GOVERNMENT ARTS COLLEGE (AUTONOMOUS)

COIMBATORE -6410018

DEPARTMENT OF MATHEMATICS

NAAN MUDHALVAN COURSE: DATA ANALYTICS WITH TABLEAU

CLASS: III YEAR B.Sc. Mathematics- SEMESTER: 5

PROJECT REPORT

(PROJECT DOCUMENTATION)

NM TEAM NUMBER   : 09

NM ID   : NM2023TMID24957   [90B682FFA48D730AC5B4D05228CA938A]

NM PROJECT TITLE   : Unlocking Insights into The Global Air Transportation Network with Tableau

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SUBMITTED TO

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Project report template

Unlocking Insights into The Global Air Transportation Network with Tableau

INTRODUCTION

1.1 Overview

   "Unlocking Insights into The Global Air Transportation Network with Tableau" is a topic that explores the use of Tableau, a powerful data visualization and business intelligence tool, to gain valuable insights into the complex and dynamic world of global air transportation. This approach involves harnessing the capabilities of Tableau to effectively analyze and present data related to flights, airports, airlines, passengers, and various factors influencing air travel.

In an increasingly interconnected world, the global air transportation network plays a pivotal role in the movement of people and goods. Airlines, airports, government agencies, and industry stakeholders are constantly seeking ways to optimize operations, enhance safety, improve the passenger experience, and make informed decisions. This is where Tableau comes into play, offering the means to transform vast and often complex aviation data into meaningful visualizations and actionable insights.

Through data integration, preparation, and visualization, Tableau allows analysts and decision-makers to uncover patterns, trends, and key performance metrics within the air transportation network. These insights may range from identifying the busiest flight routes and airports to understanding the impact of weather conditions on flight delays and the changing preferences of air travelers.

Furthermore, "Unlocking Insights into The Global Air Transportation Network with Tableau" can have far-reaching implications. It supports airlines in optimizing schedules, airports in managing capacity and efficiency, government authorities in ensuring safety and regulatory compliance, and researchers in driving innovation within the aviation sector.

This approach to data analysis empowers stakeholders to make data-driven decisions, respond to challenges, and harness opportunities in the fast-paced and highly competitive aviation industry. By effectively utilizing Tableau's capabilities, this topic underscores the importance of data visualization and analytics in enhancing our understanding of and improving the global air transportation network.

## 1.2 Purpose
            Airlines, airports, and regulatory authorities can utilize Tableau to uncover insights that improve operational efficiency. This includes optimizing flight schedules, reducing delays, and enhancing resource allocation to ensure smoother and more cost-effective operations.
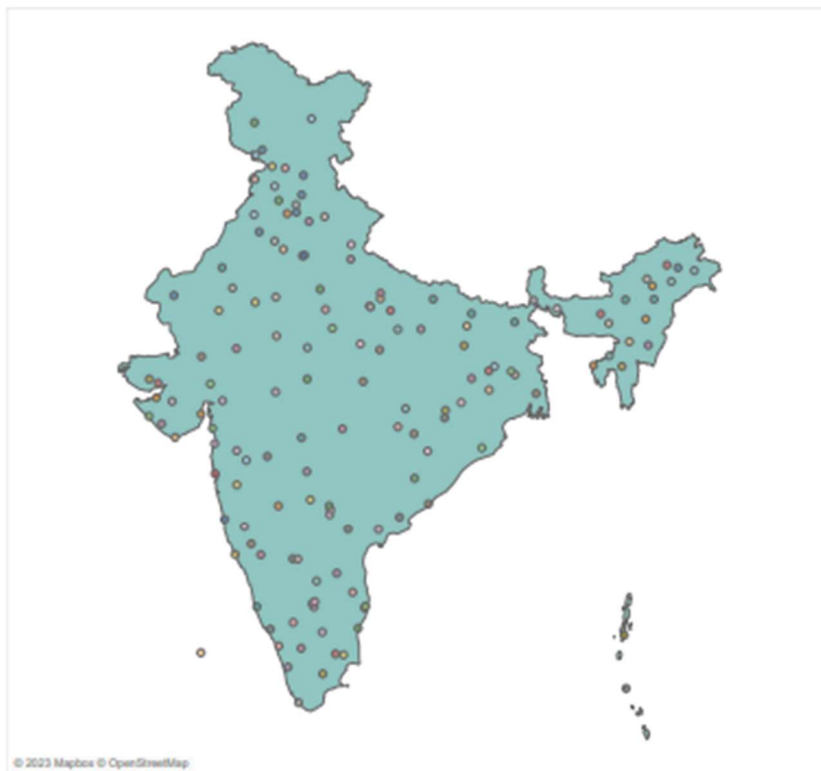
Problem Definition & Design Thinking

