



Customer Segmentation

Sun Country Airlines

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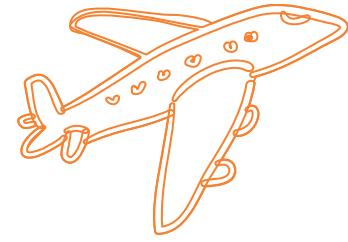
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Problem Statement



Customer
segmentation



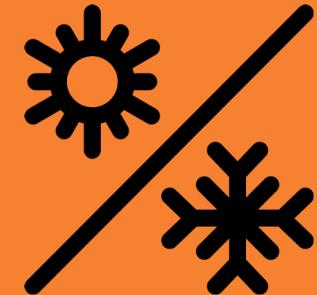
Customer
segmentations on
passengers and
transaction data

Membership
&
Card



How to increase Ufly
membership, card
holders and SCA
website traction?

Increase
Customer Base



When to give
discounts, travel
class upgrades &
how to increase
customer base?



Roadmap



As exploratory data analysis is a cyclic process, we planned to keep following the steps below and generated meaningful insights & practical recommendations

1



Brainstorming

- How to make data more meaningful?
- What questions can be answered by data?

2



Data Cleaning

- Filter for relevant data, drop duplicates
- Handling null values & outliers
- Define new variables to support analysis

3



Data Analysis

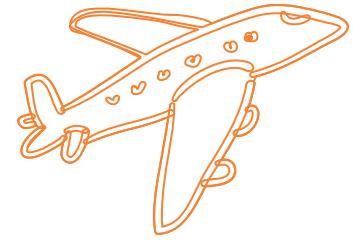
- Generating insights through data exploration & visualization
- Customer segmentation via clustering

4



Insights & Recommendations

- Generate insights about customer segments, travel patterns, etc.
- Present practical recommendations based on clustering results



Data Cleaning

Data Cleaning

1 Filtered for Sun Country Airlines Data

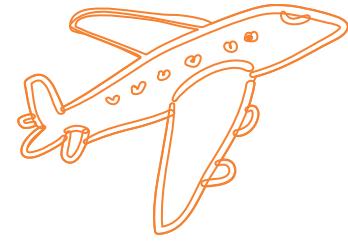
2 Handled null values using data smoothening techniques

3 Updated data types wherever necessary, dropped duplicates

4 Selected key columns, created new columns and dummy variables

5 Data processing *

* Explained in next slide



Data Processing



Data Aggregation

Count: Journeys by class, number of class upgrades, number Of discounts, different booking channels

