



Airline Customer Satisfaction

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Executive Summary

The airline industry is robust, there are many types of customer segments, from the million milers that hold their sacred titles and special privileges to the saver fare guest that require basic amenities while traveling. Airlines have immense amounts of passenger and industry data to make decisions that will drive growth, however, not all airlines are known for their service which drives growth. United Airlines for example, fell sharply from #2 for service to #4 and since then has been in a free fall due to several customer relations nightmares. Our research looks at customer survey results, passenger statistics, and airplane manufacture data to determine how United can grow by improving certain elements of their service and choosing the right routes.

Research Objective

Define recommendations & strategic direction for airlines in order to maintain and obtain areas of the Market Share by focusing on specific variables that impact customer satisfaction & passenger traffic.



Research Plan & Methodology

Research Plan

Analyze airline customer satisfaction data, airport quarterly passenger survey results & Boeing/Airbus market growth data.

Focus on areas that will provide growth to our customers in terms of Market Share.

Define areas to focus, capital investment on aircraft type, region, growth, etc.

How each company services the industry (operations/size/trends)

Methodology

Performed data cleaning, removed blank data sets.

Utilize marketing research techniques such as:

Cluster Analysis

Logistic Regression

Data Transformations

Intro to data sets

SATISFACTION SURVEY DATA

- DATASET: U.S. AIRLINE PASSENGER SATISFACTION SURVEY
- 129881 RESPONDENTS
- 14 SATISFACTORY QUESTIONS RANKING FROM 0-5 (5 BEING *HIGHLY SATISFIED*)

BOEING DATA

- BOEING 20-YEAR FORECAST DATASET
- AIRPLANE FORECAST, SERVICES FORECAST, AND TRAFFIC GROWTH PROJECTIONS FOR CARGO AND PASSENGER

AIRBUS DATA

- COLLECTION OF DATA FROM EXTERNAL SOURCES SABRE, IHS, AIRBUS
- AIRPLANE FORECAST, TRAFFIC GROWTH PROJECTIONS FOR CARGO AND PASSENGER, POPULATION, PROPENSITY TO TRAVEL, CURRENT FLEET

