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INFO 474
February 19, 2023

Final Deliverable Project Overview

Design Overview

This interactive information visualization was created as part of INFO 474 (Interactive Information Visualization) and highlights the temperature in ten U.S. cities by month in the span of one year. The visualization consists of a set of ten ridgeline plots, each displaying the distribution of actual average temperatures for each month from July 2014 to June 2015. The data used for this visualization was scraped from Wunderground and provides a one-year weather history for the following U.S. cities: Charlotte, Los Angeles, Chicago, Houston, Indianapolis, Jacksonville, New York, Philadelphia, Phoenix, and Seattle. The y-axis of each plot represents the month, while the x-axis represents the temperature of the city in degrees Fahrenheit. A minimalist color scheme is used for each month to differentiate between them while maintaining a clean and uncluttered design. The use of the ridgeline plot is particularly effective for this type of data, as it allows the viewer to easily compare the distribution of temperature across different cities and months in a visually appealing and informative manner.

This visualization also chooses to address a variety of communicative objectives and analytical questions. In terms of communicative objectives, this visualization aims to present the data in a way that is engaging and easy for the user to understand and is visually different from The New York Times [Classic Weather Chart](#) (see Figure 1). Additionally, the visualization attempts to highlight the differences in temperature distribution between the ten cities and the change in temperature distribution over the course of a year for each city, to provide insight into regional climate differences and seasonal temperature patterns. The final communicative

objective is the identification of any cities that experienced extremities in weather over the course of the year. Further, the following analytical questions can be asked as the user explores this visualization:

1. Are there any months in which the average temperature distributions are significantly different from one another?
2. How do the temperature distributions vary from city to city? Does geographical location affect the average temperature each month?
3. In which months are there extreme highs and/or lows in temperature?
4. Which cities have the most and least variability in their average monthly temperatures over the year?

User Tasks

A variety of user tasks are supported with this interactive weather visualization. A few potential ones include:

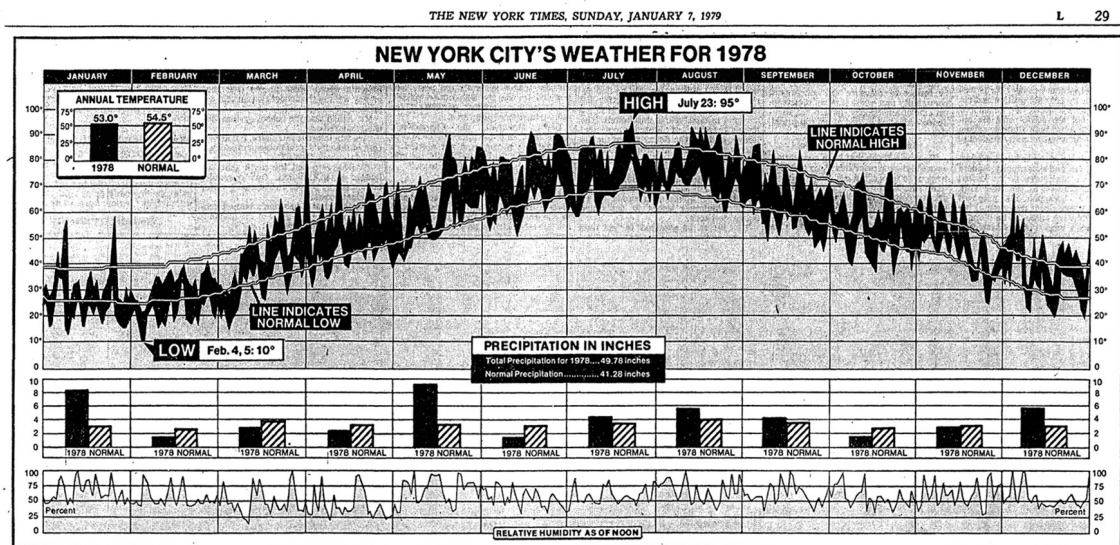
1. Identify the city (or cities) with the highest or lowest average temperature for a specific month, such as January or July.
2. Explore how the temperature distribution changes over time for a specific city.
3. Identify any outliers in the temperature distribution for a specific city or month.
4. Compare the temperature distribution for two specific cities across all twelve months, or compare the temperature distribution for a specific city to all of the other cities.
5. Identify which cities have the most and least extreme temperatures across all twelve months.
6. Find the city or cities with the least or most variation in temperature across all twelve months.

Description of Interface

The interface for this temperature visualization consists of ten individual ridgeline plots, each displaying the distribution of average temperatures for a single city over the course of one year, as mentioned previously. The use of a minimalist color scheme, with subtle shades of purple and blue ombre for each month, helps to differentiate the temperature distributions without overwhelming the viewer with too much visual information. Additionally, the interactive features of the visualization allow users to easily explore the data in greater detail. By hovering over a specific month on a given ridgeline plot, the user can view the actual average, minimum, and maximum temperatures for that month (see Figures 2-3). This allows for a more precise analysis of the data and provides a greater level of interactivity and engagement for the user.

