Airline manufacturers: historical look on Boeing and Airbus

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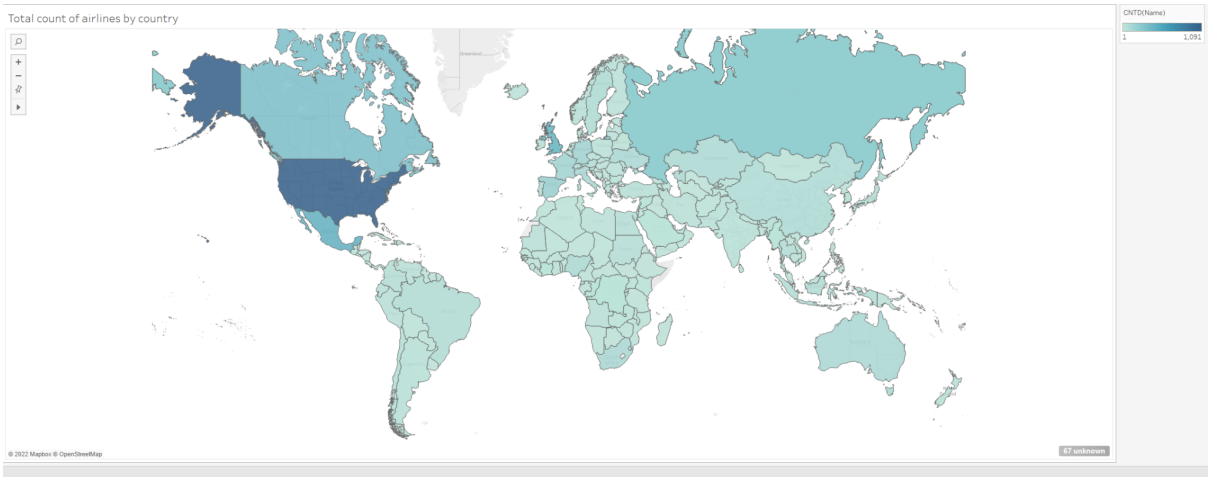
Github link: https://github.com/GustavWahl/AirlineManufacturerDataViz
Project website: https://gustavwahl.github.io/FinalProject/

Overview

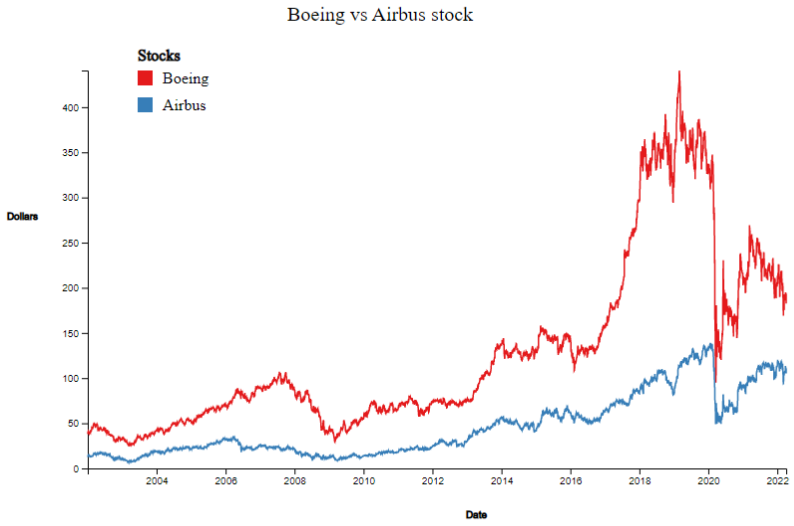
This project aims to visualize the differences and similarities between Boeing and Airbus, the two biggest airplane manufacturers in the world and also rivals. The visualizations will include stock price, historical events, airline data, comparison between countries based on the two airplane manufacturers, and destination data.

