PROJECT REPORT

1.Introduction

1.1 Overview

Unlocking insights into the global air transportation network using Tableau. This project involves analyzing and visualizing data related to the worldwide air transportation system to gain valuable insights and understand its patterns, trends, and dynamics.

Tableau, a powerful data visualization tool, will play a key role in this project. By utilizing the various features of Tableau,it is able to create insightful visualizations and dashboards that provide a comprehensive view of the global air transportation network. These visualizations can include data on flight routes, airports, passenger,airlines, and more.

It helps us to uncover hidden patterns, understand the connectivity between airports and regions, identify major hubs. This can involve examining data on flight frequencies, connectivity, flight durations, passenger demand, and airline performance.

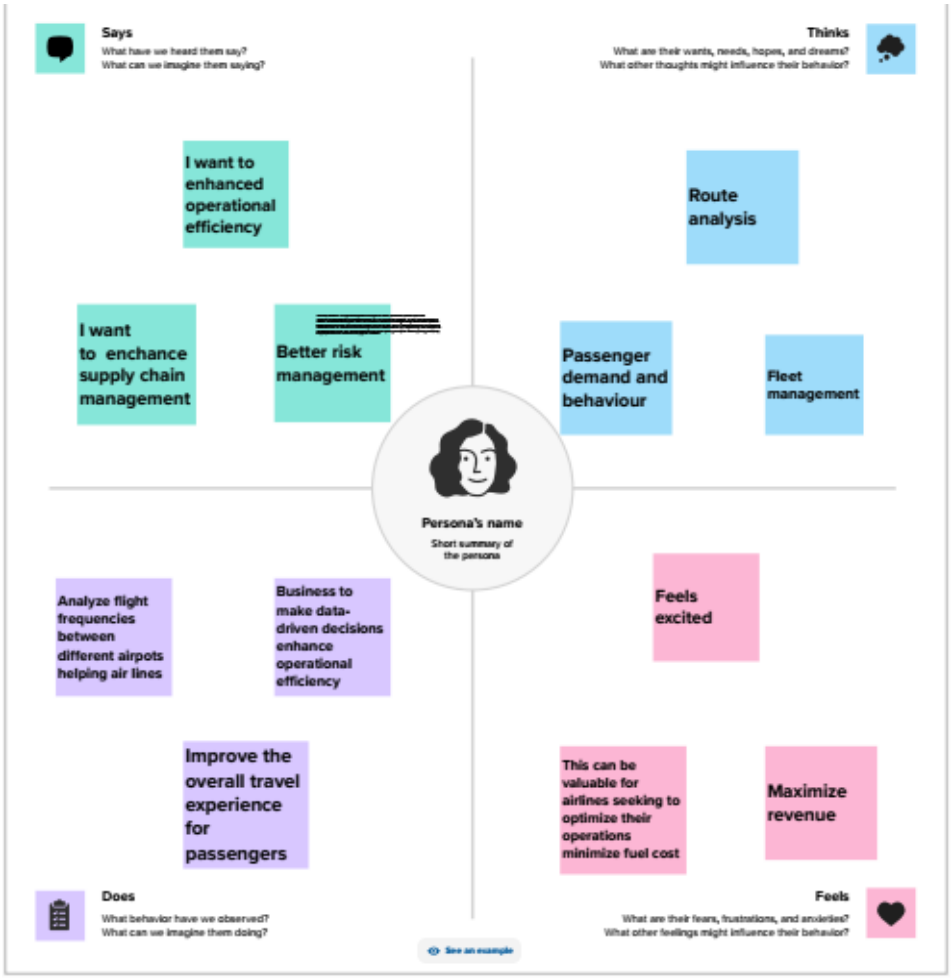
1.2 Purpose

With these insights, you can make informed decisions and recommendations about optimizing air transportation networks, identifying potential areas for growth or improvements, assessing the impact of external factor

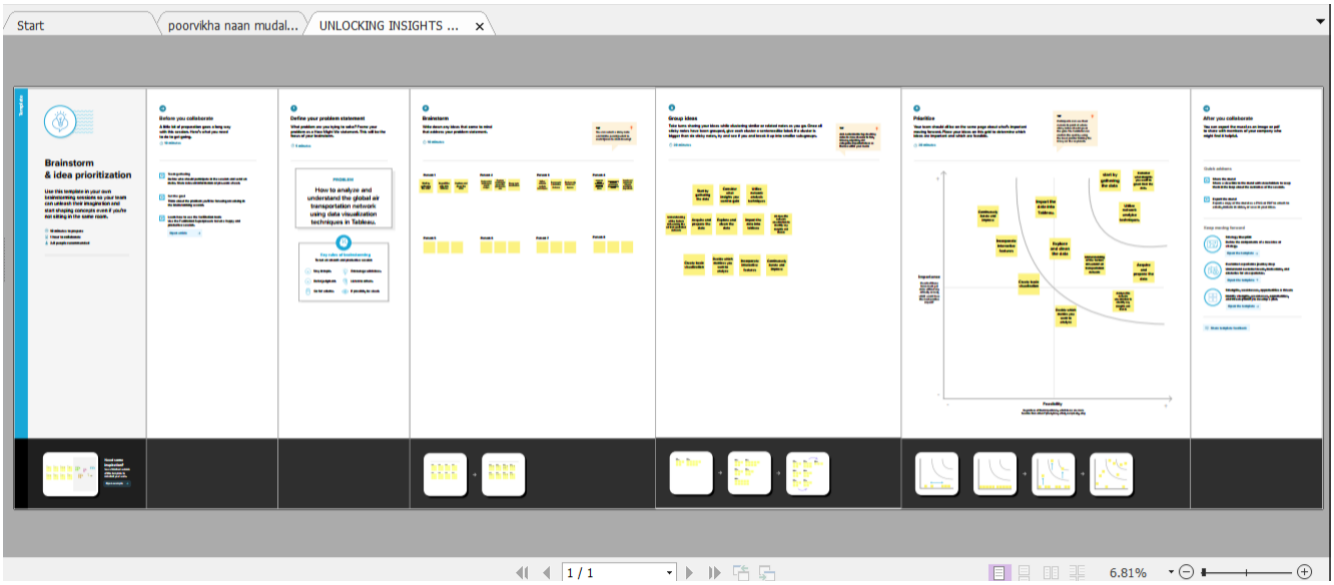
By leveraging Tableau's capabilities, we'll be able to visually communicate these insights effectively, making it easier for stakeholders, such as aviation professionals, , to understand the complex interactions within the global air transportation network.