2.1 Empathy Map
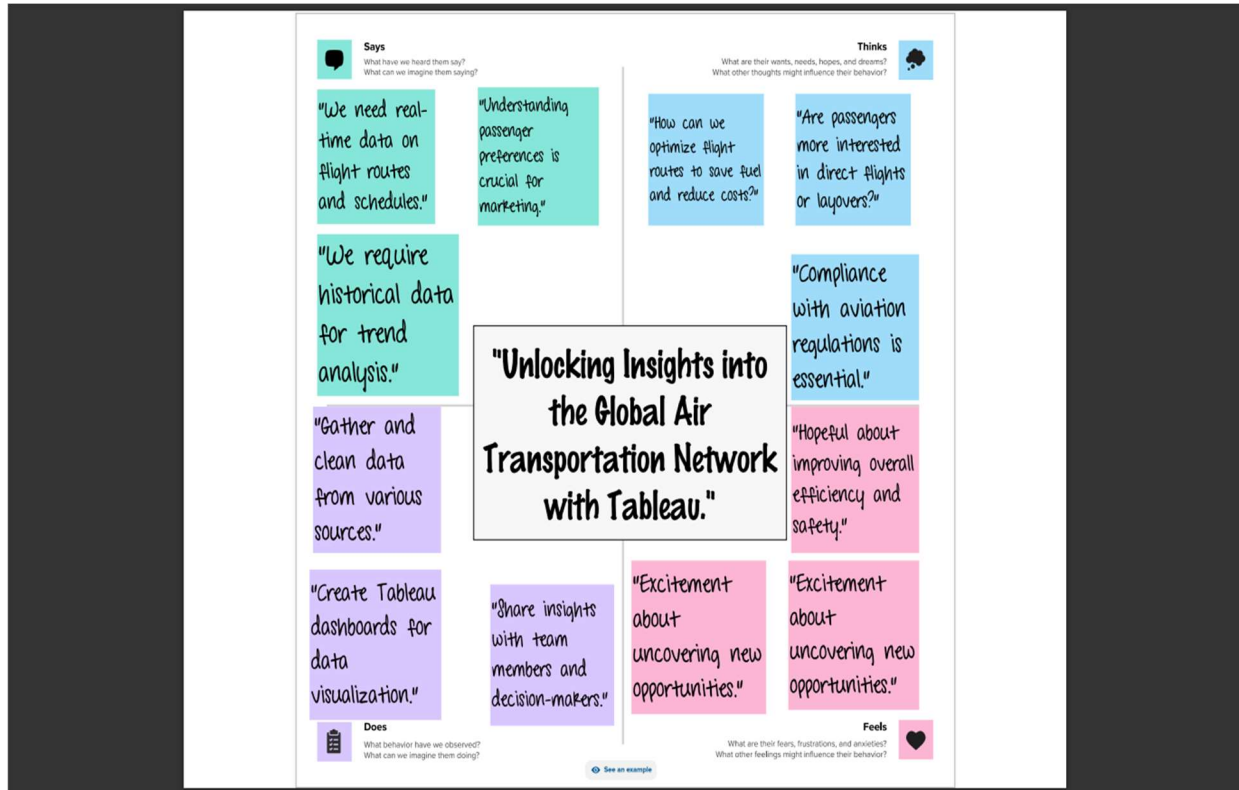
2.2 Ideation & Brainstorming Map
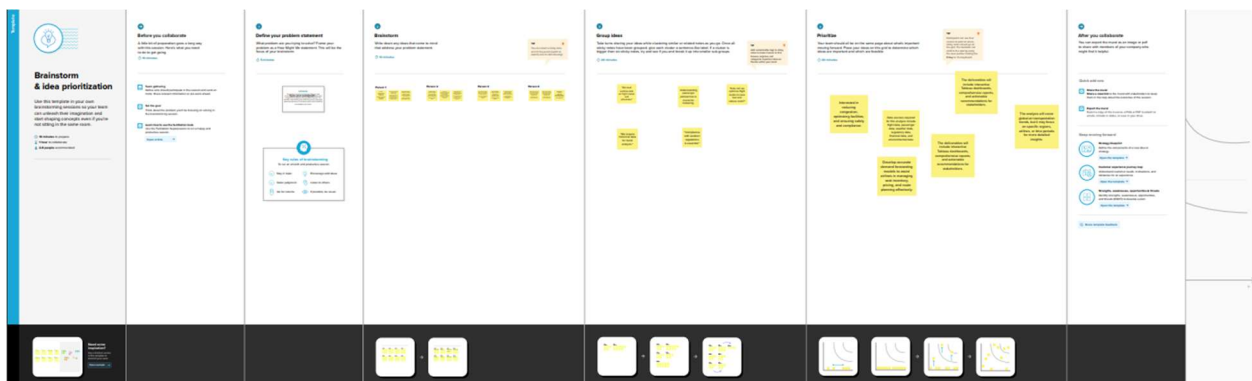
Airports Final

© 2023 Mapbox © OpenStreetMap

No of air-ports

148

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	\N	ALLIED	■
13106	MDLR Airlines	\N	MDLR	■
13107	Jagson Airlines	JGN	JAGSON	■
13905	Skyline nepc	\N	Null	■
16327	Indya Airline Group	IG1	Indya1	■
16362	OCEAN AIR CARGO	IXO	Null	■
16738	NEPC Airlines	\N	Null	■
16901	12 North	N12	12N	■
19451	Air Costa	\N	Null	■
20264	Air Vistara	VTI	Null	■
20286	Air Pegasus	PPL	Null	■
21270	Air Carnival	\N	Null	■

