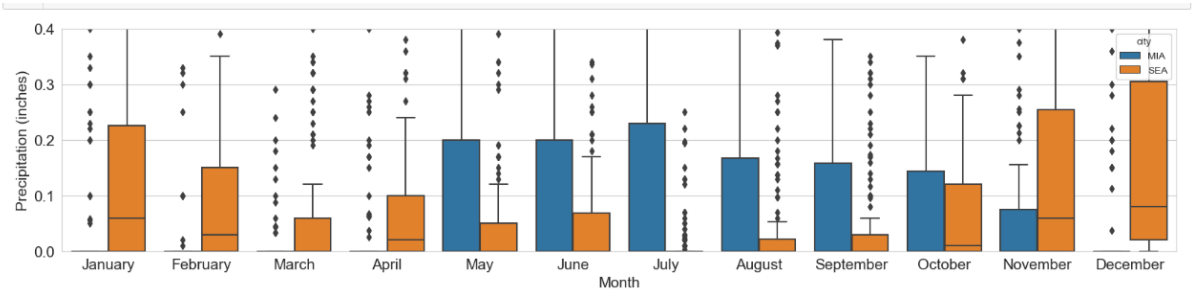
Seattle weather - Project Report

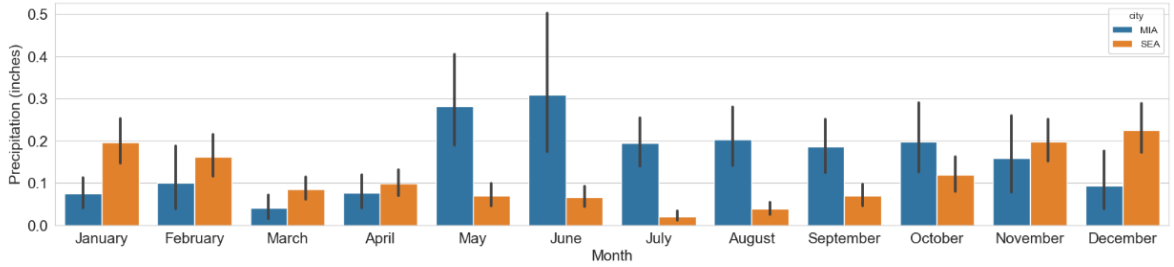
This project explores and compares rainfall patterns between Seattle, Washington, and Miami, Florida, using real weather data from the National Centers for Environmental Information (NOAA). Using data science methods, the project analyses precipitation trends to determine which city actually receives more rain and how rainfall varies throughout the year. Visualizations and statistical tests are used to support the findings and provide insights into each city's unique weather characteristics.

Based on weather data from Seattle and Miami between 2018 and 2022, the analysis shows that Seattle experiences consistent rainfall throughout the five years. In contrast, Miami shows irregular rainfall patterns, with heavy rainfall on some days and no rainfall on others.

We would like to further analyse these unexpected rainfall conditions. When we calculated the average and median values, we noticed a large difference, indicating that the data contains a higher level of variability and uncertainty.

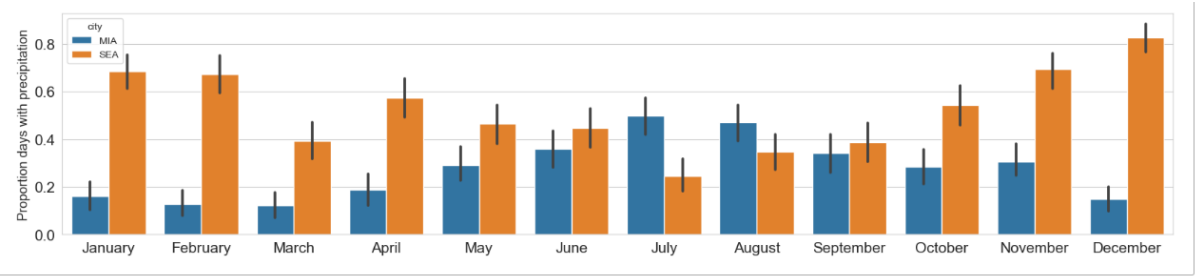


From the above box plot, we can see that Miami has no precipitation from January to April and in December, whereas Seattle experiences steady precipitation throughout the year, with little to no rain in July.



However, when we look at the above bar graph, we can see the mean precipitation for each month over the five-year period. This graph appears to contradict the earlier box plot, which is due to abnormal rainfall on certain days during the months of January through April and in

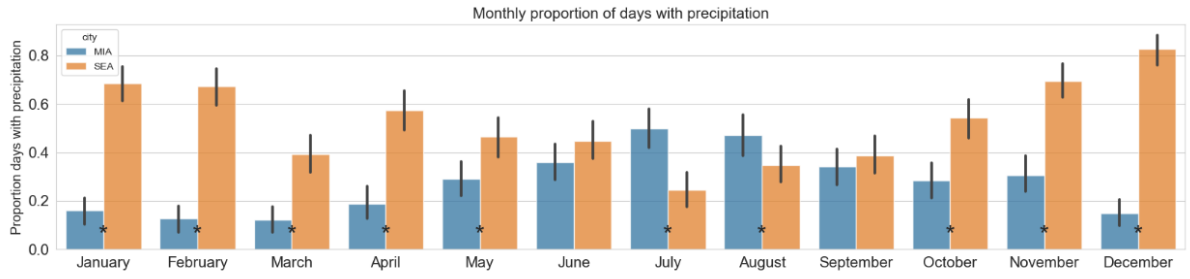
December. The extended line in the middle of each bar represents the uncertainty in precipitation. We do not observe as much variation in Seattle's data compared to Miami's.



The above graph shows the proportion of days with rainfall in each month. We can see that Seattle experiences rainfall on a greater number of days compared to Miami.
The following table further supports the observations made from the above bar graph.

any_precipitation	FALSE	TRUE
city		
MIA	130	25
SEA	49	106

The following bar plot shows the proportion of days with rainfall in each month for Seattle and Miami, highlighting the significant differences between the two cities.



The star symbols indicate significant differences in the number of precipitation days for each month. During July, August, and September, Miami experiences more rainfall than Seattle; however, overall, Seattle has a greater number of rainy days throughout the year.