GOVERNMENT OF TAMILNADU

Naan Muthalvan – Project Based Experiential Learning

UNLOCKING INSIGHTS INTO THE GLOBAL AIR TRANSPORTATION NETWORK

Submitted by

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M.V.MUTHIAH GOVERNMENT ARTS COLLEGE FOR WOMEN

(Affiliated to Mother Teresa Women's University, Kodaikanal)
Reaccredited with "A" Grade by NAAC
DINDIGUL-624001.

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PG & RESEARCH DEPARTMENT OF MATHEMATICS

BONAFIDE CERTIFICATE

This is to certify that this is a bonafide record of the project entitled, **"UNLOCKING INSIGHTS INTO THE GLOBAL AIR TRANSPORTATION NETWORK"** done by **Ms. S. PRINCY - (21321TR022), Ms. S. PRIYADHARSHINI - (21321TR023), Ms. P. RANJITHA – (21321TR024),** and **Ms. M. RENUKA – (21321TR025)** This is submitted in partial fulfillment for the award of the degree of **Bachelor of Science in Mathematics in M.V.MUTHIAH GOVERNMENT ARTS COLLEGE FOR WOMEN, DINDIGUL** during the period of June 2023 to November 2023.

Project Mentor(s) **Head of the Department**

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UNLOCKING INSIGHTS INTO THE GLOBAL AIR TRANSPORTATION NETWORK WITH TABLEAU

1. INTRODUCTION

Air Transport, which represents the next most substantial energy-consuming transport sector, includes passenger and freight airplanes, that is, aircraft configured for transporting passengers, freight, or mail. According to the International Air Transport Association (IATA), in 2017, airlines carried 4.1 billion passengers globally. This value increased by 7.3% over 2016, which represented an additional 280 million trips by air between 2016, and 2017. In addition, as with many of the energy and transport-related statistics in recent times, airlines in the Asia-Pacific region carried the largest number of passengers, According to IATA statistics, the market share of passengers increased from 2016 2017 by region is as follows:

1. Asia-Pacific, 36.3%; 1.5 billion passengers (10.6% increase from 2016).
2. Europe, 26.3%; 1.1 billion passengers (8.2% increase).
3. North America, 23%; 941.8 million passengers (3.2% increase).
4. Latin America, 7%; 286.1 million passengers (4.1% increase).
5. Middle East, 5.3%; 216.1 million passengers (4.6% increase).
6. Africa, 2.2%; 88.5 million passengers (6.6% increase).

In addition, it is noteworthy that the aggregated global number of 4.1 billion has doubled since 2005, and by 2036, IATA anticipates that airlines will carry nearly 8 billion passengers globally.

Since airfares are connected to carrier fuel costs (among others), there is an incentive for the industry to reduce fuel consumption as much as possible, both in their aircraft and in their airline infrastructure. According to a 2012 World Bank report, energy efficiency in the air transport sector has come from technology improvements in airframe and engine design, air traffic control, and airport operation.

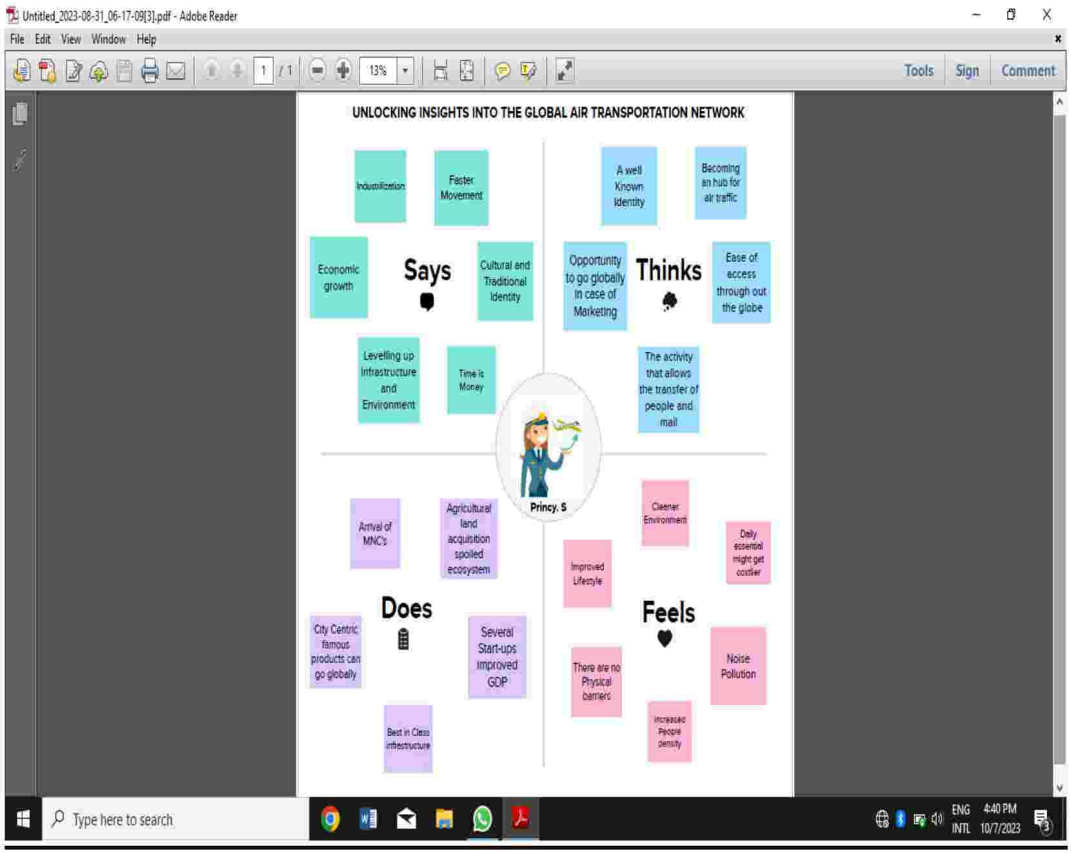
PURPOSE OF THE AIR TRANSPORT

Air Transport allows people from different countries to cross international boundaries and travel other countries for personal, business, medical, and tourism purposes.