Completed features

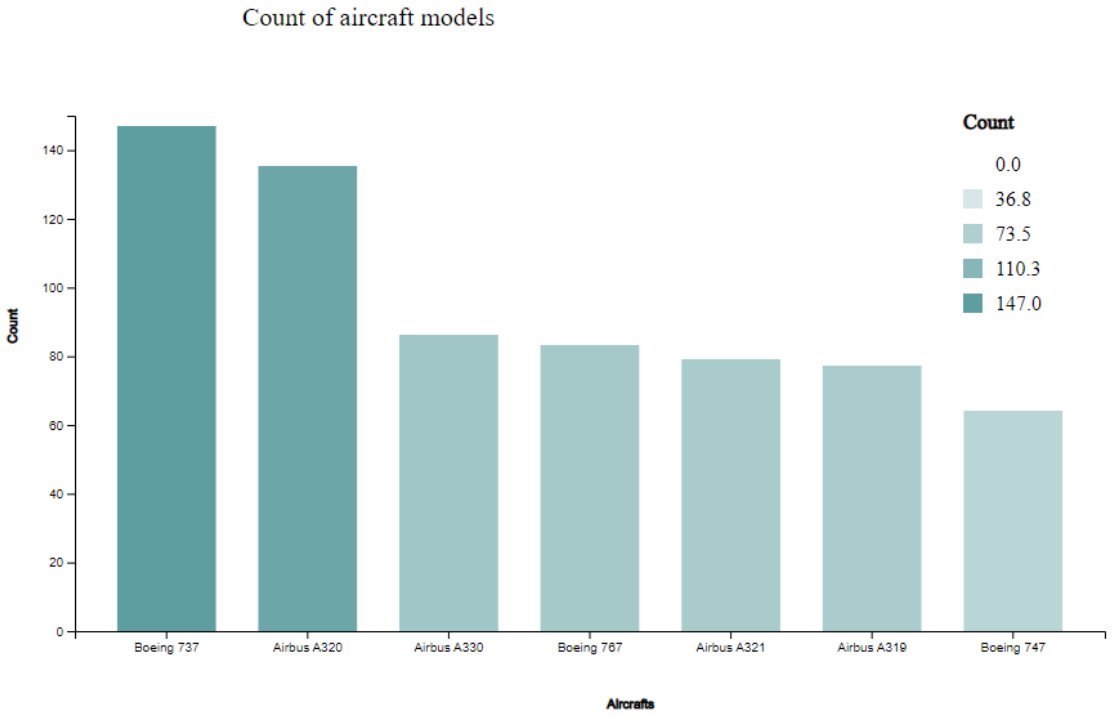
Objective: Identify the country with the most number of Airports
Feature:



Objective: Compare Boeing and Airbus stock prices over time
Link: https://vizhub.com/GustavWahlUSF/d128183d688b40dea8129285b2e5e186?edit=files
Feature:



Objective: Compare count of aircraft's in all airlines
Link: https://vizhub.com/GustavWahlUSF/ab5379f8ea774d2d995ce31ccd122a48
Feature:



Roadblocks

Underestimated the work of combining the data, and still feel like I lack some data to tell the story, might want to pivot more to airline and air industry in general, instead of focusing on the statistical history of Boeing and Airbus specifically.

Upcoming milestones

Continue with combining data, hopefully, finish by end of the week.
Finish drafts of all charts by the end of next week.

Background

The reason I wanted to choose this project is due to my interest in the stock market, historical events, and aviation. The reason I'm mainly focusing on Airbus and Boeing is due to them having the largest aviation market share.

