Introduction:

This project is about studying and analyzing airlines' flight delays dataset, which includes the information of 250k different flights, each flight has several variables such as airline, origin airport, destination airport, departure delay, and arrival delay in minutes.

The objective of the analysis is to help frequent travelers determine which airline and origin airport to choose, what are the regions with the highest and lowest number of canceled flights, which seasons have the lowest average arrival delay and the lowest number of delayed flights as well as the most prominent reasons that cause flight delays.

1- What are the states with the highest number of delayed and canceled flights?

Link:
https://public.tableau.com/views/FlightDelays_16639950121830/MultipleLayersMap?:language=en-US&:display_count=n&:origin=viz_share_link

Summary:
It seems that the Northern States tend to have fewer delayed and canceled flights than the Southern states.
Texas in the south has the highest number of delayed and cancelled flights among all other states.
California in the west is the second largest state in terms of the number of delayed flights and the third largest state in terms of the number of canceled flights.

Design:
I've used a multiple-layered map to let the audience get a holistic overview of the regions and the states that have the highest numbers of delayed and canceled flights.
The number of delayed flights increases as the color of the state gets darker, and the size of the dots describes the variation in the number of canceled flights for each state.

Resources:

Build a custom map
https://www.tableau.com/about/blog/2020/12/build-custom-maps-easy-way-multiple-map-layers-tableau

2- What are the most prominent causes of arrival delay?

Summary: Generally, late aircraft and airline delays are the highest reasons in terms of total delayed minutes while security and weather delays are the least.

Design: In this chart, I've used a pie chart where the size of each portion represents the sum of delayed minutes for each reason that causes an arrival delay, and labeled each with the measured value.

Resources: Build a Pie Chart
https://help.tableau.com/current/pro/desktop/en-us/buildexamples_pie.htm

3- Analyze the number of delayed flights for each airline and origin airport, and identify the lowest season in terms of average arrival delay in minutes.

Summary:
Overall, during the spring season, the number of delayed flights and the average arrival delay in minutes increase from April to June, while decreasing within the summer season from June to September.
We can observe that Southwest airline has the highest number of delayed and non-delayed flights among all other airlines, while Virgin America airline has the lowest number of delayed and non-delayed flights.

Design:
The default view shows the results for all airlines and origin airports, as the user chooses and filters an airline and origin airport the filter applies to both charts.

Users can choose and filter the preferred airline from the dropdown list to see how the number of delayed flights monthly and the average arrival delay in minutes change together on the dual axis.

Resources: N/A