Airline Operations & Passenger Data

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Course: Information Visualization
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Our Amazing Team

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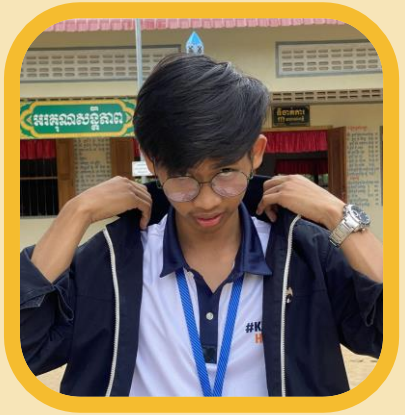

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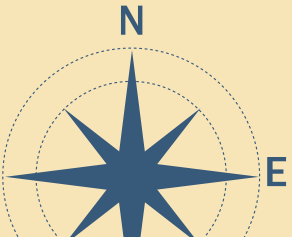
Table of contents

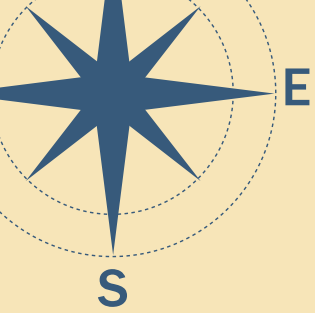


I

Introduction

Project Objective

Extract valuable insights from dataset containing airports, passenger traffic, fare statuses which can be used to enhance efficiency of workers, improve customer's experience and provide effective resource allocations.



II

Data Overview

01. Data Source

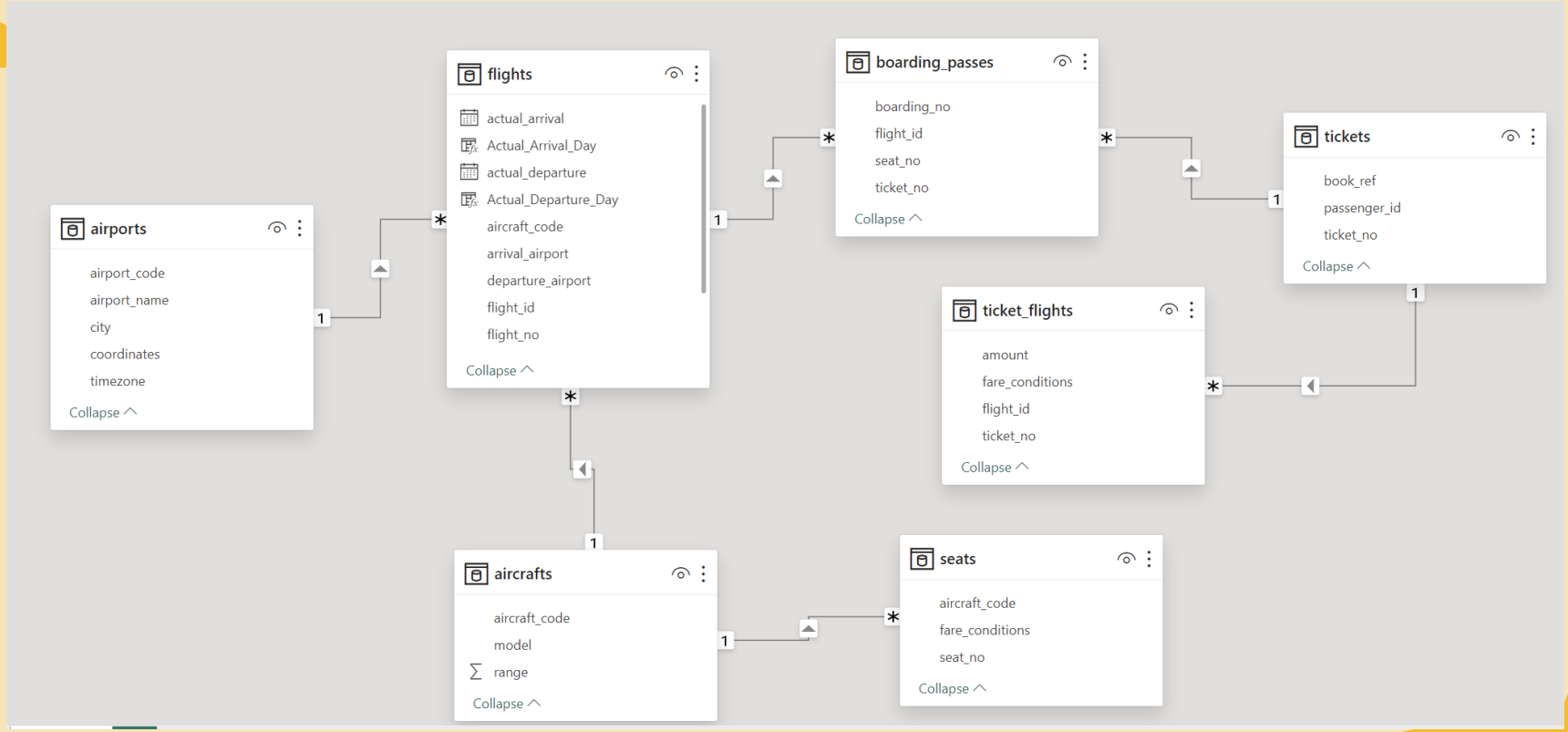
Kaggle allows users to find datasets they want to use in building AI models, publish datasets, work with other data scientists and machine learning engineers, and enter competitions to solve data science challenges.

