

# Airline Loyalty program

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DATA PREPARTION & POWER QUERY  
DAX CALCULATION AND MODELING  
REPORT & DASHBOARD  
REPORT & DASHBOARD







# DESCRIPTION OF DATASET

1. CALENDAR: THIS FILE CONTAINS DATE-RELATED DATA THAT CAN BE USED TO CREATE A DYNAMIC DATE TABLE IN POWER BI. THE COLUMNS LIKELY INCLUDE DETAILS LIKE DAY, MONTH, YEAR, AND QUARTER, WHICH CAN BE USED FOR TIME-BASED ANALYSIS IN DASHBOARDS
2. CUSTOMER FLIGHT ACTIVITY:
  - PURPOSE: CONTAINS DATA ABOUT CUSTOMER FLIGHT ACTIVITY, INCLUDING POINTS ACCUMULATED, POINTS REDEEMED, AND FLIGHT FREQUENCY, TO ANALYZE CUSTOMER BEHAVIOR.
  - KEY COLUMNS:
    - LOYALTY NUMBER: A UNIQUE IDENTIFIER FOR EACH CUSTOMER.
    - POINTS ACCUMULATED: THE TOTAL NUMBER OF LOYALTY POINTS EARNED BY THE CUSTOMER FROM FLIGHTS.
    - POINTS REDEEMED: THE TOTAL NUMBER OF LOYALTY POINTS THE CUSTOMER HAS REDEEMED.
    - FLIGHT FREQUENCY: INFORMATION ON HOW OFTEN THE CUSTOMER FLIES (E.G., FREQUENT, MODERATE, OCCASIONAL).

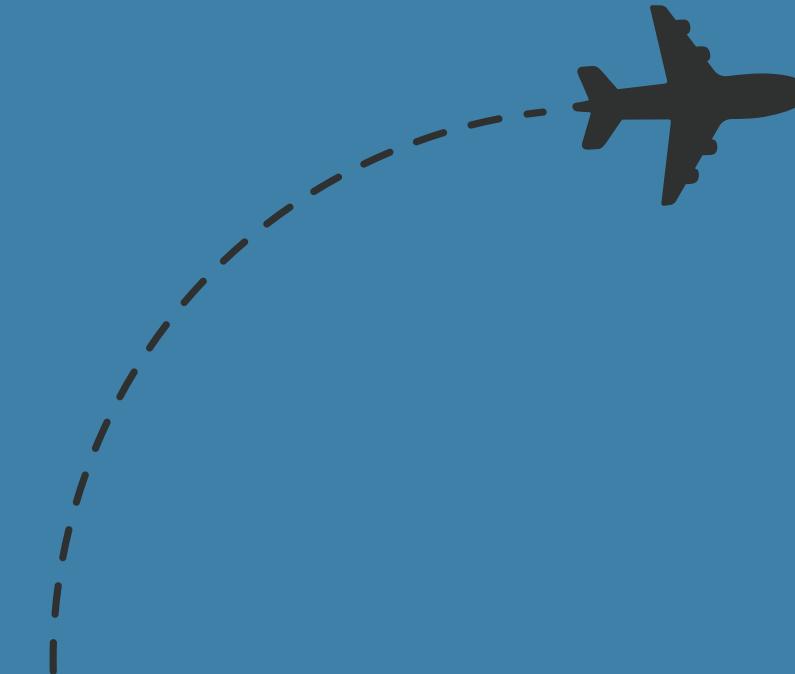
## 2 CUSTOMER LOYALTY HISTORY.CSV:

- PURPOSE: TRACKS HISTORICAL DATA ABOUT CUSTOMER LOYALTY PROGRAM ENROLLMENT, INCLUDING WHEN THEY JOINED, IF AND WHEN THEY CANCELED, AND RELATED STATUSES.
- KEY COLUMNS:
  - LOYALTY NUMBER: THE UNIQUE IDENTIFIER THAT LINKS TO THE FLIGHT ACTIVITY DATA.
  - ENROLLMENT DATE: THE DATE WHEN THE CUSTOMER JOINED THE LOYALTY PROGRAM.
  - CANCELLATION DATE: IF APPLICABLE, THE DATE WHEN A CUSTOMER CANCELED THEIR MEMBERSHIP.
  - SALARY CANCELLATION YEAR: THIS COULD REPRESENT A UNIQUE FIELD RELATED TO THE CUSTOMER'S SALARY OR THE YEAR THEIR SALARY WAS CANCELED. MAY NEED FURTHER CLARIFICATION.
  - CANCELLATION MONTH: INDICATES THE SPECIFIC MONTH IN WHICH THE CUSTOMER CANCELED THEIR MEMBERSHIP.

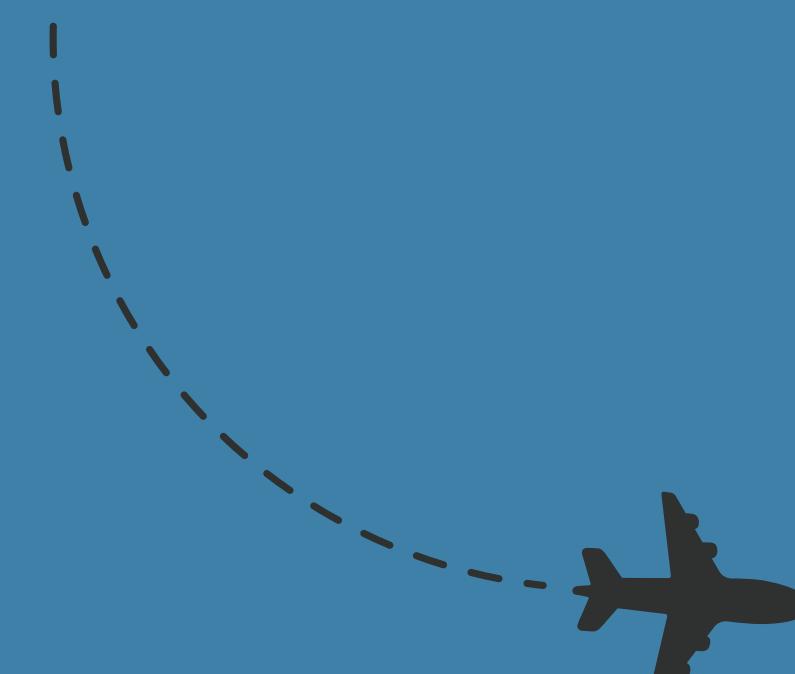


**PROBLEMS FOUND**

- **NULL VALUES IN SALARY**
- **NULL VALUES IN CANCELATION YEAR & MONTH**
- **UNDETECTED DATA TYPES**
- **DATA WITH NO RELATIONS**
- **UNNESSECARRY COLUMNS**



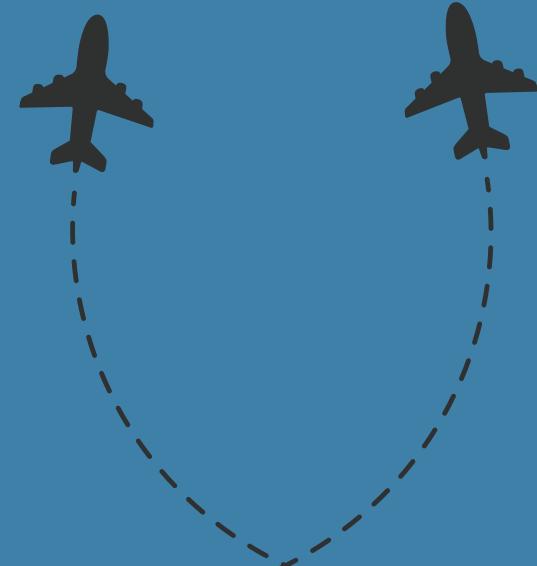
## **1) DATA PREPARTION**

- 
1. Checking if there are any duplicates in loyalty numbers in customer flight activity
  2. Promotion of header
  3. Detecting data types
  4. Replacing null values in cancellation year & cancellation month with 0 as we will be using it for a conditional column about active members
  5. Replacing null values in salary with 0
  6. Removed unnecessary column (postal Code)
  7. splitting date in calendar into (Day,Month,year,Quarter)
- 

# DATA PREPARATION

|            | 1 <sup>2</sup> <sub>3</sub> Year | 1 <sup>2</sup> <sub>3</sub> Quarter | 1 <sup>2</sup> <sub>3</sub> Month | 1 <sup>2</sup> <sub>3</sub> Day |         |
|------------|----------------------------------|-------------------------------------|-----------------------------------|---------------------------------|---------|
| 100%       | ● Valid                          | 100%                                | ● Valid                           | 100%                            | ● Valid |
| 0%         | ● Error                          | 0%                                  | ● Error                           | 0%                              | ● Error |
| 0%         | ● Empty                          | 0%                                  | ● Empty                           | 0%                              | ● Empty |
| 2012-01-01 | 2012                             | 1                                   | 1                                 | 1                               |         |
| 2012-01-02 | 2012                             | 1                                   | 1                                 | 2                               |         |
| 2012-01-03 | 2012                             | 1                                   | 1                                 | 3                               |         |
| 2012-01-04 | 2012                             | 1                                   | 1                                 | 4                               |         |
| 2012-01-05 | 2012                             | 1                                   | 1                                 | 5                               |         |
| 2012-01-06 | 2012                             | 1                                   | 1                                 | 6                               |         |
| 2012-01-07 | 2012                             | 1                                   | 1                                 | 7                               |         |
| 2012-01-08 | 2012                             | 1                                   | 1                                 | 8                               |         |
| 2012-01-09 | 2012                             | 1                                   | 1                                 | 9                               |         |
| 2012-01-10 | 2012                             | 1                                   | 1                                 | 10                              |         |
| 2012-01-11 | 2012                             | 1                                   | 1                                 | 11                              |         |
| 2012-01-12 | 2012                             | 1                                   | 1                                 | 12                              |         |
| 2012-01-13 | 2012                             | 1                                   | 1                                 | 13                              |         |
| 2012-01-14 | 2012                             | 1                                   | 1                                 | 14                              |         |
| 2012-01-15 | 2012                             | 1                                   | 1                                 | 15                              |         |
| 2012-01-16 | 2012                             | 1                                   | 1                                 | 16                              |         |
| 2012-01-17 | 2012                             | 1                                   | 1                                 | 17                              |         |
| 2012-01-18 | 2012                             | 1                                   | 1                                 | 18                              |         |
| 2012-01-19 | 2012                             | 1                                   | 1                                 | 19                              |         |
| 2012-01-20 | 2012                             | 1                                   | 1                                 | 20                              |         |
| 2012-01-21 | 2012                             | 1                                   | 1                                 | 21                              |         |
| 2012-01-22 | 2012                             | 1                                   | 1                                 | 22                              |         |
| 2012-01-23 | 2012                             | 1                                   | 1                                 | 23                              |         |
| 2012-01-24 | 2012                             | 1                                   | 1                                 | 24                              |         |
| 2012-01-25 | 2012                             | 1                                   | 1                                 | 25                              |         |
| 2012-01-26 | 2012                             | 1                                   | 1                                 | 26                              |         |

| 1.2 Salary | 1.2 Cancellation Year | 1.2 Cancellation Month |
|------------|-----------------------|------------------------|
| ● Valid    | 100%                  | ● Valid                |
| ● Error    | 0%                    | ● Error                |
| ● Empty    | 0%                    | ● Empty                |
|            | 46594                 |                        |
|            | 0                     |                        |
|            | 47670                 |                        |
|            | 217943                |                        |
|            | 0                     |                        |
|            | 75616                 | 2017                   |
|            | 56345                 | 2017                   |
|            | 0                     | 0                      |
|            | 82837                 | 2017                   |
|            | 47349                 | 0                      |
|            | 0                     | 0                      |
|            | 125167                | 0                      |
|            | 0                     | 0                      |
|            | 93052                 | 0                      |
|            | 54457                 | 2016                   |
|            | 0                     | 2017                   |
|            | 0                     | 0                      |



# CUSTOM COLUMN

## POWER QUERY

Customer Flight Activity Table:

- Created a "Net Points" column to calculate the difference between points accumulated and redeemed.

