

The Plight of Flight



Flight Review Sentiment Analysis

Presentation Outline

1. Data Collection
2. Business Objectives
3. Exploratory Data Analysis (EDA)
 - 3.1. Rating Distributions
 - 3.2. External Influences
 - 3.3. Cultural Insights
4. Natural Language Processing (NLP)
 - 4.1. Word Clouds
 - 4.2. Phrases (Trigrams)
 - 4.3. Predicting Positive/Negative Review
 - 4.4. Twitter Sentiment
5. Conclusion



Data Collection

10/10

"haven't experienced a better airline"

Ajit George Kuruvilla (Trinidad & Tobago) 10th January 2018

✓ **Trip Verified** | Flew Miami to Mumbai via Doha. There's little wonder why Qatar Airways keeps winning awards. From the check in process to inflight service to their premium lounges, I personally haven't experienced a better airline. The inflight experience is definitely what separates Qatar Airways from the competition. The cabin crew never stops working and it's the clichéd "service with a smile".

Aircraft Boeing 777 ER

Type Of Traveller Solo Leisure

Cabin Flown Business Class

Route Miami to Mumbai via Doha

Date Flown January 2018

Seat Comfort ★★★★★

Cabin Staff Service ★★★★★

Food & Beverages ★★★★★

Inflight Entertainment ★★★★★

Ground Service ★★★★★

Value For Money ★★★★★

Recommended ✓

★ Source: AirlineEquality.com

★ Stats: 7 Airlines / ~7,500 data points / 15 features

★ Target: Positive Review? (6+ Overall Rating)



