UNLOCKING INSIGHTS INTO THE GLOBAL AIR TRANSPORTATION NETWORK WITH TABLEAU

Submitted by

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GLOBAL AIR TRANSPORTATION NETWORK

1.INTRODUCTION

1.1 Overview

The project titled "Unlocking Insights into the Global Air Transportation Network with Tableau" appears to involve the use of Tableau, a data visualization tool, to gain valuable insights into the global air transportation network. The primary goals of this project is to analyze and visualize data related to the project using tableau.

It gives knowledge to extract insights, patterns from the data. The data collection includes flight schedules, passenger statistics and airport information etc.,

By using tableau platform, in a creative manner we create many visual representations such as graphs, maps and dashboard, etc., to understand the global air transportation network trends.

It gives information about travels timings, busiest routes, air travel pattern and airline performance, etc., It could be easily understandable by airlines, airports, policy makers and mainly travelers.

1.2 Purpose

The purpose of the project "unlocking insights into the Global Air Transportation Network with Tableau" is serves several important objectives. Through this project, we gain a deeper understanding about air travel, including routes, airline performance and airport operations. It provides strategical thinking about air lines, air ports to decision makers in aviation industry.

The main challenge is effectively handling and visualizing the complex and extensive global air transportation dataset while ensuring meaningful insights without overwhelming the audience. It reveals faults in previous planning and lay way to new plannings to rectify previous faults.

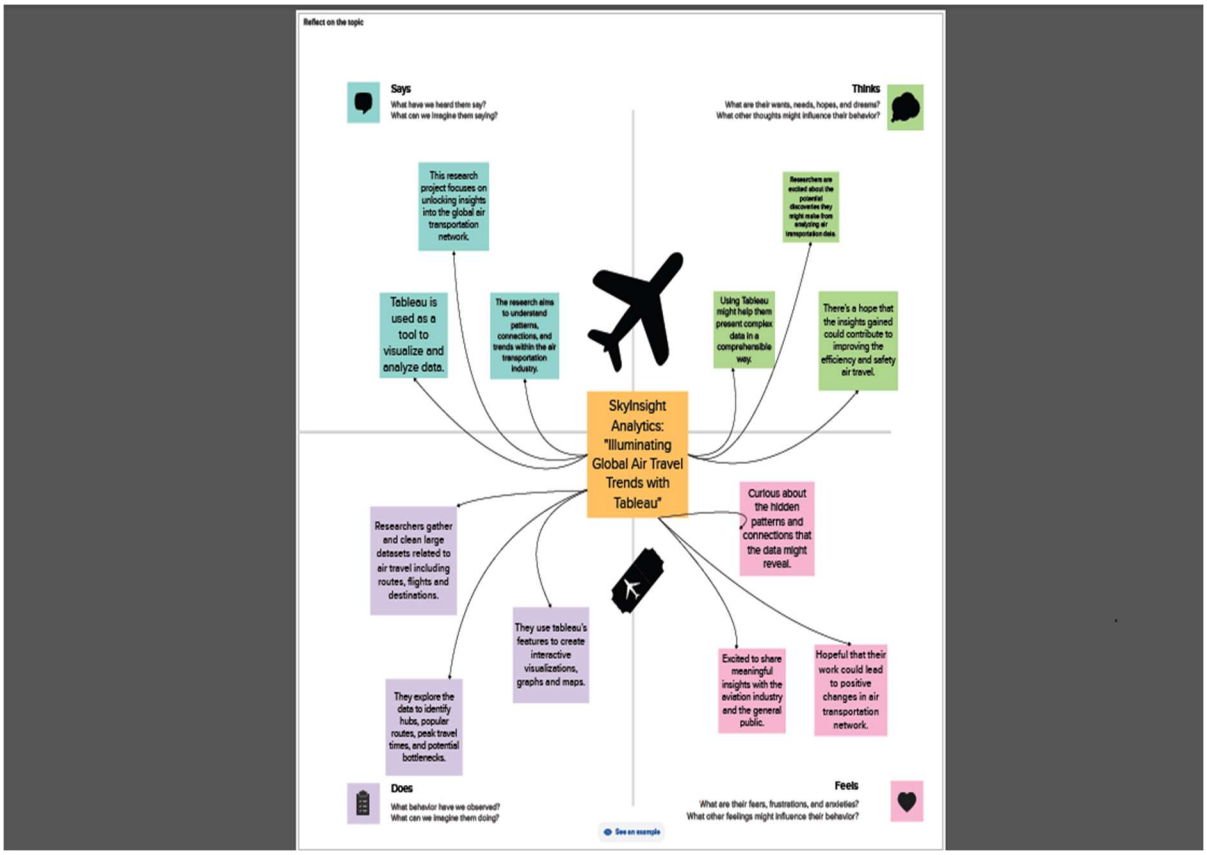
Thus it breaks new tricks and gives efficiency improvement to enabling them to make informed choices about flight bookings, destination selection to passengers. By introducing new trends and best practices in aviation sectors, air lines and air ports can be more competitive in global network.

