May	13610
July	6837
August	6221
June	5291
November	3875
April	2916
February	2629
January	1386
October	581
September	573
March	474
December	216
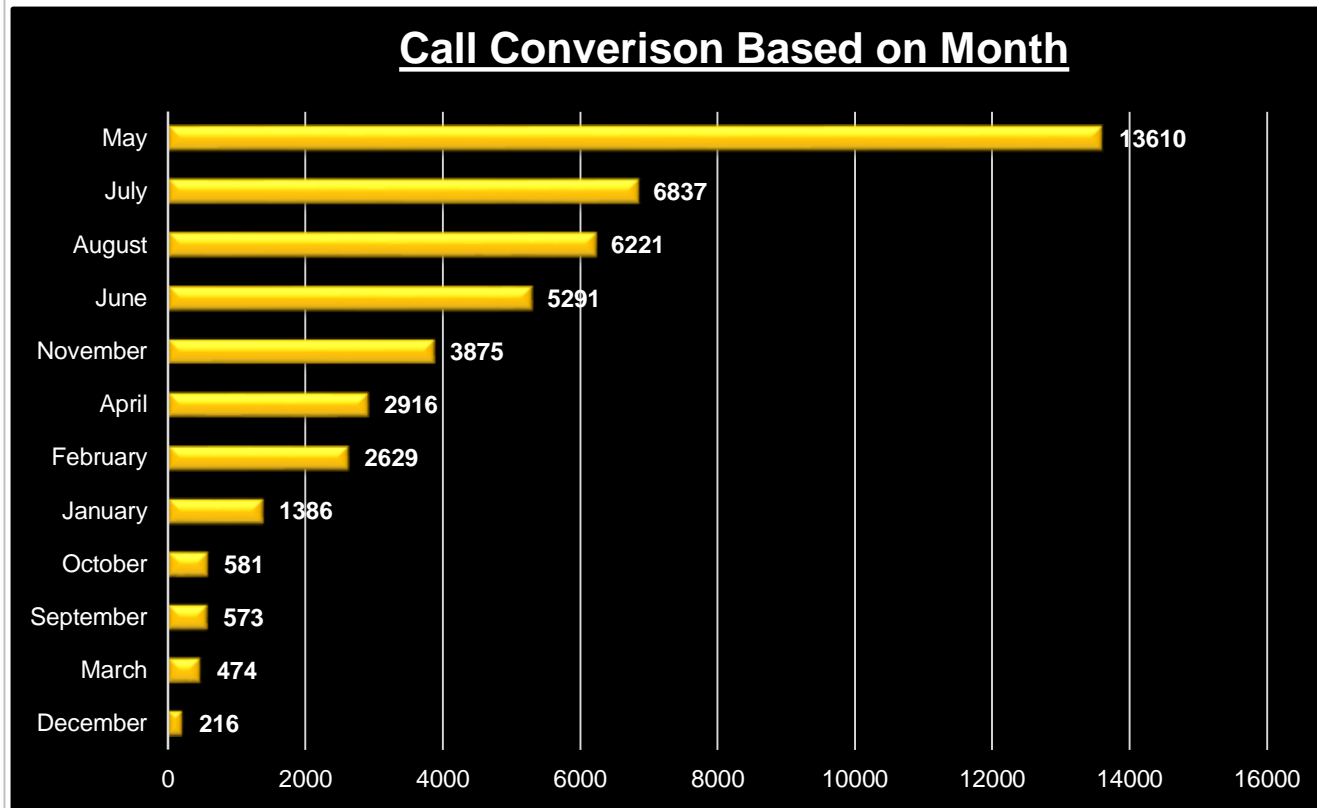
- The **Call response and conversion rate** is Higher in the month of *May*, with **decreasing rate** until *November*.