02. Dataset Overview

travel.sqlite (109.53 MB)

Table	Total Rows	Total Columns
aircrafts_data	9	3
airports_data	104	5
boarding_passes	579686	4
bookings	262788	3
flights	33121	10
seats	1339	3
ticket_flights	1045726	4
tickets	366733	3

03. Data Relation



III. Implementation

01 Connecting Dataset to PowerBI

02 Clean and prepare data for visualization

03 Arrival City

04 Total Destination

05 Total Number of flights

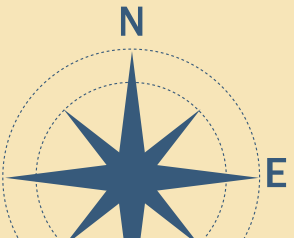
06 Airport that has the most flights

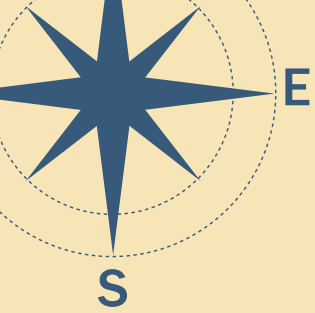
07 Overall Flights each day

08 City that have most airports

09 Airplane fly the most each month

10 The Percentage of Flight Status



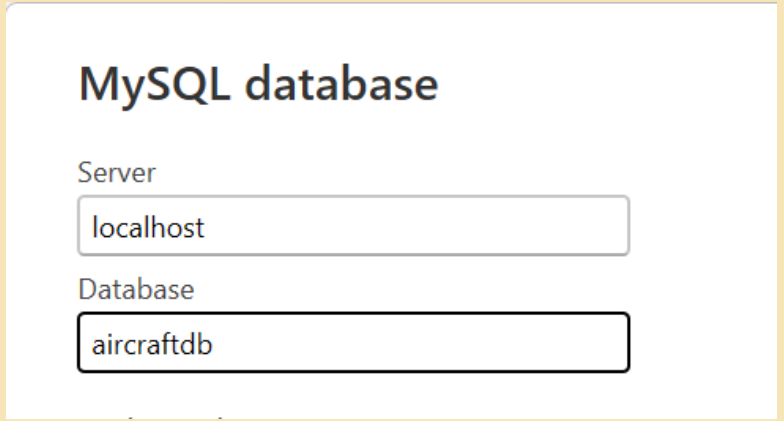


01

Dataset to Powerbi

Using SQL:

1. Open Wamp Server
2. Open PowerBi
3. Click on Get Data
4. Choose MYSQL database
5. Input server name and database name
6. Then click ok



Using API and Python:

1. Create python project folder with dataset file
2. Using pandas, sqlite3, jsonify and SocketIO
3. Read sqlite file and convert to dataframe use pandas
4. Convert dataframe to json format
5. Create app with flask and define route for each tables
6. Return json data with flask and connect to power bi