Sum: Total amount spent, number of trips

Feature Engineering

Created Dummy Variables

Demographics:
Gender, Age group

Cost metrics:
Total trips, amount spent, discounts offered

Ufly Rewards:
Cardholder, membership, booking source and travel class

Define Unique Key: Customer ID

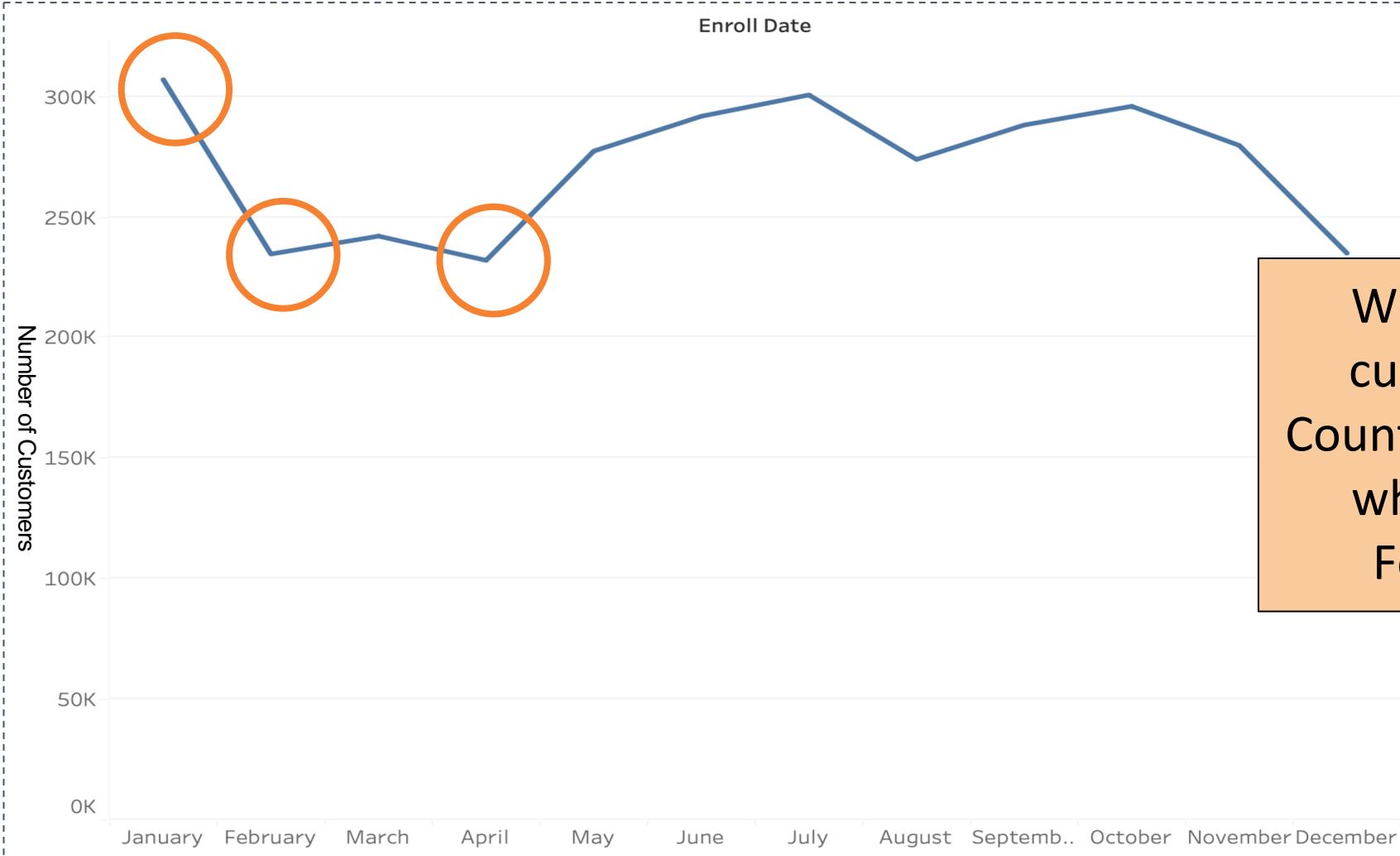
GenderCode

Birthdateid

EncryptedName



Data Exploration

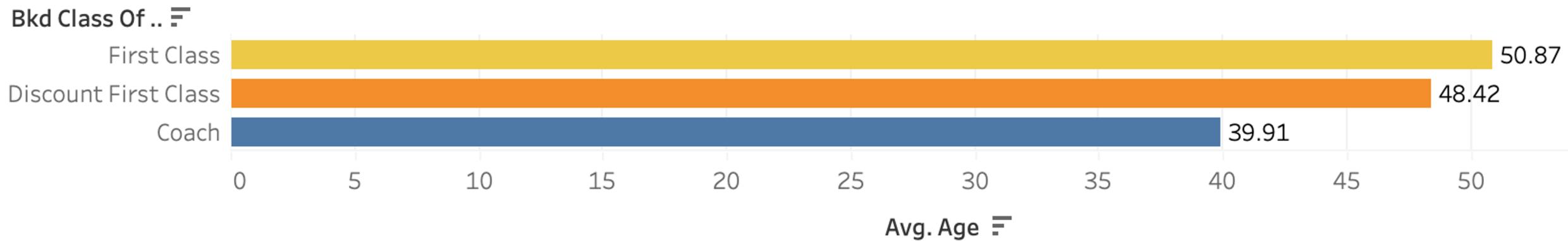


We can see a peak of customers taking Sun Country Airlines in January, while a valley in both February and April.