- In the month of *December* call conversion is less followed by *January, October, September & march.*

PART II : Bivariate Analysis

Variables under consideration: *Age Group V/S Subscription*
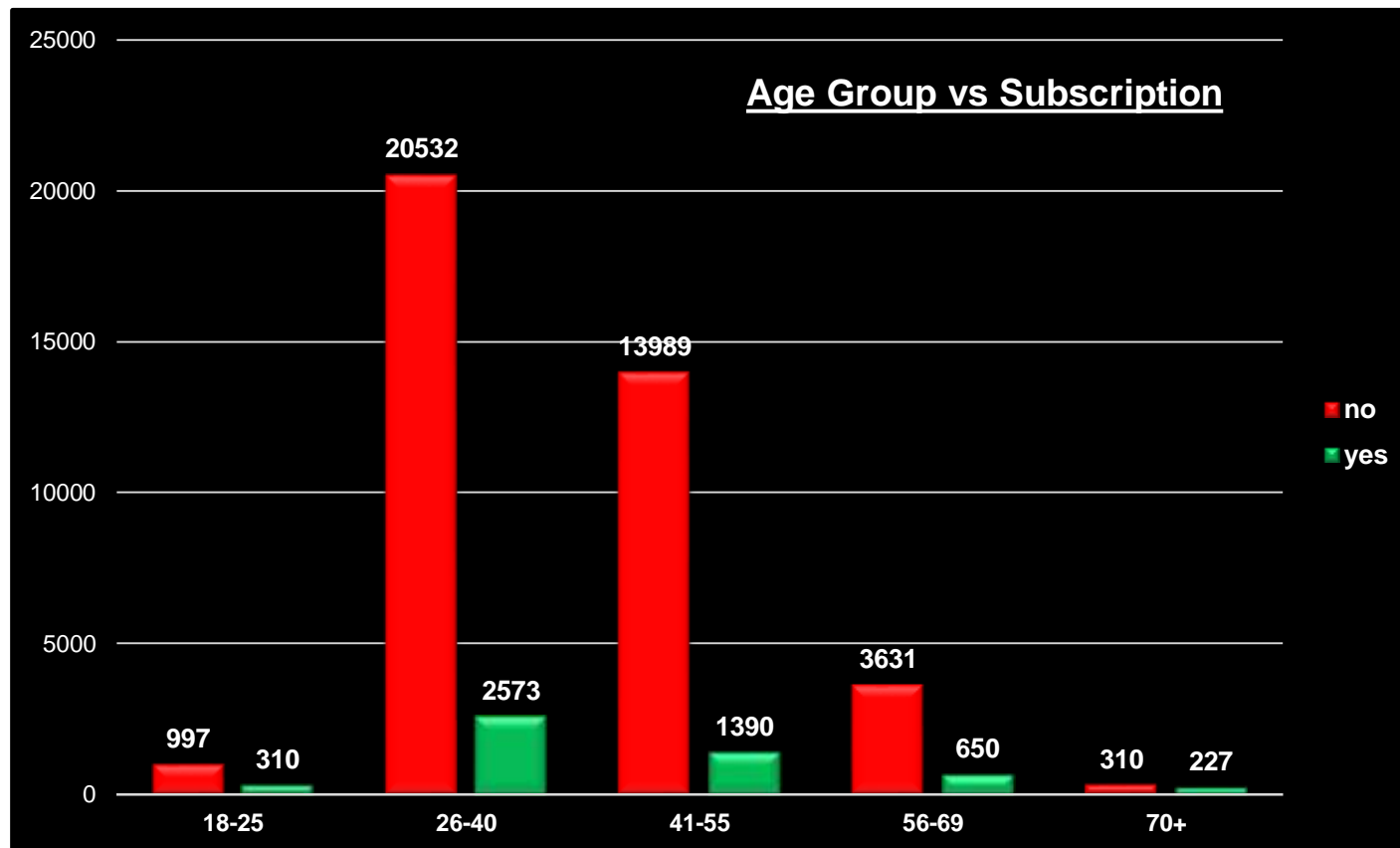
- The Successful conversion rate of subscription is with **surprising comparison of 13%** of *age group(26-40)* rather than **10% of** *age group (41-55)* .