Figures

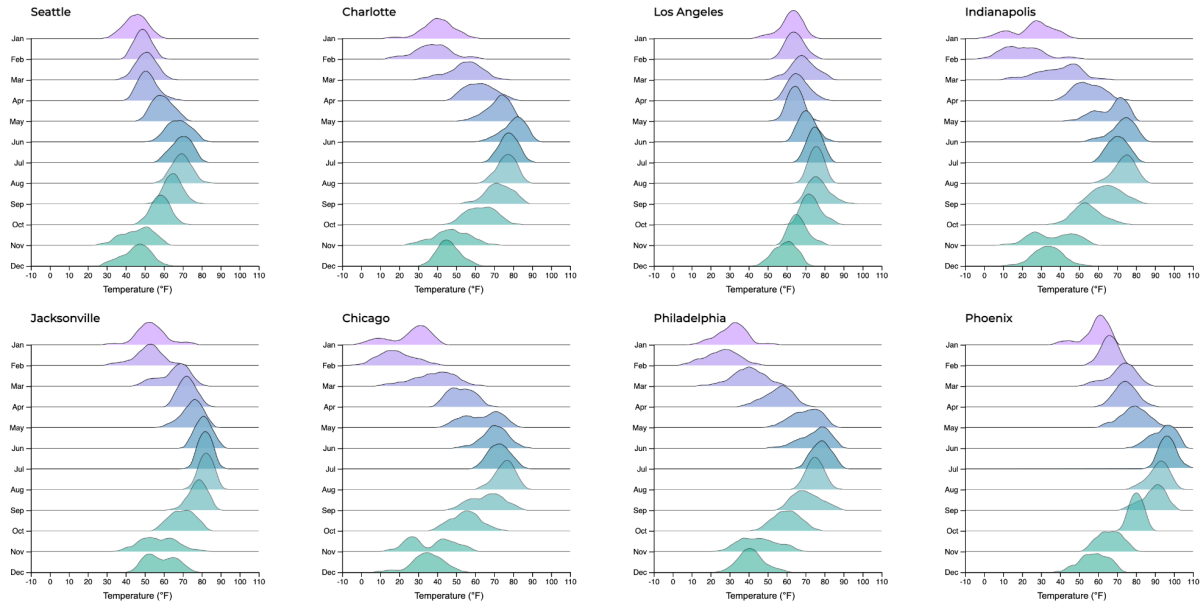
Figure 1



A traditional view of viewing weather trends, most often in the form of a line chart.

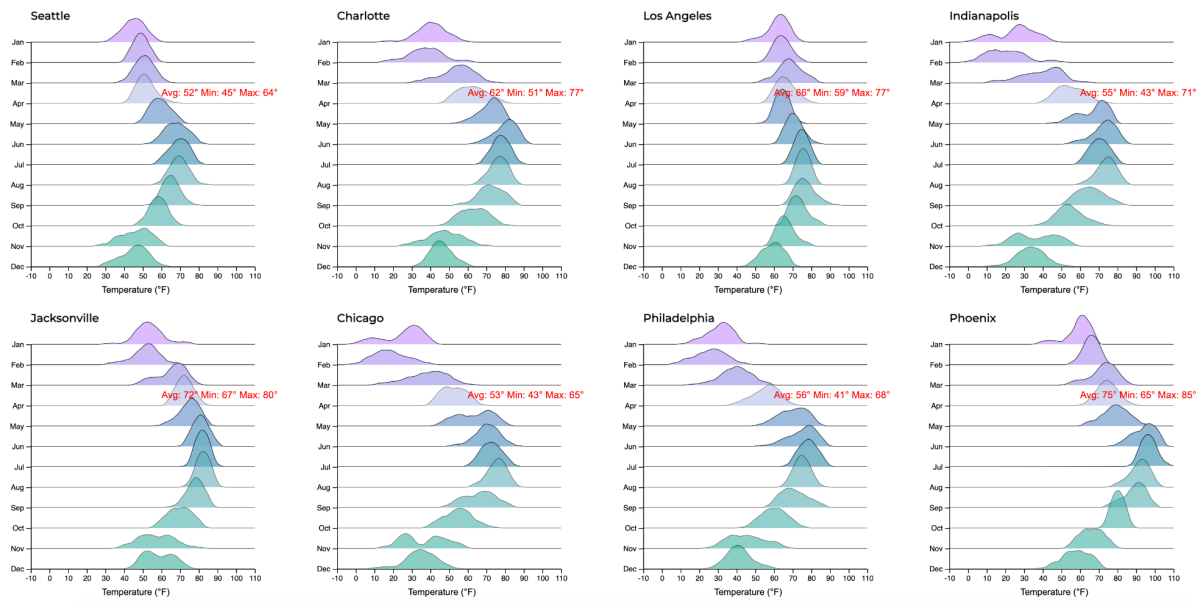
Source: New York Times.

Figure 2



The standard view of the visualization displays all the cities.

Figure 3



When the user hovers over each month, the average, min, and max temperatures of that month appear.