Customer Loyalty History Table:

- Created a custom column to calculate the total duration of enrollment in years and months, considering both active and cancelled customers.
- Added another custom column to calculate total years, including months as fractions, for a more detailed view of enrollment duration

# CUSTOM COLUMN

| A <sup>B</sup> <sub>C</sub> | Enrollment duration | 1.2 enrollment duration in years |
|-----------------------------|---------------------|----------------------------------|
|                             | Valid               | 100%                             |
|                             | Error               | 0%                               |
|                             | Empty               | 0%                               |
| 6 years 8 months            |                     | 6.7                              |
| 6 years 3 months            |                     | 6.2                              |
| 7 years 3 months            |                     | 7.2                              |
| 12 years 2 months           |                     | 12.2                             |
| 10 years 5 months           |                     | 10.4                             |
| 0 years 8 months            |                     | 0.7                              |
| 0 years 8 months            |                     | 0.7                              |
| 6 years 2 months            |                     | 6.2                              |
| 4 years 3 months            |                     | 4.2                              |
| 10 years 9 months           |                     | 10.8                             |
| 6 years 4 months            |                     | 6.3                              |
| 10 years 2 months           |                     | 10.2                             |
| 9 years 5 months            |                     | 9.4                              |
| 10 years 3 months           |                     | 10.2                             |
| 7 years 8 months            |                     | 7.7                              |
| 0 years 2 months            |                     | 0.2                              |
| 2 years 5 months            |                     | 2.4                              |
| 11 years 2 months           |                     | 11.2                             |
| 0 years 8 months            |                     | 0.7                              |
| 8 years 6 months            |                     | 8.5                              |
| 4 years 6 months            |                     | 4.5                              |
| 10 years 0 months           |                     | 10                               |
| 9 years 7 months            |                     | 9.6                              |
| 6 years 11 months           |                     | 6.9                              |
| 11 years 2 months           |                     | 11.2                             |

| 1.2 Net Points |
|----------------|
| 22914          |
| 31824          |
| 36960          |
| 49152          |
| 28044          |
| 15360          |
| 11250          |
| 49968          |
| 67770          |
| 35952          |
| 97776          |
| 56010          |
| 43248          |
| 52890          |
| 71250          |
| 34200          |
| 73980          |
| 37020          |



## CONDITIONAL COLUMN

- Customer Flight Activity Table:
  - Added a "Flight Activity Level" column to categorize customers based on flight frequency (Frequent, Moderate, or Occasional).
  - Created a "Loyalty Tier" column to assign customers to tiers (Gold, Silver, or Bronze) based on their net points.

**Add Conditional Column**

Add a conditional column that is computed from the other columns or values.

New column name: Flight Activity Level

|                            |                                 |           |                                  |
|----------------------------|---------------------------------|-----------|----------------------------------|
| Column Name: Total Flights | Operator: is greater than       | Value: 20 | Output: ABC 123 → Frequent Flyer |
| Else If: Total Flights     | Operator: is greater than or... | Value: 5  | Output: ABC 123 → Moderate Flyer |

**Add Clause**

Else: ABC 123 → Occasional Flyer

**OK** **Cancel**

**Add Conditional Column**

Add a conditional column that is computed from the other columns or values.

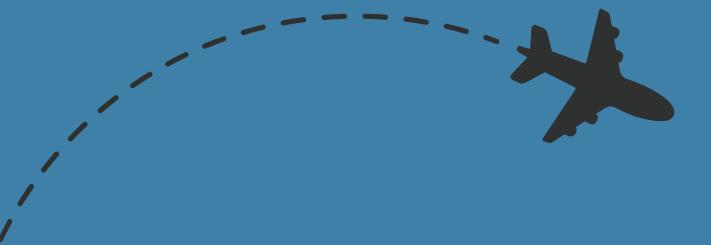
New column name: Loyalty Tier

|                         |                                 |              |                          |
|-------------------------|---------------------------------|--------------|--------------------------|
| Column Name: Net Points | Operator: is greater than       | Value: 50000 | Output: ABC 123 → Gold   |
| Else If: Net Points     | Operator: is greater than or... | Value: 20000 | Output: ABC 123 → Silver |

**Add Clause**

Else: ABC 123 → Bronze

**OK** **Cancel**



| A <sup>B</sup> C Flight Activity Level | A <sup>B</sup> C Loyalty Tier |
|--|-------------------------------|
| Valid                                  | 100%                          |
| Error                                  | 0%                            |
| Empty                                  | 0%                            |
| Moderate Flyer                         | Silver                        |
| Frequent Flyer                         | Silver                        |
| Moderate Flyer                         | Bronze                        |
| Moderate Flyer                         | Bronze                        |
| Frequent Flyer                         | Silver                        |
| Moderate Flyer                         | Gold                          |
| Moderate Flyer                         | Silver                        |
| Frequent Flyer                         | Gold                          |
| Moderate Flyer                         | Gold                          |
| Moderate Flyer                         | Silver                        |
| Moderate Flyer                         | Gold                          |
| Moderate Flyer                         | Silver                        |
| Moderate Flyer                         | Silver                        |
| Moderate Flyer                         | Silver                        |

## Customer Loyalty History Table:

- Added a "Cancellation Status" column to indicate if a customer is active or cancelled based on the cancellation year.

### Add Conditional Column

Add a conditional column that is computed from the other columns or values.

New column name  
Cancellation Status

| Column Name                  | Operator | Value ⓘ   | Output ⓘ            |
|------------------------------|----------|-----------|---------------------|
| If Cancellation Year         | equals   | ABC 123 0 | Then ABC 123 Active |
| ...<br><br><b>Add Clause</b> |          |           |                     |
| Else ⓘ                       | ABC 123  | Cancelled |                     |

OK Cancel

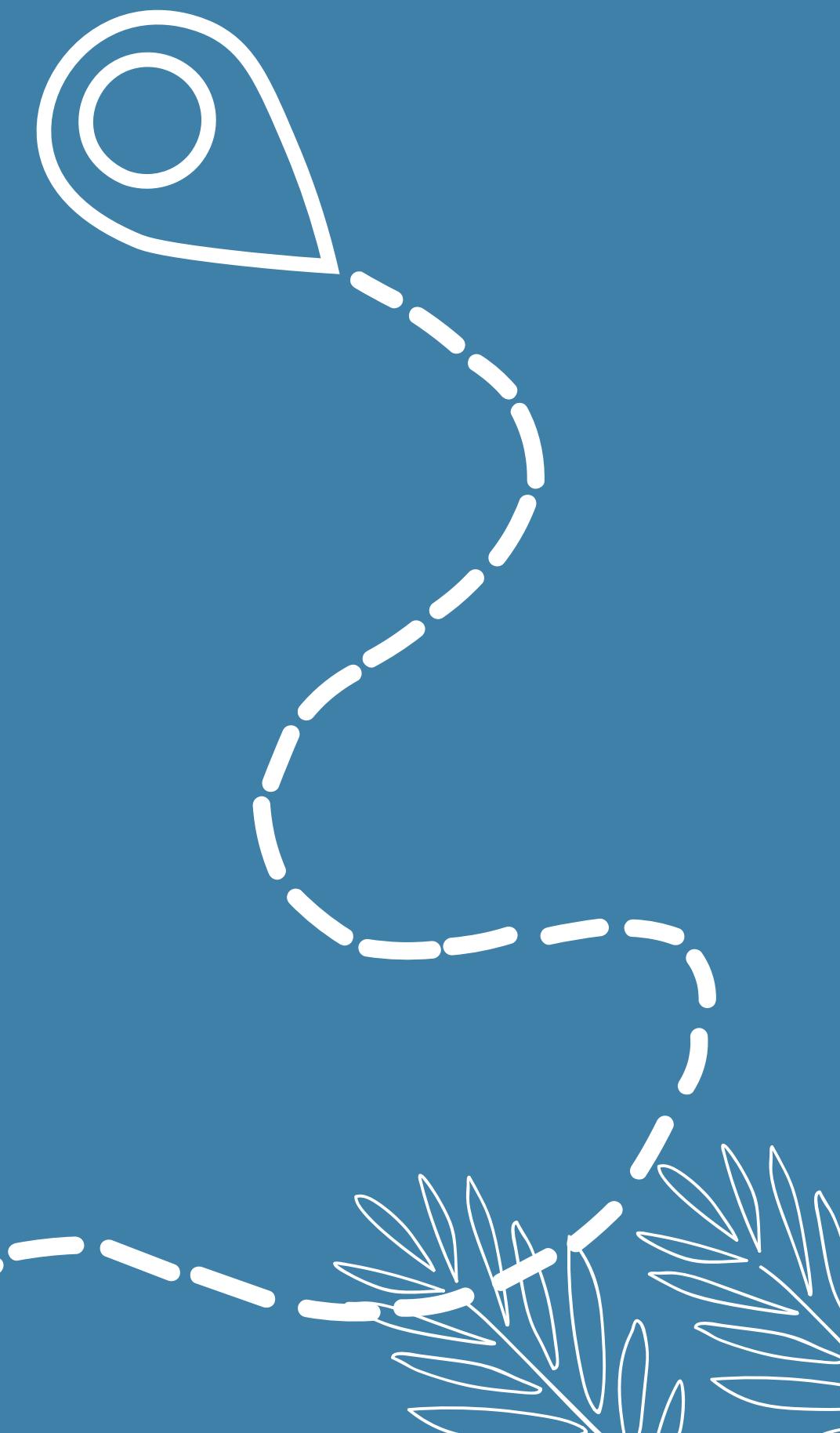
ABC 123 Cancellation Status

| ABC 123   | Cancellation Status | Percentage |
|-----------|---------------------|------------|
| Valid     | 100%                | 0%         |
| Error     | 0%                  | 0%         |
| Empty     | 0%                  | 0%         |
| Active    | Active              |            |
| Cancelled | Cancelled           |            |
| Cancelled | Cancelled           |            |
| Active    | Active              |            |
| Cancelled | Cancelled           |            |
| Active    | Active              |            |
| Cancelled | Cancelled           |            |
| Cancelled | Cancelled           |            |
| Active    | Active              |            |

# DAX CALCULATION

- Active Member: Calculated column indicates whether a member is currently active by returning "Yes" for activemembers and "No" for inactiveones. It is useful for filtering and segmenting data in reports.

|    |             |              |          |                 |                 |                  |                   | Active Member      |     |                  |                     |
|----|-------------|--------------|----------|-----------------|-----------------|------------------|-------------------|--------------------|-----|------------------|---------------------|
|    | ital Status | Loyalty Card | CLV      | Enrollment Type | Enrollment Year | Enrollment Month | Cancellation Year | Cancellation Month |     | Enrollment Lengh | Enrollment Length B |
| le | Star        | 1904         | Standard |                 | 2015            | 10               | 0                 | 0                  | Yes | 9                | 5+ Years            |
| le | Star        | 2549.45      | Standard |                 | 2017            | 3                | 0                 | 0                  | Yes | 7                | 5+ Years            |
| le | Star        | 2224.77      | Standard |                 | 2014            | 8                | 0                 | 0                  | Yes | 10               | 5+ Years            |
| le | Star        | 13197.93     | Standard |                 | 2012            | 6                | 0                 | 0                  | Yes | 12               | 5+ Years            |
| le | Star        | 4160.16      | Standard |                 | 2017            | 9                | 0                 | 0                  | Yes | 7                | 5+ Years            |
| le | Star        | 19116.57     | Standard |                 | 2017            | 1                | 0                 | 0                  | Yes | 7                | 5+ Years            |
| le | Star        | 2274.78      | Standard |                 | 2014            | 1                | 0                 | 0                  | Yes | 10               | 5+ Years            |
| le | Star        | 2652.29      | Standard |                 | 2015            | 11               | 0                 | 0                  | Yes | 9                | 5+ Years            |
| le | Star        | 2199.74      | Standard |                 | 2016            | 6                | 0                 | 0                  | Yes | 8                | 5+ Years            |
| le | Star        | 2470.12      | Standard |                 | 2017            | 10               | 0                 | 0                  | Yes | 7                | 5+ Years            |
| le | Star        | 4776.19      | Standard |                 | 2012            | 8                | 0                 | 0                  | Yes | 12               | 5+ Years            |
| le | Star        | 22500.88     | Standard |                 | 2016            | 4                | 0                 | 0                  | Yes | 8                | 5+ Years            |
| le | Star        | 4463         | Standard |                 | 2018            | 10               | 0                 | 0                  | Yes | 6                | 5+ Years            |
| le | Star        | 20123.87     | Standard |                 | 2013            | 2                | 0                 | 0                  | Yes | 11               | 5+ Years            |
| le | Star        | 2523.17      | Standard |                 | 2017            | 9                | 0                 | 0                  | Yes | 7                | 5+ Years            |
| le | Star        | 8591.31      | Standard |                 | 2016            | 2                | 0                 | 0                  | Yes | 8                | 5+ Years            |
| le | Star        | 4738.99      | Standard |                 | 2014            | 10               | 0                 | 0                  | Yes | 10               | 5+ Years            |
| le | Star        | 2345.08      | Standard |                 | 2016            | 4                | 0                 | 0                  | Yes | 8                | 5+ Years            |
| le | Star        | 20940.3      | Standard |                 | 2014            | 12               | 0                 | 0                  | Yes | 10               | 5+ Years            |
| le | Star        | 5884.31      | Standard |                 | 2017            | 1                | 0                 | 0                  | Yes | 7                | 5+ Years            |
| le | Star        | 2379.74      | Standard |                 | 2017            | 12               | 0                 | 0                  | Yes | 7                | 5+ Years            |
| le | Star        | 4354.4       | Standard |                 | 2017            | 5                | 0                 | 0                  | Yes | 7                | 5+ Years            |
| le | Star        | 6732.97      | Standard |                 | 2015            | 7                | 0                 | 0                  | Yes | 9                | 5+ Years            |
| le | Star        | 11814.48     | Standard |                 | 2018            | 1                | 0                 | 0                  | Yes | 6                | 5+ Years            |
| le | Star        | 4722.24      | Standard |                 | 2014            | 1                | 0                 | 0                  | Yes | 10               | 5+ Years            |
| le | Star        | 5110.68      | Standard |                 | 2017            | 7                | 0                 | 0                  | Yes | 7                | 5+ Years            |
| le | Star        | 2215.91      | Standard |                 | 2014            | 5                | 0                 | 0                  | Yes | 10               | 5+ Years            |



- Enrollment Length:

Calculated column calculates the total length of time a member has been enrolled by finding the difference between the enrollment date and the cancellation date in months.