- The **surprising extreme** is that Successful Opening term deposit account rate is more for **70+** *age group* with **42%** out of **537 customers.**

PART II : Bivariate Analysis

Variables under consideration: *Job Category V/S POutcome*

Job Category & Outcome

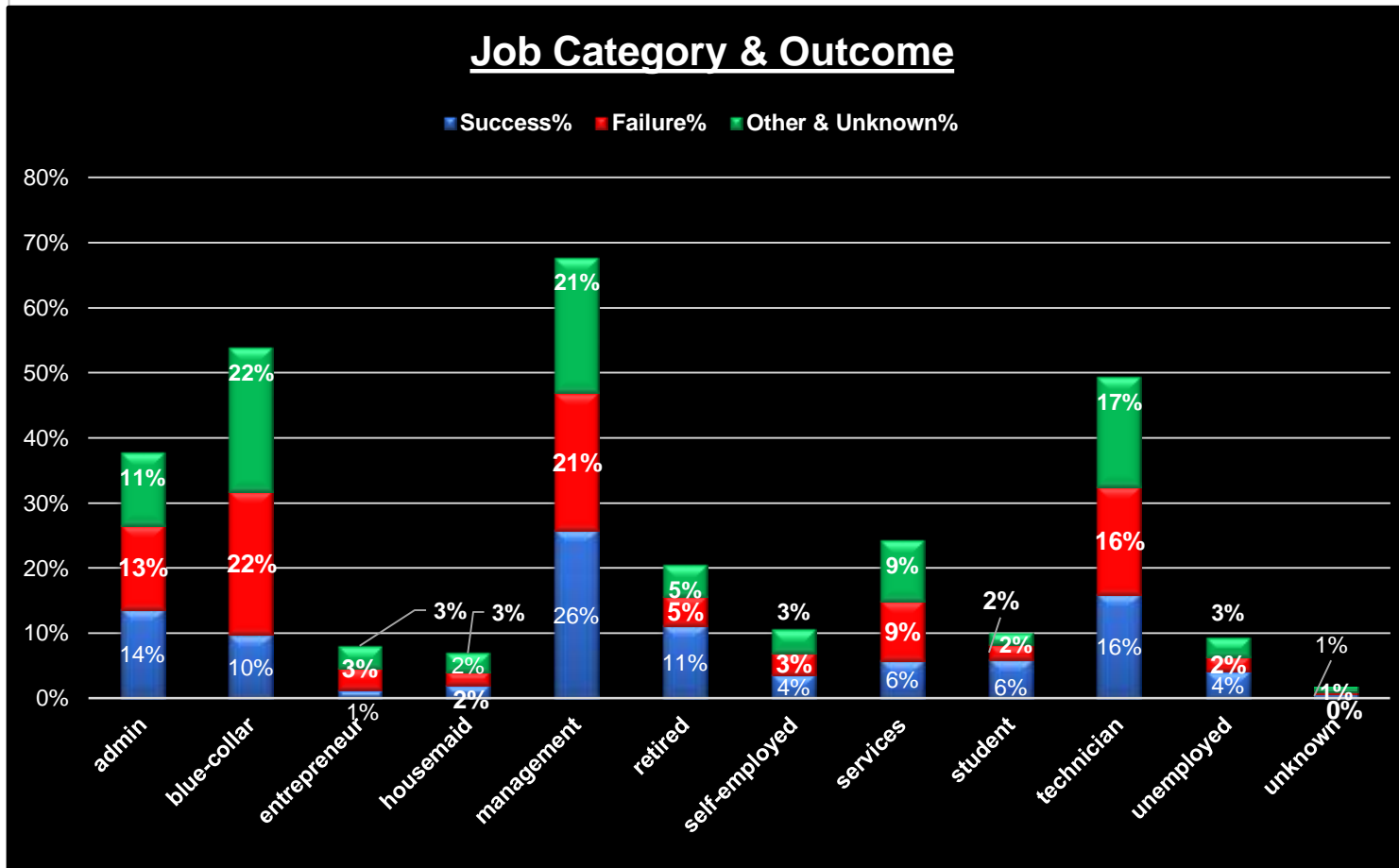- Since the job categories **Blue-collar & Management** has **higher Failure rate** of previously targeted(**Outcome)** is more compared to other, followed by **admin & technician**.