02 Clean Data and Preparing

Convert from dictionary to string

From

	aircraft_code	model	range
1	773	{"en": "Boeing 777-300", "ru": "Боинг 777-300"}	11100
2	763	{"en": "Boeing 767-300", "ru": "Боинг 767-300"}	7900
3	SU9	{"en": "Sukhoi Superjet-100", "ru": "Сухой Суперджет-100"}	3000
4	320	{"en": "Airbus A320-200", "ru": "Аэробус A320-200"}	5700
5	321	{"en": "Airbus A321-200", "ru": "Аэробус A321-200"}	5600
6	319	{"en": "Airbus A319-100", "ru": "Аэробус A319-100"}	6700
7	733	{"en": "Boeing 737-300", "ru": "Боинг 737-300"}	4200
8	CN1	{"en": "Cessna 208 Caravan", "ru": "Сессна 208 Караван"}	1200
9	CR2	{"en": "Bombardier CRJ-200", "ru": "Бомбардье CRJ-200"}	2700

To

	aircraft_code	model	range
1	773	Boeing 777-300	11100
2	763	Boeing 767-300	7900
3	SU9	Sukhoi Superjet-100	3000
4	320	Airbus A320-200	5700
5	321	Airbus A321-200	5600
6	319	Airbus A319-100	6700
7	733	Boeing 737-300	4200
8	CN1	Cessna 208 Caravan	1200
9	CR2	Bombardier CRJ-200	2700

02 Clean Data and Preparing

Handling with missing value

From

actual_arrival	actual_departure	aircraft_code	arrival_airport	departure_airport	flight_id	flight_no	scheduled_arrival	scheduled_departure	status
		CN1	OVB	KJA	13888	PG0206	8/31/2017 12:25:00 PM	8/31/2017 10:20:00 AM	Scheduled
		CN1	OVB	KJA	13890	PG0207	9/10/2017 9:40:00 AM	9/10/2017 7:35:00 AM	Scheduled
		CN1	OVB	KJA	13893	PG0206	8/23/2017 12:25:00 PM	8/23/2017 10:20:00 AM	Scheduled
		CN1	OVB	KJA	13897	PG0207	8/23/2017 9:40:00 AM	8/23/2017 7:35:00 AM	Scheduled
		CN1	OVB	KJA	13898	PG0206	9/9/2017 12:25:00 PM	9/9/2017 10:20:00 AM	Scheduled
		CN1	OVB	KJA	13899	PG0207	8/24/2017 9:40:00 AM	8/24/2017 7:35:00 AM	Scheduled
		CN1	OVB	KJA	13900	PG0207	8/17/2017 9:40:00 AM	8/17/2017 7:35:00 AM	Scheduled
		CN1	OVB	KJA	13901	PG0206	8/17/2017 12:25:00 PM	8/17/2017 10:20:00 AM	Scheduled
		CN1	OVB	KJA	13902	PG0207	9/3/2017 9:40:00 AM	9/3/2017 7:35:00 AM	Scheduled
		CN1	OVB	KJA	13903	PG0206	8/24/2017 12:25:00 PM	8/24/2017 10:20:00 AM	Scheduled
		CN1	OVB	KJA	13904	PG0206	9/4/2017 12:25:00 PM	9/4/2017 10:20:00 AM	Scheduled
		CN1	OVB	KJA	13905	PG0206	8/27/2017 12:25:00 PM	8/27/2017 10:20:00 AM	Scheduled
		CN1	OVB	KJA	13907	PG0207	8/27/2017 9:40:00 AM	8/27/2017 7:35:00 AM	Scheduled
		CN1	OVB	KJA	13908	PG0207	9/6/2017 9:40:00 AM	9/6/2017 7:35:00 AM	Scheduled
		CN1	OVB	KJA	13914	PG0207	8/20/2017 9:40:00 AM	8/20/2017 7:35:00 AM	Scheduled

