

**UNLOCKING INSIGHTS INTO THE GLOBAL AIR TRANSPORTATION**

**NETWORK WITH TABLEAU**

**BACHELOR OF SCIENCE IN MATHEMATICS**

**Submitted by**

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## **CONTENTS**

### **1. INTRODUCTION**

- i. Overview  
A brief description about your Project
- ii. Purpose  
The use of this Project, What can be achieved using this.

### **2. PROBLEM DEFINITION & DESIGN THINKING**

- iii. Empathy Map  
Paste the empathy map screenshot
- iv. Ideation & Brainstorming map  
Paste the Ideation & brainstorming map screenshot

### **3. RESULT**

Final findings (Output ) of the project along with screenshots

### **4. ADVANTAGES & disadvantages**

List of advantages and disadvantages of the proposed solution.

### **5. APPLICATIONS**

The areas where this solution can be applied.

### **6. CONCLUSION**

Conclusion summarizing the entire work and findings

### **7. FUTURE SCOPE**

Enhancements that can be made in the future.

## 1. INTRODUCTION

### 1. OVERVIEW

The air transportation network is a complex network which has the properties of small-world networks and scale-free networks. The degree distribution of the nodes displays a heavy-tailed distribution. The hubs of the network have large connectivities and long-distance connectivities at the same time.

The Global Air Transportation Network data 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 set is a comprehensive .

**Air transport network** or air transportation network (ATN) is an example of **Transports networks** and [spatial networks](#). The nodes of the network are the airports and the links represent direct flight routes between two airports. Alternatively, cities can be considered as the nodes with links representing direct flight connection between them. Air transport networks can be defined worldwide as well as for one region or for one airline company; the scale of the network can be global or transport.

## 2. Purpose;-

The worldwide air transportation network is represented by the database of [International Air Transport Association](#) (IATA). The worldwide air transportation network is a [critical infrastructure](#) with high impact on mobility, trade and economy.

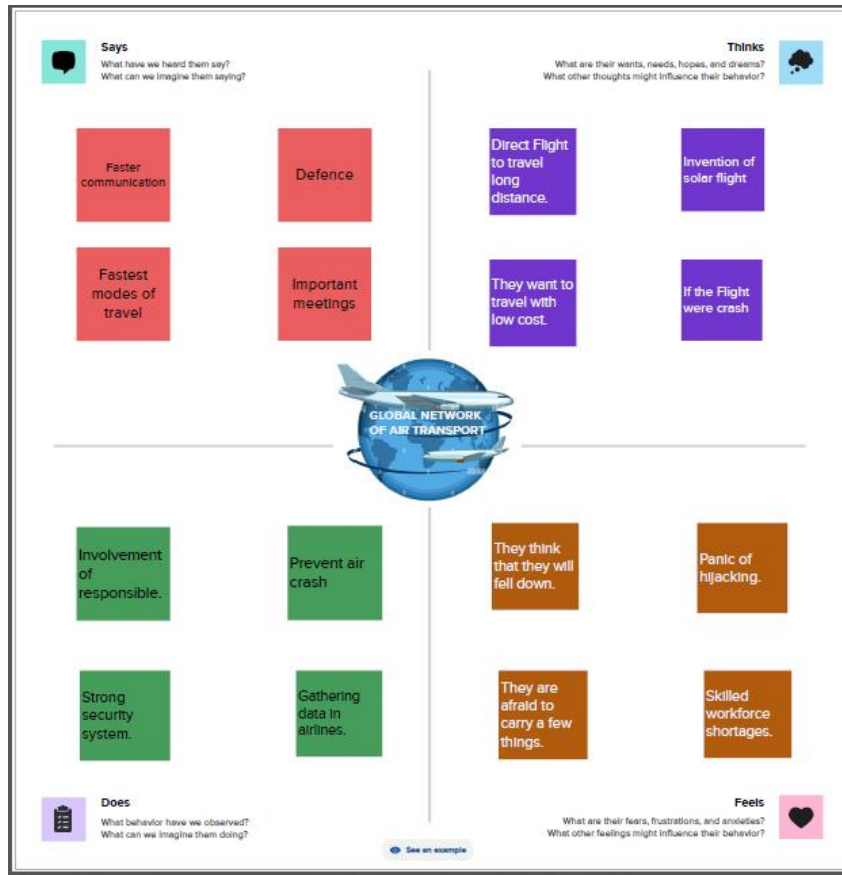
Another examples are the air transport systems of a country or a country's own air transport company. It is particularly important, because the quality of the airports and national airlines are also the measures of the state of development of the country.

The graph of an air transport network is spatial but not a [planar graph](#). The air transportation

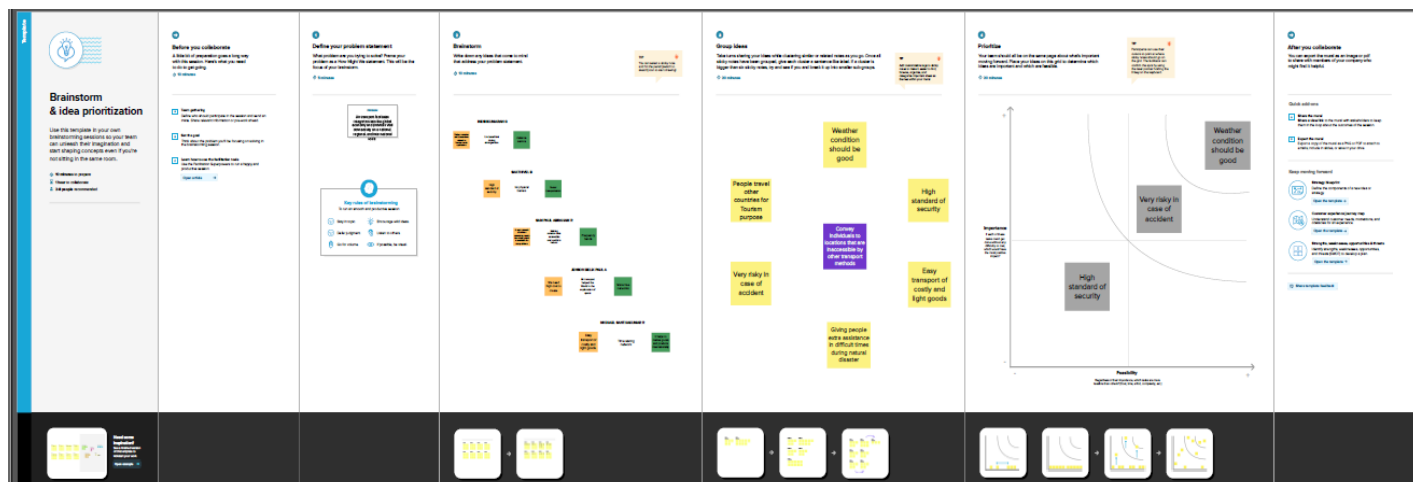
For example, Alaska can be easily isolated from the other parts of the worldwide air transport network.

**IATA and ICAO** codes, callsign 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. This dataset has been compiled through meticulous labor by researches all over the world to give you a comprehensive detail into air transportation networks from around the globe. It requires your donation in order for them to keep updating this data source .