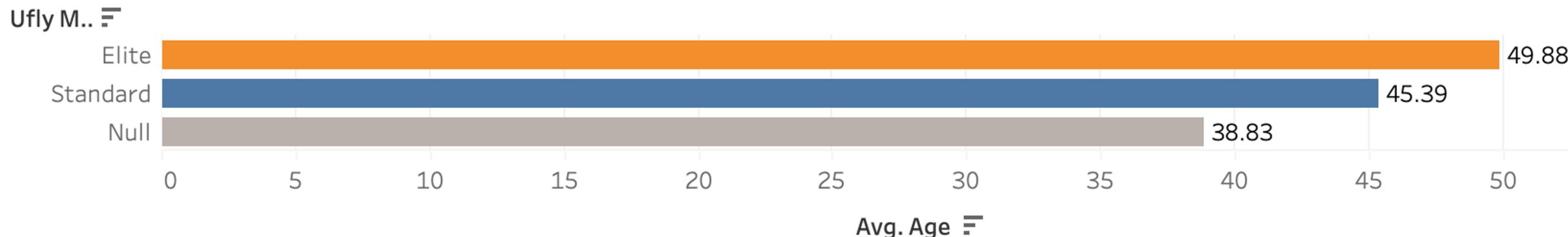


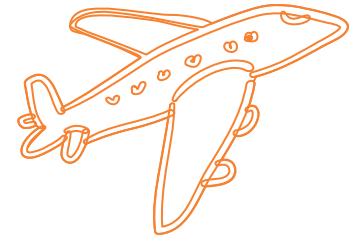
Data Exploration

For the average age above 40, people are more likely to book premium class



For the average age above 40, people are more likely to become a membership

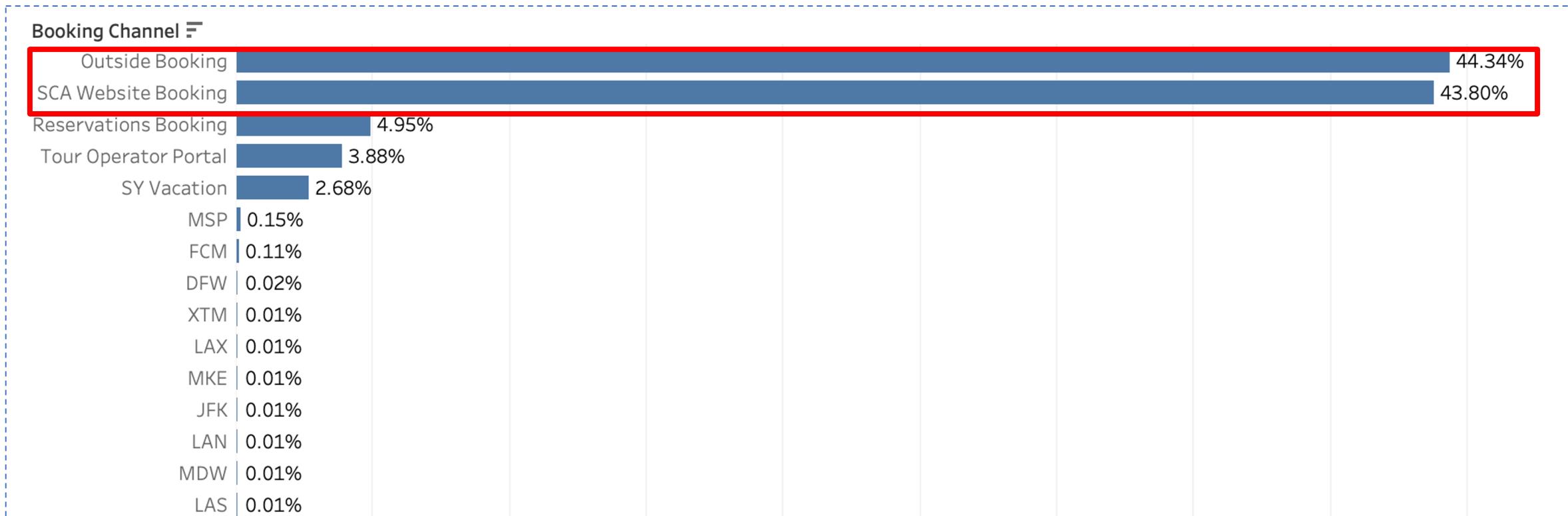


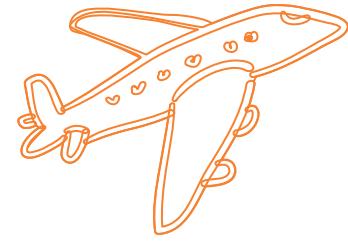


Data Exploration



The highest two booking channels dominate the rest:

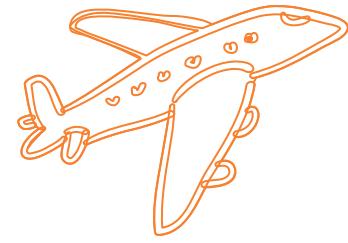




Clusters Techniques

- We used various clustering techniques like K-Prototypes, K-Medoids, DBSCAN and Gaussian Mixture Model on the SCA transaction level data
- We finalized **K-Medoids** because of following benefits:
 1. Simplicity
 2. Low sensitivity towards outliers
 3. Ability to incorporate continuous and categorical data
 4. Object-based results
- Silhouette coefficient was taken as performance measure which was highest for 5 cluster solution. **Let's see 5-cluster solution on the following slide**