2.Problems definition and design thinking

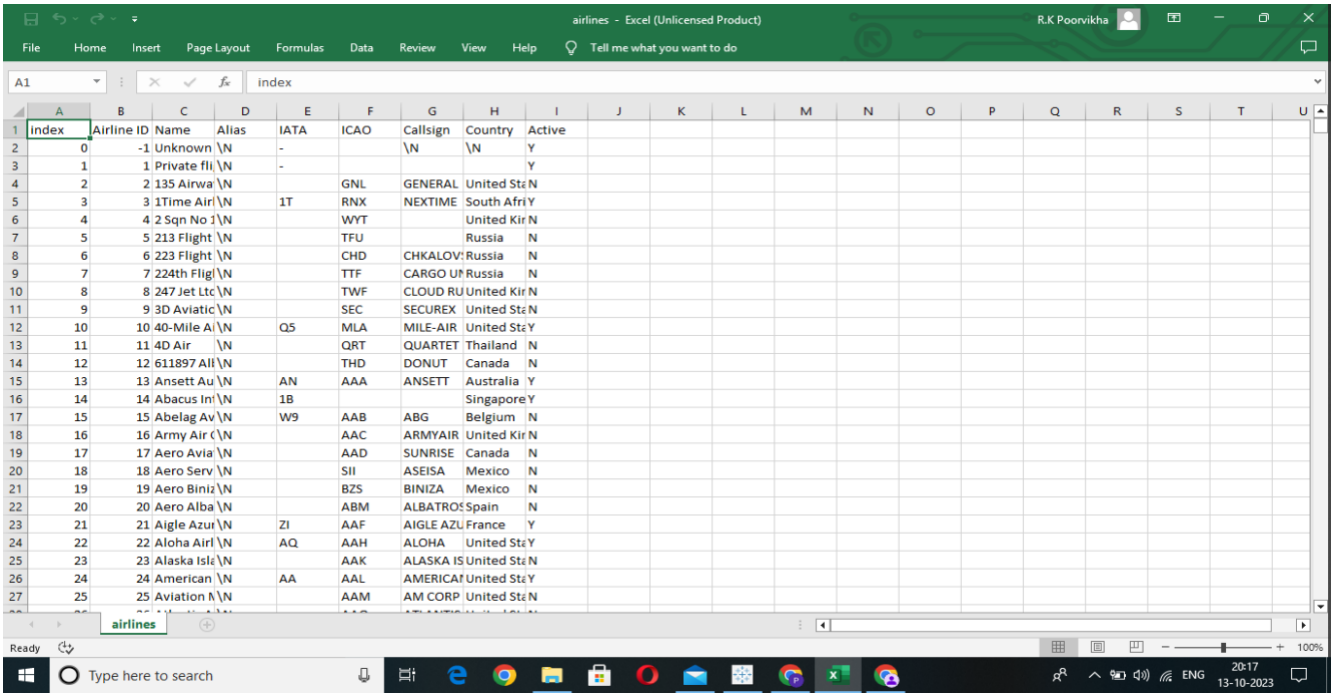
2.1 Empathy Map



2.2 Ideation and brainstorming map



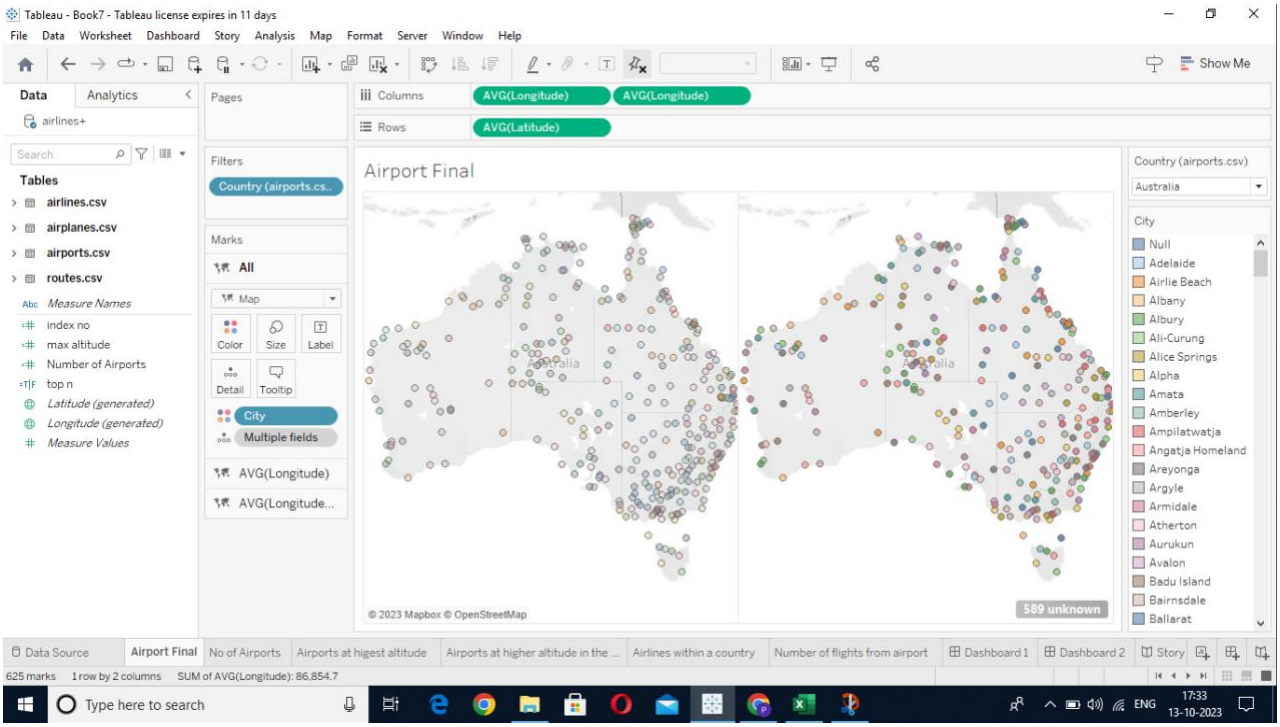
3.Dataset



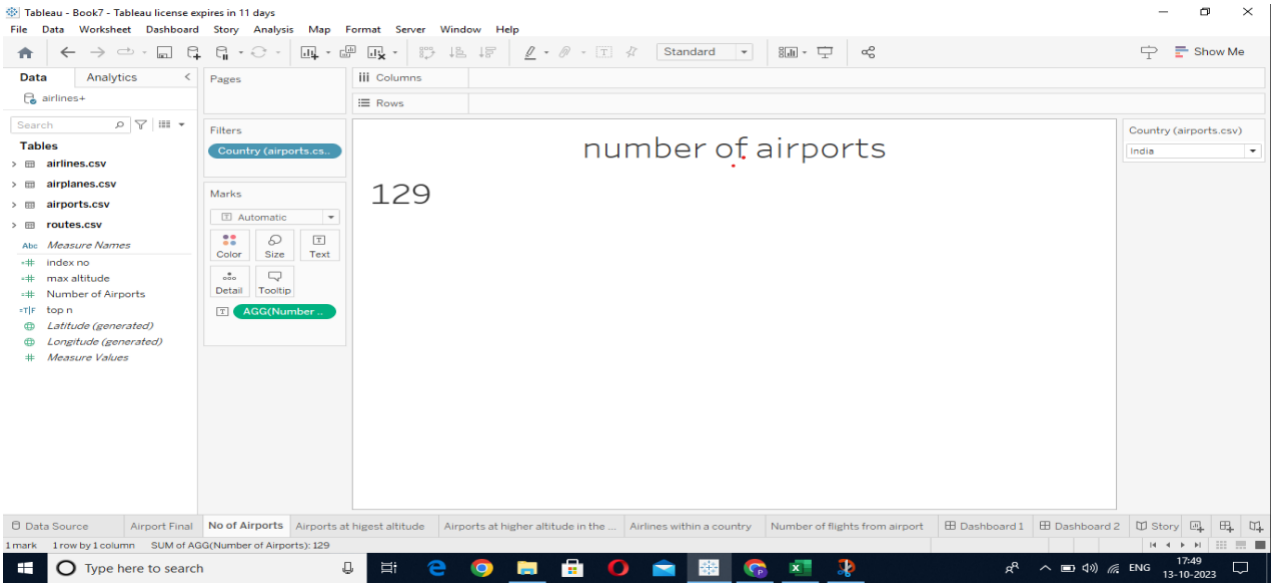
index	Airline ID	Name	Alias	IATA	ICAO	Callsign	Country	Active
0	-1	Unknown	\N	-		\N	\N	Y
1	1	Private fli	\N	-				Y
2	2	135 Airwa	\N		GNL	GENERAL	United Sta	N
3	3	1Time Airl	\N	1T	RNX	NEXTIME	South Afri	Y
4	4	2 Sqn No 1	\N		WYT		United Kir	N
5	5	213 Flight	\N		TFU		Russia	N
6	6	223 Flight	\N		CHD	CHKALOV	Russia	N
7	7	224th Flig	\N		TTF	CARGO UI	Russia	N
8	8	247 Jet Ltc	\N		TWF	CLOUD RU	United Kir	N
9	9	3D Aviatic	\N		SEC	SECUREX	United Sta	N
10	10	40-Mile Ai	\N	Q5	MLA	MILE-AIR	United Sta	Y
11	11	4D Air	\N		QRT	QUARTET	Thailand	N
12	12	611897 Alt	\N		THD	DONUT	Canada	N
13	13	Ansett Au	\N	AN	AAA	ANSETT	Australia	Y
14	14	Abacus Int	\N	1B			Singapore	Y
15	15	Abelag Av	\N	W9	AAB	ABG	Belgium	N
16	16	Army Air C	\N		AAC	ARMYAIR	United Kir	N
17	17	Aero Avia	\N		AAD	SUNRISE	Canada	N
18	18	Aero Serv	\N		SII	ASEISA	Mexico	N
19	19	Aero Biniz	\N		BZS	BINIZA	Mexico	N
20	20	Aero Alba	\N		ABM	ALBATROS	Spain	N
21	21	Aigle Azur	\N	ZI	AAF	AIGLE AZU	France	Y
22	22	Aloha Airl	\N	AQ	AAH	ALOHA	United Sta	Y
23	23	Alaska Isla	\N		AAK	ALASKA IS	United Sta	N
24	24	American	\N	AA	AAL	AMERICAI	United Sta	Y
25	25	Aviation M	\N		AAM	AM CORP	United Sta	N