## 1. Empathy Map

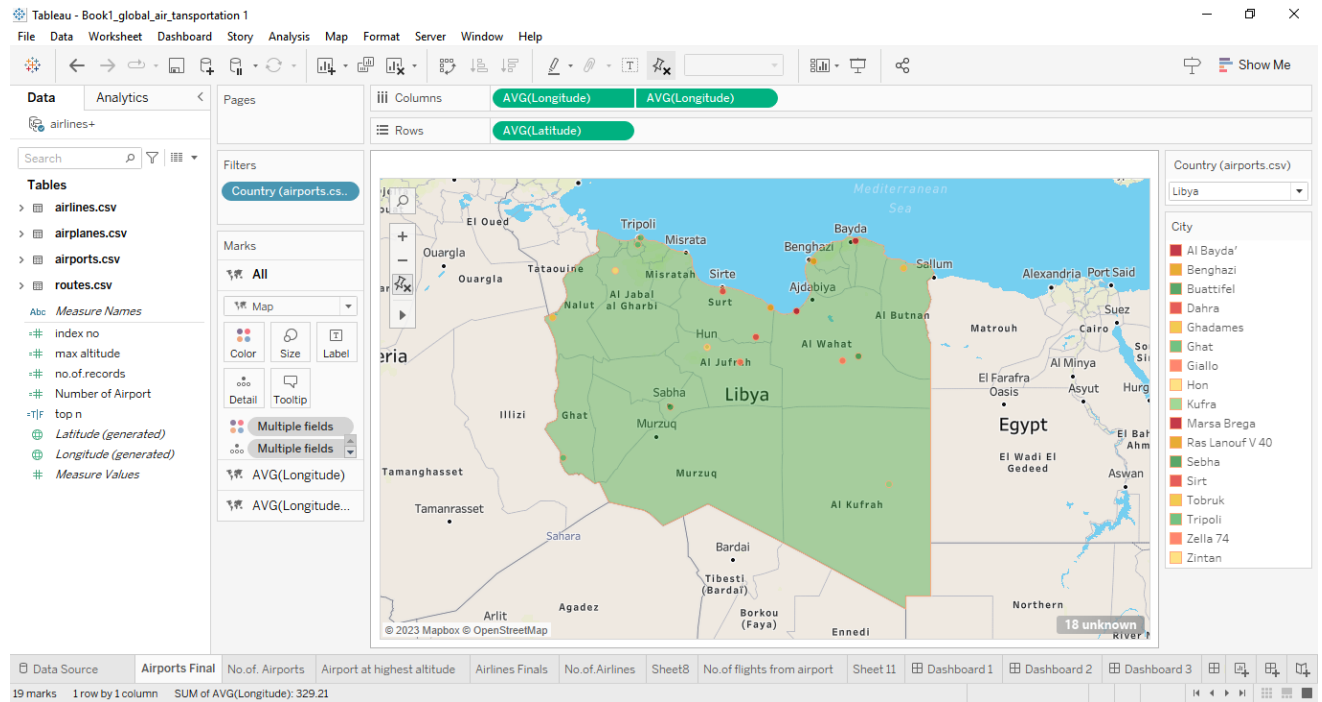


### Ideation & Brainstorming Map;-

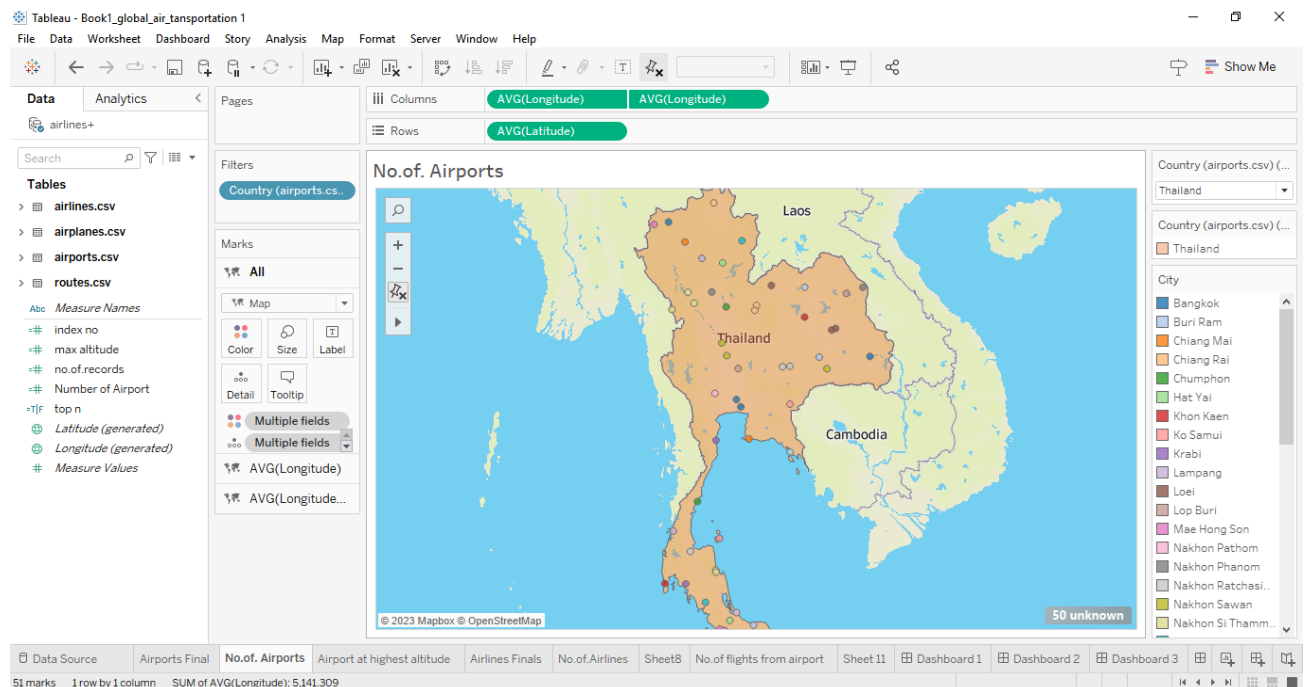


### 3.RESULT

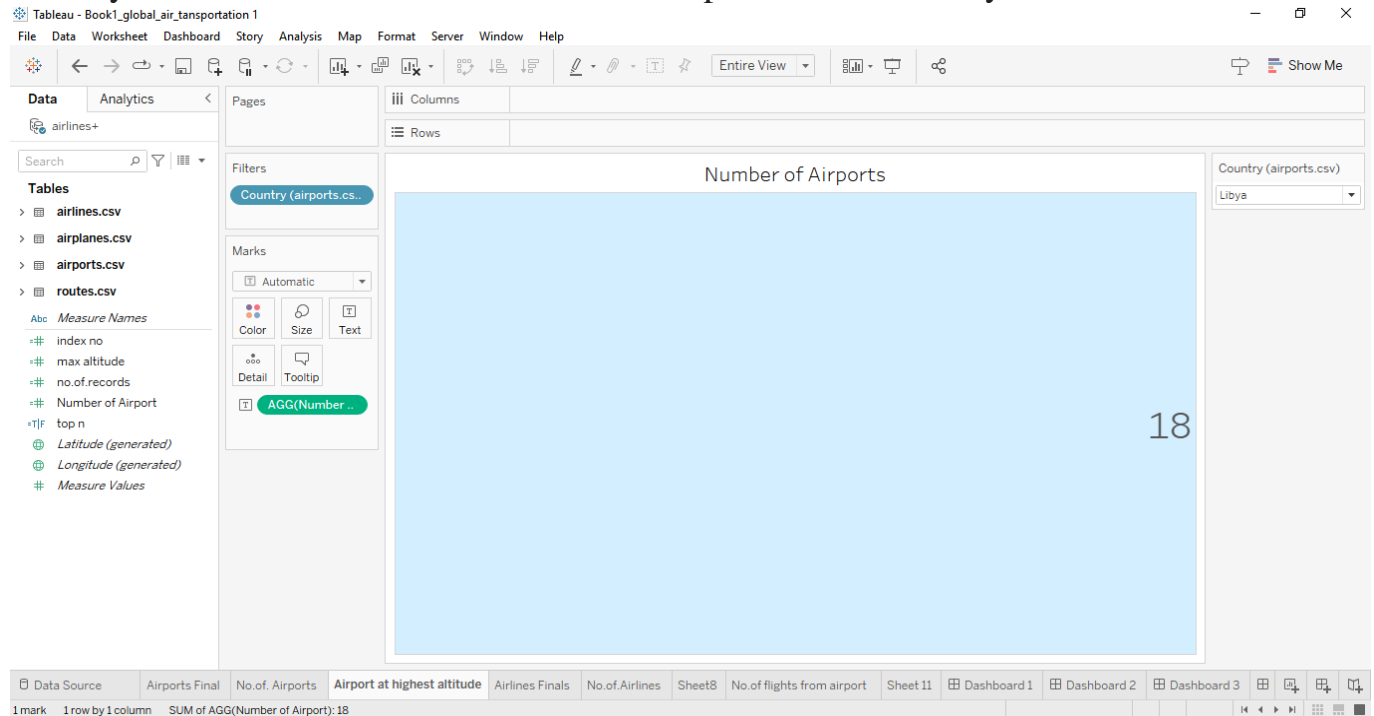
The below sheets represents that in the number of Airports within a country. The Country selected in **LIBYA**. The City of the Airport in **Libya**.