- Enrollment Length Bucket:

Calculated column categorizes members based on their enrollment length into defined segments ("< 1 year", "1-3 years", "3-5 years", "5+ years")

| LV     | Enrollment Type | Enrollment Year | Enrollment Month | Cancellation Year | Cancellation Month | Active Member | Enrollment Length | Enrollment Length Bucket | Cancellation Status |
|--------|-----------------|-----------------|------------------|-------------------|--------------------|---------------|-------------------|--------------------------|---------------------|
| 1904   | Standard        | 2015            | 10               | 0                 | 0                  | Yes           | 9                 | 5+ Years                 | Active              |
| 549.45 | Standard        | 2017            | 3                | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 224.77 | Standard        | 2014            | 8                | 0                 | 0                  | Yes           | 10                | 5+ Years                 | Active              |
| 197.93 | Standard        | 2012            | 6                | 0                 | 0                  | Yes           | 12                | 5+ Years                 | Active              |
| 160.16 | Standard        | 2017            | 9                | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 116.57 | Standard        | 2017            | 1                | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 274.78 | Standard        | 2014            | 1                | 0                 | 0                  | Yes           | 10                | 5+ Years                 | Active              |
| 652.29 | Standard        | 2015            | 11               | 0                 | 0                  | Yes           | 9                 | 5+ Years                 | Active              |
| 199.74 | Standard        | 2016            | 6                | 0                 | 0                  | Yes           | 8                 | 5+ Years                 | Active              |
| 470.12 | Standard        | 2017            | 10               | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 776.19 | Standard        | 2012            | 8                | 0                 | 0                  | Yes           | 12                | 5+ Years                 | Active              |
| 500.88 | Standard        | 2016            | 4                | 0                 | 0                  | Yes           | 8                 | 5+ Years                 | Active              |
| 4463   | Standard        | 2018            | 10               | 0                 | 0                  | Yes           | 6                 | 5+ Years                 | Active              |
| 123.87 | Standard        | 2013            | 2                | 0                 | 0                  | Yes           | 11                | 5+ Years                 | Active              |
| 523.17 | Standard        | 2017            | 9                | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 591.31 | Standard        | 2016            | 2                | 0                 | 0                  | Yes           | 8                 | 5+ Years                 | Active              |
| 738.99 | Standard        | 2014            | 10               | 0                 | 0                  | Yes           | 10                | 5+ Years                 | Active              |
| 345.08 | Standard        | 2016            | 4                | 0                 | 0                  | Yes           | 8                 | 5+ Years                 | Active              |
| 0940.3 | Standard        | 2014            | 12               | 0                 | 0                  | Yes           | 10                | 5+ Years                 | Active              |
| 884.31 | Standard        | 2017            | 1                | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 379.74 | Standard        | 2017            | 12               | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 4354.4 | Standard        | 2017            | 5                | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 732.97 | Standard        | 2015            | 7                | 0                 | 0                  | Yes           | 9                 | 5+ Years                 | Active              |
| 814.48 | Standard        | 2018            | 1                | 0                 | 0                  | Yes           | 6                 | 5+ Years                 | Active              |
| 722.24 | Standard        | 2014            | 1                | 0                 | 0                  | Yes           | 10                | 5+ Years                 | Active              |
| 110.68 | Standard        | 2017            | 7                | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 215.91 | Standard        | 2014            | 5                | 0                 | 0                  | Yes           | 10                | 5+ Years                 | Active              |

| LV     | Enrollment Type | Enrollment Year | Enrollment Month | Cancellation Year | Cancellation Month | Active Member | Enrollment Length | Enrollment Length Bucket | Cancellation Status |
|--------|-----------------|-----------------|------------------|-------------------|--------------------|---------------|-------------------|--------------------------|---------------------|
| 1904   | Standard        | 2015            | 10               | 0                 | 0                  | Yes           | 9                 | 5+ Years                 | Active              |
| 549.45 | Standard        | 2017            | 3                | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 224.77 | Standard        | 2014            | 8                | 0                 | 0                  | Yes           | 10                | 5+ Years                 | Active              |
| 197.93 | Standard        | 2012            | 6                | 0                 | 0                  | Yes           | 12                | 5+ Years                 | Active              |
| 160.16 | Standard        | 2017            | 9                | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 116.57 | Standard        | 2017            | 1                | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 274.78 | Standard        | 2014            | 1                | 0                 | 0                  | Yes           | 10                | 5+ Years                 | Active              |
| 652.29 | Standard        | 2015            | 11               | 0                 | 0                  | Yes           | 9                 | 5+ Years                 | Active              |
| 199.74 | Standard        | 2016            | 6                | 0                 | 0                  | Yes           | 8                 | 5+ Years                 | Active              |
| 470.12 | Standard        | 2017            | 10               | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 776.19 | Standard        | 2012            | 8                | 0                 | 0                  | Yes           | 12                | 5+ Years                 | Active              |
| 500.88 | Standard        | 2016            | 4                | 0                 | 0                  | Yes           | 8                 | 5+ Years                 | Active              |
| 4463   | Standard        | 2018            | 10               | 0                 | 0                  | Yes           | 6                 | 5+ Years                 | Active              |
| 123.87 | Standard        | 2013            | 2                | 0                 | 0                  | Yes           | 11                | 5+ Years                 | Active              |
| 523.17 | Standard        | 2017            | 9                | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 591.31 | Standard        | 2016            | 2                | 0                 | 0                  | Yes           | 8                 | 5+ Years                 | Active              |
| 738.99 | Standard        | 2014            | 10               | 0                 | 0                  | Yes           | 10                | 5+ Years                 | Active              |
| 345.08 | Standard        | 2016            | 4                | 0                 | 0                  | Yes           | 8                 | 5+ Years                 | Active              |
| 0940.3 | Standard        | 2014            | 12               | 0                 | 0                  | Yes           | 10                | 5+ Years                 | Active              |
| 884.31 | Standard        | 2017            | 1                | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |
| 379.74 | Standard        | 2017            | 12               | 0                 | 0                  | Yes           | 7                 | 5+ Years                 | Active              |

```

1 Enrollment Length = year(TODAY())-[Enrollment Year]
2 SNITCH(
3   True(),
4   [Enrollment Length]<=1 , "0-1 Year",
5   [Enrollment Length]<=3 , "1-3 Years",
6   [Enrollment Length]<=5 , "3-5 Years",
7   " 5+ Years"
8 )
  
```

- LifeTime Value Active Members:

This measure calculates the total lifetime value (LTV) of active members, which is essential for understanding the revenue potential from these members throughout their membership duration.

```
1 LifeTime Value Active Members = CALCULATE(  
2     SUM([CLV]),  
3     'Customer Loyalty History'[Cancellation Year]=BLANK()  
4 )
```

- Loyalty Ratio by Loyalty Card:

This measure calculates the ratio of members using a loyalty card to the total number of members. This provides insights into the effectiveness and engagement of the loyalty program among members.

```
1 Loyalty Ratio by Loyalty Card =  
2 CALCULATE(  
3     DIVIDE(  
4         sum('Customer Flight Activity'[Points Accumulated]),  
5         sum('Customer Flight Activity'[Total Flights])  
6     ),  
7     All('Customer Loyalty History'[Loyalty Card]  
8 )  
9 )
```

## YearOverYear Growth in Total:

This measure calculates the percentage increase or decrease in a specific total (such as revenue or membership count) when compared to the same period in the previous year. It provides insights into how the business is performing over time and helps identify trends.

```
1 YearOverYear Growth in total flights =
2 var PreviousYearFlights =
3 CALCULATE(
4     sum([Total Flights]),
5     DATEADD('Calendar'[Date],-1,YEAR)
6 )
7 RETURN
8 DIVIDE(SUM([Total Flights])-PreviousYearFlights,PreviousYearFlights,0)
```

## • Salary range

DAX Editor

```

1 SalaryGroup = SWITCH(
2   TRUE(),
3   [AdjustedSalary] <= 10000, "0 - 10,000",
4   [AdjustedSalary] <= 20000, "10,001 - 20,000",
5   [AdjustedSalary] <= 30000, "20,001 - 30,000",
6   [AdjustedSalary] <= 40000, "30,001 - 40,000",
7   [AdjustedSalary] <= 50000, "40,001 - 50,000",
8   [AdjustedSalary] > 50000, "50,001 - 54,294"
9 )

