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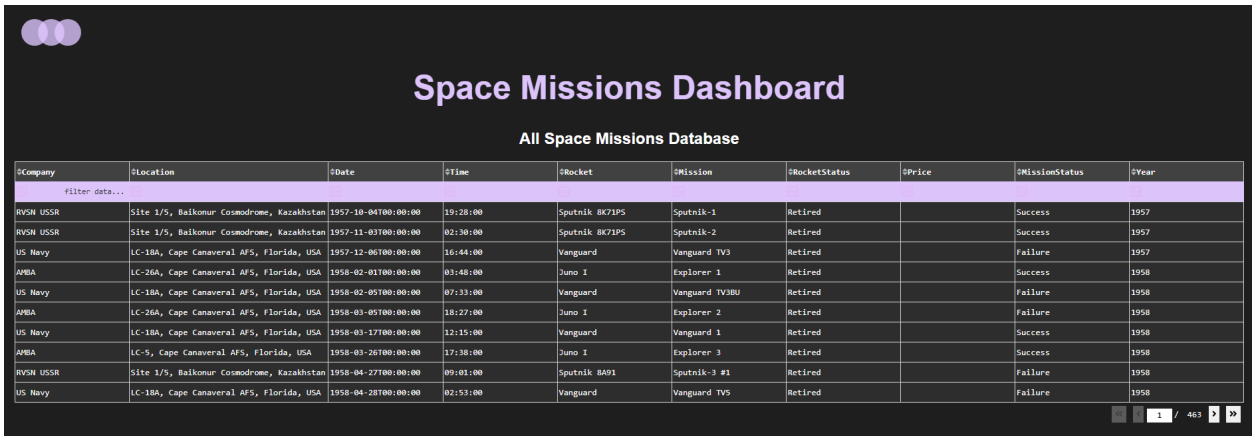
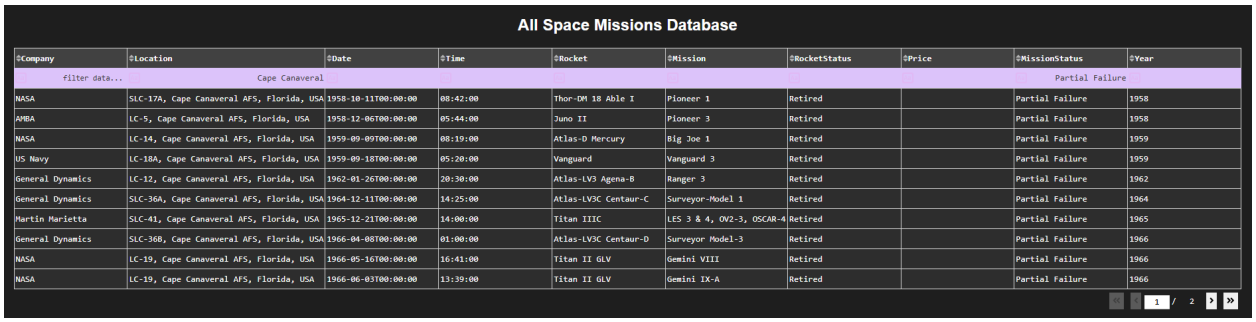
Rely Health Coding Assessment - Space Missions Dashboard Visualizations Explanation

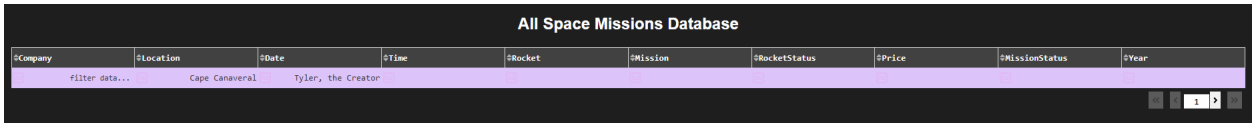
Data Table View - *With Sorting and Filtering Capabilities*



The complete data table is placed at the very top of the dashboard. The top row features column names, with the second lavender row being the filtering row. For example, looking at all launches from “Cape Canaveral” that were deemed a “Partial Failure”, we get the following:

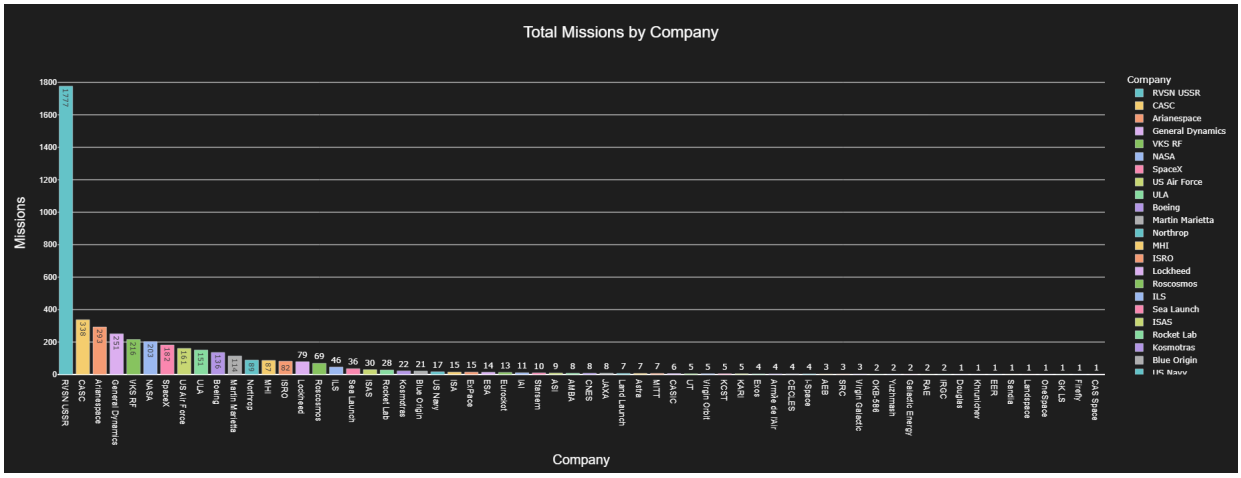


These filters allow the user to view any combination of missions so long as there exists a mission that meets all the requested filters. If an invalid filter is inputted, the table will simply be blank:

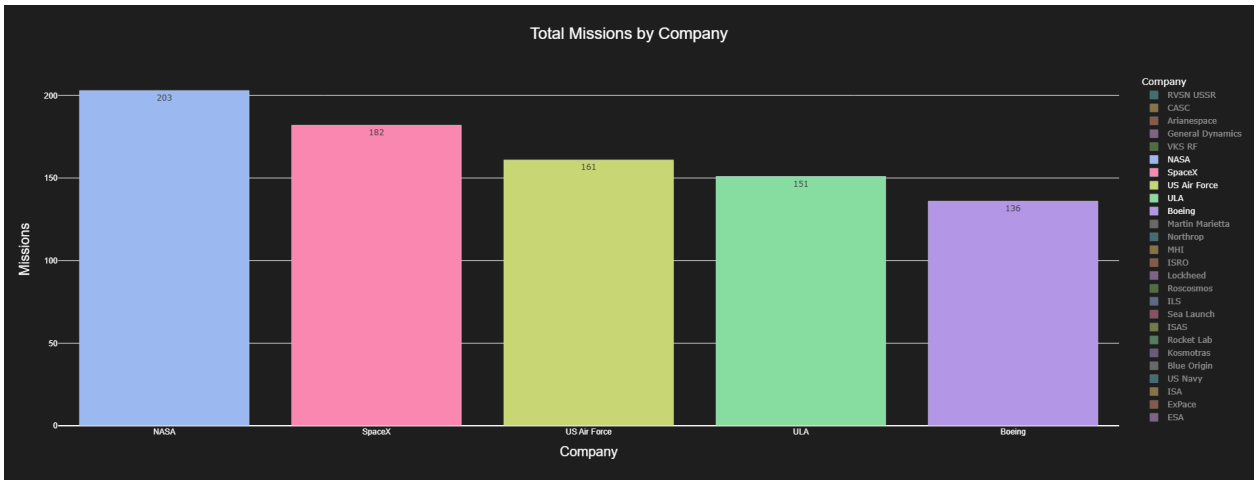


The four selected visualizations below make use of certain information all stemming from this data table.

