project 4: **Build Data Dashboard** Maha Alsuwayyid Aug, 8, 2020	report

Project 4: Build Data Dashboard

In this project, I created six visualizations to reveal insights from a given dataset and used three of these visualizations to building a simple dashboard by tableau Public. (three worksheets to build one dashboard and extra three worksheets)

I've worked on a **flight delay and cancellation dataset**, this data comes from the Kaggle dataset, and it's open-source and we can work on it.

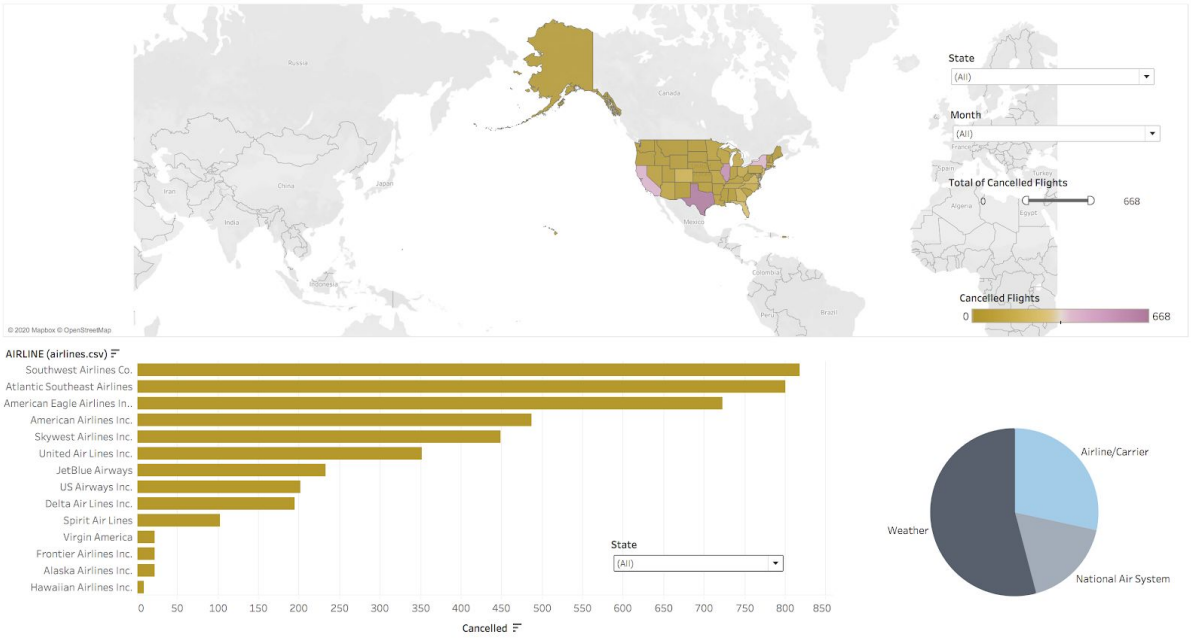
First, I cleaned this data by using Data Interpreter feature of tableau, then I linked the (**airlines and airports**) tables with **flights** table by using **Inner Join**.

Second, I created the visualizations and dashboard from this data.

below, I will provide a brief description of each Insight from the visualizations with its details.

project 4: **Build Data Dashboard** Maha Alsuwayyid Aug, 8, 2020	report

<Flight Cancellations Dashboard (have Total of Cancelled Flights, Cancellations Reasons, and Cancelled Flights for each airline)>



Link:

https://public.tableau.com/views/project4BuildDataDashboard/FlightCancellationsDashboard?:language=en&:display_count=y&publish=yes&:origin=viz_share_link

Summary:

the **Flight Cancellations Dashboard** is showing the total of Cancelled Flights for each State of the USA States, and what is the Airline has the most canceled flights. and what is the total of cancelled flights for each cancellation reason.

1. So from the dashboard for the first sheet (**Total of Cancelled Flights for each State Map**) we can see that the state that has most cancelled flights is **TX**, with **668 cancelled flights.**

   and the state that has least cancelled flights are (**AS, DE, GU, VI**) with **0 cancelled flight.**

2. And from the dashboard for the Second Sheet (**Total of Cancelled Flights For each cancellation Reason PieChart**), we can see that the most cancellation due to the **weather**, with **2397 canceled flights**.
   and the least cancellation due to the **National Air system**, with **776 Canceled flights**.
3. And from the dashboard for the Third Sheet (**Total of Cancelled Flights for each Airline BarChart**), we can see that the Airline that has most cancelled flights is **Southwest Airlines Co.**, with **818 cancelled flights**.
   and the Airline that has least cancelled flights is **Hawaiian Airlines Inc.**, with **8 cancelled flights**.

