Flight Data Visualization

By Natalie Urban

1. Which airlines have the worse delays?

Dashboard link (Flight Delays Dashboard):
https://public.tableau.com/app/profile/natalie.urban/viz/FlightDelaysDashboard_16715096331130/Dashboard1?publish=yes

Summary:

We can see from the dashboard linked above, that the states of Texas, California, and Florida have the highest sum of arrival flight delays in minutes. Texas takes the lead with a sum of 174,212 minute delays in 2015, while California had 171,586 minute delays and Florida had 116,929 minute delays. The airlines with the highest sum of delay minutes on average are Hawaiian Airlines with an average of 22.7-minute delays in the year 2015, Atlantic Southeast Airlines with an average of 21.9-minute delays, and Delta Airlines with an average of 21.6-minute delays. The top city with the highest minute delays is Marquette Michigan with an average of 83.4-minute delays in 2015.

Design:

The overall design of this dashboard was intended with the map visualization displayed in the top larger section, so that there is more room to show the spaced-out destinations. In this visualization, I also made sure to implement colors that easily show users which states are higher in delay minutes. I displayed the sum of delay minutes in each state as well, since the colors that are more similar can easily be distinguished in which state is higher in delay minutes. The Average Delays by Airline visualization was created as a horizontal bar char so that the airlines can be easily read and compared. The bar chart is colored orange so that it is not mistaken to pair with the map chart's blue colors, but also for the accessibility of colorblind users. Finally, the Top Cities in Arrival Flight Delays is a bar chart to display the differences in the amounts of flight delay minutes by city. I filtered the data so that it only displayed the top 8

cities because the graph was too large, and it was unnecessary to show every city to answer the question. I did add a user-interaction filter so that the user can see all the cities or only the top two cities if desired. The bars are grey, so they are accessible for colorblind people. I also included the city names and state abbreviations so the results can easily be seen.

2. What causes delays?

Dashboard link (Flight Delay Causes Dashboard):
https://public.tableau.com/app/profile/natalie.urban/viz/FlightDelayCausesDashboard/Dashboard2?publish=yes

Summary:

From the dashboard, we see that the Chicago O'Hare International Airport is the highest in delay minutes in most of the delay types. This airport has a total of 79,563 late aircraft delay minutes and a total of 72,418 air system delay minutes. The Hartsfield-Jackson Atlanta International Airport has the highest total of airline delays with 62,505 minutes. Dallas/Fort Worth International Airport has the highest sum of weather delays with 10,028 minutes. We can also see that late aircraft delays are in most cases caused by late aircraft delays in terms of the sum of delay minutes over the months of 2015. It is also shown that the month of June is highest in all total delay minutes except for weather delays, which has the highest delay minutes in February (24,203 delay minutes), and security delays, which has the highest delay minutes in November (864 delay minutes).

Design:

For this dashboard, I included two visualizations. One visualization shows the minutes of different kinds of delays in each airport, while the other visualization displays the types of delays, and their delay minute totals over the year 2015. I color-coordinated both graphs so that the delay types are the same and easily recognized when going from one graph to another. The colors for these visualizations are also readable for those with color-blindness. The Flight

Delay Causes by Airport graph is a vertical bar graph, I chose this graph so that it shows the minutes of different types of delays by airport to help the user see which delays are more common at which airports and which types of delays have the highest totals in delay minutes. I also filtered this graph's data since the other airport total delay minutes were so small in comparison to the airports shown that the data was unnecessary to answer the question. I designed the Flight Delay Causes by Month graph to be a line graph since we are looking at delay type minute totals over the span of months. I put each of the data type lines in one graph so they could be more easily compared.

3. What time of the year are flights the longest?

Visualization links (Longest Flights by Date, Longest Flights by Day, Longest Flights by Weekday)
https://public.tableau.com/app/profile/natalie.urban/viz/LongestFlightsbyDate/Sheet6?publish=yes
https://public.tableau.com/app/profile/natalie.urban/viz/LongestFlightsbyDate/Sheet7?publish=yes
https://public.tableau.com/app/profile/natalie.urban/viz/LongestFlightsbyMonth/Sheet8?publish=yes (see note with image below)

Summary:

We can see from the visualization, that the month of July is the highest in total flight minutes, with the highest day in total flight minutes as the 8th and the day of the week with the highest total of flight minutes as Thursday. July has a total of 3,637,760 minutes total in terms of total flight time. Over the span of all the months, we can also see that Thursday is the most popular day for long flights in almost every month.