Qatar Airways Customer Reviews

Food & Beverages



Inflight Entertainment



Seat Comfort



Staff Service



Value for Money



Customer rating
from 1165 reviews

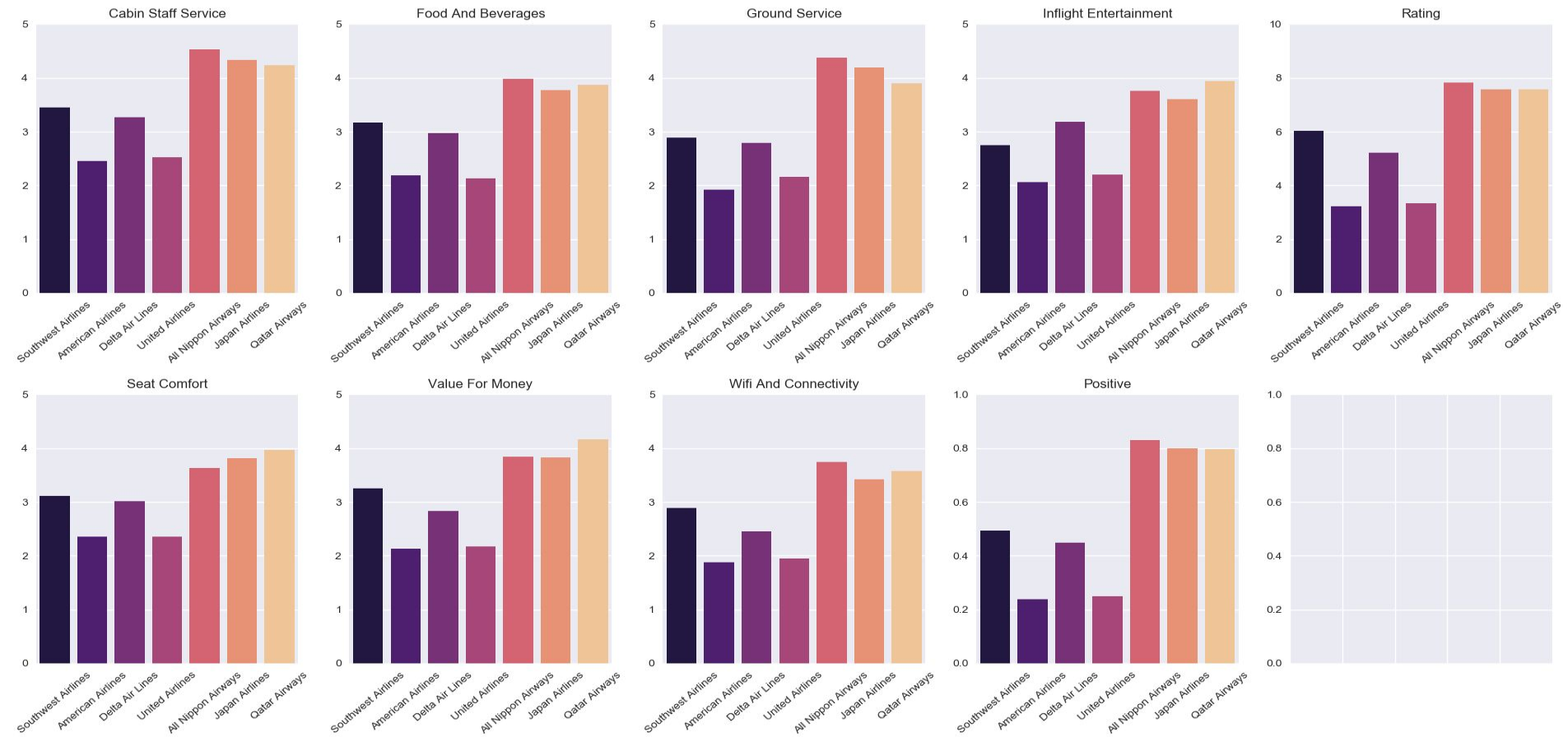


Business Objectives

1. Effectively determine strengths and weaknesses
2. Be able to benchmark performance based on competitors
3. Visualize effect of external factors on perception of company
4. Explore human psychology to increase flight satisfaction

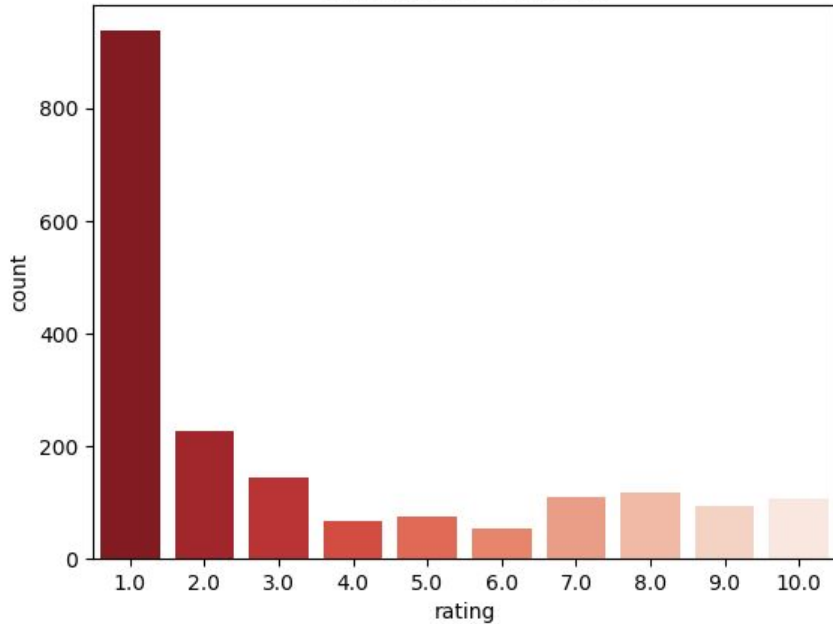


Exploratory Data Analysis (EDA)

