

# Exploring Climate Data of Singapore





# Who Am I?

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Data analyst/scientist hired to  
improve a local company's operations



# Audience:

# Picnic Essentials Business

## Equipment Rental



Tents, mats, tables, chairs

## Retail Sales



Kites, baskets, flowers, mats, tents

## Food and Beverages



Pizzas, sausages, salads etc



# Audience:

# Picnic Essentials Business

## Picnic Packages



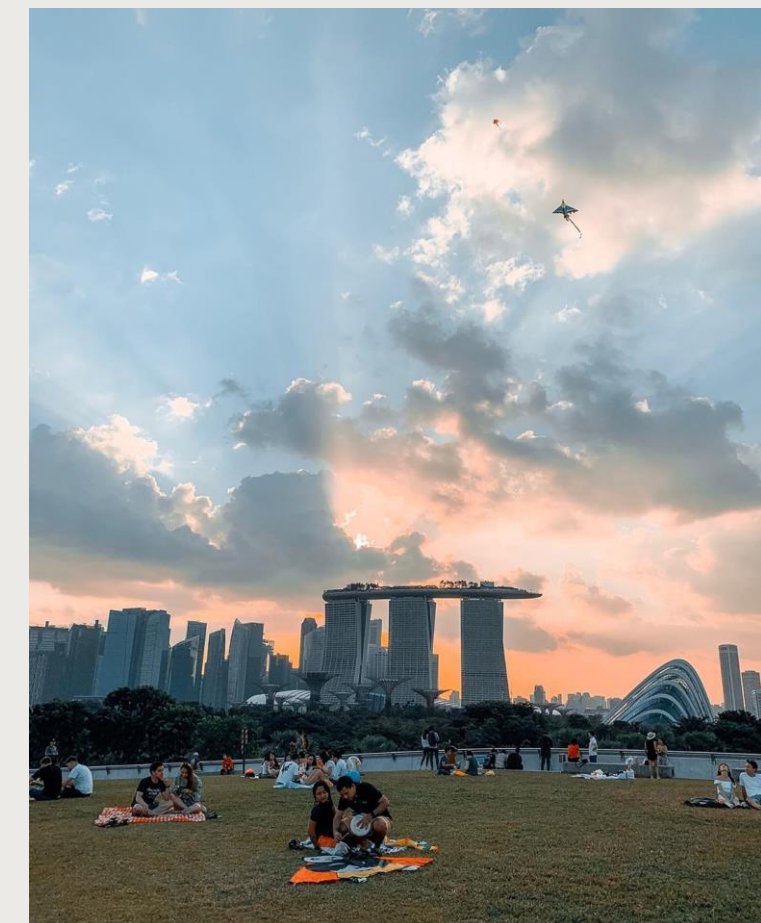
**Birthdays, Proposals, Parties**

## Outdoor Event Planning



**For both industry partners  
and picnic go-ers**

## Picnic Location Recommendation



**Marina Barrage**



# Problems

**Customer experience  
affected by weather**

**Outdoor activities are disrupted by rainfall  
Kite-flying requires certain windspeed**

**Demand affected by  
weather**

**Demand may vary according to seasonal patterns**

**Picnic location  
recommendation**

**Which areas/locations are best for kite-flying? Least  
chance of rain?**

# Problem Statement

- This project aims to analyze **monthly weather patterns** over the year and **locations** to provide valuable insights and recommendations for **optimizing picnic planning and operations** based on weather conditions.
- This can help guide the development of **tailored marketing campaigns, optimize inventory levels, and enhance customer experience.**

