



## Business Intelligence Case Study: FlyingWhale Airline

### Objective:

The objective of this project is to leverage the available Customer Flight Activity and Customer Loyalty History datasets to enhance FlyingWhale Airline's business intelligence capabilities. By analyzing customer flight activity, loyalty segmentation, and enrollment and cancellation trends, we aim to develop strategic insights and actionable recommendations that will increase the duration of customer enrollments and reduce the rate of cancellations, ultimately improving customer retention and satisfaction.

### Dataset Overview:

#### 1. Customer Flight Activity:

- **Loyalty Number:** A unique identifier for each customer's loyalty account.
- **Year and Month:** Period details for analysis, allowing for the examination of monthly and yearly trends.
- **Flights Booked:** Number of flights booked by each member during the specified period.
- **Flights with Companions:** Number of flights booked by each member with additional passengers.
- **Total Flights:** Combined total of Flights Booked and Flights with Companions for each member.
- **Distance:** Flight distance traveled in kilometers during the specified period, providing insights into travel behavior.
- **Points Accumulated:** Loyalty points earned by each member in the period, reflecting their engagement with the loyalty program.
- **Points Redeemed:** Loyalty points redeemed by each member during the period, indicating their utilization of rewards.
- **Dollar Cost Points Redeemed:** Dollar equivalent for points redeemed in Canadian Dollars (CDN), enabling financial analysis of loyalty program utilization.

#### 2. Customer Loyalty History:

- **Loyalty Number:** A unique identifier for each customer's loyalty account, facilitating the linkage of customer activity across datasets.

- **Demographics:** Information about customers' country, province, city, postal code, gender, education, salary, and marital status, providing insights into customer characteristics.
- **Loyalty Card:** Current status of the loyalty card, indicating the member's level of engagement with the loyalty program.
- **Customer Lifetime Value (CLV):** Total invoice value for all flights ever booked by each member, reflecting their overall value to the airline.
- **Enrollment Details:** Information about the member's enrollment, including enrollment type (Standard / 2018 Promotion), enrollment year, and enrollment month, allowing for analysis of enrollment trends.
- **Cancellation Details:** Year and month of cancellation (if applicable), providing insights into membership churn and retention efforts.

## Steps Taken:

1. Dataset uploaded in Power bi, First done data modeling.
2. Removed all the duplicates in dataset by Power Query.
3. In customer Flight history table, created new column for Months names using DAX then sorted the names according to months for attractive insights.
4. Created a table Customer Loyalty Cancellation for loyalty members that have cancelled.
5. Created two new columns in the new table Enrollment Duration (e.g. 2 years 1 month) and Enrollment Duration (Months) (e.g. 25) by using DAX in Power Bi.
6. Create two new columns in Customer Loyalty History table Cancellation Duration (Till Date) and Cancellation Duration (Till Date) Months by using DAX.

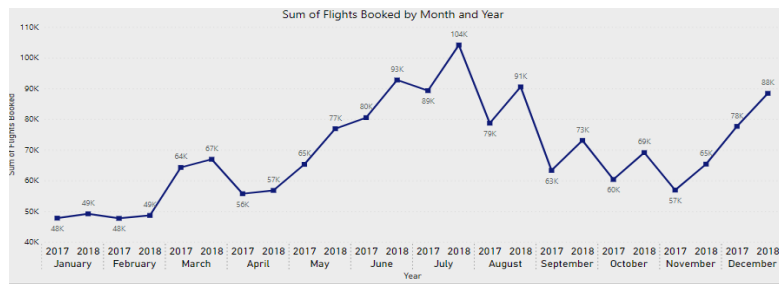
## Visualization techniques:

### Flight Activity Analysis Dashboard:



- Analyzing monthly and yearly flight booking patterns.

Used Line Chart to analyze the patterns of booked Flights for monthly and yearly.

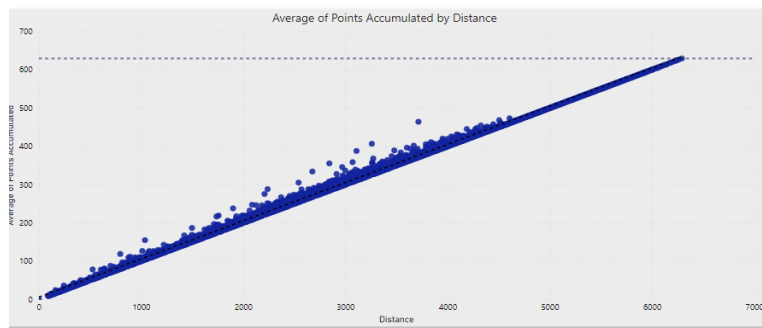


Total Sum of Flights Booked was higher for 2018 (881754) than 2017 (787410).

