

PROJECT REPORT

1) INTRODUCTION

1.1 Overview:

- The project titled "Unlocking Insights into The Global Air Transportation Network with Tableau" is an initiative aimed at leveraging Tableau, a powerful data visualization and analytics tool, to gain a comprehensive understanding of the global air transportation network. This project involves the collection, analysis, and visualization of data related to air travel to uncover valuable insights and trends within the industry.
- The primary goal of the project is to gain actionable insights into the global air transportation network. This includes understanding factors such as routes, airlines, passenger traffic, and more to make data-driven decisions, improve efficiency, and enhance the overall air travel experience.
- Tableau is used to create interactive and informative data visualizations. Various charts, graphs, maps, and dashboards are designed to represent the data in a visually engaging manner. These visualizations make it easier for stakeholders to understand complex trends and patterns within the air transportation network.

The Project Aims to Uncover Valuable Insights Such As:

1. Busiest airports and routes.
2. Airlines with the best on-time performance.
3. Seasonal fluctuations in passenger traffic.
4. Impact of external factors (e.g., weather, economic conditions) on air travel.
5. Emerging market opportunities for airlines and airports.

1.2 Purpose:

- The primary purpose of this project is to leverage Tableau's powerful data visualization capabilities to create interactive and informative visualizations that provide a comprehensive view of the global air transportation network. This includes creating interactive dashboards, charts, maps, and graphs to make complex data more accessible and understandable for stakeholders.
- Understanding how airports are connected and which routes are most frequently traveled can help stakeholders, including airlines and airport authorities, optimize their infrastructure and services. This can lead to more efficient operations and improved customer experiences.
- The project can serve as a valuable resource for market research. By analyzing passenger demographics, destinations, and travel preferences, businesses can make informed decisions about market entry, pricing strategies, and marketing campaigns.
- Understanding the global air transportation network is crucial for emergency response and crisis management. The project can provide insights into how quickly and efficiently resources can be mobilized in the event of natural disasters, pandemics, or other crises.
- With a focus on sustainability, the project can assess the environmental impact of global air travel. By analyzing data on flight distances, fuel consumption, and emissions, it can provide insights into the aviation industry's contribution to carbon emissions and help identify areas for improvement.
- By analyzing passenger data, the project can help airlines and airports enhance the overall passenger experience. Insights into travel habits, preferences, and pain points can lead to improvements in services, facilities, and amenities.
- Government agencies and policymakers can use the project's insights to make informed decisions regarding aviation regulations, infrastructure investments, and safety measures.

2.PROBLEM DEFINATION &DESIGN THINKING

2.1 EMPHY MAP



2.2 IDEATION & BRAINSTORMING MAP

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions or your team. Can content that is original and that displays creative potential go beyond what is already in the same space.

- 1. 5 minutes warm-up
- 2. 10 minutes ideation
- 3. 20 minutes prioritization

Before you collaborate

At the start of your session, please share your ideas with the group. Please don't be too shy to go quiet.

1. 5 minutes

- 1. 5 minutes warm-up
- 2. 10 minutes ideation
- 3. 20 minutes prioritization

Define your problem statement

What problem are you trying to solve? Please use your problem statement to guide your brainstorming. This will be the focus of your session.

1. 5 minutes

How might we solve this problem?

Key values of your company

1. 5 minutes

2. 10 minutes

3. 20 minutes

Brainstorm

What are your ideas? Please write them down. Please use your problem statement to guide your brainstorming. This will be the focus of your session.

1. 5 minutes

2. 10 minutes

3. 20 minutes

Group ideas

Sort your ideas into groups. Please use your problem statement to guide your brainstorming. This will be the focus of your session.

1. 5 minutes

2. 10 minutes

3. 20 minutes

Prioritize

Sort your ideas into groups. Please use your problem statement to guide your brainstorming. This will be the focus of your session.

1. 5 minutes

2. 10 minutes

3. 20 minutes

After you collaborate

Sort your ideas into groups. Please use your problem statement to guide your brainstorming. This will be the focus of your session.