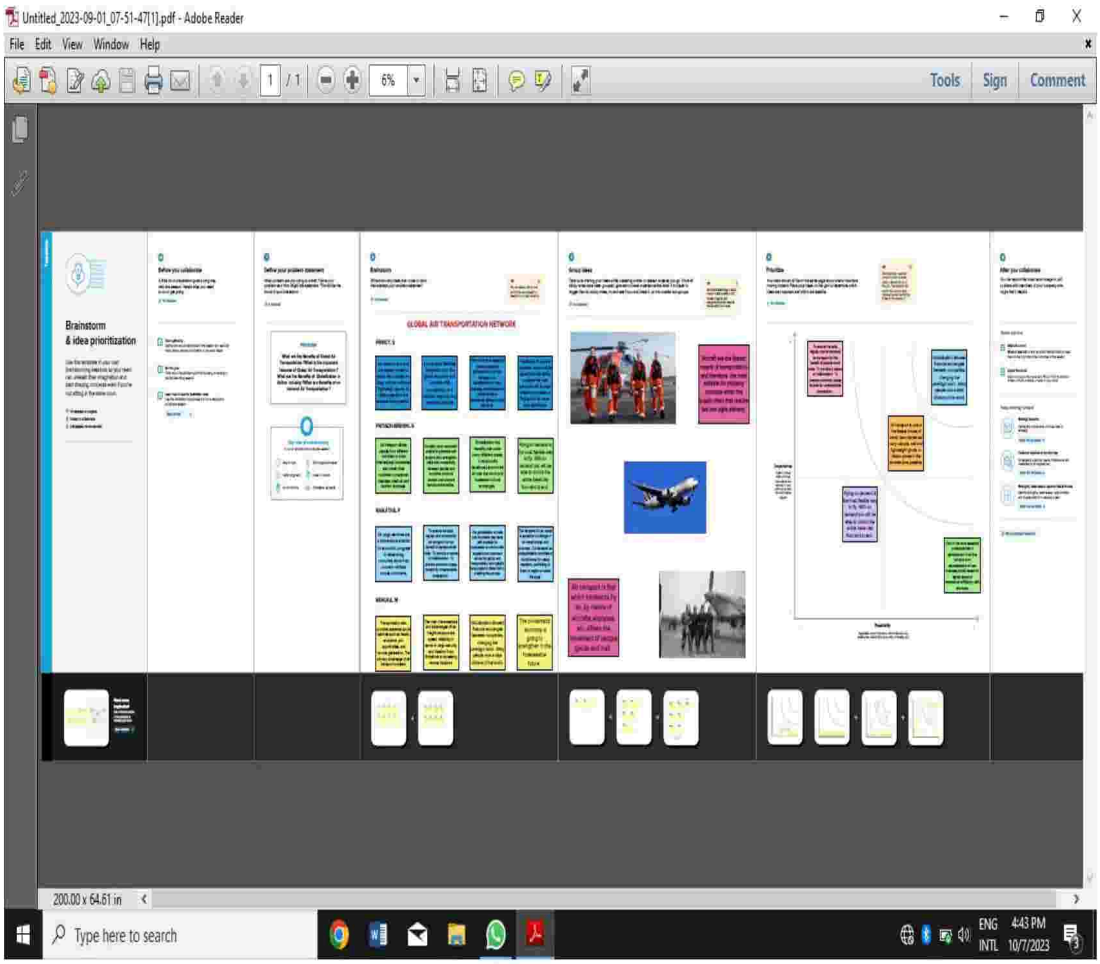
The importance of air transport lies in its ability as an economic engine to generate and support jobs, strengthen trade and connectivity between people and countries, promote tourism, and connect remote communities.

