

# PROJECT REPORT

# Unlocking Insights into the Global Air Transportation Network with Tableau.

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## **1. INTRODUCTION:**

### **1.1 Project overview: Unlocking Insights into the Global Air Transportation Network with Tableau**

- Air Transportation is the transportation of passengers and goods via aircraft. The global air transportation market is expected to witness significant growth in the forecast period owing to the increasing air passenger traffic, growing number of airport expansion projects and rising demand for air freight services.
- It is one of the most important segments of the transportation sector. It is widely used for transportation of both passengers and goods due to convenience, speed and efficiency. Airlines are the major providers of air transportation services.
- Air transportation plays a critical role in connecting people and businesses around the world, providing faster and more efficient transportation options than the other modes of transportation.
- Air travel is one of the most commonly used modes of transportation across the world due to its ease of access, faster commute, and reasonable costs. Its increasing demand has made it possible to achieve connectivity to nearly every part of the world, with a growing number of direct flights to major cities. Air transportation offers speed, global reach, efficiency, safety, connectivity.
- The main characteristics that define air transportation are the following:

#### **a. Faster transportation:**

The airplane is much faster than a car, truck, train or ship, making it the ideal transportation system for transporting goods in the shortest possible time.

b. Ideal for accessing remote location:

In very distant or remote destinations, other types of transport are inefficient. Air transport has practically no limitations on reaching any place.

c. Security:

According to statistical data, the airplane is the safest means of transportation. It is a very reliable method of transportation, where the goods arrive at their destination in perfect condition. Freight insurance premiums in air transport are generally lower than in land or sea transport.

d. Shorter delivery times:

One of its main features and advantages is that there is no doubt that delivery times are much shorter than in other transportation alternatives.

e. Rapidity:

Air transport had the highest speed among all the modes of transport.

f. Expensive:

Air transport is the most expensive means of transport. There is huge investment in purchasing aero planes and constructing aerodromes.

g. Special Preparations:

Air transport requires special preparations like wheelers links, meteorological stations, flood lights, searchlights etc.

h. Global Reach:

Air transportation allows for global connectivity, linking distant locations across continents and oceans. It enables people and goods to travel quickly and efficiently to almost any destination with an airport. Airports act as gateways, connecting countries and fostering economic and cultural exchanges.

i. Efficiency:

Air travel is known for its efficiency, particularly over long distances. Airlines optimize flight routes and schedules to ensure the most direct and time-efficient journeys.

j. Connectivity:

Air transportation facilitates connectivity by providing extensive flight networks and connecting routes.

The Global Air Transportation Network dataset is a comprehensive collection of information on airports, airlines and their routes. It contains information such as names, cities, countries, codes (IATA and ICAO) longitudes, latitudes and altitudes of airports across the world with detailed time zone and daylight-saving time data and this includes information about Airlines including their IDs, name aliases, IATA and ICAO codes, callsigns country of origin and active/inactive status.

## **1.2 PURPOSE:**

Air transport is one of the fastest modes of public transport which connects international boundaries. Air transport allows people from different countries to cross international boundaries and travel to other countries for personal, business, medical and tourism purposes. Although air transport provides the fastest means by saving the time of journey, another aspect of air transport is the facilities and comfort level of the passengers.

Air transportation is used for various purposes, such as business and leisure travel, the delivery of time-sensitive goods, and emergency response and rescue missions.

Air transport is one of the most important segments of the transportation sector. It is widely used for transportation of both passengers and goods due to its convenience, speed and efficiency.