PASSENGER STATS DATA

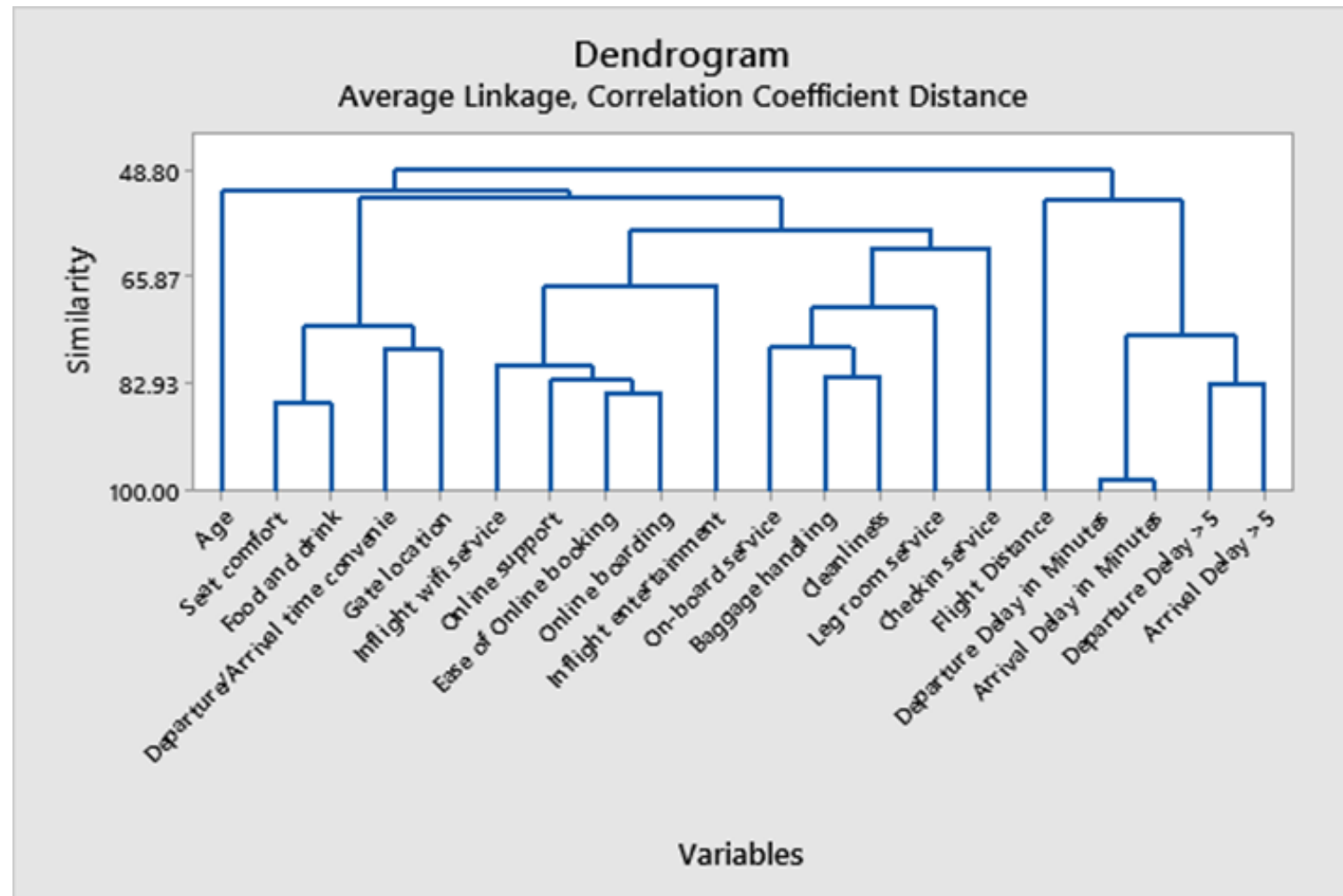
- INTERNATIONAL AND DOMESTIC PASSENGER DATA FROM 2007 TO PRESENT
- WE'LL FOCUS ON DOMESTIC FLIGHTS WITHIN THE U.S.

Data Findings

Cluster Analysis

Dendrograms show correlation between variables on the horizontal axis.

- No two variables are 100% the same
- Age doesn't show any significant similarity with other variables
- Total of four clusters



Customer satisfaction data