2. PROBLEM DEFINITION AND DESIGN THINKING

2.1 EMPATHY MAP

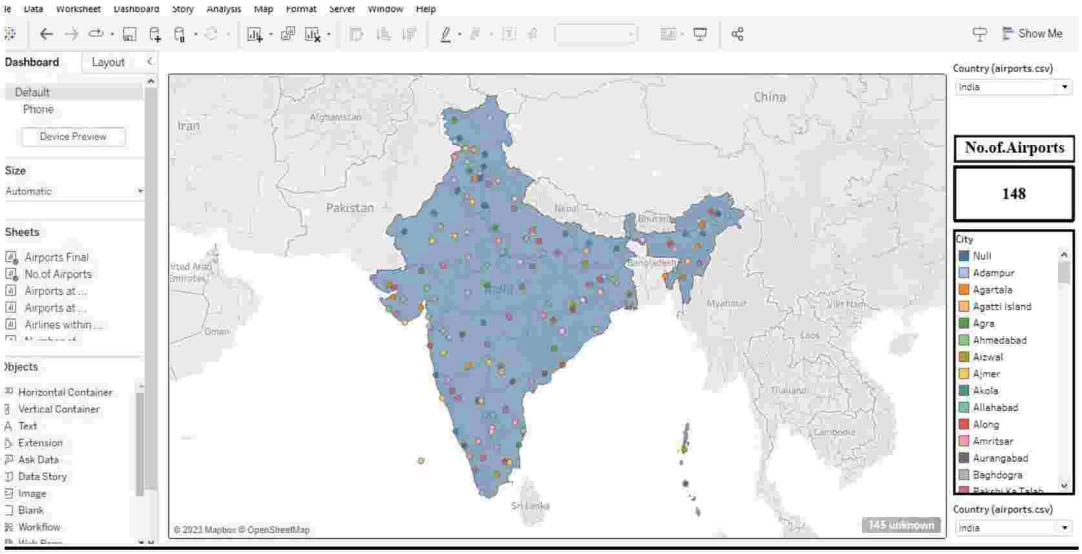


2.2 BRAINSTROMING MAP

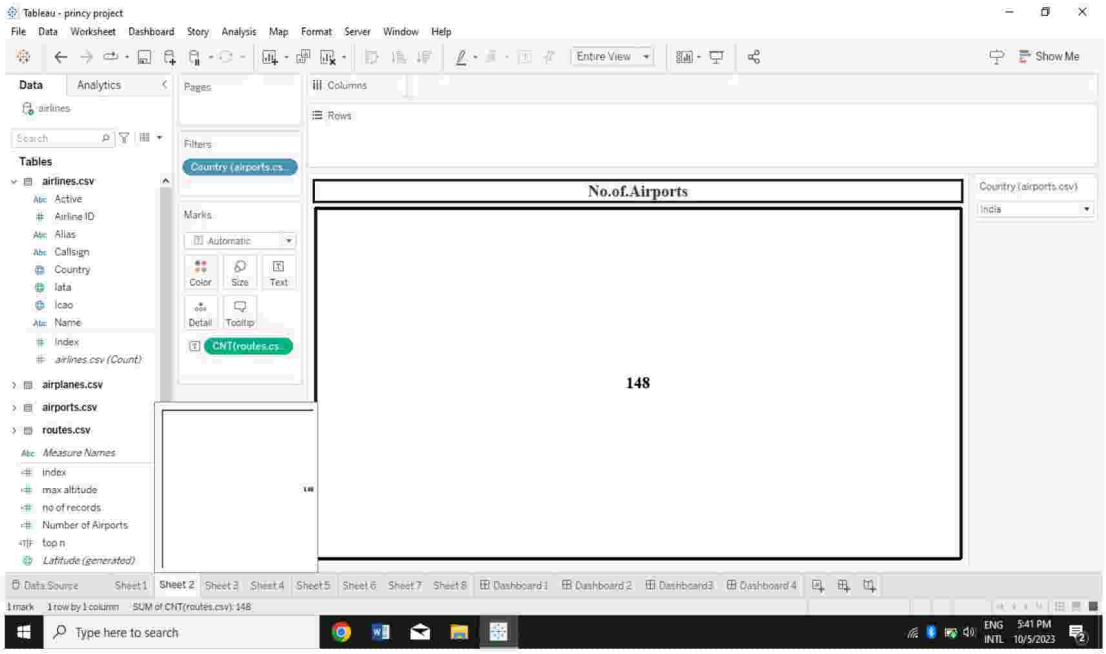


3. RESULT

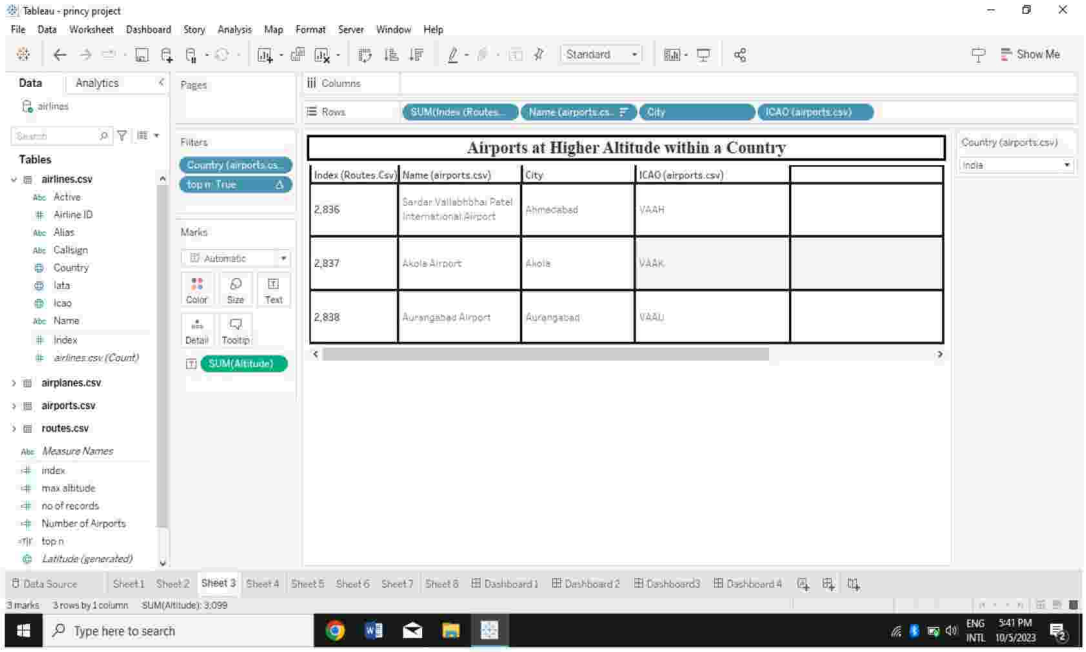
3.1 AIRPORTS FINAL



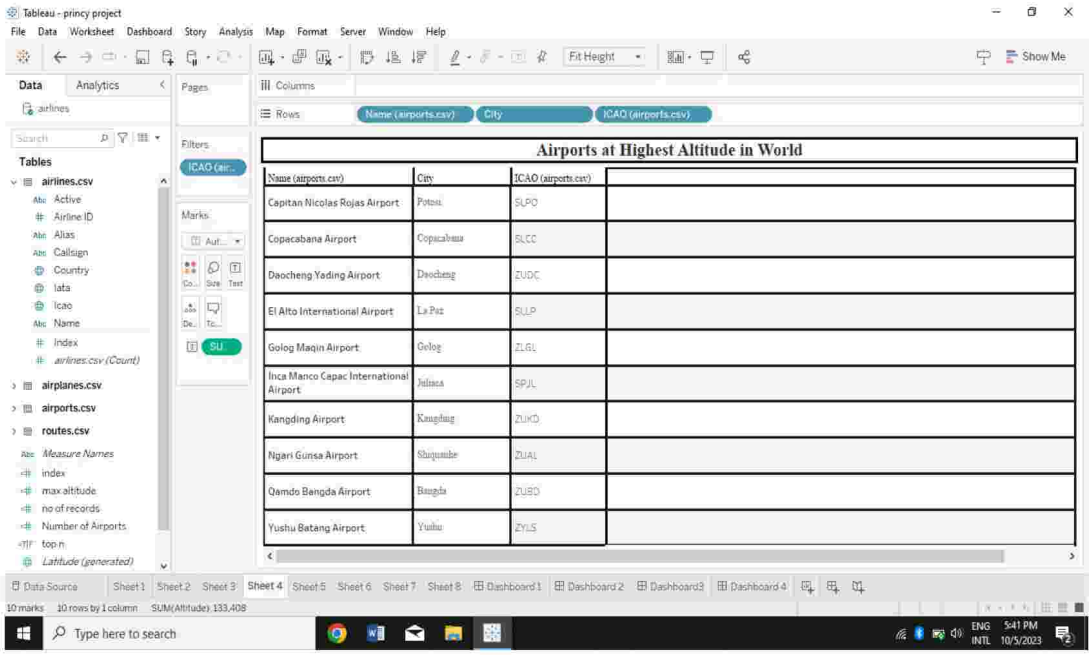
3.2 NUMBER OF AIRPORTS



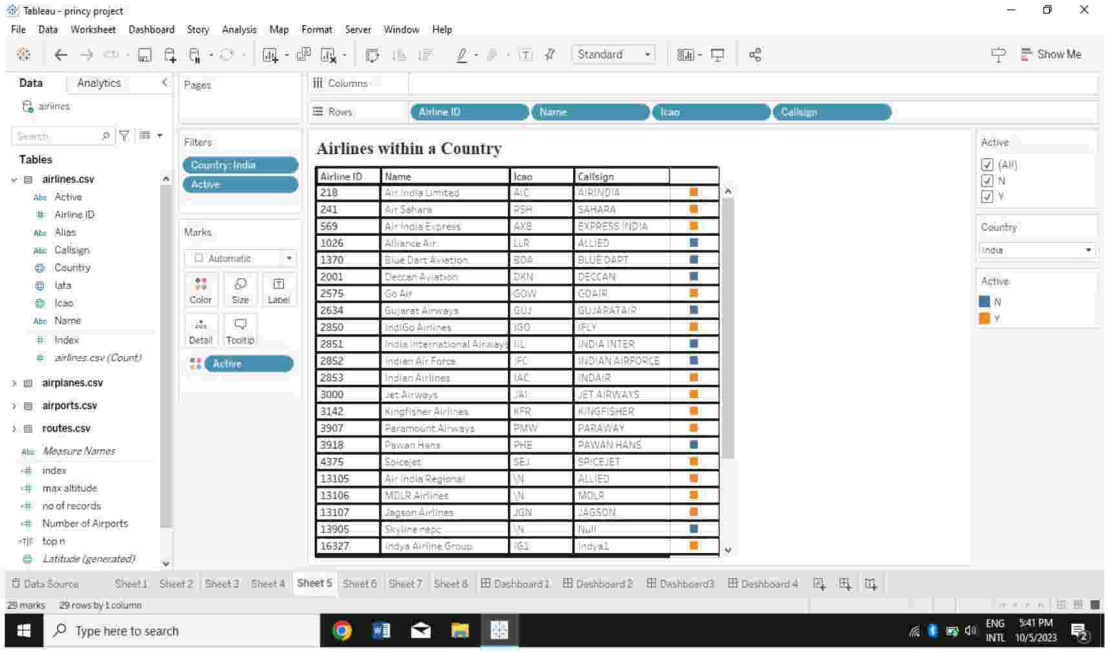
3.3 AIRPORTS AT HIGHER ALTITUDE WITHIN A COUNTRY