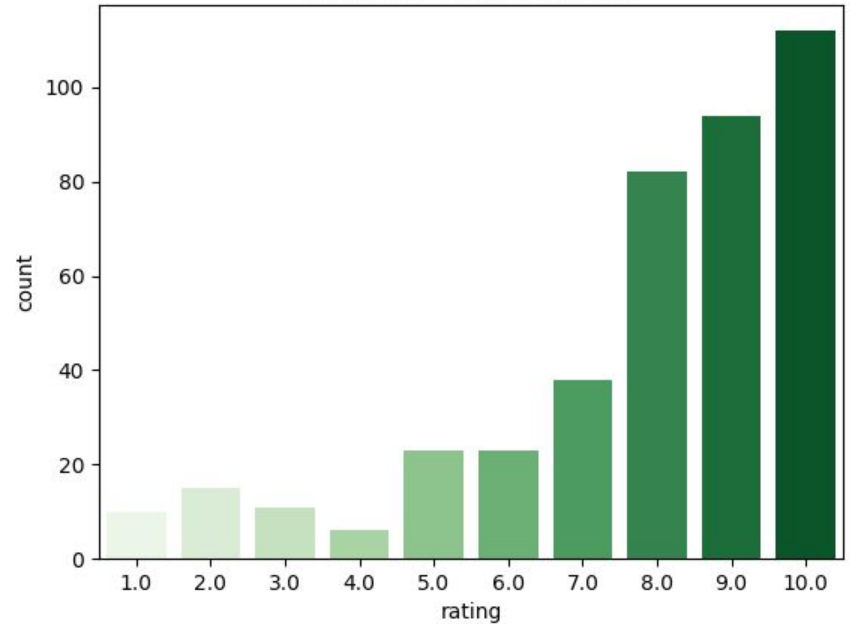


Comparative Analysis

United Airlines : Rating

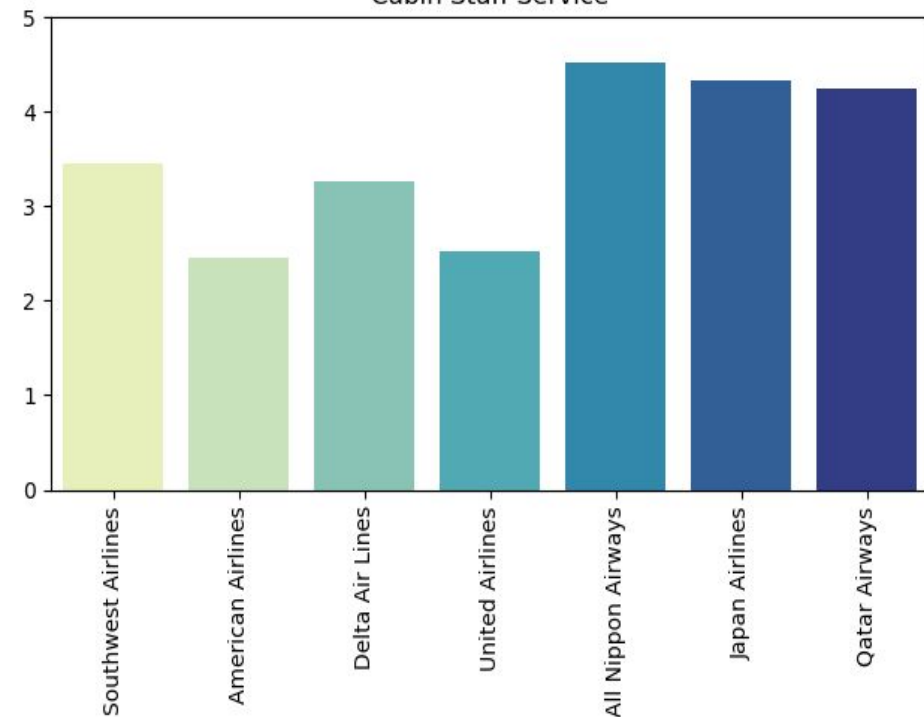


All Nippon Airlines : Rating

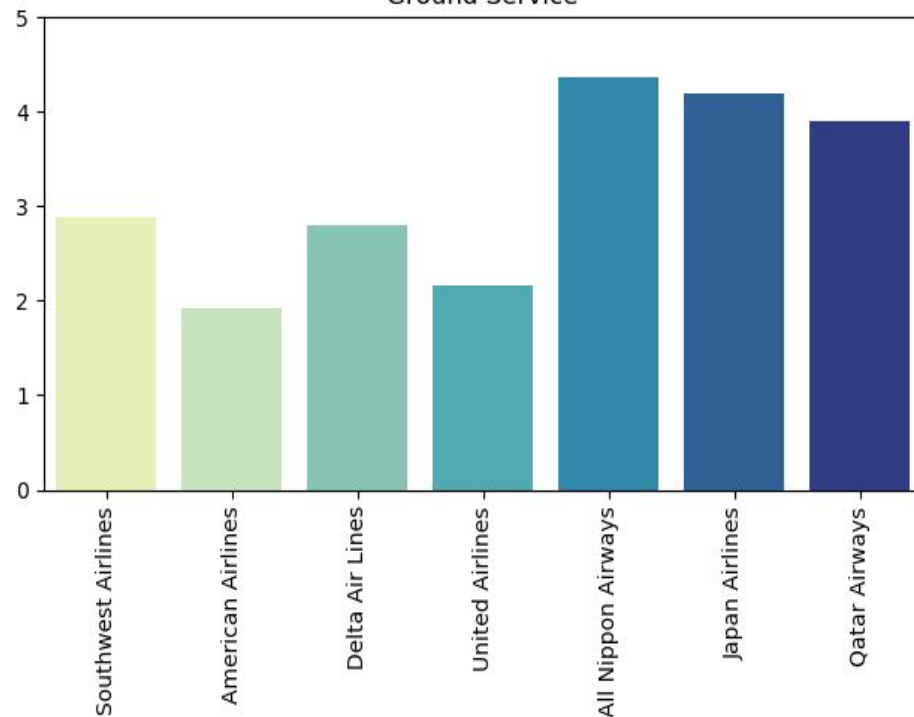


Comparative Analysis Part 2

