Explore Weather Trends (https://github.com/mhxprs2022/data_analyst.git)

1) Extract Data from San Francisco, Las Vegas, and Global

```
select year, city, country, avg_temp,
        AVG(avg_temp) OVER(order by year) as sf_moving_avg_temp
from city_data
where city IN ('San Francisco')
order by year asc

select year, city, country, avg_temp,
        AVG(avg_temp) OVER(order by year) as lv_moving_avg_temp
from city_data
where city IN ('Las Vegas')
order by year asc

select year, avg_temp,
        AVG(avg_temp) OVER(order by year) as global_moving_avg_temp
from global_data
order by year asc
```

2) Moving average is calculated using sql window function

3) Line chart with local and global temperature trends are plotted with plotly in Rmd

Explore Weather Trends

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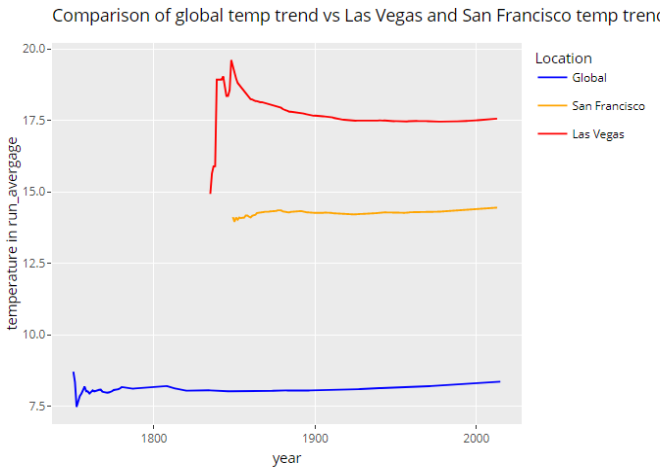
Explore Weather Trends for San Francisco, Las Vegas, and compare to Global Weather trend



4) Answer questions
    a) The city I live in is San Francisco, and from the weather trends, its average temperatures over the last 100 years are roughly 6 degrees higher than global average temperature (~14 for San Francisco vs ~8 for global). The differences are pretty consistent
    b) The changes in San Francisco over the time compared to global are very similar. From 1900 to 2000, the average temperature rose from 14.27 to 14.39 for San Francisco, while the average temperature rose from 8.07 to 8.30 for global
    c) Overall trends of the temperature seems rise for both San Francisco and global for the past 100 (Not enough data for San Francisco for the past 200 years)
    d) I also plotted the temperature trends for Las Vegas. Wow, it is hot. The average temperature over the past 100 years is much higher than global (17.5 vs 8) and also hotter than San Francisco. Maybe I shouldn't move to Las Vegas for retirement. It's too hot in the summer.

weather.Rmd

````
---
title: "ExploreWeather"
author: "Christopher Hu"
date: "`r Sys.Date()`"
output: html_document
---

```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
```

## Explore Weather Trends for San Francisco, Las Vegas, and compare to Global Weather trend

```{r echo=FALSE, message=FALSE}
library(tidyverse)
library(plotly)

colors <- c("Global" = "blue", "San Francisco" = "orange", "Las Vegas" = "red")

# 4 data frames
results_moving_avg_global   <- read_csv("./results_global_moving_average.csv")
result_moving_avg_SF        <- read_csv("./results_sf_moving_average.csv")
result_moving_avg_LV        <- read_csv("./results_lv_moving_average.csv")

ggplotly(
ggplot() +
  geom_line(data = results_moving_avg_global,
            mapping = aes(x = year, y = global_moving_avg_temp, color = "Global")) +
  geom_line(data = result_moving_avg_SF,
            mapping = aes(x = year, y = sf_moving_avg_temp, color = "San Francisco")) +
  geom_line(data = result_moving_avg_LV,
            mapping = aes(x = year, y = lv_moving_avg_temp, color = "Las Vegas")) +
  labs(X = "year",
       y = "temperature in run_avergage",
       title = "Comparison of global temp trend vs Las Vegas and San Francisco temp trends",
       color = "Location") +
  scale_color_manual(values = colors)
)

```
````