1. 5 minutes

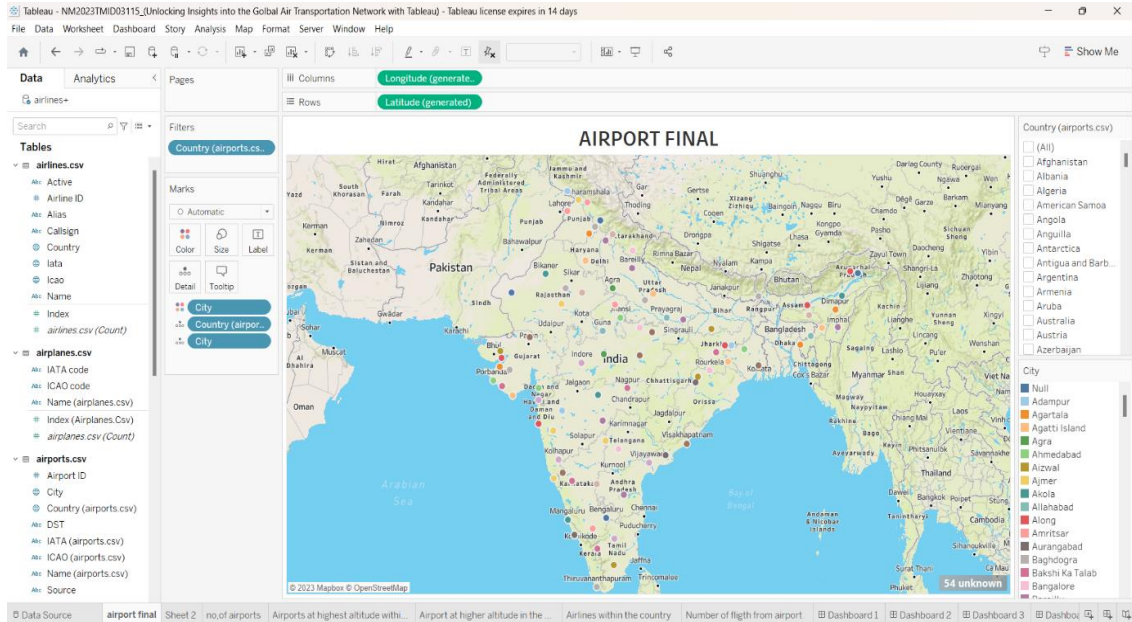
2. 10 minutes

3. 20 minutes

3.RESULT

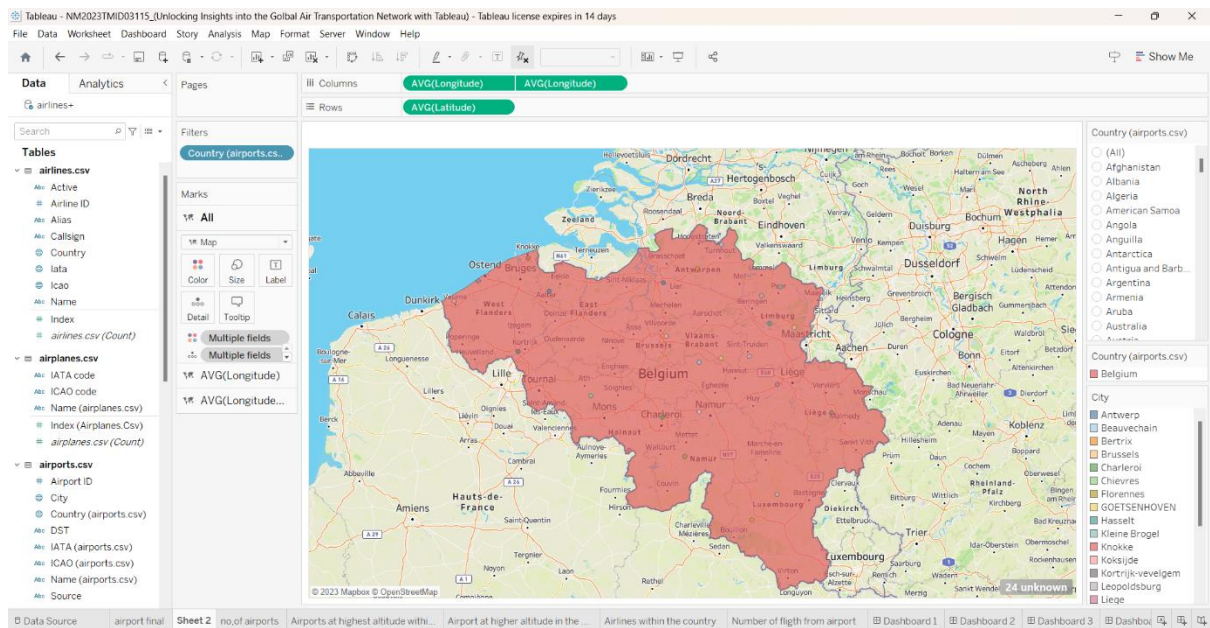
AIRPORT FINAL

In sheet -1 shows location of all airports at every places all over the world



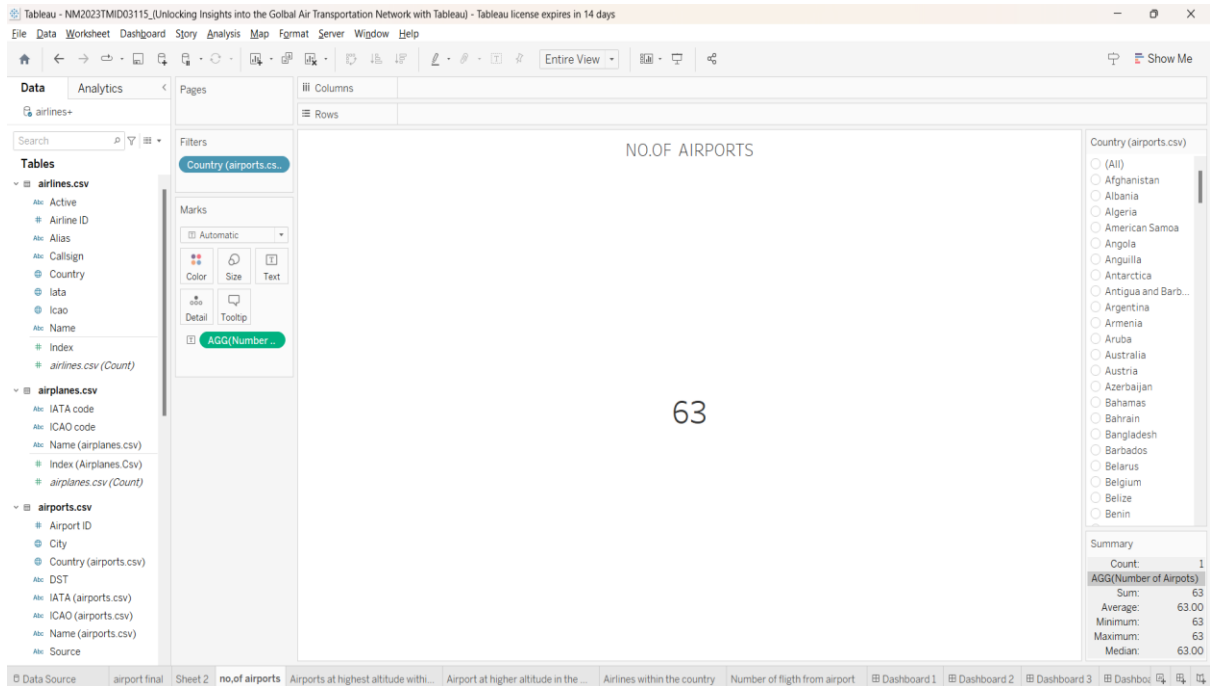
COUNTRIES HAVING AIRPORTS

The sheet-2 shows number of airports present in the individual country



NUMBER OF AIRPORTS

The sheet-3 shows total number of airports present in the country by entering the name of the country



AIRPORTS AT HIGHEST ALTITUDE WITHIN THE COUNTRY

The sheet -4 the airport which present in the highest altitude within the country

Tableau - NM2023TMD03115_(Unlocking Insights into the Global Air Transportation Network with Tableau) - Tableau license expires in 14 days

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Fit Width Show Me

Data Analytics Pages Columns Rows

AGG(index no) Name (airports.csv) City ICAO (airports.csv)

Country (airports.csv) top n: True

Country (airports.csv) Kazakhstan

Airports at highest altitude within a country

Index no	Name (airports.csv)	City	ICAO (airports.csv)	SUM(Altitude)
Null	Yubileyny Airfield	Baikonur	UAON	328
	Urzhar Airport	Urzhar	UASU	0
	Ekibastuz Airport	Ekibastuz	UASB	621

Country (airports.csv) Kazakhstan

airlines.csv

- Active
- Airline ID
- Alias
- Callsign
- Country
- Iata
- Icao
- Name
- Index
- airlines.csv (Count)

airplanes.csv

- IATA code
- ICAO code
- Name (airplanes.csv)
- Index (Airplanes.Csv)
- airplanes.csv (Count)

airports.csv

- Airport ID
- City
- Country (airports.csv)
- DST
- IATA (airports.csv)
- ICAO (airports.csv)
- Name (airports.csv)
- Source

