DESIGN OVERVIEW

The data visualization inspired by the word cloud is a visual representation of cities, with the color of each city's name representing its temperature and the boldness and size of the font representing its precipitation level. These data are obtained from the databases containing weather history scrapped from Wunderground and the scales for the temperature and precipitation variables are based on the data. For temperature, I used a color gradient, with the blue end representing the lowest temperatures and the red end representing the highest temperatures. For precipitation, I used a font-weight gradient, with the lightest font representing drizzling levels of precipitation and the boldest font representing heavy precipitation. To make the difference more striking, I adjusted the font size respective to the font weight.

The data visualization also includes a filter feature that allows users to selectively view cities based on their precipitation levels. This is implemented by including checkboxes next to each precipitation level (drizzling, slight, medium, and heavy) in the legend. This filter feature would allow users to focus on specific precipitation levels and more easily compare the temperature and precipitation levels of cities within a specific precipitation range. It would also allow users to quickly identify cities with extreme precipitation levels, such as cities with very heavy or very light precipitation levels.

Overall, this data visualization would provide a clear and easy-to-understand representation of the temperature and precipitation levels of various cities. It would allow users to quickly compare the temperature and precipitation levels of different cities.

Analytical Questions And Communicative Objectives

Analytical questions about the data:

- What are the average temperature and precipitation levels for each city in the visualization?

- Are there any cities with extreme temperature or precipitation levels compared to the other cities?

- How do temperature and precipitation levels vary across different cities?

- Is there a relationship between temperature and precipitation levels for different cities?

Communicative objectives for the visualization:

- To provide a clear and simple representation of the temperature and precipitation levels of various cities.

- To allow users to easily compare the temperature and precipitation levels of different cities.

- To allow users to focus on specific precipitation levels and more easily compare the temperature and precipitation levels of cities within that range.

- To provide quick access to information about the temperature and precipitation levels of specific cities.

- To help users better understand the weather conditions in different cities and make informed decisions about traveling to or living in those cities.

USER TASKS

- As a student who is interested in meteorology, I want to discover the temperature and precipitation of cities so that I can build a general knowledge of the weather of cities.

- As a weather enthusiast, I want to investigate the temperature and precipitation of cities so that I can draw a conclusion on the relationship between temperature and precipitation.

- As a current Seattle resident who is traveling/moving to other cities, I want to compare the temperature and precipitation of cities so that I can make informed decisions about traveling/moving to those cities.

- As a weather enthusiast, I am interested in learning which cities have the least and most precipitation so that I can better understand the extreme temperatures or precipitation levels of a city.

- As a user, I want to filter the visualization to only display cities with specific precipitation levels so that I can more easily compare the temperature and precipitation levels of cities within that range.

- As a user, I want to quickly access information about the temperature and precipitation levels of a specific city so that I can easily obtain that information without having to search through the entire visualization.

- As a user, I want to compare the temperature and precipitation levels of different cities so that I can identify patterns and trends in the data and better understand the weather conditions in those cities.

