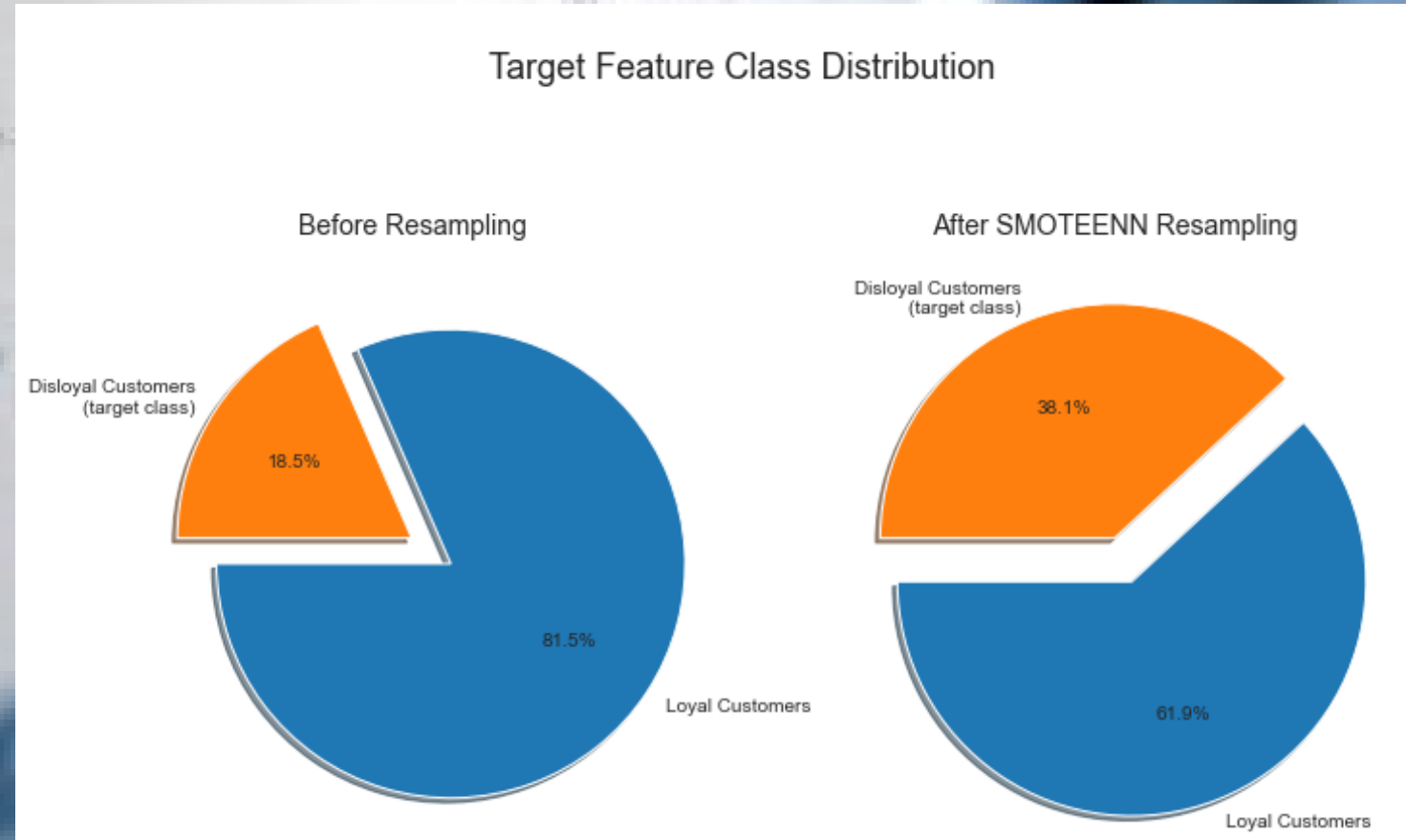# Sigma Airlines

The Future of Customer Satisfaction

Overview

Utilize ML technology to . . .