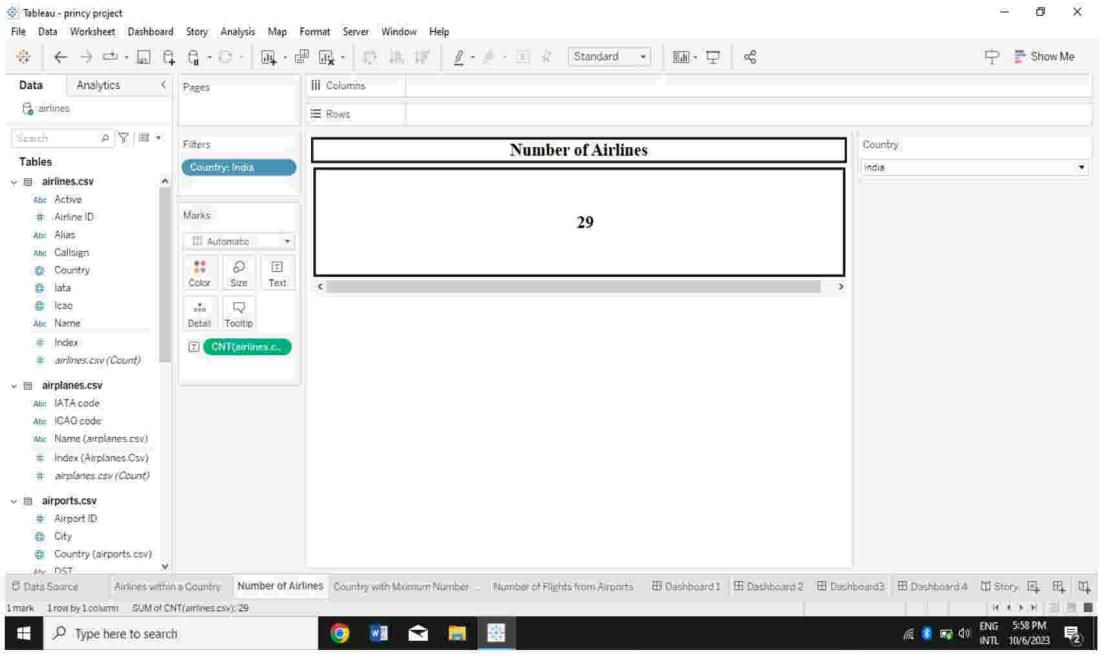
3.4 AIRPORTS AT HIGHER ALTITUDE IN WORLD



