

IST 687 : APPLIED DATA SCIENCE

MEMBERS:

AUSTRIN F DABRE

RHYTHM ARORA

LA LEH JAFARPOUR

CHRISTOPHER WHELAN

LUIGI PENALOZA

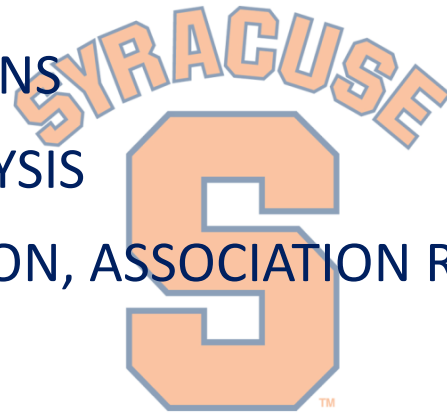
The Hyatt logo features the word "HYATT" in a blue, serif, all-caps font. A red swoosh underline is positioned beneath the letters "Y" and "A".

School of Information Studies
SYRACUSE UNIVERSITY



CONTENT

- ❑ INTRODUCTION
- ❑ BUSINESS QUESTIONS
- ❑ BUSINESS RULES & ASSUMPTIONS
- ❑ DESCRIPTIVE STATISTICAL ANALYSIS
- ❑ MODELING: LINEAR REGRESSION, ASSOCIATION RULES
- ❑ VISUALIZATIONS
- ❑ INTERPRETATION OF THE RESULTS
- ❑ RECOMMENDATION
- ❑ LESSONS LEARNED



INTRODUCTION

- A survey was conducted on Hyatt Hotels from February 2014 to January 2015.
- The survey gathered information about various characteristics of the hotel and quality of stay, which influenced the overall customer experience.
- Hyatt categorized customers according to Net Promoter Score (NPS) Type as Detractor, Passive or Promoter.
- Our approach was to focus on a specific area based on certain factors and perform analysis on what factors drive a customer to be a promoter or detractor.
- Out of the data provided for 12 months we initially narrowed down our analysis to 1 month which was July because it had the least likelihood to recommend out of all the months available

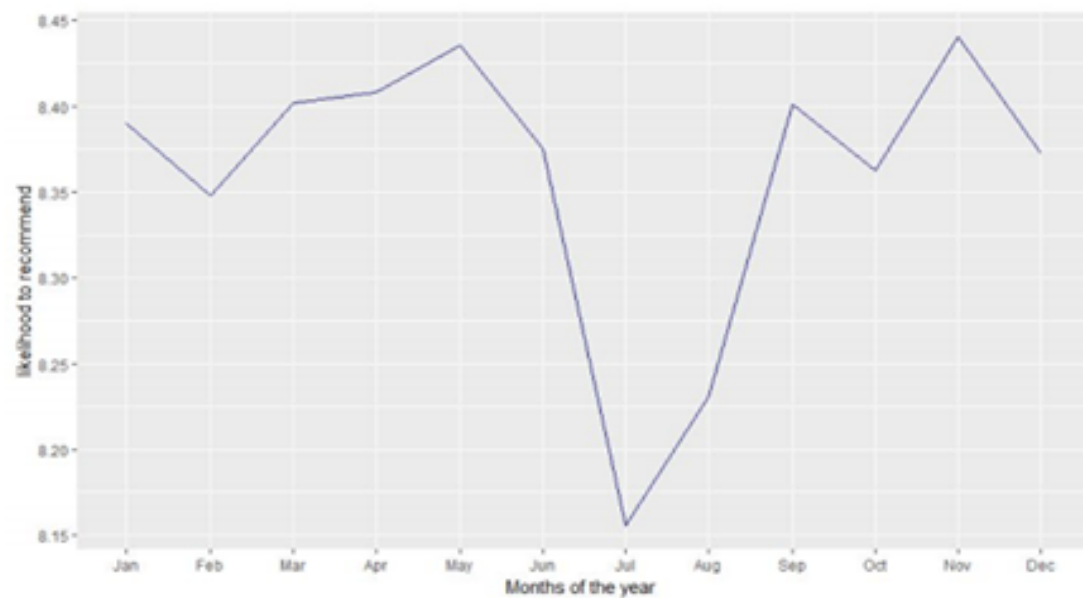


Fig. 17: Likelihood of recommend versus Months of the year

The monthly reservations trend looks like this:

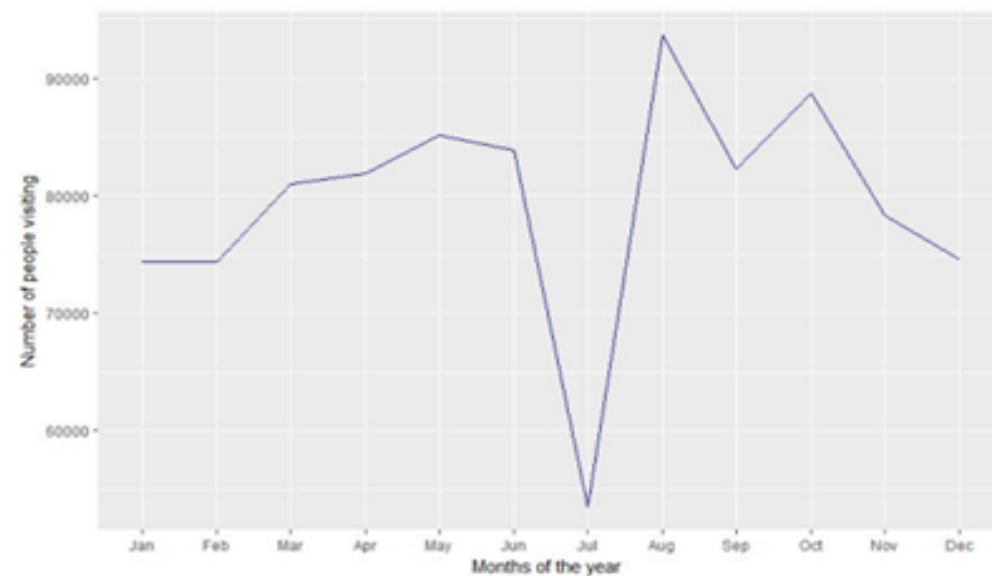
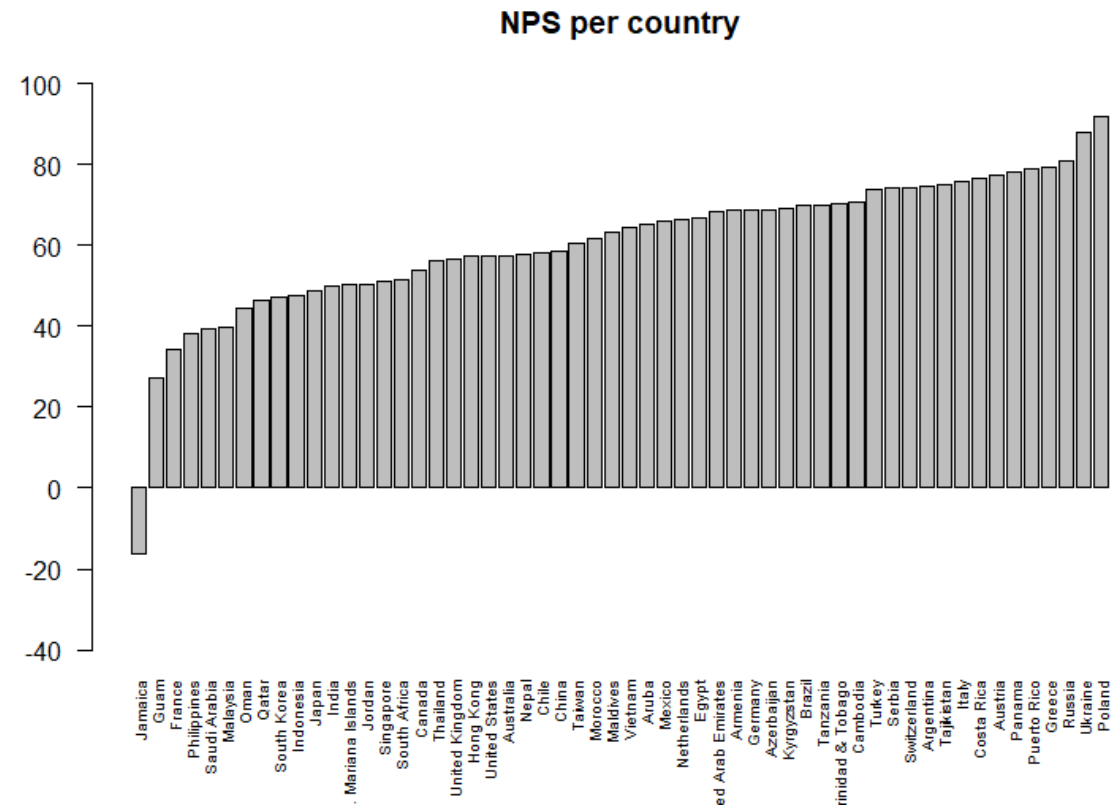


Fig. 16: Monthly Reservation Trends

DATA PREPARATION

- ▶ We cleaned the dataset the following way:
 - ▶ For NPS type, Likelihood to Recommend and Countries:
 - ▶ We removed all customer data which was blank in these columns to perform analysis on them.
 - ▶ For numerical variables – 1 to 10 (survey options)
 - ▶ We looked at the number of entries in the variable that were blank. If a vast majority of them were blank, like in the case of Internet Satisfaction, we dropped that variable from our analysis.
 - ▶ For the rest, we substituted the mean of the non-blank data into the blank spaces, so that we can use that customer's data and not omit it.
 - ▶ For flag variables – “Y” and “N” (amenities):
 - ▶ We removed all the rows which were blank so that we can perform analysis on them.