Data Source airport final Sheet 2 no. of airports Airports at highest altitude wit... Airport at higher altitude in the ... Airlines within the country Number of flight from airport Dashboard 1 Dashboard 2 Dashboard 3 Dashbo

AIRPORTS IN THE HIGHEST ALTITUDE WITHIN THE WORLD

The sheet-5 shows the airport which is present in highest altitude within the world

Tableau - NM2023TMD03115_(Unlocking Insights into the Global Air Transportation Network with Tableau) - Tableau license expires in 14 days

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Standard

Show Me

Data Analytics Pages Columns Rows

airlines+

Search

Tables

- airlines.csv
 - Active
 - Airline ID
 - Alias
 - Call sign
 - Country
 - Iata
 - Icao
 - Name
 - Index
 - airlines.csv (Count)
- airplanes.csv
 - IATA code
 - ICAO code
 - Name (airplanes.csv)
 - Index (Airplanes.Csv)
 - airplanes.csv (Count)
- airports.csv
 - Airport ID
 - City
 - Country (airports.csv)
 - DST
 - IATA (airports.csv)
 - ICAO (airports.csv)
 - Name (airports.csv)
 - Source

Filters

ICAO (airports.csv)

Marks

Automatic

Color Size Text

Detail Tooltip

SUM(Altitude)

Airport at higher altitude in the world

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

Data Source airport final Sheet 2 no.of airports Airports at highest altitude with... Airport at higher altitude in the... Airlines within the country Number of flight from airport Dashboard 1 Dashboard 2 Dashboard 3 Dashboi

AIRLINE WITHIN THE COUNTRY

The sheet-6 shows the airline which is available and unavailable within the country

Tableau - NM2023TMD03115_(Unlocking Insights into the Global Air Transportation Network with Tableau) - Tableau license expires in 14 days

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Fit Height Show Me

Data Analytics Pages Columns Rows

airlines+

Search

Tables

- airlines.csv
 - Active
 - Airline ID
 - Alias
 - Callsign
 - Country
 - Iata
 - Icao
 - Name
 - Index
 - airlines.csv (Count)
- airplanes.csv
 - IATA code
 - ICAO code
 - Name (airplanes.csv)
 - Index (Airplanes.Csv)
 - airplanes.csv (Count)
- airports.csv
 - Airport ID
 - City
 - Country (airports.csv)
 - DST
 - IATA (airports.csv)
 - ICAO (airports.csv)
 - Name (airports.csv)
 - Source

Filters

Country: Norway

Active

Marks

Automatic

Color Size Label

Detail Tooltip

Active

Airlines within the country

Airline ID	Name	Icao	Callsign
947	Avinor	HQO	Null
1125	Airwing	NWG	NORWING
1395	Bergen Air Transport	BGT	BERGEN AIR
1538	Benair	HAX	SCOOP
1545	Blom Geomatics	LED	SWEEPER
1589	CHC Helicopter Service	HKS	HELIBUS
1813	Coast Air	CST	COAST CENTER
2437	Fonnafly	NOF	FOHNA
2625	Guard Systems	GSY	GUARD AIR
2732	Helikopterdrift	HDR	HELIDRIFT
2744	Helitrans	HTA	SCANBIRD
3109	Kato Airline	KAT	KATO-AIR
3326	Lufttransport	LTR	LUFT TRANSPORT
3677	Norcopter	NOC	Null
3688	Norsk Flyrjeneste	NIR	NORSEMAN
3689	Norsk Helikopter	NOR	NORSKE
3690	Norsk Luftambulans	DOC	HELIDOC
3697	North Atlantic Cargo	NFC	NORTH ATLANTIC
3737	Norwegian Air Shuttle	NAX	NOR SHUTTLE
3738	Norwegian Aviation College	TFN	SPRIT
3929	Pegasus Helicopters	HAK	HEUFALCON
4268	Royal Norwegian Air Force	NOW	NORWEGIAN
4606	SAS Braathens	CNO	SCANOR
4666	Sundt Air	MDT	MIDNIGHT
5439	Widerøe	WIF	WIDEROE
6182	Arctic Air	AKR	Arctic Norway
6183	Braathens	BRA	Braathens
6862	Fred. Olsen	FOF	Null
18702	Denim Air	YN	DNM
20170	Norwegian Long Haul AS	NLH	NORSTAR
20729	Norwegian Air International (DB)	IBK	NORTRANS

Active

(All)