To contribute research and innovation in the field of aviation to bring comprehensive data set.

2.PROBLEM DEFINITION & DESIGN THINKING

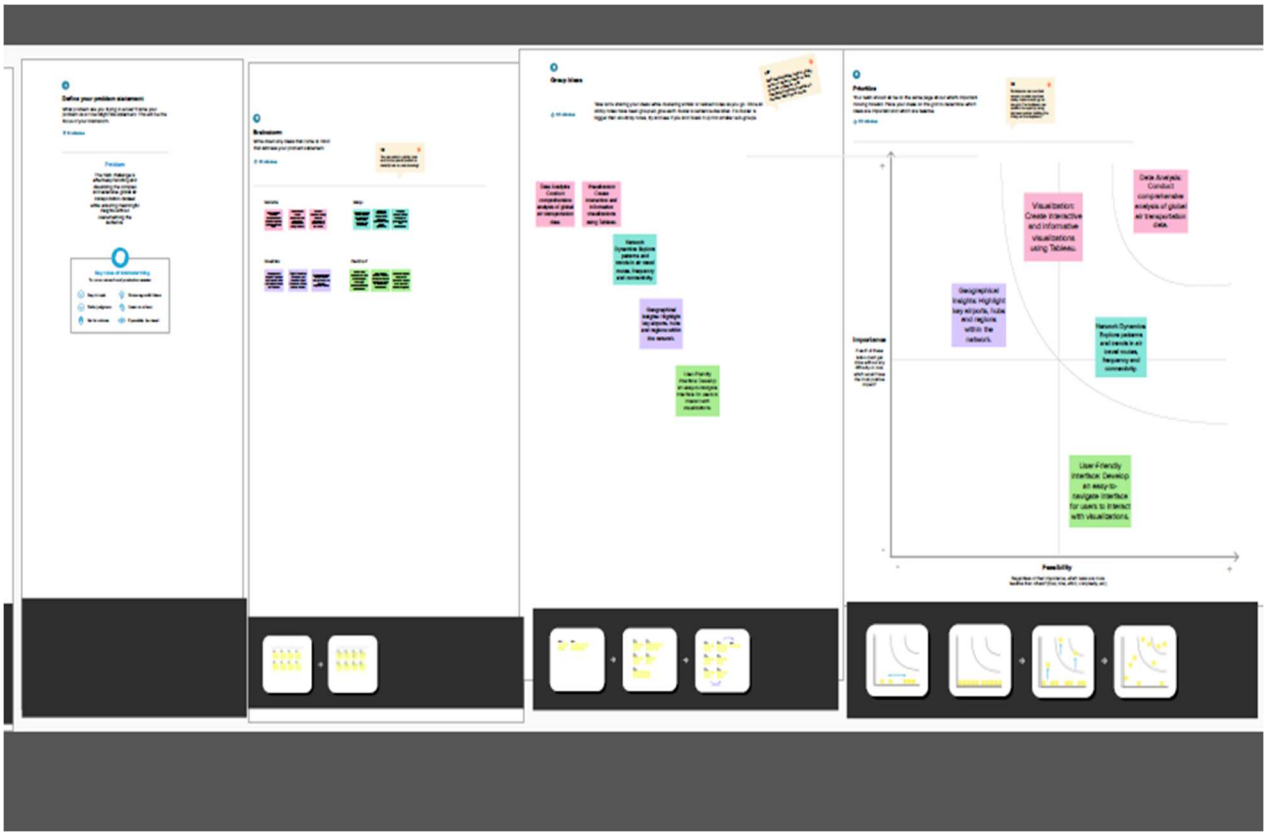
2.1 Empathy Map

Empathy Map gives some ideas for this particular project. It is useful to unlocking insights into this particular title.



2.2 Ideation & Brainstroming Map

Brainstroming Map contains the ideas from the empathy map whose having high prioritization. And also we plot prioritization graph in the brainstorming ideas section.



