UNLOCKING INSIGHT INTO THE GLOBAL AIR TRANSPORTATION NETWORK WITH TABLEAU

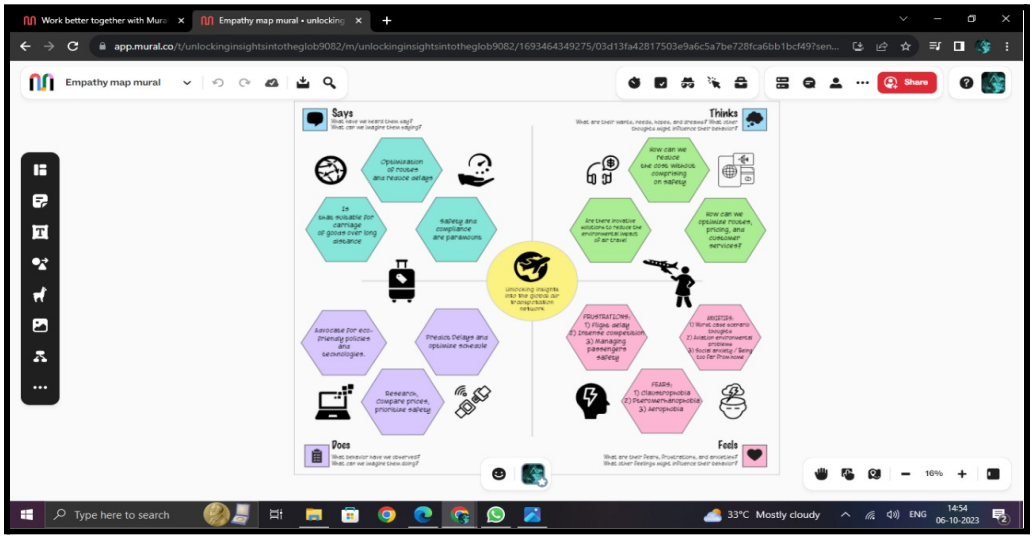
This Global Air Transportation Network dataset is a comprehensive collection of information on airports, airlines and their routes. It contains information such as names, cities, countries, codes (IATA and ICAO) longitudes, latitudes and altitudes of airports across the world with detailed time zone and daylight saving time data. Additionally, this includes information about airlines including their IDs, name aliases, IATA and ICAO codes, callsigns country of origin and active/inactive status. Similarly, it also covers route details such as airline sources to destination airports along with essential details like codeshare stakeholder if any stops required during this journey along with the type of aircraft being used for that particular journey.

PURPOSE:

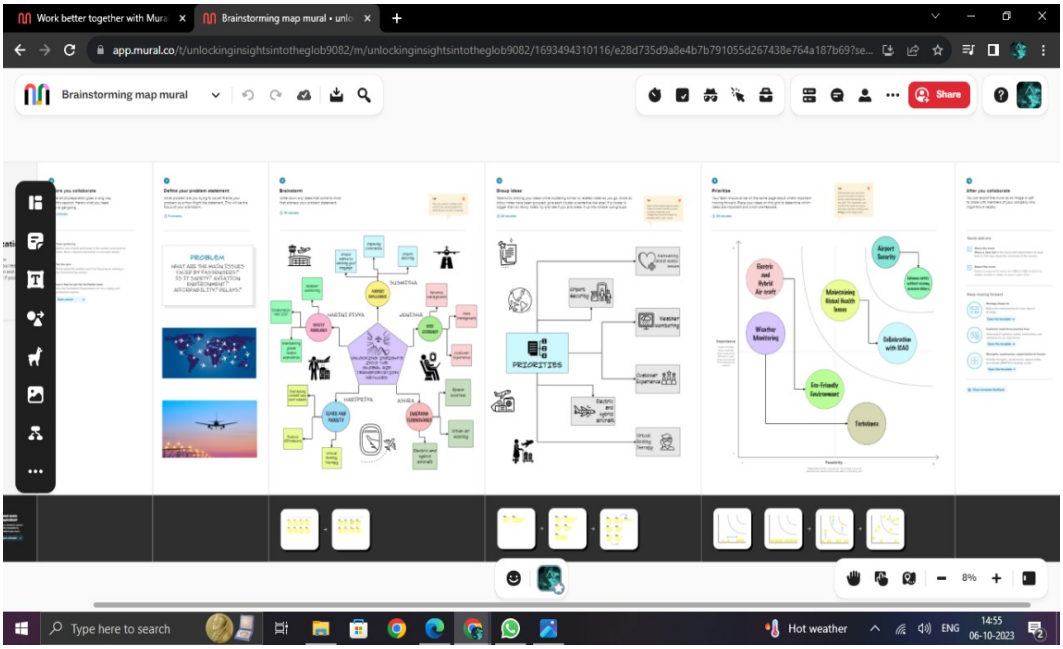
Tableau help us to create interactive visualisation which makes us understand complex data identify trends and gain insights from information that might be difficult to interpret in raw numerical form.The global air transportation network never lacks data,as it's collect every attractive point.Data and analytics play a central role to understand and refine every aspect of these systems, from check-in queue times and shop locations to punctuality of flight arrivals and departures.This project helps us track evolving trends in the commercial aviation industry and identify new routes or destinations that customers would like served from our airports, enabling us to expand our network footprint and service offering.