N

Y

Country

Norway

Active

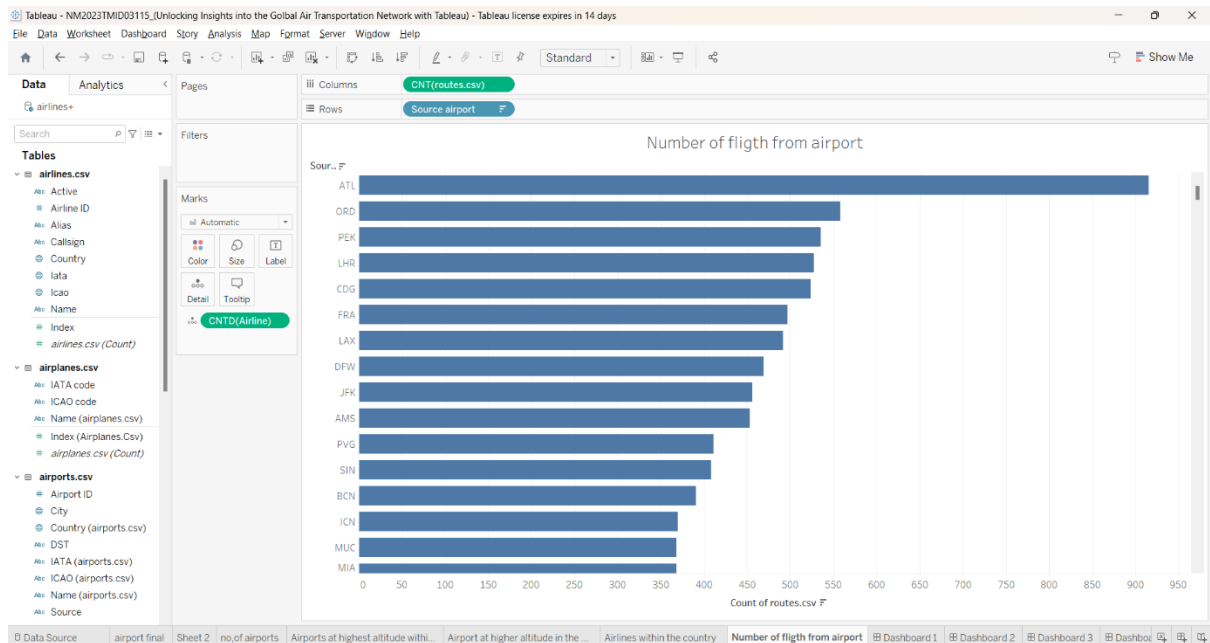
N

Y

Data Source airport final Sheet 2 no. of airports Airports at highest altitude with... Airport at higher altitude in the ... Airlines within the country Number of flight from airport Dashboard 1 Dashboard 2 Dashboard 3 Dashboard 4