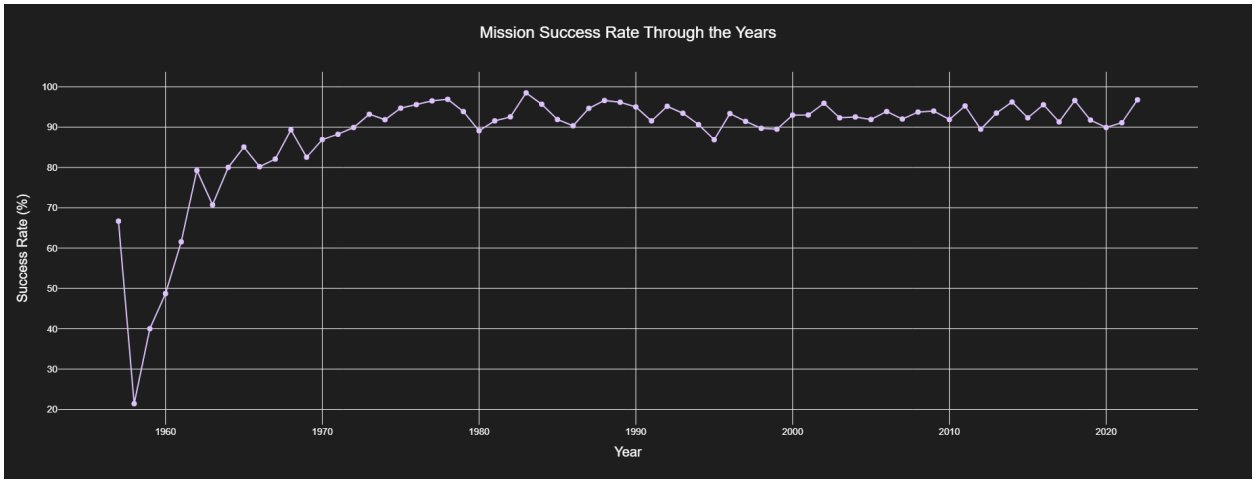
Bar Graph - *Total Mission Count vs Company*



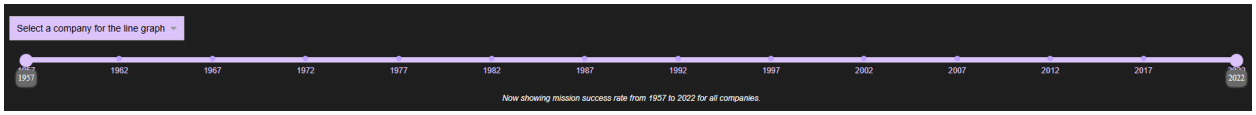
I decided to include the bar graph pictured above as the very first plot in the dashboard since it is straightforward and provides what I believe are two of the more important pieces of information contained in the datasheet: company names, and their total missions throughout history. This lets the user easily visualize which companies are at the top when it comes to mission count, ordering them left to right largest to smallest. By interacting with the legend, the user is able to filter it and interact with the graph to show only selected companies. For example, if the user is interested in seeing the mission counts for NASA, SpaceX, US Air Force, Ula, and Boeing only, this information is able to be displayed and the bar graph is updated.