3.RESULT

This project helps to create our ideas about various aspects of the global air transportation networks like,

- Travel routes
- Seasonal trends
- Airport congestion pattern
- Airline performances

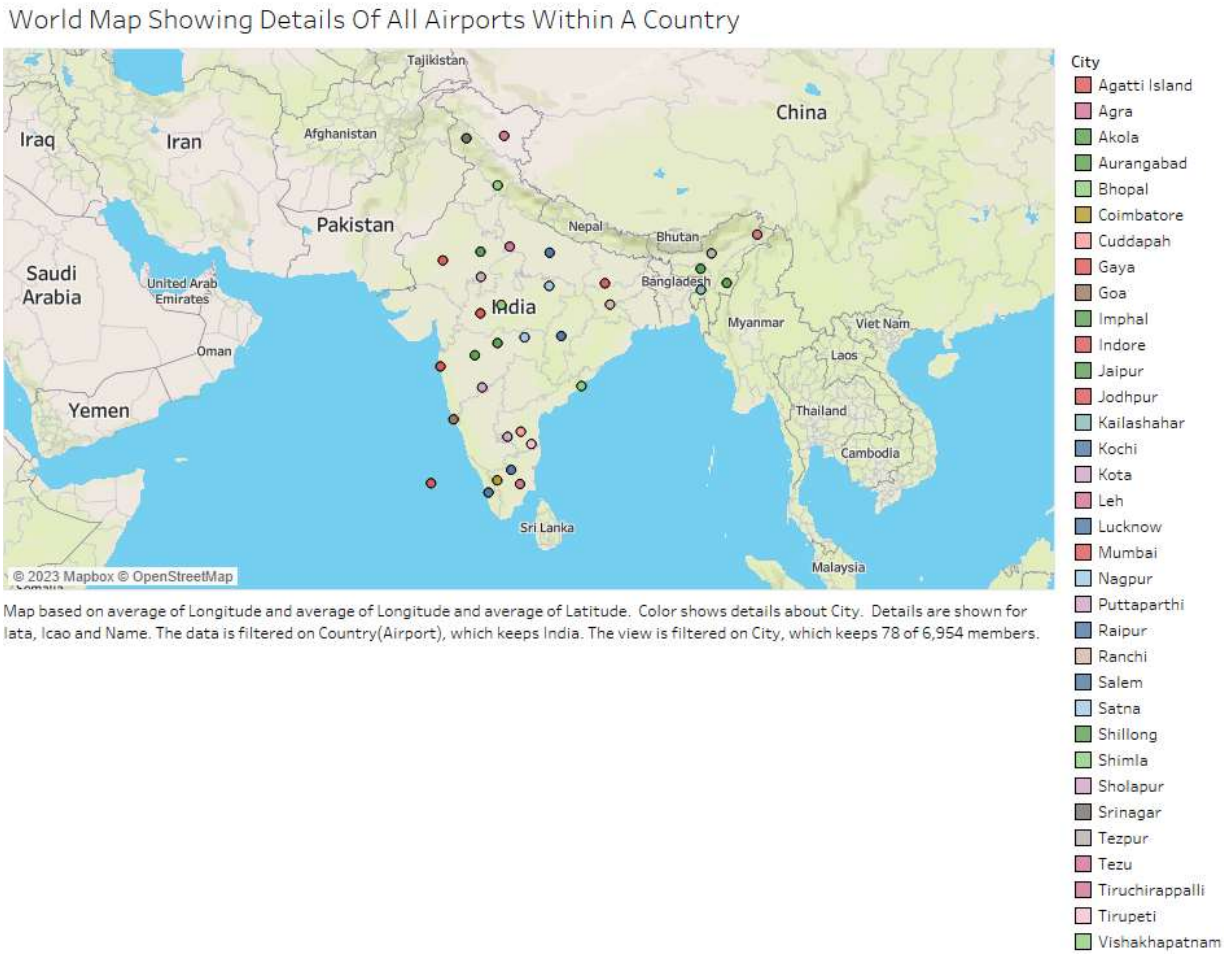
Passenger Experience:

- The airlines gives sufficient information to the passengers. Such as, flight booking, lay overs and travel times.
- So travelers are benefited to these kinds of improved information.
- The comprehensive reports and dashboards that aid in informed decision making that leads to more strategic and cost savings.
- These project also contributing about the upcoming changes in the airlines.

The main aspect to this projects is improving the safety purpose for the passenger and quality for air transportation network.

Overall, the results of the project would be aimed at improving the efficiency, safety, and quality of the global air transportation network for both industry stakeholders and travelers. The exact outcomes would depend on the specific insights uncovered and the actions taken based on those insights.