- The Success rate is more for **Management with ¼** out all other Job Categories.

- The **Other & unknown** indicates **no conversion or no Successful** conversion for the products, from the visual it refers that more % are lying in these category with **higher** in Major Job Categories **management & Blue-Collar**.

PART II : Bivariate Analysis

Variables under consideration: *Customer-Segment V/S Loan Default*

Customer-Segment vs Loan Default
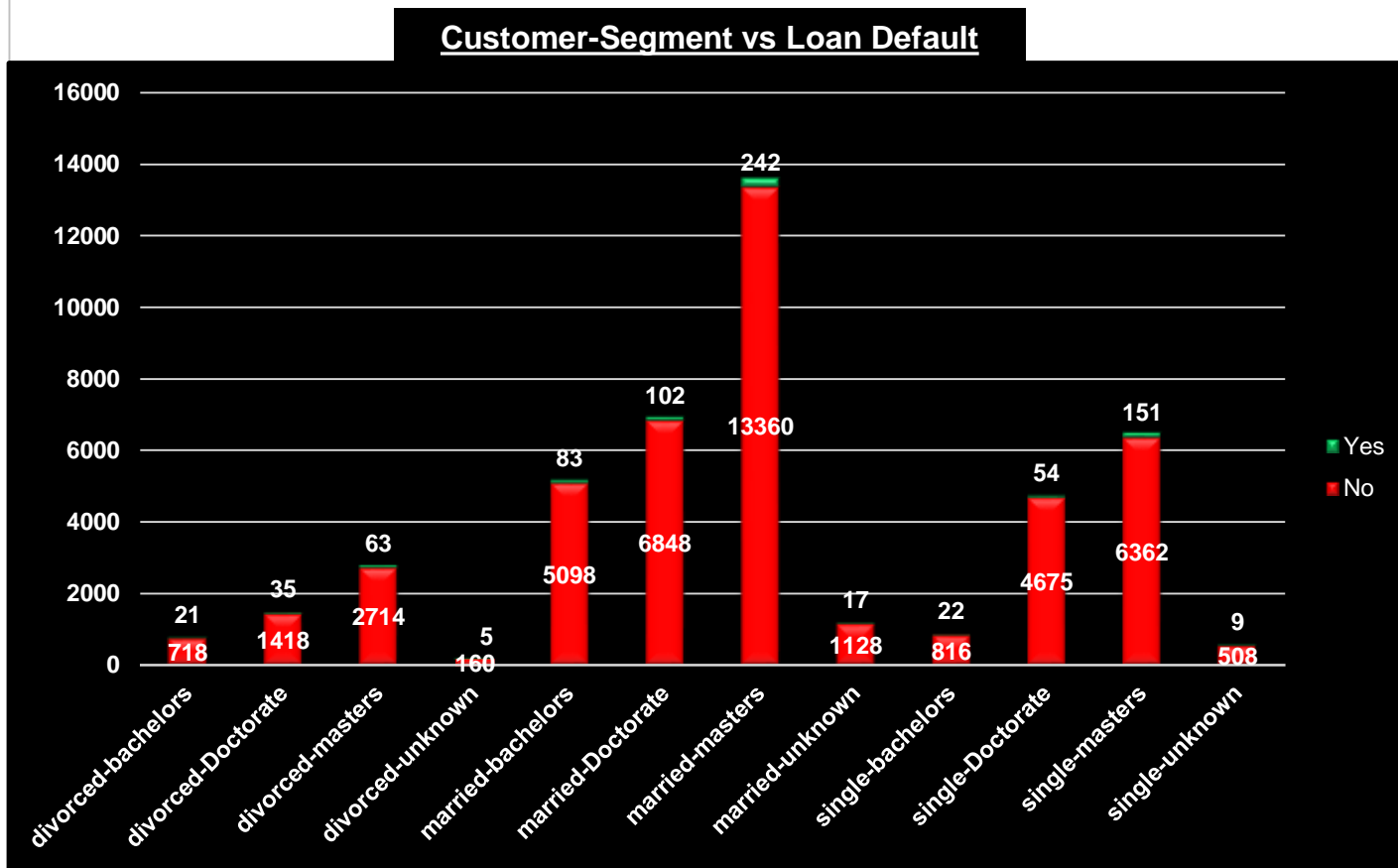
- The Loan default **yes/no** ratio is more for **Customer-Segment:** *married-masters & married-Doctorate* equally and sharing No & yes with **30.5% & 30.1%** respectively.