4.Visulalizations

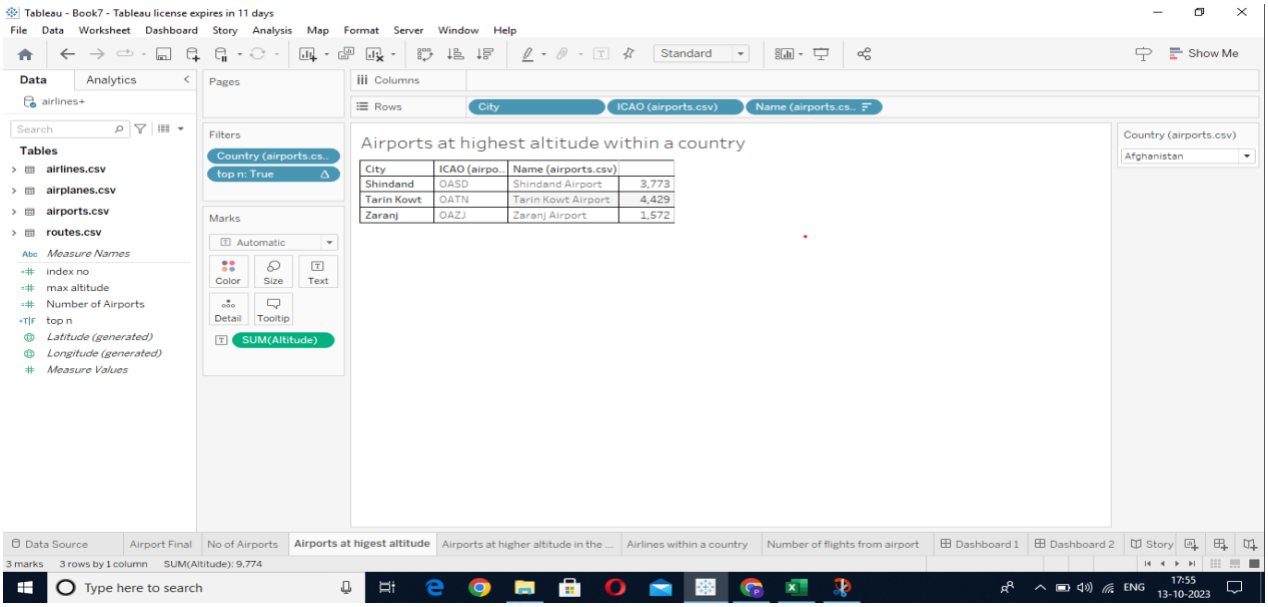
4.1 Airport Final



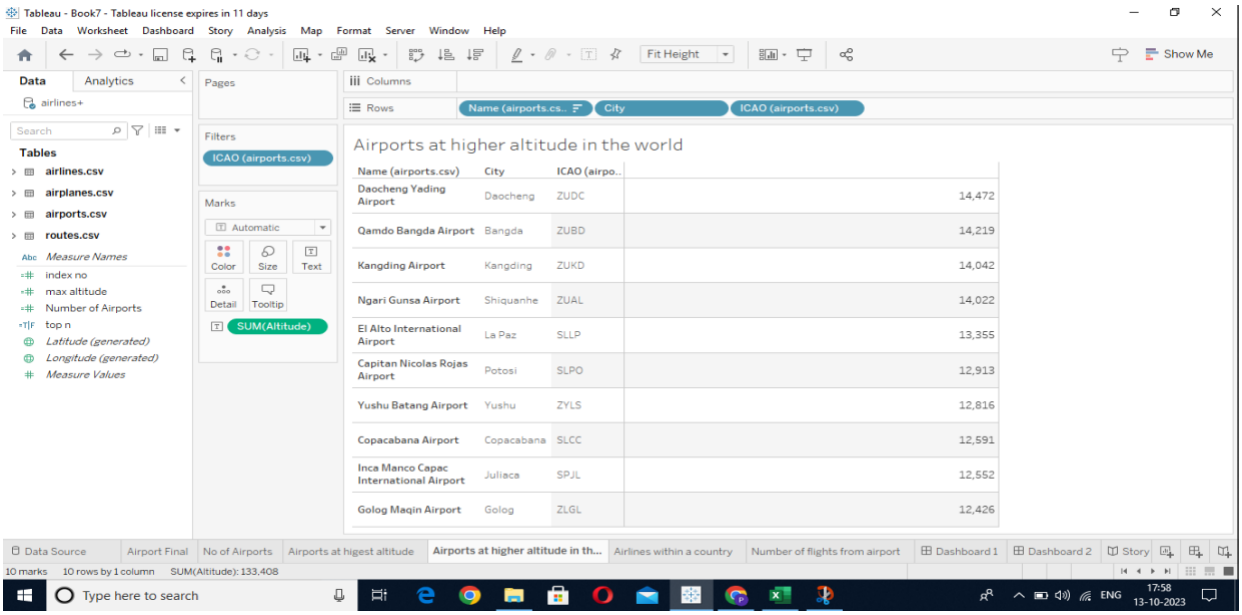
4.2 Number of Airports



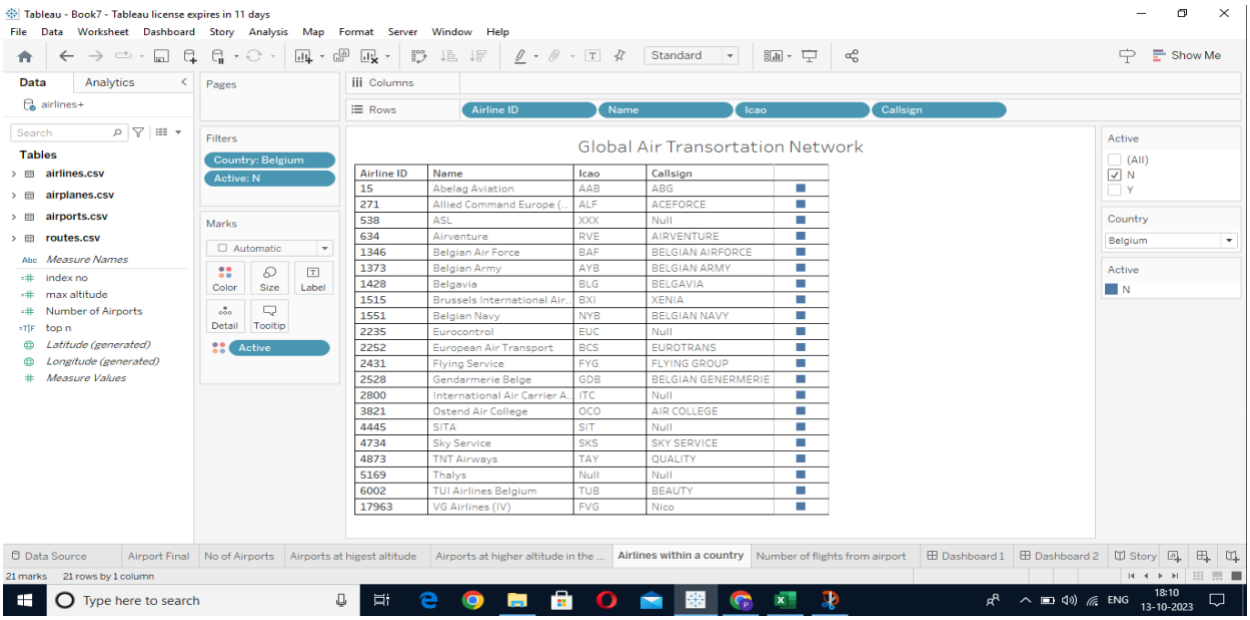
4.3 Airports at higher altitude within a Country



