

# customer segmentation FOR XYZ AIRLINE



Aditya Tomar  
Jhan-Syuan Lin  
Niharika Agnihotri  
Saloni Jadhav  
Yash Bhirud

# BUSINESS PROBLEM

- XYZ is directly rivaled by large national airline companies and **competitive pricing alone is not sufficient** to stay afloat.
- Not enough time or resources have been invested in validating and **developing customer profiles**.
- **Lack of customer knowledge** significantly hampers XYZ's digital marketing and advertising efforts.
- **Brand loyalty is low**, a small proportion of customers have enrolled in the XFly Rewards Program.



# BLUEPRINT



# DATA CLEANING



**Data Filtering:** Filtering for only XYZ data



**Null values:** “NA” values will be replaced by 0 for int and ‘none’ for strings



**Anomalies:** Replacing anomalies in data like 15k entries having aged out of the normal range with the mean



**Modification of data types:** Data types are modified wherever required for eg. date columns



# WHY CLUSTERING

- Historical data on XYZ's customers can be harnessed to get a better understanding of the clientele.
- A better understanding of the customers will help XYZ refine its marketing and expansion strategies.
- Through clustering, we want to identify clear, distinguishable segments of customers and use their characteristics to provide insights and recommendations

# CLUSTERING APPROACHES



K-Means



Gaussian Mixture Model



K-Prototypes



K-Medoids

**We preferred Gaussian Mixture Model because it is computationally efficient and captures most information among all clustering models.**



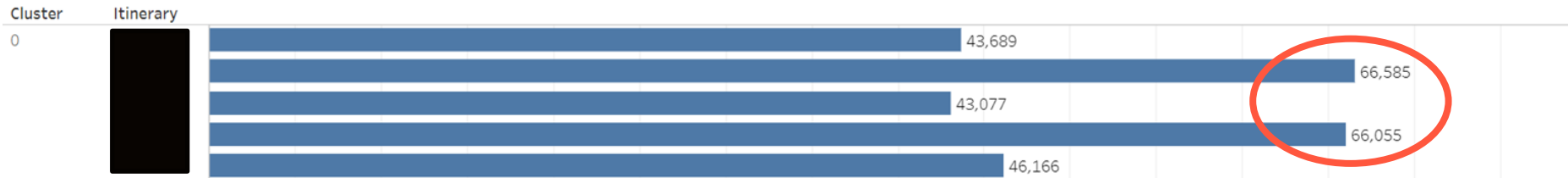
# CLUSTERS



## Cluster 0: Average Customers

Cohort size: 48%

- Book 2 months in advance on average
- 20% of them are members
- No multi city trips
- 50% of trips are from/to Vegas



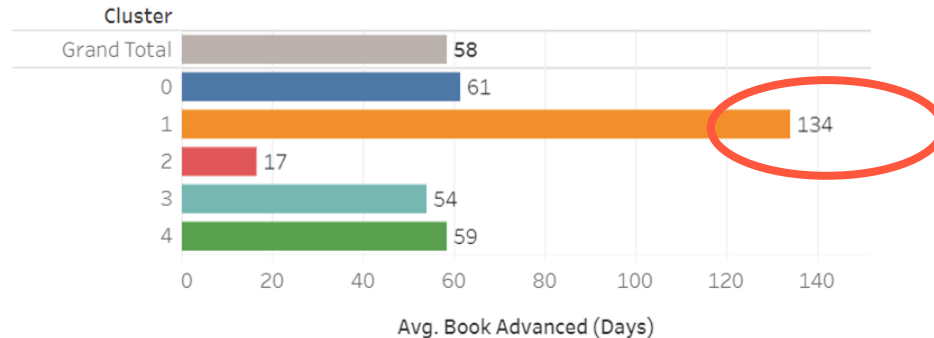
# CLUSTERS



## Cluster 1: Advance Bookers

Cohort size: 1%

- Book well in advance (4-5 months)
- Book through reservation booking
- Book the most tickets (62%) between July to December but to fly between Jan to March



The number of days the customers in Clusters booked tickets in advance. Cluster 1 has the maximum number of 134 days.