2.PROBLEM DEFINITION AND DESIGN THINKING

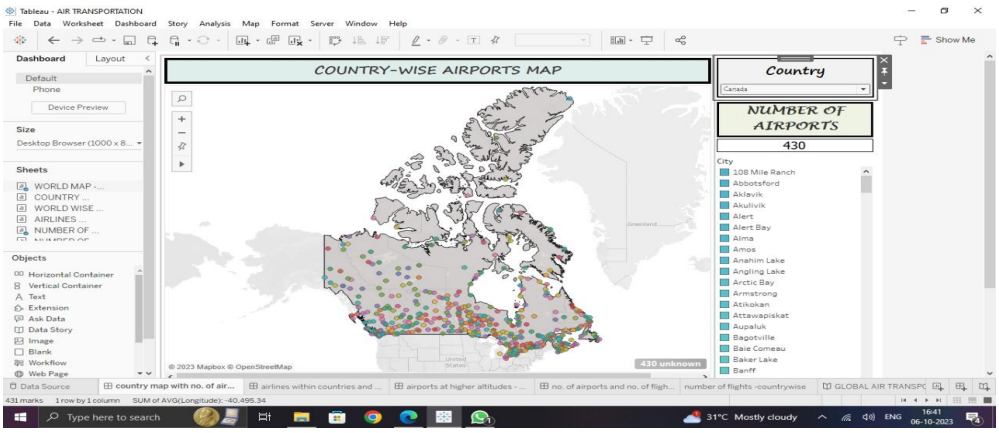
2.1 EMPATHY MAP

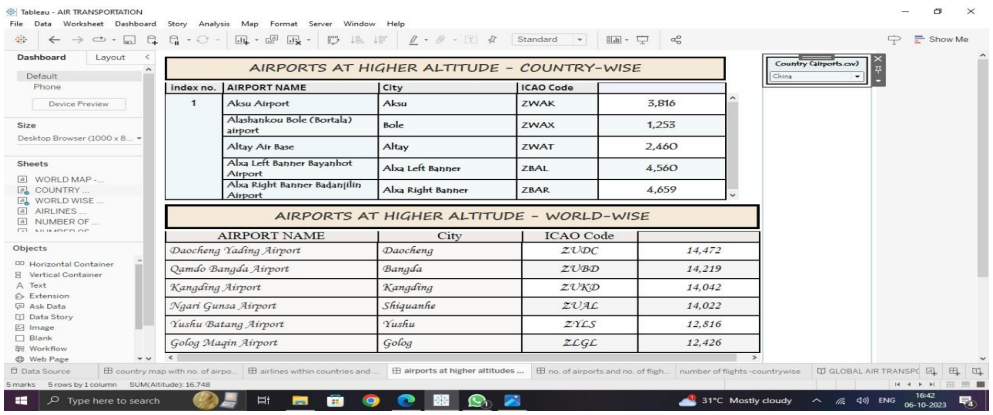


2.2 Ideation & Brainstorming Map



3. RESULT





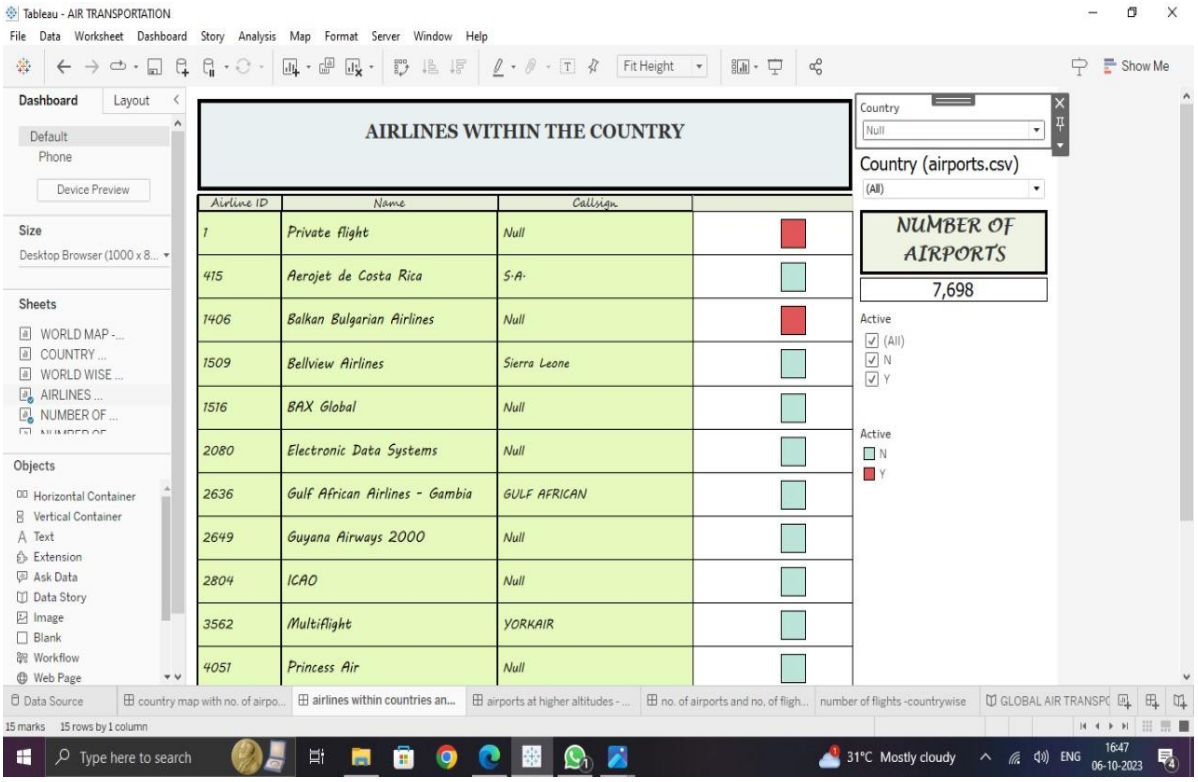


Tableau - AIR TRANSPORTATION
File Data Worksheet Dashboard Story Analysis Map Format Server Window Help
Fit Height
Show Me
Dashboard
Layout
Default
Phone
Device Preview
Size
Desktop Browser (1000 x 8...
Sheets
WORLD MAP -...
COUNTRY ...
WORLD WISE ...
AIRLINES ...
NUMBER OF ...
Objects
Horizontal Container
Vertical Container
Text
Extension
Ask Data
Data Story
Image
Blank
Workflow
Web Page
AIRLINES WITHIN THE COUNTRY
Airline ID | Name | Callsign
1 | Private flight | Null
415 | Aerojet de Costa Rica | S·A·
1406 | Balkan Bulgarian Airlines | Null
1509 | Bellview Airlines | Sierra Leone
1516 | BAX Global | Null
2080 | Electronic Data Systems | Null
2636 | Gulf African Airlines - Gambia | GULF AFRICAN
2649 | Guyana Airways 2000 | Null
2804 | ICAO | Null
3562 | Multiflight | YORKAIR
4051 | Princess Air | Null
Country
Null
Country (airports.csv)
(All)
NUMBER OF AIRPORTS
7,698
Active
(All)
N
Y
Active
N
Y
Data Source
country map with no. of airpo...
airlines within countries an...
airports at higher altitudes - ...
no. of airports and no. of fligh...
number of flights -countrywise
GLOBAL AIR TRANSPO
15 marks
15 rows by 1 column
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31°C Mostly cloudy
ENG
16:47
06-10-2023