To

actual_arrival	actual_departure	aircraft_code	arrival_airport	departure_airport	flight_id	flight_no	scheduled_arrival	scheduled_departure	status
7/19/2017 2:28:00 PM	7/19/2017 12:24:00 PM	CN1	KJA	OVB	9940	PG0204	7/19/2017 2:25:00 PM	7/19/2017 12:20:00 PM	Arrived
8/15/2017 3:40:00 PM	8/15/2017 1:34:00 PM	CN1	KJA	OVB	9945	PG0205	8/15/2017 3:35:00 PM	8/15/2017 1:30:00 PM	Arrived
7/23/2017 2:27:00 PM	7/23/2017 12:23:00 PM	CN1	KJA	OVB	9949	PG0204	7/23/2017 2:25:00 PM	7/23/2017 12:20:00 PM	Arrived
7/25/2017 3:35:00 PM	7/25/2017 1:31:00 PM	CN1	KJA	OVB	9950	PG0205	7/25/2017 3:35:00 PM	7/25/2017 1:30:00 PM	Arrived
7/19/2017 3:42:00 PM	7/19/2017 1:34:00 PM	CN1	KJA	OVB	9951	PG0205	7/19/2017 3:35:00 PM	7/19/2017 1:30:00 PM	Arrived
8/8/2017 3:39:00 PM	8/8/2017 1:33:00 PM	CN1	KJA	OVB	9953	PG0205	8/8/2017 3:35:00 PM	8/8/2017 1:30:00 PM	Arrived
7/26/2017 6:42:00 PM	7/26/2017 4:36:00 PM	CN1	KJA	OVB	9955	PG0205	7/26/2017 3:35:00 PM	7/26/2017 1:30:00 PM	Arrived
7/22/2017 3:35:00 PM	7/22/2017 1:30:00 PM	CN1	KJA	OVB	9957	PG0205	7/22/2017 3:35:00 PM	7/22/2017 1:30:00 PM	Arrived
8/14/2017 2:29:00 PM	8/14/2017 12:25:00 PM	CN1	KJA	OVB	9959	PG0204	8/14/2017 2:25:00 PM	8/14/2017 12:20:00 PM	Arrived
8/15/2017 2:28:00 PM	8/15/2017 12:22:00 PM	CN1	KJA	OVB	9962	PG0204	8/15/2017 2:25:00 PM	8/15/2017 12:20:00 PM	Arrived
8/2/2017 2:27:00 PM	8/2/2017 12:22:00 PM	CN1	KJA	OVB	9964	PG0204	8/2/2017 2:25:00 PM	8/2/2017 12:20:00 PM	Arrived
8/5/2017 2:30:00 PM	8/5/2017 12:24:00 PM	CN1	KJA	OVB	9969	PG0204	8/5/2017 2:25:00 PM	8/5/2017 12:20:00 PM	Arrived
8/5/2017 3:37:00 PM	8/5/2017 1:31:00 PM	CN1	KJA	OVB	9970	PG0205	8/5/2017 3:35:00 PM	8/5/2017 1:30:00 PM	Arrived

General Dashboard

9
Total Number of Aircraft

33K
Total Flights

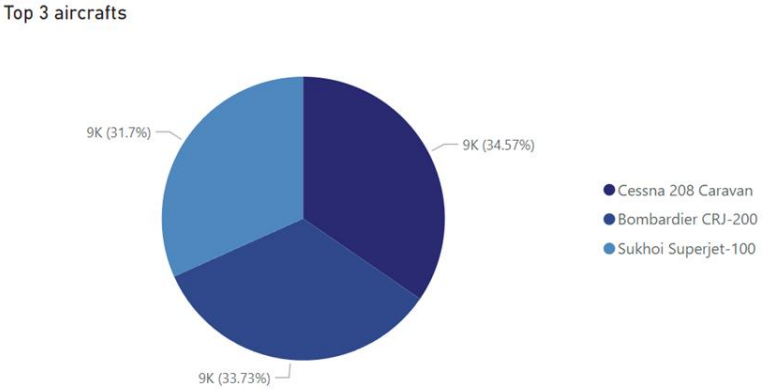
367K
Tickets sold

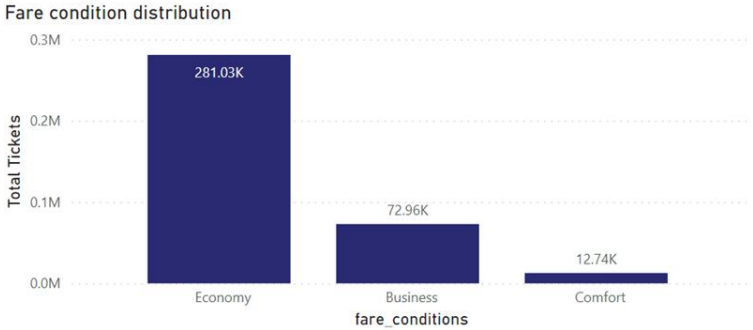
5.34K
Average aircraft range

101
Number of cities

aircraft_code	model	Sum of range
319	Airbus A319-100	6700
320	Airbus A320-200	5700
321	Airbus A321-200	5600
733	Boeing 737-300	4200
763	Boeing 767-300	7900
773	Boeing 777-300	11100
CN1	Cessna 208 Caravan	1200
CR2	Bombardier CRJ-200	2700
SU9	Sukhoi Superjet-100	3000
Total		**48100**