Design:

1. for the first sheet (**Total of Cancelled Flights for each State Map)** I choose the **Map**, it is the best representation for this type of data (states and Cancelled flights) and here, I used some of tableau features to more easily interactivity and accurate with this visualization as follow:
   - I converted the data type of **Month** from number to string, then converted month names by using **Aliases** feature. then use **Month** as a filter with a **single value(drop-down list)** type.
   - I added **State** as a filter with a **single value(drop-down list)** type.
   - I added **Sum(cancelled)** as a filter with (Total of cancelled Flights) name.
   - I added (**State and Country**) to **detail** card to display (State and Country) with data in map.
   - I used colors for the Map that work with colorblindness.

project 4: **Build Data Dashboard** Maha Alsuwayyid Aug, 8, 2020	report

2. for the second sheet (**Total of Cancelled Flights For each cancellation Reason PieChart)** we have only three reasons So, I choose the **Pie Chart**, it is the best representation for the Cancellation Reasons,and I used some of tableau features to more easily interactivity and accurate with this visualization as follow:
    - I replaced the Cancellation Reasons letters with the full reason name to make the data of visualizations more readable by using **Aliases**.
    - I added **Cancellation Reasons** to **Color** card to display color for each reason of Cancellation Reasons in pie chart.
    - I added **Sum(cancelled)** to **angle** card to display total cancelled flights based on reason.
    - I added **Cancellation Reasons** to **tooltip** card to display the name of reason as tip for each part of pie chart part.
    - I used colors for the pie chart that work with colorblindness.

3. for the third sheet (**Total of Cancelled Flights for each Airline BarChart)** I choose the **Bar chart**, it is the best representation for this type of data (Total Cancelled flights for each Airline) and here, I used some of tableau features to more easily interactivity and accurate with this visualization as follow:
    - I swep between columns and rows by using **Swep** icon.
    - I sort the bars by using **Sort** icon.
    - I added **State** as a filter with a **single value(drop-down list)** type.
    - I used colors for the bar chart that work with colorblindness.

project 4: **Build Data Dashboard** Maha Alsuwayyid Aug, 8, 2020	report

Link:

https://public.tableau.com/views/project4BuildDataDashboard/TotalofDelaysforeachAirline?:language=en&:display_count=y&:origin=viz_share_link

Summary:

the **fourth sheet (Total of Delays for each Airline)** is showing the Total of all possible Delays that found in the dataset (Airline/ Air System / Weather / Late aircraft / Security / Departure and Arrival) Delays for each Airline, and what is the Airline that has the most Delays. and what is the Airline that has the fewest Delays according to each delays type.

- So, for **Airline delays** we can see that the Airline that has most Delays is **Southwest Airlines Co.**, with **182,670 Airline delays.**

and the Airline that has fewest Delays is **Virgin America** with **7583 Airline delays.**

- for **Air System delays** we can see that the Airline that has most Delays is **Delta Air Lines Inc.**, with **87,162 Air System delays.**

  and the Airline that has fewest Delays is **Hawaiian Airlines Inc.** with **205 Air System delays.**
- for **Weather delays** we can see that the Airline that has most Delays is **Delta Air Lines Inc.**, with **32,138 Weather delays.**

  and the Airline that has fewest Delays is **Hawaiian Airlines Inc.** with **402 Weather delays.**
- for **Late aircraft delays** we can see that the Airline that has most Delays is **Southwest Airlines Co.**, with **316,320 Late aircraft delays.**

  and the Airline that has fewest Delays is **Hawaiian Airlines Inc.** with **5258 Late aircraft delays.**
- for **Security delays** we can see that the Airline that has most Delays is **American Airlines Inc.**, with **1130 Security delays.**

  and the Airline that has fewest Delays is **Atlantic Southeast Airlines, United Air Lines Inc. and Frontier Airlines Inc.** with **0 Security delays.**
- for **Departure delays** we can see that the Airline that has most Delays is **Southwest Airlines Co.**, with **648,419 Departure delays.**

  and the Airline that has fewest Delays is **Hawaiian Airlines Inc.** with **589 Departure delays.**
- for **Arrival delays** we can see that the Airline that has most Delays is **Southwest Airlines Co.**, with **289,992 Arrival delays.**

  and the Airline that has fewest Delays is **Alaska Airlines Inc.** with **-4007 Arrival delays.**