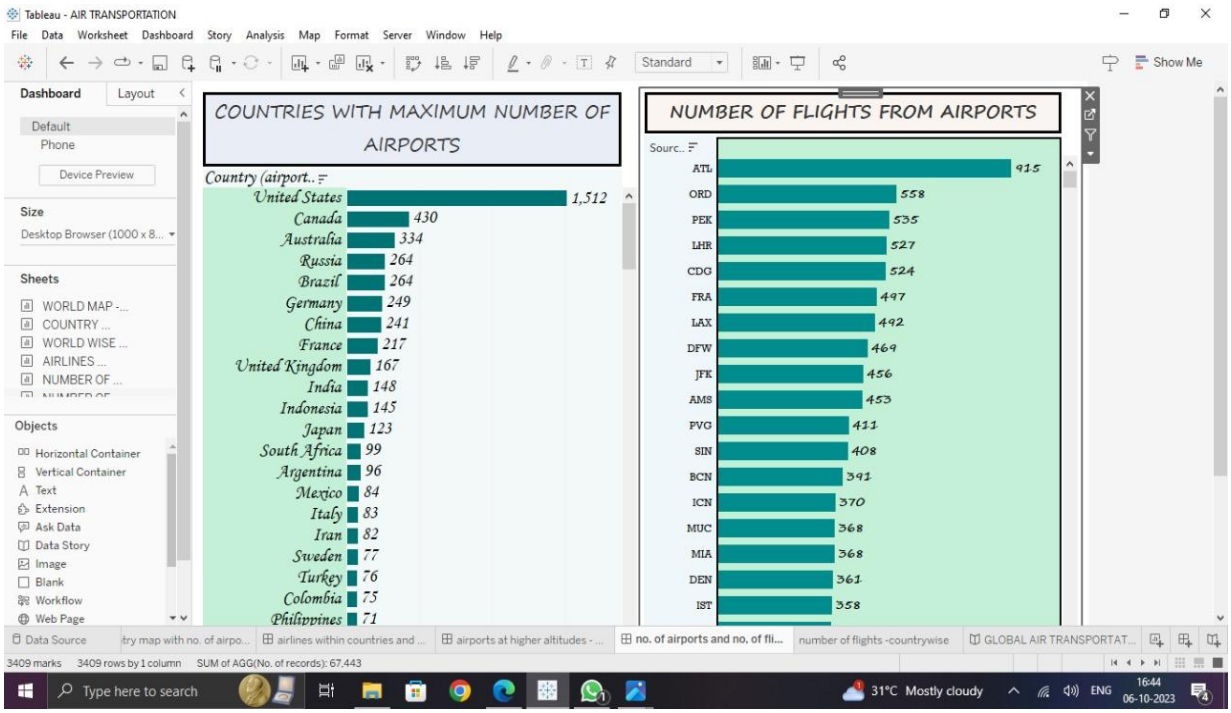
Tableau - AIR TRANSPORTATION
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Sheets
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WORLD WISE ...
AIRLINES ...
NUMBER OF ...
Objects
Horizontal Container
Vertical Container
Text
Extension
Ask Data
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Image
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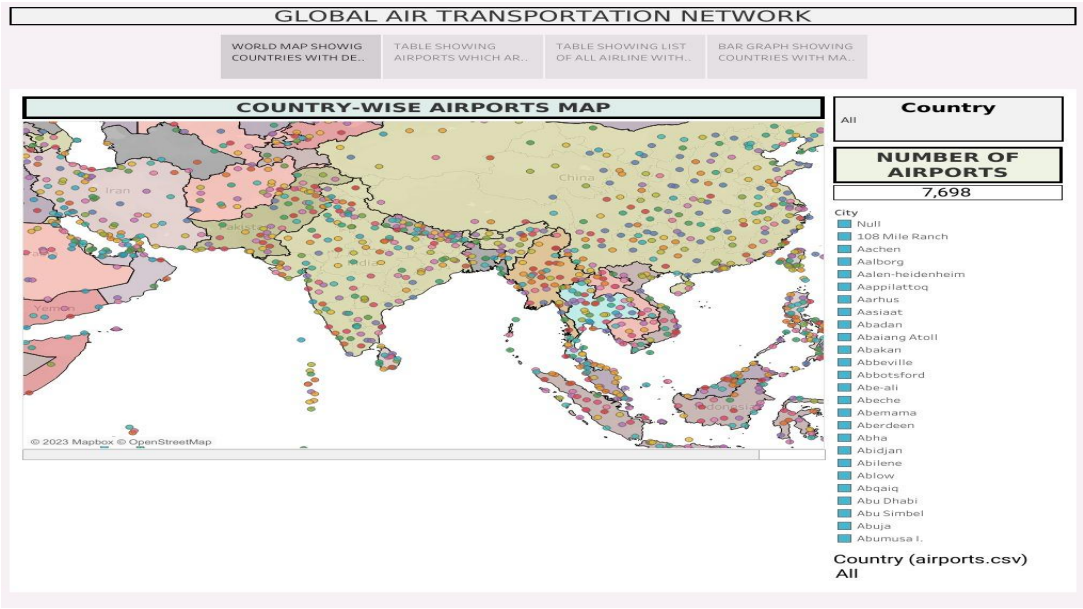
Workflow
Web Page
COUNTRIES WITH MAXIMUM NUMBER OF AIRPORTS
Country (airport...
United States 1,512
Canada 430
Australia 334
Russia 264
Brazil 264
Germany 249
China 241
France 217
United Kingdom 167
India 148
Indonesia 145
Japan 123
South Africa 99
Argentina 96
Mexico 84
Italy 83
Iran 82
Sweden 77
Turkey 76
Colombia 75
Philippines 71
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
Data Source
try map with no. of airpo...
airlines within countries and ...
airports at higher altitudes - ...
no. of airports and no. of fli...
number of flights -countrywise
GLOBAL AIR TRANSPORTAT...
3409 marks
3409 rows by 1 column
SUM of AGG(No. of records): 67,443
Type here to search
31°C Mostly cloudy
ENG
16:44
06-10-2023