id	satisfaction_v2	Gender	Customer Type	Age	Type of Travel	Class	Flight Distance	Seat comfort	Departure/Arrival time convenient	Food and drink
11112	satisfied	Female	Loyal Customer	65	Personal Travel	Eco	265	0	0	0
110278	satisfied	Male	Loyal Customer	47	Personal Travel	Business	2464	0	0	0
103199	satisfied	Female	Loyal Customer	15	Personal Travel	Eco	2138	0	0	0

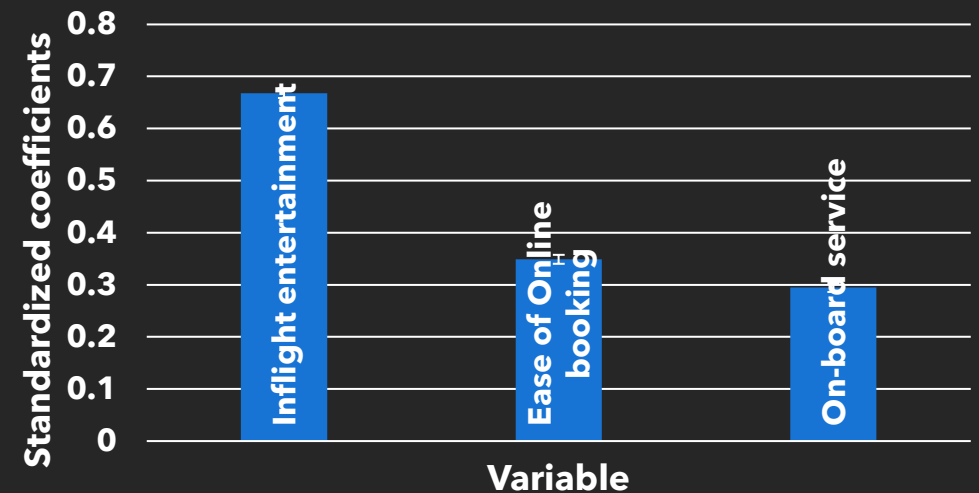
Data cleaning and intended use:

- Added a couple variables

Departure Delay in Minutes	Arrival Delay in Minutes	Departure Delay >5	Arrival Delay >5
0	0	0	0
310	305	1	1
0	0	0	0

- Performed logit regression on the data to predict satisfaction variable

satisfaction_v2 / Standardized coefficients
(95% conf. interval)



Data Findings

Source	Value
Intercept	-5.945
Inflight entertainment	0.900
Ease of Online booking	0.485
On-board service	0.420

- **Our model produced a hit rate of 80.5% using 3 significant variables**

Hit rate	% correct
neutral or dissatisfied	76.61%
satisfied	83.71%
Total	80.50%

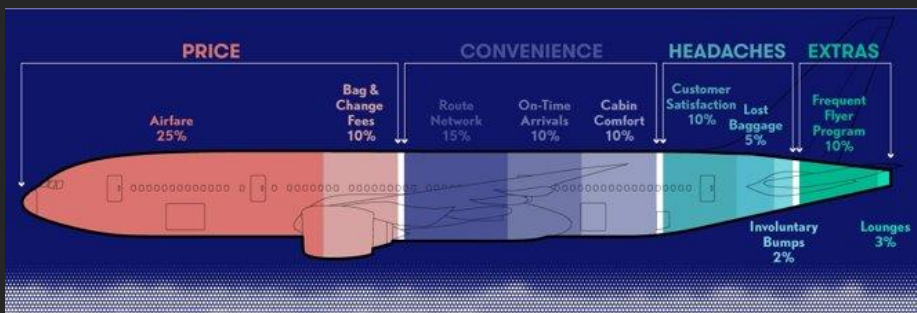
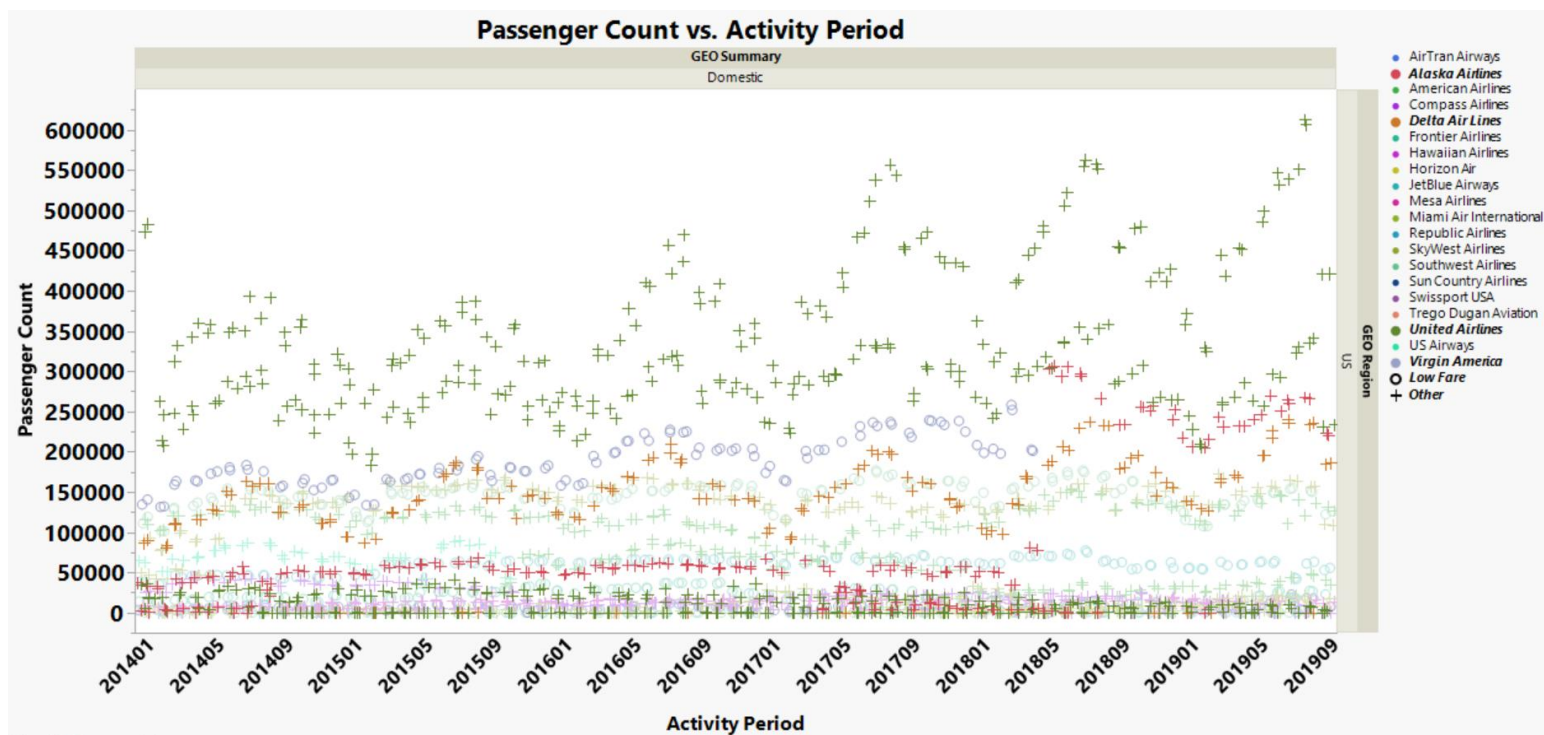
- **Noteworthy:**
 - **Inflight entertainment had the biggest weight on our model**
 - **People want the time to pass quickly when traveling**
 - ***In “less” successful models variables such as Departure/Arrival time convenience, Food and drink, Inflight WiFi service, and Arrival delay > 5 minutes all had negative influence on the model***
 - **These are variables that people expect to have some baseline level of satisfaction.**
- **Recommendation:**
 - **Airline industries should take this survey data into account and if unsure how their customers are satisfied, then they could offer a discount for customers that fill out this survey.**