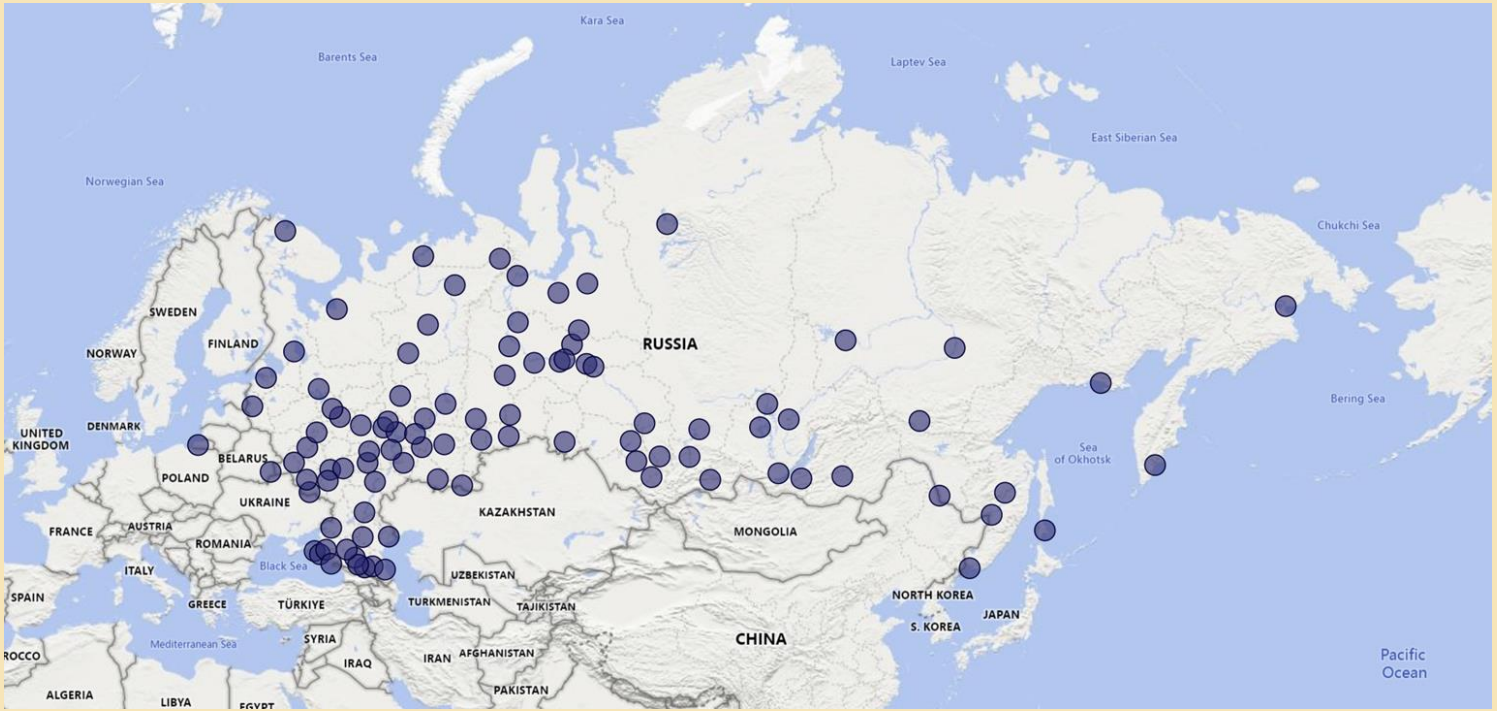
Date : July 2017 - September 2017
Location : Russia