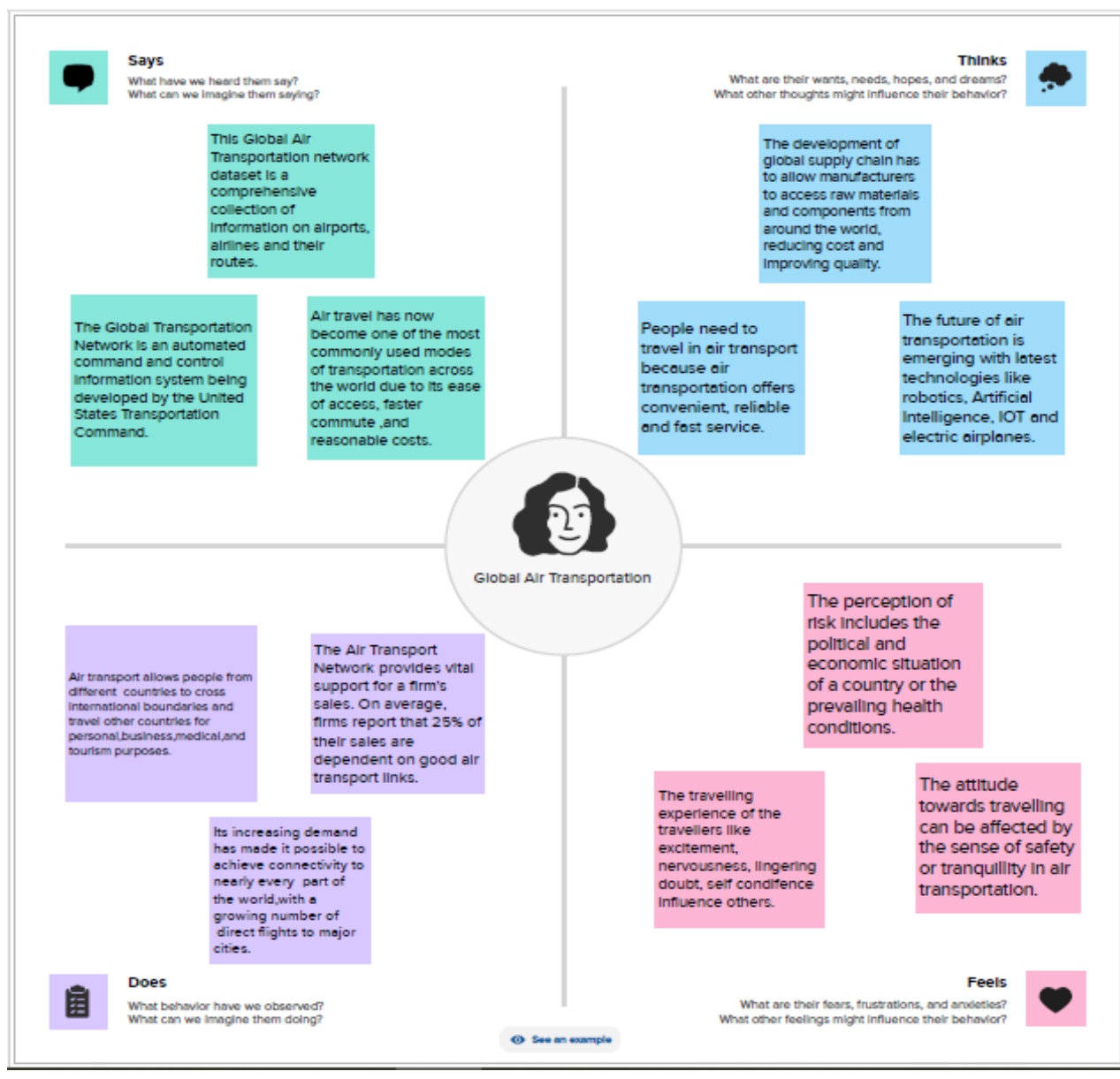
Air transport is currently used in almost all industrial sectors and distribution chains. Most companies use air transport to market goods and products internationally or to deliver samples and documents related to foreign trade operations.

An airline is a company that provides air transport services for traveling passengers and /or freight.

Air transportation involves the use of airplanes, helicopters, and other types of aircraft to transport passengers, cargo, and other goods between different locations, whether domestic or international.