- *Understand what 'disloyal' customer's are most displeased with*

- *Improve disloyal-to-loyal churn rate*

- *Understand what services need the most improvement*

- *Bonus: identify other populations that deserve attention*

The Data

- Over 100k total records

- Describes flight details (e.g. distance, class)

- Describes customer's sentiment, including survey responses

- Preprocessed (e.g. missing values, encoding)

- Resampled (SMOTEENN)

Target Feature Class Distribution

Before Resampling

Disloyal Customers (target class)
18.5%

Loyal Customers
81.5%

After SMOTEENN Resampling

Disloyal Customers (target class)
38.1%

Loyal Customers
61.9%

The ML Model

- Random Forest Classifier

- 98% accuracy, 0.94 F1 Score

- Preprocessed (e.g. missing values, encoding)

- Resampled (SMOTEENN)

Random Forest Predictions vs Actual Values
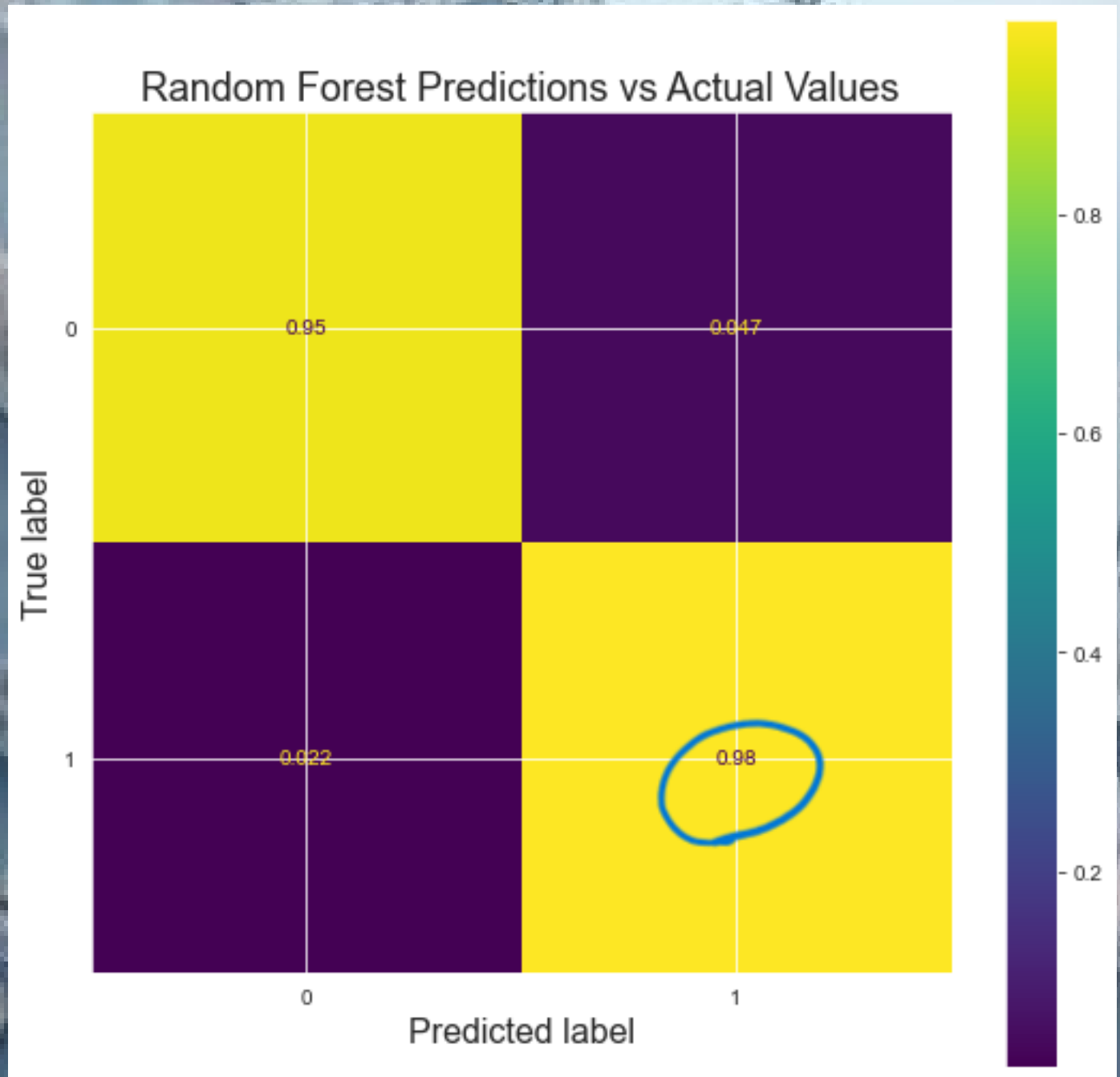
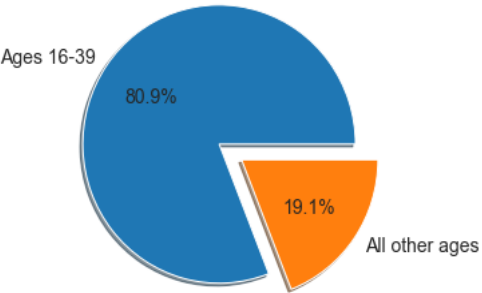Customer Satisfaction By Age, Flight Distance and Loyalty
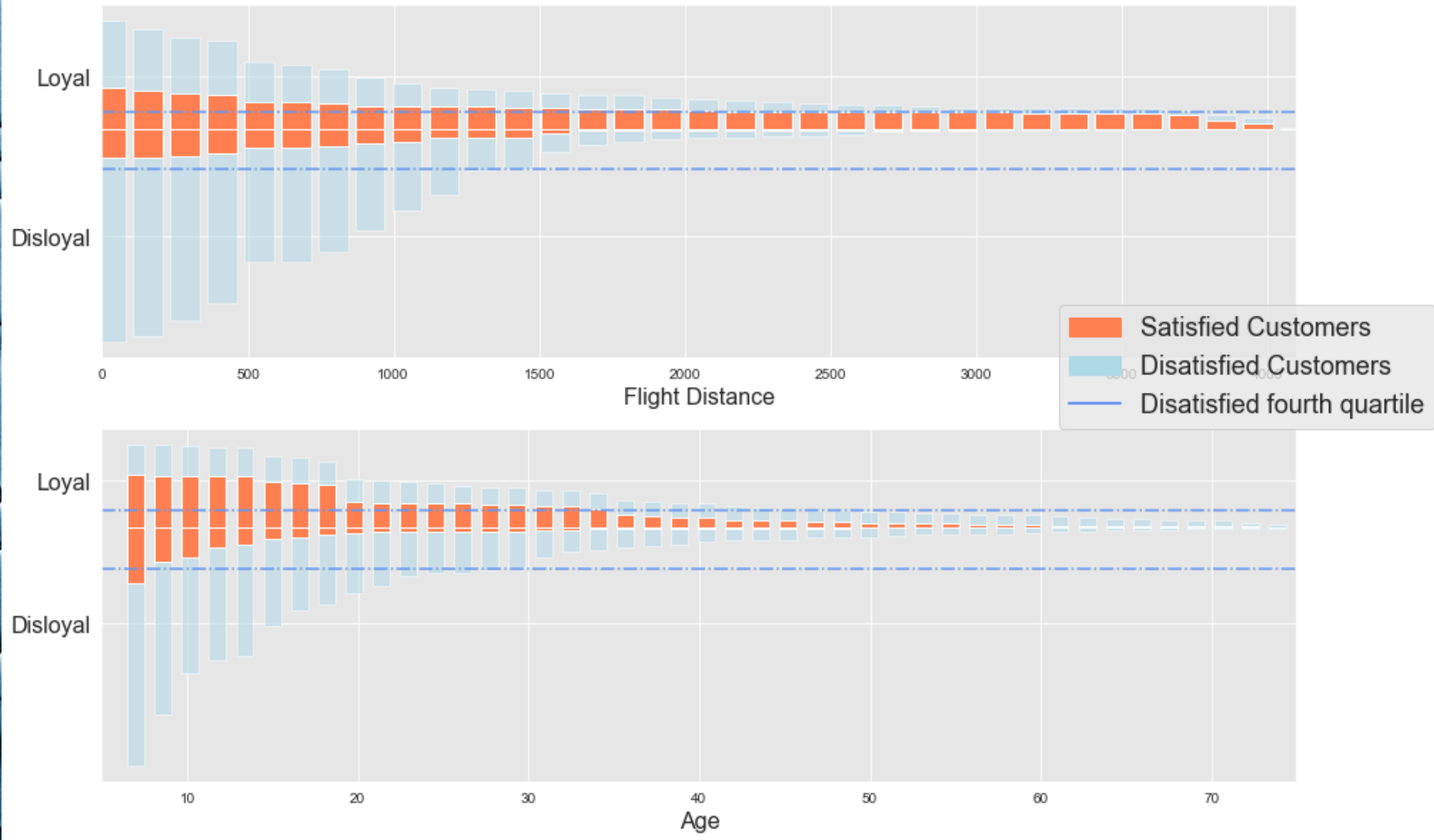
Discoveries