Project Objectives

- Identify the growth of Boeing and Airbus stock and comparison to index and each other.
- Identify the most popular airplane model by airline orders
- Identify the most popular airline models for select destinations
- Identify the Boeing and Airbus airplane shares by different airline companies.
- Identify the effect of airplane crashes and significant events on the stock.
- Identify the market share of airline manufacturers by country

Data

I will be using the data sets under, to retrieve all the data needed for my final project, there will be some data processing needed to be done to extract necessary and remove unnecessary data.
https://www.kaggle.com/kerneler/starter-boeing-stock-historical-data-e30d64c1-3/data
https://www.kaggle.com/ieneames/fleet-dataset-exploration-and-visualisation/data
https://www.kaggle.com/vasiliispe/boeing/version/1
https://www.kaggle.com/jonathanbouchet/airlines-route-tracker/data?select=routes.csv
https://www.kaggle.com/ioanagheorghiu/historical-flight-and-weather-data
https://www.kaggle.com/ruslankl/airplane-crashes-data-visualization/data?select=Airplane_Crashes_and_Fatalities_Since_1908.csv
https://www.kaggle.com/miquar/explore-flights-csv-airports-csv-airlines-csv/data?select=flights.csv
https://www.kaggle.com/nayuts/airport-traffic-visualization-geopandas-plotly/data
https://www.back4app.com/database/back4app/aircraft-make-and-model-list
https://www.kaggle.com/alvaroibrain/aircraft-production-data
https://finance.yahoo.com/quote/AIR.PA/history?p=AIR.PA
https://finance.yahoo.com/quote/AIR.DE?p=AIR.DE&.tsrc=fin-srch
https://www.statista.com/topics/3697/airbus-and-boeing/#dossierKeyfigures

Data processing

I expect a lot of data cleanup due to having so many different datasets, some of the datasets might not be that usable. I also expect to merge some of the datasets.
I think there will be a lot of data processing to prepare the data in a useful format.

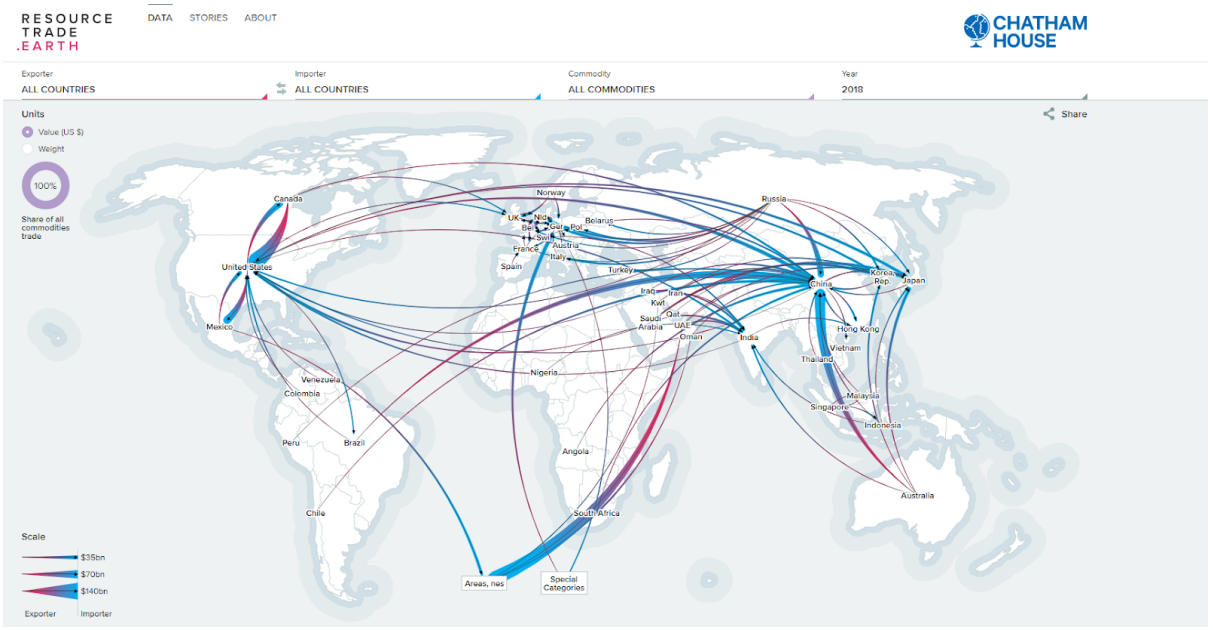
The datasets include stock market data, events related to the airline manufacturers, airlines, airline routes, airline orders, countries, and historical airplane manufacturing data.