```

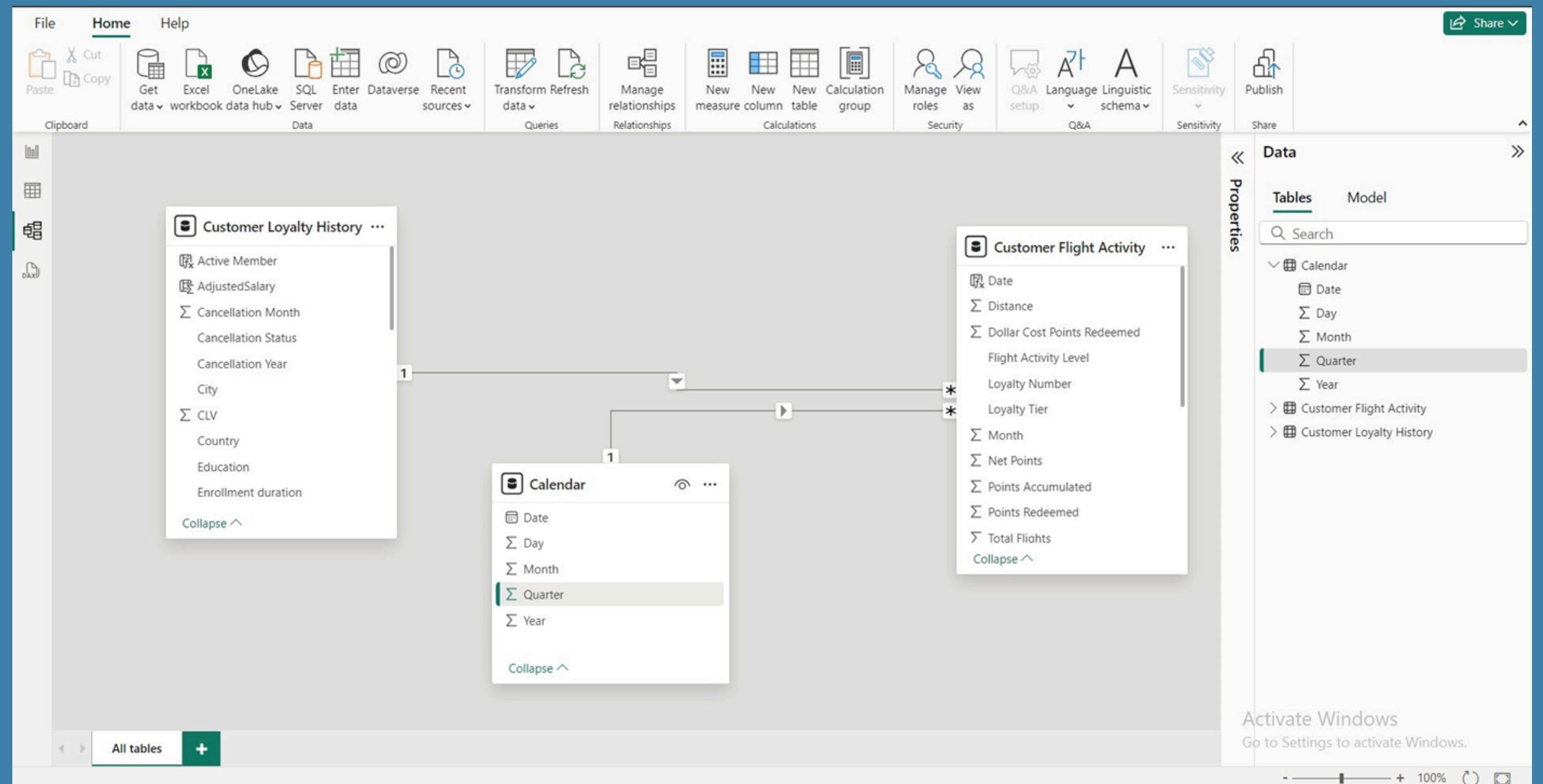
| Enrollment Length Bucket | Cancellation Status | Enrollment duration | enrollment duration in years | AdjustedSalary | SalaryGroup | EnrollmentDurationInMonths | EnrollmentDurationYearGroup |
|--------------------------|---------------------|---------------------|------------------------------|----------------|-------------|----------------------------|-----------------------------|
| 5+ Years                 | Active              | 9 years 0 months    | 9                            | 0              | 0 - 10,000  | 108                        | 5 - 10 years                |
| 5+ Years                 | Active              | 7 years 7 months    | 7.6                          | 0              | 0 - 10,000  | 91.2                       | 5 - 10 years                |
| 5+ Years                 | Active              | 10 years 2 months   | 10.2                         | 0              | 0 - 10,000  | 122.4                      | 10 - 12 years               |
| 5+ Years                 | Active              | 12 years 4 months   | 12.3                         | 0              | 0 - 10,000  | 147.6                      | Over 12 years               |
| 5+ Years                 | Active              | 7 years 1 months    | 7.1                          | 0              | 0 - 10,000  | 85.2                       | 5 - 10 years                |
| 5+ Years                 | Active              | 7 years 9 months    | 7.8                          | 0              | 0 - 10,000  | 93.6                       | 5 - 10 years                |
| 5+ Years                 | Active              | 10 years 9 months   | 10.8                         | 0              | 0 - 10,000  | 129.6                      | 10 - 12 years               |
| 5+ Years                 | Active              | 8 years 11 months   | 8.9                          | 0              | 0 - 10,000  | 106.8                      | 5 - 10 years                |
| 5+ Years                 | Active              | 8 years 4 months    | 8.3                          | 0              | 0 - 10,000  | 99.6                       | 5 - 10 years                |
| 5+ Years                 | Active              | 7 years 0 months    | 7                            | 0              | 0 - 10,000  | 84                         | 5 - 10 years                |
| 5+ Years                 | Active              | 12 years 2 months   | 12.2                         | 0              | 0 - 10,000  | 146.4                      | Over 12 years               |
| 5+ Years                 | Active              | 8 years 6 months    | 8.5                          | 0              | 0 - 10,000  | 102                        | 5 - 10 years                |
| 5+ Years                 | Active              | 6 years 0 months    | 6                            | 0              | 0 - 10,000  | 72                         | 5 - 10 years                |
| 5+ Years                 | Active              | 11 years 8 months   | 11.7                         | 0              | 0 - 10,000  | 140.4                      | 10 - 12 years               |
| 5+ Years                 | Active              | 7 years 1 months    | 7.1                          | 0              | 0 - 10,000  | 85.2                       | 5 - 10 years                |
| 5+ Years                 | Active              | 8 years 8 months    | 8.7                          | 0              | 0 - 10,000  | 104.4                      | 5 - 10 years                |
| 5+ Years                 | Active              | 10 years 0 months   | 10                           | 0              | 0 - 10,000  | 120                        | 5 - 10 years                |
| 5+ Years                 | Active              | 8 years 6 months    | 8.5                          | 0              | 0 - 10,000  | 102                        | 5 - 10 years                |
| 5+ Years                 | Active              | 9 years 10 months   | 9.8                          | 0              | 0 - 10,000  | 117.6                      | 5 - 10 years                |
| 5+ Years                 | Active              | 7 years 9 months    | 7.8                          | 0              | 0 - 10,000  | 93.6                       | 5 - 10 years                |
| 5+ Years                 | Active              | 6 years 10 months   | 6.8                          | 0              | 0 - 10,000  | 81.6                       | 5 - 10 years                |

Data

- Search
- Enrollment duration
- Σ enrollment duration in years
- Enrollment Length
- Enrollment Length Bucket
- Σ Enrollment Month
- Enrollment Type
- Σ Enrollment Year
- EnrollmentDurationInMonths
- EnrollmentDurationYearGroup
- Gender
- LifeTime Value Active Members
- LoyalCustomerCount
- Loyalty Card
- Loyalty Number
- Loyalty Ratio by Loyalty Card
- Marital Status
- Province
- RevenueFromHighSalaryCust...
- RevenueFromLowSalaryCusto...
- Σ Salary
- SalaryGroup
- Top10PercentCustomers
- Go to Settings
- Go to Windows
- TotalCancellations

# Date column

# DATA MODELING



## 1. SOME DATA PREPROCESSING WE NEEDED BEFORE THE REPORT

WE CREATED NEW COLUMNS AND MEASURES THAT WOULD HELP SEGMENT CUSTOMERS AND ANALYZE THEIR BEHAVIOR MORE EFFECTIVELY LIKE

- **SALARY GROUP:** I CATEGORIZED CUSTOMERS BASED ON THEIR SALARY INTO DIFFERENT SALARY RANGES SUCH AS "0 - 10,000", "10,001 - 20,000", AND SO ON, TO ALLOW FOR EASIER SEGMENTATION AND ANALYSIS BY INCOME GROUP.
- **ENROLLMENT DURATION GROUP:** I GROUPED CUSTOMERS BY THE LENGTH OF THEIR ENROLLMENT IN THE LOYALTY PROGRAM, USING CATEGORIES LIKE "0 - 1 YEARS", "1 - 5 YEARS", AND "OVER 12 YEARS". THIS ALLOWED FOR A BETTER UNDERSTANDING OF HOW LONG CUSTOMERS STAY WITH THE PROGRAM.

### NEW MEASURES CREATED LIKE:

I ALSO CREATED SEVERAL IMPORTANT MEASURES TO ENABLE MORE DETAILED ANALYSIS AND PROVIDE KEY INSIGHTS:

- **TOTAL FLIGHTS:** THE TOTAL NUMBER OF FLIGHTS TAKEN BY EACH CUSTOMER.
- **TOTAL POINTS ACCUMULATED:** THE TOTAL NUMBER OF LOYALTY POINTS EARNED BY EACH CUSTOMER.
- **TOTAL POINTS REDEEMED:** THE TOTAL NUMBER OF LOYALTY POINTS REDEEMED BY EACH CUSTOMER.
- **TOTAL POINTS UNUSED:** THE REMAINING POINTS THAT CUSTOMERS HAVE NOT YET REDEEMED.
- **ACTIVE COUNT:** THE COUNT OF CUSTOMERS WHO ARE STILL ACTIVE IN THE LOYALTY PROGRAM.
- **CANCELED COUNT:** THE NUMBER OF CUSTOMERS WHO HAVE CANCELED THEIR MEMBERSHIP.
- **LOYAL CUSTOMER COUNT:** THE NUMBER OF CUSTOMERS WHO ARE CONSIDERED LOYAL BASED ON THEIR ENGAGEMENT METRICS.

# CUSTOMER SEGMENTATION:

How can customers be segmented based on their flight activity (e.g., frequent flyers vs. occasional flyers)?  
 Are there any significant differences in flight activity (total flights, distance, points accumulated) between different customer segments (e.g., by gender, education, salary)?

**Customer Segmentation**

**Customer Loyalty and Retention**

**Customer Cancellation**

**Geographic Insights**

**Cancellation vs Activated Geographi...**

**Points Usage**

**CLV**

**Seasonality and Customer Behavior**

**Enrollment and Cancellation Trends**

**Revenue Insights**

**Q&A**

**THE DATA LAYER IS INTEGRATED WITH THE AIRPORTS AND AIRLINES**

**87K**  
Total\_Flights

**Year**  
 2017  
 2018

**Month**

**Customer Segmentation by Flight Activity: Frequent vs. moderate fly... vs. Occasional Flyers**

Flight Activity Le...  
 Moderate Fly...  
 Occasional FI...  
 Frequent Flyer

5.35K (31.95%)  
0.21K  
11.18K (66.8%)

**Total\_Flights by Gender**

Gender  
 Male  
 Female

44K (49.94%)  
44K (50.06%)

**Flight Activity Comparison by Demographics: (Gender, Education, and Salary)**

**Total\_Flights by Education**

| Education                      | Total_Flights |
|--------------------------------|---------------|
| Bachelor                       | ~50K          |
| College                        | ~20K          |
| High School or Below Education | ~5K           |
| Doctor                         | ~5K           |
| Master                         | ~5K           |

**Total\_Flights by SalaryGroup**

| SalaryGroup     | Total_Flights |
|-----------------|---------------|
| 50,001 - 54,294 | ~50K          |
| 0 - 10,000      | ~15K          |
| 40,001 - 50,000 | ~5K           |
| 30,001 - 40,000 | ~2K           |
| 20,001 - 30,000 | ~1K           |
| 10,001 - 20,000 | ~1K           |
| OK              | ~1K           |

# CUSTOMER LOYALTY AND RETENTION

What is the average customer loyalty duration (from enrollment to cancellation)?  
What factors (e.g., salary, marital status, flight activity) are correlated with customer loyalty or cancellation?

- Customer Segmentation
- Customer Loyalty and Retention
- Customer Cancellation
- Geographic Insights
- Cancellation vs Activated Geograph...
- Points Usage
- CLV
- Seasonality and Customer Behavior
- Enrollment and Cancellation Trends
- Revenue Insights
- Q&A



Customer Segmentation

Customer Loyalty and Retention

Customer Cancellation

Geographic Insights

Cancellation vs Activated Geographic..

Points Usage

CLV

Seasonality and Customer Behavior

Enrollment and Cancellation Trends

Revenue Insights

Q&A

Total Canceled Customers.