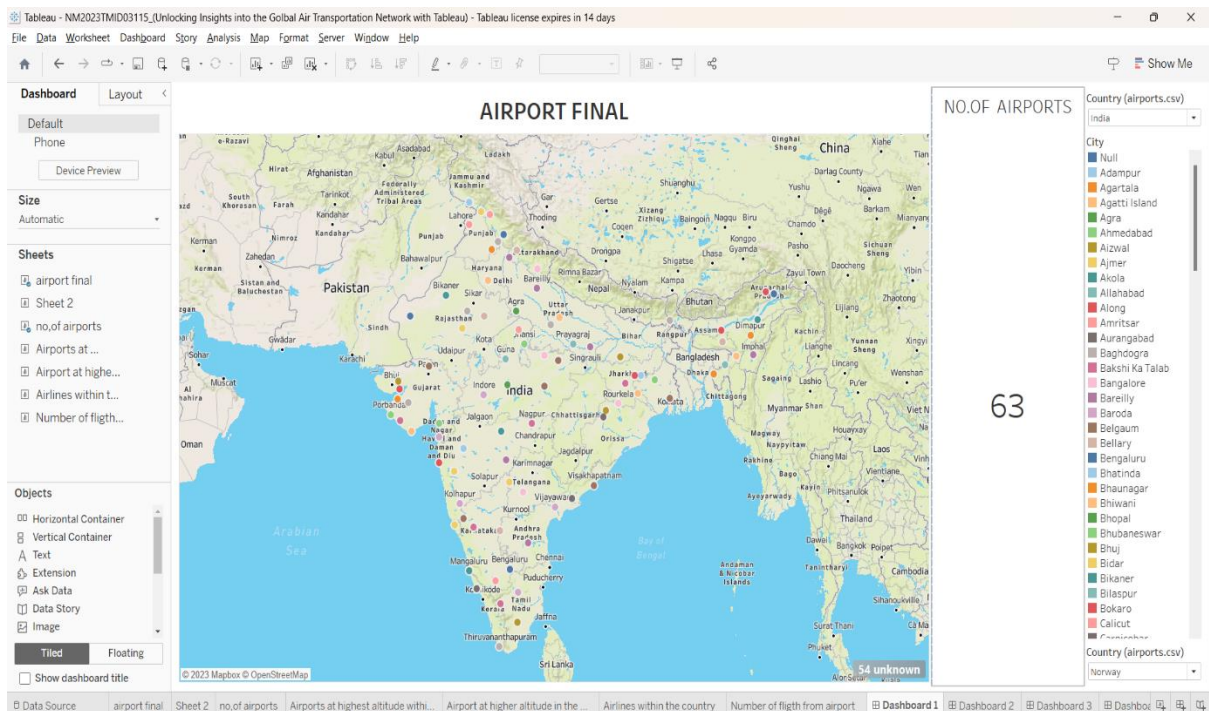
NUMBER OF FLIGHT FROM AIRPORT

The sheet-7 shows number of availability of flights in the individual airport



DASHBOARD 1

In this dashboard-1 while we enter the name of a country we can find both number of airports and their location within the country.



DASHBOARD 2

In the dashboard-2 while we enter the name of the country we can find both the number of airports within the country and the availability of air ports.

The screenshot shows a Tableau dashboard titled "Airlines within the country". The main view is a table with columns: Airline ID, Name, Icao, Callsign, and a color-coded status. The table lists various airlines, including Avinor, Airwing, Bergen Air Transport, Benair, Blom Geomatics, CHC Helikopter Service, Coast Air, Fonnafly, Guard Systems, Helikopterdrift, Helitrans, Kato Airline, Lufttransport, Norcopter, Norsk Flyjeneste, Norsk Helikopter, Norsk Luftambulans, North Atlantic Cargo, Norwegian Air Shuttle, Norwegian Aviation College, Pegasus Helicopters, Royal Norwegian Air Force, SAS Braathens, Sundt Air, Widerøe, Arctic Air, Braathens, Fred. Olsen, Denim Air, Norwegian Long Haul AS, and Norwegian Air International (D8).

On the right side of the dashboard, there is a large text field labeled "NO.OF AIRPORTS" displaying the value "63". Above this field, there is a filter for "Country" set to "Norway".

The left sidebar contains navigation options: Dashboard, Layout, Size, Sheets, and Objects. The "Sheets" section is expanded, showing a list of sheets: airport final, Sheet 2, no.of airports, Airports at ..., Airport at high..., Airlines within t..., and Number of flight....

The bottom of the dashboard shows a row of tabs: Data Source, airport final, Sheet 2, no. of airports, Airports at highest altitude with..., Airport at higher altitude in the ..., Airlines within the country, Number of flight from airport, Dashboard 1, Dashboard 2 (selected), Dashboard 3, and Dashboi....

DASHBOARD 3

In the dashboard-3 while we enter the name of the country we can find the airport at highest altitude within the both country and world.

Tableau - NM2023TMID03115_(Unlocking Insights into the Global Air Transportation Network with Tableau) - Tableau license expires in 14 days

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Dashboard Layout

Default
Phone
Device Preview

Size
Automatic

Sheets

- airport final
- Sheet 2
- no.of airports
- Airports at ...
- Airport at highe...
- Airlines within t...
- Number of flight...

Objects

- Horizontal Container
- Vertical Container
- Text
- Extension
- Ask Data
- Data Story
- Image
- Tiled
- Floating
- Show dashboard title

Airports at highest altitude within a country

Country (airports.csv): Kazakhstan

Index no	Name (airports.csv)	City	ICAO (airports.csv)	
Null	Yubileyniy Airfield	Baikonur	UADN	328
	Urzhar Airport	Urzhar	UASU	0
	Ekibastuz Airport	Ekibastuz	UASB	621