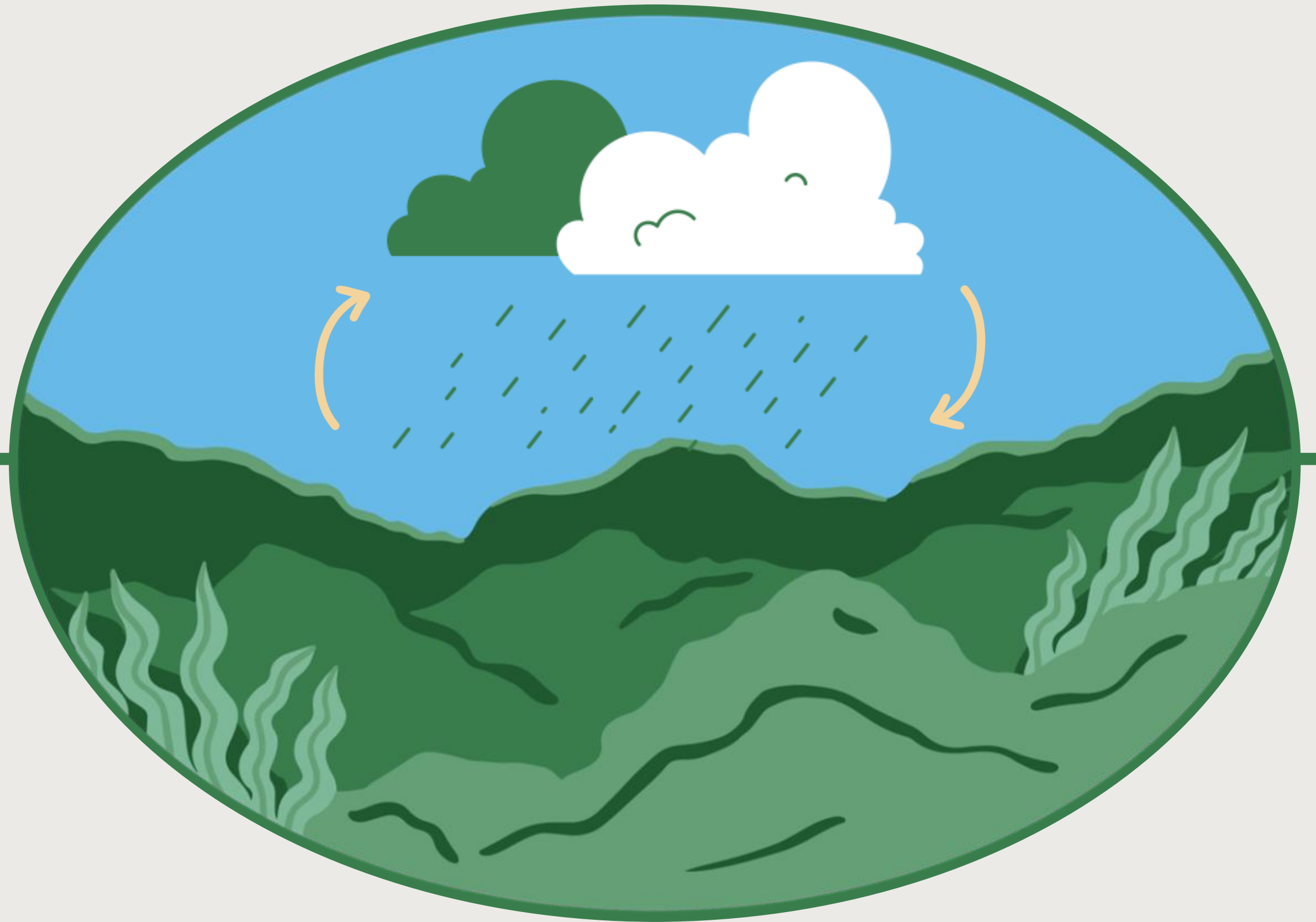
# Project Aims

- Explore climate trends in Singapore
- Identify months with best weather conditions for picnic
- Identify locations with best weather conditions for picnic