03 Arrival City

Airports in cities of Russia



04 Total Destination

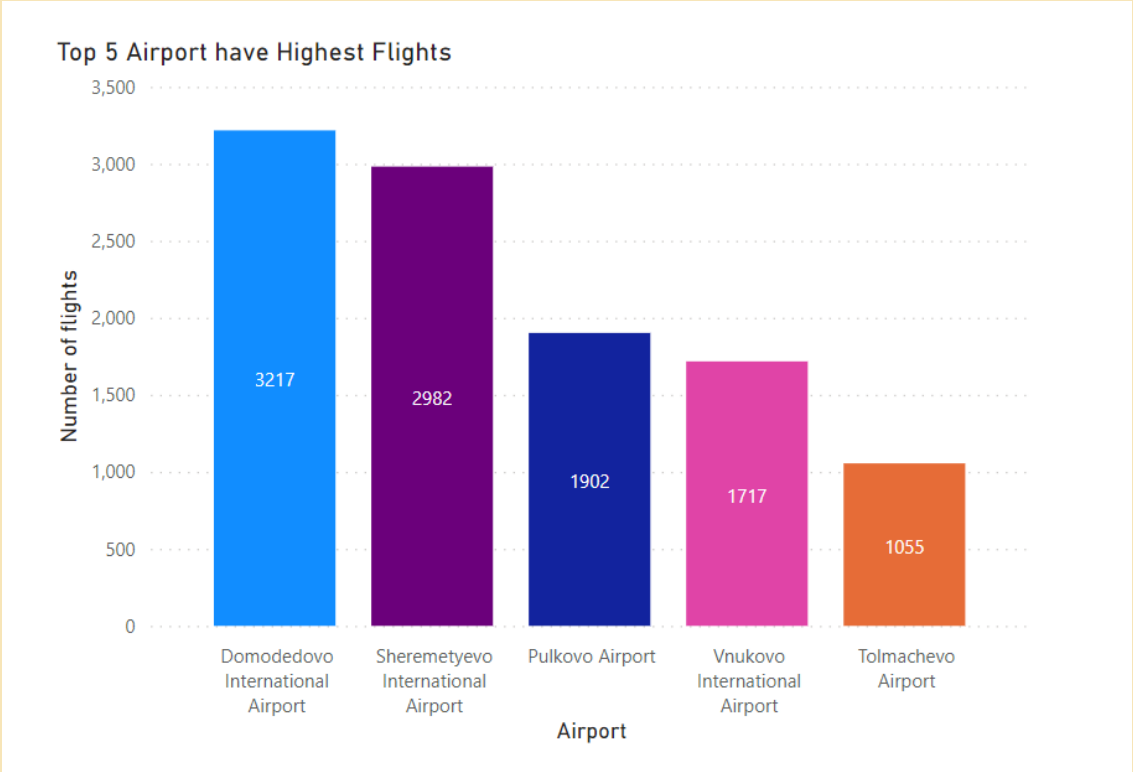
There are **104** Destination of City.

