

Project 1

Exploring climate data of Singapore

Background

As ATC (Association of Trade & Commerce) Singapore. It is essense to help not just corporation and SMEs, but the individual business owner as well. One of the familiar business owner that can be found along the great Orchard Road and other tourism attraction places are the traditional ice-cream stand. They have been in business around haft a century, but now they're not doing so well now. Many of the owner are elder, hence ATC should help them to improve their business or at least help them to be more efficienct, help them take advantage from weather. The hottest period in the day would ideally be when people may want ice-cream the most, so setting up the stand at the right time and right place would be the key to success.





Problem

How can we help
uncles sell more
ice-cream?

data

The data used in the project can be obtained from [data.gov.sg](<https://data.gov.sg/search>). The record was from 1982 to 2022 The data used in this project with data dictionary are as follow:

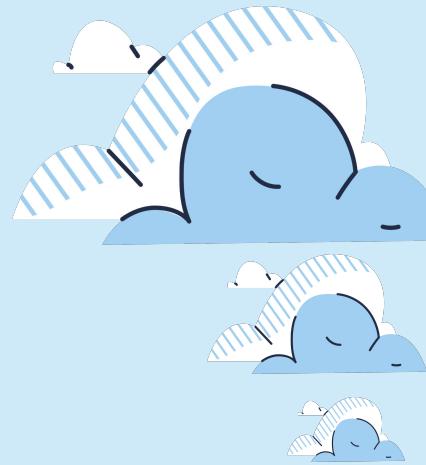
Data Dictionary

Feature	Type	Dataset	Description	...
month	datetime	All dataset	Month of the year	
total_rainfall	float	rainfall-monthly-total	Total rainfall in mm	
maximum_rainfall	float	rainfall-monthly-maximum-daily-total	Maximum rainfall in mm in a day	
mean_sunshine	float	sunshine-duration-monthly-mean-daily-duration	Mean sunshine duration in hours	
temp_mean_daily_min	float	surface-air-temperature-mean-daily-minimum	Mean daily minimum temperature in degree Celsius	
no_of_rain_days	int	rainfall-monthly-number-of-rain-days	Number of days with rainfall more than 0.2mm	
mean_rh	float	relative-humidity-monthly-mean	Mean relative humidity in percentage	
total_visitors	int	Number of International Visitor Arrival	Total number of international visitor arrival in Singapore	

Finding:

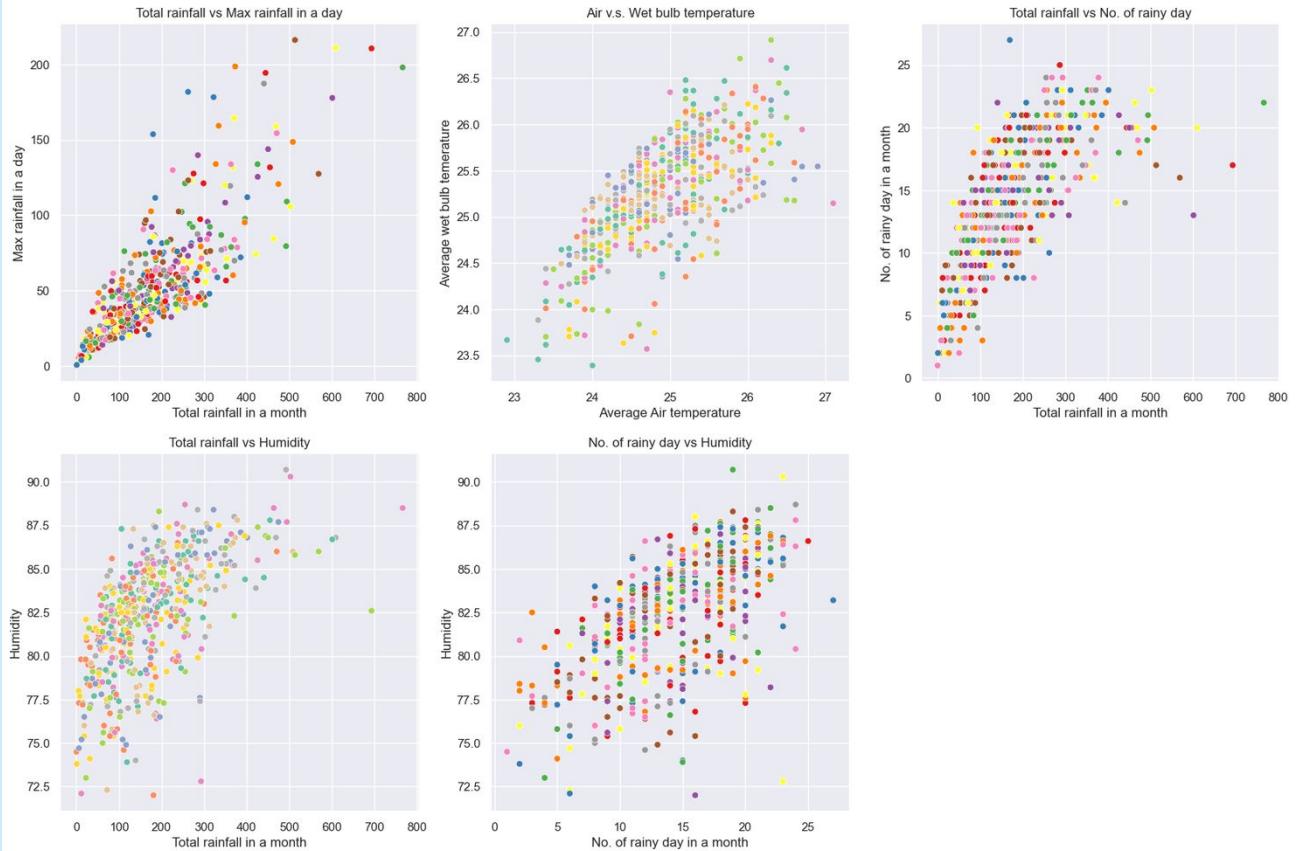
Finding one:

There some relationship between weather index such rainfall, temperature, sunshine ,and relative humidity, but they are obvious and not surprise.