July in Year 2018 made up 6.24% of the Sum of Flights Booked.

- Exploring the correlation between flight distances and loyalty points accumulated.

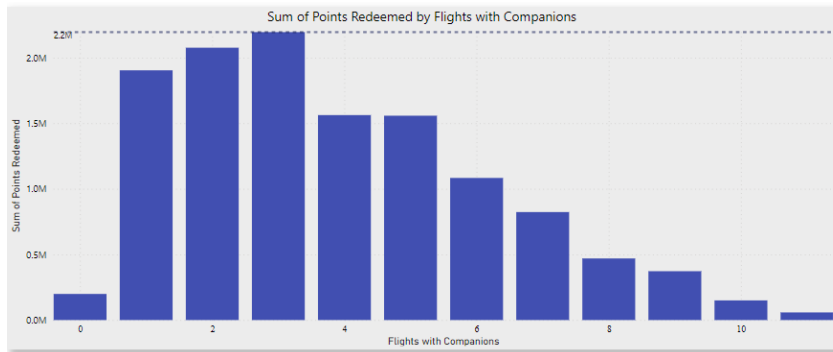
Used scatter chart visual also added trend line and max line to explore the correlation.



The graph shows a positive correlation between distance and the average number of points accumulated. This means that as the distance increases, the average number of points accumulated also increases.

- Assessing the impact of companion bookings on loyalty points redeemed

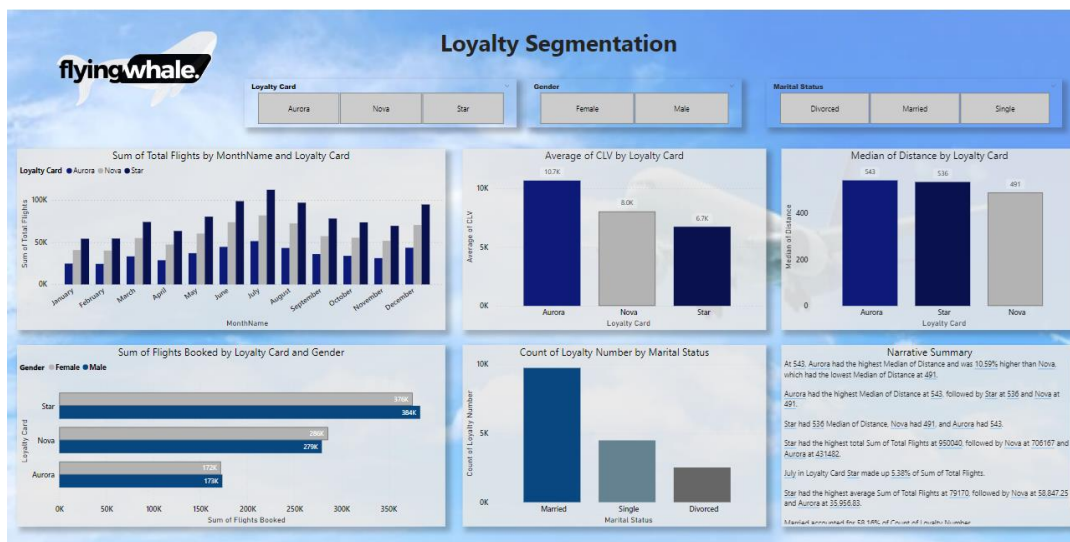
Used column chart to access the impact by adding Flights with companions on x-axis and Sum of points redeemed on Y-axis.



At 2195087, Flights with 3 number of companions had the highest Sum of Points Redeemed and was 3,679.16% higher than 11, which had the lowest Sum of Points Redeemed at 58084.