- The default **yes%** is more with around **4% increase** with **no%** ,while it has around ,more **yes/no** rate.

- *Single-unknown* & *divorced-unknown* has **marginable** Loan Default % with nearby **2%.**

PART II : Bivariate Analysis

Variables under consideration: *Day V/S Subscription*

Day V/S Subscription

Sunday	8294	1100
Saturday	7739	1040
Friday	7050	982
Thursday	3206	752
Wednesday	296	208
Tuesday	5039	301
Monday	7835	767

- no
- yes
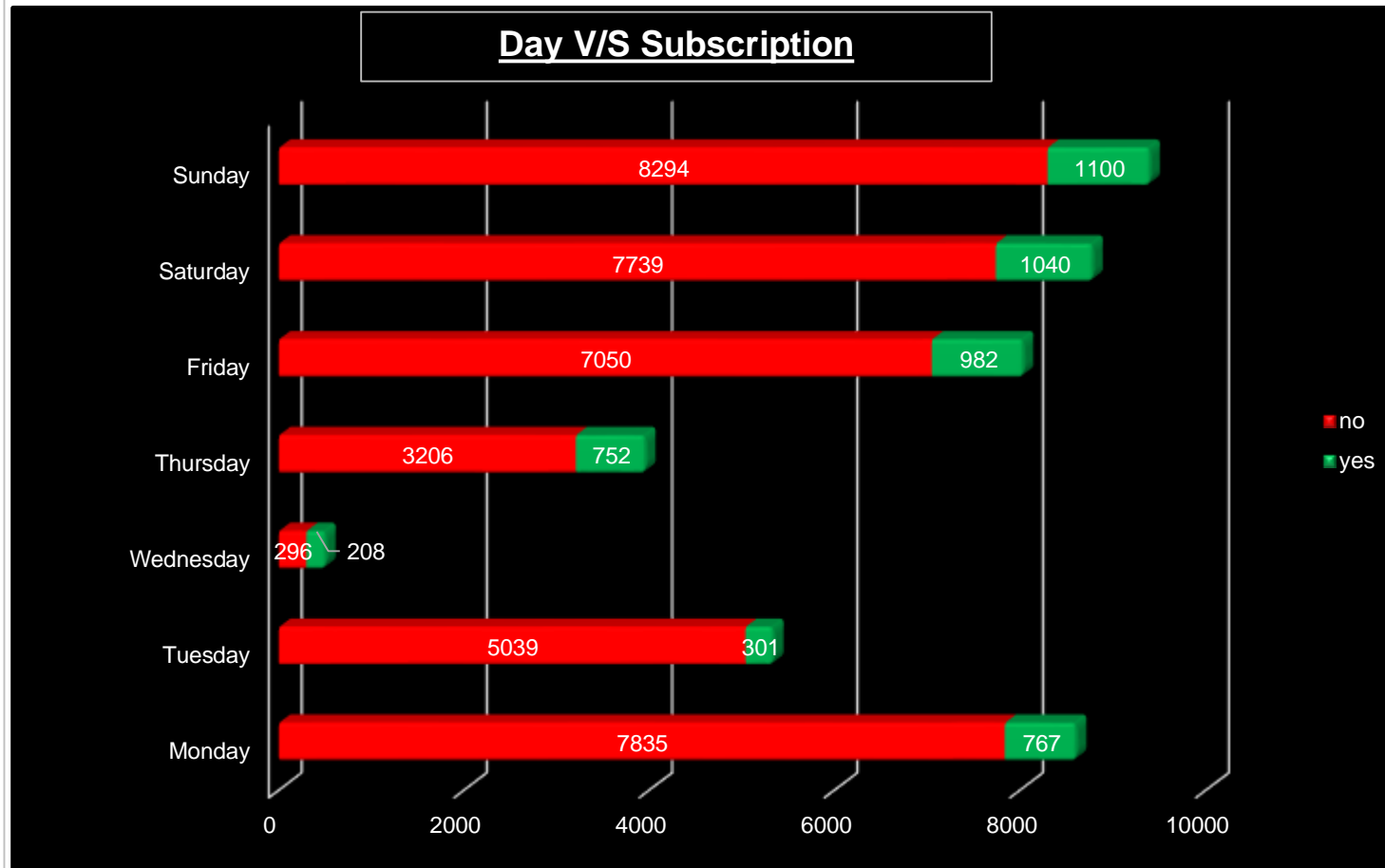
| Day | Subscription | |
	No	Yes
Monday	20%	15%
Tuesday	13%	6%
Wednesday	1%	4%
Thursday	8%	15%
Friday	18%	19%
Saturday	20%	20%
Sunday	21%	21%

