

ASSIGNMENT 1: ANALYZING SUNSHINE PATTERNS FOR OPTIMAL LIVING

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1 Introduction

This dataset contains information on global cities, including their latitude, longitude, and monthly sunshine hours. It provides insights into the geographical distribution of sunshine, allowing for an analysis of how location influences sunlight exposure across different regions throughout the year.

2 Key Questions from the Dataset

The dataset leads to the following key questions:

1. Is there a correlation between location (latitude/longitude) and sunshine hours?
2. How do northern and southern cities compare in sunshine duration?
3. Can we compare sunshine hours across cities to determine ideal living locations?
4. Which city has the most sunshine in each month?
5. What are the peak sunshine months for each city?

3 Figures

City Locations with Sunshine Hours

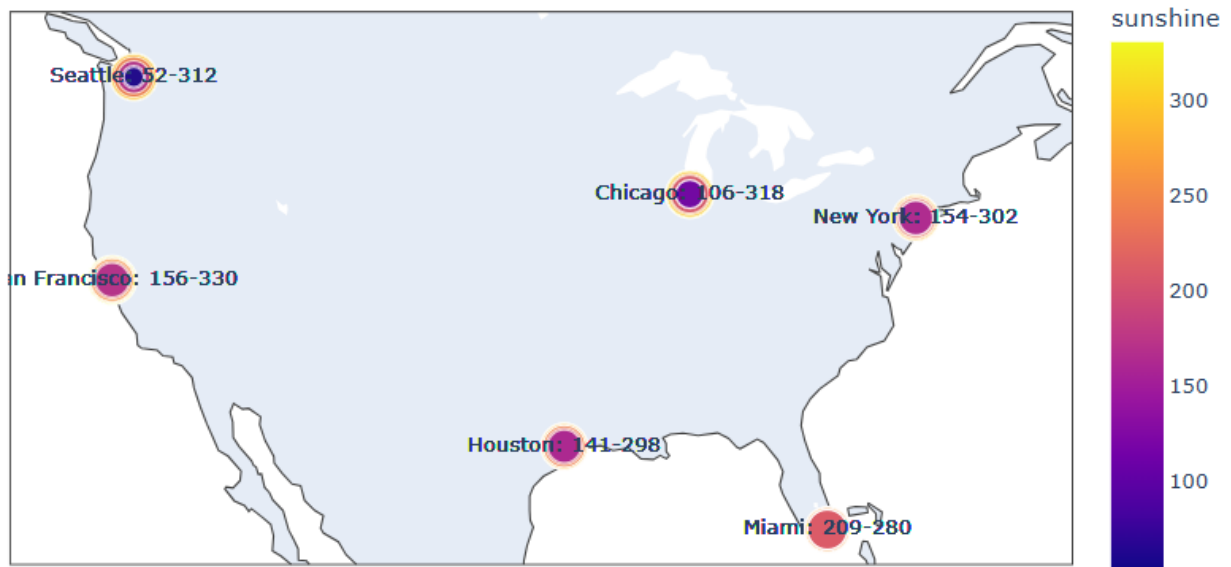


Figure 1: Sunshine Distribution Across Six U.S. Cities: A Geographical Mapping with Sunshine Range