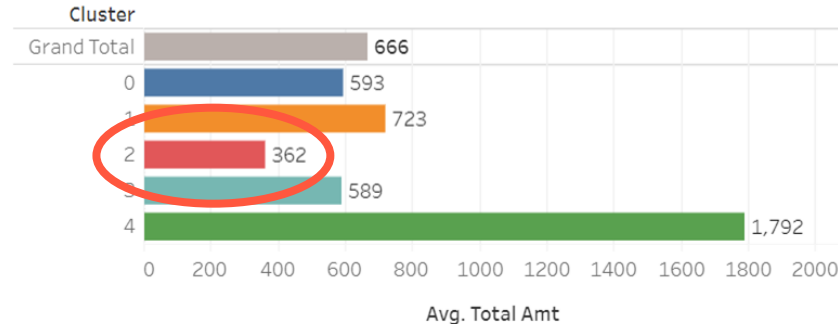
# CLUSTERS



## Cluster 2: Last-minute bookers:

Cohort size: 0.4%

- Book tickets spontaneously
- Book only at airports
- Per person expenditure is the lowest ( \$362 )



The average amount of dollars spent by a person in the cluster through the 2 years

# CLUSTERS



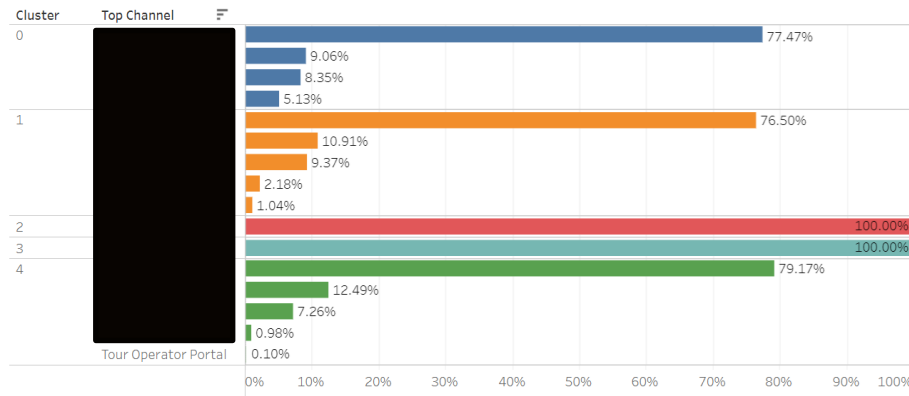
## Cluster 3: Price Sensitive Bookers

Cohort size: 44.4%

- Mostly Non-members (93%)
- Book through external websites only



Top Channel by Cluster



All bookings in Cluster 3 are from external websites

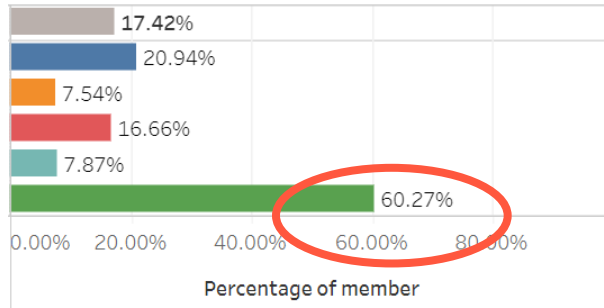
# CLUSTERS



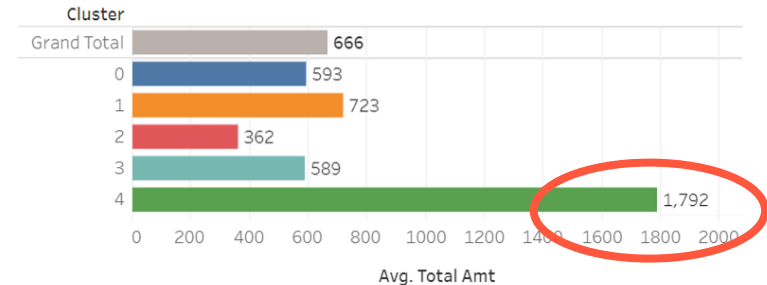
## Cluster 4: Frequent travelers:

Cohort size: 6.2%

- Members & card holders
- Highest frequency of trips among all clusters
- Book only through XYZ website
- Per person expenditure is the highest (~\$1800).