4.4 Airports at higher altitude in the World

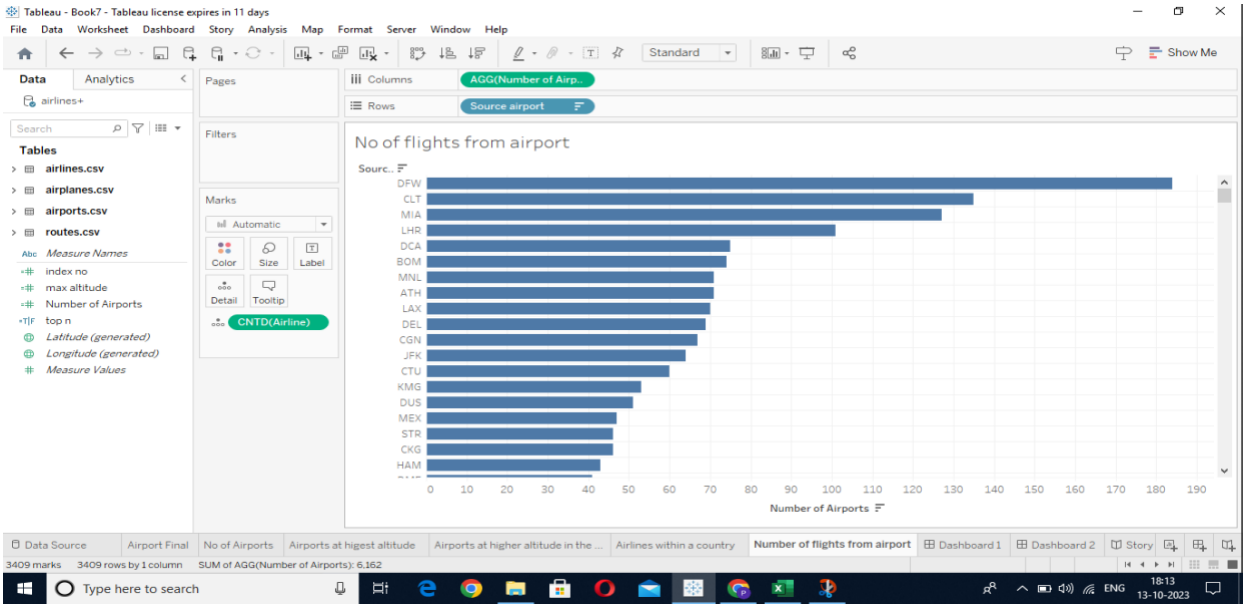


4.5 Airlines within a Country

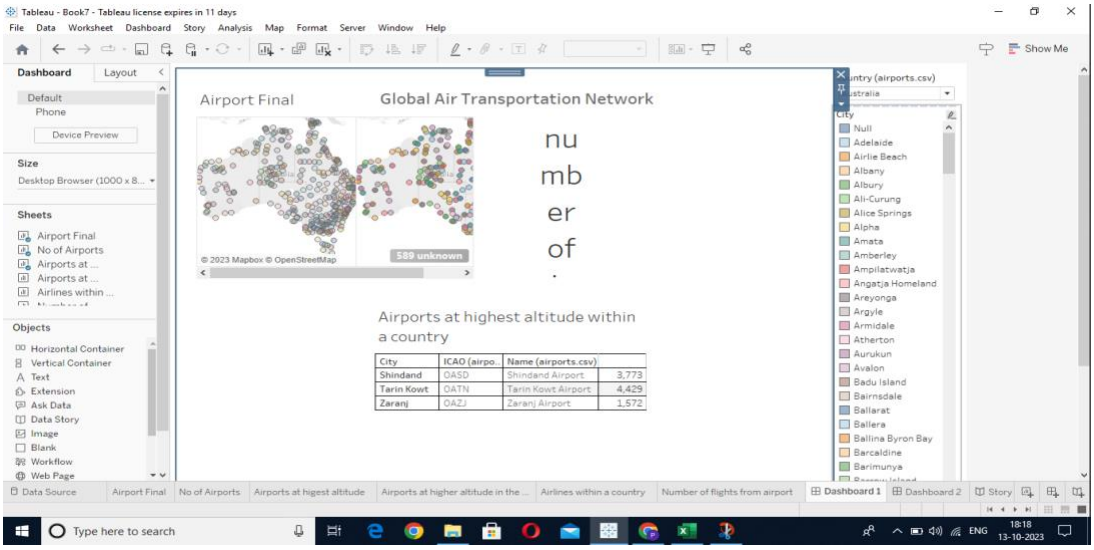


Airline ID	Name	Icao	Callsign
15	Abelag Aviation	AAB	ABG
271	Allied Command Europe (...	ALF	ACEFORCE
538	ASL	XXX	Null
634	Airventure	RVE	AIRVENTURE
1346	Belgian Air Force	BAF	BELGIAN AIRFORCE
1373	Belgian Army	AYB	BELGIAN ARMY
1428	Belgavia	BLG	BELGAVIA
1515	Brussels International Air...	BXI	XENIA
1551	Belgian Navy	NYB	BELGIAN NAVY
2235	Eurocontrol	EUC	Null
2252	European Air Transport	BCS	EUROTRANS
2431	Flying Service	FYG	FLYING GROUP
2528	Gendarmerie Belge	GDB	BELGIAN GENERMERIE
2800	International Air Carrier A...	ITC	Null
3821	Ostend Air College	OCO	AIR COLLEGE
4445	SITA	SIT	Null
4734	Sky Service	SKS	SKY SERVICE
4873	TNT Airways	TAY	QUALITY
5169	Thalys	Null	Null
6002	TUI Airlines Belgium	TUB	BEAUTY
17963	VG Airlines (IV)	FVG	Nico