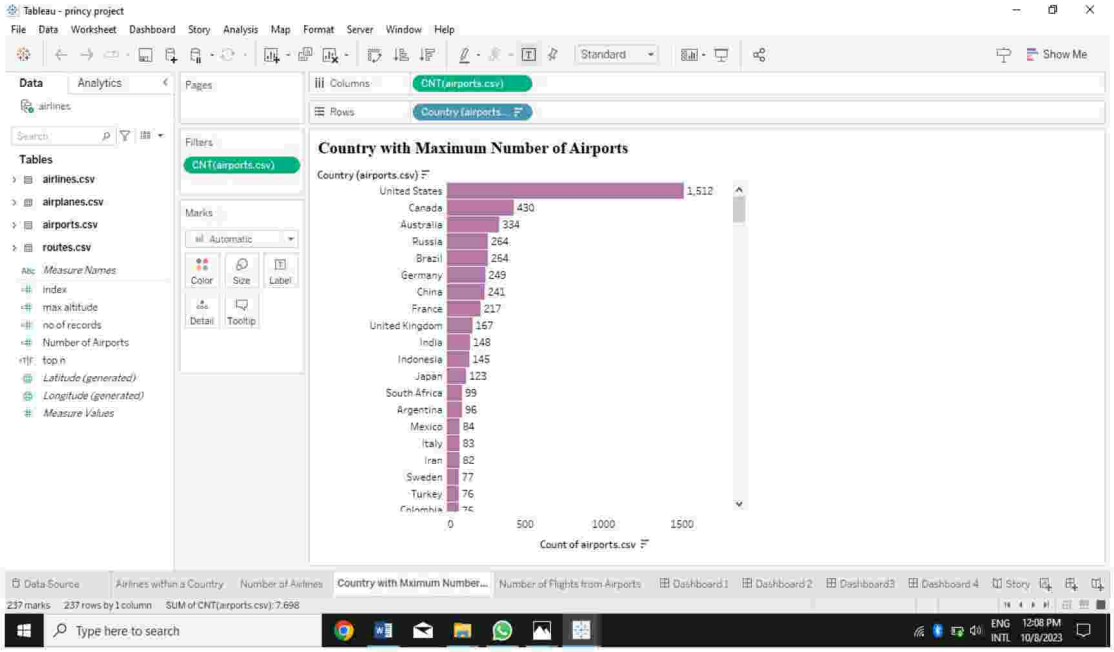
3.5 AIRLINES WITHIN A COUNTRY



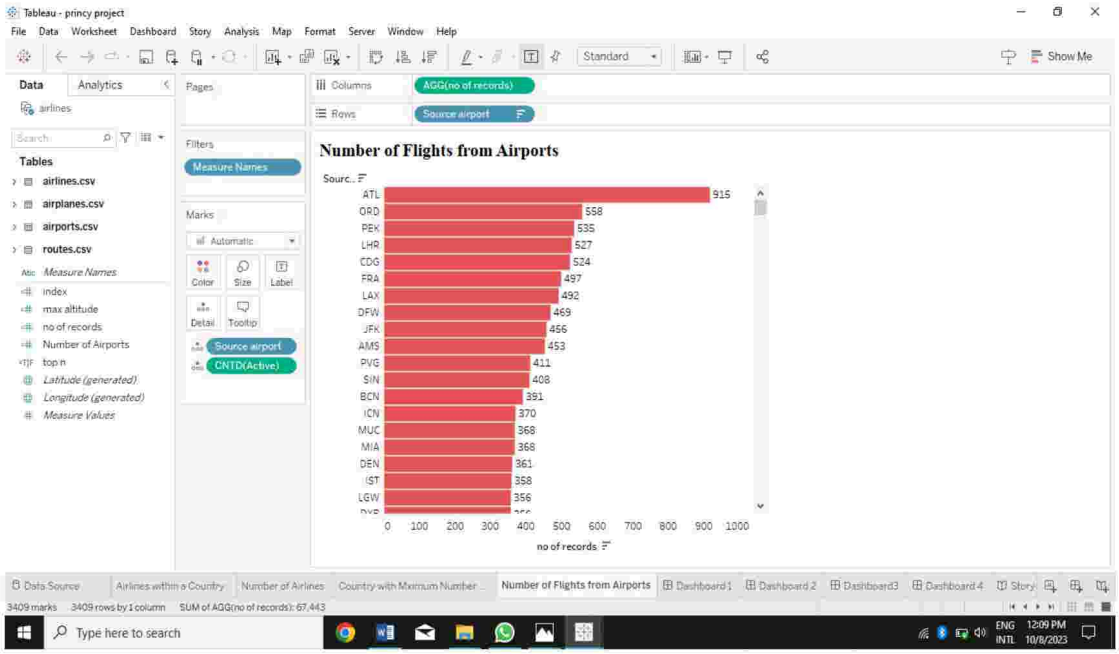
3.6 NUMBER OF AIRLINES



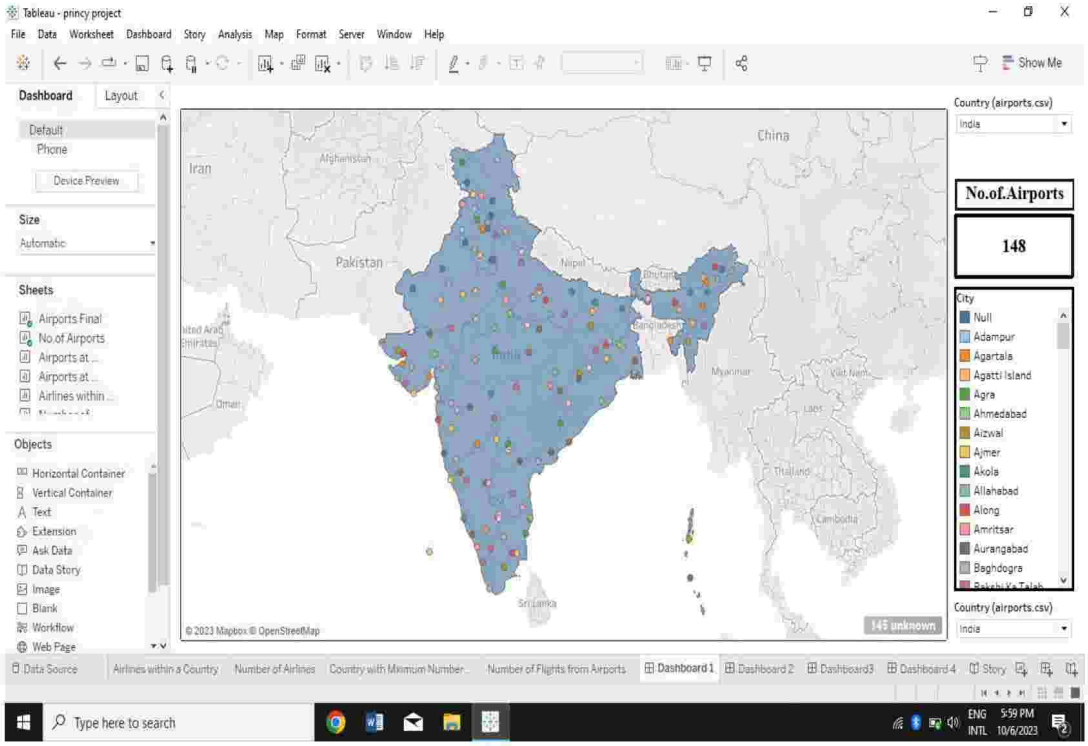
3.7 COUNTRY WITH MAXIMUM NUMBER OF AIRPORTS