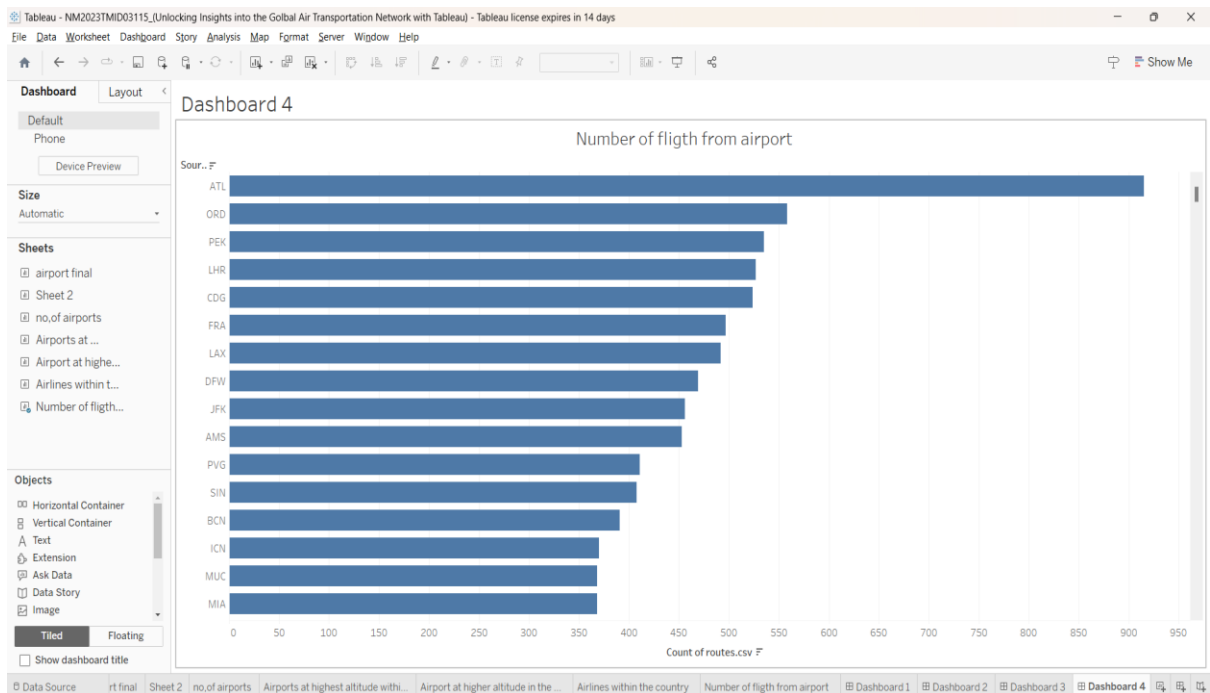
Airport at higher altitude in the world

Name (airports.csv)	City	ICAO (airports.csv)	
Capitan Nicolas Rojas Airport	Potosi	SLPO	12,913
Copacabana Airport	Copacabana	SLCC	12,591
Daocheng Yading Airport	Daocheng	ZUDC	14,472
El Alto International Airport	La Paz	SLP	13,355
Golog Maqin Airport	Golog	ZLGL	12,426

Data Source | airport final | Sheet 2 | no.of airports | Airports at highest altitude withi... | Airport at higher altitude in the ... | Airlines within the country | Number of flight from airport | Dashboard 1 | Dashboard 2 | **Dashboard 3** | Dashboi | Show Me

