|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Gender** | Male | Female |  |  |  |  |  |
| **Customer Type** | First-time | Returning |  |  |  |  |  |
| **Type of Travel** | Business | Personal |  |  |  |  |  |
| **Flight\_Class** | Business | Economy | Economy Plus |  |  |  |  |
| **Satisfaction** | Neutral or Dissatisfied | Satisfied |  |  |  |  |  |
| **Survey Ques** | Departure and Arrival Time Convenience | Ease of Online Booking | Check-in Service | Online Boarding | Gate Location | On-board Service | Seat Comfort |
|  | Leg Room Service | Cleanliness | Food and Drink | In-flight Service | In-flight Wifi Service | In-flight Entertainment | Baggage Handling |
| **Age** | 7 --85 |  |  |  |  |  |  |
| **Distance** | 31--4983 |  |  |  |  |  |  |
| **Departure Delay(max)** | 1592 |  |  |  |  |  |  |
| **Arrival Delay(max)** | 1584 |  |  |  |  |  |  |

**Airplane Satisfaction - EDA**

***Values in Data Table***

1. **An Overview for Whole Customers**

* IDs are unique
* There are 65899 female and 63981 male customers. 50.7% female and 49.3% male
* The percentage of the customers who said they were satisfied is 43.4
* The 69% of customers choosed the company for business travels, personal based travels’ percentage is almost 31%
* The 47.9% of total customers flew in Business Class
* The 44.9% of total customers flew in Economy Class
* The Economy Plus Class is not a popular choice across in customers, only 7.2% of customers flew in Economy Plus
* The 81.7 of total customers flew with the company earlier, first-time customers’ percentage is 18.3%
* The top 10 repeated ages are 39, 25, 40, 44, 41, 42, 43, 45, 23, 22. There are 75 different age values in customers the min age is 7 and max age is 85
* When bins were created, there is no huge difference between 4 groups:19-30, 31-40, 41-50 and 51-60. We can say that customer distribution is balanced.
* Arrival and departure delays' average are similar between the distance groups. However there are too many outliers that's why it is meaningless to look relationship between distance group and delay.
* There is a negative relationship between distance group and the number of customers

1. **First-Time Customer Analysis**

* There are 12843 female and 10937 male customers who flew with the company for the first time. The females' percentage is 54% and the males' percentage is 46 %.
* The percentage of the first time customers who said they were satisfied is around 24 %
* 57.3 % of first-time customers flew in Economy Class, which is almost 6 of 10 first-time customers flew in Economy Class.
* 38.8 % of first-time customers flew in Business Class
* 3.8 % of first-time customers flew in Economy Plus Class, it is not a popular class for the first-time customers as same as the total customers approach.
* The top 10 repeated ages are 25,22,23,24,26,27,20,21,37,38 among first-time customers
* Almost half of the first-time customers’ ages are between 19 and 30 -- 49.56 %

1. **Survey Index Segmentation Analysis**

There are 14 different survey indexes to be asked to customers

I segmented these 14 different indexes to 3 different parts:

* *Pre-Flight Indexes*: Ease of Online Booking, Check-in Service, Online Boarding, Gate Location, On-Board Service
* *In-Flight Indexes*: Seat Comfort, Leg Room Service, Cleanliness, Food and Drink, In-flight service, In-Flight Wifi Service, In Flight Entertainment
* *After-Flight Indexes*: Departure and Arrival Time Convenience, Baggage Handling

**Pre-Flight Indexes: (***table contains average values for the each group)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **flight\_class** | **satisfaction** | **ease\_of\_online**  **\_booking** | **checkin\_service** | **online\_boarding** | **gate\_location** | **onboard**  **service** |
| Business | Neutral or Dissatisfied | 2.8 | 2.9 | 2.8 | 3.0 | 2.9 |
| Business | Satisfied | 3.0 | 3.8 | 4.1 | 3.0 | 4.0 |
| Economy | Neutral or Dissatisfied | 2.5 | 3.1 | 2.6 | 3.0 | 3.1 |
| Economy | Satisfied | 3.2 | 3.2 | 3.7 | 2.9 | 3.3 |
| Economy Plus | Neutral or Dissatisfied | 2.6 | 3.0 | 2.6 | 3.0 | 3.0 |
| Economy Plus | Satisfied | 3.0 | 3.1 | 3.7 | 3.0 | 3.2 |

**Business Class Evaluation**

* Customers seem insensitive to gate location
* Ease of online booking index seems has not a remarkable impact on satisfaction
* Customers care mostly about check-in, online boarding and onboard service in pre-flight indexes

**Economy Class Evaluation**

* Check-in service, gate location and onboard service indexes seem have not a remarkable impact on satisfaction
* Customers care mostly about ease of the online booking and online boarding

**Economy Plus Evaluation**

* Customers seem insensitive to gate location
* Check-in service and onboard service indexes seem have not a remarkable impact on satisfaction