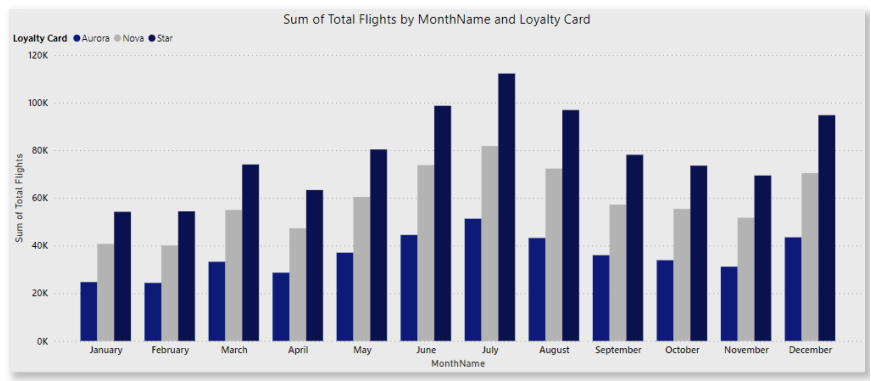
Overall, in Flight Activity Analysis, the airline seems to have experienced an increase in flight activity from 2017 to 2018. There were more flights booked, flights traveled longer distances, and more points were accumulated and redeemed.

## Loyalty Segmentation dashboard:



- Showing Total number of flights by Loyalty Card across months.

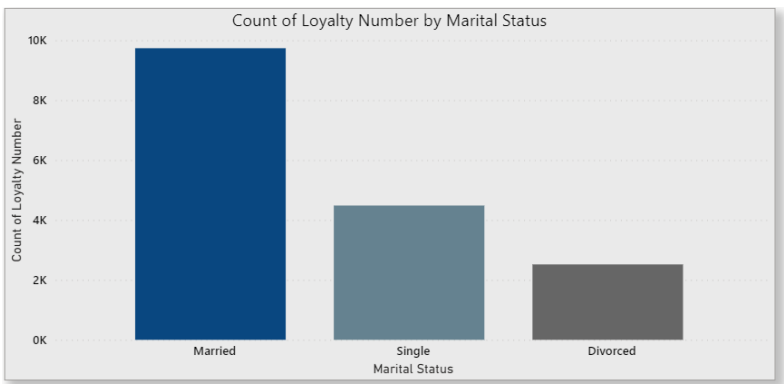
Used clustered column chart for segmenting customers based on loyalty card status.



Star has the highest total number of flights booked across all months, followed by Nova and Aurora. Interestingly, in July, Star flyers made up the highest percentage (5.30%) of the total flights booked that month.

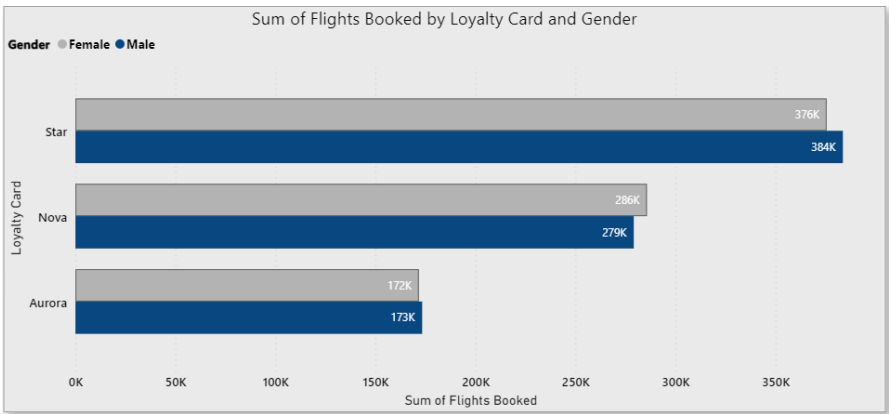
- Analyzing the demographics and behaviors of customers.

Number of loyalty members by marital status. By using Column chart.