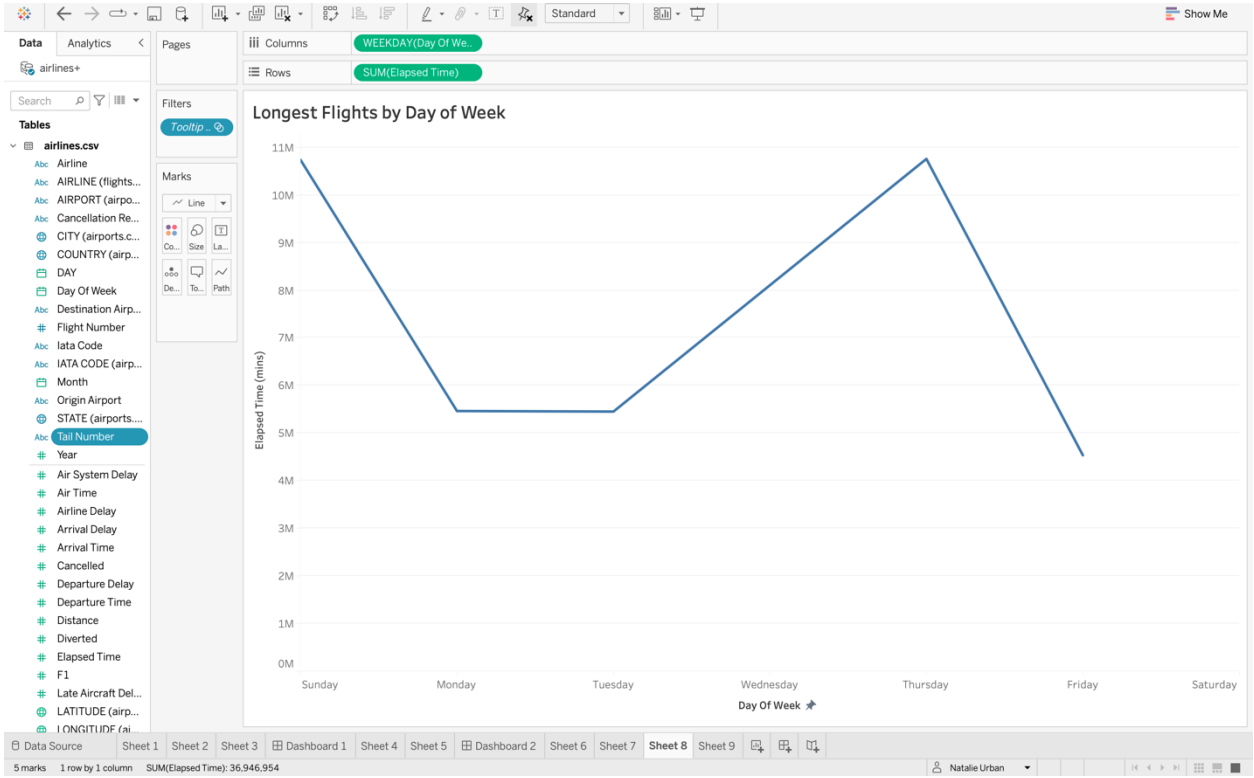
Design:

This visualization was designed as a line graph to compare the flight minutes over the months. I also included graphs in the tooltip so that the user can hover over a specified month

and see the most popular day in flight elapsed minutes and the most popular day of the week for that specific month. This allows for easier access to see the direct relationship between the dates. The day of the week chart is a line chart, to see how flight total minutes vary over the days of the week. The flight times by the day of the month is also a line chart since we are looking at flight total minutes over the span of days. The weekdays Wednesday and Saturday are missing from the line graph since there were too little values that it is barely seen in the pie chart or any chart.

Note:

For some reason, my weekdays were not showing when I displayed them on Tableau Public so I have attached an image below to show that they were included in my desktop workspace.



Resources:

Shannon Belmont. “Working with Tooltips in Tableau.” *Youtube*, uploaded by Shannon Belmont, 12 November 2020, https://www.youtube.com/watch?v=LDLvqVhvByw.