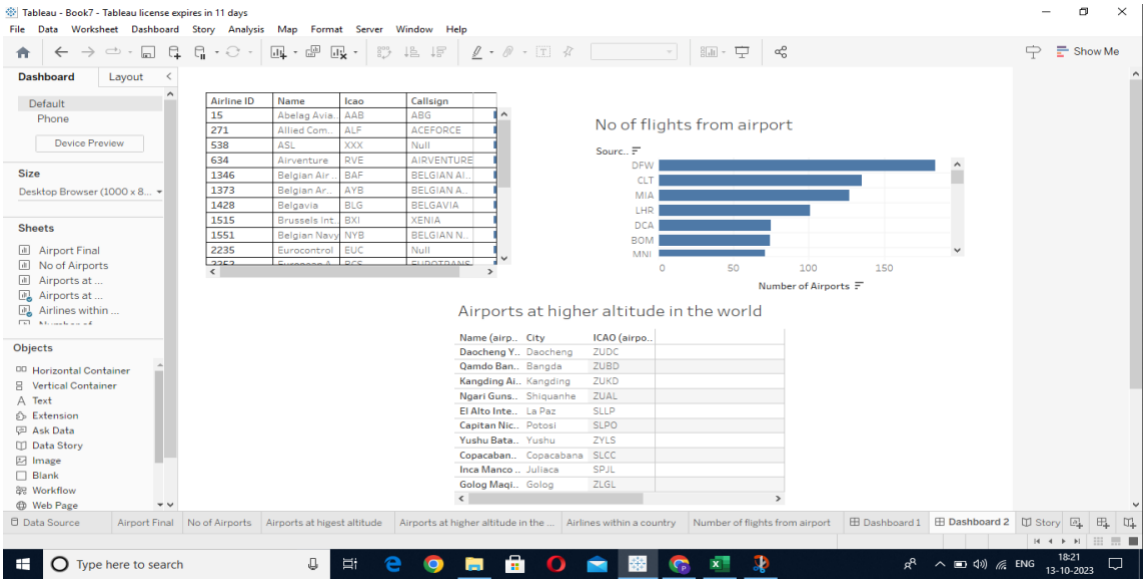
4.6 Number of flights from the Airports



5. Dashboard 1



Dashboard 2



5.2 Story

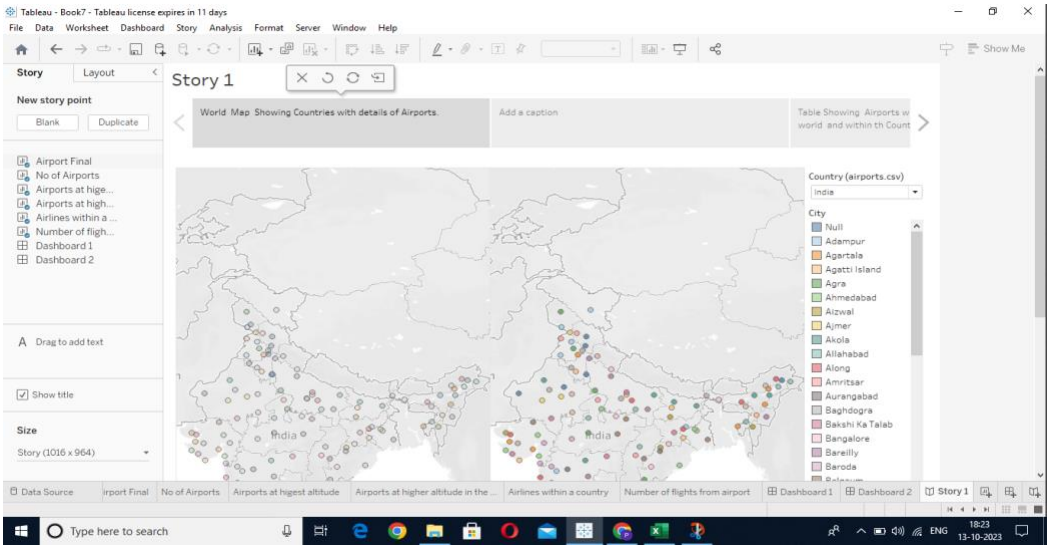


Tableau - Book7 - Tableau license expires in 11 days
File Data Worksheet Dashboard Story Analysis Format Server Window Help
Story
Layout
New story point
Blank
Duplicate
Story 1
World Map Showing Countries with details of Airports.
Add a caption
Airport Final
No of Airports
Airports at hige...
Airports at high...
Airlines within a ...
Number of figh...
Dashboard 1
Dashboard 2
Drag to add text
Show title
Size
Story (1016 x 964)
Country (airports.csv)
india
City
Null
Adampur
Agartala
Agatti Island
Agra
Ahmedabad
Aizwal
Ajmer
Akola
Allahabad
Along
Amritsar
Aurangabad
Baghdogra
Bakshi Ka Talab
Bangalore
Bareilly
Baroda
India
Data Source
No of Airports
Dashboard 1
Dashboard 2
Story 1
Type here to search
ENG
18:23
13-10-2023