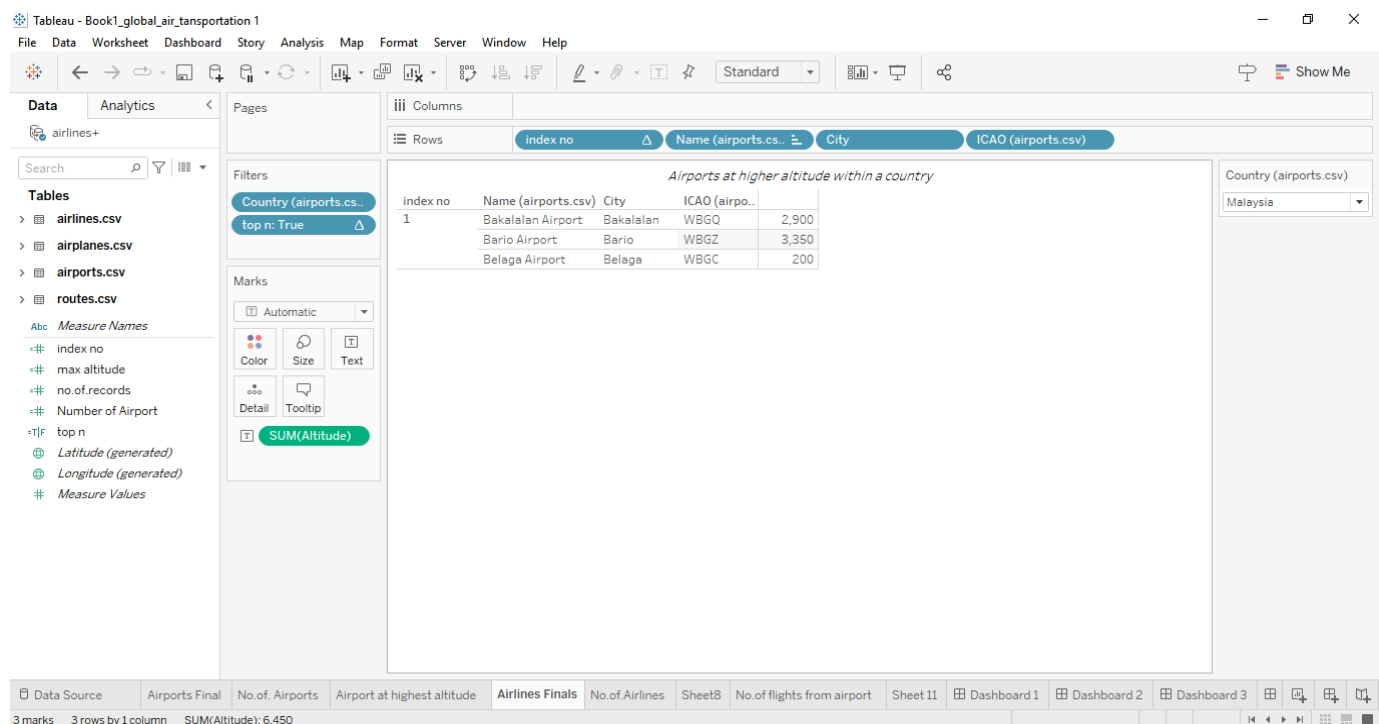
The below sheet represents that in the country with **THAILAND**. Number of Airports from the **City** the within a **Thailand**.



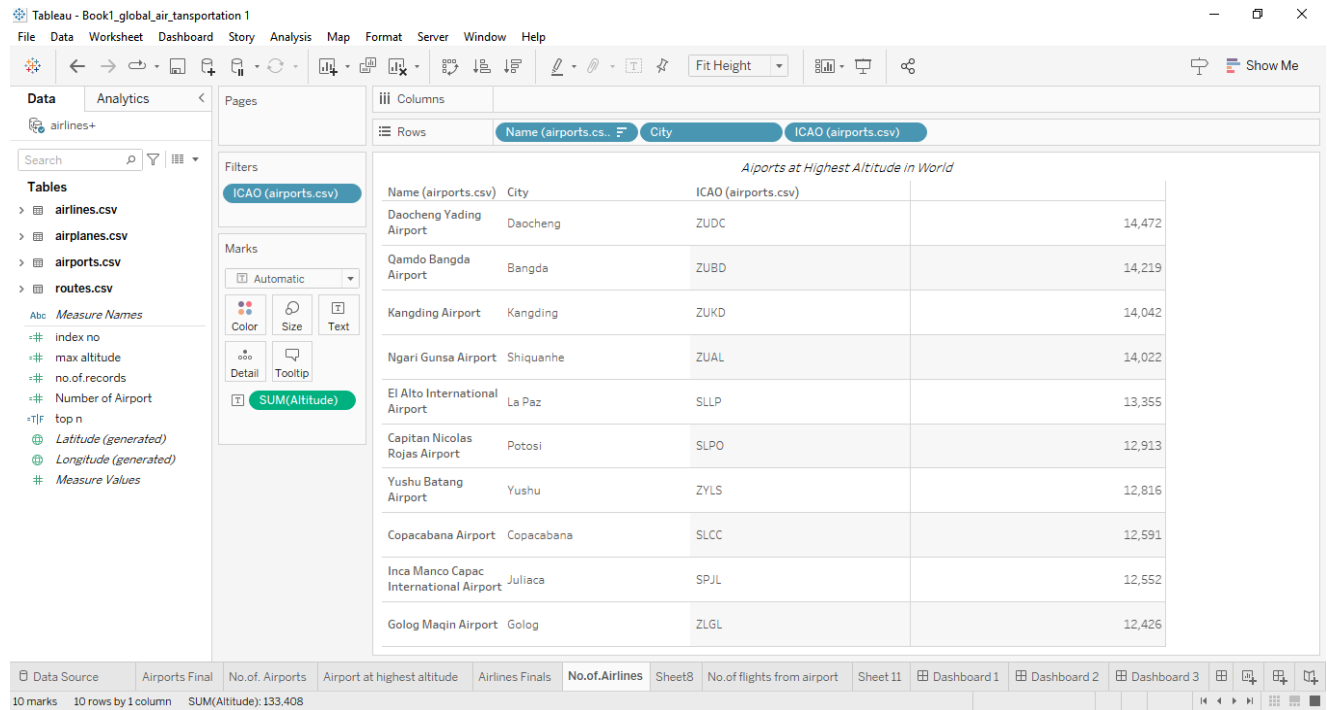
The below sheets represents as the **Number of Airports in their country**. The Country selected with the total number of airports in the Country.