## 2. PROBLEM DEFINITION & DESIGN THINKING:

### 2.1 Empathy Map:



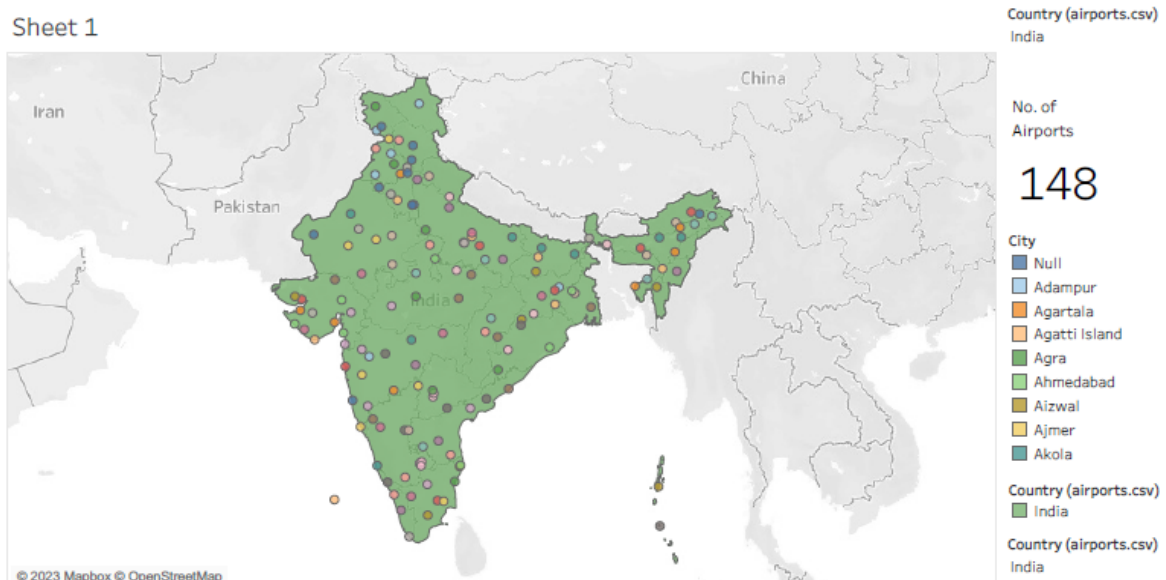
## 2.2 Ideation & Brainstorming Map:

[illegible]



### 3. RESULT:

#### Dashboard - 1



In this dashboard, World map showing details of all Airports within a Country and Number of Airports within the Country are visualized.

Dashboard -2

Airlines within a Country

Airline ID	Name	Icao	Callsign	
184	Air Alpha Greenland	AHA	AIR ALPHA	■
864	Atlantic Helicopters	FAC	FAROECHOPTER	■
921	Air Greenland	GRL	GREENLAND	■
1078	Air Alsie	MMD	MERMAID	■
1379	Bel Air Helicopters	BEH	BLUECHOPTER	■
1412	Billund Air Center	BIL	BILAIR	■
1586	CHC Denmark	HBI	HELIBIRD	■
1781	Cimber Air	CIM	CIMBER	■
1859	Company Flight	CYF	COMPANY FLIGHT	■
1890	Copenhagen Airtaxi	CAT	AIRCAT	■
1954	DAT Danish Air Transport	DTR	DANISH	■
1977	Dancopter	DOP	DANCOPTER	■
1978	Danish Air Force	DAF	DANISH AIRFORCE	■
1979	Danish Army	DAR	DANISH ARMY	■
1980	Danish Navy	DNY	DANISH NAVY	■
2270	Execujet Scandinavia	VMP	VAMPIRE	■
2330	Faroecopter	HBL	HELIBLUE	■
2373	Flexflight	FXT	Null	■
2700	Helenia Helicopter Service	HHP	HELENIA	■
2837	Ikaros DK	IKR	IKAROS	■
3057	Jetttime	JTG	JETTIE	■
3104	Maskott Air Services	MAS	MASKOTT	■

Active

☒ N

☒ Y

Country  
Denmark

No. of  
Airlines

32

Active

☒ N

☒ Y

Country  
Denmark

In this dashboard, Table showing List of All Airlines within the Country and Number of Airlines within the Country are visualized.