GLOBAL AIR TRANSPORTATION NETWORK
WORLD MAP SHOWIG COUNTRIES WITH DE..
TABLE SHOWING AIRPORTS WHICH AR..
TABLE SHOWING LIST OF ALL AIRLINE WITH..
BAR GRAPH SHOWING COUNTRIES WITH MA..
COUNTRY-WISE AIRPORTS MAP
© 2023 Mapbox © OpenStreetMap
Country
All
NUMBER OF AIRPORTS
7,698
City
Null
108 Mile Ranch
Aachen
Aalborg
Aalen-heidenheim
Aappilattoq
Aarhus
Aasiaat
Abadan
Abaiang Atoll
Abakan
Abbeville
Abbotsford
Abe-ali
Abeche
Abemama
Aberdeen
Abha
Abidjan
Abilene
Ablow
Abqaiq
Abu Dhabi
Abu Simbel
Abuja
Abumusa I.
Country (airports.csv)
All

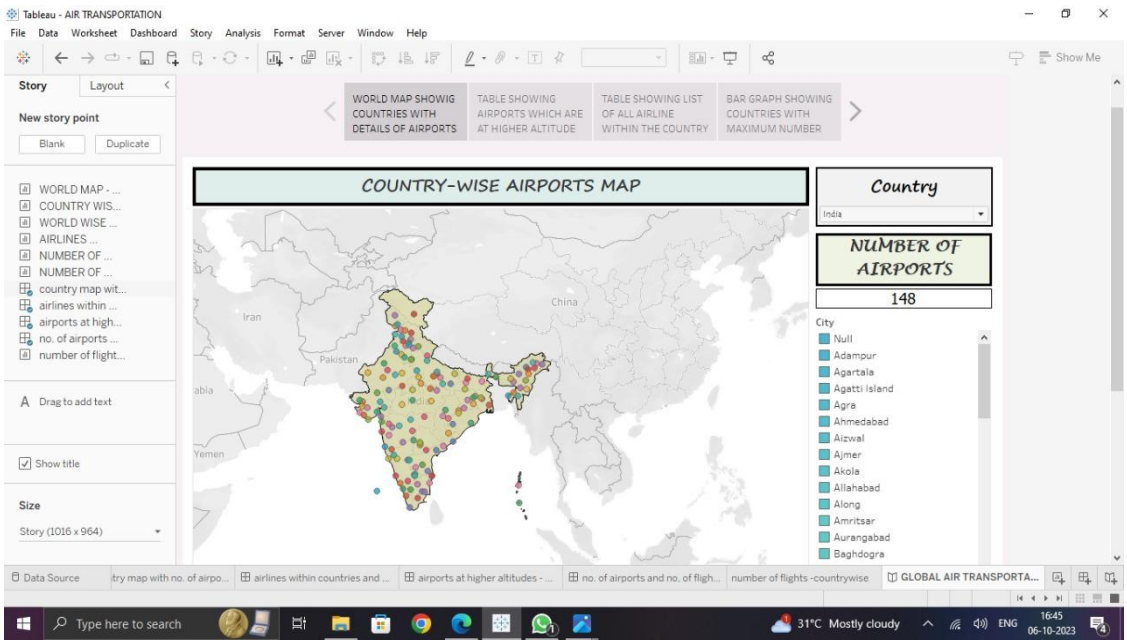


Tableau - AIR TRANSPORTATION
File Data Worksheet Dashboard Story Analysis Format Server Window Help
Show Me
Story
Layout
New story point
Blank
Duplicate
WORLD MAP - ...
COUNTRY WIS...
WORLD WISE ...
AIRLINES ...
NUMBER OF ...
NUMBER OF ...
country map wit...
airlines within ...
airports at high...
no. of airports ...
number of flight...
Drag to add text
Show title
Size
Story (1016 x 964)
WORLD MAP SHOWIG COUNTRIES WITH DETAILS OF AIRPORTS
TABLE SHOWING AIRPORTS WHICH ARE AT HIGHER ALTITUDE
TABLE SHOWING LIST OF ALL AIRLINE WITHIN THE COUNTRY
BAR GRAPH SHOWING COUNTRIES WITH MAXIMUM NUMBER
COUNTRY-WISE AIRPORTS MAP
Country
India
NUMBER OF AIRPORTS
148
City
Null
Adampur
Agartala
Agatti Island
Agra
Ahmedabad
Aizwal
Ajmer
Akola
Allahabad
Along
Amritsar
Aurangabad
Baghdogra
Data Source
airlines within countries and ...
airports at higher altitudes - ...
no. of airports and no. of fligh...
number of flights -countrywise
GLOBAL AIR TRANSPORTA...
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31°C Mostly cloudy
ENG
16:45
06-10-2023