- Provide recommendations for a picnic essentials business in Singapore



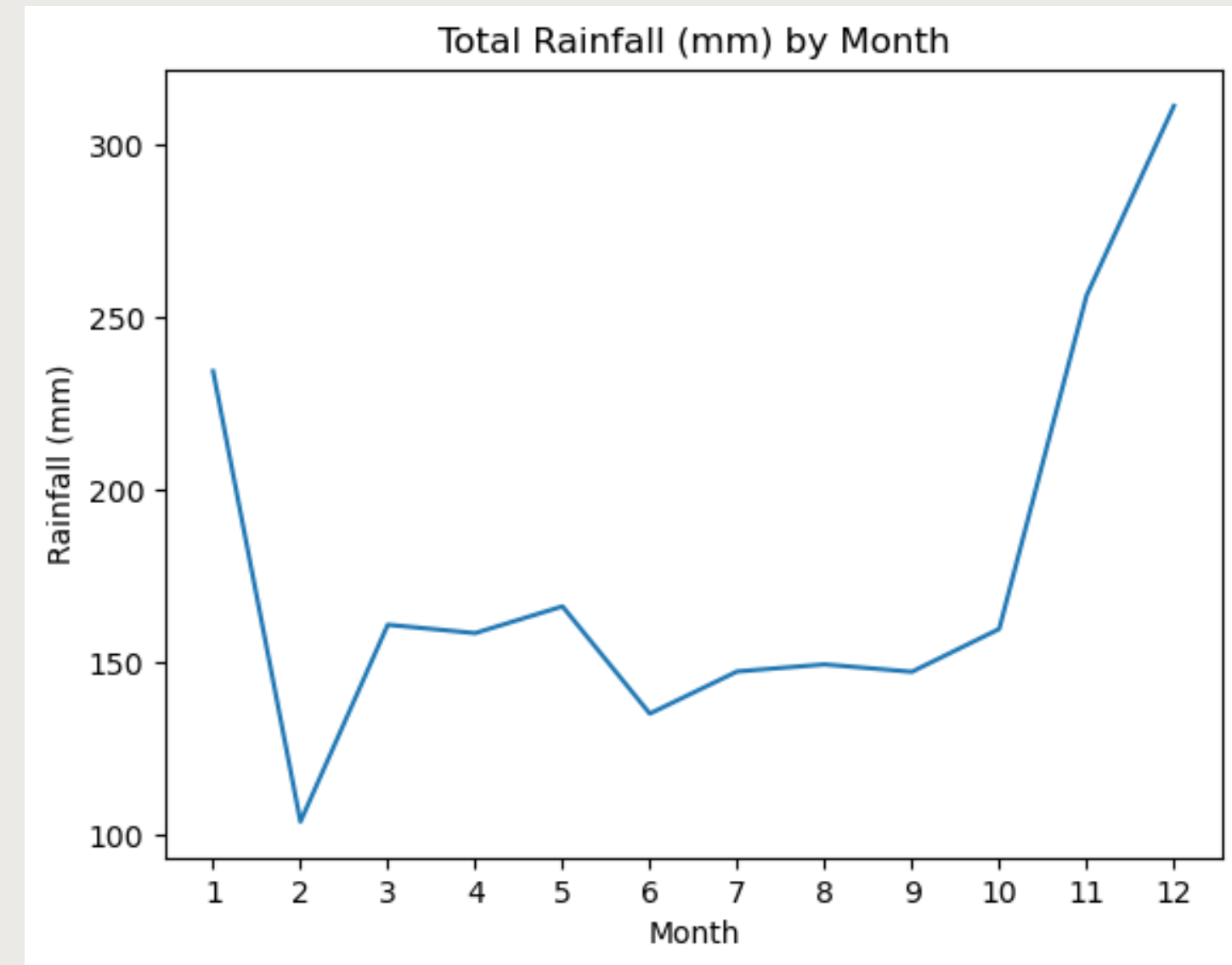
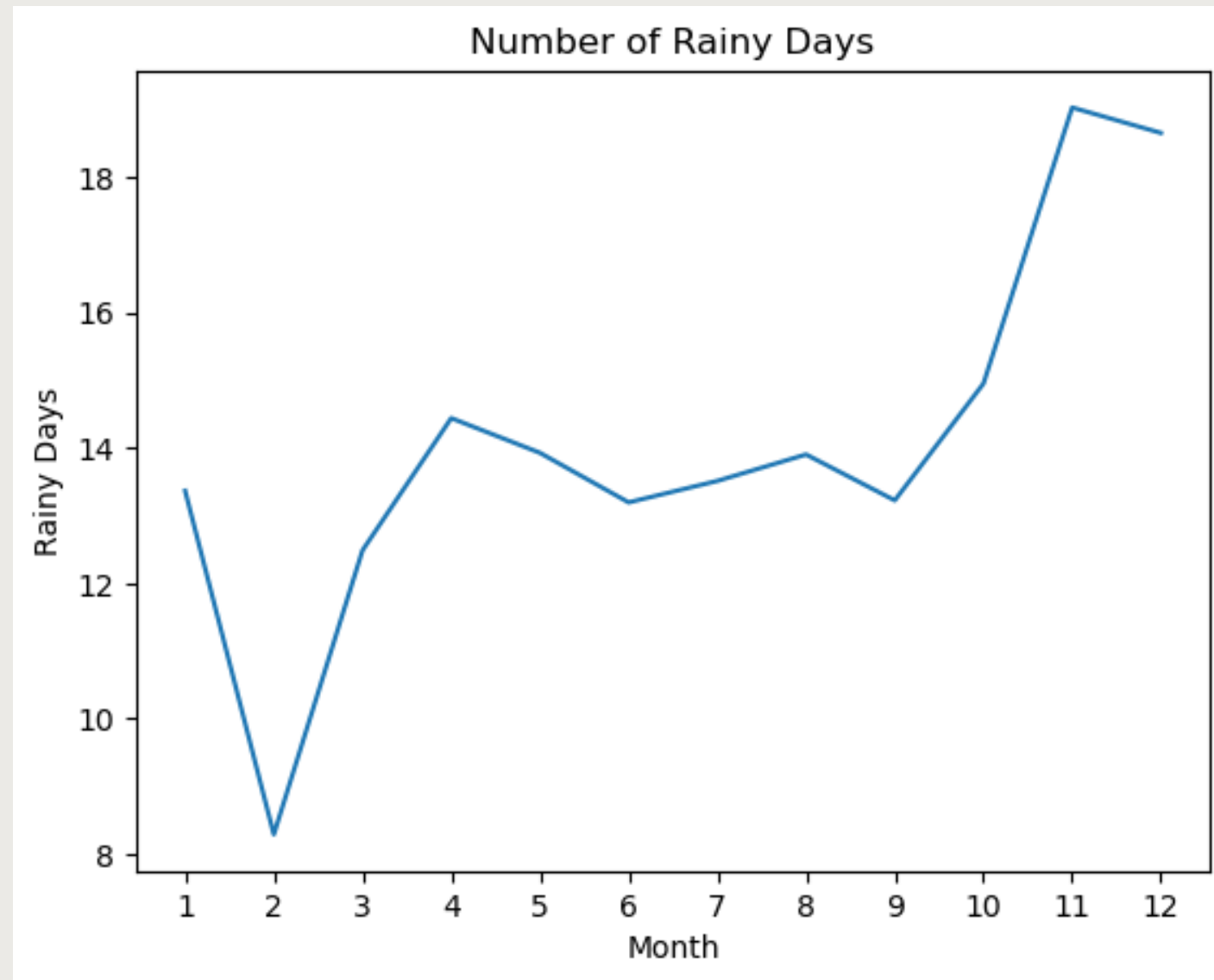


