

# Vancouver vs Seattle Precipitation – Final Report

*Does it rain more in Vancouver or Seattle?*

## Introduction

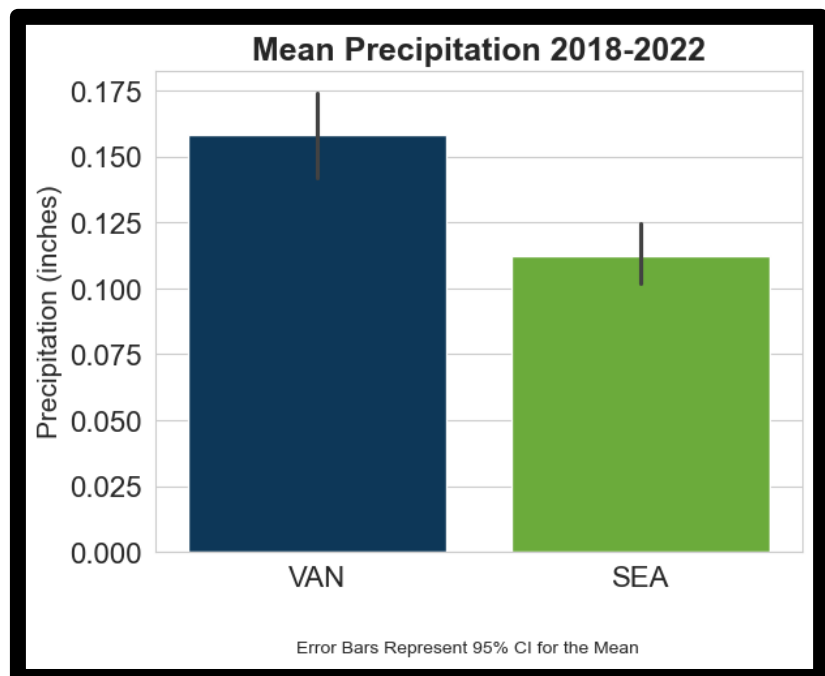
Seattle is colloquially known as one of the rainiest places to live in the United States. Nestled between the Olympic and the Cascade Mountain Ranges, its picturesque scenery is often shrouded behind clouds. However, it is not the only metropolitan city along the Salish Sea coastline. Vancouver contains a similarly picturesque but rainy setting. Both share the same Northern Cascades on one side, though, Vancouver hosts the Vancouver Island Ranges on its oceanic flank. Despite these similarities, small changes in their exposure to the Pacific Ocean may cause drastic differences in their realized rain totals. Rain Shadows, a hallmark of mountain geography, are just one of the variables that threaten to challenge Seattle and Vancouver's notions of equal rain. To even think about asking whether these differences result in distinct annual rainfall patterns between the two cities, we must first find out just how different their rainfalls may be and ask ourselves; *Does it rain more in Vancouver or Seattle?*