NPS PER COUNTRY



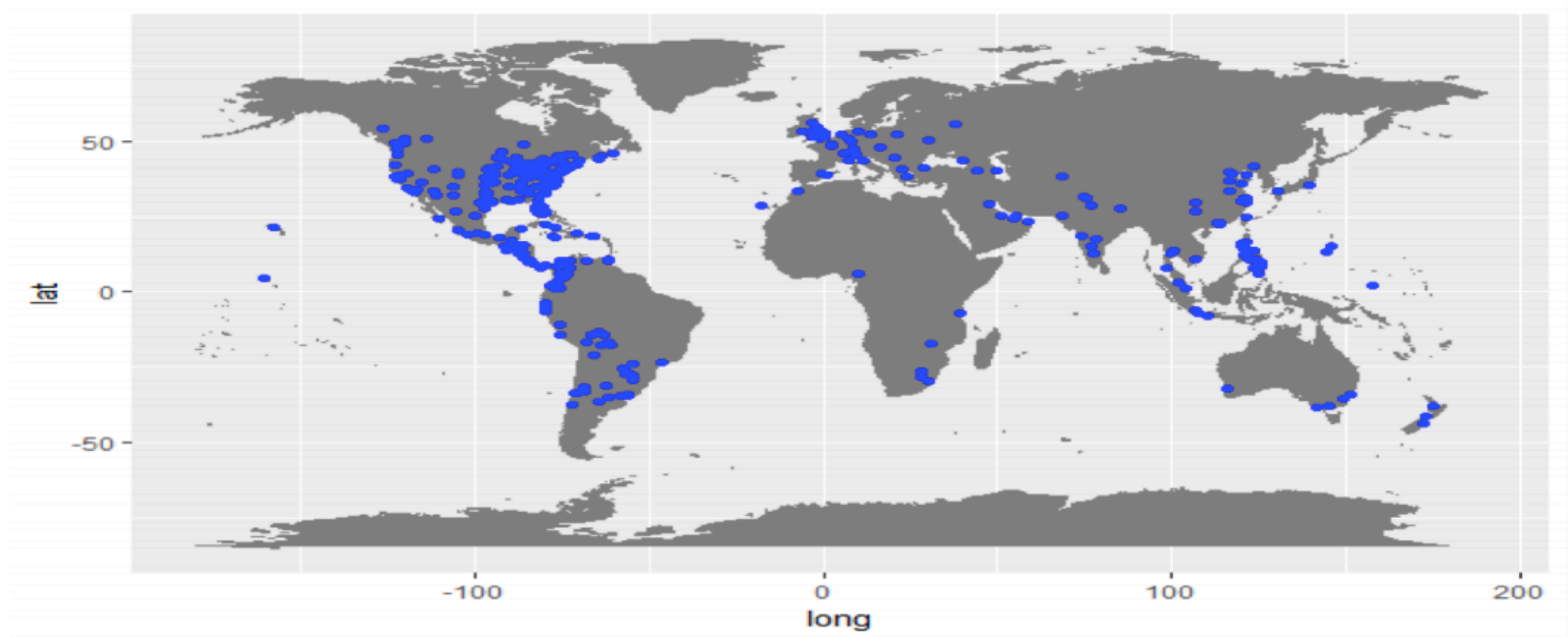
BUSINESS QUESTIONS

- Likelihood to Recommend has a substantial role in determining the NPS type.
- Increasing the customer satisfaction on services and the quality of stay of detractors can convert them to promoters.
- Improving the array of amenities available to customers can convert detractors into promoters.
- We are to focus on improving the NPS, by providing the customers attractive offers that would in turn contribute to increasing the NPS

MAJOR DATA QUESTIONS

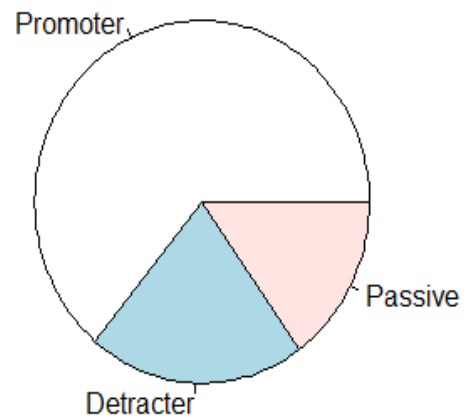
- What is the spread of customers with different Purpose of Visit across the three NPS types?
- What is the average Likelihood to recommend across different months in an year?
- Which countries have the most number of detractors?
- Which states within the United States have the lowest NPS?
- Which states within the United States have the highest number of detractors?
- Which survey factors have the most impact on Likelihood to Recommend?
- Which survey factors have most impact on NPS type across different purpose of visits?
- The presence of which amenities have most impact on NPS type across different purposes of visits?