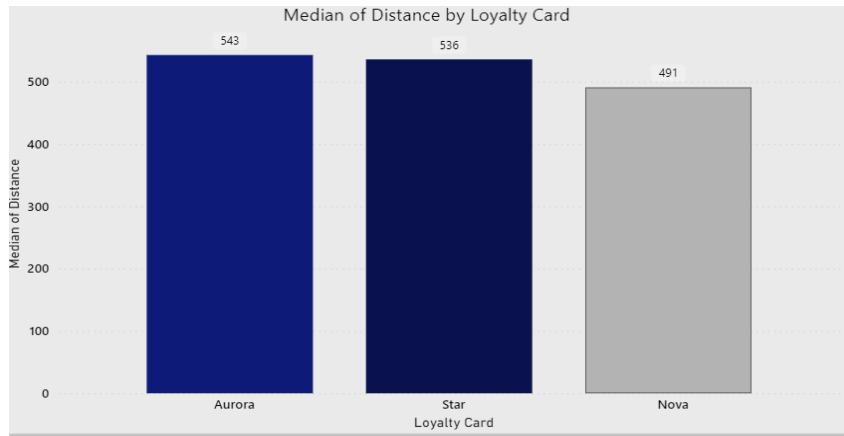
Married had the highest Count of Loyalty Number followed by Single and Divorced.

- Flights booked by loyalty card and broken up by gender.



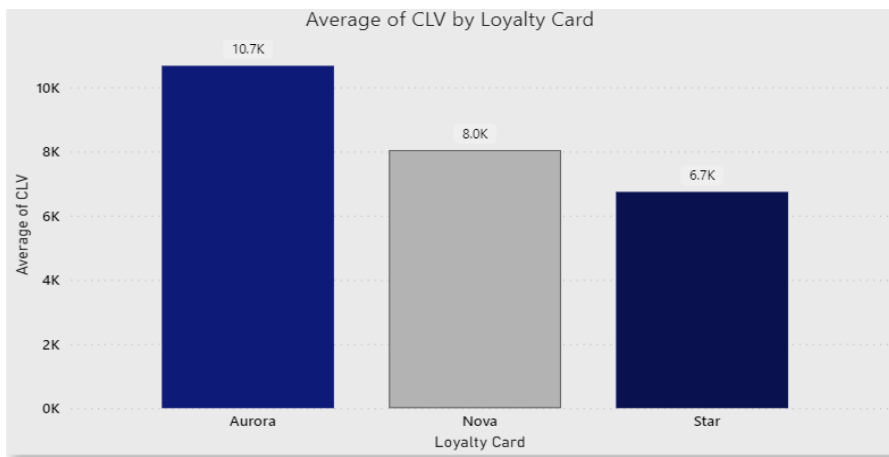
Total Sum of Flights Booked was higher for Male than Female. Star in Gender Male made up 22.99% of Sum of Flights Booked.

- Median distance travelled by different loyalty card tiers.



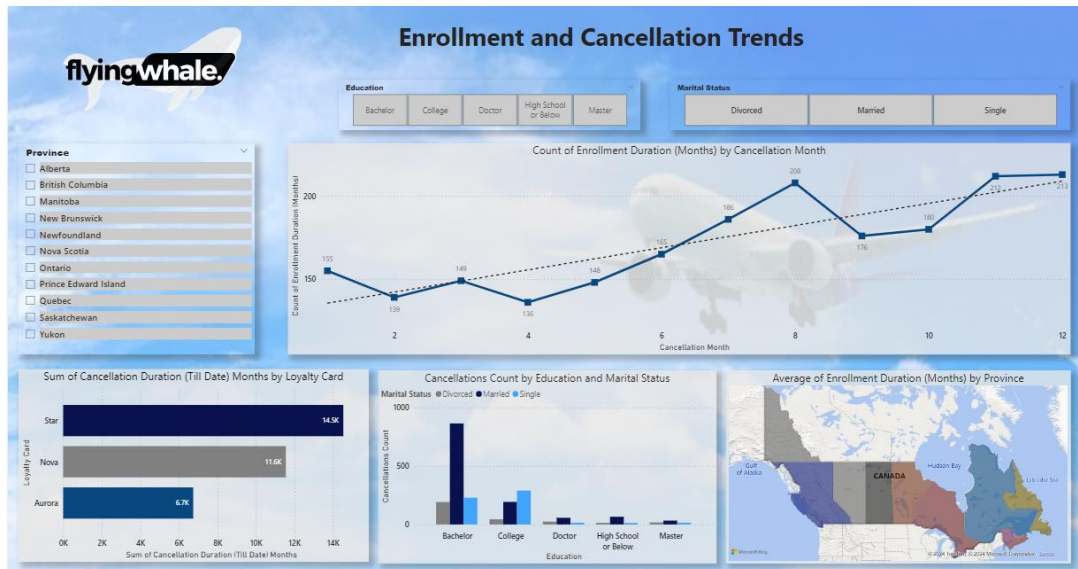
Aurora had the highest Median of Distance at 543, followed by Star at 536 and Nova at 491.

