Assignment 1: Expository Visualization

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To determine which city is more suitable for us to live in based on sunshine hour data, we can ask the following question:

Which city receives more sunshine hour per day in each season?

We need to process the raw data into the appropriate format. First, we must define the months that correspond to each season:

- Spring: March (31 days), April (30 days), May (31 days)
- Summer: June (30 days), July (31 days), August (31 days)
- Autumn: September (30 days), October (31 days), November (30 days)
- Winter: December (31 days), January (31 days), February (28 days)

Then, we can calculate the total sunshine hours for each season across all six cities and divide them by the total number of days in each season. We use a bar chart and a line chart to visualize the data, as they emphasize different aspects. The bar chart allows for comparing average sunshine hours for each season on a city-by-city basis, while the line chart illustrates the trend of sunshine hours across the seasons.
Figure 1 displays the bar chart of average sunshine hours per day for each season, while Figure 2 presents the line chart of average sunshine hours per day across the seasons. The colors used for each city are based on their respective flag colors, making it easy for viewers to identify which city they are observing.
From the bar chart, we can see that in summer, all cities have an average daily sunshine of over 8 hours, with Chicago having the highest at approximately 9.91 hours per day. In winter, there are significant differences in sunshine hours among the cities. Seattle averages only 2.54 hours per day in winter, while Miami still has an average of 7.31 hours.
Next, from the line chart, we can see that although Miami does not have the highest sunshine hours in summer, its sunshine hours are quite consistent across all four seasons. In contrast, the other five cities experience higher sunshine hours in summer compared to Miami, but their sunshine hours drop substantially in winter.

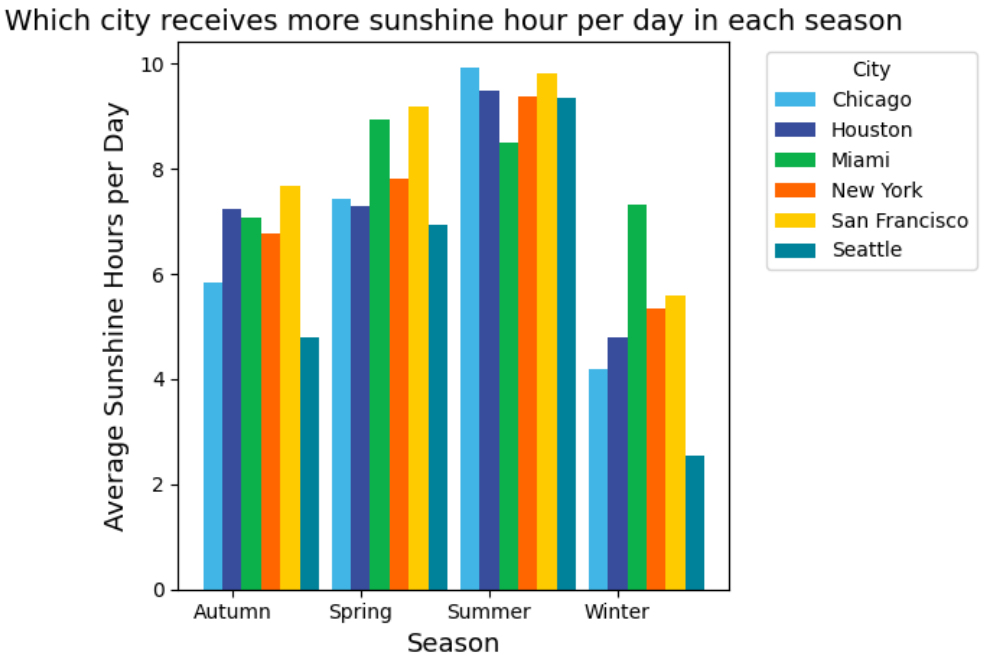

Figure 1: Bar chart of average sunshine hours per day in each season

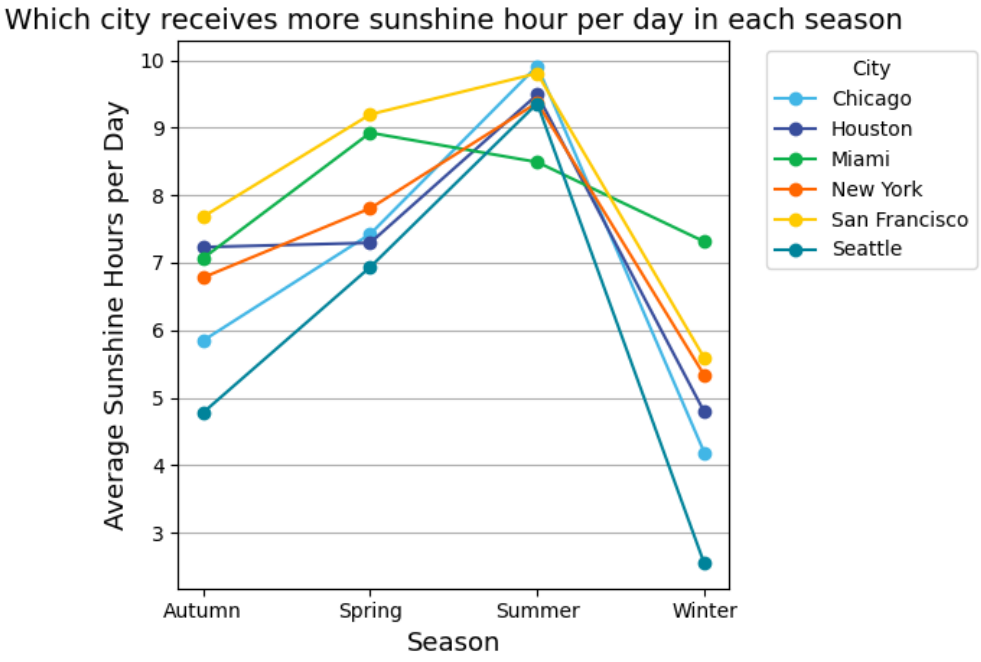

Figure 2: Line chart of average sunshine hours per day in each season