Cabin Staff Service



Ground Service



Perception of Value

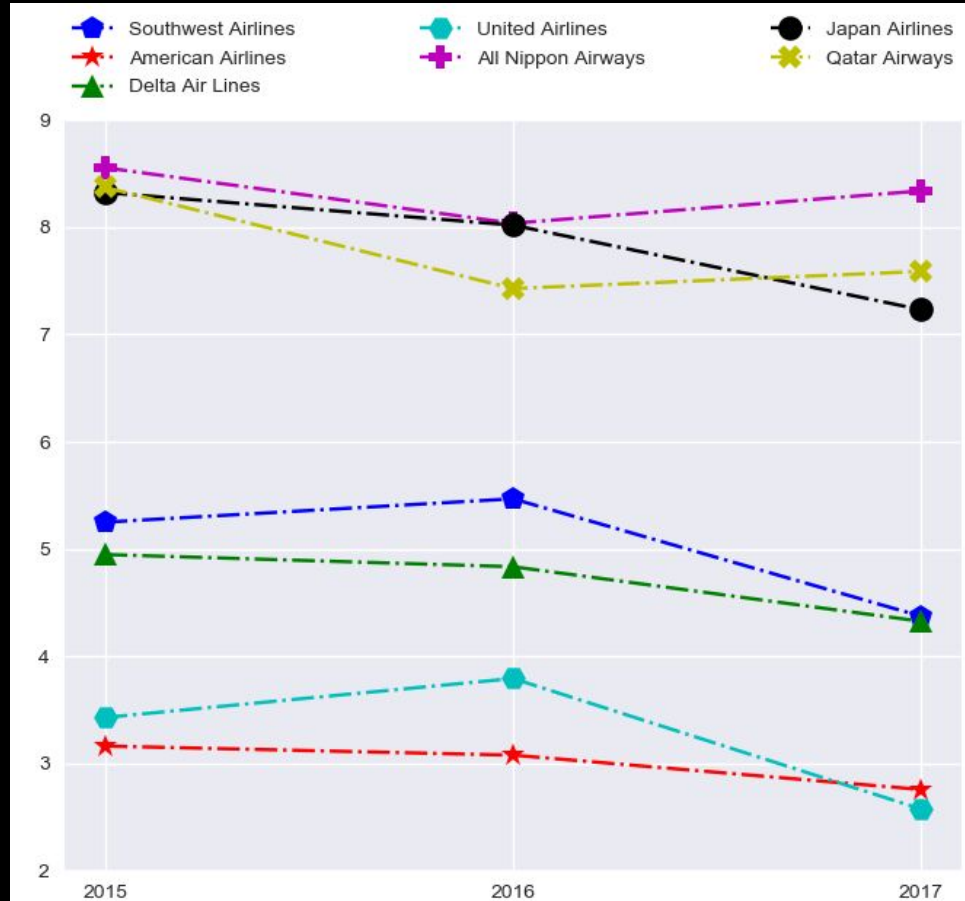


“Price is what you pay, value is what you get.”

- Warren Buffett

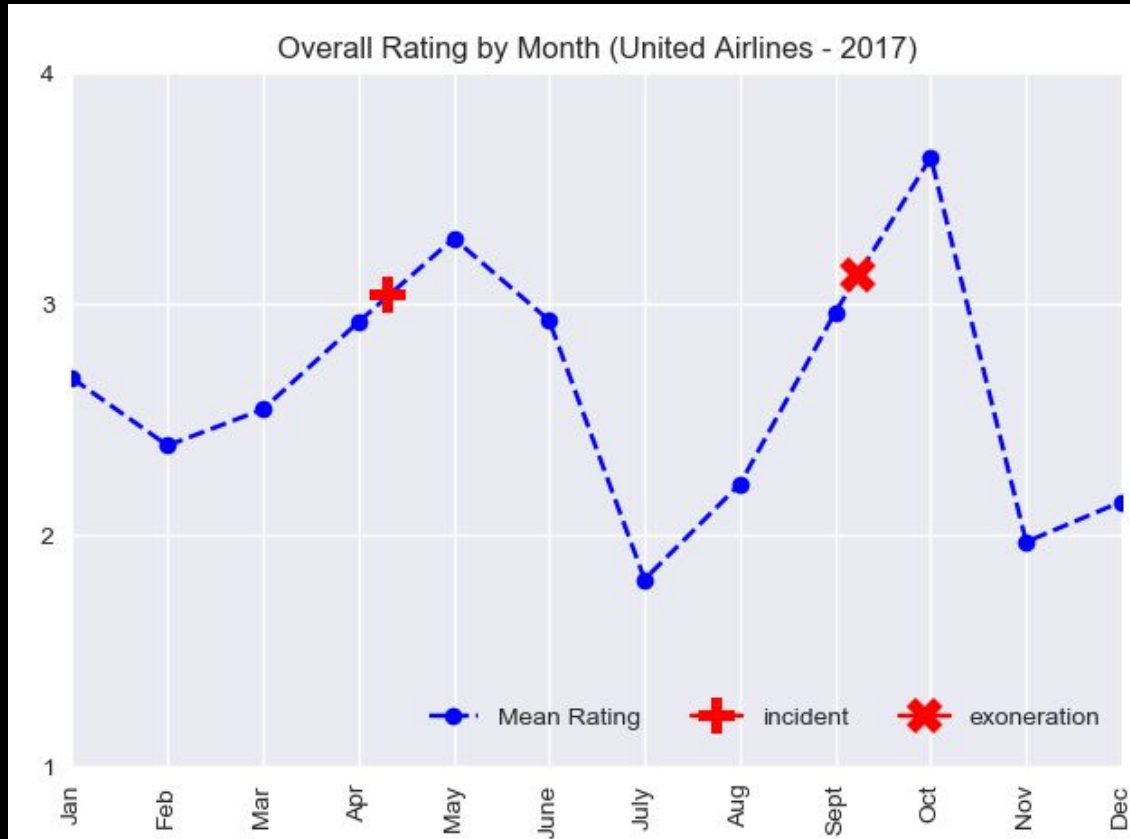
Competitiveness Over Time (Rating)