3.8 NUMBER OF FLIGHTS FROM AIRPORTS

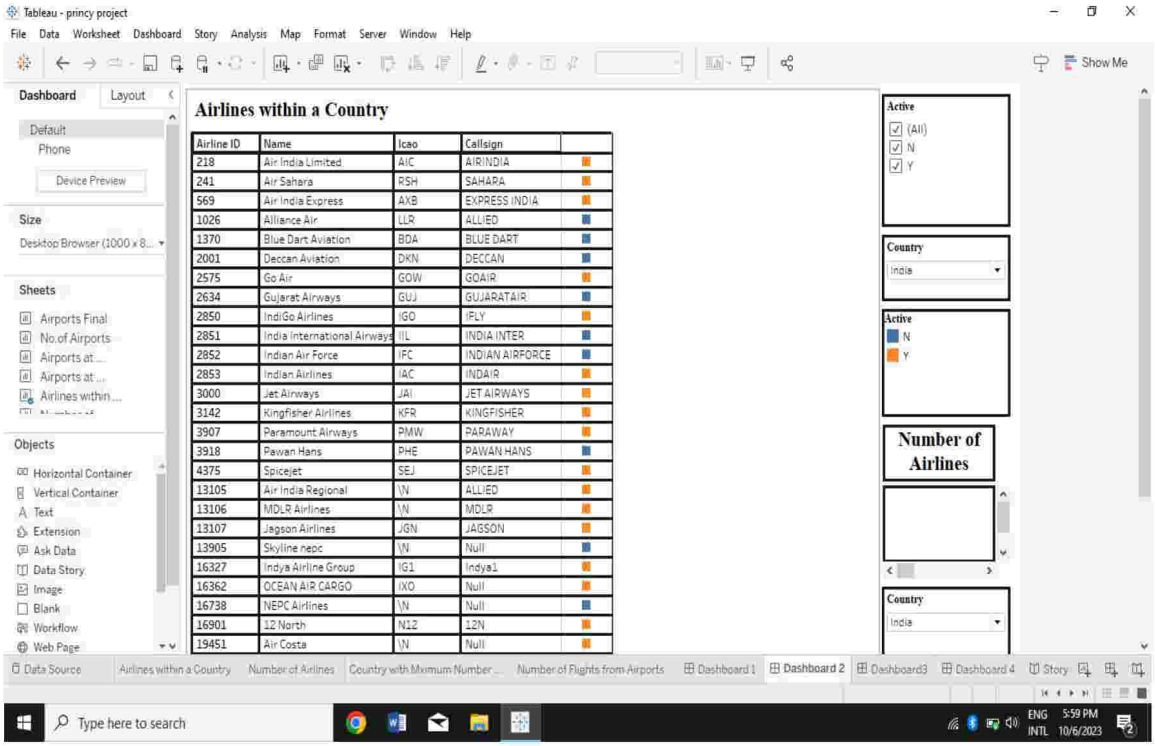


DASHBOARD 1



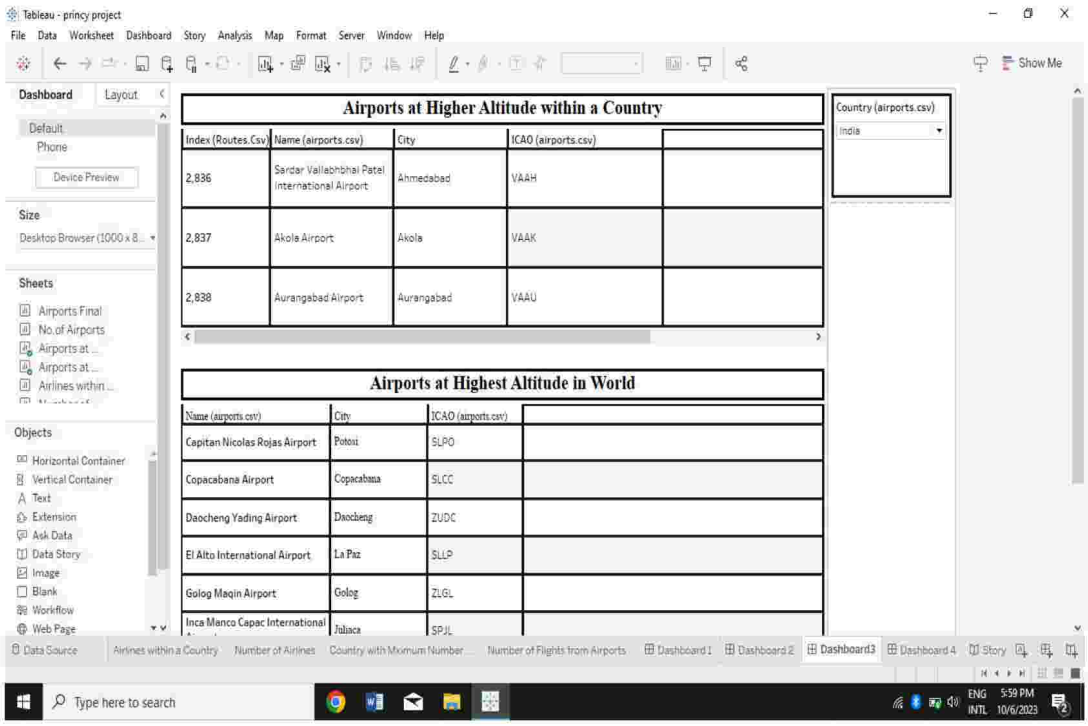
In dashboard 1 we get the information about in the world map showing country wise Airports. We mark the location of the Airports and we calculated the number of airports in India. 148 Airports in India. We also mark the city.

DASHBOARD 2



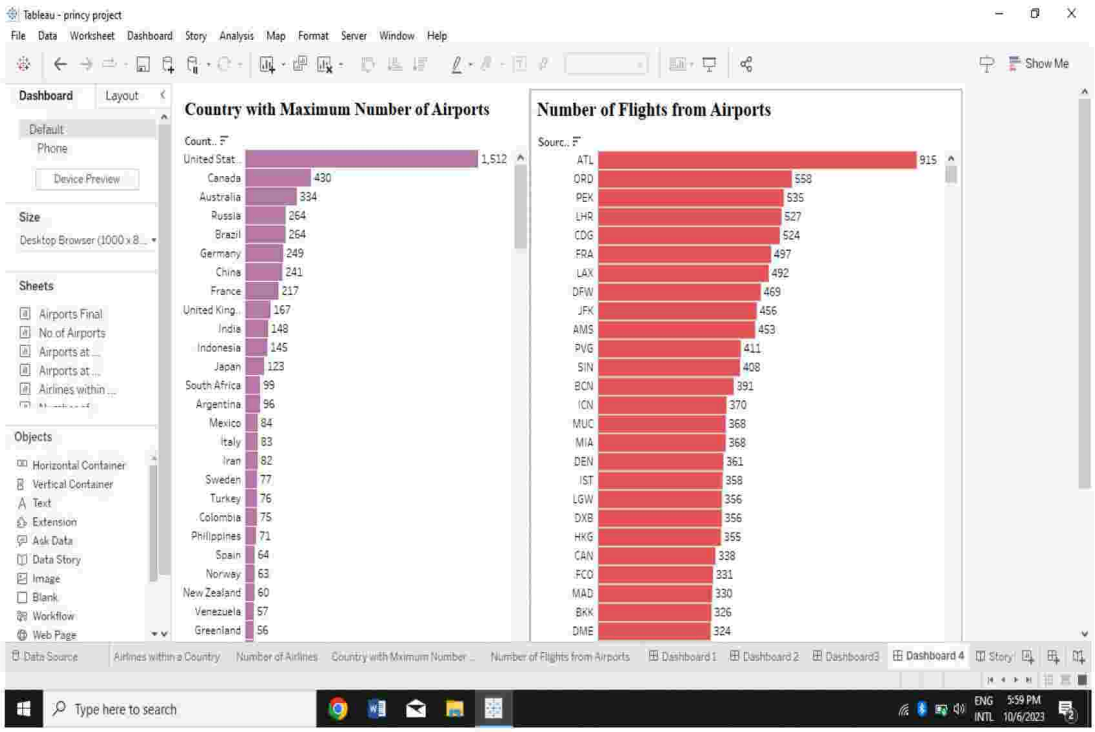
In this dashboard 2 the table showing list of all airlines in country wise. We get information about Airlines within a country in India. The blue colour denotes the airline was active. The orange colour denotes the airline was in active. And we also calculated how many airlines in India ? There are 29 airlines.

DASHBOARD 3



In this dashboard 3 we get the information about Top three Airports at Higher Altitude within a country in India. And also we calculated the Airports at Higher Altitude in World.

DASHBOARD 4



In this dashboard 4 we get the information about the bar graph showing country with maximum number of Airports and Number of flights from Airports.