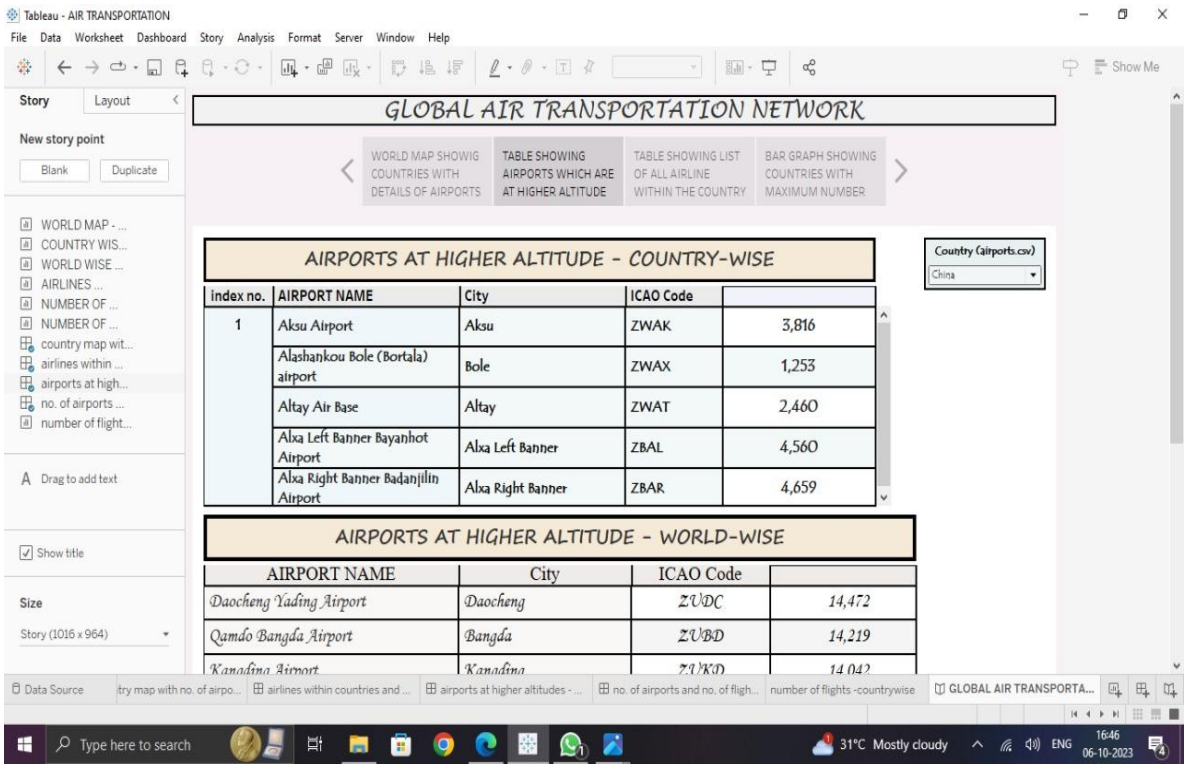
Tableau - AIR TRANSPORTATION
File Data Worksheet Dashboard Story Analysis Format Server Window Help
Story Layout
New story point
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AIRLINES ...
NUMBER OF ...
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airlines within ...
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no. of airports ...
number of flight...
Drag to add text
Show title
Size
Story (1016 x 964)
GLOBAL AIR TRANSPORTATION NETWORK
WORLD MAP SHOWIG COUNTRIES WITH DETAILS OF AIRPORTS
TABLE SHOWING AIRPORTS WHICH ARE AT HIGHER ALTITUDE
TABLE SHOWING LIST OF ALL AIRLINE WITHIN THE COUNTRY
BAR GRAPH SHOWING COUNTRIES WITH MAXIMUM NUMBER
AIRPORTS AT HIGHER ALTITUDE - COUNTRY-WISE
Country (airports.csv)
China
index no. AIRPORT NAME City ICAO Code
1 Aksu Airport Aksu ZWAK 3,816
Alashankou Bole (Bortala) airport Bole ZWAX 1,253
Altay Air Base Altay ZWAT 2,460
Alxa Left Banner Bayanhot Airport Alxa Left Banner ZBAL 4,560
Alxa Right Banner Badanjilin Airport Alxa Right Banner ZBAR 4,659
AIRPORTS AT HIGHER ALTITUDE - WORLD-WISE
AIRPORT NAME City ICAO Code
Daocheng Yading Airport Daocheng ZUDC 14,472
Qamdo Bangda Airport Bangda ZUBD 14,219
Kangding Airport Kangding ZUKD 14,042
Data Source
airports at higher altitudes - ...
no. of airports and no. of fligh...
number of flights -countrywise
GLOBAL AIR TRANSPORTA...
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31°C Mostly cloudy
ENG
16:46
06-10-2023