# Weather Trends





# Rainfall

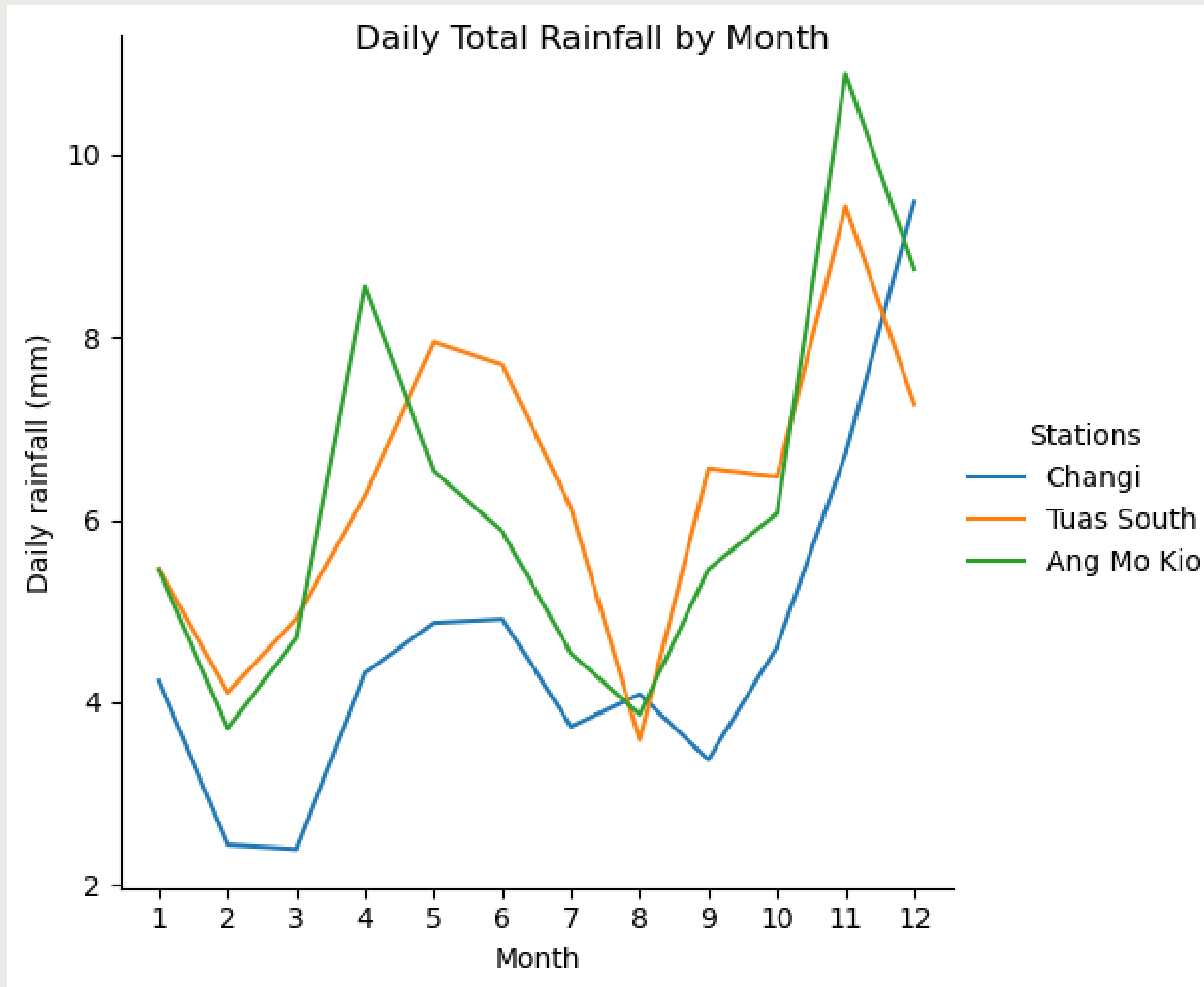


1) **November/December** has the **highest** rainfall and number of rainy days

2) **February** has the **lowest** rainfall and number of rainy days

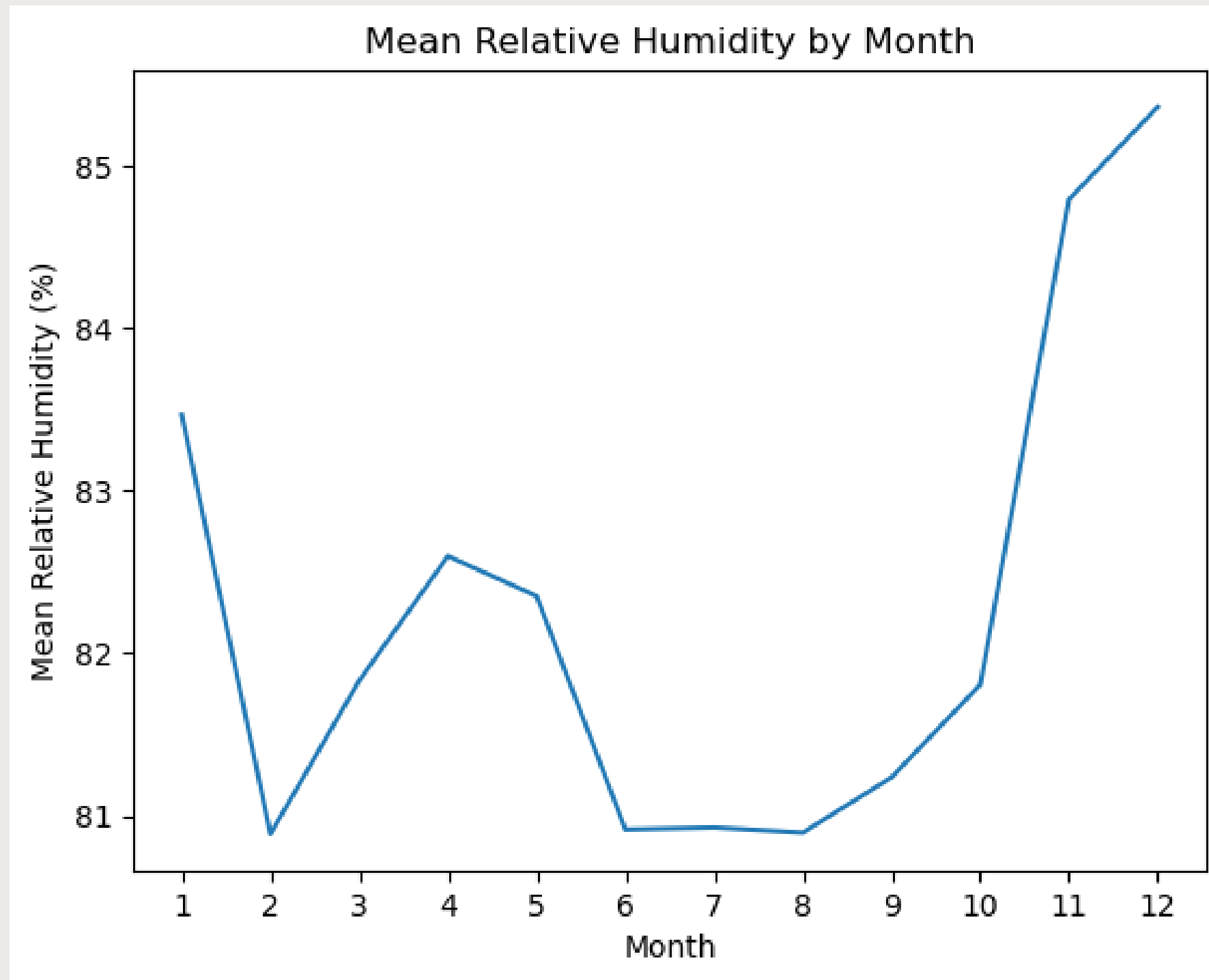
*A day is considered to have “rained” if the total rainfall for that day is 0.2mm or more (<http://www.weather.gov.sg/climate-climate-of-singapore/>)*

# Rainfall by stations



1) **Changi** has the **lowest** mean rainfall, whereas Tuas/Ang Mo Kio has higher rainfall