60% of customers in Cluster 4 are members

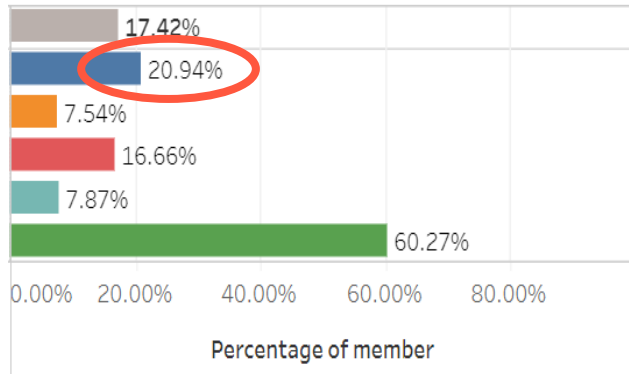
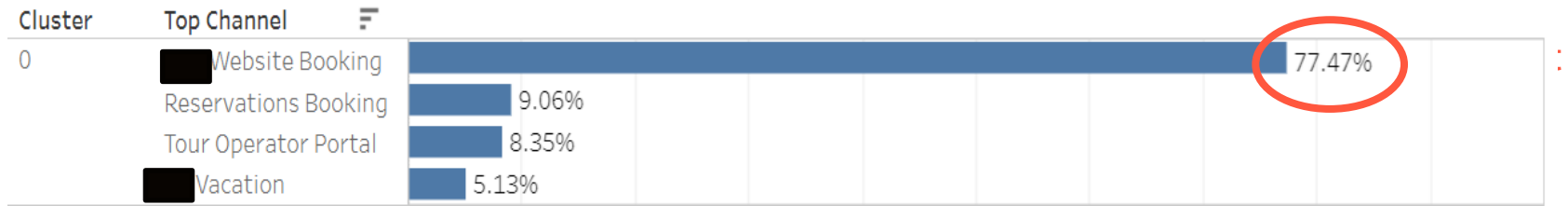


The average amount of dollars spent by a person in the cluster through the 2 years

# RECOMMENDATIONS

## Cluster 0: Average Customers

### Top Channel by Cluster

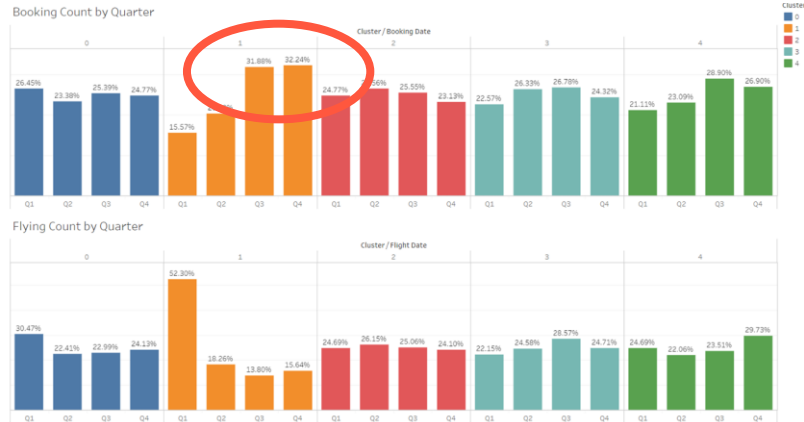


Since almost 80% of people book through the XYZ website but just 20% of them are members, we can **incentivize converting to XYZP Membership** by offering sign-up discounts during checkout.

The XYZ website should have advertisement banners promoting its rewards programs.

# RECOMMENDATIONS

## Cluster 1: Advance Bookers

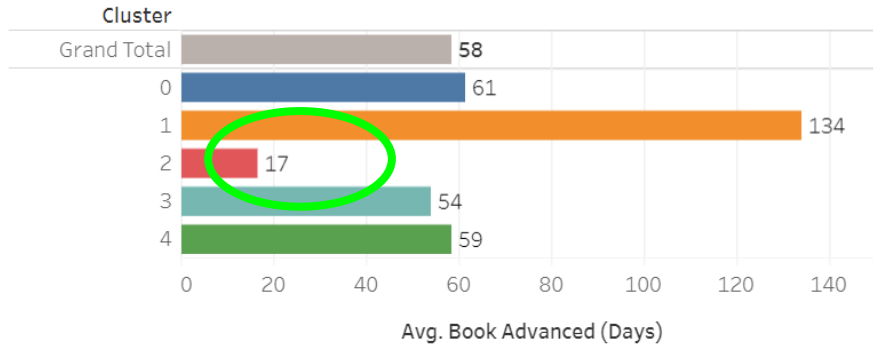


Create a **sense of urgency**, these customers like to research and a time constraint might drive their decision.