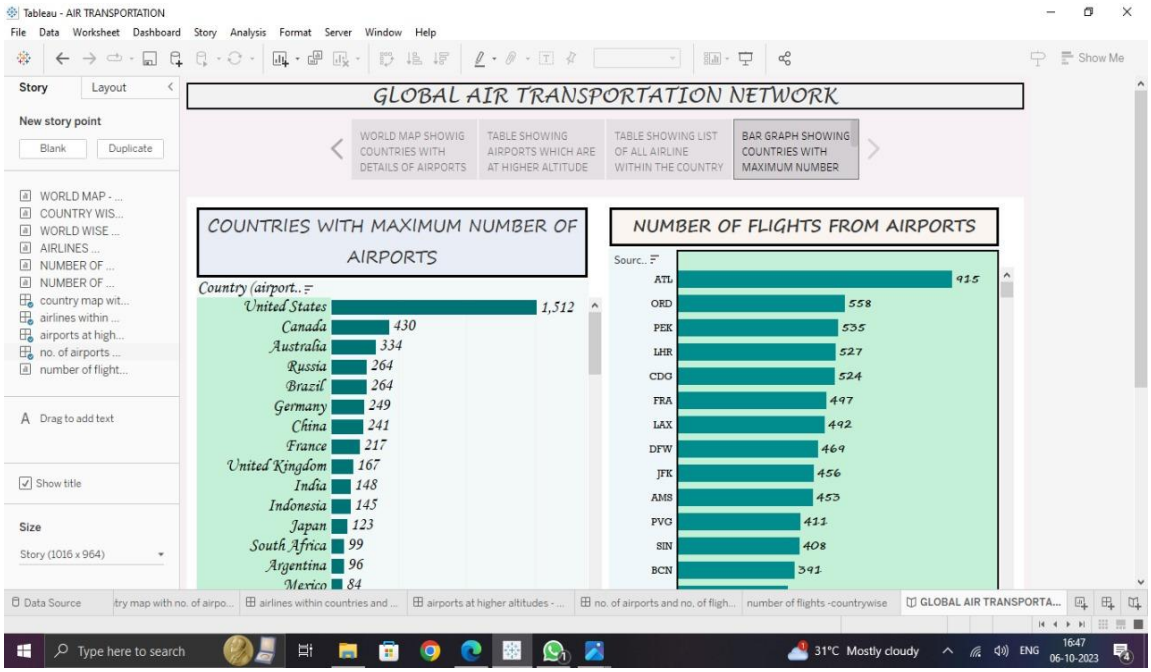
Tableau - AIR TRANSPORTATION
File Data Worksheet Dashboard Story Analysis Format Server Window Help
Story Layout
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WORLD MAP - ...
COUNTRY WIS...
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Size
Story (1016 x 964)
GLOBAL AIR TRANSPORTATION NETWORK
WORLD MAP SHOWIG COUNTRIES WITH DETAILS OF AIRPORTS
TABLE SHOWING AIRPORTS WHICH ARE AT HIGHER ALTITUDE
TABLE SHOWING LIST OF ALL AIRLINE WITHIN THE COUNTRY
BAR GRAPH SHOWING COUNTRIES WITH MAXIMUM NUMBER
COUNTRIES WITH MAXIMUM NUMBER OF AIRPORTS
Country (airport..
United States 1,512
Canada 430
Australia 334
Russia 264
Brazil 264
Germany 249
China 241
France 217
United Kingdom 167
India 148
Indonesia 145
Japan 123
South Africa 99
Argentina 96
Mexico 84
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
Data Source
airports at higher altitudes - ...
no. of airports and no. of fligh...
number of flights -countrywise
GLOBAL AIR TRANSPORTA...
Type here to search
31°C Mostly cloudy
ENG
16:47
06-10-2023

4. ADVANTAGES:

- Once a new dashboard is built, it never needs to be manually updated or maintained again.
- During bad weather,we can use these dataset to analyse planned schedule for the affected period and identify airlines operating multiple flights to/from the same destination.
- Geospatial analysis of flight routes, airport locations, and passenger flows can help in optimizing routes, identifying high-traffic areas, and improving overall network efficiency.

DISADVANTAGE :

- Large datasets can sometimes lead to slower performance, requiring powerful hardware for optimal usage.
- Tableau licensong costs can be expensive for individual users or small businesses.
- The adoption of new technologies like automation and sustainable aviation fuels also presents hurdles.

5. APPLICATIONS:

*Route optimization:

These visualizations can help identify routes with high demand and potential for expansion.

*Air traffic management:

Air traffic control organizations can create dashboards to monitor and manage air traffic, including real-time tracking of flights, airspace utilization, and congestion management.

*Infrastructure planning:

Not all regions have easy access to airports or affordable air travel, which can exacerbate disparities in economic development and mobility.We can use these geomap to build better infrastructure in remote area.

*Safety analysis:

These visualizations can analyze safety records, incidents, and accident data. Dataset helps identify safety trends, assess risk factors, and implement safety measures.

6. CONCLUSION:

The global air transportation network is a critical infrastructure with high impact on mobility.By these data visualisation we can be used to strategic decision-making, optimization, and improving the efficiency of the aviation industry. This will make a valuable tool for shaping the future of air travel.

7. FUTURE SCOPE:

The future of using Tableau for insights into the global air transportation network will likely involve increased automation, real-time decision-making, a strong focus on sustainability and safety, and the integration of advanced technologies to unlock deeper insights from aviation data. Analyzing flight data can lead to better on-time performance and resource allocation.Continuous improvements in flight data analysis can lead to better operational efficiency, from on-time performance to baggage handling.Integration with IoT sensors and AI can enable predictive maintenance for aircraft.Staying informed about Tableau's updates and industry trends will be essential to fully leverage these evolving capabilities.