WHY WE CHOSE USA?



DESCRIPTIVE STATISTICAL ANALYSIS

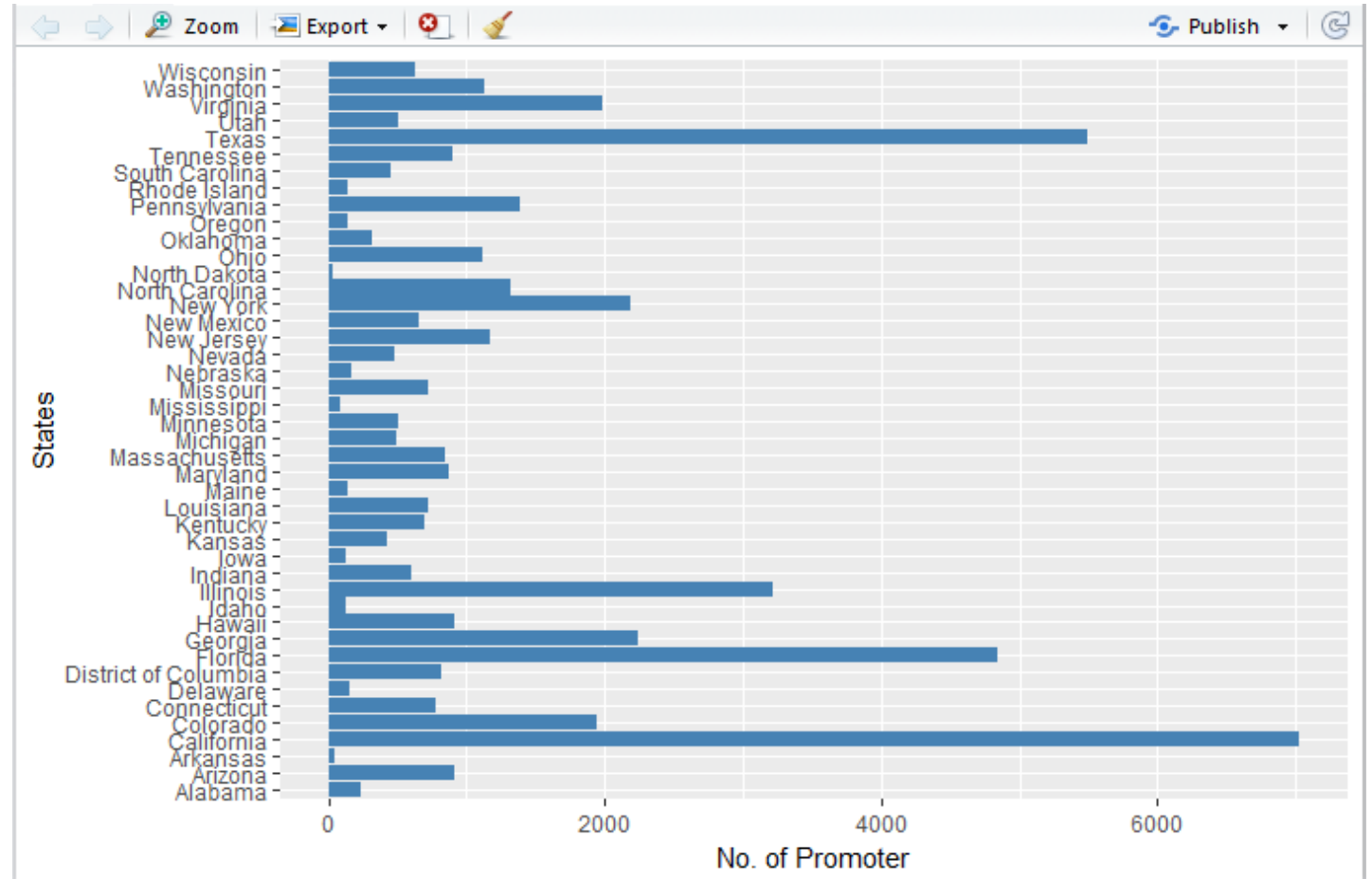
	NPS_Type	United States
1		960742
2	Detractor	9230
3	Passive	13590
4	Promoter	49677