- Identifying trends in Customer Lifetime Value (CLV) across loyalty segments.



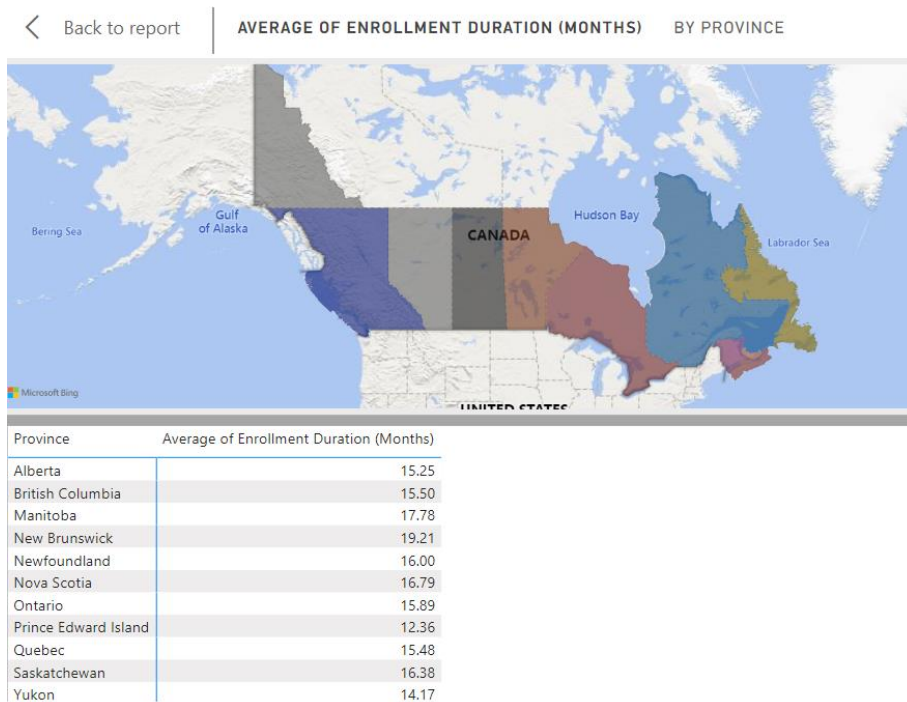
Aurora had the highest Average of CLV at 10,672.69, followed by Nova at 8,045.62 and Star at 6,741.76.

## Enrollment and Cancellation Trends Dashboard:



- Average duration of enrollment among cancelled members by province.

Used map visual to see which province members cancelling the fastest.

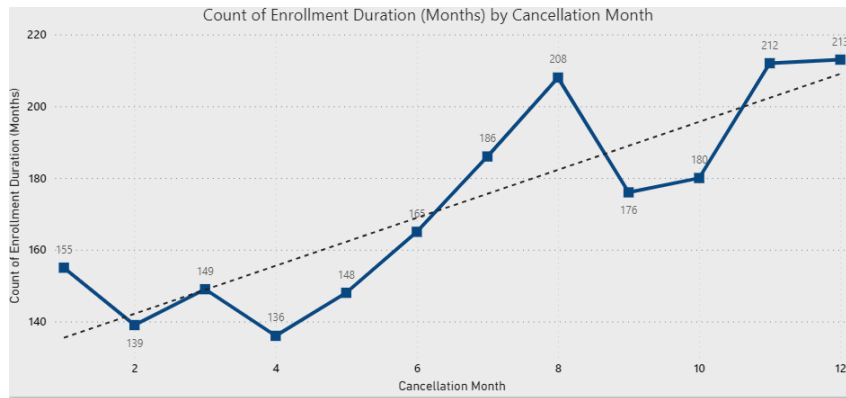


New Brunswick has the highest cancellation rate (19.21 months) among all the provinces.

Prince Edward Island has lowest cancellation rate of 12.36 months.

- Most popular months for cancellations.

Used Line chart to analyze the months for cancellation also added a trend line.