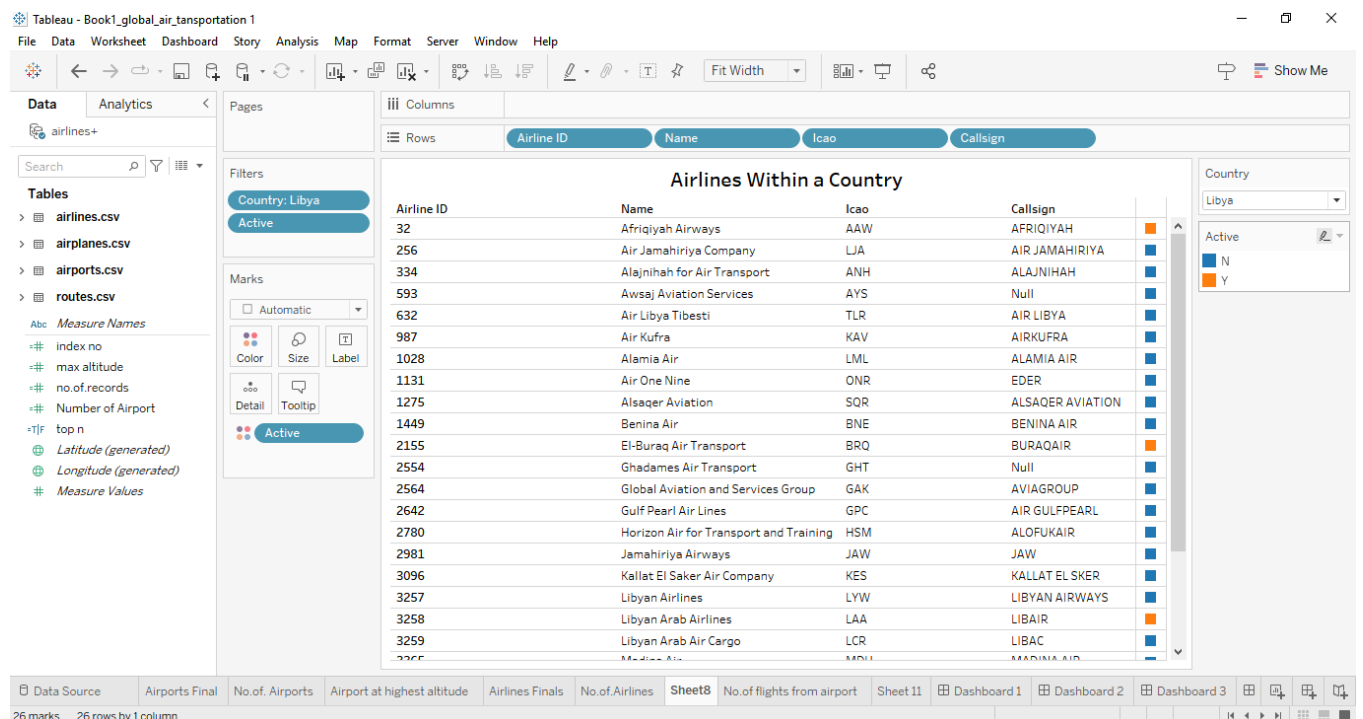
The below represents that the **AIRPORT AT HIGHER ALTITUDE WITHIN A COUNTRY**. I have selected the country with **Malaysia**.



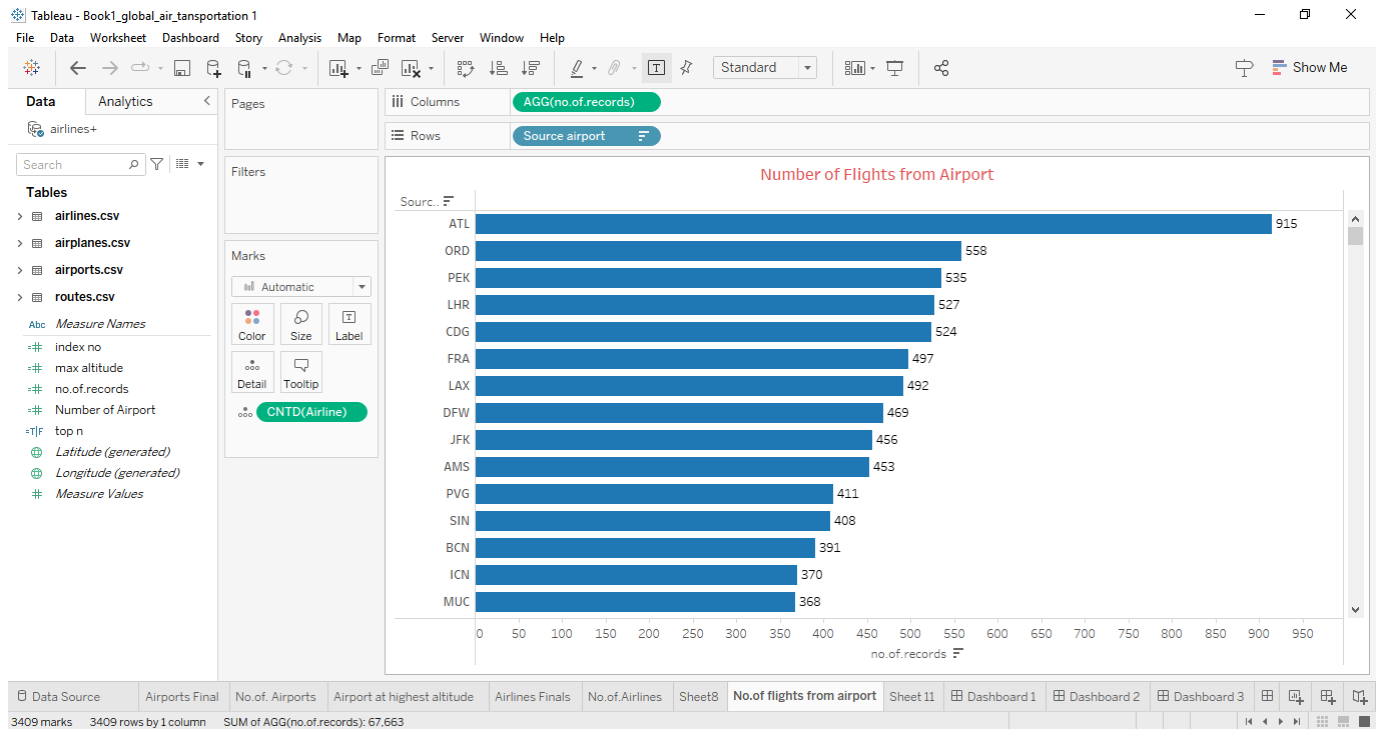
The below represents that the AIRPORT AT HIGHER ALTITUDE IN WORLD .The most highest altitude in the world.