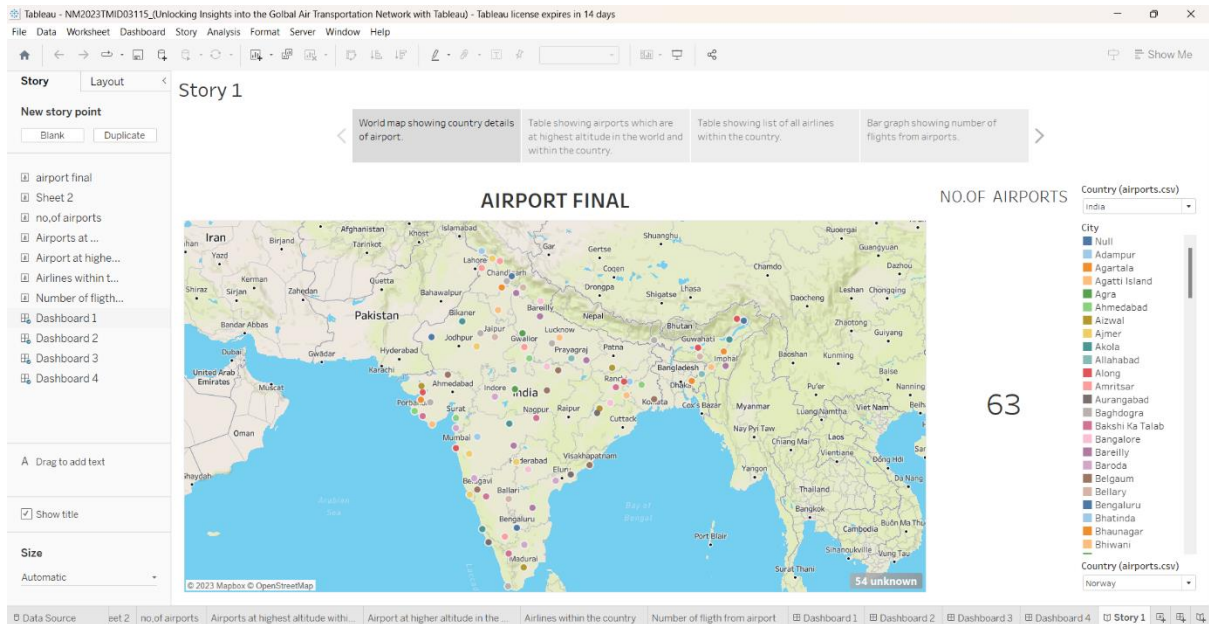
DASHBOARD 4

In the dashboard-4 we can know number of availability of flights in the individual airport



STORY

The story is the combination of the all the dashboard.it shows the number of airports,air port location and altitude of an airport.



4.ADVANTAGE

- The project empowers stakeholders in the aviation industry to make informed decisions based on visualized data. This can lead to better resource allocation, route optimization, and improved customer service.
- Tableau offers powerful and interactive data visualization capabilities. It allows for the creation of easy-to-understand and insightful charts, graphs, and dashboards, making complex data more accessible to a broad audience.
- Tableau can be set up to monitor and update data in real-time. This is particularly valuable in the dynamic aviation industry, where conditions and trends can change rapidly.
- Tableau allows for the creation of customized dashboards and reports, ensuring that the project can cater to the specific needs and preferences of various stakeholders, from airline executives to regulatory authorities.
- Tableau's interactivity features allow users to drill down into the data, filter information, and ask questions, providing a more engaging and exploratory experience.

DISADVANTAGE

- The aviation industry generates vast and complex datasets. Handling and cleaning such data for Tableau analysis can be time-consuming and may require substantial computing resources.
- Tableau is a powerful tool, but it comes with licensing costs. Depending on the scale of the project and the number of users, these costs can add up.
- Effective use of Tableau requires proficiency in the tool, data analysis, and domain knowledge. Not all team members may be familiar with the software, necessitating training or hiring experienced analysts.
- When dealing with sensitive aviation data, ensuring data security and compliance with privacy regulations is critical. Mishandling data can lead to security breaches or legal issues.
- The project will need ongoing maintenance to ensure data accuracy and relevancy. Updates may be required as new data becomes available or as the needs of stakeholders change.
- Data quality and availability can vary from region to region. In some cases, data might not be readily accessible or might be incomplete, limiting the scope of the analysis.

APPLICATION

- The project involves collecting and integrating data from multiple sources, such as flight schedules, passenger demographics, airline performance metrics, and airport data. These datasets are cleansed, transformed, and loaded into Tableau for analysis.
- Tableau provides a user-friendly interface to create interactive and visually appealing dashboards. Users can explore data through a range of visualizations like maps, charts, and graphs. The project can help aviation professionals, policymakers, and researchers analyze complex data sets to identify trends and patterns.
- Airlines and airports can track performance metrics and identify areas for improvement, leading to more efficient operations and improved customer satisfaction.

CONCLUSION

- The project empowers decision-makers in the aviation industry with valuable insights, enabling them to make informed choices related to routes, schedules, marketing strategies, and customer service.
- Airlines and airports can tailor their services to meet passenger preferences, leading to increased customer satisfaction and loyalty.
- The project can identify underserved routes, creating opportunities for airlines to expand their services and capture new markets.

7.FUTURE SCOPE

- Implement predictive modeling to forecast future trends in air travel. This can be valuable for airlines, airports, and policymakers to plan for capacity, schedule adjustments, and resource allocation.
- Incorporate real-time data feeds to provide up-to-the-minute insights and enhance the project's relevance for decision-makers in the air transportation industry.
- Utilize machine learning algorithms to identify patterns and anomalies in air transportation data, improving safety and operational efficiency.
- Consider making the data and insights available to other stakeholders, such as travel agencies, data analysts, and researchers, potentially creating a revenue stream for the project.
- Create public-facing dashboards that allow travelers to explore flight data, making it easier for them to plan their trips and understand travel trends.
- Extend the project to assess the environmental impact of air transportation, helping to drive sustainability efforts in the industry.