# Relative Humidity

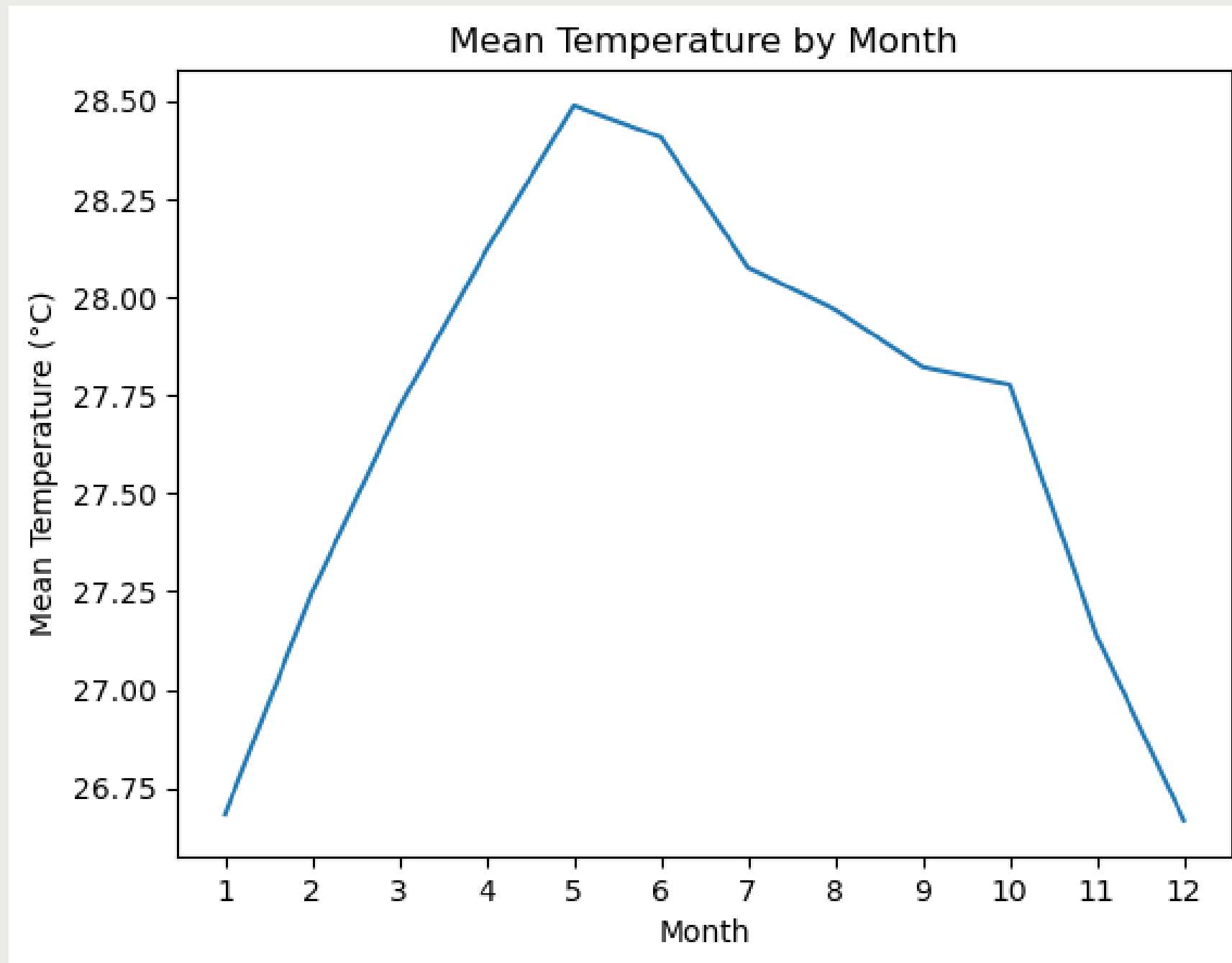


**1) February/June-August** has the **lowest** mean relative humidity

**2) November and December** has the **highest** mean relative humidity

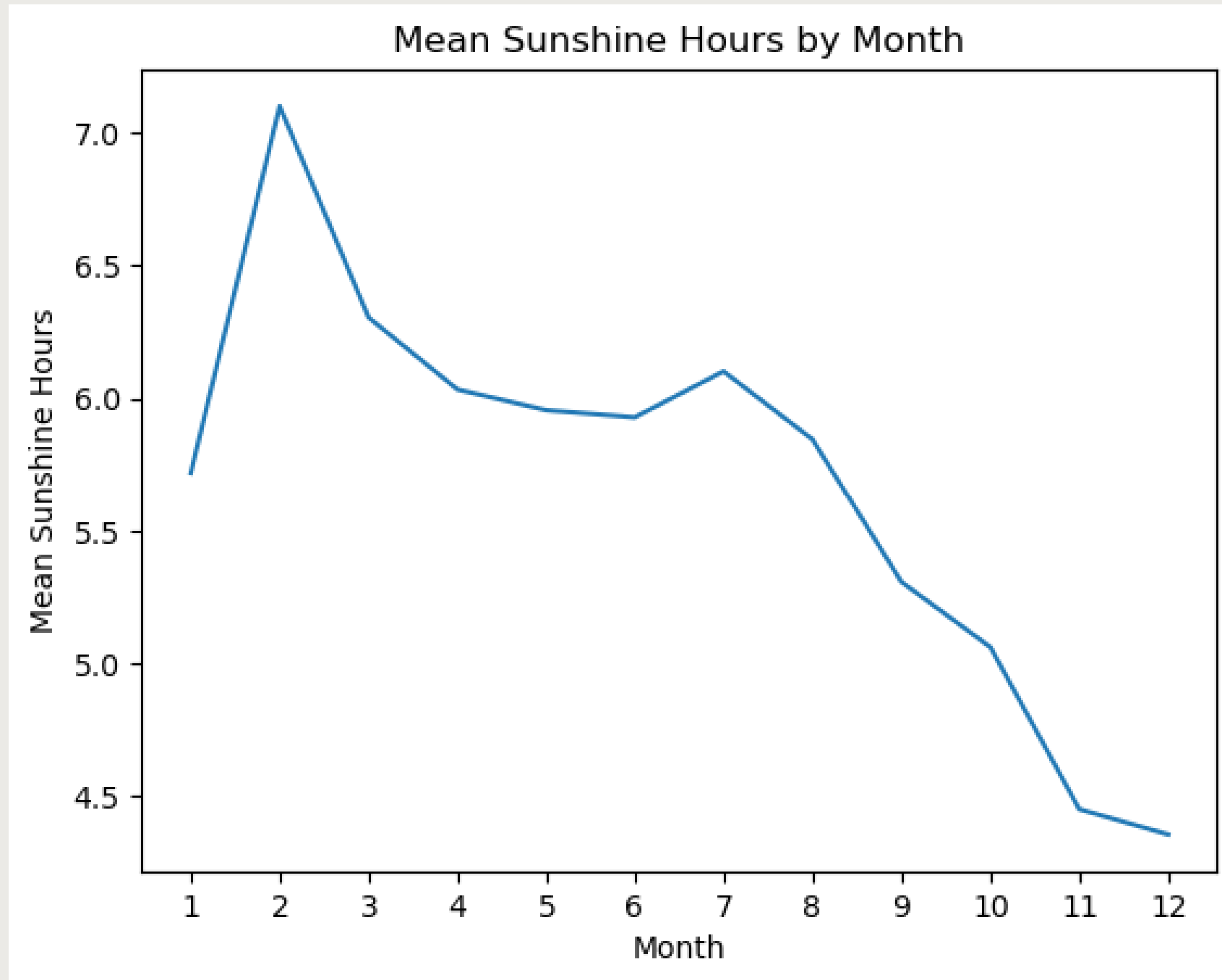


# Temperature



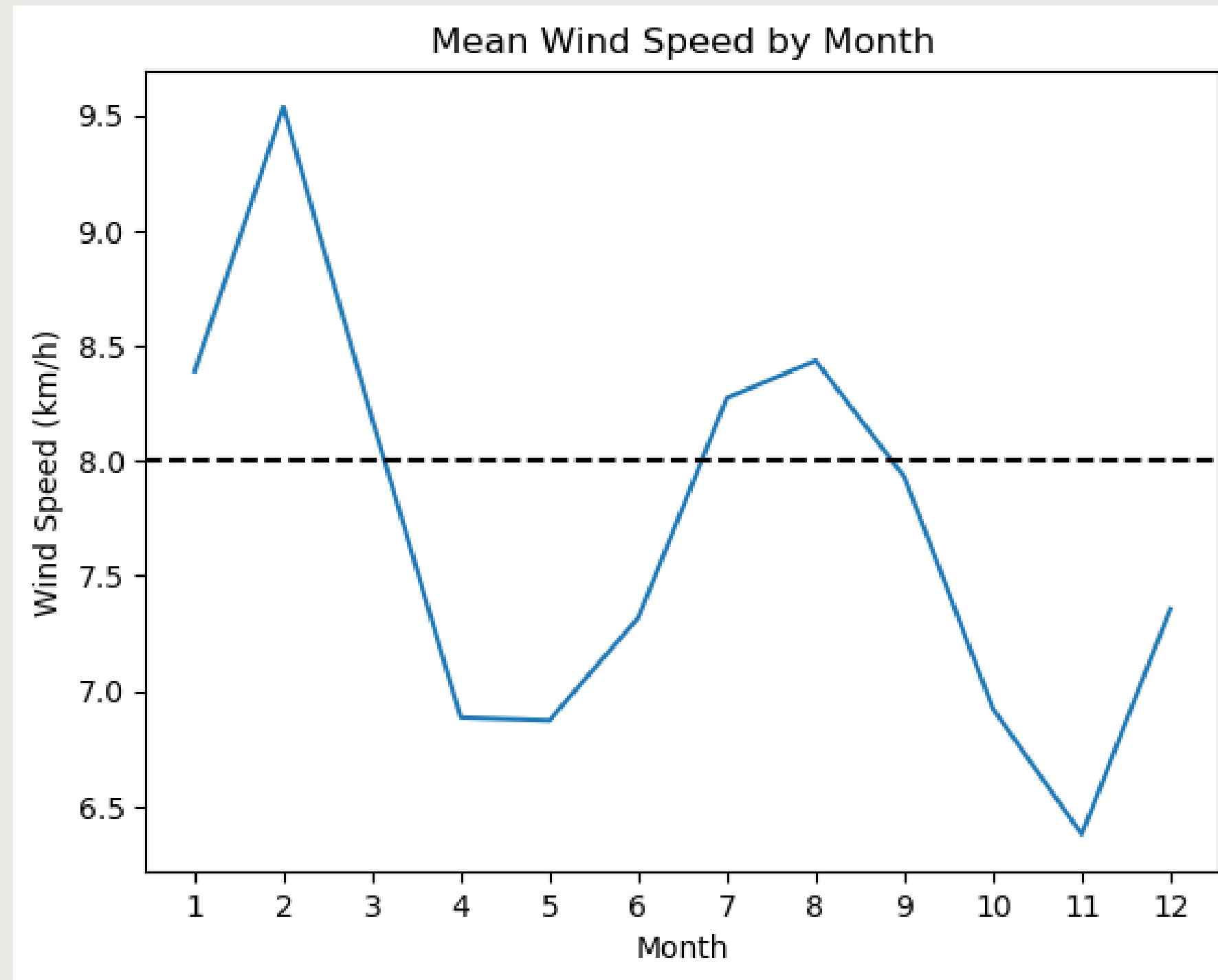
- 1) **May/June** has the **highest** temperatures
- 2) **January and December** has the **lowest** temperatures

# Mean Sunshine Hours



1. **February** has the **highest** mean sunshine hours
2. **November/December** has the **lowest** mean sunshine hours