The data processing will be implemented using scripting languages, most likely javascript, and produce new CSV files to be used for the data visualization.

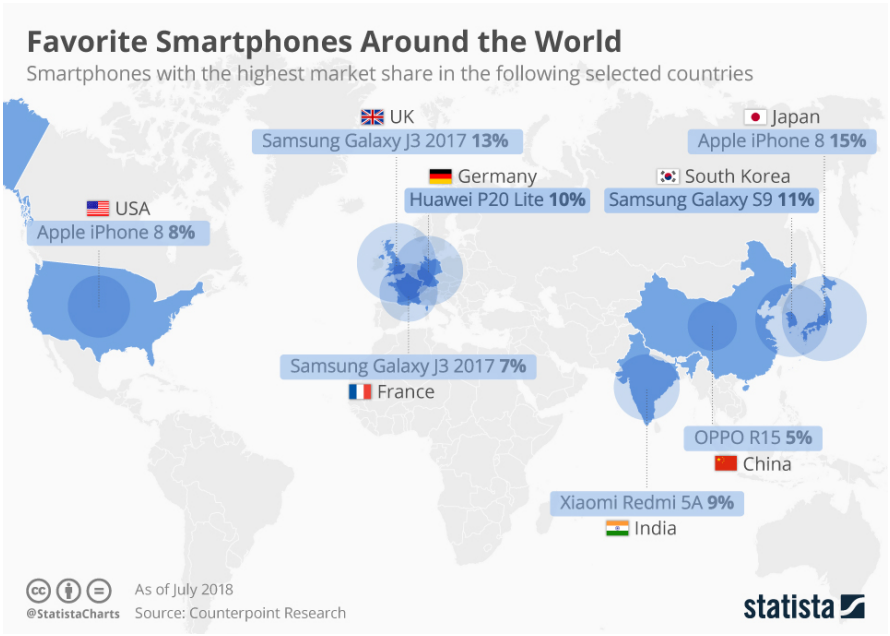
Related work

Includes pictures and history from Boeing vs Airbus rivalry.
https://www.businessinsider.com/airbus-history-boeing-rivalry-2018-4#boeing-meanwhile-is-struggling-to-get-its-troubled-737-max-back-off-the-ground-42

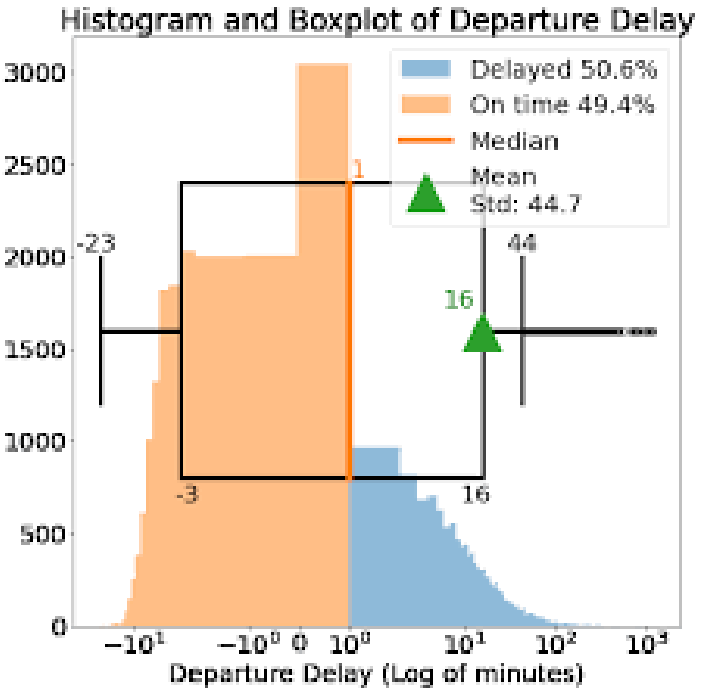
Inspiration for the flow map finding the flight route with the most traffic for either Boeing or Airbus.