- Call rate for the *subscription* is more on *weekends(Friday, Saturday, Sunday)* .

- The *Weekdays* conversion is less Considering *Tuesday, Wednesday, Thursday*.

- The call response is **too low** on *Wednesdays* and the **surprising extreme** with **more conversion on Monday.**

PART II : Bivariate Analysis

Variables under consideration: *Call_duration(secs) V/S Customer Segment*

Call_duration(secs) V/S Customer Segment
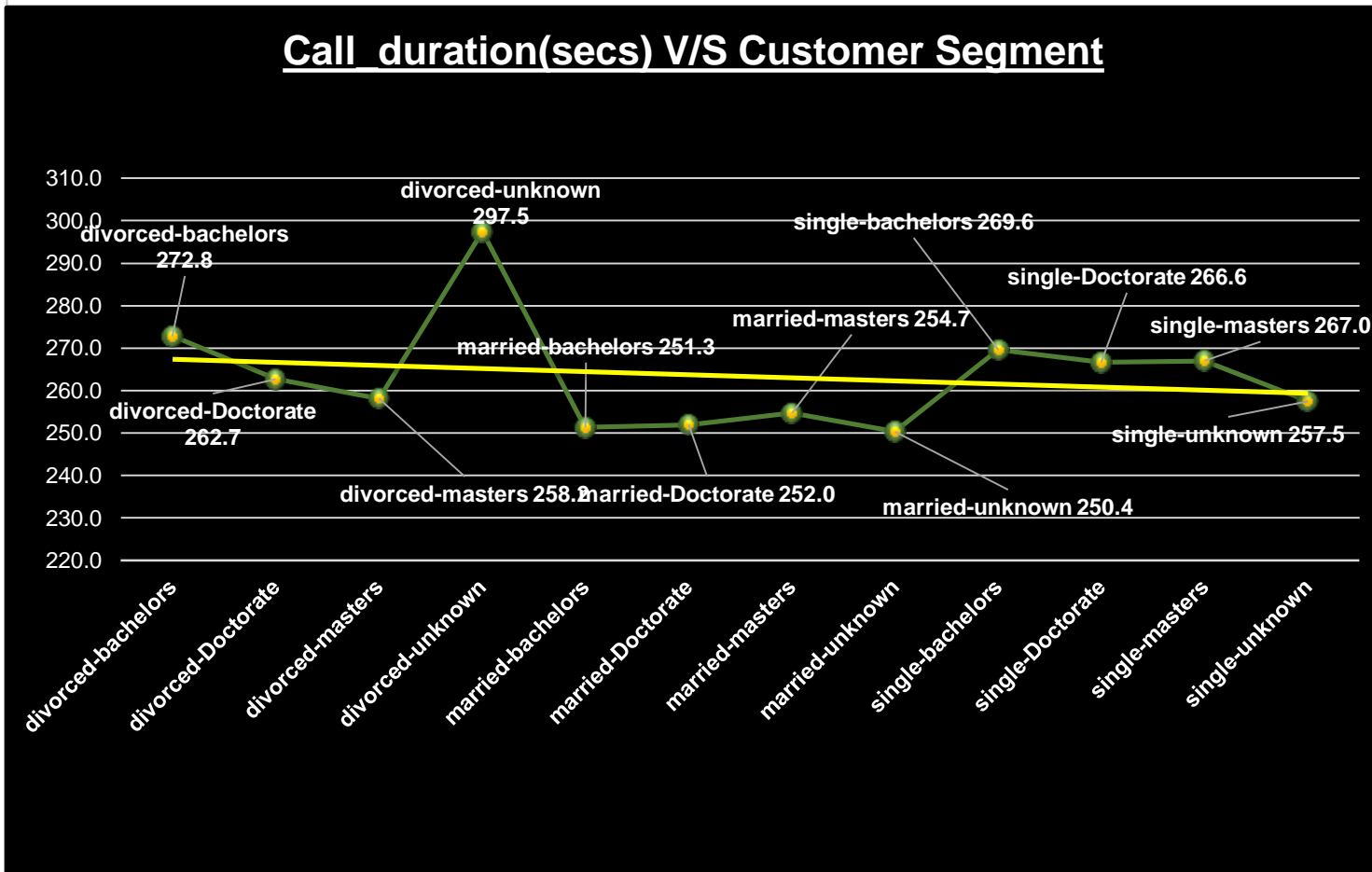
- The Category *Divorced-unknown* has **higher Average Call Duration(secs)** with *5 minutes* call Duration, considering the factor of **increasing success rate**.

- The Average call Duration of a call to a customer is **258 secs**. With almost **4minutes**.

- *Divorced-masters* , *married-doctorate & married-unknown* has lesser call duration and referring less than the Average Call Duration.

PART III: Major insights

Average Converted Calls based on Customer Segment(secs)

Customer Segment	yes
single-bachelors	708
divorced-unknown	648
married-bachelors	626
divorced-masters	607
divorced-bachelors	590
divorced-Doctorate	567
married-masters	565
single-masters	545
single-Doctorate	494
married-Doctorate	485
married-unknown	480
single-unknown	380

- **Average Converted Calls for overall Customer-Segment is *541secs.***

Average Non-converted calls based on Customer Segment(secs)

Customer Segment	no
divorced-unknown	238
single-unknown	234
single-masters	227
married-masters	223
divorced-bachelors	223
married-bachelors	221
married-unknown	219
divorced-masters	218
married-Doctorate	218
single-bachelors	217
single-Doctorate	216
divorced-Doctorate	214