2067

Total Active Customers

15K

Enrollment Year

- 2012
- 2013

Enrollment

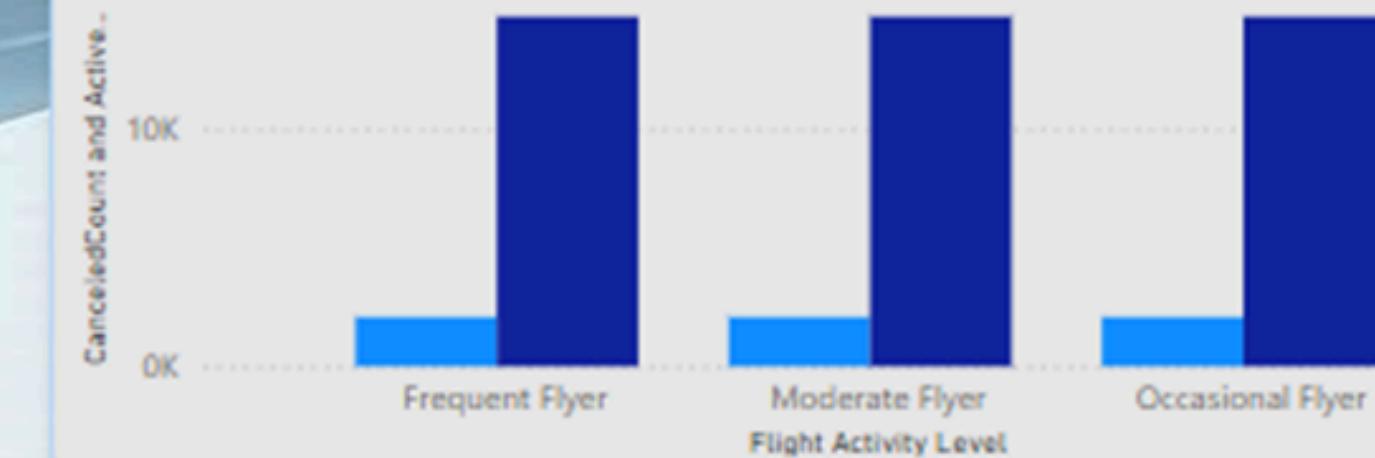
All

Cancellation Year Count of Loyalty Number

| Cancellation Year | Count of Loyalty Number |
|-------------------|-------------------------|
| 2013              | 43                      |
| 2014              | 181                     |
| 2015              | 265                     |
| 2016              | 427                     |
| 2017              | 506                     |
| 2018              | 645                     |
| Total             | 2067                    |

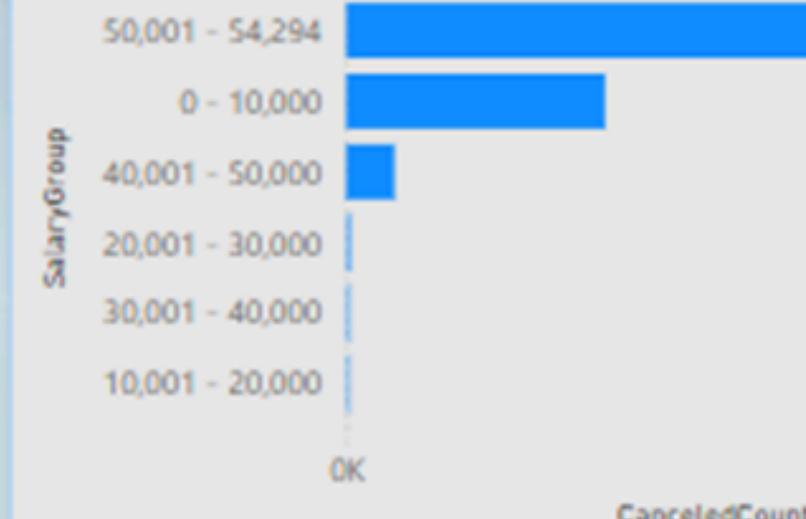
CanceledCount and ActiveCount by Flight Activity Level

● CanceledCount ● ActiveCount



how factors like salary, marital status, and flight activity relate to Cancellation:

CanceledCount by SalaryGroup



CanceledCount and ActiveCount by Marital Status

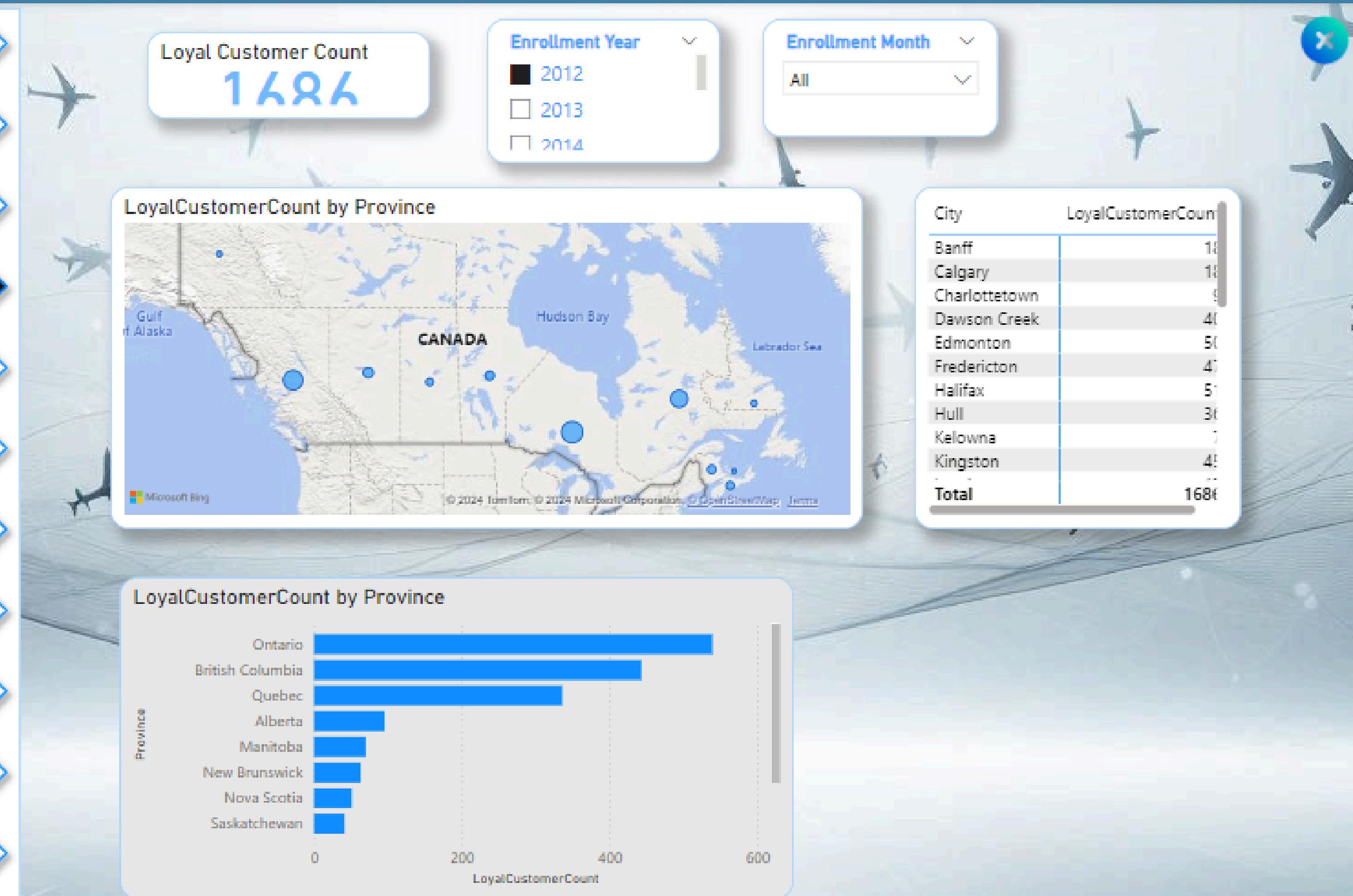
● CanceledCount ● ActiveCount



## GEOGRAPHIC INSIGHTS:

What are the top regions (e.g., country, province, city) where the most loyal customers are located? Are there specific regions where customers tend to cancel their loyalty programs more frequently?

- Customer Segmentation
- Customer Loyalty and Retention
- Customer Cancellation
- Geographic Insights**
- Cancellation vs Activated Geographic...
- Points Usage
- CLV
- Seasonality and Customer Behavior
- Enrollment and Cancellation Trends
- Revenue Insights
- Q&A



We made drill through page when he Chooses specific city or province it shows the activation and cancellation in this region

- [Customer Segmentation](#)
- [Customer Loyalty and Retention](#)
- [Customer Cancellation](#)
- [Geographic Insights](#)
- [Cancellation vs Activated Geographic...](#)
- [Points Usage](#)
- [CLV](#)
- [Seasonality and Customer Behavior](#)
- [Enrollment and Cancellation Trends](#)
- [Revenue Insights](#)
- [Q&A](#)

Total Canceled Customers.  
**(Blank)**

Total Active Customers

**539**

Enrollm...

2012

Enrollm...

All

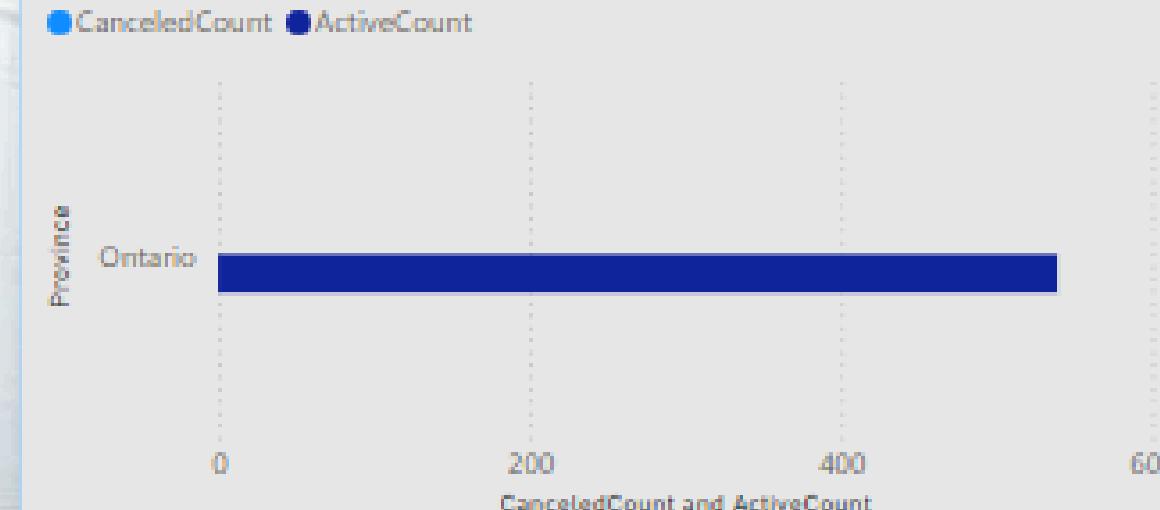
CanceledCount by City



ActiveCount by City



CanceledCount and ActiveCount by Province



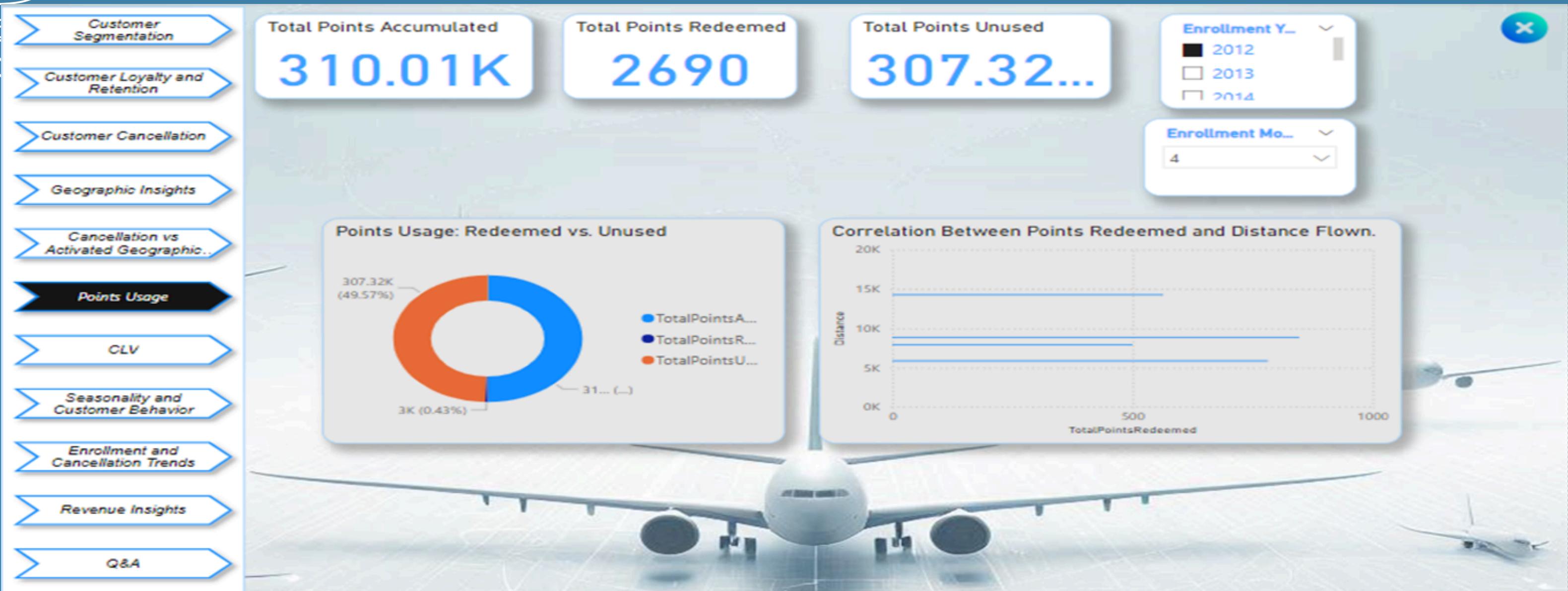
City      CanceledCount    ActiveCount

| City         | CanceledCount | ActiveCount |
|--------------|---------------|-------------|
| Kingston     | 45            |             |
| London       | 17            |             |
| Ottawa       | 54            |             |
| Sudbury      | 21            |             |
| Thunder Bay  | 24            |             |
| Toronto      | 342           |             |
| Trenton      | 36            |             |
| <b>Total</b> |               | <b>539</b>  |