Clusters Description



We identified 5 segments using the K-Medoid Clustering method

	Segments	Gender	Booking Channels	Age groups	Membership	Travel Frequency	% Class Upgrade	Discount	Amount / Trips (\$)	Card Holder
1	Loyal Senior Female Travelers	Female	SCA Website	Senior (>55)	Standard	High (~ 5Trips)	21% Trips	High (~2.5 Trips)	406.8\$	Yes
2	Budget Travelers	Female	Outside	Adult (26-40)	Not Member	Low (~ 2Trips)	6% Trips	Low (~ 0.9 Trips)	283\$	No
3	Loyal Senior Male Travelers	Male	SCA Website	Senior (>55)	Standard	High (~ 5Trips)	23% Trips	High (~2.4 Trips)	408.7\$	No
4	Young, potential future customers	Female	SCA Website	Child (<18)	Not Member	Low (~ 2Trips)	6% Trips	Medium (~ 1.2 Trips)	335\$	No
5	Students fresh users	Male	Outside	Adult (26-40)	Not Member	Low (~ 2Trips)	7% Trips	Low (~ 0.9 Trips)	324.9\$	No



Clusters Description



Cluster 1 (Loyal Senior Female Travelers):

- Senior-aged, female
- Standard Ufly membership
- Cardholders
- Most likely to travel FC
- Highest amount spent per trip
- 54% discounted trips
- Booking source: SCA website

Cluster 2 (Budget Travelers):

- Adult, female
- Ufly membership: non-member
- No card
- Least likely to travel FC
- Low amount spent per trip
- 40% discounted trips
- Booking source: Outside

Cluster 3 (Loyal Senior Male Travelers):

- Senior-aged, male
- Standard Ufly membership
- No card
- More likely to travel FC
- High amount spent per trip
- 48% discounted trips
- Booking source: SCA website

Cluster 4 (Young, Potential Future Customers):

- Female, young
- No Ufly membership
- No card
- Less likely to travel FC
- Medium amount spent per trip
- 53% discounted trips
- Booking source: SCA website

Cluster 5 (Students fresh users):

- Male, young adults
- No Ufly membership
- No card
- Less likely to travel FC
- Medium amount spent per trip
- 41% discounted trips
- Booking source: Outside



Business Recommandations per segment



Investments
Opportunity



Promote the benefits of Ufly membership and SCA card

- 1-month free elite Ufly membership around winters



Award points (money worth) stored in SCA card of flights booked from SCA website

- Also increase cardholders

Give more first-class upgrades to increase their loyalty

- For a middle-aged woman, comfort is important



Business Recommandations per segment

Budget
Travelers



Provide more discounts on SCA website

- Incentivize customers to book using SCA website
- Save on commission provided to outside distributors



Promote Standard Ufly Rewards Membership

- Exchange fly miles for discounts and upgrades



Business Recommendations per segments

Loyal
Senior
Male
Travelers



Customer Relationship Management

- Class Upgrades & Elite class memberships exchange for Ufly Rewards miles



Speciality Discounts and Services

- Priority check-in, comfort seats, complementary food & beverages, personal assistance, for Senior customers.



Senior Special Vouchers

- When they upgrade to an Elite membership to motivate them for upgrades



Business Recommendations per segments

young,
potential
future
customers



Family Customers

- Family seating specially offered on their website



Potential Loyalty

- Discount for school groups of becoming a membership





Business Recommendations per segments

Young
males,
fresh users



Not Card holder, not members

- single-time promo for increasing awareness first



Book on the Outside Website

- focus on SEO from other flight booking websites



Male and 18-24 years-old

- Referral coupons for peers
- Back to school and vacation packages
- Fly-to-ballgame special seasonality coupons



Business Recommendations

General Recommendations for all customers:



Focusing on the periods after the Christmas holidays

- Attract potential customers via promotion code



Boosting the customers' booking rate on the website of Sun Country Airlines

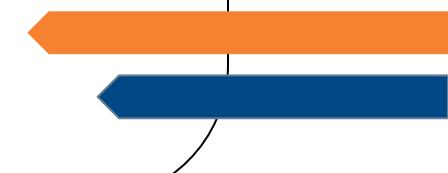
- Discounts on the first several rides
- Free bags on the first trip



Seniors Travel Assistance programs



Social Media Promotion





Thank You