- **Average Non-converted calls for overall Customer-Segment is *221secs.***
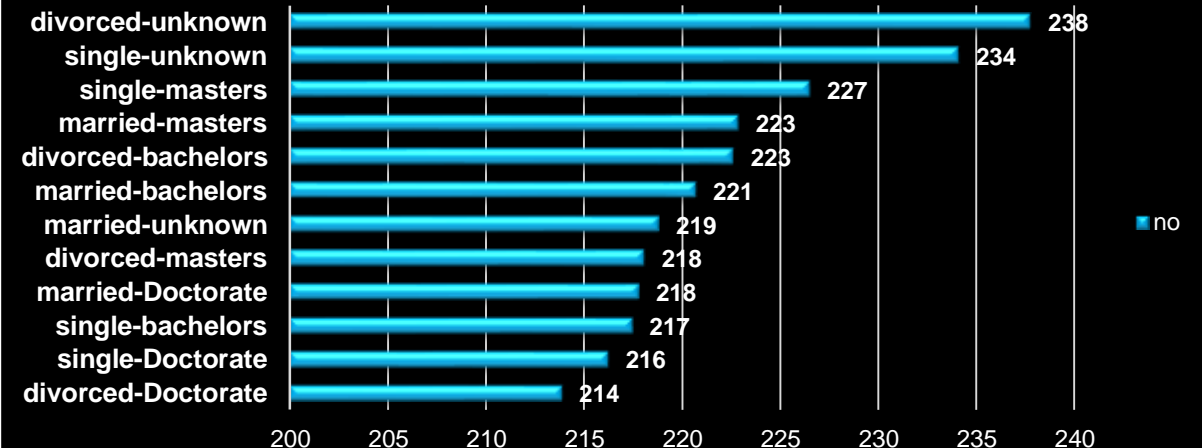
PART III: Major insights

The Conversion rate based on each customer segment is more for Customer-Segment : *married-masters followed by married-doctorate, single-doctorate, single-masters respectively*.

Conversion rate based on each customer segment

Segment	Conversion rate
married-masters	24.5%
married-Doctorate	17.2%
single-Doctorate	16.6%
single-masters	16.1%
married-bachelors	7.6%
divorced-masters	5.6%
divorced-Doctorate	3.9%
married-unknown	2.7%
divorced-bachelors	2.0%
single-bachelors	1.7%
single-unknown	1.6%
divorced-unknown	0.5%

PART III: Major insights

Cost per Customer Segment for Converted Calls

- married-masters; ₹ 12,640
- married-Doctorate; ₹ 8,880
- married-bachelors; ₹ 8,570
- single-Doctorate; ₹ 8,280
- divorced-Doctorate; ₹ 2,010
- single-bachelors; ₹ 1,010
- married-unknown; ₹ 1,380
- single-masters; ₹ 3,910
- divorced-masters; ₹ 2,860
- single-unknown; ₹ 830
- divorced-bachelors; ₹ 890
- divorced-unknown; ₹ 240

Y-axis: ₹ 16,000, ₹ 12,000, ₹ 8,000, ₹ 4,000, ₹ 0

X-axis: married-masters, married-Doctorate, single-Doctorate, single-masters, married-bachelors, divorced-masters, divorced-Doctorate, married-unknown, divorced-bachelors, single-bachelors, single-unknown, divorced-unknown

PART III: Major insights

Considering(Given),
Estimated Budget for Marketing Campaign by the bank:
₹ 1,50,000.00
Cost per customer for 1 minute:
₹ 10.00

Customer Segment	Converted Calls Cost per minute	Conversion rate
married-masters	₹ 12,640	24.5%
married-Doctorate	₹ 8,880	17.2%
single-Doctorate	₹ 8,280	16.6%
single-masters	₹ 3,910	16.1%
married-bachelors	₹ 8,570	7.6%
divorced-masters	₹ 2,860	5.6%
divorced-Doctorate	₹ 2,010	3.9%
married-unknown	₹ 1,380	2.7%
divorced-bachelors	₹ 890	2.0%
single-bachelors	₹ 1,010	1.7%
single-unknown	₹ 830	1.6%
divorced-unknown	₹ 240	0.5%
Total	**₹ 51,500**	

PART III: Major insights

Final Recommendations :

- **Target : Age Group 26-40.**
  -
- Consider, Campaign performance increase at the Month of **MAY(Recommended),**rest months can be chosen based on effectiveness of the campaign resources.

- Create feasible campaigns for **age group 60+ .**

- **Target Customer Segment** : ***married-masters, married-Doctorate & single-Doctorate*** (based on the cost of call and conversion rate), even ***single-masters*** preferable.

- Call on ***Weekends*** rather than ***Weekdays***(Call rate for the subscription is more on weekends(***Friday, Saturday, Sunday***)) .