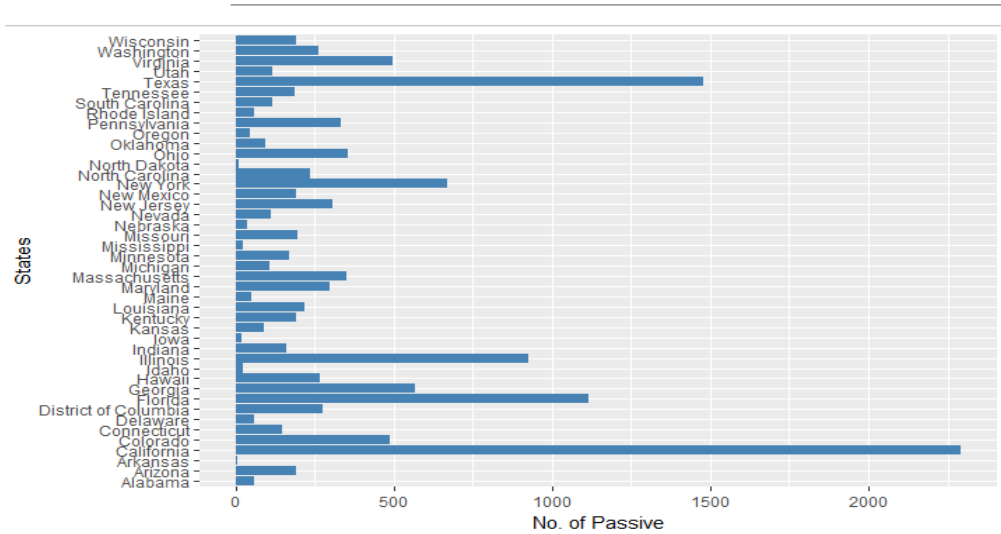
Out of the total number of people who have visited and stayed Hyatt hotels, 68.5% have been promoters (9/10 NPS) of the hotel franchisee.

STATEWISE DISTRIBUTION - PROMOTERS

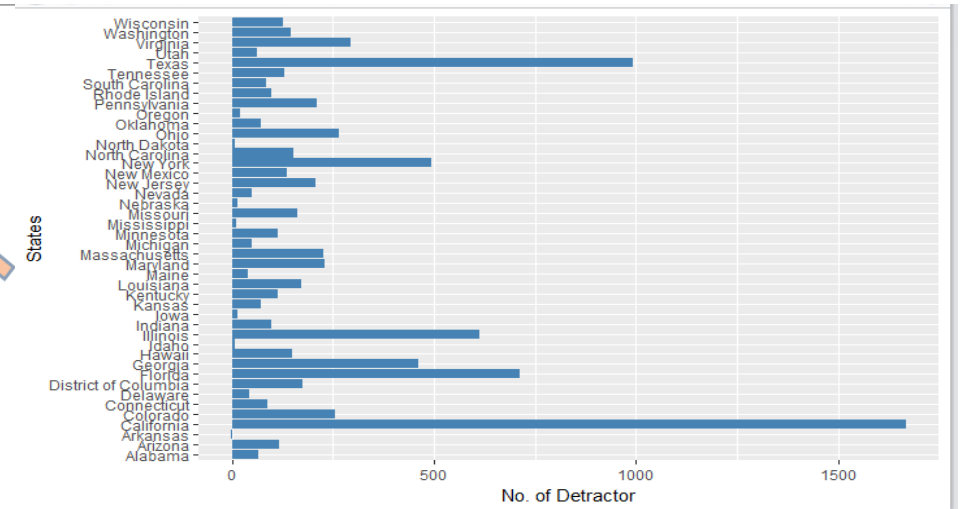
California has the highest promoters with about 7000 total promoters and 14% of the total promoters in the US



