**Comparative Weather Analysis: Seattle, Washington, and Longview, Texas  
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*Date:* October 8, 2025**This project compares the weather data of Seattle, Washington, and Longview, Texas between 2018 and 2022. The analysis focuses on precipitation patterns, examining differences in rainfall frequency, seasonal trends and total precipitation amounts. Seattle is known for its frequent rain, while Longview's weather is hot and dry. The data set used in this analysis was obtained from the National Oceanic and Atmospheric Administration (NOAA).

In data cleaning stage, the Seattle dataset contained 190 missing precipitation values to handle Seattle’s missing data the average daily precipitation was calculated by grouping the data by each day of the year. Each missing precipitation value was then replaced with the corresponding daily average. On the other hand, Longview had just one missing value, which we dropped because it did not affect the results much.

A graph of a bar chart

AI-generated content may be incorrect.While Seattle receives a lot more rainfall than Longview does throughout the year. The bar plot to compare the average daily precipitation between the two cities. It shows that during the 2018–2022 observation period, rain fell in Seattle on about 55% of days while it only fell on 29% of days in Longview. This is nearly a 2:1 ratio of precipitation.

The bar plot shows clear seasonal rainfall patterns for both cities with higher precipitation during winter months and lower amounts during summer. However, Seattle consistently receives more precipitation than Longview throughout most of the year. We can clearly see that, in Seattle, there is more precipitation in the winter, whereas in Longview there is more precipitation in the spring. During the summer months of July and August, both cities reach their annual precipitation minimums and experience particularly dry conditions. The error bars demonstrate A graph of different colored bars

AI-generated content may be incorrect.year-to-year variation, especially during the winter months, which have more rain.

A graph with blue and orange bars

AI-generated content may be incorrect.The bar plot showing the monthly proportion of rainy days, stars mark the months where the difference between the two cities is statistically significant, based on the two-proportion z-test. The monthly proportion of rainy days shows Seattle consistently exceeding Longview throughout the year, with statistically significant differences marked by asterisks in every month except July. Monthly proportion of days with precipitation indicates Seattle experiencing rainy conditions 25%-80% from August through June. However, Longview has a significantly lower rainfall frequency of 25%-45%. Moreover, neither city shows statistically significant differences in July. As a result, summer drying affects both regions equally during peak summer.

Therefore, this project result illustrates that Seattle has more frequent rainfall throughout the year compared to Longview. Precipitation difference is nearly twice as many days annually. While both cities have similar seasonal patterns. Seattle maintains consistently higher rainfall frequency and more consistent daily precipitation. Seattle experiences moderate, steady rainfall whereas Longview shows more variable patterns with longer dry periods.