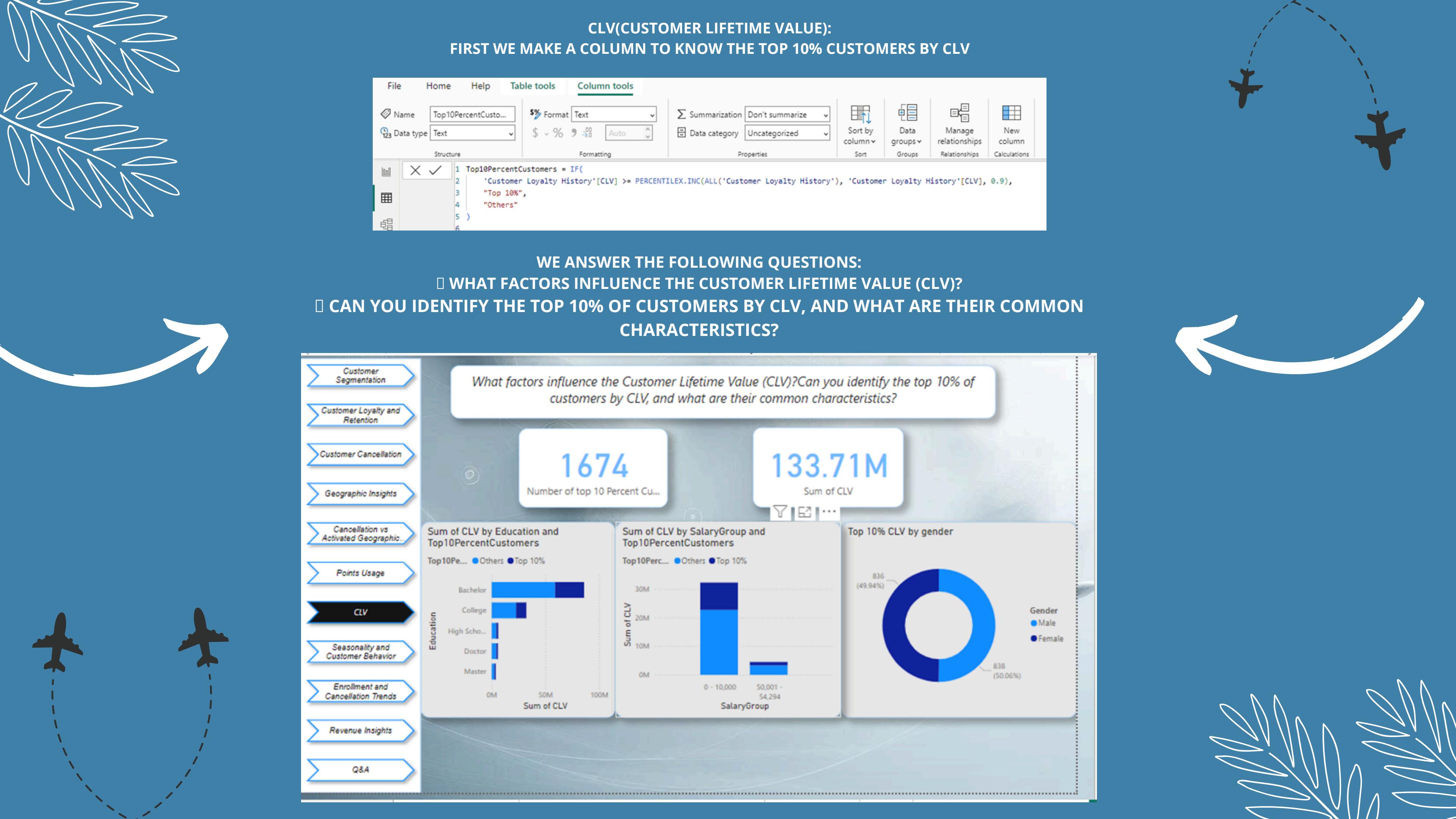
## Points Usage:

What percentage of points accumulated by customers are redeemed vs. those that remain unused?

What is the correlation between points redemption and the distance flown?



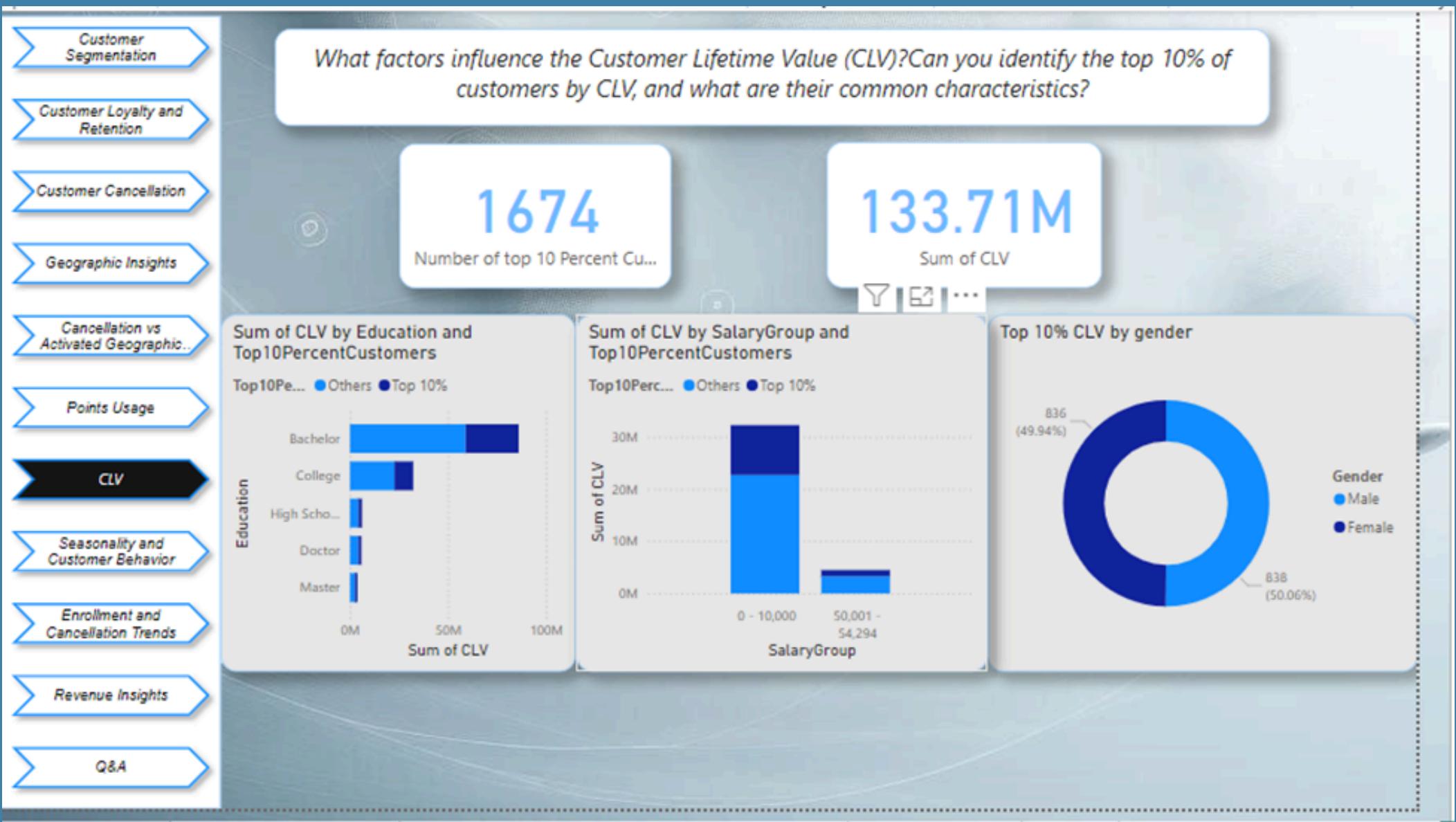
## CLV(CUSTOMER LIFETIME VALUE): FIRST WE MAKE A COLUMN TO KNOW THE TOP 10% CUSTOMERS BY CLV



```
File Home Help Table tools Column tools
Name Top10PercentCusto... Format Text $ % Summarization Don't summarize Data category Uncategorized Sort by column Sort Data groups Groups Manage relationships New column
123 Data type Text $ % Auto Data category Uncategorized Sort by column Sort Data groups Groups Manage relationships New column
Structure X ✓ 1 Top10PercentCustomers = IF(
2   'Customer Loyalty History'[CLV] >= PERCENTILEX.INC(ALL('Customer Loyalty History'), 'Customer Loyalty History'[CLV], 0.9),
3   "Top 10%",
4   "Others"
5 )
6
```

WE ANSWER THE FOLLOWING QUESTIONS:

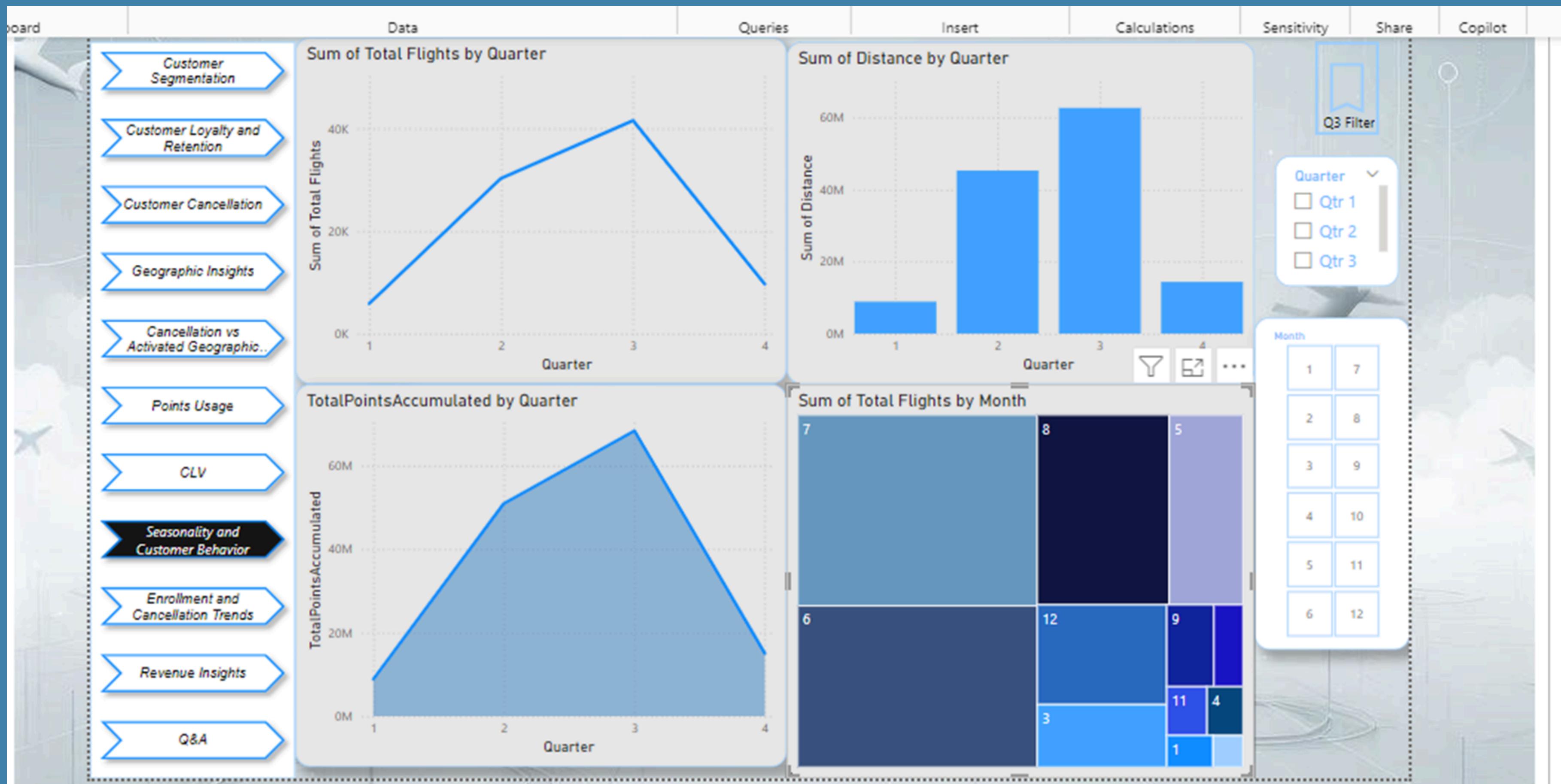
- WHAT FACTORS INFLUENCE THE CUSTOMER LIFETIME VALUE (CLV)?
- CAN YOU IDENTIFY THE TOP 10% OF CUSTOMERS BY CLV, AND WHAT ARE THEIR COMMON CHARACTERISTICS?