# Mean Wind Speed

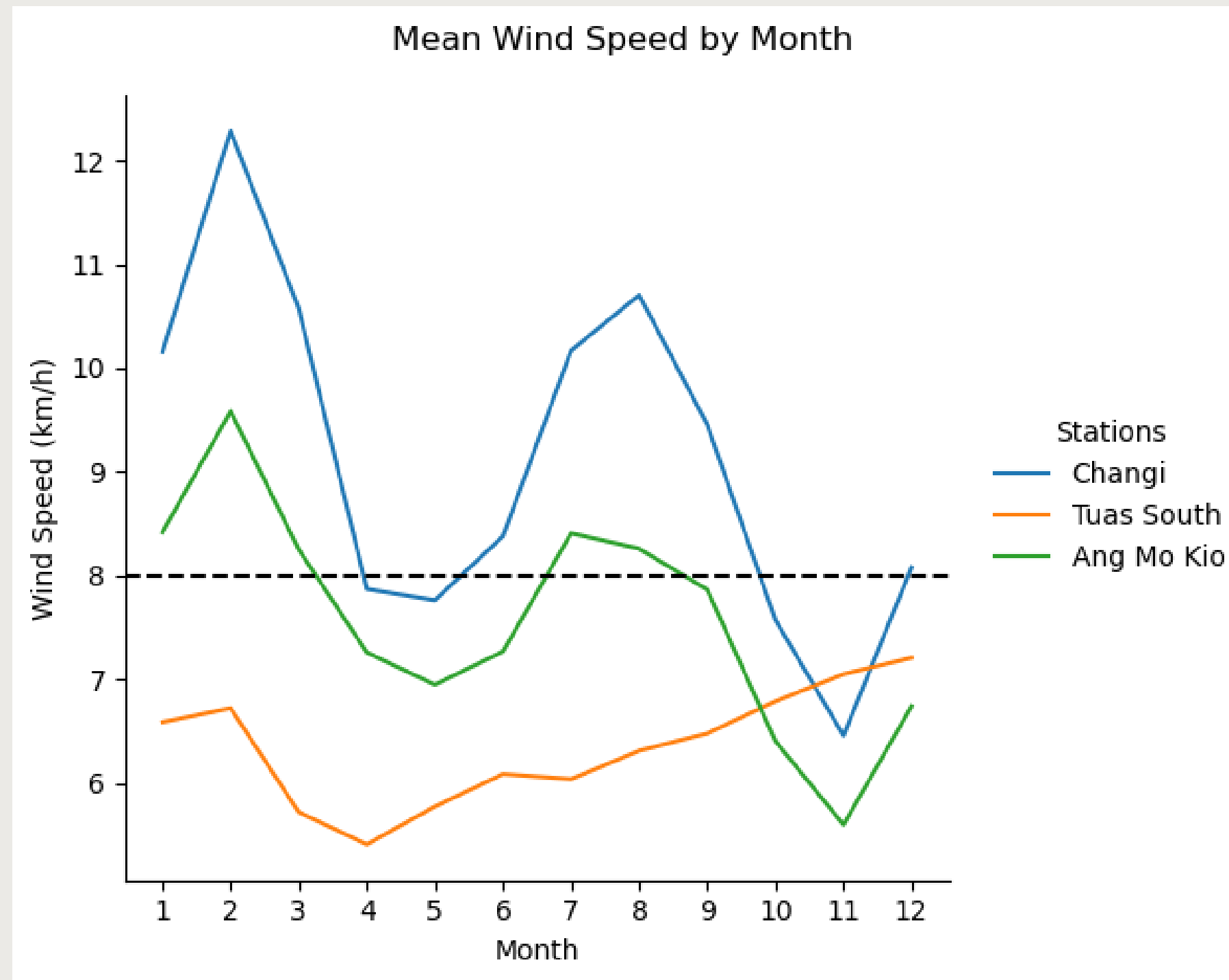


1. **February** has the **highest** mean wind speed
2. **November** has the **lowest** mean wind speed

Wind speeds of more than 8km/h is best for most kites (<https://www.nationalkitemonth.org/how-to-fly-a-kite/>)