SCREENSHOTS

Average Annual Temperature and Precipitation Comparison in 7 US Cities
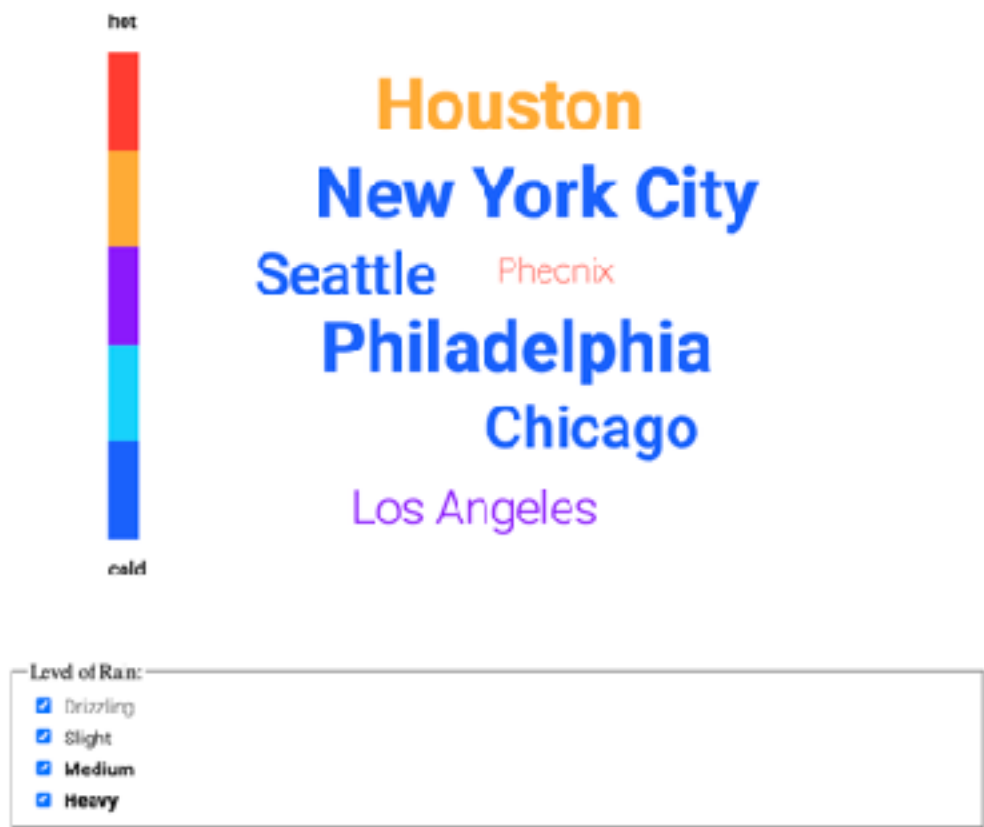
Average Annual Temperature and Precipitation Comparison in 7 US Cities
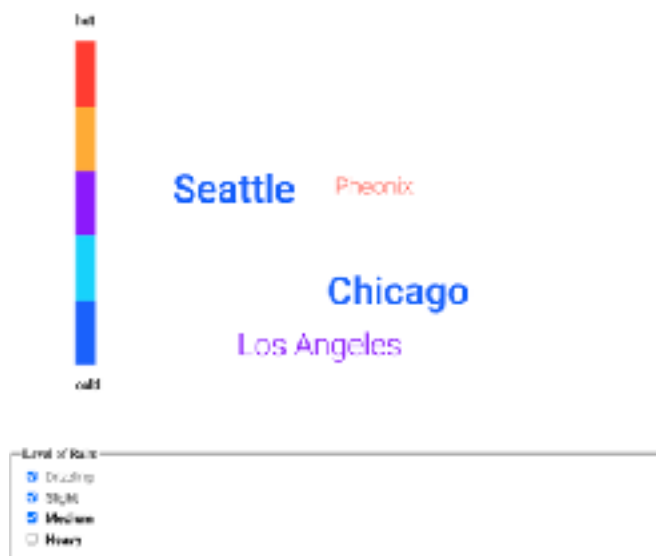
Average Annual Temperature and Precipitation Comparison in 7 US Cities

DESCRIPTION

Data

To create this visualization, I first need to gather and manipulate data on the temperature and precipitation levels of the 7 cities. This data is calculated from the cities' weather databases with the following columns:

- average_min_temp (The average minimum temperature on that day since 1880)
- average_max_temp (The average maximum temperature on that day since 1880)
- average_precipitation (The average amount of rain or snow on that day since 1880)

After using Python to manipulate the data, I produced a table of average yearly precipitation and temperature (Table 1), which I then divided into ranges (Table 2).

finalData

Name	Seattle	Houston	New York City	Los Angeles	Chicago	Philadelphia	Pheonix
temperature	52.65219173082190	69.04657634246650	65.04704520547050	66.47806210173080	51.60547045205480	65.07290273072900	75.10968004103500
precipitation	37.46	49.770000000000000	49.34	14.650000000000000	39.050000000000000	41.53	8.03

(Table 1: Temperature and precipitation data)

rangeData

	Seattle	Houston	New York City	Los Angeles	Chicago	Philadelphia	Pheonix
r1	r4	r1	r3	r1	r1	r5
Medium	Heavy	Heavy	Slight	Medium	Heavy	Drizzling

(Table 2: Temperature and precipitation range data)

Filter

By default, all precipitation levels would be selected, and the visualization would display all cities. However, if a user unchecks one or more of the precipitation levels, the visualization would only display cities that have precipitation levels that are still checked. For example, if a user unchecks the "heavy" precipitation level, the visualization would no longer display cities that have heavy precipitation levels.