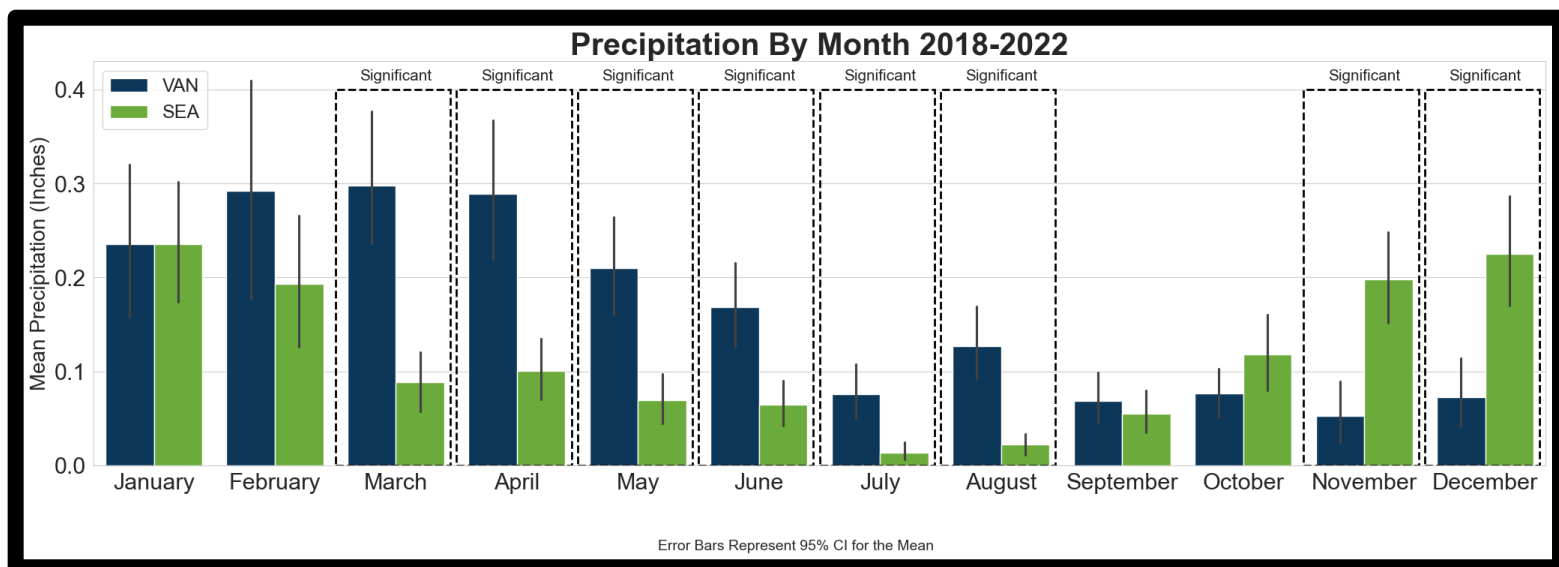
## Methods

We will look at three different rainfall metrics calculated from 2018 - 2022. Over this 5-year period, a deeper look at the mean precipitation by year, the mean precipitation by month, and finally, the proportion of rainy days in every month should give us a good introduction to our burning question. The data we compare was collected from a single, representative, weather station in each metro area and sourced from the NOAA Climate Data Online Search Portal. Data was then processed using a coding language called Python and some associated libraries that can be used to augment its capacity, especially in data visualization.

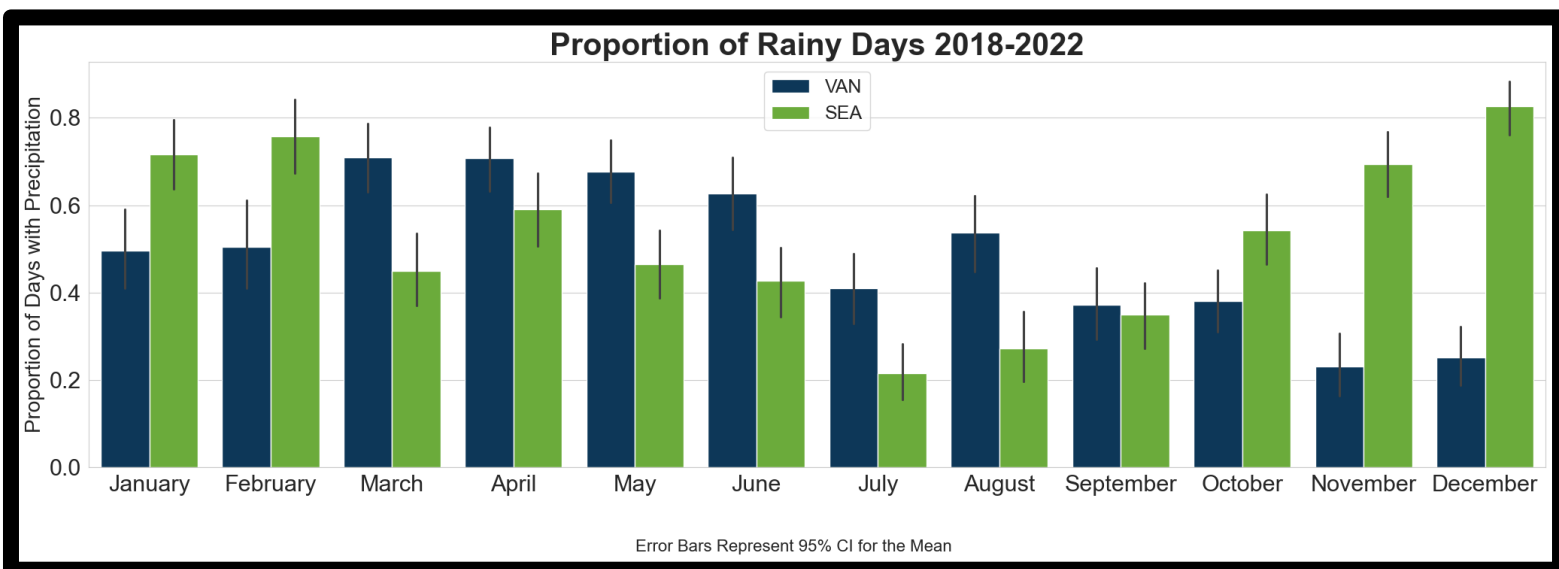
## Results

After crunching the numbers, we can see in the figure on the right that Vancouver has a measurably greater average rainfall in inches over this period. From 2018 – 2022, Vancouver had a mean of 0.158 inches, while Seattle only saw a mean of 0.113 inches. It should be noted, the max recorded rainfall in a day for both cities were also quite different with Vancouver seeing 3.05 inches, while Seattle also saw a large day of 2.60 inches. Similarly, we found that the spread within the data followed a similar pattern with Vancouver having a standard deviation of 0.33, while Seattle saw a slimmer 0.25. This implies we should dig deeper.





If we are to do this same analysis of means but by month, we can see Vancouver still sees more months with greater mean precipitation. Not just that, but if we run a t-test, a method of assessing if the difference we see in means is simply due to random chance or a significant difference, the Vancouver rainfall has a myriad of significant months, while Seattle only has two. It is interesting to note, however, that Seattle does make a strong case in the fall for most rainfall.



Furthermore, if we look at the proportion of dates within each month that have some level of rain, Vancouver once again takes the cake; holding the patterns we saw in previous analysis. It again, is of note, that Vancouver sees the greatest number of rainy days in the spring and summer months. On the other hand, Seattle sees its rainiest months in the fall and winter months.

### Conclusion

We can say with some confidence from our analysis that Vancouver is rainier city than Seattle. The Canadian metropolitan area sees more average rainfall, more average monthly rainfall, and finally a higher proportion of Rainer days from 2018 – 2022. That being said, there is some inter-season variability that give Seattle a fighting change. While we cannot conclude the reason why, we can answer an important initial inquiry of *Does it rain more in Vancouver or Seattle?*