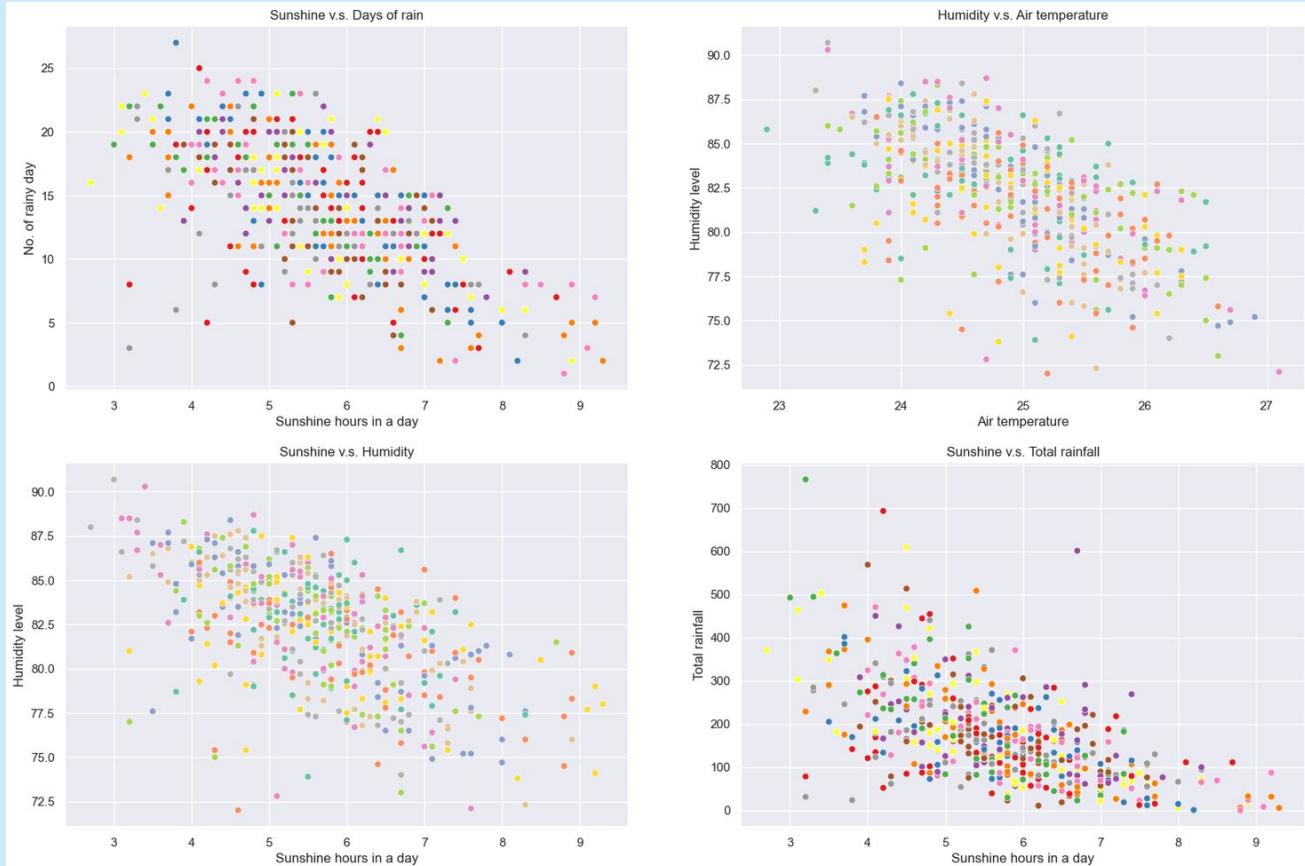
Finding:

Finding one:



Finding:

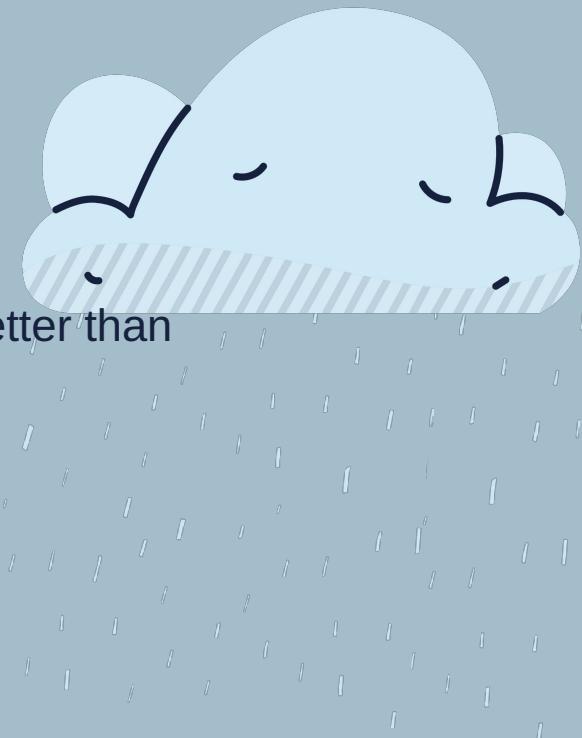
Finding one:



Finding:

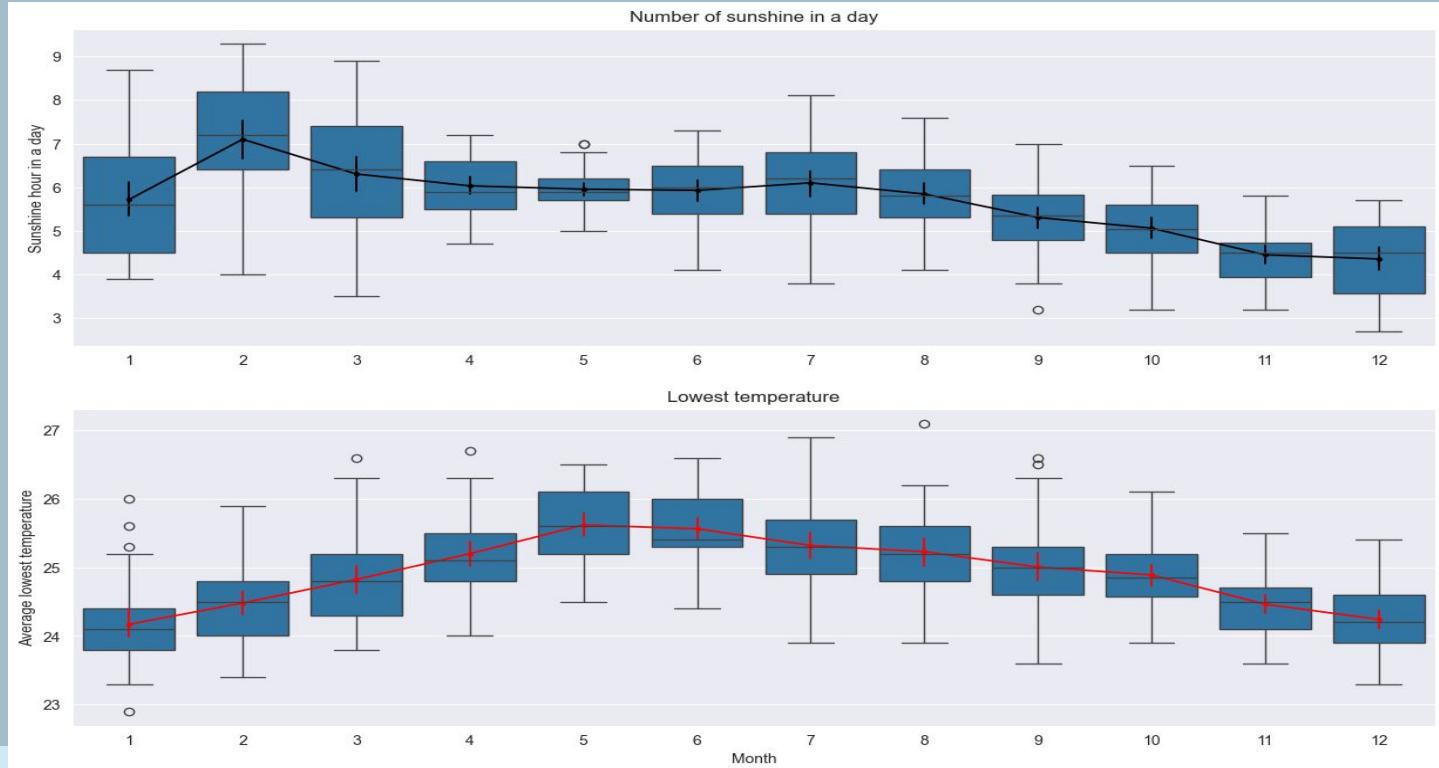
Finding two:

Singapore has rain throughout the year, but some month is wetter than others, hottest month, and sunniest month.