## Dashboard - 3

Airports at Higher Altitude within a Country

index no	Name (airports.csv)	City	ICAO (airports.csv)	
1	Ziro Airport	Zero	VEZO	5,403
	Yelahanka Air Force Station	Bangalore	VOYK	3,045
	Vishakhapatnam Airport	Vishakhapatnam	VEVZ	15

Country (airports.csv)  
India

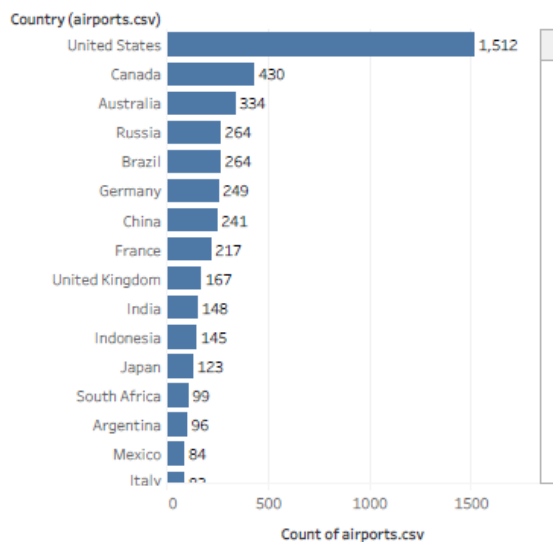
Airports at Highest Altitude in World

Name (airports.csv)	City	ICAO (airports.csv)	
Daocheng Yading Airport	Daocheng	ZUDC	14,472
Qamdo Bangda Airport	Bangda	ZUBD	14,219
Kangding Airport	Kangding	ZUKD	14,042
Ngari Gonsa Airport	Shiquanhe	ZUAL	14,022
El Alto International Airport	La Paz	SLLP	13,355
Capitan Nicolas Rojas Airport	Potosi	SLPO	12,913
Yushu Batang Airport	Yushu	ZYLS	12,816
Copacabana Airport	Copacabana	SLCC	12,591
Inca Manco Capac Internation..	Juliaca	SPJL	12,552
Golog Maqin Airport	Golog	ZLGL	12,426

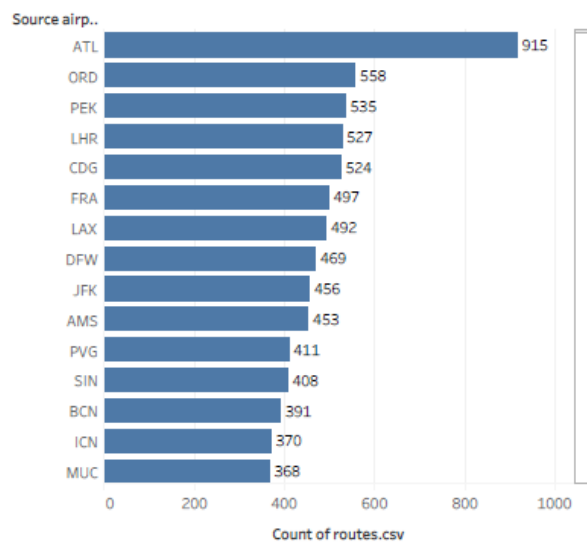
In this dashboard, Table showing Airports which are at Highest Altitude in the world and within the Country are visualized.

## Dashboard - 4

Country with Maximum Number of Airports



Number of Flights from Airport



In this dashboard, Bar Graphs showing Countries with Maximum Number of Airports and Number of Flights from Airports are visualised.

## Story -1

## Story 1

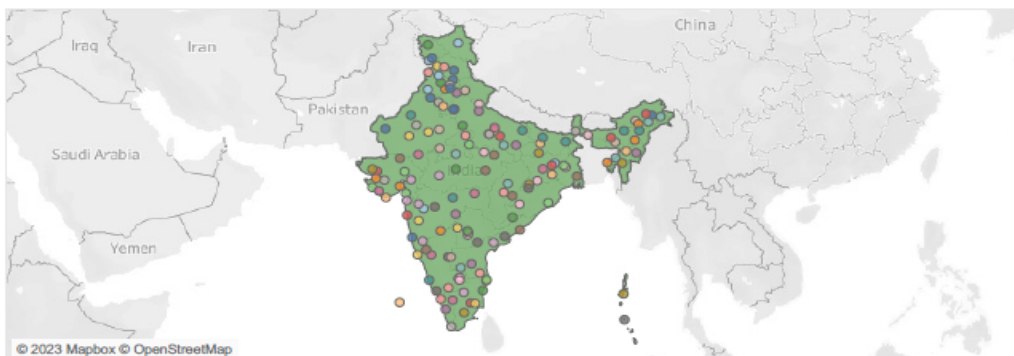
World Map Showing Countries with details of Airports.