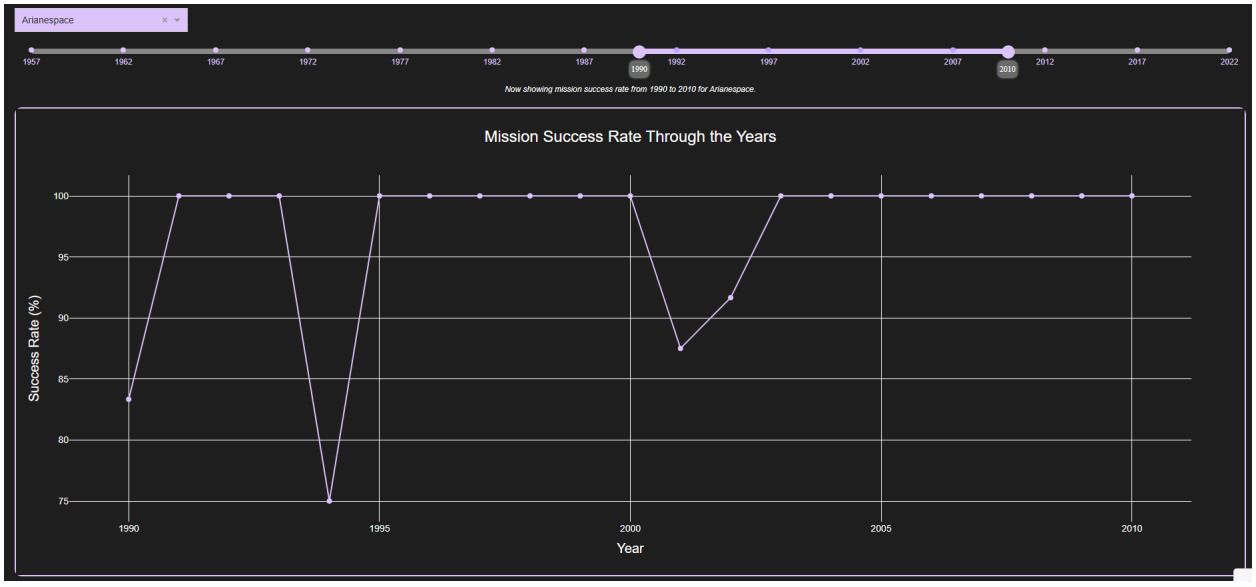
Line Graph - *Success Rate vs Time*



For my second plot, I created a line graph to switch it up, plotting two other important variables of success rate of missions against time, to visualize if rocket missions are becoming safer as time progresses. For interactability, there are two filters present: a dropdown menu to isolate a company's success rate, as well as a slider to filter a certain range of years, with accompanying text to let the user know what is being displayed at the moment.

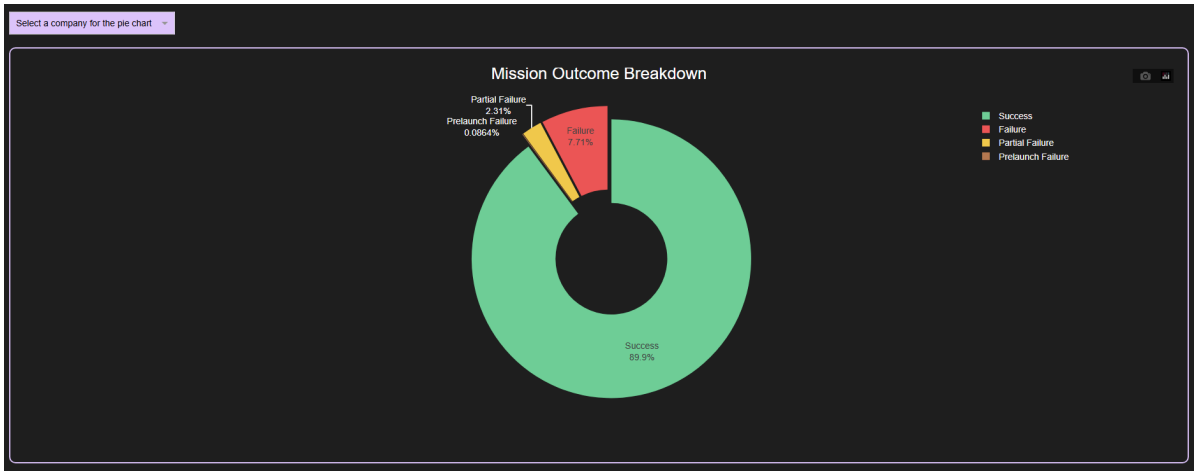


These update the line graph depending on what is selected. For example, viewing only Arianespace's success rate from 1990 to 2010 will show the following:

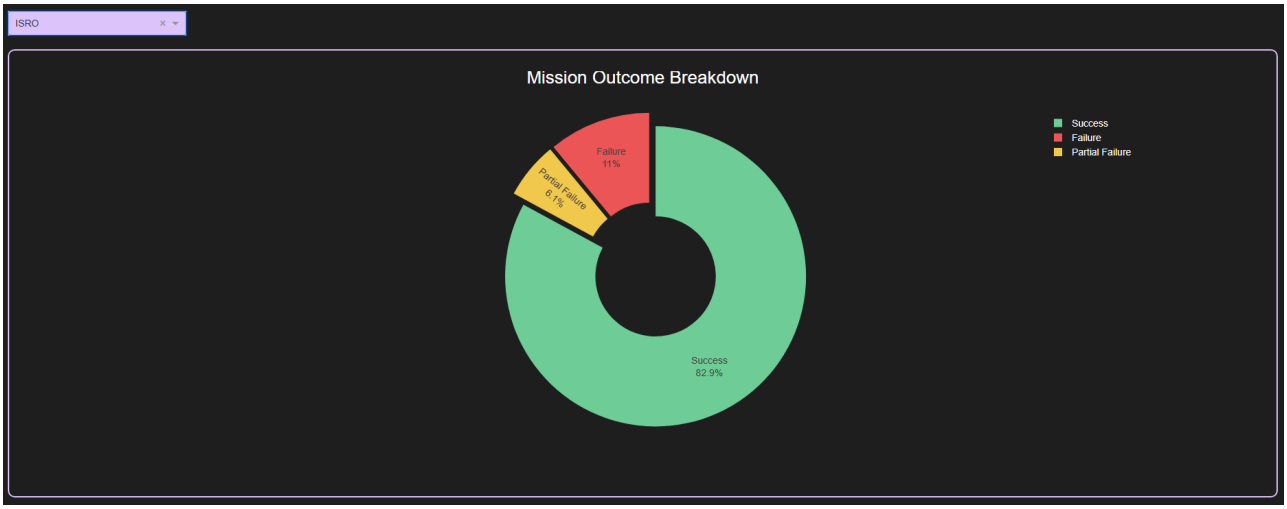


I elected to do a line graph since viewing a fluctuating percentage is best visualized through this form of graph compared to other possible options. It allows the user to easily see if a certain company, or all companies altogether, see an increase or decrease in success rate throughout the decades.