# RECOMMENDATIONS

## Cluster 2: Last-minute bookers:

Avg Book Advanced by Cluster

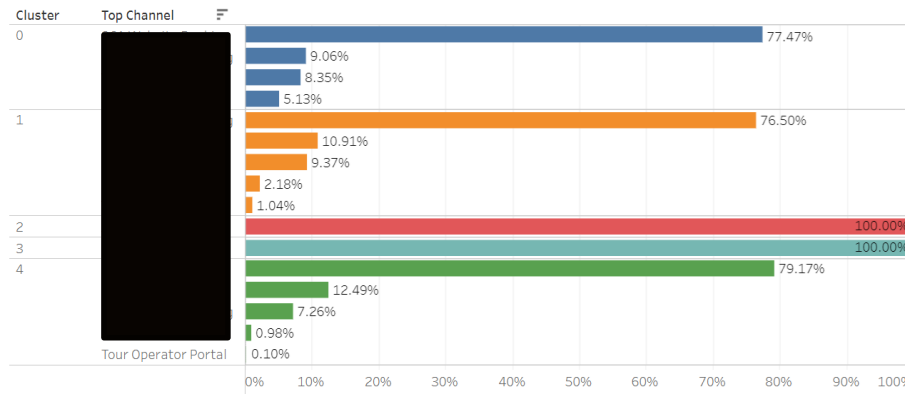


Due to time constraints of booking tickets at the airport these customers have low bargaining power. Prices at the airport can be **marked up and discounts should not be offered.**

# RECOMMENDATIONS

## Cluster 3: Price Sensitive Bookers

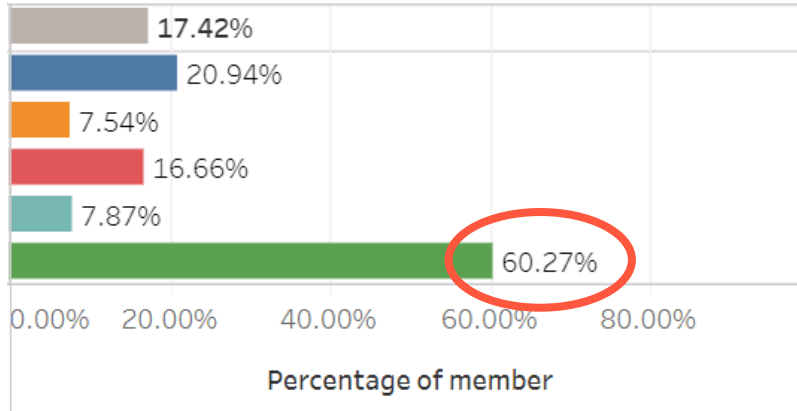
Top Channel by Cluster



These customers who book via external websites should be **offered benefits upon enrolling in the XFly program**. They can be targeted through e-mail communication; benefits could involve receiving discounted rates in the long term.

# RECOMMENDATIONS

## Cluster 4: Frequent Flyers



**Offer seat upgrades and rewards** for frequently flying customers to increase overall satisfaction and cement their loyalty to XYZ Airlines.

Use their loyalty to increase reach by giving **referral bonuses** when they tell friends and family about XYZ.



# GENERAL RECOMMENDATIONS

- Points received from booking via the **XCA website should be higher** than if booked through external websites.
- The **signup process** for the XFly rewards program should be **simplified**. Customers that book through external channels should be notified of the existence and benefits of the rewards program through emails.
- XFly Rewards program should have different **membership tiers**, customers in a higher tier should receive more points. This would encourage even price-sensitive customers to stay loyal to XCA.
- Points can be **redeemed to get benefits** such as upgrades, free seat selection, and move bookings.



**THANK you**