STORY

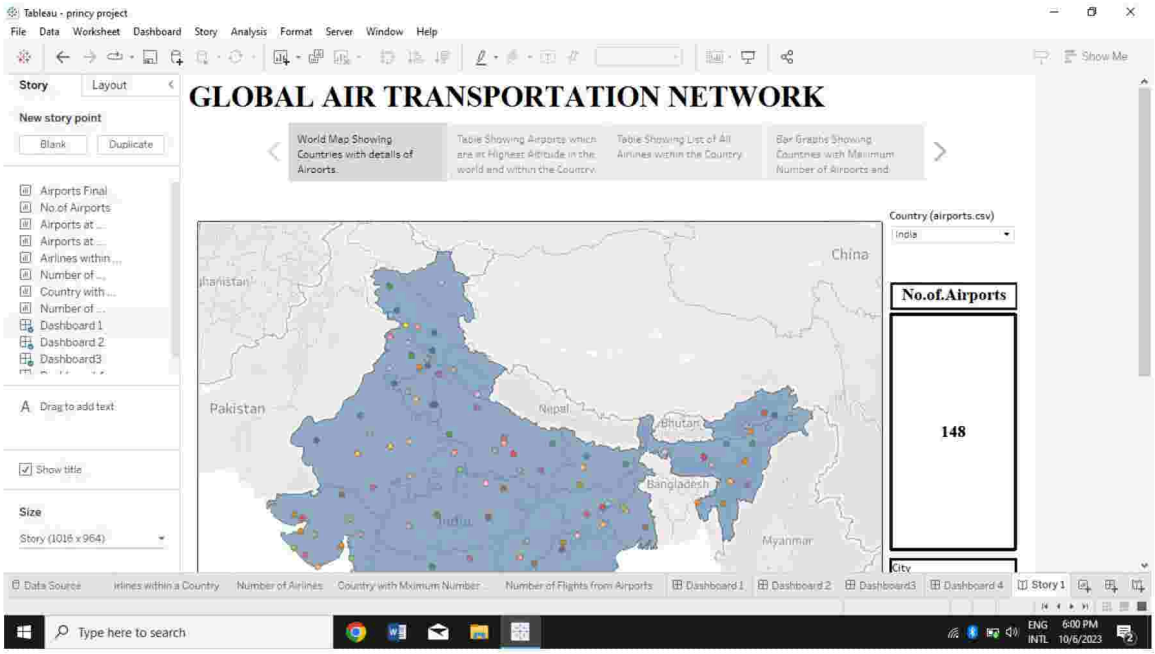


Tableau - princy project
File Data Worksheet Dashboard Story Analysis Format Server Window Help
Story Layout
New story point
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Airports Final
No.of Airports
Dashboard 1
Dashboard 2
Dashboard3
Drag to add text
Show title
Size
Story (1016 x 964)
GLOBAL AIR TRANSPORTATION NETWORK
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 Maximum Number of Airports and
Country (airports.csv)
India
No.of.Airports
148
China
Pakistan
Nepal
Bhutan
Bangladesh
Myanmar
Data Source
Number of Airlines
Country with Mximum Number
Number of Flights from Airports
Dashboard 1
Dashboard 2
Dashboard3
Dashboard 4
Story 1
Type here to search
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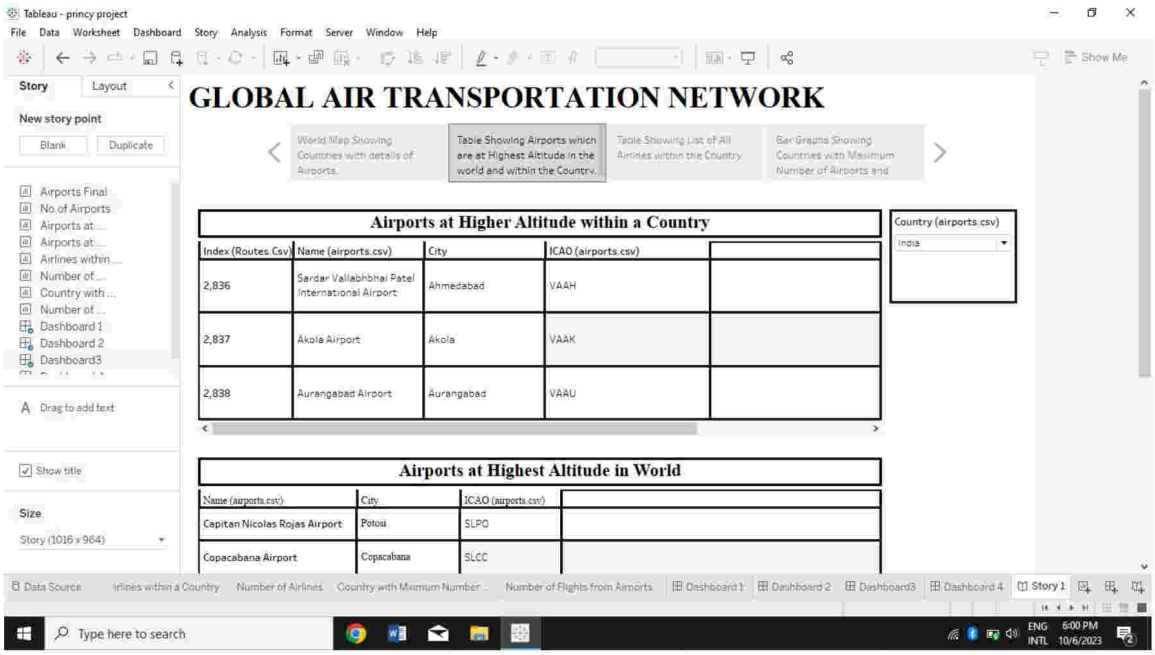
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Bar Graphs Showing Countries with Maximum Number of Airports and
Airports at Higher Altitude within a Country
Index (Routes.Csv)
Name (airports.csv)
City
ICAO (airports.csv)
2,836
Sardar Vallabhbhai Patel International Airport
Ahmedabad
VAAH
2,837
Akola Airport
Akola
VAAK
2,838
Aurangabad Airport
Aurangabad
VAAU
Country (airports.csv)
India
Airports at Highest Altitude in World
Name (airports.csv)
City
ICAO (airports.csv)
Capitan Nicolas Rojas Airport
Potosi
SLPO
Copacabana Airport
Copacabana
SLCC
Data Source
Number of Airlines
Country with Mximum Number
Number of Flights from Airports
Dashboard 1
Dashboard 2
Dashboard3
Dashboard 4
Story 1
Type here to search
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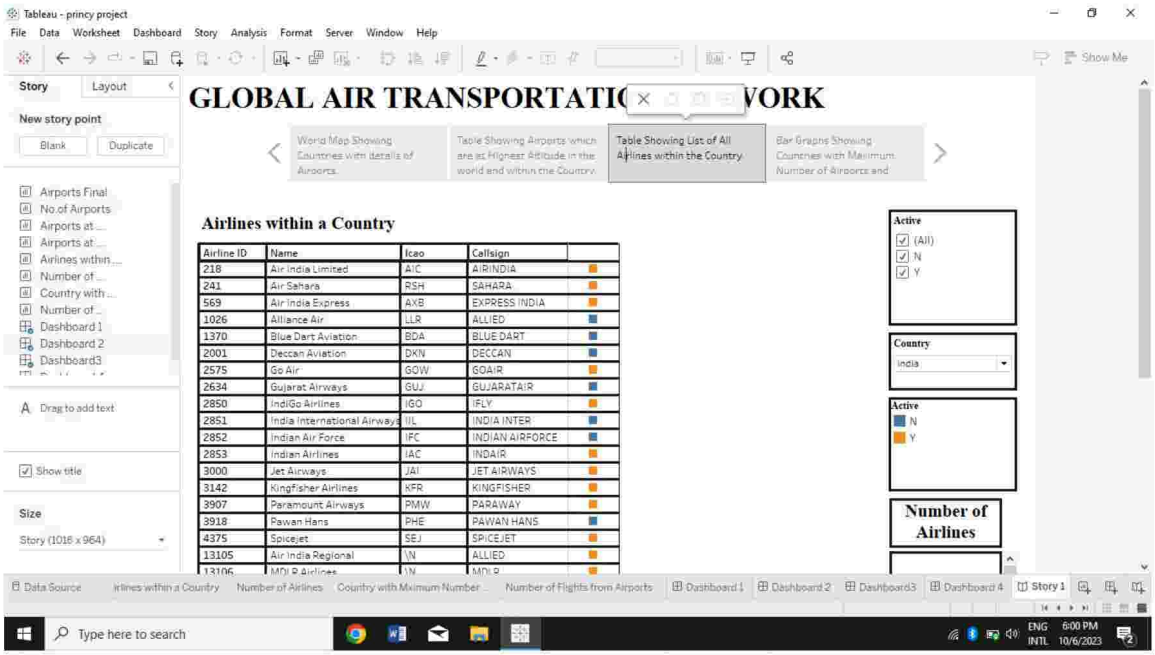
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Airlines within a Country
Airline ID Name Icao Callsign
218 Air India Limited AIC AIRINDIA
241 Air Sahara RSH SAHARA
569 Air India Express AXB EXPRESS INDIA
1026 Alliance Air LLR ALLIED
1370 Blue Dart Aviation BDA BLUE DART
2001 Deccan Aviation DKN DECCAN
2575 Go Air GOW GOAIR
2634 Gujarat Airways GUJ GUJARATAIR
2850 IndiGo Airlines IGO IFLY
2851 India International Airways IIL INDIA INTER
2852 Indian Air Force IFC INDIAN AIRFORCE
2853 Indian Airlines IAC INDAIR
3000 Jet Airways JAI JET AIRWAYS
3142 Kingfisher Airlines KFR KINGFISHER
3907 Paramount Airways PMW PARAWAY
3918 Pawan Hans PHE PAWAN HANS
4375 Spicejet SEJ SPICEJET
13105 Air India Regional IN ALLIED
Active
(All)
N
Y
Country
India
Active
N
Y
Number of Airlines
Story
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Airports Final
No.of Airports
Airports at ...
Airports at ...
Airlines within ...
Number of ...
Country with ...
Number of ...
Dashboard 1
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Data Source
Airlines within a Country
Number of Airlines
Country with Maximum Number ...
Number of Flights from Airports
Dashboard 1
Dashboard 2
Dashboard3
Dashboard 4
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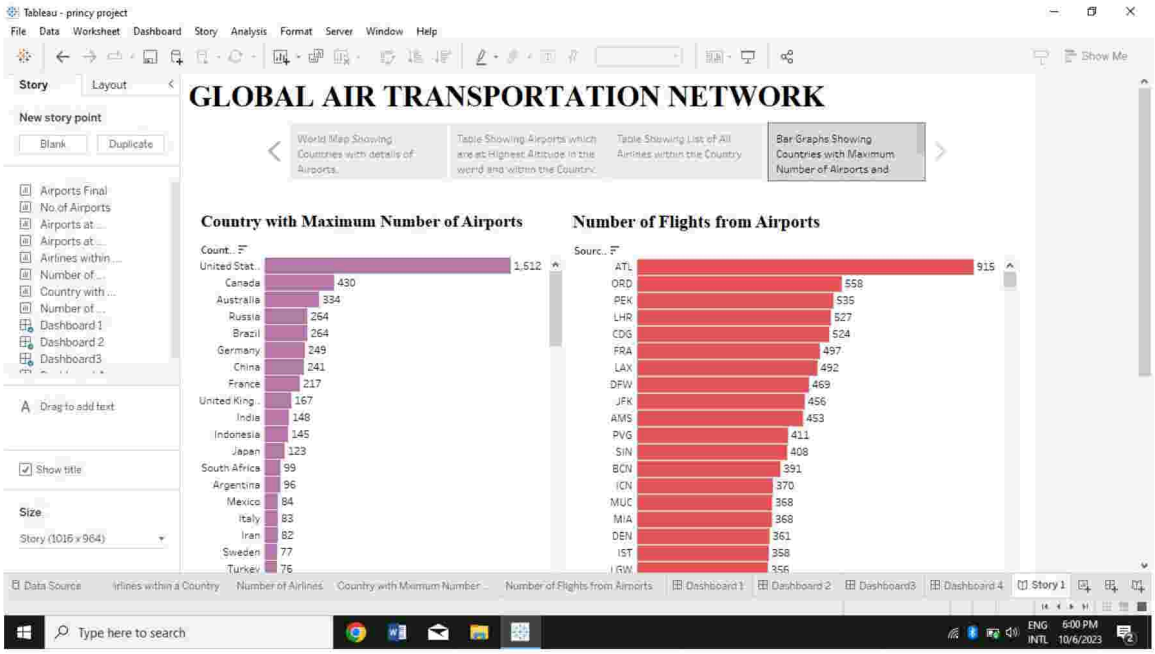
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Bar Graphs Showing Countries with Maximum Number of Airports and
Country with Maximum Number of Airports
Count...
United Stat.. 1,512
Canada 430
Australia 334
Russia 264
Brazil 264
Germany 249
China 241
France 217
United King.. 167
India 148
Indonesia 145
Japan 123
South Africa 99
Argentina 96
Mexico 84
Italy 83
Iran 82
Sweden 77
Turkey 76
Number of Flights from Airports
Sourc...
ATL 915
ORD 558
PEK 535
LHR 527
CDG 524
FRA 497
LAX 492
DFW 469
JFK 456
AMS 453
PVG 411
SIN 408
BCN 391
ICN 370
MUC 368
MIA 368
DEN 361
IST 358
LGW 356
Story
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No.of Airports
Airports at ...
Airports at ...
Airlines within ...
Number of ...
Country with ...
Number of ...
Dashboard 1
Dashboard 2
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Data Source
Airlines within a Country
Number of Airlines
Country with Maximum Number ...
Number of Flights from Airports
Dashboard 1
Dashboard 2
Dashboard3
Dashboard 4
Story 1
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4. ADVANTAGES & DISADVANTAGES