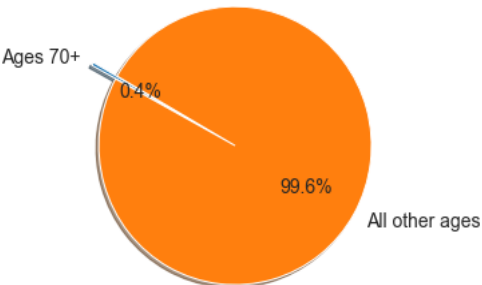*Bulk of dissatisfaction found in:*

- *Flights under 1500 miles*

- *Flyers under 30*

- *Mostly disloyal customers*
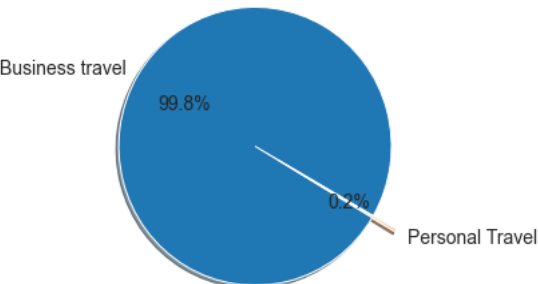
Disloyal Market Share by Demographic Groups

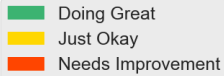Young adults flying less than 3000 miles

Ages 16-39 — 80.9%
All other ages — 19.1%
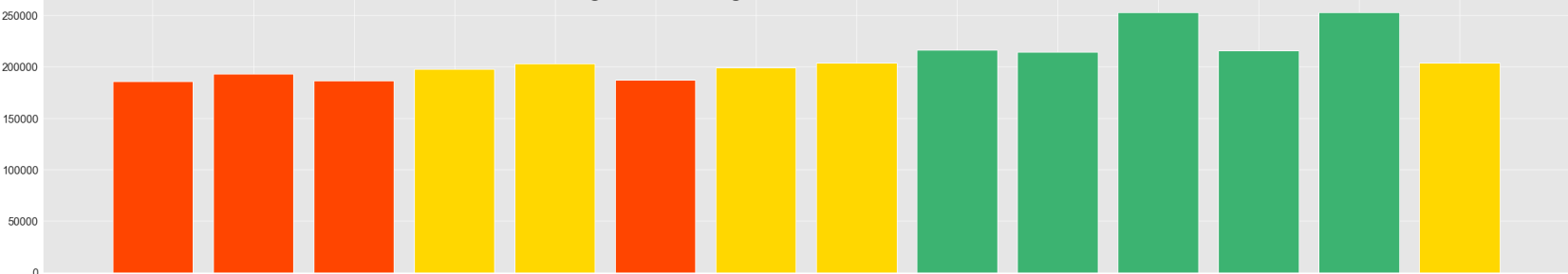
Seniors flying less than 1500 miles