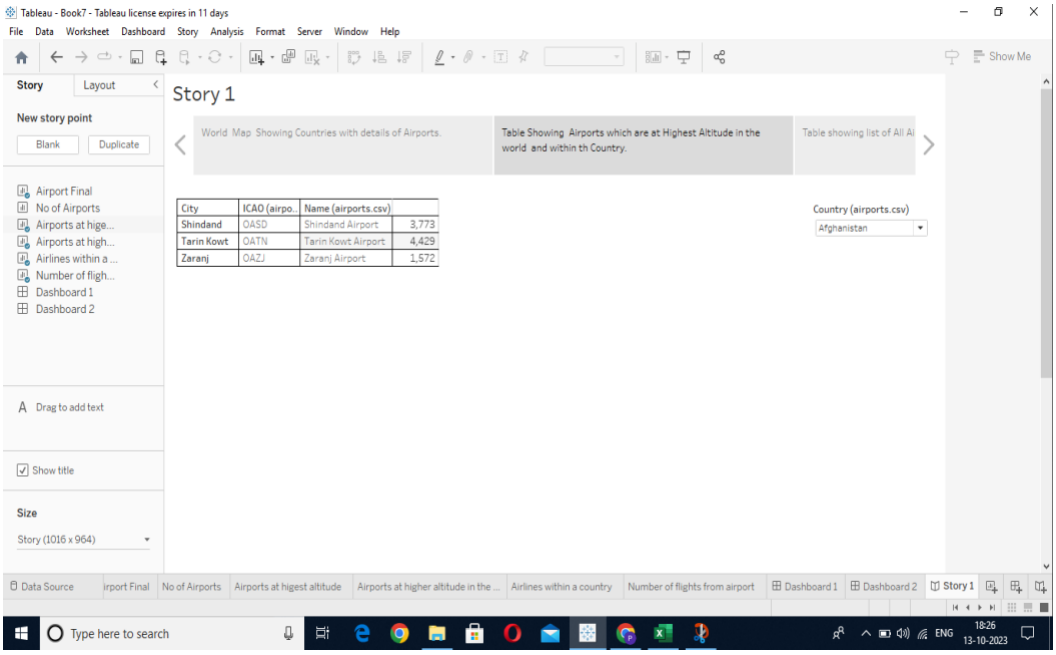


Tableau - Book7 - Tableau license expires in 11 days
File Data Worksheet Dashboard Story Analysis Format Server Window Help
Story
Layout
New story point
Blank
Duplicate
Story 1
World Map Showing Countries with details of Airports.
Table Showing Airports which are at Highest Altitude in the world and within th Country.
City
ICAO (airpo..
Name (airports.csv)
Shindand
OASD
Shindand Airport
3,773
Tarin Kowt
OATN
Tarin Kowt Airport
4,429
Zaranj
OAZJ
Zaranj Airport
1,572
Country (airports.csv)
Afghanistan
Airport Final
No of Airports
Airports at hige...
Airports at high...
Airlines within a ...
Number of figh...
Dashboard 1
Dashboard 2
Drag to add text
Show title
Size
Story (1016 x 964)
Data Source
No of Airports
Dashboard 1
Dashboard 2
Story 1
Type here to search
ENG
18:26
13-10-2023

