SCORCHING HEAT

Unveiling Heat Temperatures of Major Philippine Cities Through Exploratory Data Analysis

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BACKGROUND

The Philippines is experiencing extreme heat, with temperatures reaching record highs across the archipelago. Communities across the country are feeling the impact of the heat, especially those in urban areas which led to the suspension of in-person classes in public schools and health warnings from authorities. This exploratory data analysis of weather data from **138 major cities** in **April 2024** from **OpenWeatherMap.org** which was downloaded from **Kaggle**, can help us understand this heatwave and how temperatures vary across the Philippines.

METHODOLOGY

Data Preparation

DateTime formats were converted into more informative variables like Month, Day, DayName, and Hour Interval for better analysis.

Data Cleaning

Inconsistencies and missing values in the weather data for the 138 cities were checked to select best variables needed for analysis.

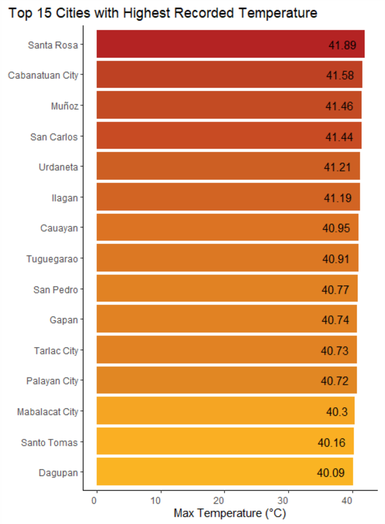
Data Analysis

Summary statistics were applied to the data to calculate average temperatures, and identify any correlations with other weather metrics, considering the influence of month, day, and time.

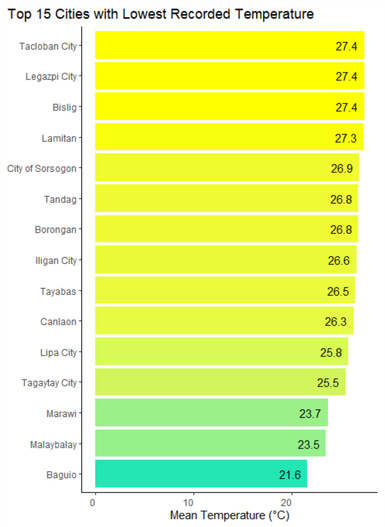
Data Visualization

Charts and graphs were created to explore temperature distributions, identify potential outlier, and visualize trends across different cities, considering the month, day, and time of day.