- Consistent drop among all attributes of flight on average
- Profit margin of 1%: Cost of fuel, labor expenses, government fees/taxes
- ANA and Qatar Airways committed to quality flight experience
- United Airlines mean overall rating dropped by 30%

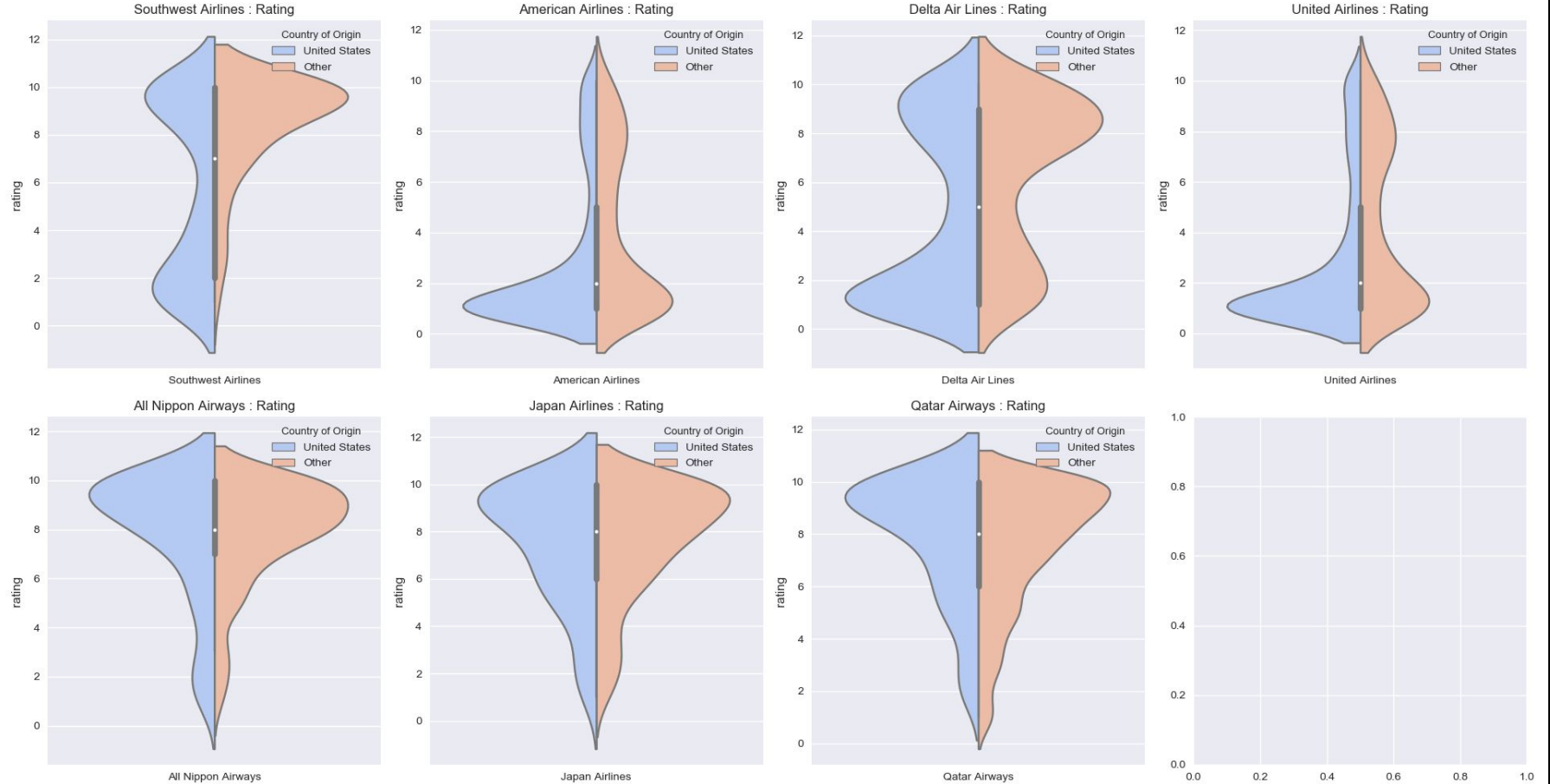


Don't end up on the News

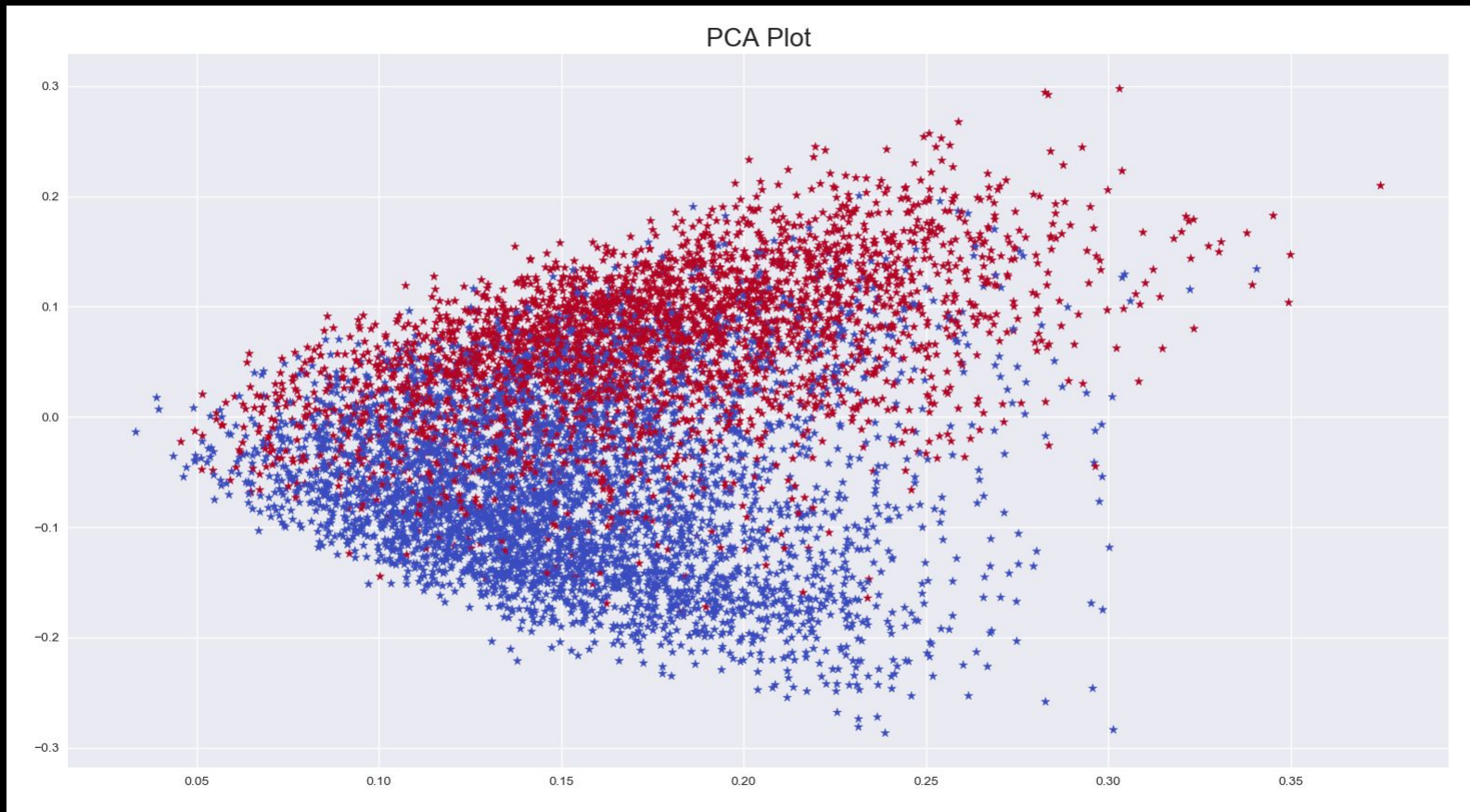
- Effect of external factors on perception of quality
- Time heals all wounds



Cultural Insights



Natural Language Processing (NLP)