- **The sheet 1 shows that the overall details of airports with in the country as in the form of world map.**



- **The sheet 2 displays how much airports are there in our country**

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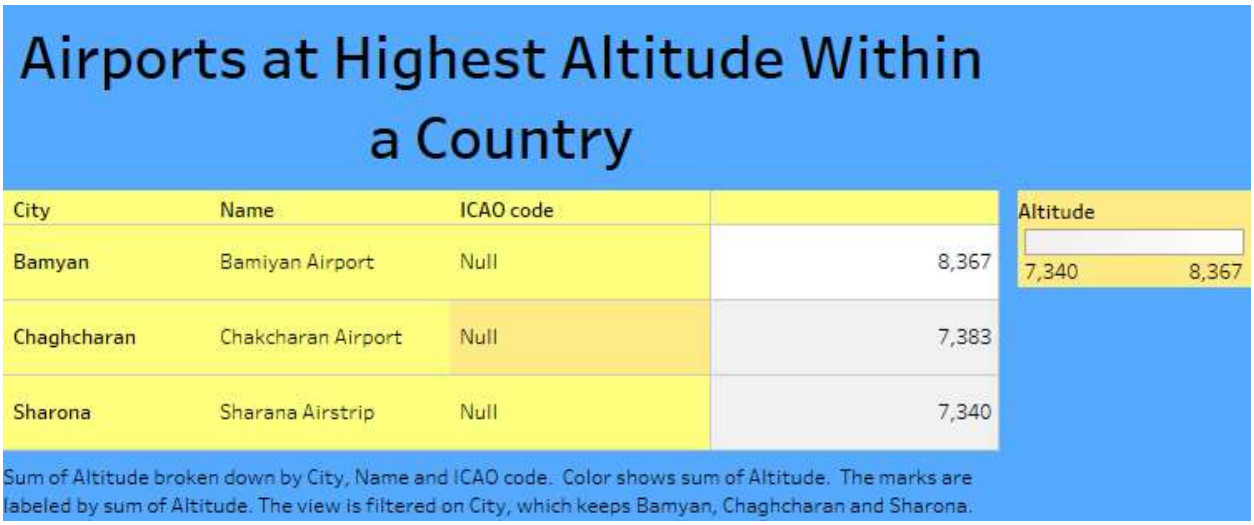
- **Sheet 3 shows that the airports at highest altitude within a country as in the form of data table.**



- **Sheet 4 visualizes airport at highest altitude in the world, in this table shows Bamiyan airport has higher altitude.**

Airports at higher altitude in the world

City	Name	ICAO code	
Bamyan	Bamiyan Airport	Null	8,367
Chaghcharan	Chakcharan Airport	Null	7,383
Sharona	Sharana Airstrip	Null	7,340

Sum of Altitude broken down by City, Name and ICAO code. Size shows details about City. The data is filtered on Country(Airport) and count of routes.csv. The Country(Airport) filter has multiple members selected. The count of routes.csv filter ranges from 1 to 3. The view is filtered on City, which keeps Bamyan, Chaghcharan and Sharona.

City
- Abc Bamyan
- Abc Chaghcharan
- Abc Sharona

- **This sheet 5 explains the details about airlines within a country. In this sheet we displayed fourteen countries and its airports name.**