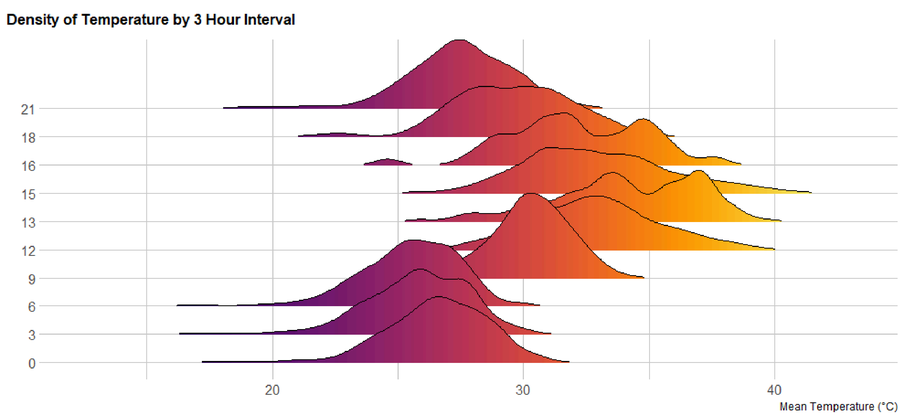
RESULTS AND DISCUSSION



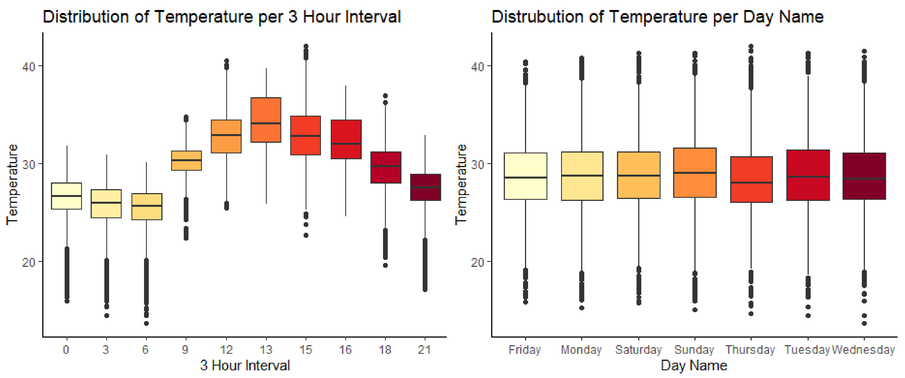
The graph shows the Top 15 cities in the Philippines ranked by their highest recorded temperatures, with Santa Rosa hitting 41.89°C (107.4°F) as the hottest, while Tuguegarao City stands at number nine with 40.91°C (105.63°F).



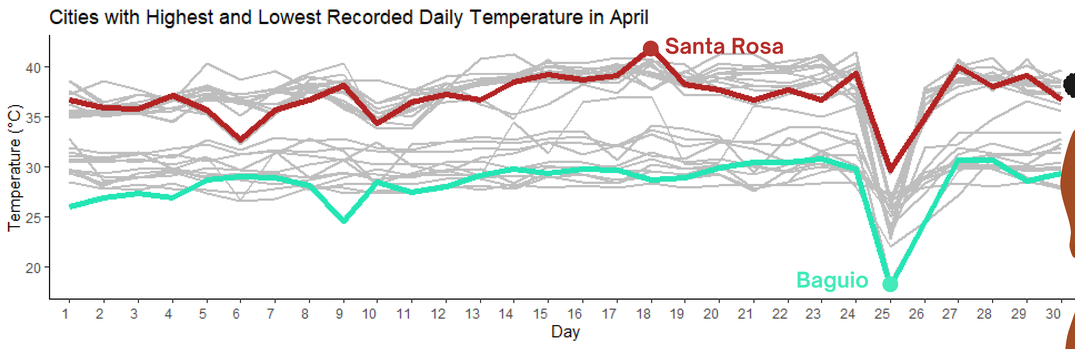
The graph shows the Top 15 cities ranked by their lowest recorded temperatures, with Baguio City hitting 21.6°C (70.88°F) as the coldest place in the Philippines. Tacloban City, Legazpi City, and Bislig City are all tied for their lowest recorded temperature at 27.4°C (81.32°F).



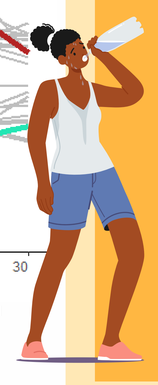
The graph shows the density of temperature by 3-hour interval. Each density plot shows the distributions of temperature recorded per hour interval. The graph shows two prominent peaks in temperature density. First, temperatures around 20 - 30°C occur frequently during specified time intervals around 0-6 (dawn). Second, temperatures near 40°C also have higher density which occurs during time intervals of 12-16 (afternoon).



These box plots show the distributions of temperature per 3-hour interval (similarly to the graph above) and per name of the day. These provides insights into the central tendency, variability, and potential outliers. The first box plot shows that starting from the 12-hour mark, there is a notable increase in temperature variability. While the second plot shows that temperatures are generally consistent throughout the week, with slight variations.



The graph depicts the highest and lowest recorded daily temperatures in various cities during April. Temperatures fluctuate between approximately 20°C and 40°C throughout the month. The highest recorded temperatures which is Santa Rosa (maroon) generally stay above 35°C until a sharp decline towards the end of April. The lowest recorded temperatures which is Baguio (aqua green) remain relatively stable around 25°C before rising slightly mid-month and then also declining sharply towards month-end. The sharp decline around day 25 could be due to weather changes, seasonal transitions, or other environmental influences.



CONCLUSION

The analysis of weather data from 138 major cities in the Philippines in April 2024 provides valuable insights into the ongoing heatwave gripping the nation. The results reveal extreme temperature fluctuations across different regions, with Santa Rosa emerging as the hottest city and Baguio City as the coldest. The data visualizations highlight peak temperature densities during specific times of the day, shedding light on the patterns of temperature variation throughout April. Additionally, the box plots offer insights into temperature variability over different intervals and days of the week, emphasizing the need for continued monitoring and adaptation to mitigate the impacts of the scorching heat.