North America Vs South America Summary

With this project, our goal was to compare North America and South America's overall monthly temperature changes over the last sixty years. Our hypotheses were:

+**Null**: Regional Mean Temperature Changes between North and South America are NOT statistically different from one another

+**Alternative**: Regional Mean Temperature Changes between North and South America ARE statistically different from one another.

-**Goal**: Prove our alternative hypothesis and derive a solid answer on the better region to build new corporate headquarters

We were able to have our alternative hypothesis accepted when comparing the p-values of the slope intercept formula (y=mx+b) of both linear regression models for both regions. P-Values were derived from both values of slope and intercept:

+The p-values for comparing slopes that are smaller than 0.05 indicate that there are statistically significant differences in the rate of mean temperature changes between North and South America over the years 1961 to 2019.

+In other words, the two regions (North and South America) experience different trends in temperature changes over time.

+The p-values for comparing intercepts that are smaller than 0.05 indicate that there are statistically significant differences in the mean temperature values at the starting year (1961) between North and South America.

+From these values we derived that South America has a much more predictable and stable trend in temperature change than Northern America. The baseline mean temperatures in North and South America are significantly different.

From our findings we concluded that both countries' current temperatures are rising but with distinctly different trends. This supports our null hypothesis but, when we took a deeper look at the change in temperature the alternative hypothesis was then accepted. North America showed that it was growing at a faster rate and has the biggest variance in temperature change. While South America was more consistent with temperature and was growing slightly less. This then gave us the conclusion that we should move our location to South America. More data analysis could be conducted to predict the monthly average temperature changes into 2024 or beyond, using the linear regression equations derived from our Meteorological Year For NA and SA with Regression Line plot, as well as calculating normal tests for all of the months for both regions, expanding upon the histogram visualizations that depicted information for January and July. Further data analysis, including the use of more datasets that include additional weather-related data points, socio-economic data values, or even other factors that are directly or indirectly related to climate change, could reveal even more interesting historical trends related to weather in the regions!