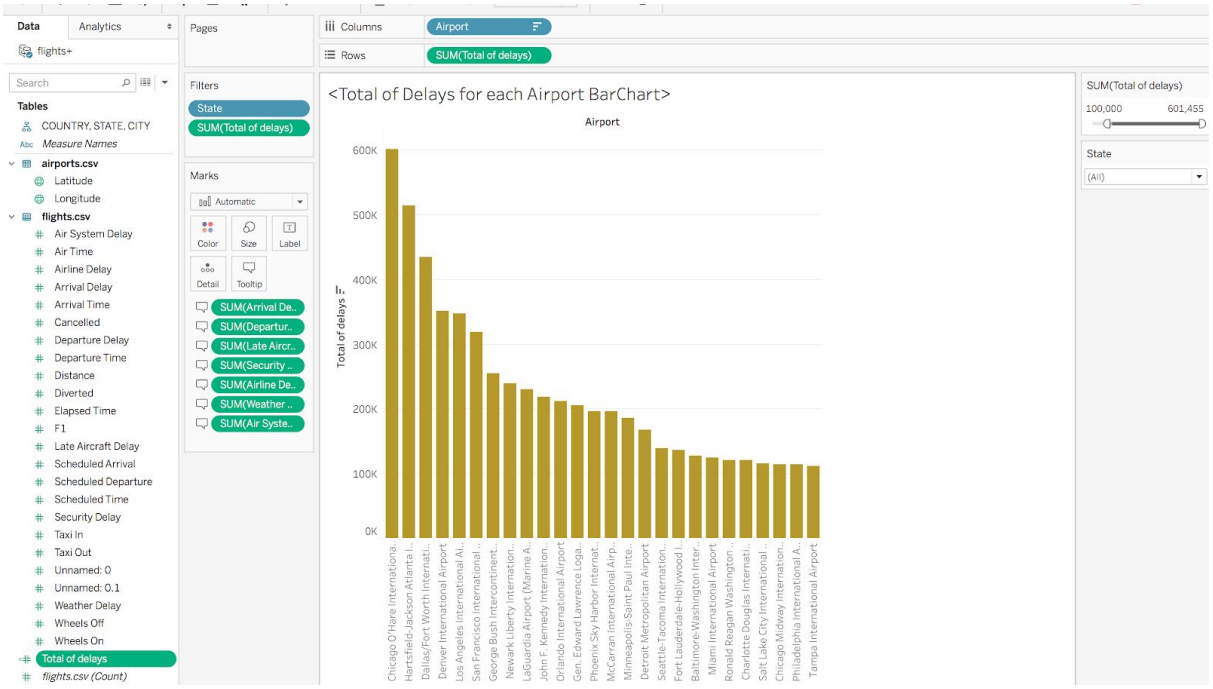
project 4: **Build Data Dashboard** Maha Alsuwayyid Aug, 8, 2020	report

Design:

I choose the **Bar chart**, it is the best representation for this type of data (Total daleys for each Airline according to dayles type) and here, I used some of tableau features to more easily interactivity and accurate with this visualization as follow:

- I sort the bars by using **Sort** icon.
- I added **Airlines** as a filter with a **single value(drop-down list)** type.
- I added **State** as a filter with a **single value(drop-down list)** type.
- I used colors for the bar chart that work with colorblindness.

project 4: **Build Data Dashboard** Maha Alsuwayyid Aug, 8, 2020	report



Link:

https://public.tableau.com/views/project4BuildDataDashboard/TotalofDelaysforeachAirport?:language=en&:display_count=y&:origin=viz_share_link

Summary:

the **fifth sheet (Total of Delays for each Airport)** is showing the Total of all possible Delays that found in data set (Airline / Air System / Weather / Late aircraft / Security / Departure and Arrival) delays for each Airport on condition the total of delays equal or more than 100,000. and what is the Airport has the most Delays. and what is the Airport has the fewest Delays.

- we can see that the Airport that has most Delays is **Chicago O'Hare International Airport**, with **601,455 total of delays.**

  and the Airport that has fewest Delays is **Tampa International Airport** with **111,966 total of delays.**