STATEWISE DISTRIBUTION – PASSIVE AND DETRACTORS



California has about 2400 passive customers



Number of detractors is around 1700,

NPS – DESCRIBING DISTRIBUTION OF NPS SCORES IN CALIFORNIA

	NPS_Type	California
1		153961
2	Detractor	1669
3	Passive	2293
4	Promoter	7027



NPS CALCULATION

TOTAL VOTERS: = 7027+1669+2293

Percentage of promoters =

$7027/\text{Total Voters} * 100$

63.94

Percentage of detractors =

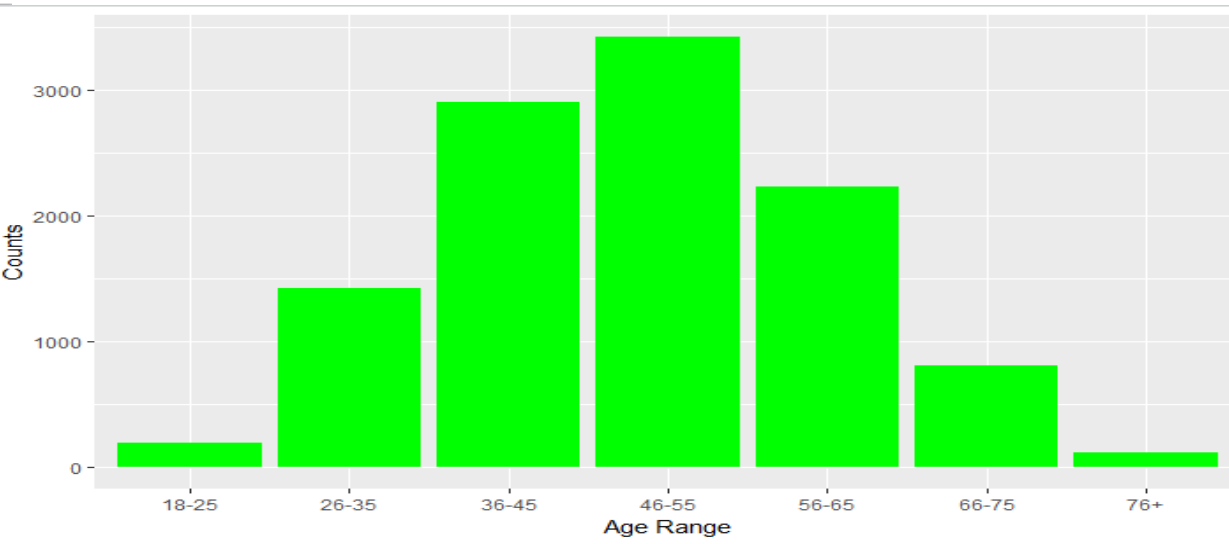
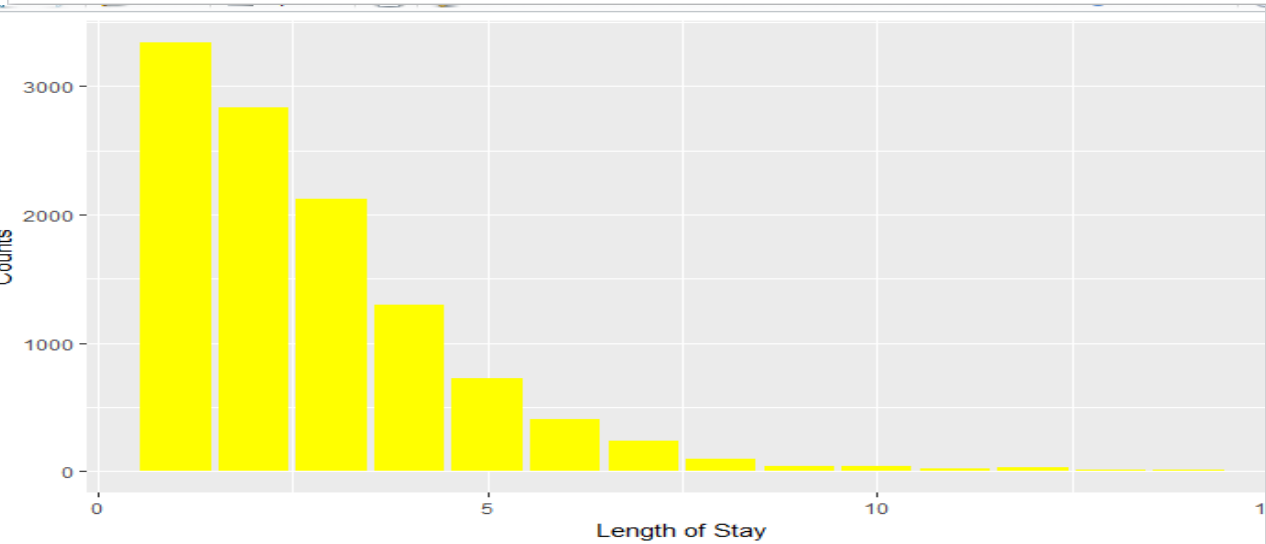
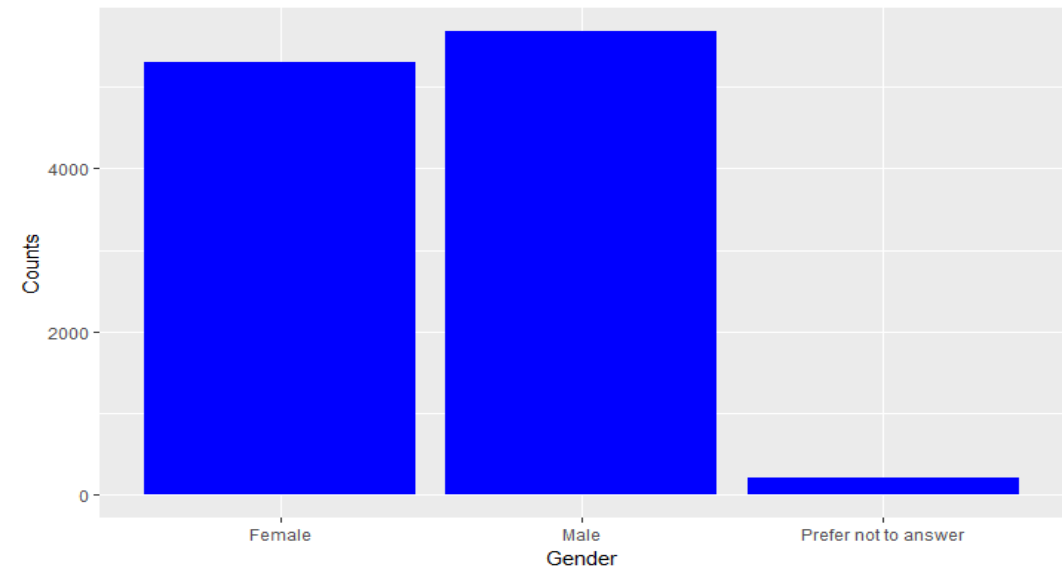
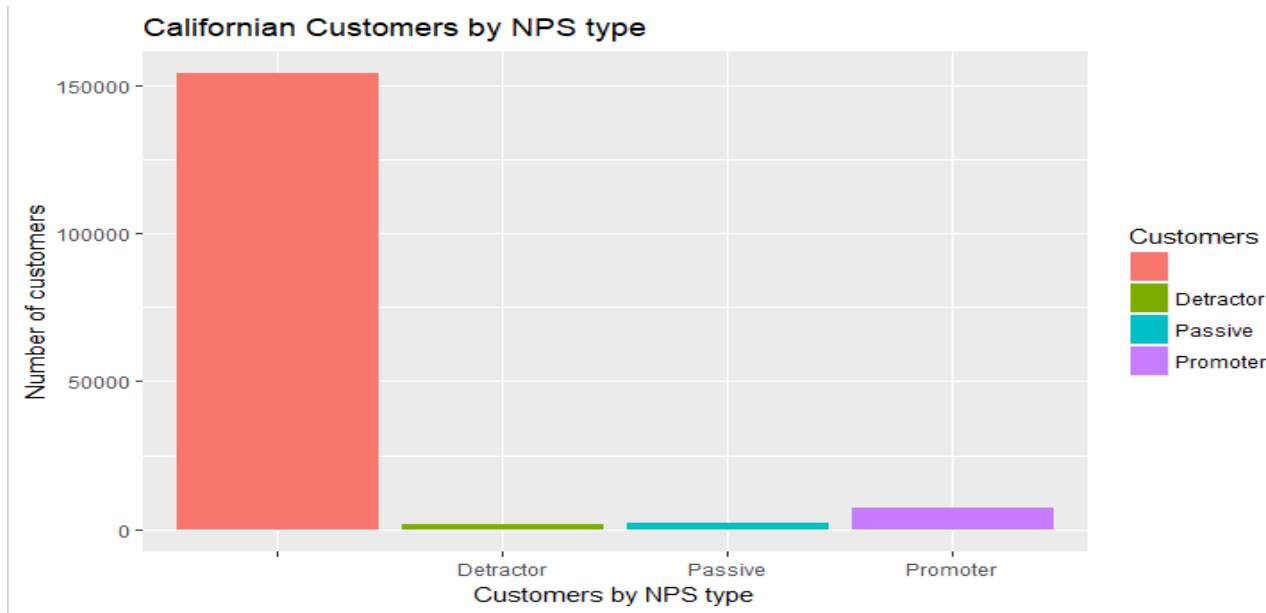
$1669/\text{Total Voters} * 100$