Air Traffic Passenger Data



Observations:

- United airlines has continually supported the most passengers
- Alaska airlines saw a large spike in passengers during 2018 when they absorbed Virgin airlines
- Delta (and United) see season shifts in passenger support due to fewer flights in the winter months



Air Traffic Passenger Data Findings

- Focus should be on modernizing interior of planes to meet passenger needs
- Airlines need to be cognizant of the fact that seasonal flight operations can be negative to customer satisfaction
- How can United get market share back and increase customer/employee satisfaction?

"United Airlines employees show 'sharpest' decline for courtesy and helpfulness, study says"

Recommendation:

To get an understanding of passengers desires, United should offer the aforementioned survey to customers in return for a small discount

Traffic Growth Rate Projection Top 10 2018-2038

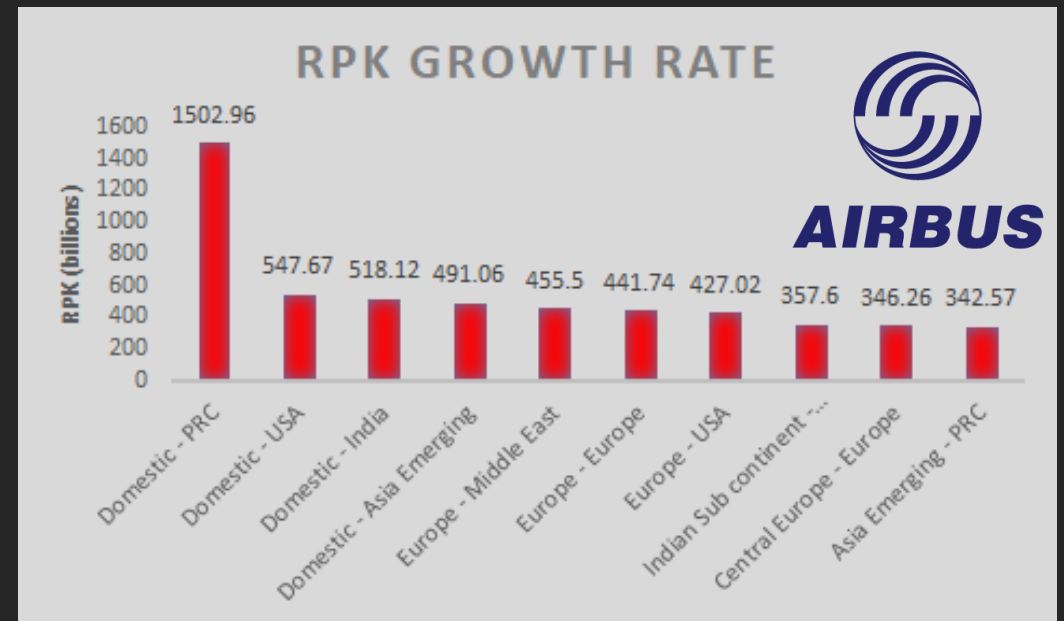
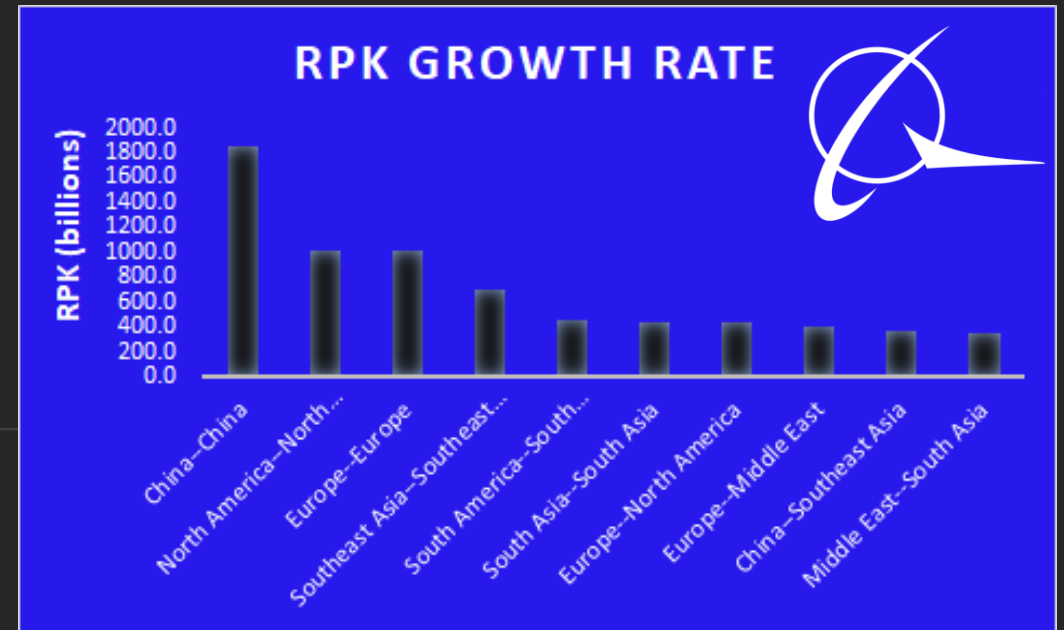
RPK – Revenue Passenger Kilometer

Revenue Passengers * Kilometer travelled

Highest growth by far is domestic flights (domestic Europe also)