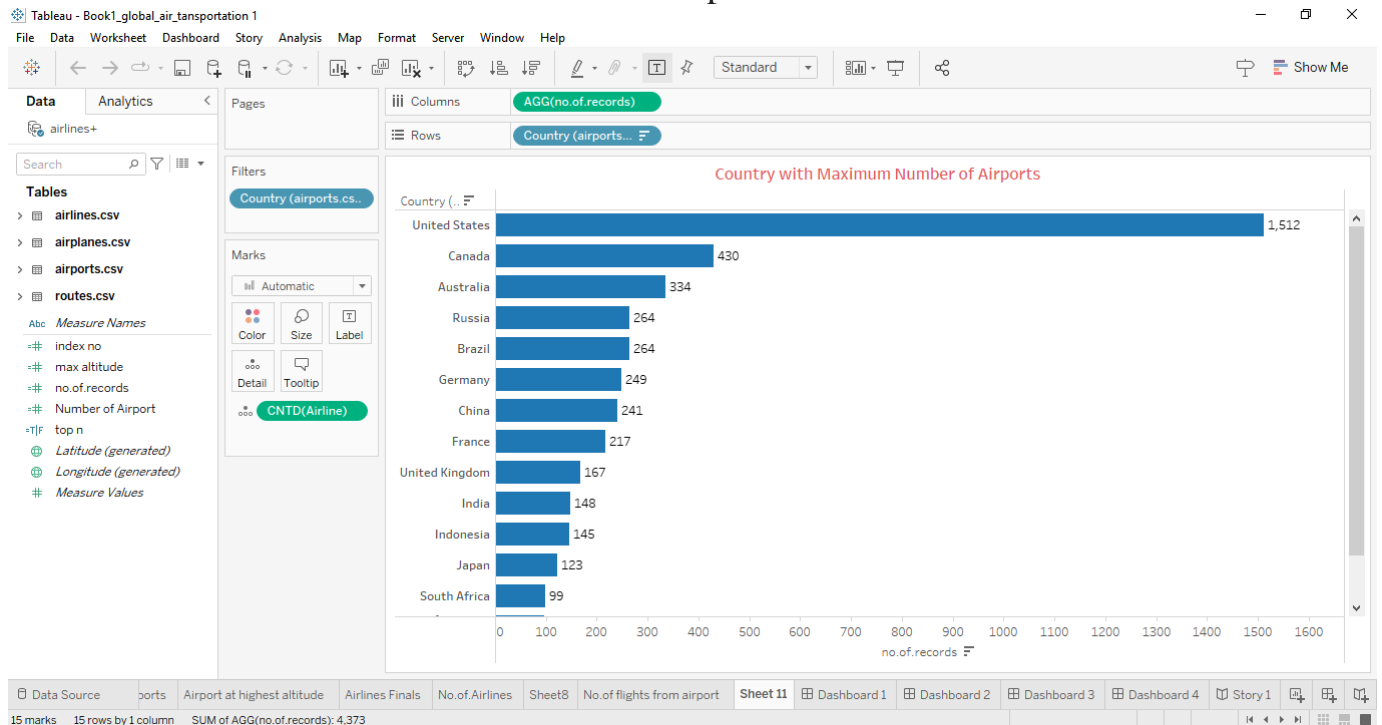
The below represents as the AIRLINES WITHIN A COUNTRY. The number of active and non active airlines within a country



The below sheets represents as **NUMBER OF FLIGHTS FROM AIRPORT**. The number of records from source of the airport.

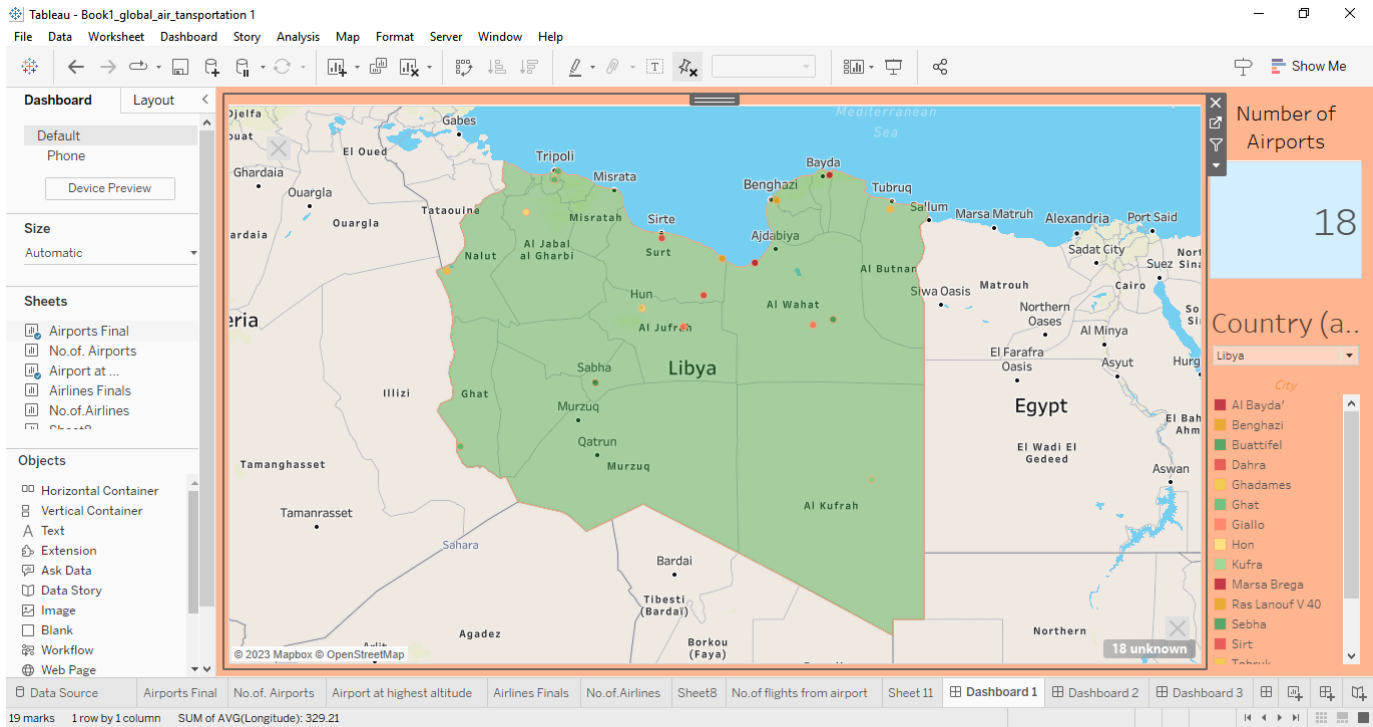


The below sheets represents as **COUNTRY WITH MAXIMUM NUMBER OF AIRPORT**. The maximum number of airport in the world.