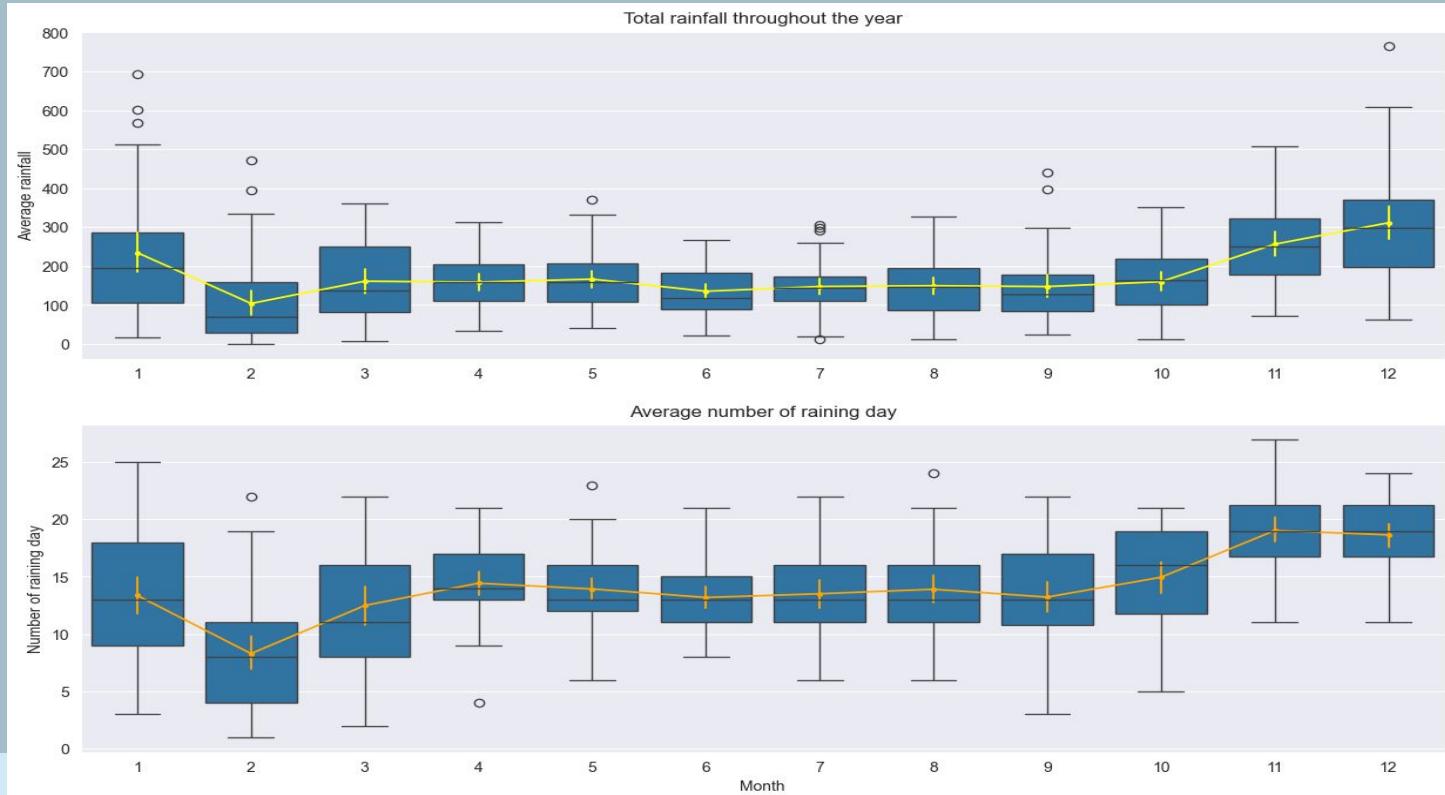
Finding:

Finding two:



Finding:

Finding two:



Finding:

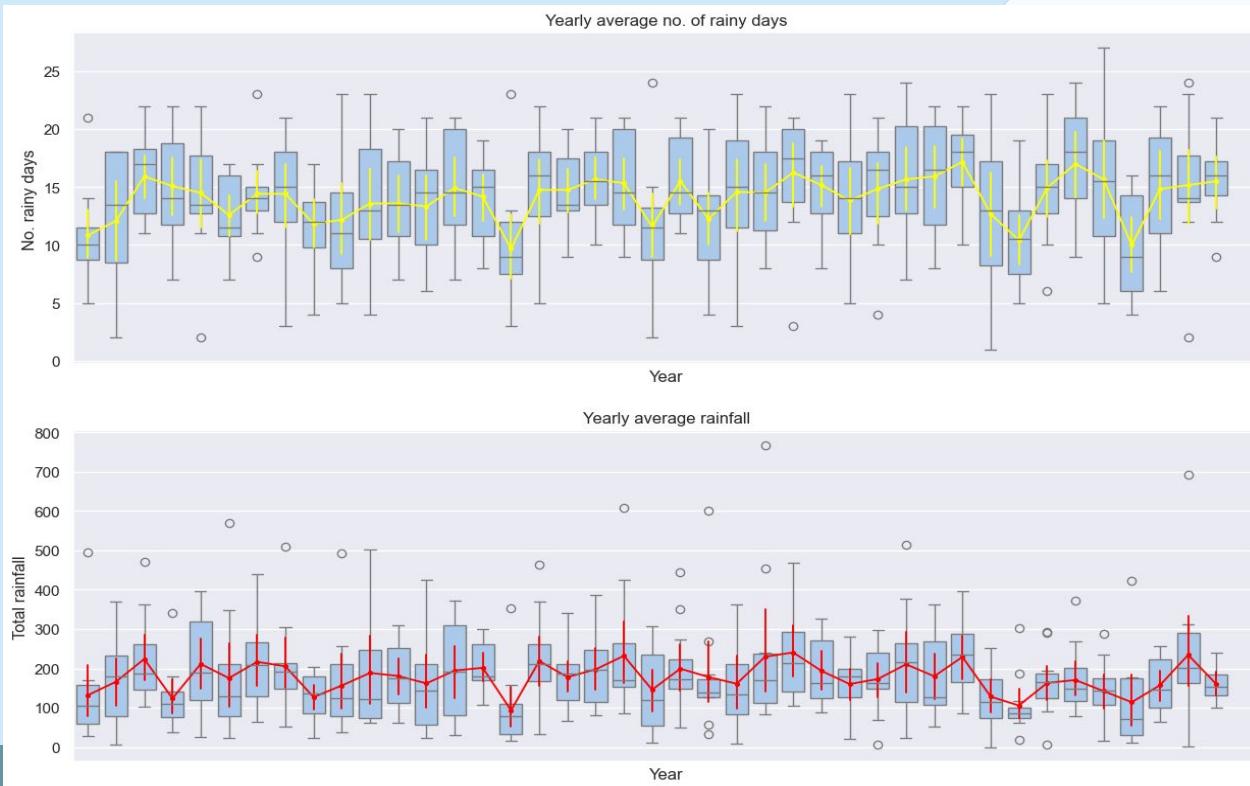
Finding three:

Since 1982, we don't have significant surge (both increase and decrease) in term of rainfall. Hence, volume of rainfall or number of raining days in a month today, isn't much different from 40 years ago.



Finding:

Finding three:



Finding:

Finding four:

The wet bulb temperature data were recorded by hour. The distribution shape also very close to perfect normal distribution, so mean/median/mode are close to each other.

So the statistically analysis rely on mean and standard deviation sufficient to describe the entire distribution