Domestic flights typically use single aisle aircrafts

Capturing market share as an airline could focus on these routes

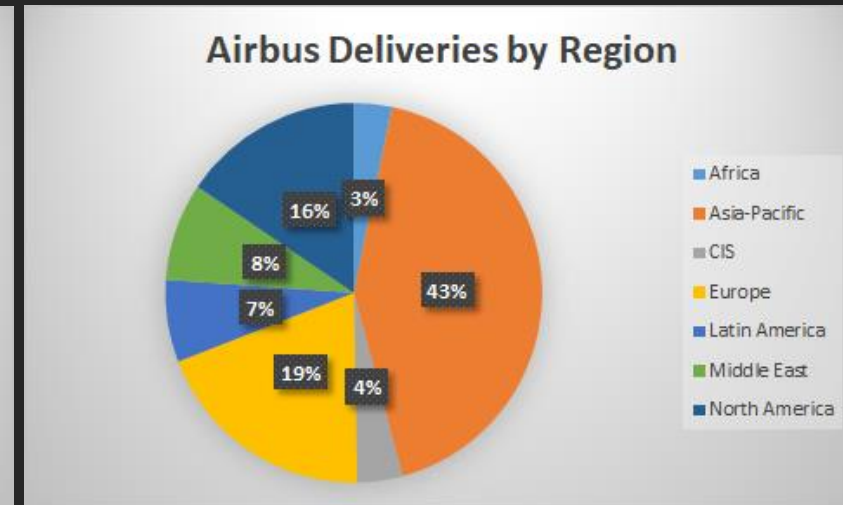
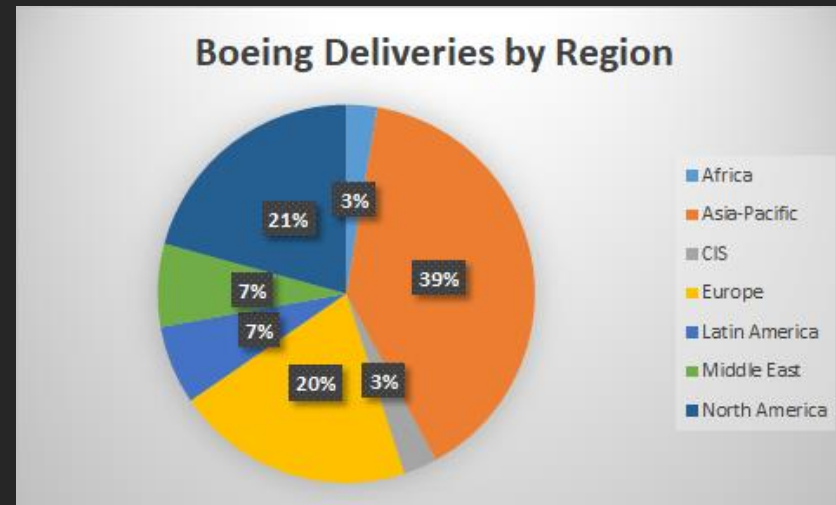
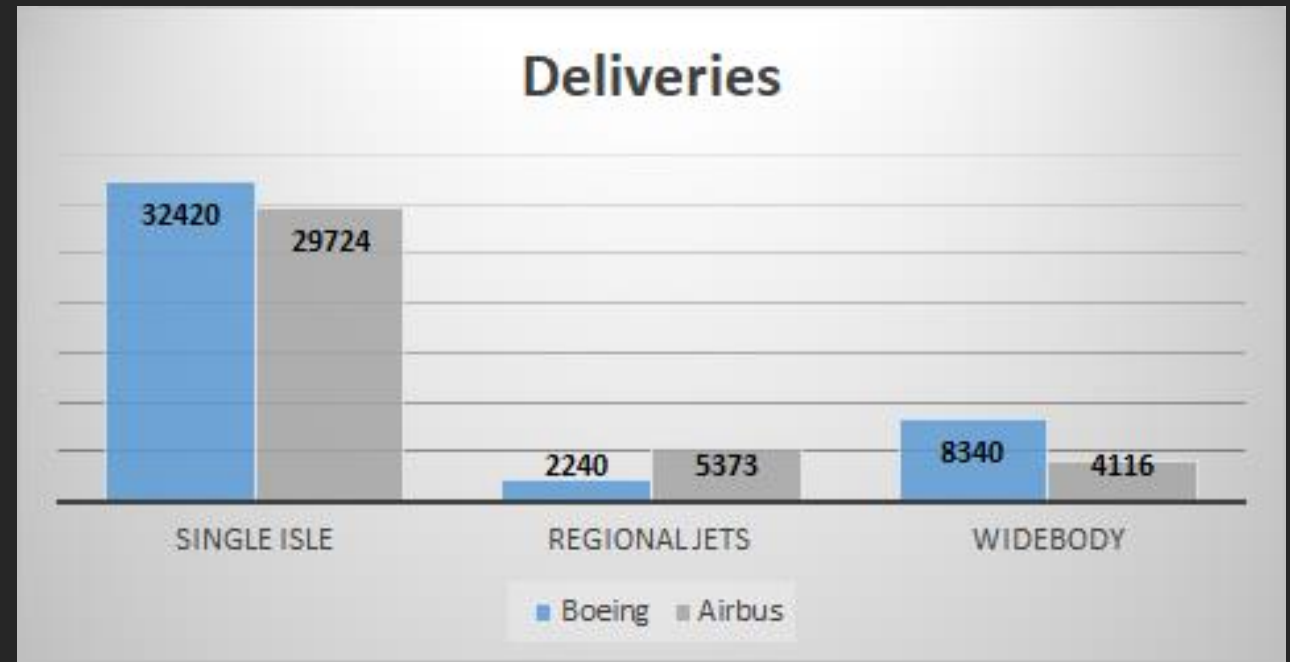