Classifying Reviews

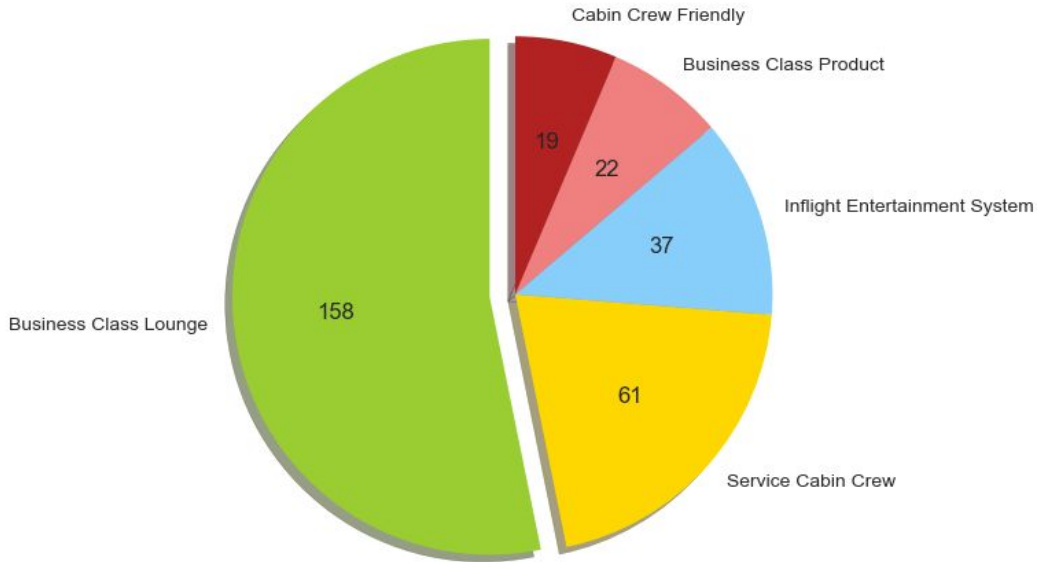
- Naive Bayes Classifier - Supervised learning technique to predict positive or negative review
- Used weights for positive/negative classification based on airline
- Optimized model to pick up on negative reviews while maintaining an efficient accuracy score of around 85%
- So what? : This means we can automate the detection of negative reviews and extract relevant information if necessary

All Nippon Airways : Positive Words

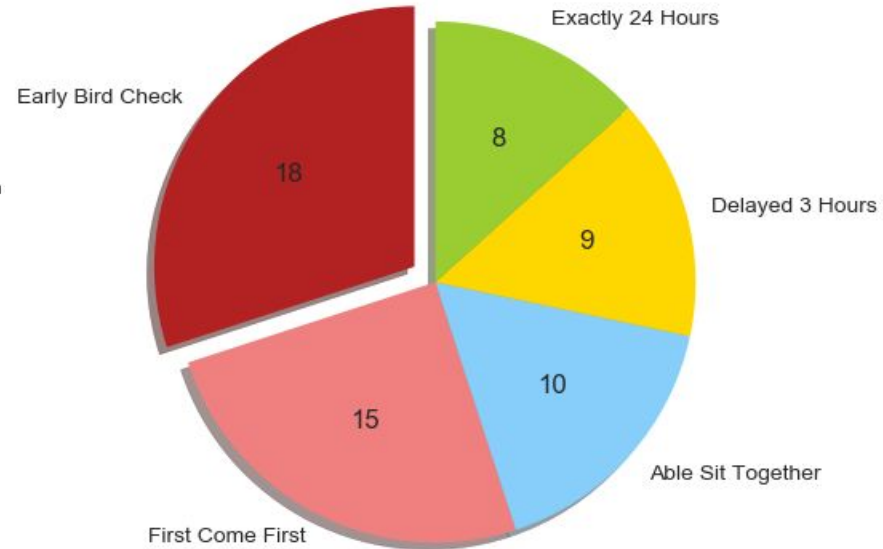
[illegible]

Common Phrases (Trigrams)