15.188

Nps calculation = percentage of
promoters – percentage of
detractors

#48.75785

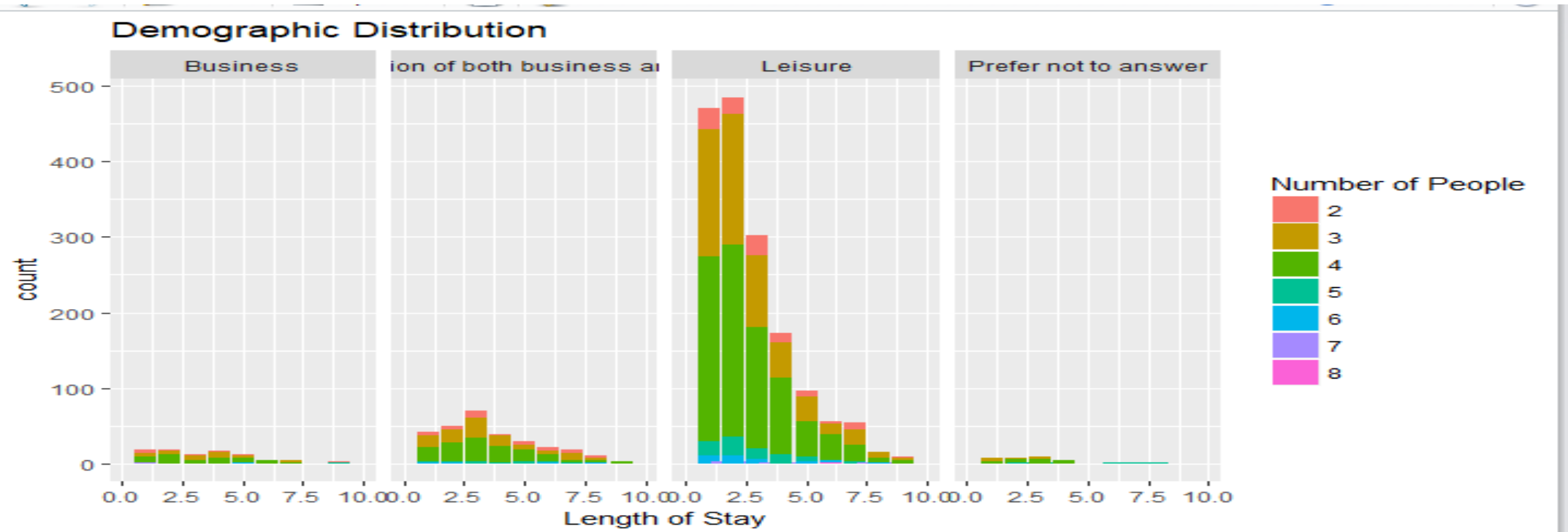
CALIFORNIA CUSTOMERS BY NPS TPYE, AGE, GENDER AND LENGTH OF STAY



DISTRIBUTION OF CUSTOMERS BASED ON THE PURPOSE OF THEIR VISIT



DEMOGRAPHIC DISTRIBUTION OF NO OF PEOPLE BASED ON TYPE OF TRIP AND LENGTH OF STAY



WORD CLOUDS BASED ON THE AMENITIES TO DETRACTORS AND PROMOTERS



WORD CLOUDS BASED ON THE AMENITIES TO DETRACTORS AND PROMOTERS

WordCloud for Detractors



Modelling

Linear modelling

○ Likelihood to recommend against Business facilities

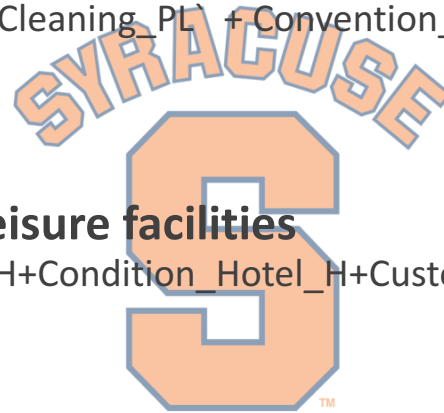
- Features used: `Business Center_PL` + `Dry-Cleaning_PL` + `Convention_PL` + `Fitness Center_PL`
- R-square value : 0.2348

○ Likelihood to recommend against Leisure facilities

- Overall_Sat_H+Guest_Room_H+Tranquility_H+Condition_Hotel_H+Customer_SVC_H+Staff_Cared_H+Internet_Sat_H+Check_In_H+F&B_Overall_Experience_H`
- R-square value: 0.8405

○ Likelihood to recommend against All facilities

- Features: All
- R-square value: 0.002405



ASSOCIATION N RULES

BUSINESS :

- ❖ Convention
- ❖ Conference
- ❖ Business Center
- ❖ Dry Cleaning
- ❖ Fitness Center

LEISURE:

- ❖ Casino
- ❖ Spa
- ❖ Boutique
- ❖ Golf
- ❖ Outdoor Pool

A RULES – Variables and Visualizations

- ☐ Spa_PL and Pool_Outdoor_PL
- ☐ Customer_Service, Condition_of_hotel, Guest_Room_Quality
- ☐ Business_Center, Convention_Center, DryCleaning, Conference_Center, Fitness_center
- ☐ Business_Center, Convention_Center, Fitness_Centre
- ☐ Golf, Casino

RECOMMENDATIONS

- ☐ Provide offers or discounts in the month of July to increase the users to Hyatt Regency which will in turn increase the Likelihood to recommend
- ☐ Use the given deliverables to compare selected hotel with other similar hotels and improve facilities
- ☐ Give perks to customers based on provided tool to improve their NPS
- ☐ Availability of facilities that matter to business users like Business Center, Convention Center, Dry cleaning, Conference center and fitness center record large numbers of promoters