Example of market share of models by country.

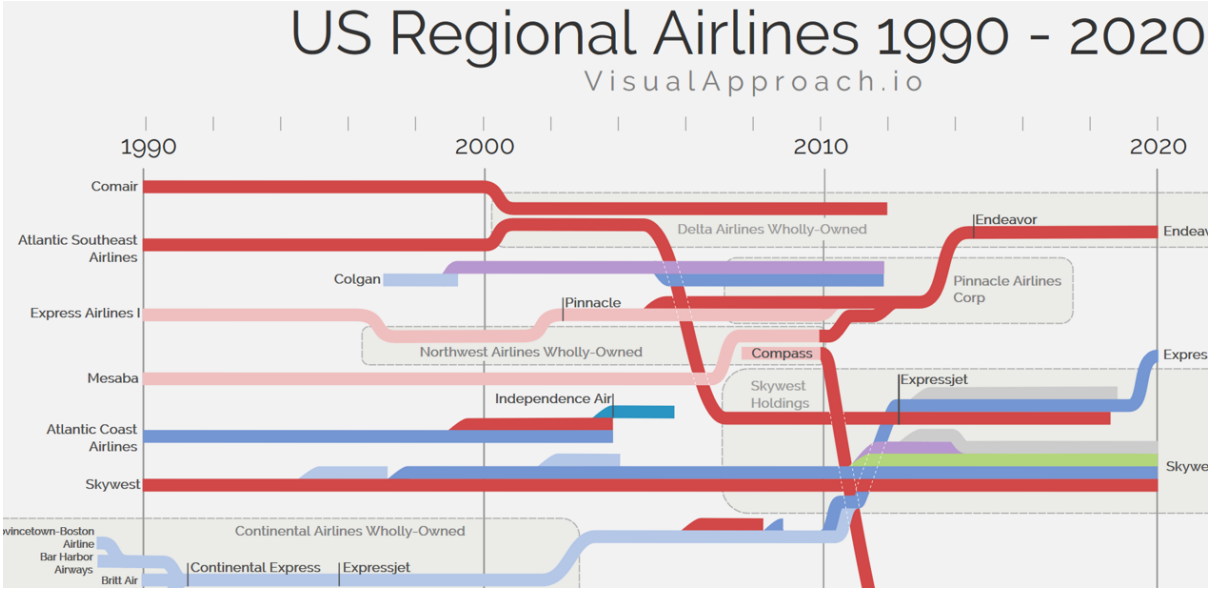


Histogram graphs of delayed airplane departures.



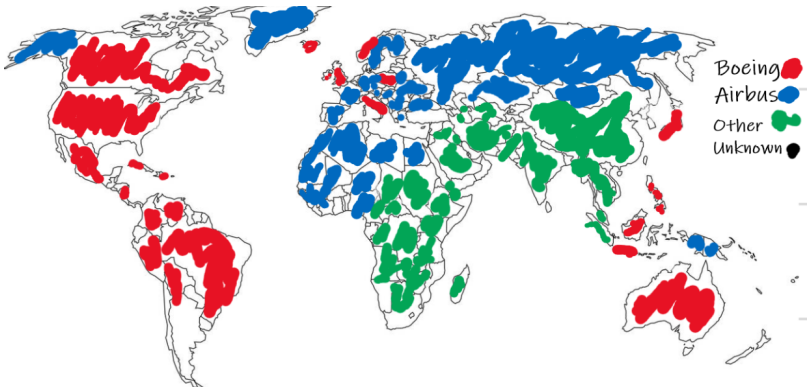
Airline and orders.