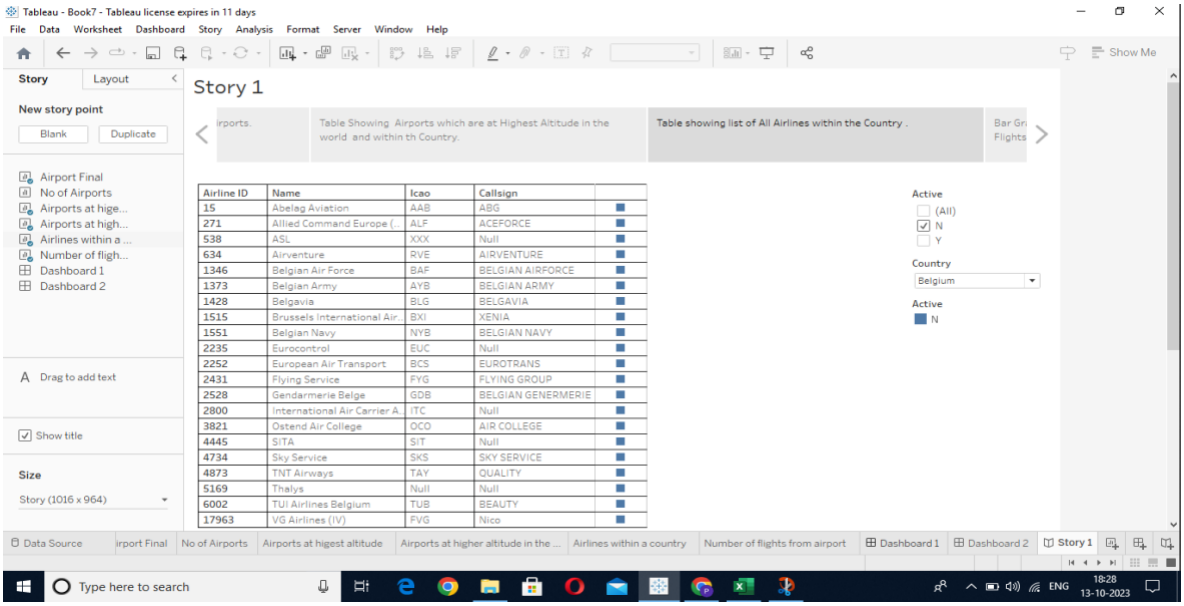


Tableau - Book7 - Tableau license expires in 11 days
File Data Worksheet Dashboard Story Analysis Format Server Window Help
Show Me
Story Layout
New story point
Blank Duplicate
Airport Final
No of Airports
Airports at hige...
Airports at high...
Airlines within a ...
Number of fligh...
Dashboard 1
Dashboard 2
Drag to add text
Show title
Size
Story (1016 x 964)
Story 1
Table Showing Airports which are at Highest Altitude in the world and within th Country.
Table showing list of All Airlines within the Country .
Airline ID | Name | Icao | Callsign
15 | Abelag Aviation | ABG | ABG
271 | Allied Command Europe (... | ALF | ACEFORCE
538 | ASL | XXX | Null
634 | Airventure | RVE | AIRVENTURE
1346 | Belgian Air Force | BAF | BELGIAN AIRFORCE
1373 | Belgian Army | AYB | BELGIAN ARMY
1428 | Belgavia | BLG | BELGAVIA
1515 | Brussels International Air... | BXI | XENIA
1551 | Belgian Navy | NYB | BELGIAN NAVY
2235 | Eurocontrol | EUC | Null
2252 | European Air Transport | BCS | EUROTRANS
2431 | Flying Service | FYG | FLYING GROUP
2528 | Gendarmerie Belge | GDB | BELGIAN GENERMERIE
2800 | International Air Carrier A... | ITC | Null
3821 | Ostend Air College | OCO | AIR COLLEGE
4445 | SITA | SIT | Null
4734 | Sky Service | SKS | SKY SERVICE
4873 | TNT Airways | TAY | QUALITY
5169 | Thalys | Null | Null
6002 | TUI Airlines Belgium | TUB | BEAUTY
17963 | VG Airlines (IV) | FVG | Nico
Active
(All)
N
Y
Country
Belgium
Active
N
Data Source
No of Airports
Airports at higest altitude
Airlines within a country
Number of flights from airport
Dashboard 1
Dashboard 2
Story 1
Type here to search
ENG
18:28
13-10-2023

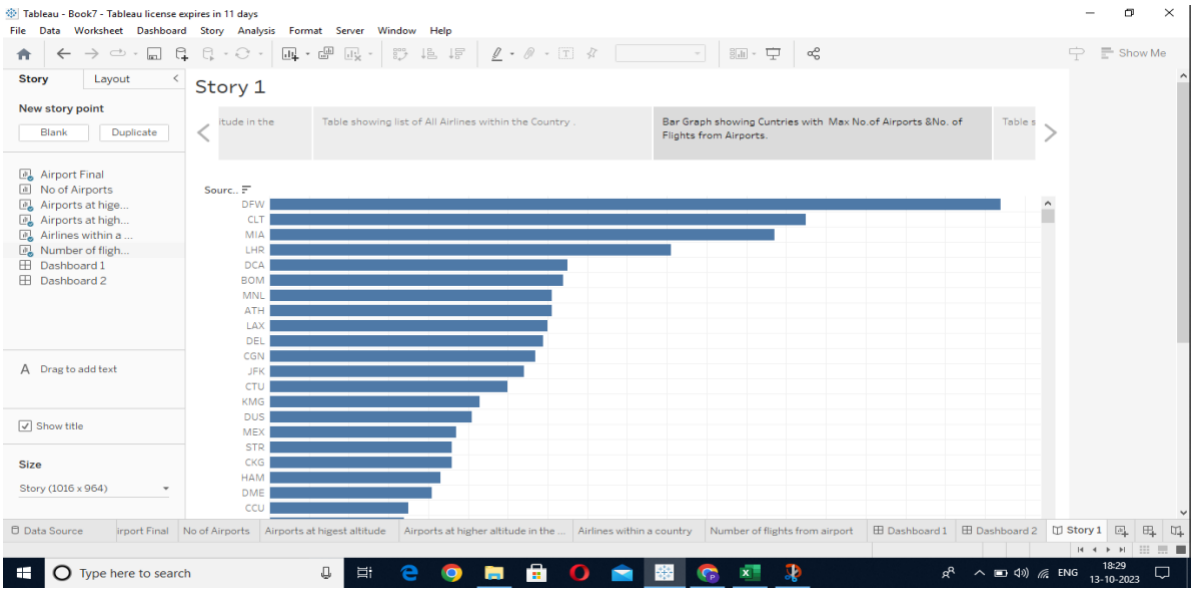
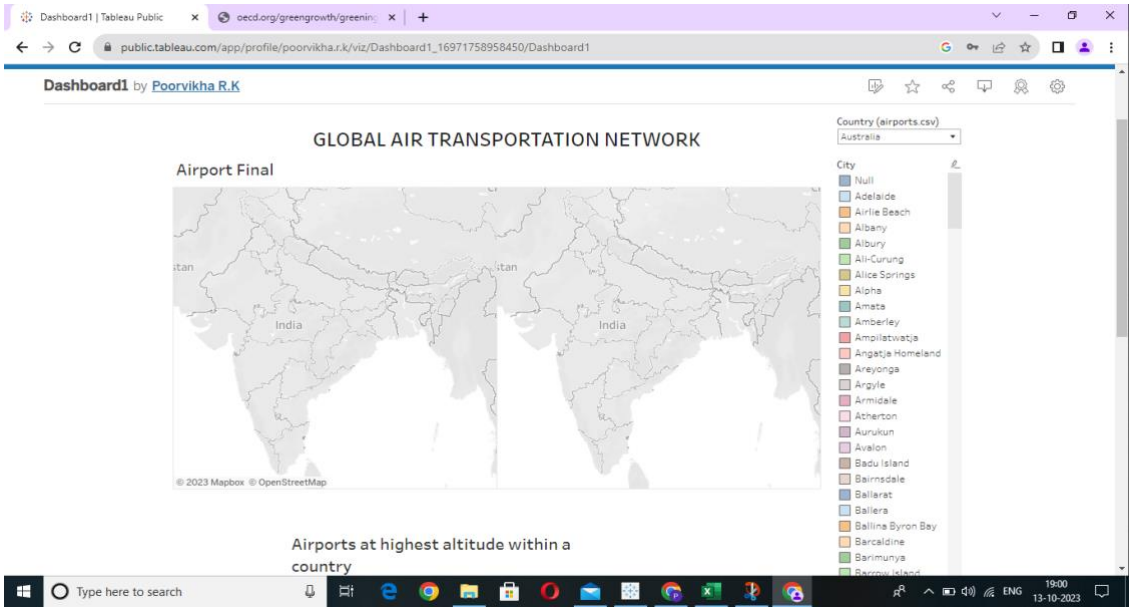


Tableau - Book7 - Tableau license expires in 11 days
File Data Worksheet Dashboard Story Analysis Format Server Window Help
Show Me
Story Layout
New story point
Blank Duplicate
Airport Final
No of Airports
Airports at hige...
Airports at high...
Airlines within a ...
Number of fligh...
Dashboard 1
Dashboard 2
Drag to add text
Show title
Size
Story (1016 x 964)
Story 1
Table showing list of All Airlines within the Country .
Bar Graph showing Cuntries with Max No.of Airports &No. of Flights from Airports.
Sourc..
DFW
CLT
MIA
LHR
DCA
BOM
MNL
ATH
LAX
DEL
CGN
JFK
CTU
KMG
DUS
MEX
STR
CKG
HAM
DME
CCU
Data Source
No of Airports
Airports at higest altitude
Airlines within a country
Number of flights from airport
Dashboard 1
Dashboard 2
Story 1
Type here to search
ENG
18:29
13-10-2023