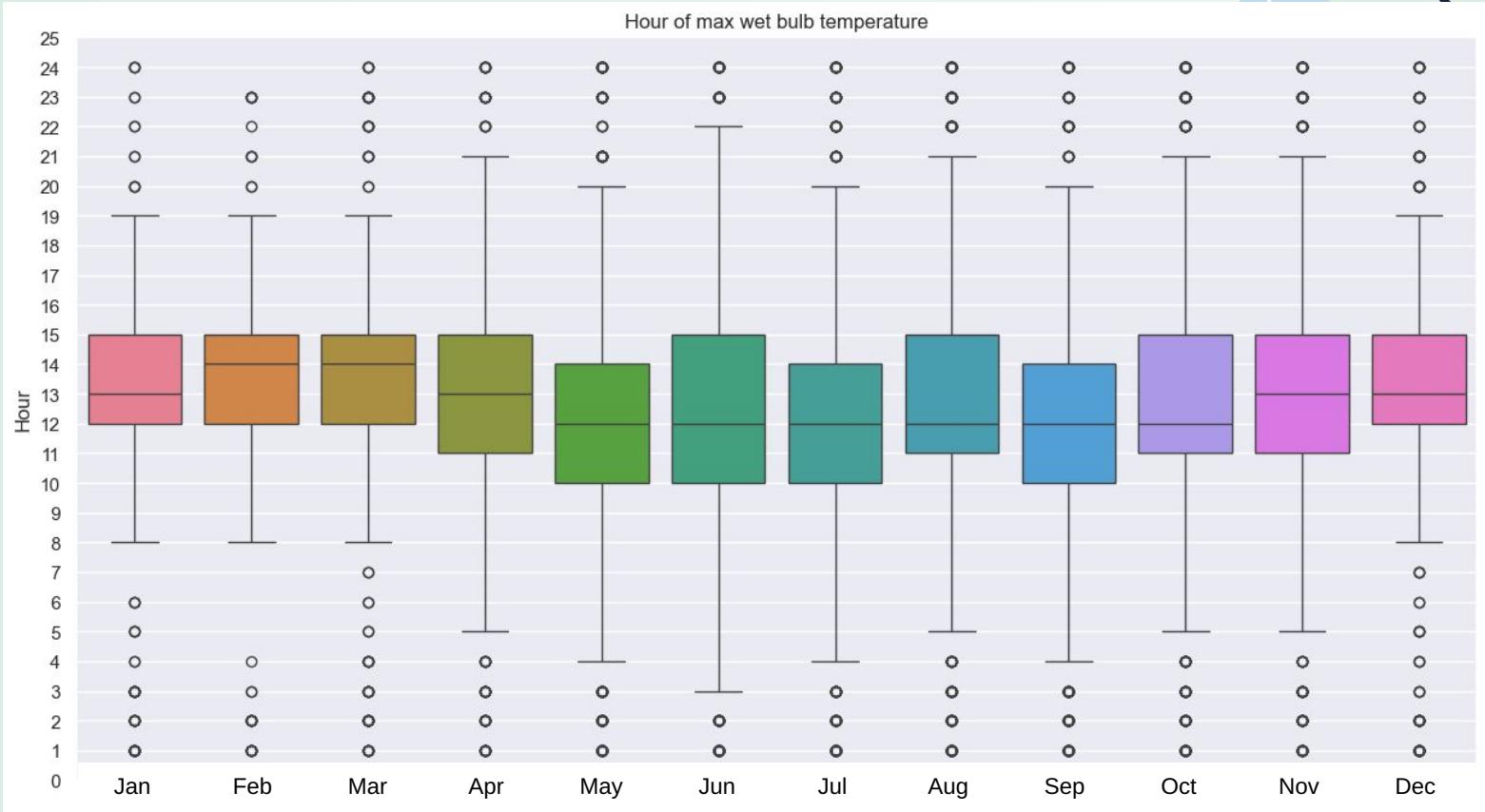


Finding four:

- Dec, Jan, Feb, and Mar has 50% chances that the hottest time of day will be between noon and 3 pm
- Apr, Aug, Oct, and Nov has 50% chances that the hottest time of day will be between 11 am to 3 pm
- May, Jul, and Sep has 50% chances that the hottest time of day will be between 10 am to 2 pm
- Jun has 50% chances that the hottest time of day will be between 10am to 3 pm



found:



Implication:

- February has the best weather for selling ice-cream. It may not be the hottest month, but it has the longest sunlight hour and least chance of raining.
- Jun is probably the secord best for uncles. It has the longest hot weather period during the day, and also the hottest month in the year.
- November and December are the least favorable months for selling ice-cream. They have highest raining chance and the temperature are among the lowest in the year.
- May, Jul, and Sep are likely to start heating up sooner than others, perhaps uncles need to set up stand earlier than usual.
- The rest of the months can be expected to be rained half of the time, with hottest period of the day between 11 am to 3 pm.