Table showing Airports which are at Highest Altitude in the World and within the Country.

Table showing List of All Airlines within the country.

Bar Graphs showing Countries with Max No. of Airports and No. of Flights from Airports.

## Sheet 1

Country (airports.csv)  
IndiaNo. of  
Airports

148

City  
Null

Country (airports.csv)

India

Country (airports.csv)  
India

#### **4. ADVANTAGES & DISADVANTAGES:**

The advantages and disadvantages of this project are given below:

##### **Advantages:**

##### **1. High Speed:**

The supreme advantage of air transport is its high speed. It is the fastest mode of transport. Passengers and goods can be transported easily from one place to other.

##### **2. Minimum Cost:**

Unlike railways and road transport, there is no need to spend money on the construction of any track or road, only airports have to be constructed.

##### **3. Strategic Importance:**

An airway has great strategic importance. It can be used for internal and external security.

##### **4. Easy transport of costly and light goods:**

It is quite convenient to send costly, light and perishable goods through air transport.

##### **5. Free from physical barriers:**

Air transport is free from physical barriers like rivers, mountains and valleys etc.

##### **6. Useful in natural calamities:**

During earthquakes, floods, accidents and famine air transport is used for rescue operations.

## 7. Comfortable and Quick Services:

It provides a regular, comfortable, efficient and quick service. It offers convenient, reliable and fast services of transport.

### **Disadvantages:**

#### 1. High Costs:

Air transport is a costly service. Its operational costs are too high. Middle class and poor people can not afford its cash.

#### 2. More Risks:

Air transport is prone to accidents. A small mistake can be very dangerous for passengers. Air travel is the riskiest mode of transport. Compared to other means of travel, the risks of collisions are higher.

#### 3. Huge Investments:

For creating aviation facilities, huge investments are required. The cost of aeroplanes, construction and maintenance of aerodromes and control mechanisms needs a capital expenditure.

#### 4. Uncertain and Unreliable:

Air transport is uncertain and unreliable as it is controlled to a great extent by weather conditions. Unfavourable weather such as fog, snow or heavy rain etc. may cause cancellation of scheduled flights and suspension of air service.

#### 5. Breakdowns and Accidents:

It requires a large amount of capital investment in the construction and maintenance of aeroplanes. Further, very trained and skilled persons are required for operating air service.

## **5. APPLICATIONS:**

Air transport is an important enabler to achieving economic growth and development. Air transport facilitates integration into the global economy and provides vital connectivity on a national, regional, and international scale. It helps generate trade, promote tourism, and create employment opportunities.

## **6. CONCLUSION:**

I hereby conclude that, according to my project “Unlocking Insights into the Global Air Transportation Network with Tableau”. I have made a clear survey over this project. I have gained and analysed more about the subtopics like World Map showing Countries with the details of Airports and Number of Airports within the Country, Airports at higher altitude within a Country, Airports at highest altitude in World, Airlines within the Country, Bar graph showing Country with maximum number of airports and number of flights from Airport.

## **7. FUTURE SCOPE:**

The industry has a number of domestic and international airlines, as well as a large network of airports. The future of the aviation industry in India is likely to see continued growth and expansion, driven by factors such as a growing middle class, increased tourism, and government policies supporting the industry.

Emerging technologies are reshaping with robotics, artificial intelligence, the internet of things, unmanned aircraft systems and the push for hybrid and electric airplanes.



Air travel has a reputation for being cramped, uncomfortable, and expensive, particularly at peak times. It's also a major contributor to the greenhouse gas emissions that cause climate change. But major changes to air travel is in development, so hopefully, in the next few decades, traveling by plane will get more affordable, more comfortable, and more environmentally friendly.

## **8. APPENDIX:**

Tableau Profile link: <https://public.tableau.com/app/profile/s.m.siva.lakshmi/vizzes>