4.1 ADVATAGES

- Air Transport is the fastest means of transport. It is one of the most advanced abs developed means of Transportation.
- This means helps to reach places where roads and rails cannot reach i.e jungles, deserts and mountains areas.
- Travel by air is comfortable but costly. Helicopters can land in small areas and are useful in mountain and terrain.
- Airways are useful during for providing rescue operations.
- Very Fast
- Deliver items quickly over long distances
- Give you high levels of security for sensitive items
- Be used for a range of goods

4.2 DISADVANTAGES

- Air transport can involve higher costs than other options, and is not suitable for all goods
- Flights are subjects to delay or cancelation
- You will need to pay taxes at each airport you use
- Fuel and currency surcharges will usually be added to freight costs
- Further transportation may be needed from the destination airport to the final destination

5. APPLICATIONS OF AIR TRANSPORTATION

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.

6. FUTURE SCOPE

The future of the aviation industry in India is likely to see continued growth and expression, driven by factors such as a growing middle class, increased tourism, and government policies supporting the industry.

The roadmap outlined significant benchmarks to achieve the goal of making India the best-performing centre for aviation by 2040, in addition to expanding the country's aviation industry.

The aviation market is anticipated to expand quickly between 2022 and 2029 throughout the anticipated time period.

7. CONCLUTION

The Air transport industry is not only a vital engine of global socio-economic growth but is also of vital importance as a catalyst for economic development in most countries and for many regions within each country. Its importance arises not only from its ability to facilities the movement of people but also its ability to expedite the movement of goods.