# SEASONALITY AND CUSTOMER BEHAVIOR

## WE ANSWER THIS QUESTION:

## HOW DOES FLIGHT ACTIVITY (TOTAL FLIGHTS, DISTANCE, POINTS ACCUMULATED) CHANGE BY QUARTER? ARE THERE SEASONAL TRENDS?



FIRST WE CALCULATE A MEASURE TO CALCULATE THE TOTAL CANCELLATIONS(IF THE CANCELLATION YEAR IS NOT 0, IT IMPLIES THAT A CANCELLATION OCCURRED IN THAT YEAR)

The screenshot shows the Microsoft Power BI ribbon with the 'Measure tools' tab selected. The 'Name' field contains 'TotalCancellations'. The 'Format' dropdown is set to 'Whole number'. The 'Data category' is 'Uncategorized'. In the 'Calculations' section, there is a 'New measure' button and a 'Quick measure' button. Below the ribbon, the formula bar displays the DAX code: '1 TotalCancellations = COUNTROWS(FILTER('Customer Loyalty History', 'Customer Loyalty History'[Cancellation Year] <> 0))'. The table below the formula bar has columns: 'enrollment duration' (months), 'enrollment duration in years' (9), 'AdjustedSalary' (0), 'SalaryGroup' (0 - 10,000), 'EnrollmentDurationInMonths' (108), 'EnrollmentDurationYearGroup' (5 - 10 years), and 'Top10' (Other).

THEN WE ANSWER THE FOLLOWING QUESTIONS:

- HOW DO ENROLLMENT AND CANCELLATION RATES VARY BY YEAR AND MONTH?
- ARE THERE ANY SIGNIFICANT TRENDS IN CUSTOMER ENROLLMENT OR CANCELLATIONS OVER THE YEARS?

- Customer Segmentation
- Customer Loyalty and Retention
- Customer Cancellation
- Geographic Insights
- Cancellation vs Activated Geographic...
- Points Usage
- CLV
- Seasonality and Customer Behavior
- Enrollment and Cancellation Trends**
- Revenue Insights
- Q&A

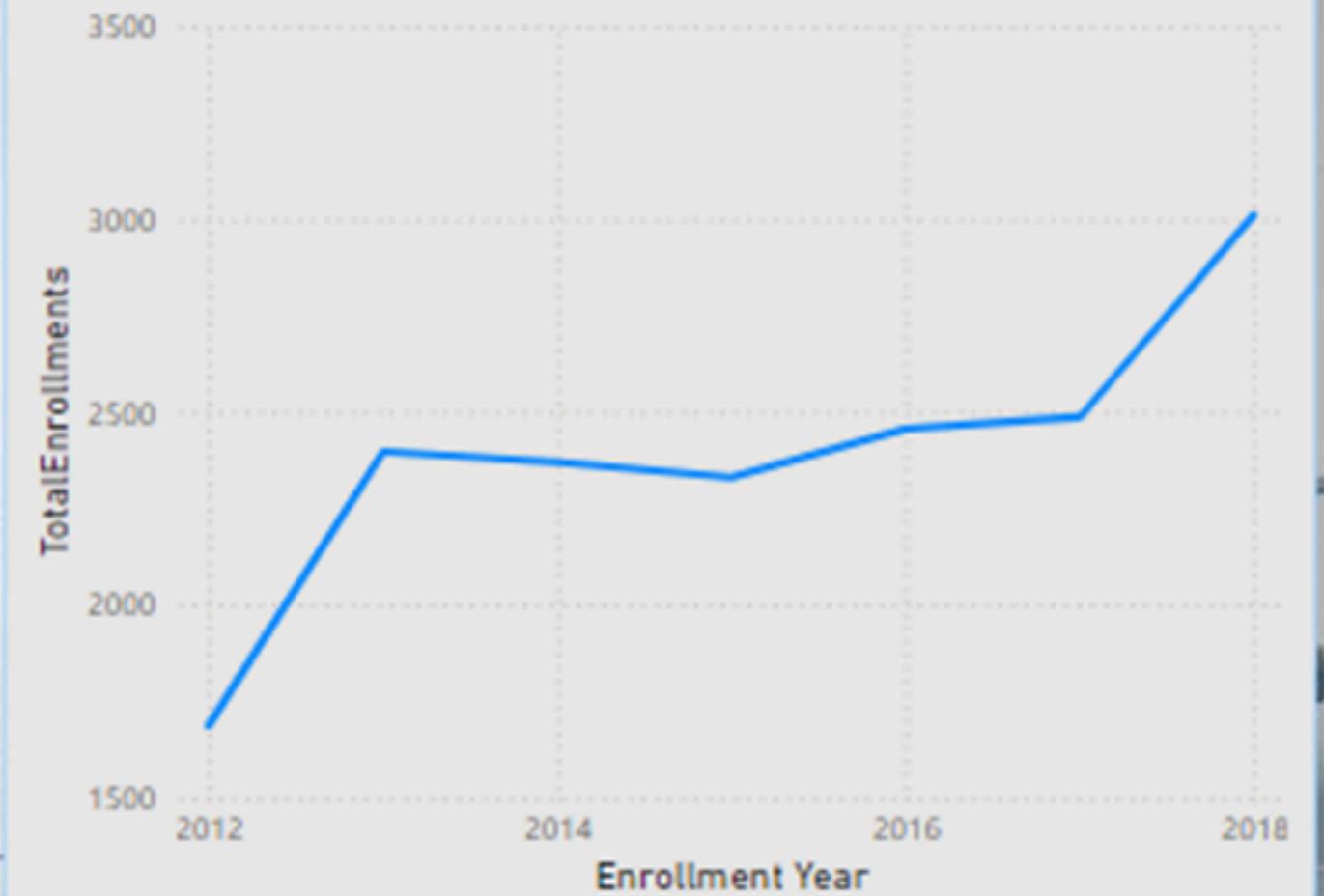
Year

|      |      |      |
|------|------|------|
| 2012 | 2015 | 2018 |
| 2013 | 2016 |      |
| 2014 | 2017 |      |

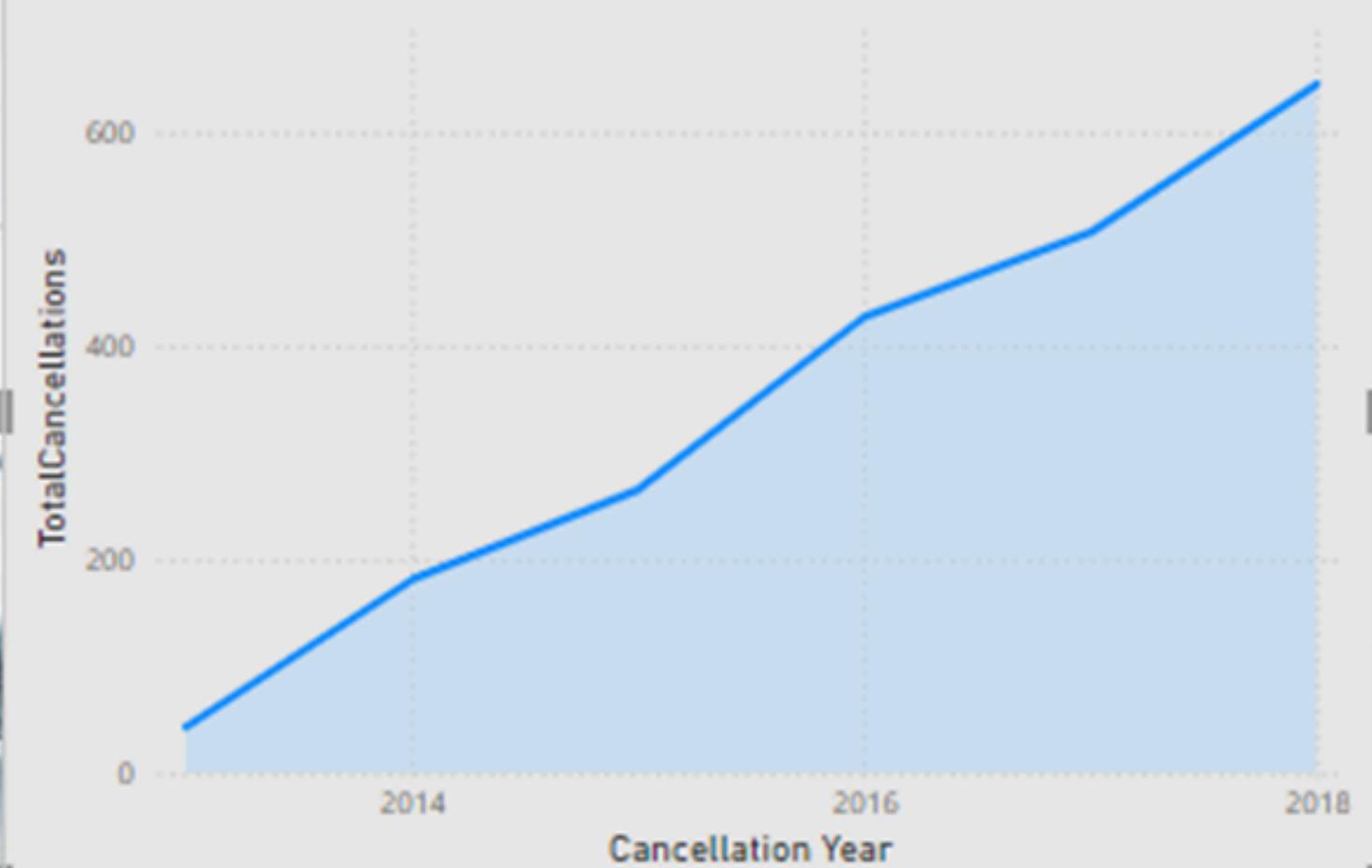
Month

|   |   |    |
|---|---|----|
| 1 | 5 | 9  |
| 2 | 6 | 10 |
| 3 | 7 | 11 |
| 4 | 8 | 12 |

How do enrollment rate can vary by year and month?



How do cancellation rates vary by year and month?



## FIRST ,WE CALCULATE TOTAL REDEMPTION REVENUE

The screenshot shows the Power BI ribbon with the 'Measures' tab selected. The 'Data / Drill' tab is also visible. In the 'Format' tab, the 'Format' dropdown is set to 'Whole number' and the 'Data category' is 'Uncategorized'. In the 'Calculations' tab, a measure definition is shown:

```
#1 TotalRedemptionRevenue = SUM('Customer Flight Activity'[Dollar Cost Points Redeemed])  
#2
```

WE ANSWER THE FOLLOWING QUESTION:  
HOW MUCH REVENUE IS GENERATED THROUGH POINTS REDEMPTION, AND HOW DOES THIS VARY ACROSS DIFFERENT CUSTOMER SEGMENTS?

Customer Segmentation

Customer Loyalty and Retention

Customer Cancellation

Geographic Insights

Cancellation vs Activated Geographic...