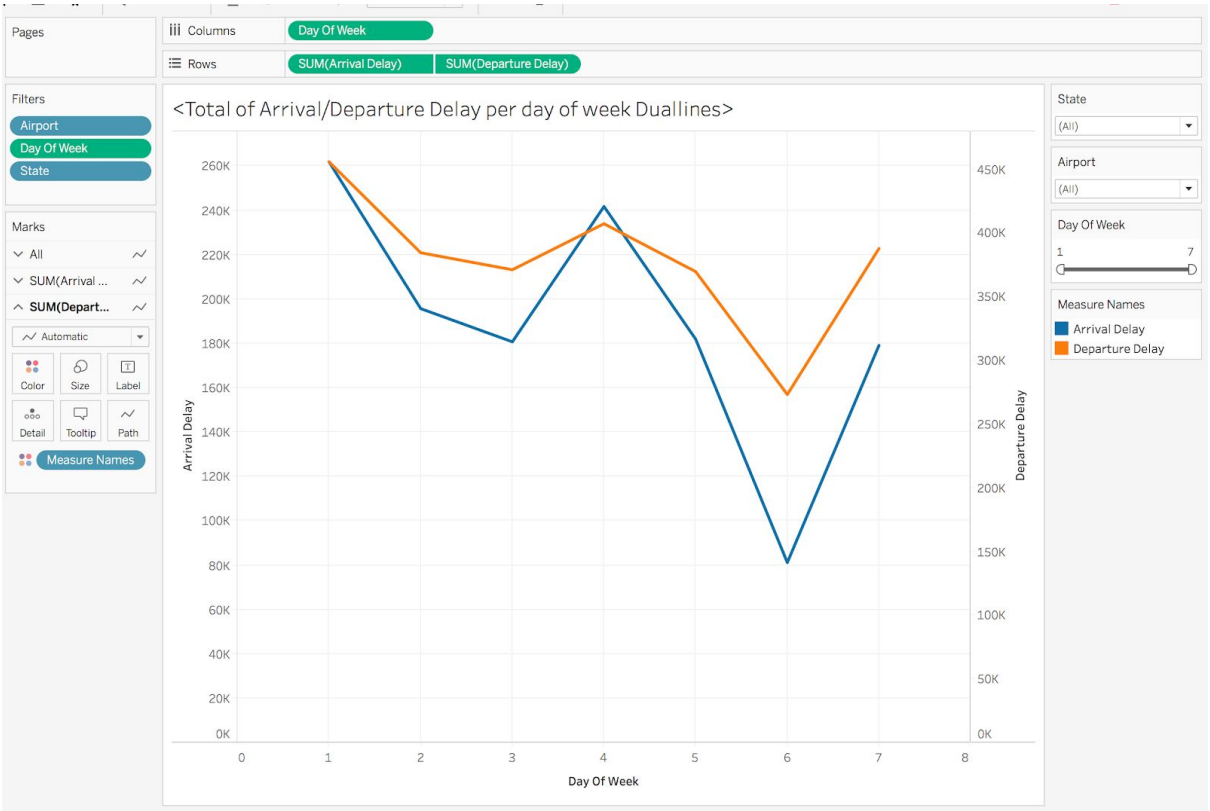
project 4: **Build Data Dashboard** Maha Alsuwayyid Aug, 8, 2020	report

Design:

I choose the **Bar chart**, it is the best representation for this type of data (Total daleys for each Airport) and here, I used some of tableau features to more easily interactivity and accurate with this visualization as follow:

- I Create **calculated field** with total of delays name that sum all the delays types (**[Airline Delay]+[Arrival Delay]+[Departure Delay]+[Air System Delay]+[Late Aircraft Delay]+[Security Delay]+[Weather Delay]**) by using calculated field feature.
- I sort the bars by using **Sort** icon.
- I added **State** as a filter with a **single value(drop-down list)** type.
- I added **Sum(Total of delays)** as a filter and I set the range to start from 100,000 with the name (**Total of delays**).
- I added the sum of each delay type to tooltip card to display the total of each delays types as a tip for each bar in case we need more info.
- I used colors for the bar chart that work with colorblindness.

project 4: **Build Data Dashboard** Maha Alsuwayyid Aug, 8, 2020	report



Link:

https://public.tableau.com/views/project4BuildDataDashboard/TotalofArrivalDepartureDelaypderdayofweekDuallines?:language=en&:display_count=y&:origin=viz_share_link

Summary:

the **sixth sheet (Total of Arrival/Departure Delays per day of week Duallines)** is showing the Total of Arrival/Departure Delays for each day of week and what is the day of week has the most Arrival/Departure Delays. and what is the the day of week has the fewest Arrival/Departure Delays.

- we can see that the day of week that has most Arrival and Departure Delays is **Sunday (day 1)**, with **261,935 Arrival delays** and **455,860 Departure Delays.**

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- and the the day of week that has fewest Arrival and Departure Delays is **Friday (day 7)** with **81,214 Arrival delays** and **273,264 Departure Delays.**

Design:

I choose the **Duallines,** to show the increasing of Arrival/Departure Delays per week days and comparing between Arrival/Departure Delays that represent the majority of delays. and here, I used some of tableau features to more easily interactivity and accurate with visualization as follow:

- I added **day of week** as a filter with (day of week) name.
- I added **Airpot** as a filter with a **single value(drop-down list)** type.
- I added **State** as a filter with a **single value(drop-down list)** type.
- I used colors for the Duallines that work with colorblindness.

Resources:

- Data Visualizations lessons - Business analyst nanodegree by Udacity. link
- Flight delay and Cancellation Dataset by Kaggle**.** link
- Tableau public to build data dashboard. link