**In-Flight Indexes: (***table contains average values for the each group, if abbreviation refers inflight in below table)*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **flight\_class** | **satisfaction** | **seat\_**  **comfort** | **leg\_**  **room\_s** | **cleanliness** | **food\_and\_drink** | **if\_service** | **if\_wifi\_**  **service** | **if\_entertainment** |
| Business | Neutral or Dissatisfied | 3 | 2.9 | 2.7 | 2.9 | 3.2 | 2.9 | 2.9 |
| Business | Satisfied | 4.1 | 4 | 3.8 | 3.5 | 4.1 | 4 | 4 |
| Economy | Neutral or Dissatisfied | 3.1 | 3 | 3 | 3 | 3.5 | 3.1 | 3.1 |
| Economy | Satisfied | 3.5 | 3.3 | 3.5 | 3.5 | 3.5 | 3.3 | 3.3 |
| Economy Plus | Neutral or Dissatisfied | 3 | 3 | 2.9 | 2.9 | 3.4 | 3 | 3 |
| Economy Plus | Satisfied | 3.7 | 3.2 | 3.7 | 3.7 | 3.3 | 3.2 | 3.2 |

**Business Class Evaluation**

* Customers have a remarkable sensitivity to all indexes

**Economy Class Evaluation**

* Customers seem insensitive to inflight service
* Leg room service, wifi service and entertainment indexes seem have not a remarkable impact on satisfaction

**Economy Plus Evaluation**

* Leg room service, wifi service and entertainment indexes seem have not a remarkable impact on satisfaction
* There is no consistency for inflight service index. The satisfied customers’ average for inlight service is 3.4 as well as neutral or dissatisfied customers’ average is 3.3

**After-Flight Indexes: (***table contains average values for the each group)*

|  |  |  |  |
| --- | --- | --- | --- |
| **flight\_class** | **satisfaction** | **baggage\_handling** | **dep\_and\_arr\_timecon** |
| Business | Neutral or Dissatisfied | 3.2 | 2.9 |
| Business | Satisfied | 4.1 | 2.9 |
| Economy | Neutral or Dissatisfied | 3.4 | 3.2 |
| Economy | Satisfied | 3.5 | 3.1 |
| Economy Plus | Neutral or Dissatisfied | 3.4 | 3.3 |
| Economy Plus | Satisfied | 3.3 | 3 |

* Departure and arrival time convenience index seems not have a remarkable impact on satisfaction, especially business class customers have no sensitivity.
* Baggage Handling is an important index for Business class, it doesn’t have a remarkable impact on satisfaction for economy and economy plus customers.

**Relationship between average distance&number of customers- grouped by flight class**

|  |  |  |  |
| --- | --- | --- | --- |
| **distance\_group** | **flight\_class** | **avg\_distance** | **#ofcustomer** |
| 0030-1000 | Economy | 500 | 44408 |
| 0030-1000 | Business | 502 | 23495 |
| 0030-1000 | Economy Plus | 491 | 7200 |
| 1001-2000 | Business | 1540 | 14849 |
| 1001-2000 | Economy | 1316 | 11338 |
| 1001-2000 | Economy Plus | 1332 | 1723 |
| 2001-3000 | Business | 2473 | 13578 |
| 2001-3000 | Economy | 2397 | 2500 |
| 2001-3000 | Economy Plus | 2414 | 476 |
| 3001-4000 | Business | 3505 | 10192 |
| 3001-4000 | Economy | 3662 | 38 |
| 3001-4000 | Economy Plus | 3544 | 5 |
| 4001-5000 | Business | 4646 | 46 |
| 4001-5000 | Economy | 4694 | 25 |
| 4001-5000 | Economy Plus | 4642 | 7 |

Above 1000 miles, the most preferred flight class is Business.

There is a drastic decrease for number of customers above 3000 miles, except business class flights.

**Relationship between flight\_class & type\_of\_travel**

|  |  |  |
| --- | --- | --- |
| **flight\_class** | **type\_of\_travel** | **#ofcustomers** |
| Business | Business | 59,487 |
| Business | Personal | 2,673 |
| Economy | Personal | 33,005 |
| Economy | Business | 25,304 |
| Economy Plus | Business | 4,902 |
| Economy Plus | Personal | 4,509 |

Business Class is preferred for business purposed flights mostly. The distribution in the economy and the economy plus classes is more balanced.

**Customer Consistency for Arrival&Departure Delay Index**

If we consider the consistency with only the arrival and departure delay values (ignore behavioral and instinct-based evaluation for the customers), the survey point should be 5, where arrival delay=0 & departure delay = 0

-There are 43008 customers who didn't face any delays, but still don't have full satisfaction in terms of time convenience.

-The inconsistent customers are approximately 35% of total customers without irrelevant ones in terms of arrival and departure delay evaluation.