Report: Analysis of Rainfall Patterns in Seattle and New York City

Introduction:

In this report, we will explore the rainfall patterns between Seattle and New York City using weather data collected from Seattle Tacoma airport and JFK airport, respectively. The objective is to determine which city experiences more rainfall and identify any significant differences in rainfall patterns between the two locations.

Data Description:

We'll use data obtained from The NOAA National Centers for Environmental Information to collect data related to Seattle Weather and New York's weather for the 3 year period January 2020 - January 2024. this data can be requested using This [Link](https://www.ncei.noaa.gov/cdo-web/search?datasetid=GHCND). This data was cleaned for the purpose of this project to only include the necessary fields and converted to a tidy format. the cleaned data is accessible using this [link](https://github.com/Parsar22/DATA3320/blob/87316140006e551e2cff58958d5a1de65fca0a3a/clean_seattle_nyc_weather.csv)

Analysis Methods:

Several methods were employed to analyze the rainfall patterns in Seattle and New York City:

Seasonal Analysis: Categorized the data into seasons (Spring, Summer, Fall, Winter) based on the month column and calculated the average precipitation for each season in both cities.

Monthly Analysis: Examined the monthly precipitation trends for Seattle and NYC to identify any recurring patterns or differences in rainfall distribution throughout the year.

Yearly Analysis: Investigated the yearly precipitation trends over a four-year period to assess the consistency of rainfall patterns over time.

Results:

A graph showing the number of seasons

Description automatically generated

Seasonal Analysis: Seattle experiences higher rainfall during the Winter and Fall seasons, while NYC exhibits more consistent rainfall throughout the year, with relatively steady precipitation levels across all seasons.

A graph showing the months of the year

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Monthly Analysis: Seattle tends to have higher rainfall during the Winter and Spring months, whereas NYC experiences more or similar precipitation levels from March to October.

A graph showing different colored lines

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Yearly Analysis: Yearly precipitation trends for both cities demonstrate consistent patterns, with minor variations observed between years. Notably, 2022 exhibited deviations from the otherwise stable trend, indicating potential anomalies in precipitation levels.

Conclusion:

Based on the analysis, it's pretty clear that Seattle gets more rain during certain times of the year, especially in Winter and Fall, causing some ups and downs in precipitation levels. Meanwhile, New York City seems to have a more steady rainfall throughout the year, with a consistently higher average rainfall compared to Seattle. But overall, despite these differences, both cities seem to have pretty similar overall precipitation patterns during the period we looked at.