DASHBOARD 1



DASHBOARD 2

Tableau - Book1\_global\_air\_transportation 1

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Dashboard Layout

Default Phone Device Preview

Size Automatic

Sheets

- Airports Final
- No. of Airports
- Airport at ...
- Airlines Finals
- No. of Airlines

Objects

- Horizontal Container
- Vertical Container
- Text
- Extension
- Ask Data
- Data Story
- Image
- Blank
- Workflow
- Web Page

Airlines Within a Country

Airline ID	Name	Icao	Callsign	
32	Afriqiyah Airways	AAW	AFRIQIYAH	
256	Air Jamahiriya Company	LJA	AIR JAMAHIRIYA	
334	Alajnihah for Air Transport	ANH	ALAJNIHAH	
593	Awsaj Aviation Services	AYS	Null	
632	Air Libya Tibesti	TLR	AIR LIBYA	
987	Air Kufra	KAV	AIRKUFRA	
1028	Alamia Air	LML	ALAMIA AIR	
1131	Air One Nine	ONR	EDER	
1275	Alsaqer Aviation	SQR	ALSAQER AVIATION	
1449	Benina Air	BNE	BENINA AIR	
2155	El-Buraq Air Transport	BRQ	BURAQAIR	
2554	Ghadames Air Transport	GHT	Null	
2564	Global Aviation and Services Group	GAK	AVIAGROUP	
2642	Gulf Pearl Air Lines	GPC	AIR GULFPEARL	
2780	Horizon Air for Transport and Training	HSM	ALOFUKAIR	
2981	Jamahiriya Airways	JAW	JAW	
3096	Kallat El Saker Air Company	KES	KALLAT EL SKER	
3257	Libyan Airlines	LYW	LIBYAN AIRWAYS	
3258	Libyan Arab Airlines	LAA	LIBAIR	
3259	Libyan Arab Air Cargo	LCR	LIBAC	
3365	Madina Air	MDH	MADINA AIR	
3565	Musrata Air Transport	MMR	MUSRATA AIR	
3629	Nayzak Air Transport	NZA	Null	

Country

Libya

Number of Airports

18

Active

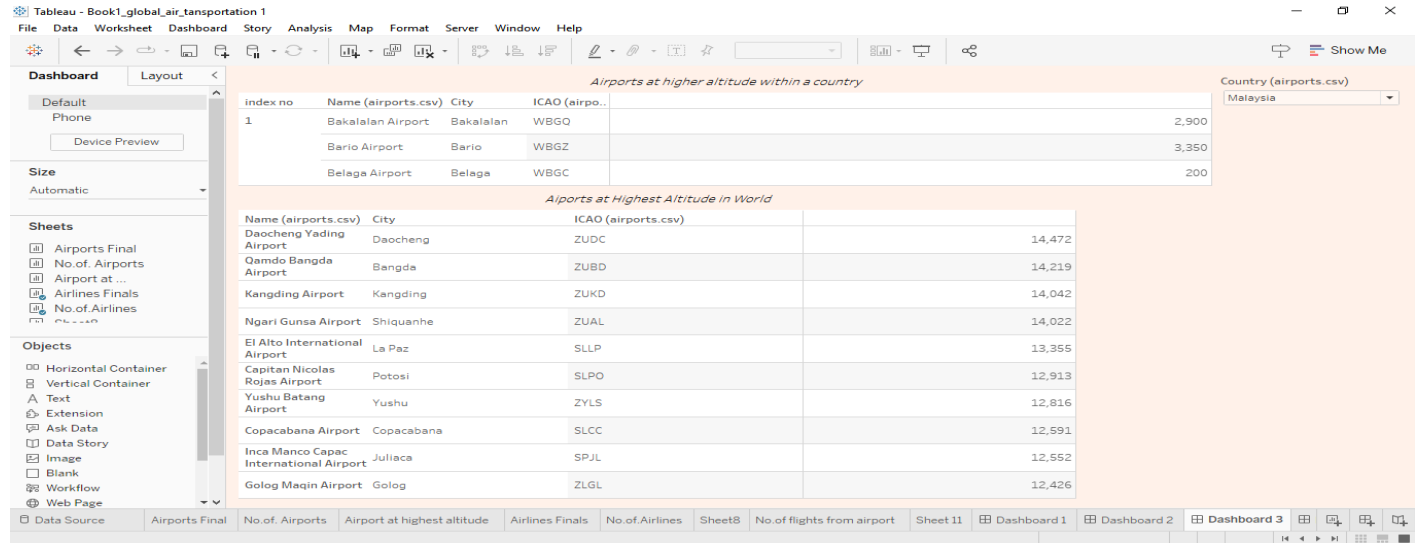
N Y

Active

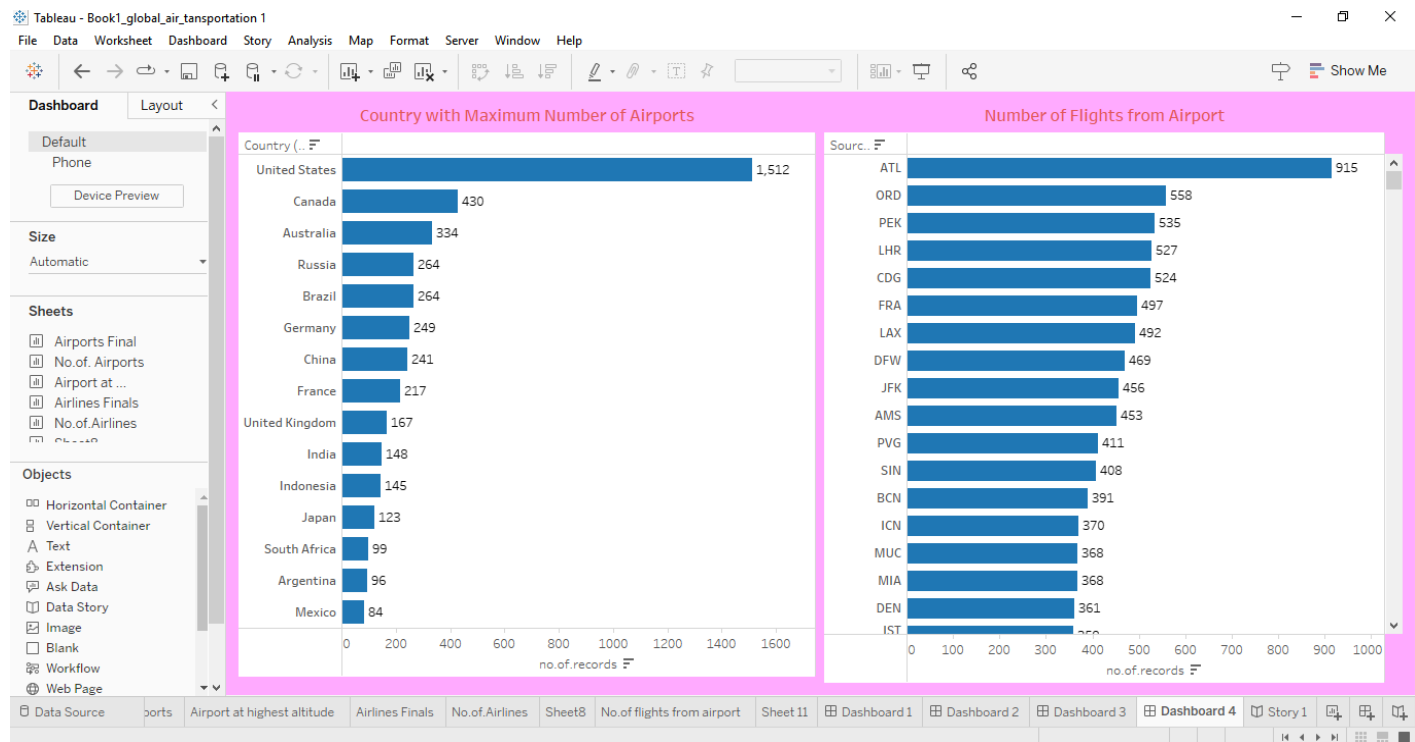
(All)