Regional Airlines and their merging to larger airline companies.

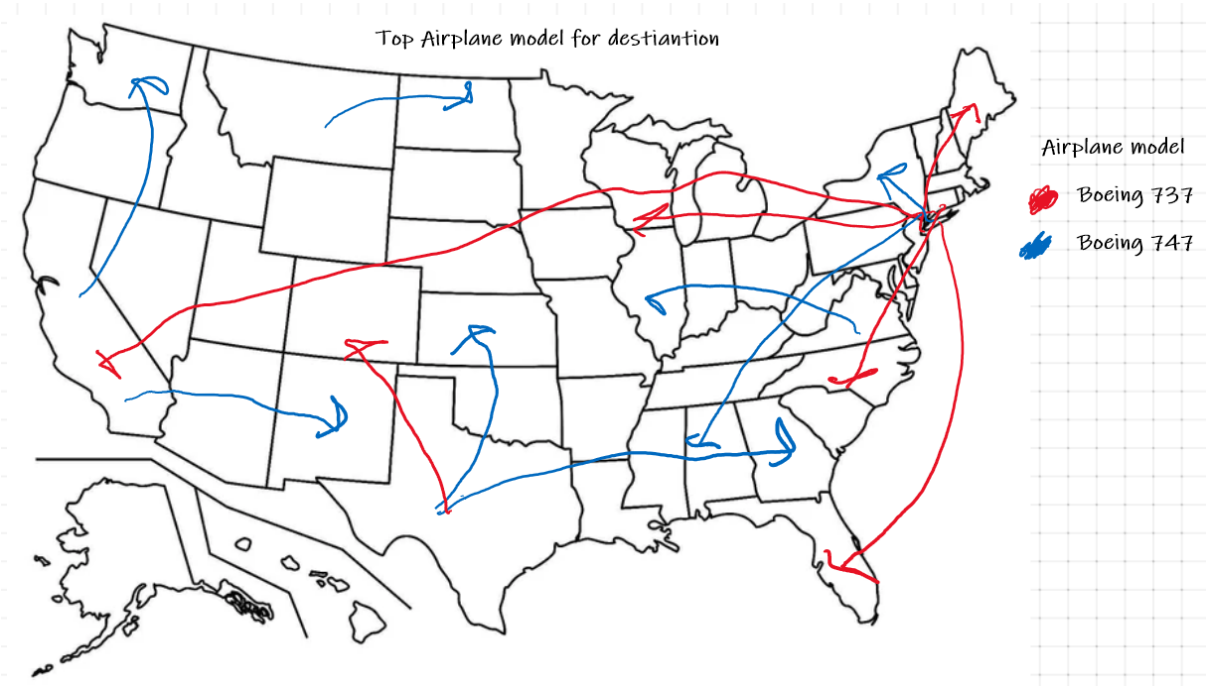


Visualization design

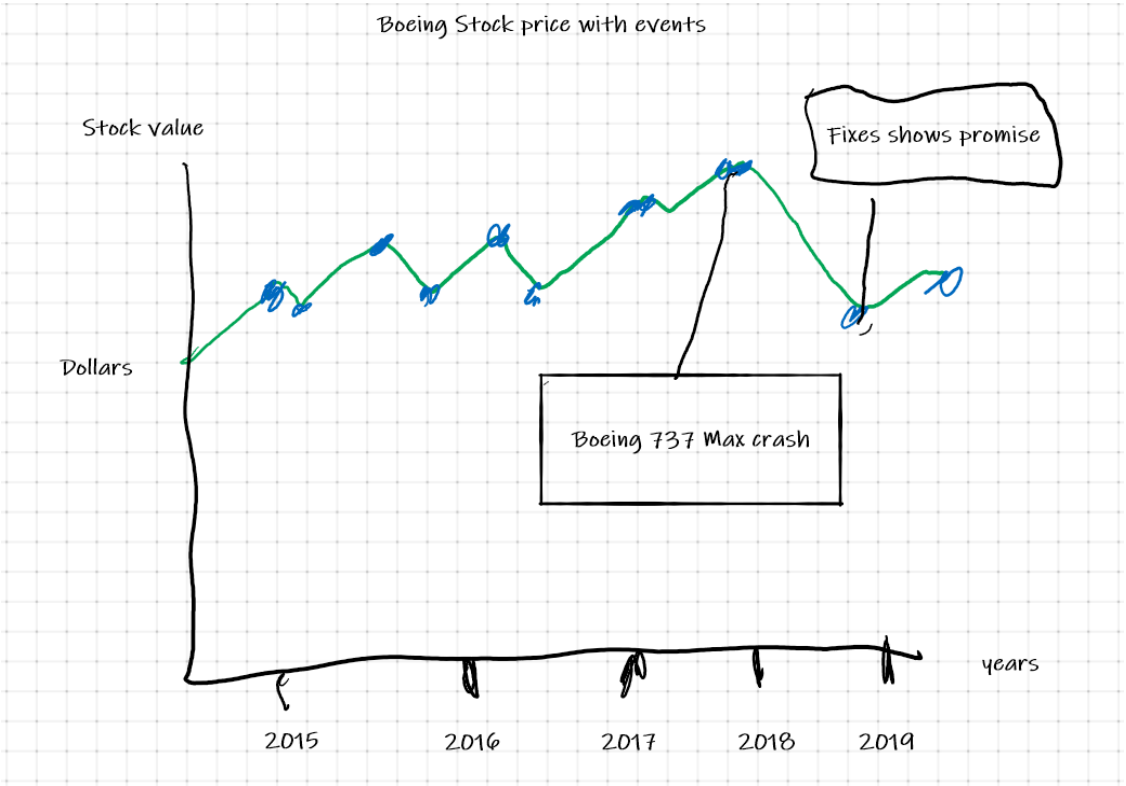
For example visualization of Market share of airline manufacturers:



Arrows symbolize top airline model for that destination



Line chart valuation of Boeing stock with dot plot of significant event



Must-have Features

- Candle chart of the historical growth of Boeing and Airbus stock and Index. This will give a clear understanding of the huge growth of the two dominant manufacturers by comparing them side by side.
- Bar chart of the top ordered airplane model. This will visualize the top ordered airplane model by ranking them in a bar chart.
- Flow chart with color scale on the arrow to symbolize the popularity of airline models for select destinations. This will visualize the most popular airplane model and type from select destinations.
- Map of countries with color scale as the number of the ordered airplanes. This will visualize the countries which ordered most of the top airplane models, to be able to compare countries.
- Dot plot chart of crashes with a line chart of stock. This will help to visualize if any plane crashes have any effect on the stock of the airplane manufacturers.
- Divergent bar chart with a count of airplanes from airline manufacturers by country. This will compare the two airline manufacturers' count of planes in each country, to see which country prefers which airline manufacturer.

Optional features

A nice timeline of all the data combined from both Boeing and Airbus, with functionality to compare, highlight and focus on specific data points. My goal would be to give the big picture of why these two big manufacturing companies have the biggest market share in the industry, and how some significant events have affected these companies.

I would also like to include a covid section where it goes more into detail about how covid has affected airline manufacturers.

Project schedule

Weeks	Accomplishment
1	Finish website for the project, start to work on data processing.
2	Revise data sets, finish most of the data processing work and import the data into the project folder. Finish draft of candle and bar chart
3	Finish the flow chart, a map chart, histogram, and dot plot.
4	Add more functionality to charts and create tooltips and animations.
5	Finish tooltips and work on animations, create a draft of the finalized web page for the project.
6	Fix visual issues, bugs, general cleanup, continue work on animations, etc
7	Fix visual issues, bugs, general cleanup, continue work on animations, etc
8	Finalize the presentation and the project site, do some styling for the web page to make it prettier, and push changes to the remote server.