Ages 70+ — 0.4%
All other ages — 99.6%

Business travel, all ages. all distances

Business travel — 99.8%
Personal Travel — 0.2%

Disloyal Customers Survey Responses, By age and length of flight, or type of travel
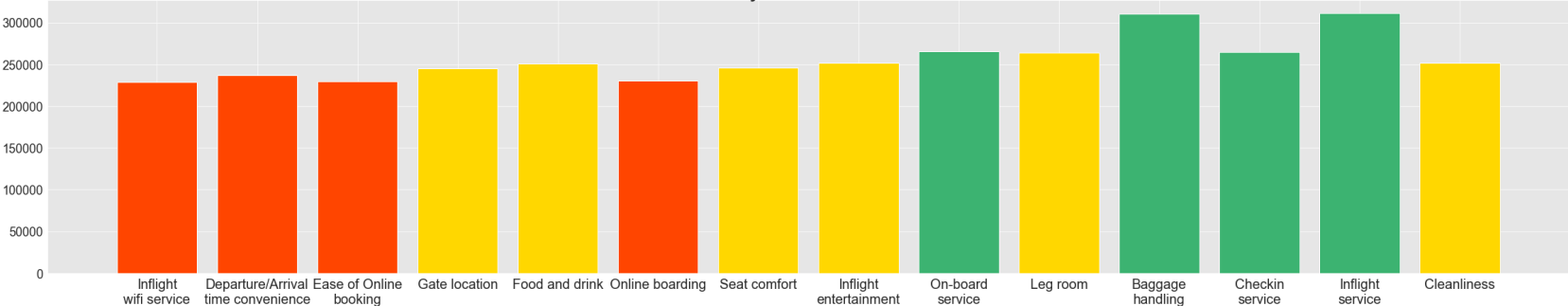
- Doing Great
- Just Okay
- Needs Improvement

Ages 16-39, flights shorter than 3000 miles

Ages 70+, flights shorter than 1500 miles
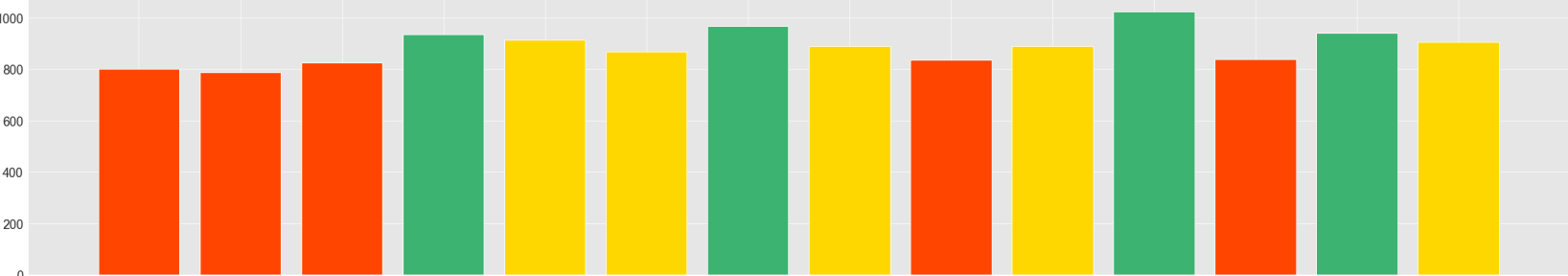
All disloyal business travel

Inflight wifi service · Departure/Arrival time convenience · Ease of Online booking · Gate location · Food and drink · Online boarding · Seat comfort · Inflight entertainment · On-board service · Leg room · Baggage handling · Checkin service · Inflight service · Cleanliness

Final Thoughts

Disloyal market has a lot of room for penetration

Focus on business travelers between 16 and 40 on flights 3k miles or less

Prioritize improving UI of online services (e.g. online booking, online boarding)

Prioritize in-flight comfort and convenience (e.g. in-flight Wi-Fi, seat comfort, refreshments)

For More Information . . .

- Explore the GitHub repository

- Connect with me on LinkedIn

- Send me an email at zethusabney@gmail.com

- Subscribe to my YouTube channel