Aircraft projected deliveries

Deliveries directly correlate to traffic growth

Regional breakdown highlights Asia-Pacific, Northern America and Europe

Opportunities depending on target market and base of operations



Conclusion

How can airlines obtain/maintain market share?

Logistic Regression:

It's important to understand what satisfies our customers. Determining a model for predicting variables such as *satisfaction*, shines

Cluster Analysis:

Highlighted four clusters that had high degree of variability

Based on Growth Projections and Deliveries for 2018-2038:

Largest market growth is in domestic flight

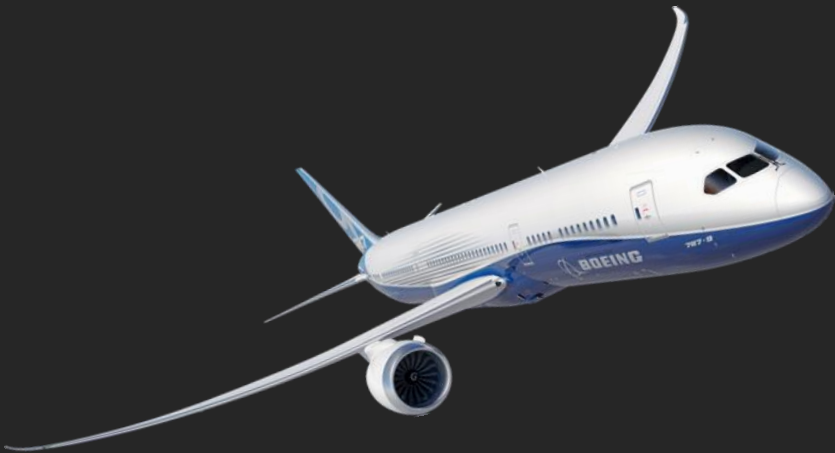
Domestic flights are flown by single isle aircraft

Regional data shows potential opportunity in North America, China and Europe

Recommendations

What should airlines and industries like Airbus and Boeing do going forward?

- ❑ Onboard: Focus for airlines should be on modernizing inflight entertainment options
- ❑ Further improvements should be made on the planning side and assessing each delay and determine the root cause so that repeat issues do not occur.
- ❑ United should assess their customer satisfaction, offering a survey (with a discount for those who participate)
- ❑ Carriers can focus on domestic travel and increasing their fleet with single aisle aircrafts
- ❑ Wide body aircraft market hard to compete with lack of opportunity



Thank You!