Country
India

Active
■ N
■ Y

Number of Airlines

29

Airports at Higher within a Country

Name (airports.csv)	ICAO	City	
Adampur Airport	VIAX	Adampur	775
Agartala Airport	VEAT	Agartala	46
Agatti Airport	VOAT	Agatti Island	14

Airports at Highest Altitude in World

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

ICAO (airports.csv)
- [x] 0W18
- [x] 1AZ0
- [x] 2FD7
- [x] ZKSB
- [x] 5A8
- [x] 5NC2
- [x] 7FA1
- [x] 7FL4
- [x] 03N
- [x] 07FA
- [x] 07MT

Limit
Top 10 by SUM([Altitude])

City
- [x] Null
- [x] 108 Mile Ranch
- [x] Aachen
- [x] Aalborg
- [x] Aalen-heidenheim
- [x] Aappilattoq
- [x] Aarhus
- [x] Aasiaat
- [x] Abadan
- [x] Abaiang Atoll
- [x] Abakan
- [x] Abbeville
- [x] Abbotsford
- [x] Abe-ali

Country (airports.csv)
- [ ] Afghanistan
- [ ] Albania
- [ ] Algeria
- [ ] American Samoa
- [ ] Angola
- [ ] Anguilla
- [ ] Antarctica
- [ ] Antigua and Barbuda
- [ ] Argentina
- [ ] Armenia
- [ ] Aruba
- [ ] Australia
- [ ] Austria
- [ ] Azerbaijan

Country with maximum no of airports

Country (airports.csv)

	Count of routes.csv
Null	59,965
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
Spain	64
Norway	63
New Zealand	60
Venezuela	57
Greenland	56
Greece	55
Pakistan	54
Finland	51
Thailand	50
Chile	46
Saudi Arabia	45

Number of flight from Airport

Source airp..

	Count of routes.csv
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
DXB	356
HKG	355
CAN	338
PCO	331
MAD	330
BKK	326
DME	324
CTU	324
YYZ	319
MAN	316
BRU	316
VIE	308
CLT	301
PHL	289
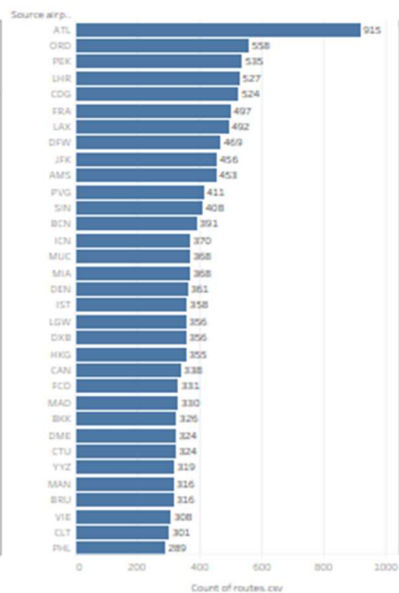
ADVANTAGES AND DISADVANTAGES

Advantages:

Data analysis can help identify potential safety risks and ensure compliance with aviation regulations. This contributes to safer air travel and greater peace of mind for passengers. Researchers can use the insights gained from data analysis to drive innovation in aviation. This could lead to advancements in aviation technology, airspace management, sustainable practices, and more. Airlines and airports can identify areas of inefficiency and take measures to reduce costs. For example, optimizing routes, managing resources more effectively, and minimizing fuel consumption can lead to substantial cost savings.

Disadvantages:

Handling sensitive data related to passenger information, security measures, and aviation operations raises concerns about data privacy and security. Unauthorized access or data breaches can have severe consequences. Ensuring the accuracy and reliability of data is critical for meaningful insights. Inaccurate or incomplete data can lead to incorrect conclusions and misguided decisions.

The aviation industry generates vast and complex datasets, which can be challenging to clean, process, and analyze. Handling large volumes of data may require significant computational resources.

CONCLUSION

In conclusion, Harnessing the power of data provides a foundation for informed decision-making. By using Tableau to analyze and visualize data related to flights, passengers, and operations, stakeholders can make more effective choices to improve efficiency and passenger experience. The insights gained through data analysis enable airlines and airports to optimize their operations. This includes better scheduling of flights, reducing delays, and enhancing resource allocation to improve overall efficiency.

FUTURE SCOPE

In future , As technology improves, the ability to analyze real-time data from flight tracking systems, weather sensors, and passenger information will become more robust. This can enhance decision-making and operational efficiency, allowing stakeholders to respond quickly to changing conditions. The use of predictive modeling and machine learning can be expanded to forecast air traffic trends, passenger demand, and potential disruptions. This will help stakeholders proactively plan for challenges and opportunities. With increasing focus on sustainability and environmental concerns, insights into emissions, fuel efficiency, and green aviation practices will be crucial. Data analysis can support the development and assessment of sustainable aviation initiatives. Air travel safety and security will continue to be paramount. Insights into security risks and safety measures can be further enhanced to ensure safer and more secure air transportation.