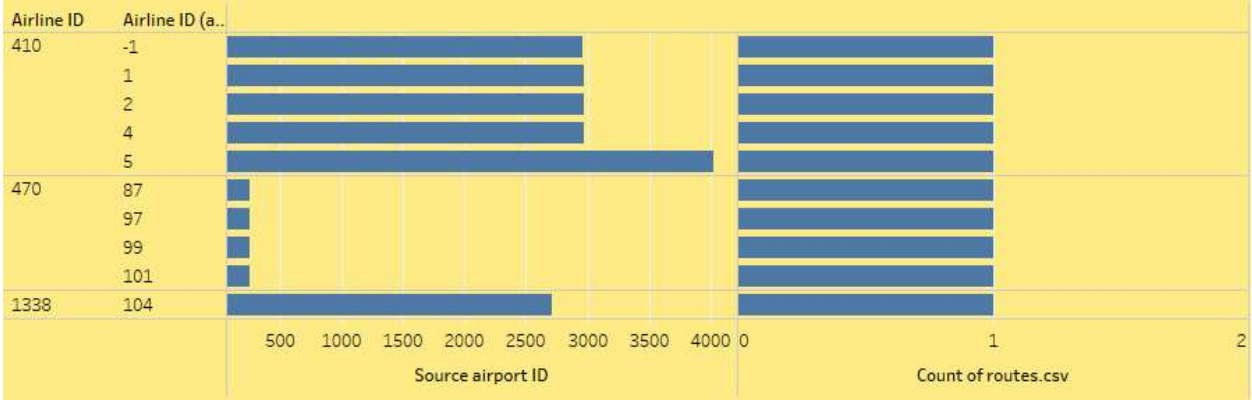
Airlines within a country

Name	City	ICAO code	
Arviat Airport	Eskimo Point	\N	32
Campbell River Airport	Campbell River	\N	346
Fort McMurray Airport	Fort Mcmurray	\N	1,211
Fort St John Airport	Fort Saint John	\N	2,280
Geraldton Greenstone Regional Ai..	Geraldton	\N	1,144
Îles-de-la-Madeleine Airport	Iles De La Madeleine	\N	35
Kelowna International Airport	Kelowna	\N	1,421
Kingston Norman Rogers Airport	Kingston	\N	305
Nanaimo Airport	Nanaimo	\N	92
Natashquan Airport	Natashquan	\N	39
Prince Albert Glass Field	Prince Albert	\N	1,405
Siglufjörður Airport	Siglufjordur	\N	10
Stephenville Airport	Stephenville	\N	84
Tofino / Long Beach Airport	Tofino	\N	80

Sum of Altitude broken down by Name, City and ICAO code. The view is filtered on ICAO code and sum of Altitude. The ICAO code filter has multiple members selected. The sum of Altitude filter ranges from 10 to 3,000.

- **Sheet 6 represents the number of flights from airport as in the form of bar chart.**

Number of Flights From Airport



Source airport ID and count of routes.csv for each Airline ID (airlines.csv) broken down by Airline ID. The data is filtered on count of Source airport ID, which includes values greater than or equal to 0. The view is filtered on Airline ID (airlines.csv), which has multiple members selected.

4.ADVANTAGES & DISADVANTAGES

Advantages:

- The Informed Decision-Making is more helpful advantages because for their more information and strategic decision making is helpful.
- Efficiency improvement at reduced cost.
- The fuel consumption is the most important factor so, the most recommendation for fuel consumption is the advantageous factor.
- The global air transportation network project is most helpful to understanding the industries.

Disadvantages:

- Cost and resource security is too vast.
- Data and privacy security is not secured.
- Accuracy of the data collected which can be subjected to errors.
- Stakeholders unwilling or slow to adopt changes.
- The Technology limitation also one of the disadvantages.

In summary, while the project offers numerous advantages in terms of informed decision-making, efficiency improvements, and enhanced passenger experiences, it also comes with challenges related to data privacy, complexity, and the need for resources and technological support. Careful planning and consideration of these factors are crucial for the project's success.

5.APPLICATIONS

- Airline and Airport Operations: Airlines and airports can apply the project's insights to optimize flight scheduling, reduce delays, and enhance overall operations.
- Passenger Information: Travelers can access user-friendly dashboards and apps to make informed choices about flights, layovers, and destinations.
- Government and Policy: Aviation authorities and policymakers can use the project's findings to inform regulations, infrastructure investments, and safety measures.
- Research and Education: The project's dataset and insights can support ongoing research in aviation, air traffic management, and transportation studies.

6.CONCLUSION

The project successfully utilized Tableau and data analysis techniques to unlock valuable insights into the global air transportation network. By addressing challenges in data utilization and decision-making, it has contributed to improved efficiency and the overall passenger experience. Stakeholders in the aviation industry now have access to data-driven recommendations that can lead to more strategic decisions and cost savings.

7.FUTURE SCOPE

- Real-Time Analysis: Expanding the project to include real-time data analysis can provide more dynamic and responsive insights for airlines, airports, and travelers.
- Predictive Analytics: Incorporating predictive modeling can help forecast trends in air travel, enabling proactive decision-making and better resource allocation.
- Machine Learning Integration: Utilizing machine learning algorithms can enhance the accuracy of predictions and recommendations.
- Global Collaboration: Collaborating with international aviation bodies and organizations can provide a more comprehensive view of the global air transportation network.
- Data Standardization: Promoting data standardization across the industry can improve the quality and compatibility of data sources.
- Security and Privacy: Enhancing data security and privacy measures is crucial, especially as more passenger data is collected.
- Sustainability Focus: Future iterations of the project can place a greater emphasis on sustainability by analyzing and promoting eco-friendly practices in aviation.

In summary, the project has laid the foundation for data-driven decision-making in the aviation industry. Its future scope can include advanced analytics, real-time insights, and a stronger emphasis on sustainability, further benefiting both industry stakeholders and travelers while advancing the field of aviation research.