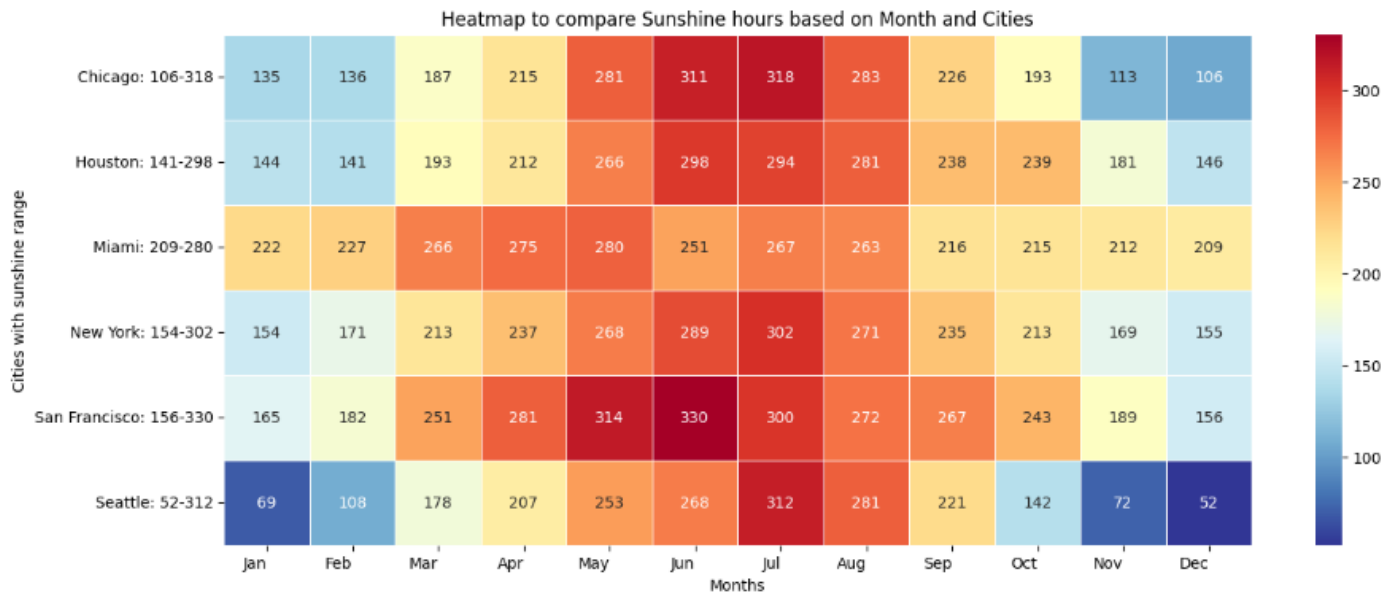


Figure 2: Sunshine Distribution Across Six U.S. Cities: A heat map with data values

4 Key Findings

1. Correlation Between Location and Sunshine:

There is a negative correlation between latitude and sunshine hours, indicating that cities further from the equator experience fewer sunshine hours in certain months. Longitude shows a slight positive correlation with sunshine.

2. Geographical Comparison:

Cities in northern regions show varying minimum sunshine hours, while their maximum sunshine hours remain fairly consistent. Proximity to the equator plays a significant role in determining sunshine duration, as cities closer to the equator receive more consistent sunshine throughout the year.

3. Identifying Ideal Living Conditions:

The heatmap allows for comparing sunshine hours across cities, helping individuals choose their preferred living conditions. For instance, Miami, which maintains consistent sunshine hours year-round, could be an ideal choice for those who prefer stable weather.

4. Monthly Sunshine Insights:

The heatmap highlights the monthly sunshine distribution for each city, allowing tourists and residents to gauge sunshine intensity in different months. This information can be used to predict weather conditions for trips or day-to-day planning.

5. Peak Sunshine Months:

The peak sunshine months for each city are clearly visible in the heatmap, answering questions about when cities experience their highest and lowest sunshine hours. This insight is valuable for scheduling activities or making travel plans.

6. Color Coding in Heatmap:

The heatmap uses a gradient color scale from blue to red to represent the intensity of sunshine hours. Blue regions represent cities with lower sunshine (potentially colder), while red regions represent higher sunshine (hotter climates). This color coding effectively conveys temperature and climate-related information at a glance.

7. Visual Insights:

The heatmap is sorted by months on the X-axis and cities on the Y-axis, showing the variation of sunshine throughout the year for each city. It provides a clear view of which city has the maximum and minimum sunshine hours without further breakdown. This visualization makes it easy to identify sunshine trends across cities and months, enhancing our understanding of how sunshine fluctuates geographically and seasonally.

8. Conclusion:

The heatmap proves to be an insightful and relevant visualization, effectively answering key questions about sunshine hours across cities. The color gradient and structure make it a valuable tool for comparing cities, planning travel, and understanding how geography impacts sunshine distribution.