Pie Chart - *Mission Outcome vs Company*

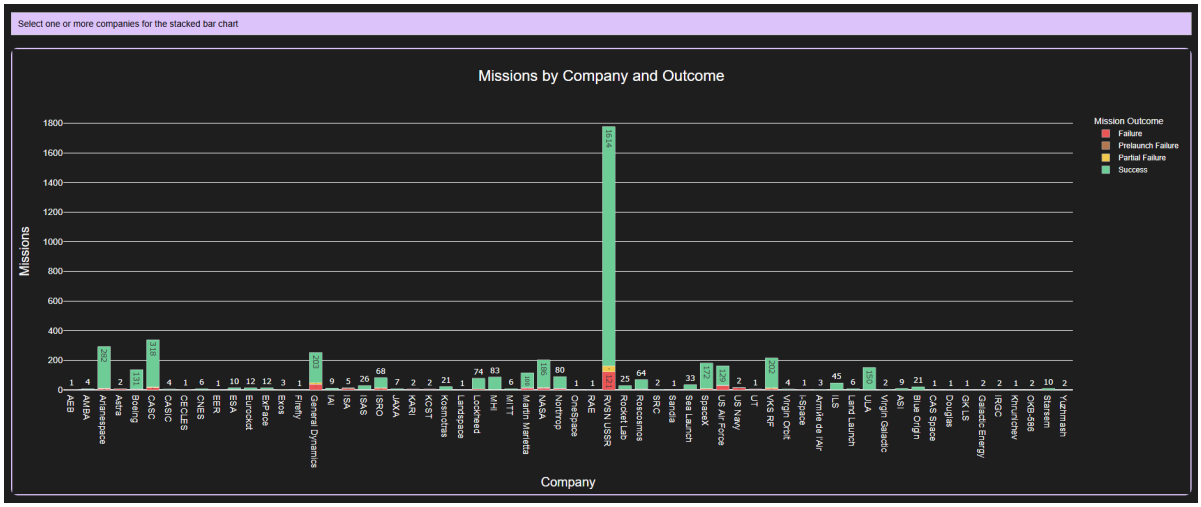


A pie chart is a classic way to visualize information, especially for a statistic as important as mission outcome. Since there are only four possible mission statuses (Failure, Partial Failure, Prelaunch Failure, and Success), visualizing these four on a pie chart makes the most sense and is easily understood by the user. Through the dropdown on the top left that allows the user to select a certain company to view, we are still able to provide a degree of interactivity. For example, this is the updated pie chart for ISRO's missions.

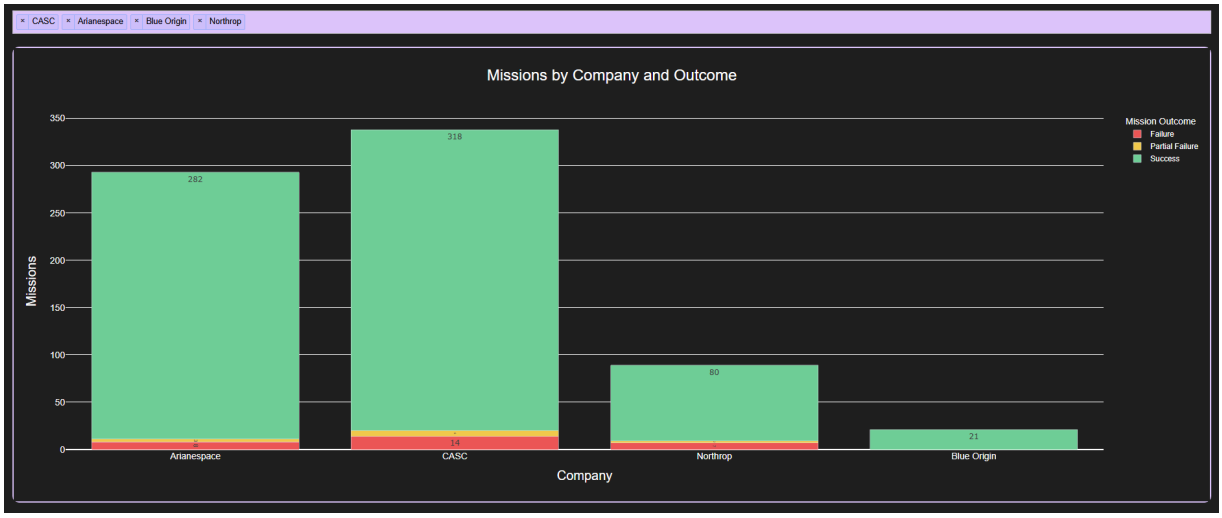


It is easy to read and understand a pie chart, as it is clearly stated and shown that for ISRO, 82.9% of their missions were a success, 11% were a failure, and 6.1% were prelaunch failures. Pie charts are intuitive for showing relative percentages of a whole. Compare this to the next visualization: the stacked bar chart.

Stacked Bar Chart - *Mission Outcome vs Company vs Total Mission Count*



The stacked bar chart takes previously known information and combines it into a comprehensive, detailed graph with increased interactability. I chose to include a stacked bar chart so that the user would have another perspective on not only the total count of missions, but also how well each company performed compared to another simultaneously. The dropdown at the top allows the user to select multiple companies to view. For example, viewing CASC, Arianespace, Northrop, and Blue Origin all at once looks like this:



The user can get a clear visual of not just the total number of missions, but also how well they went compared to other companies as well as how well the missions went out of all of that company's missions. I also chose to do a stacked bar chart as a way of creating a visualization

method that used more than two variables, since the bar chart, line graph, and pie chart all used two variables against each other. The stacked bar chart uses three.

Overall, these four selected visualizations all allow for the user to view the most important aspects of the datasheet while being interactable and intuitive. For a full, comprehensive view of the spreadsheet, the data table is still present at the top, filterable in each column if necessary.