19 marks 1 row by 1 column SUM of AVG(Longitude): 329.21

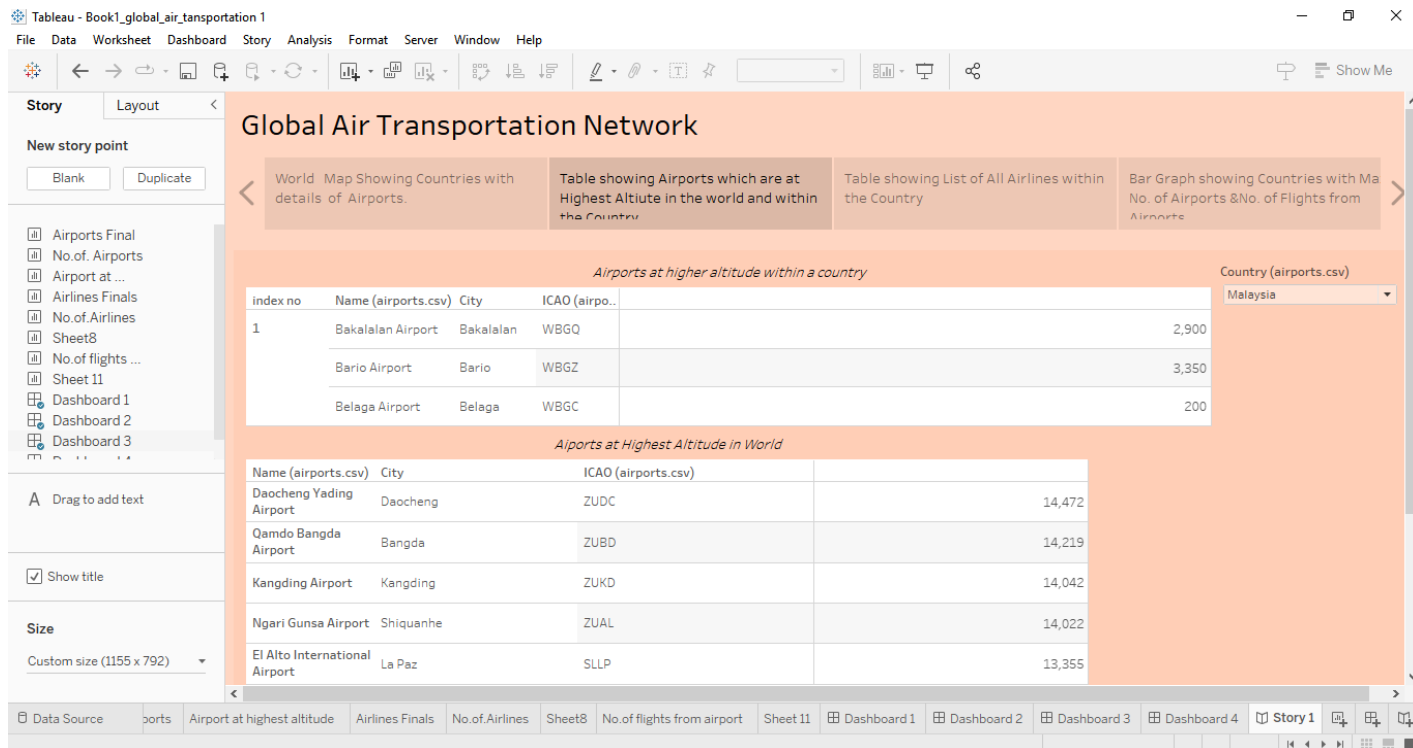
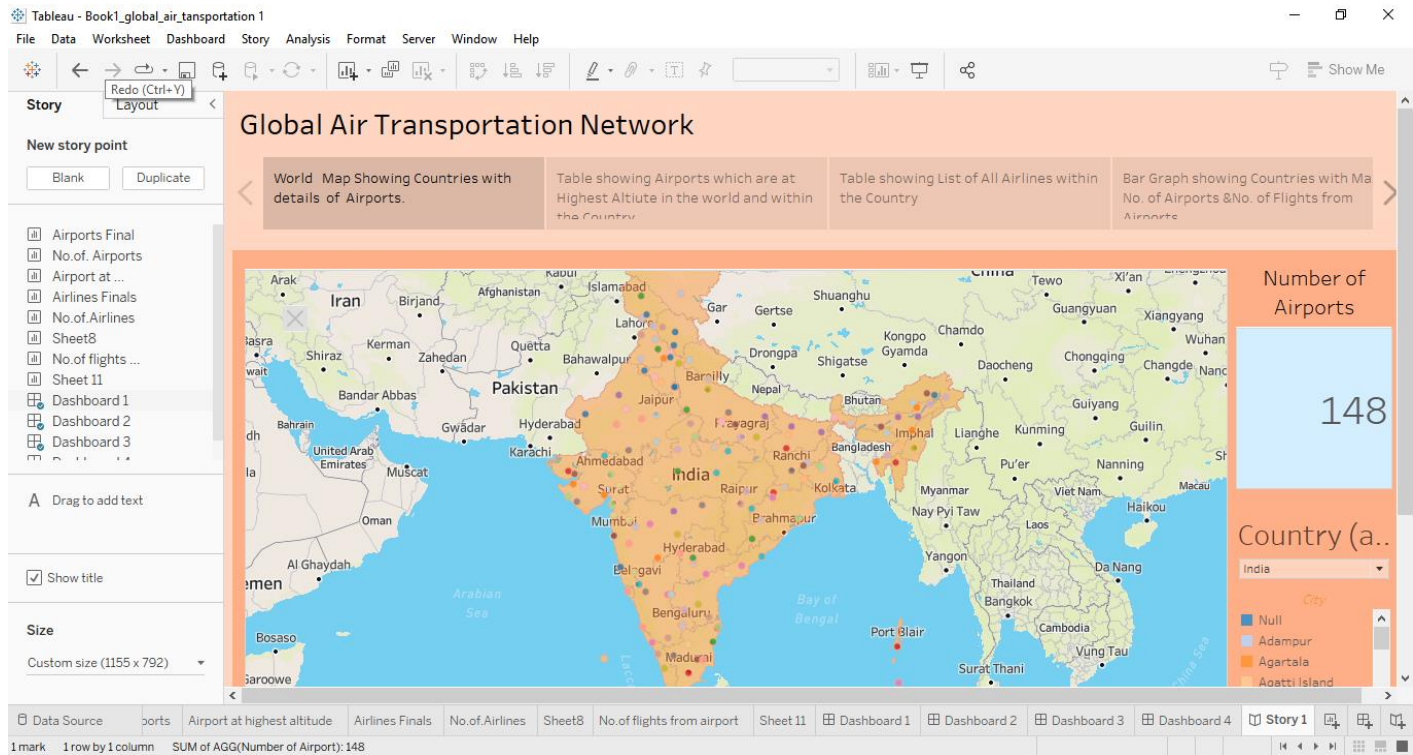
## DASHBOARD 3