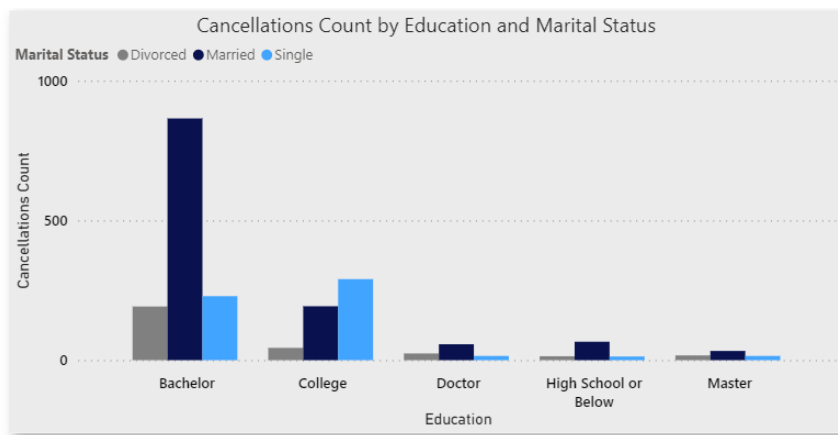
At 213, 12 (December) had the highest Count of Enrollment Duration (Months) and was 56.62% higher than 4, which had the lowest Count of Enrollment Duration (Months) at 136.

The other popular months are 11 (November) followed by 8 (July).

Across all 12 Cancellation Month, Count of Enrollment Duration (Months) ranged from 136 to 213.

- Cancellations by education and marital status.

Used Clustered column chart to analyze which demographic is cancelling the most.



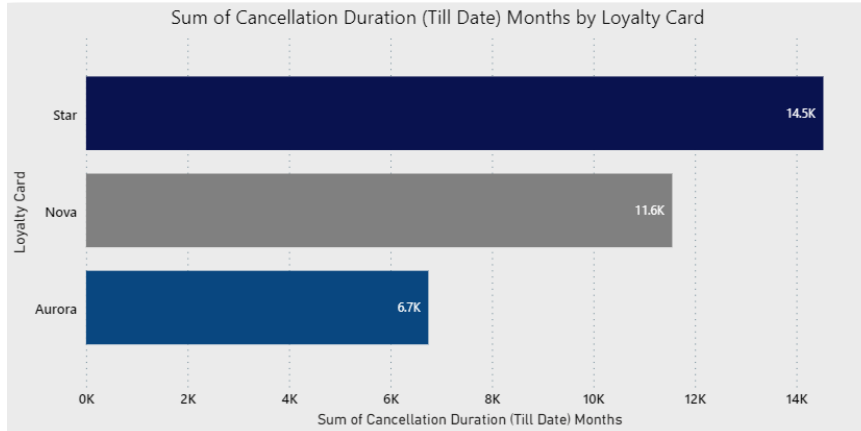
Married had the highest total Cancellations Count followed by Single and divorced.

Bachelor in Marital Status Married made up 41.85% of Cancellations Count.

Demographic with Marital Status cancelling the most.



- Which loyalty card members have the lowest enrollment duration among cancellations.



Star had the highest Sum of Cancellation Duration (Till Date) Months at 14531, followed by Nova at 11552 and Aurora at 6746.

- Recommended strategies for improving enrollment and retention.

### Reduce Cancellations:

- **Target December Cancellations:** The data shows December has the highest cancellation rate (213 months). Conduct surveys or targeted communication with members cancelling in December to understand their reasons for leaving. Address those concerns to reduce future December cancellations.
- **Focus on New Brunswick:** New Brunswick has the highest overall cancellation rate (19.21 months). Investigate reasons for cancellation specific to this province. This could involve targeted surveys or focus groups.
- **Improve Retention for Married Members:** Married members have the highest cancellation count. Explore reasons for cancellation within this demographic and develop targeted retention programs.

### Improve Enrollment:

- **Highlight Benefits by Province:** Understanding provinces with lower cancellation rates (e.g., Prince Edward Island) can inform marketing strategies. Promote the program's benefits that resonate with demographics in those areas.

### General Strategies:

- **Improve User Experience:** A smooth enrollment process, user-friendly platform, and clear communication can help reduce churn.
- **Targeted Communication:** Regular communication can address concerns and keep Flying Whales top-of-mind. Use targeted emails, special offers, or loyalty program updates.