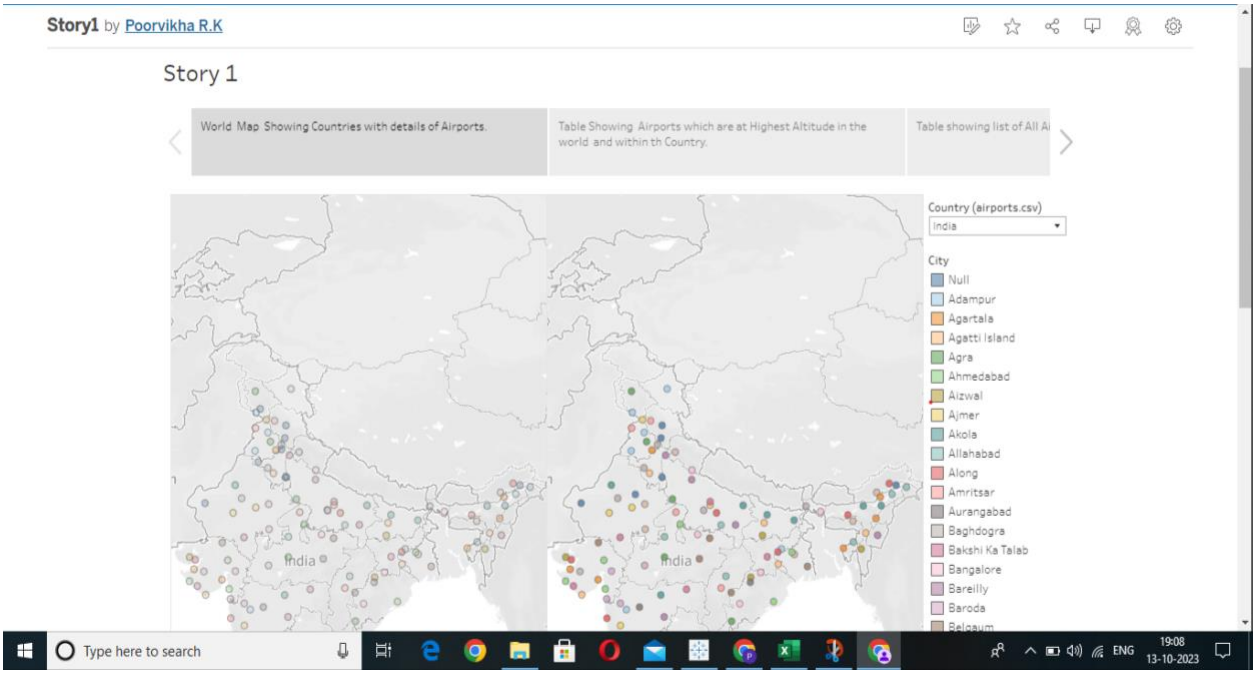
6.Publications in tableau public

6.1 Publication of dashboard1



6.2 Publication of dashboard 2

6.3 Publication of Story



7.Advantages and Disadvantages

Advantages

- Visualize and analyze flight patterns: Tableau's data visualization capabilities allow you to create interactive dashboards and visual representations of flight routes and patterns. This can help identify popular travel routes, busiest airports, and potential bottlenecks in the air transportation system.
- Enhance safety and security: By analyzing data on incidents and accidents, airlines, regulators, and airports can identify patterns and take proactive measures to enhance safety and security measures. This can include adjusting flight paths, optimizing security screening processes, and identifying potential risks.
- Inform policy and decision-making: Governments and regulatory bodies can use Tableau projects to analyze data on air transportation networks to inform policy and decision-making. This can include infrastructure planning, airspace management, and regulatory interventions to enhance overall system performance.
- Optimize flight operations: By analyzing data on flight delays, cancellations, and diversions, you can identify patterns and root causes. With these insights, airlines can optimize their operations, improve on-time performance, and minimize disruptions to passengers.

Disadvantages

- Data limitations: Access to comprehensive and accurate data is crucial for generating meaningful insights. However, there may be limitations in the availability, quality, and consistency of the data, which can impact the accuracy and reliability of the analysis.g
- Complexity of data integration: Integrating data from different sources, such as airlines, airports, and regulatory bodies, can be a complex process. Data may have different formats, structures, and standards, requiring significant effort and resources to clean, transform, and integrate the data for analysis.
- Privacy and data security concerns: Air transportation data often contains sensitive information, such as passenger details and flight itineraries. Ensuring adequate security measures and compliance with privacy regulations is crucial to protect the privacy of individuals and prevent unauthorized access or misuse of the data.
- Ethical considerations: Using data insights to optimize operations or enhance revenue generation must be balanced with ethical considerations. For example, optimizing flight routes and schedules solely based on profitability may inadvertently neglect underserved or remote communities, which could have social and economic implications.

8.Applications

- Regulatory compliance:
  Tableau can assist regulatory bodies in monitoring and assessing compliance with safety regulations, security protocols, and environmental standards. By visualizing and analyzing data, regulators can identify areas of concern and implement appropriate measures
- Safety and maintenance:
  Analyzing data on incidents, accidents, and maintenance records can help airlines identify safety trends, assess aircraft performance, and plan maintenance schedules. Tableau helps visualize this information, enabling proactive decision-making and improving overall safety standards.
- Demand forecasting:
  Tableau's data visualization capabilities can help airlines predict passenger demand trends for specific routes, time periods, or destinations. This insight can aid in capacity planning, pricing strategies, and overall revenue management.

9.Conclusion

- In conclusion, the Unlocking Insights into Global Air Transportation Network with Tableau project has provided valuable insights into the patterns and dynamics of the global air transportation network. Through the use of Tableau, we were able to analyze and visualize vast amounts of data, allowing us to gain a deeper understanding of how flights are connected, the busiest airports, and the most popular flight routes.

- Tableau's visualizations played a crucial role in presenting the data in a clear and easily understandable manner. With interactive dashboards and visual representations, we were able to communicate complex information effectively, enabling stakeholders to make data-driven decisions.
- Overall, the Unlocking Insights into Global Air Transportation Network with Tableau project demonstrated the power of data analysis and visualization in understanding the intricacies of the global air transportation network. This knowledge can be leveraged by airlines, airports, and tourism industries to improve operations, enhance customer experience, and drive more efficient and sustainable travel around the world.

10.Future Scope

- Demand forecasting:

By analyzing historical data on flight routes, passenger numbers, and other relevant factors, airlines and airports can better forecast future demand. They can use this information to optimize their operations, allocate resources efficiently, and plan for growth or capacity adjustments.

- Route optimization:

Understanding the global air transportation network can help airlines identify new, underserved routes or determine the most efficient routes for their aircraft. This analysis can take into account factors such as traffic patterns, fuel consumption, and flight connectivity, allowing airlines to optimize their route networks to increase profitability and passenger satisfaction.