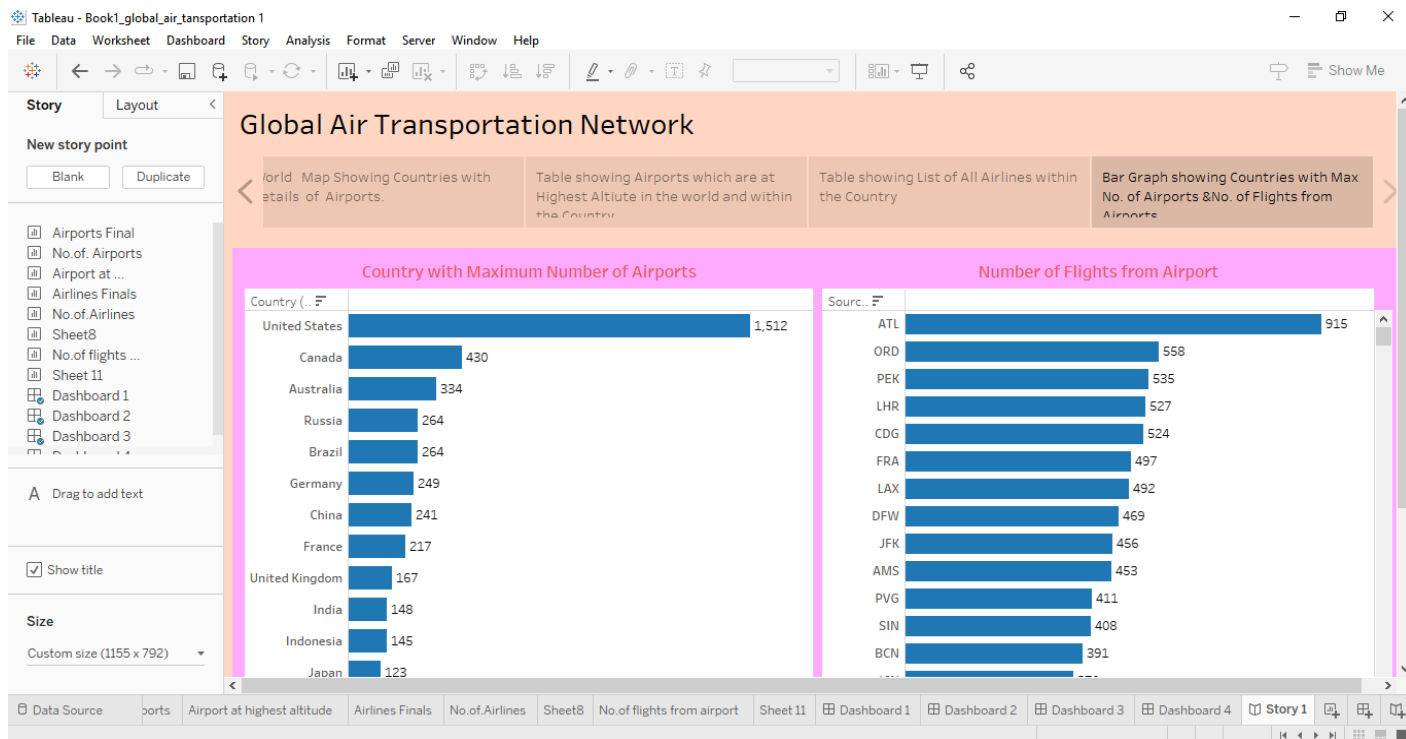
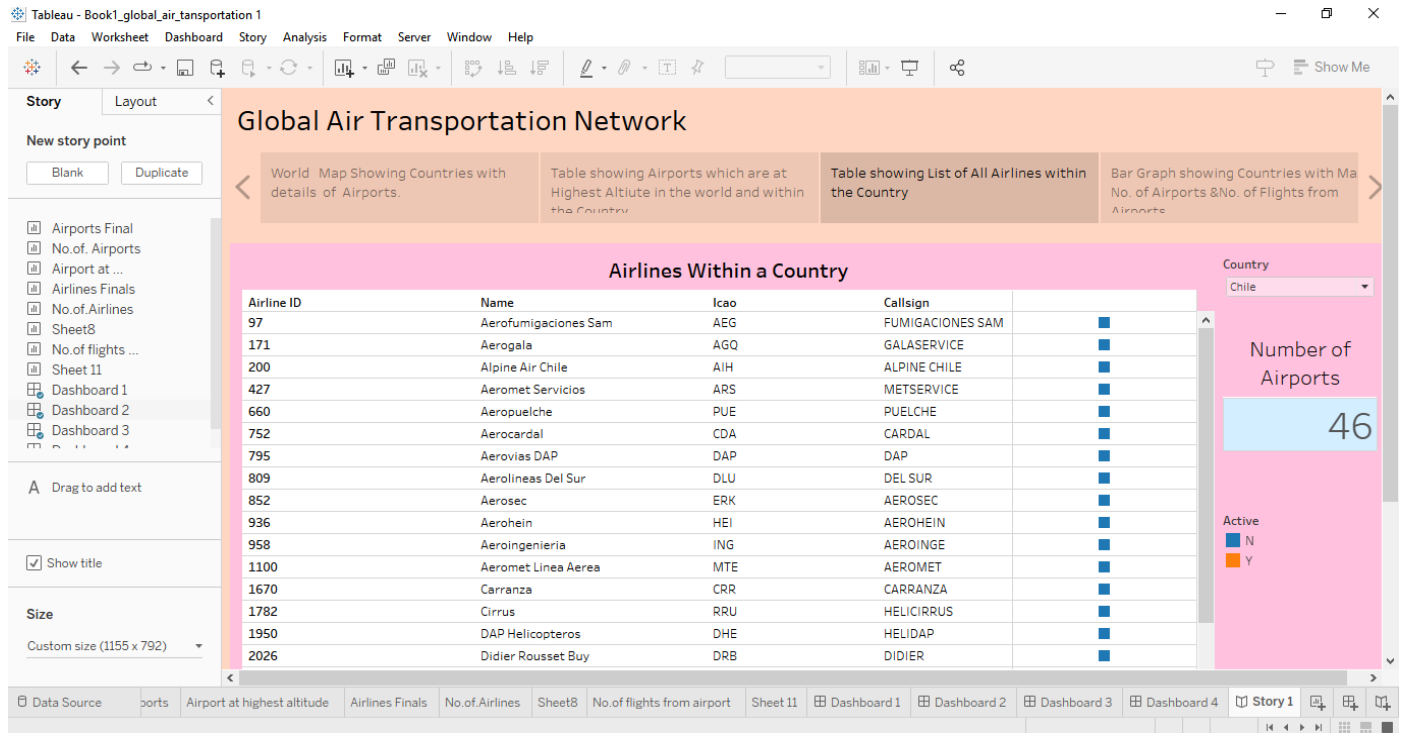


## DASHBOARD 4



# STORY





## 4. ADVANTAGES & DISADVANTAGES

### Advantage;-

- High speed Air is the type of freight capable of travelling long in short periods of time...
- Send almost everywhere your freight
- High Standard of Security
- Natural Route. ..
- There is less need for heavy packaging

### Disadvantage;-

- Risky. . Air travel is the riskiest mode of transport, since there can be considerable losses to goods, customer and crews as a result of a minor crash. ...
- Cost
- Some product limitation.
- Capacity for small carriage...
- Enormous investment.

## APPLICATIONS;

There are many solutions in this project. Some of them are,

- Modeling air transport networks aims airline companies to organize their routes in a cost-efficient way and therefore maximize their profits.
- . Air transport network models are also the tool to investigate system robustness.
- They help to determine weaknesses of the system in case of various kinds of disruptions.

## 6. CONCLUSION

Problem definition and design think is made through the Empathy map and Ideation & Brainstorming map. Data is analysed through data visualization by Tableau desktop. Visualizations, dashboard, and story are made in Tableau public.

## 7. FUTURE SCOPE

The complexity of the air transport network has led many to apply network science to better understand its properties at macroscopic (network properties), and mesoscopic (community Longitudinal analysis is rare, because the data is expensive to obtain. This section will review both existing research and conduct longitudinal case studies on sub-regions of the air transport network.

The system is able to predict whether Air transportation network will be connected safe or not .

As a result, secure and cyber security transportation ways and roots. The system will be connected as the Unlocking Global air transportation network data with the source are analysis within the project.