05 Total Number of Flights

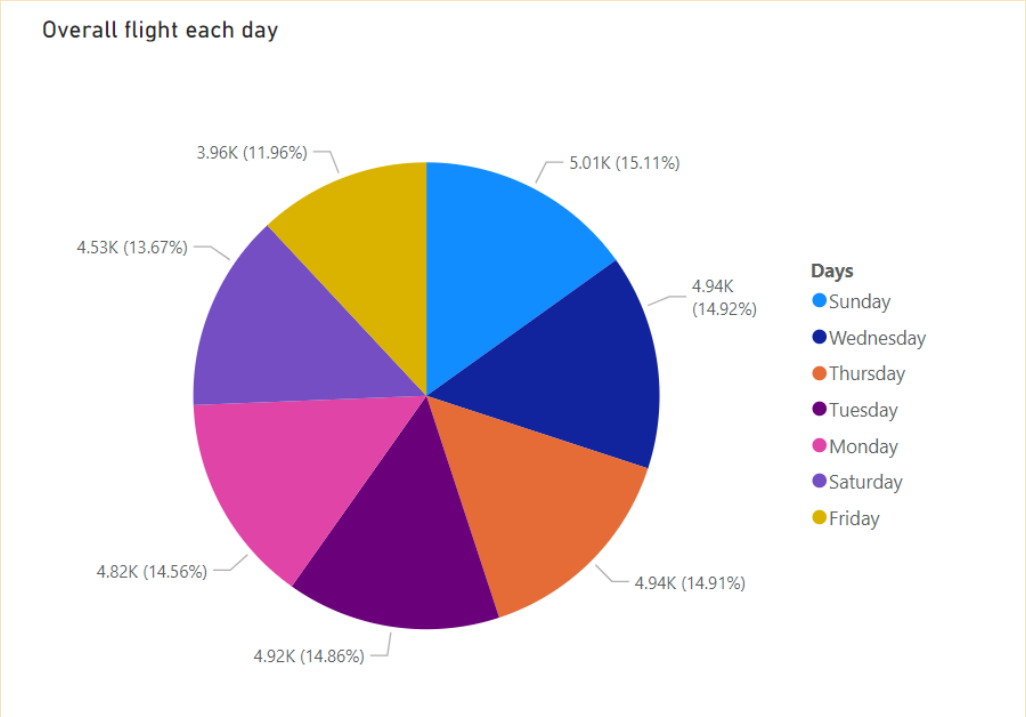
Overall Flights

33K

06 Airport that has the most Flights

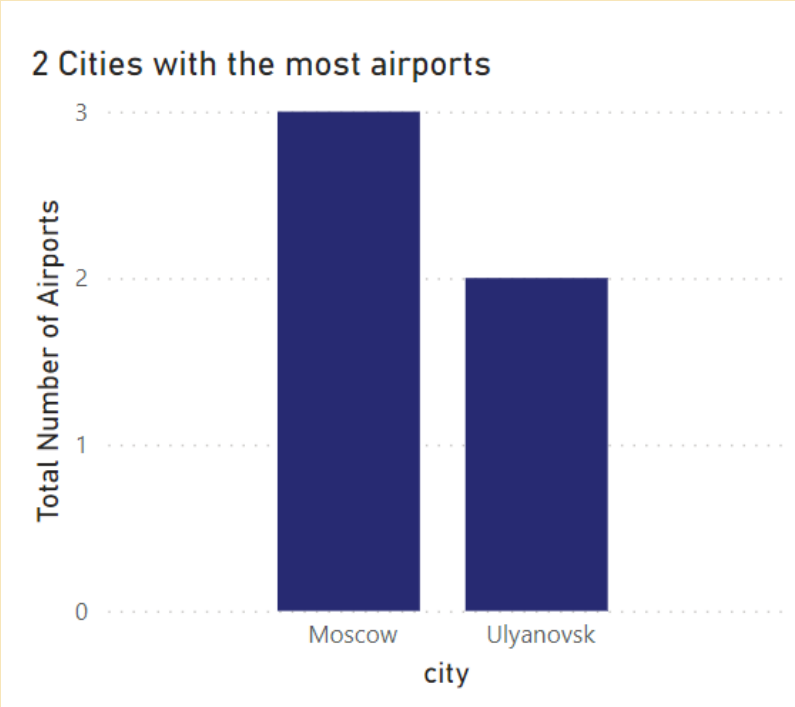


07 Overall flights each day

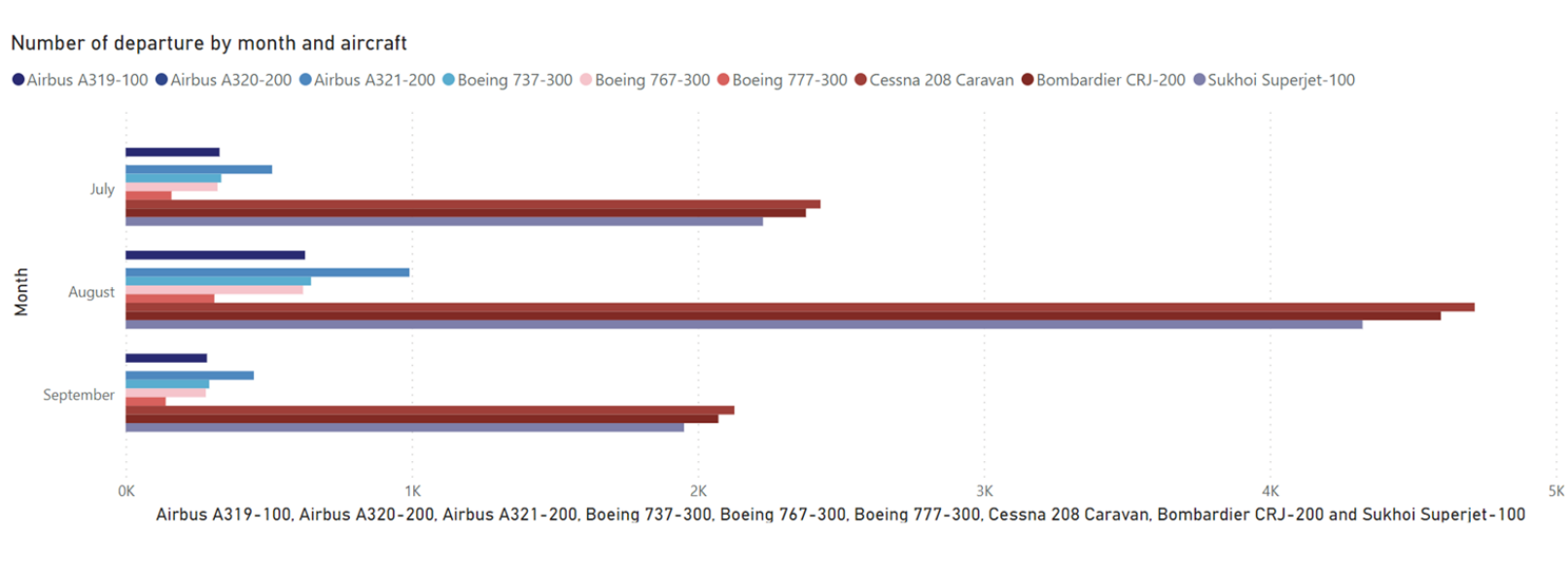


08 City that has the most airports

Airports in cities of Russia

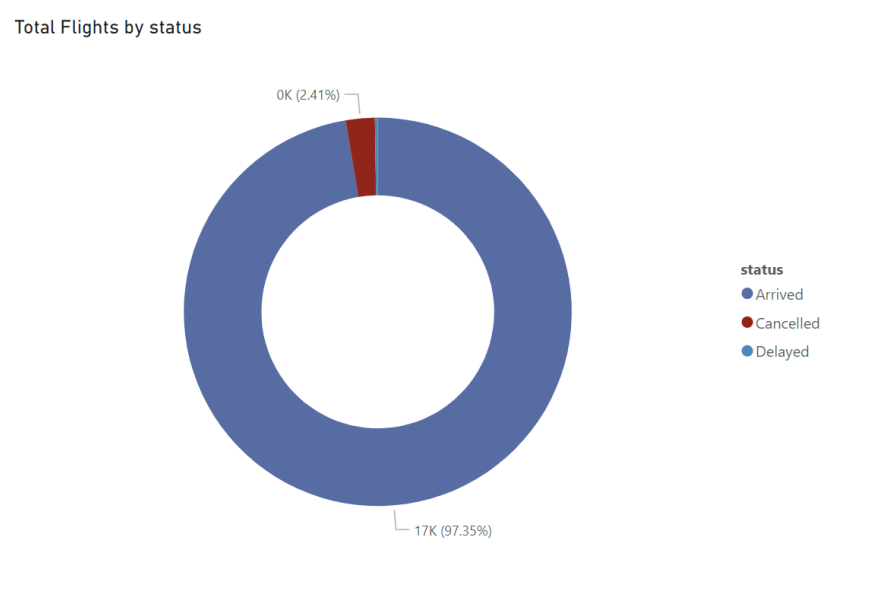


09 Airplane fly the most each month



In august there are twice as many flights compared to other months, with Cessna 208 Caravan having the highest number of passengers.

10 The Percentage of Flight Status



Most flights are able to arrive safely and on schedule, only a small percentage of flights get canceled or delayed.

Conclusion

In conclusion, from data we can compare values and give a straightforward and clear summary of the data like which aircraft is most popular, which months have the highest ticket sales and which fare is most bought so that we can take actions according to the data to make the most profit for the company.

Recommendation

Enhance efficiency

By optimizing leet composition to better align with passenger’s demand and route characteristic

Improve customer satisfaction

Using data to implement more proactive measures which can mitigate flight delays and cancellations

Airport and Airline collaboration

To streamline check-in and boarding processes to optimize passenger flow and reduce waiting time

Reference

https://www.kaggle.com/datasets/saadharoon27/airlines-dataset

Thanks

Do you have any questions?

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