Points Usage

CLV

Seasonality and Customer Behavior

Enrollment and Cancellation Trends

Revenue Insights

Q&A

179K

TotalRedemptionRevenue

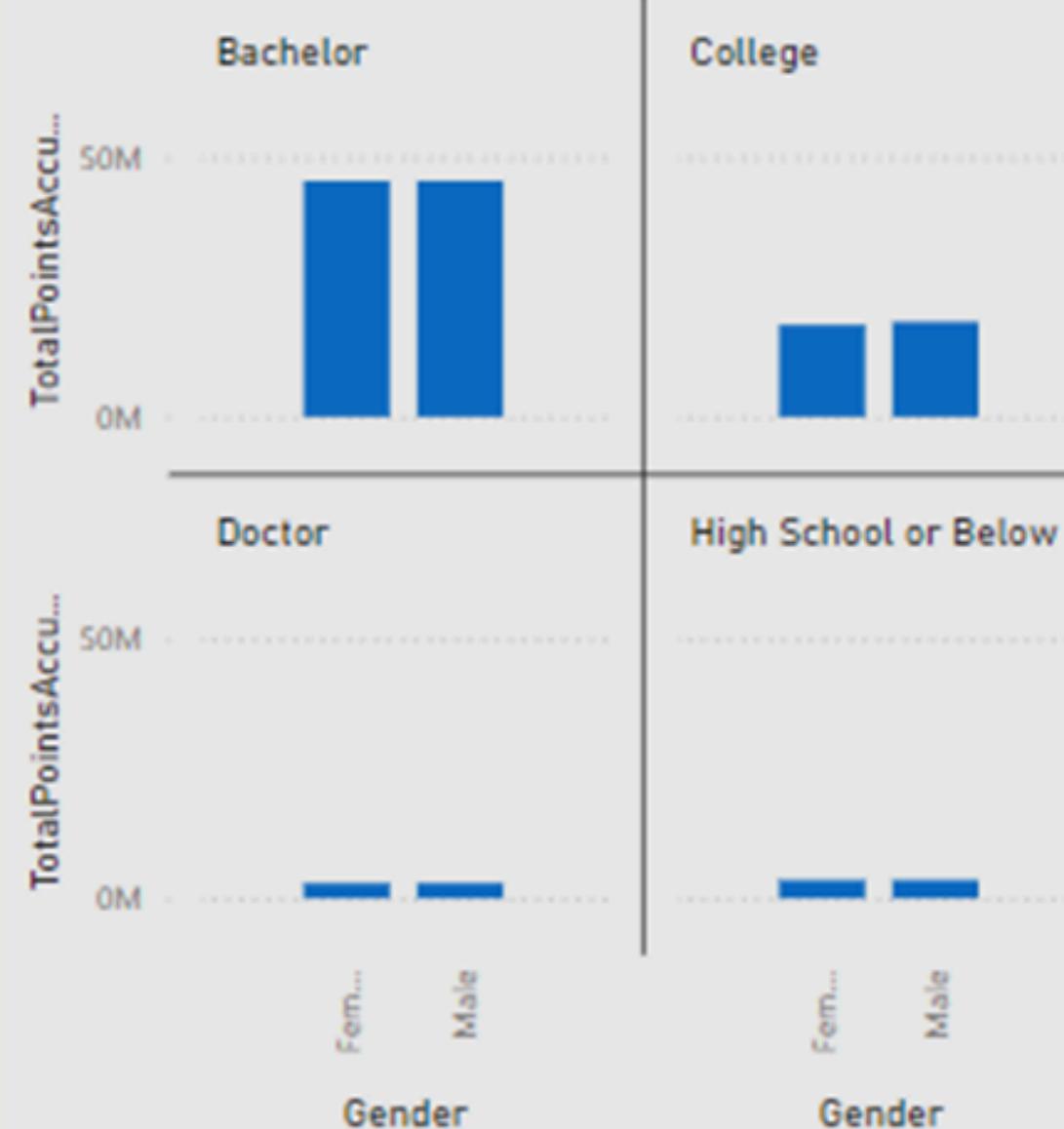
17K

RevenueFromHighSalaryCusto...

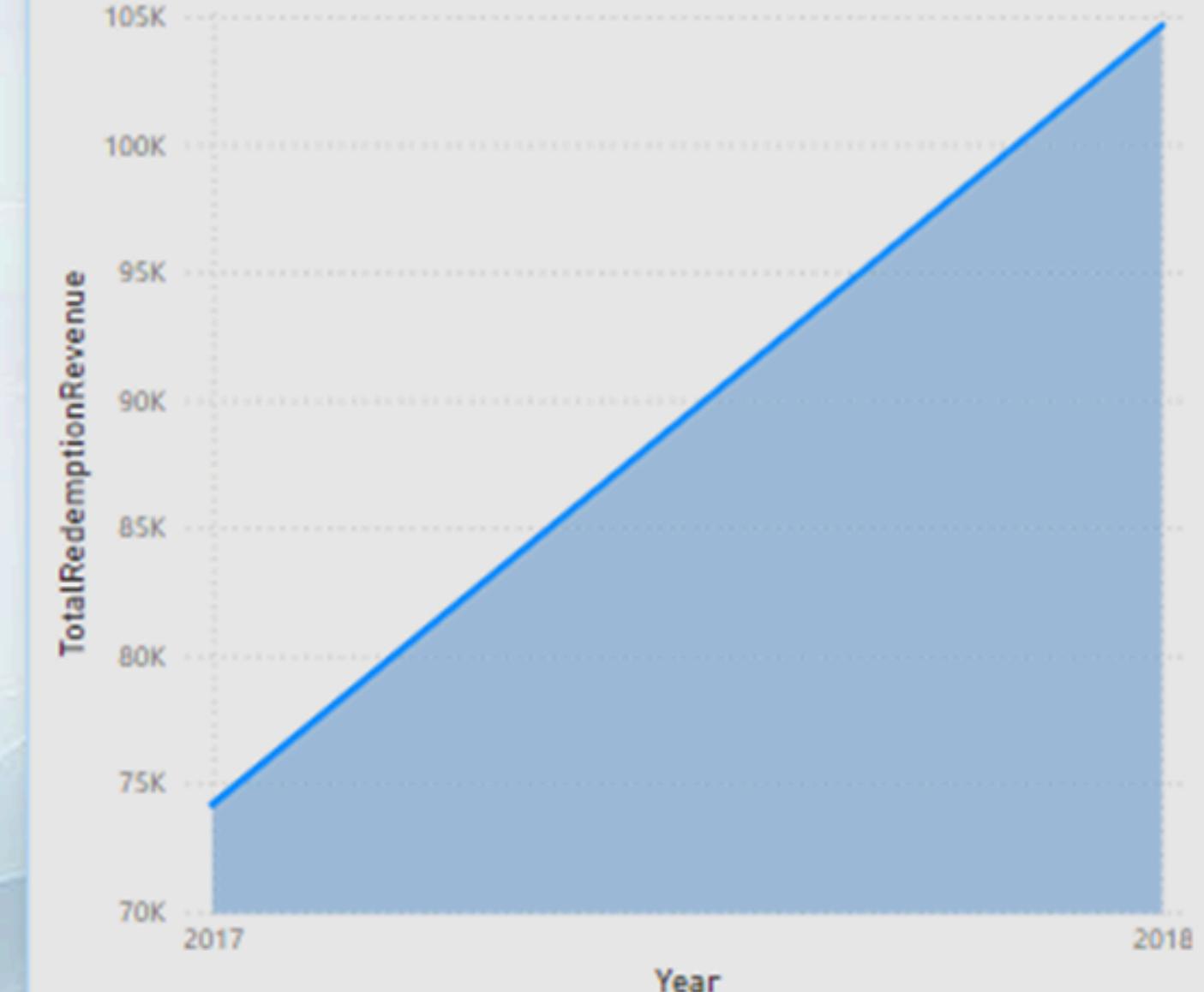
162K

RevenueFromLowSalaryCusto...

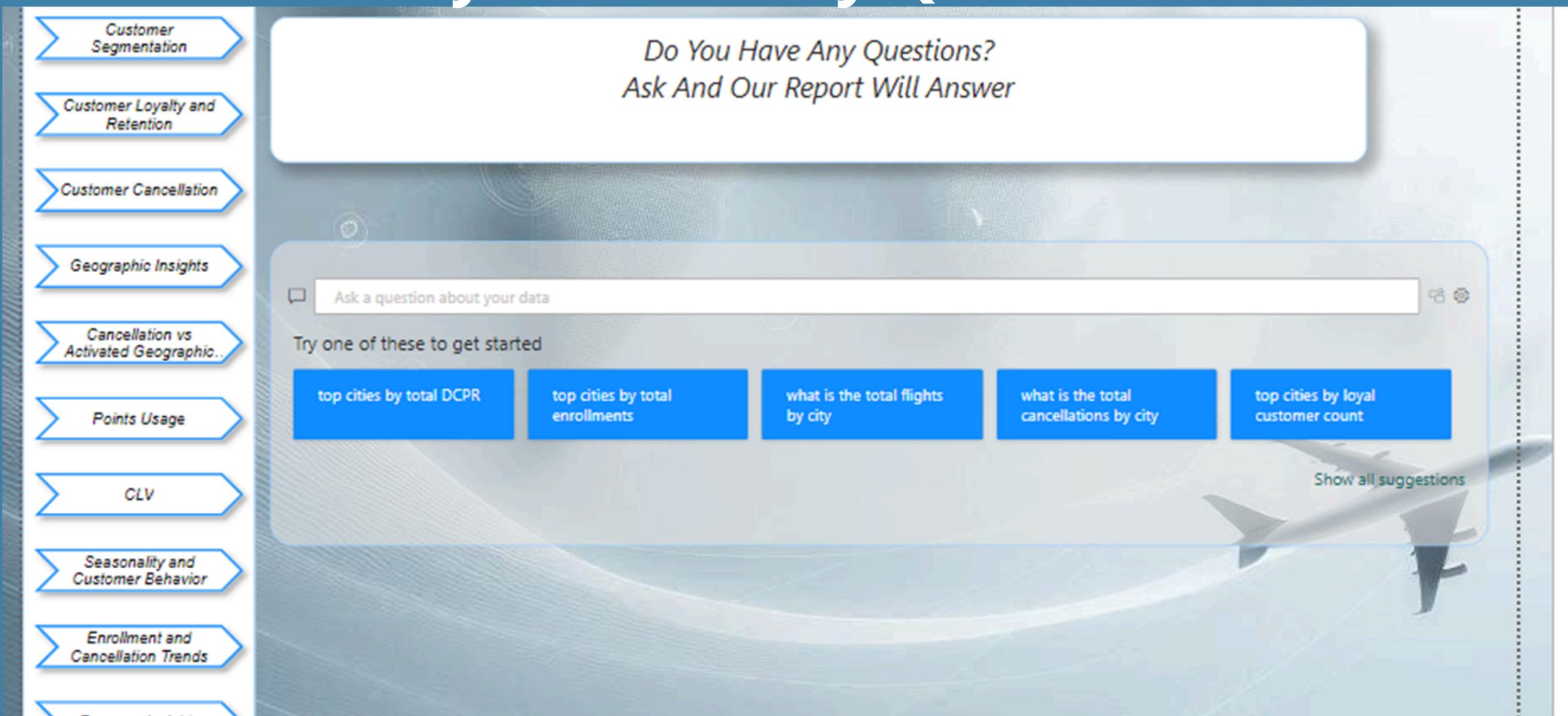
TotalPointsAccumulated by Gender and Education



TotalRedemptionRevenue by Year



# Finally Do you have any Questions?



**Dashboard link:**

[https://app.powerbi.com/links/KqWJUIuybn?ctid=2082de46-1afa-4b64-a440-6558f80e9840&pbi\\_source=linkShare&bookmarkGuid=f10efbcb-d4a3-4859-b679-ddbfe3c8802f](https://app.powerbi.com/links/KqWJUIuybn?ctid=2082de46-1afa-4b64-a440-6558f80e9840&pbi_source=linkShare&bookmarkGuid=f10efbcb-d4a3-4859-b679-ddbfe3c8802f)

**App link:**

[https://app.powerbi.com/Redirect?action=OpenReport&appId=bc395775-1706-4de6-abee-56349d10e0ab&reportObjectId=83375c24-bdaa-48ef-90ab-1671858494cf&ctid=2082de46-1afa-4b64-a440-6558f80e9840&reportPage=73b14808c9a41c650c85&pbi\\_source=appShareLink&portalSessionId=0583a32c-ec8b-4815-9ae6-92a2b3be85a4](https://app.powerbi.com/Redirect?action=OpenReport&appId=bc395775-1706-4de6-abee-56349d10e0ab&reportObjectId=83375c24-bdaa-48ef-90ab-1671858494cf&ctid=2082de46-1afa-4b64-a440-6558f80e9840&reportPage=73b14808c9a41c650c85&pbi_source=appShareLink&portalSessionId=0583a32c-ec8b-4815-9ae6-92a2b3be85a4)