Qatar Airways : Positive Trigrams

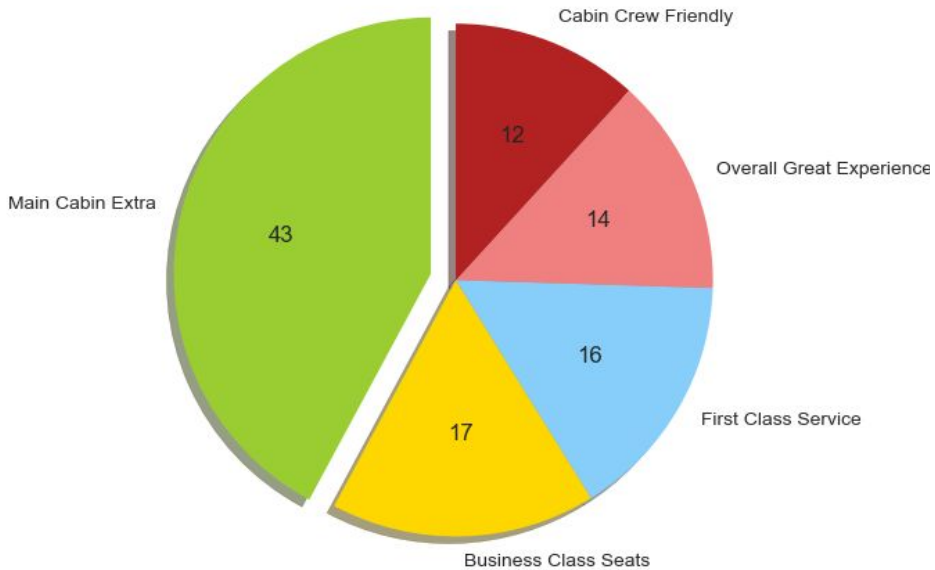


Southwest Airlines : Negative Trigrams

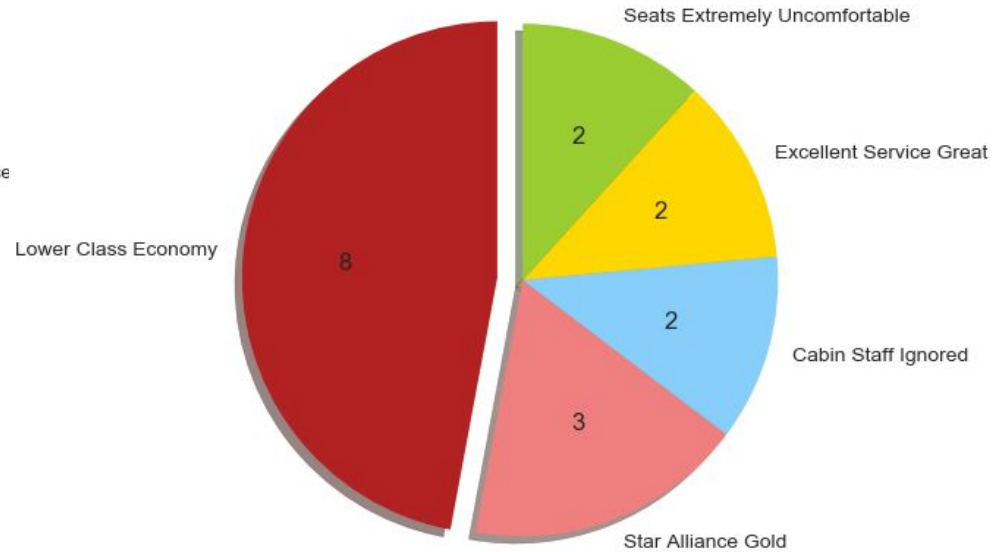


Switch it up!

American Airlines : Positive Trigrams



All Nippon Airways : Negative Trigrams



Twitter Sentiment



AwardTravel

@awardtravelcom

Follow

Fresh cooked steak and shoe shine service?
😱😱😱😱 @kksight checking in Japan
Airlines First Class Lounge at HND.

@JAL_Official_jp #JAL #JapanAirlines
#LuxuryTravel



Lounge Review: Japan Airlines First Class Lounge - Tokyo Haneda Airport (H...
Lounge Review on Japan Airlines First Class Lounge at Tokyo Haneda Airport (HND)
for passengers with a first-class boarding pass or Oneworld's Emerald Privilege.
awardtravel.com



Time Out Chicago

@TimeOutChicago

Follow

American Airlines is launching hourly
Chicago-NYC flights with free beer and wine
ow.ly/HKzn30hRRx3



2:00 PM - 18 Jan 2018

40 Retweets 111 Likes



Tom Joyner

@TJMShow

Follow

Behind every seat there is a story, and we
want to hear yours. Tell us your most
memorable Southwest Airlines story for a
chance to win a \$100 Southwest Airlines Gift
Card! bit.ly/2DweinW



All Nippon Airways

@FlyANA_official

Follow

Your doorway to JAPAN! Follow All Nippon
Airways, the only 5-Star Skytrax rated Airline
in Japan, for all the unique info!



3:31 AM - 5 Dec 2017

156 Retweets 1,421 Likes



121carhire

@121carhire

Follow

Best business class beds in the sky, from
Japan Airlines to Qatar's Qsuites
independent.co.uk/travel/news-an ...

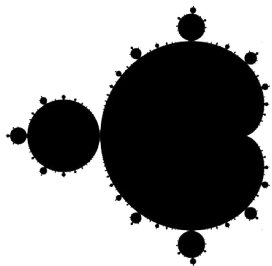


Future Considerations

1. Gain an understanding of the quality/profit tradeoff with revenue data
2. Dive deeper into cultural influence in data
3. Become familiar with different advertising techniques and how that may affect sentiment



Technologies Used



TextBlob



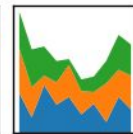
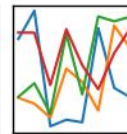
plotly



PostgreSQL

pandas

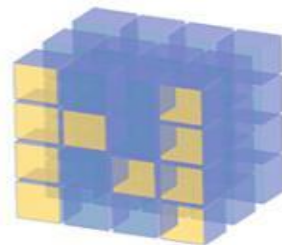
$$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$$



Tweepy

An easy-to-use Python library for accessing the Twitter API.

Seaborn
matplotlib



NumPy

A large commercial airplane is shown from a low angle, flying towards the viewer. The plane is white with two engines mounted under the wings. The background is a dramatic sunset over the ocean, with the sun low on the horizon, casting a warm orange glow. The sky transitions from orange near the horizon to a deep blue at the top. There are some scattered clouds. The word "Questions?" is superimposed in the center of the image in a large, bold, black font.

Questions?