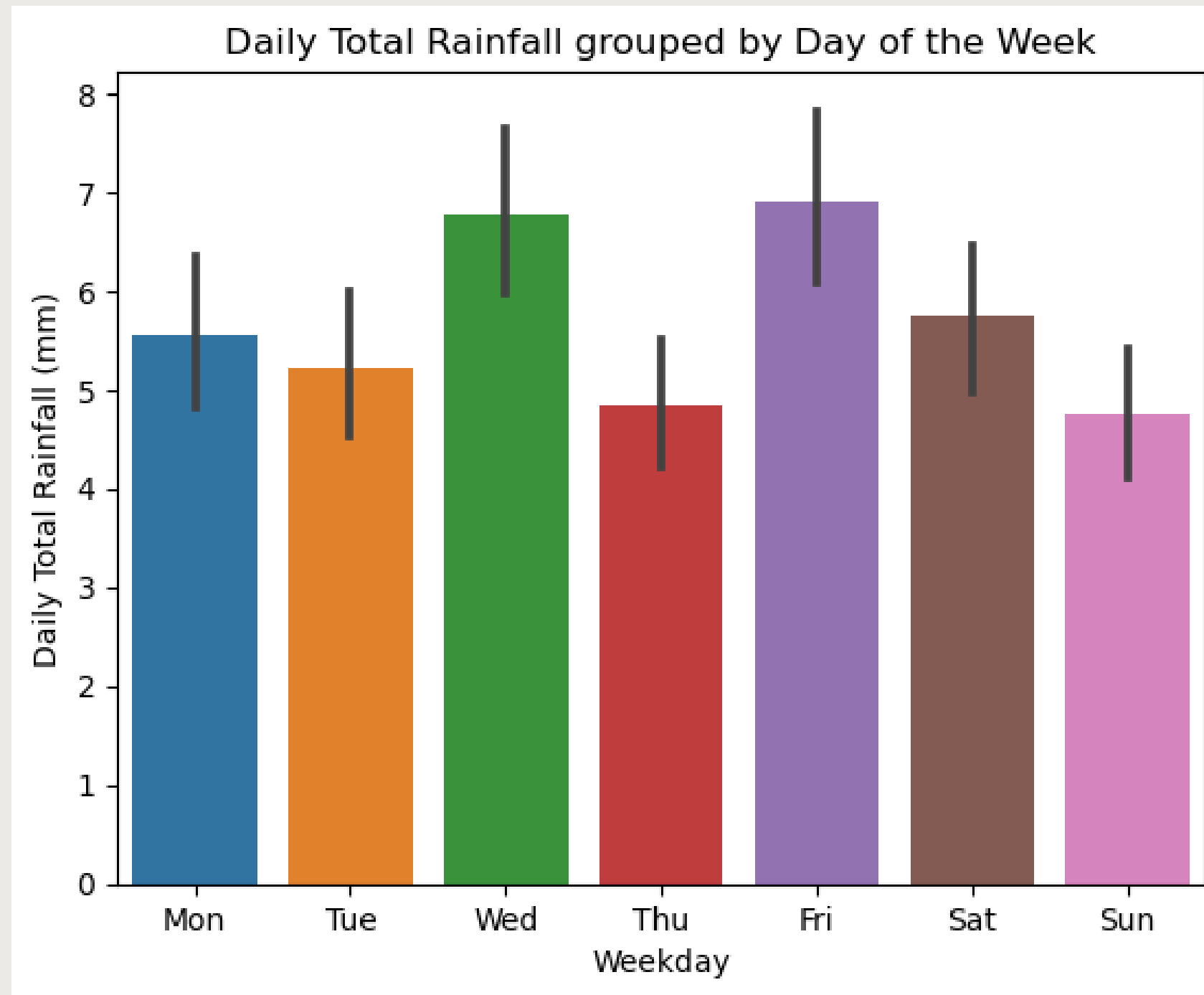
# Mean Wind Speed



1) **Changi** has the **highest** wind speed

2) Wind speeds at **Changi** is **above 8km/h** most of the time

# Does rainfall vary based on weekday?

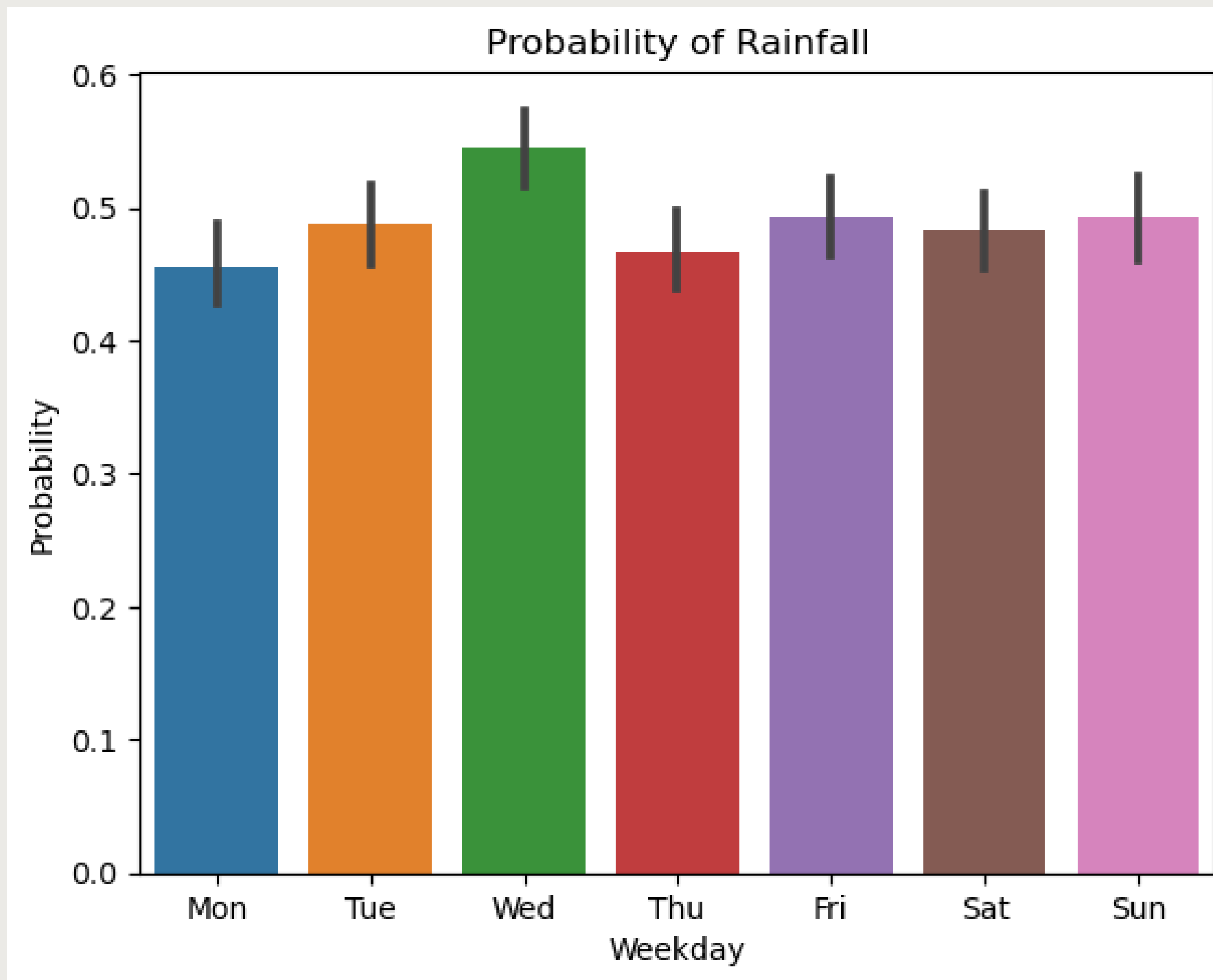


*This graph includes both rainy days and non-rainy days.*

1. **Wednesday and Friday (6.8-6.9mm)** have the **highest** mean total daily rainfall.
2. **Thursday and Sunday (4.8mm)** have the **lowest** mean total daily rainfall.

Rain more **frequently or heavily** on Wed/Fri?

# Probability of Rainfall

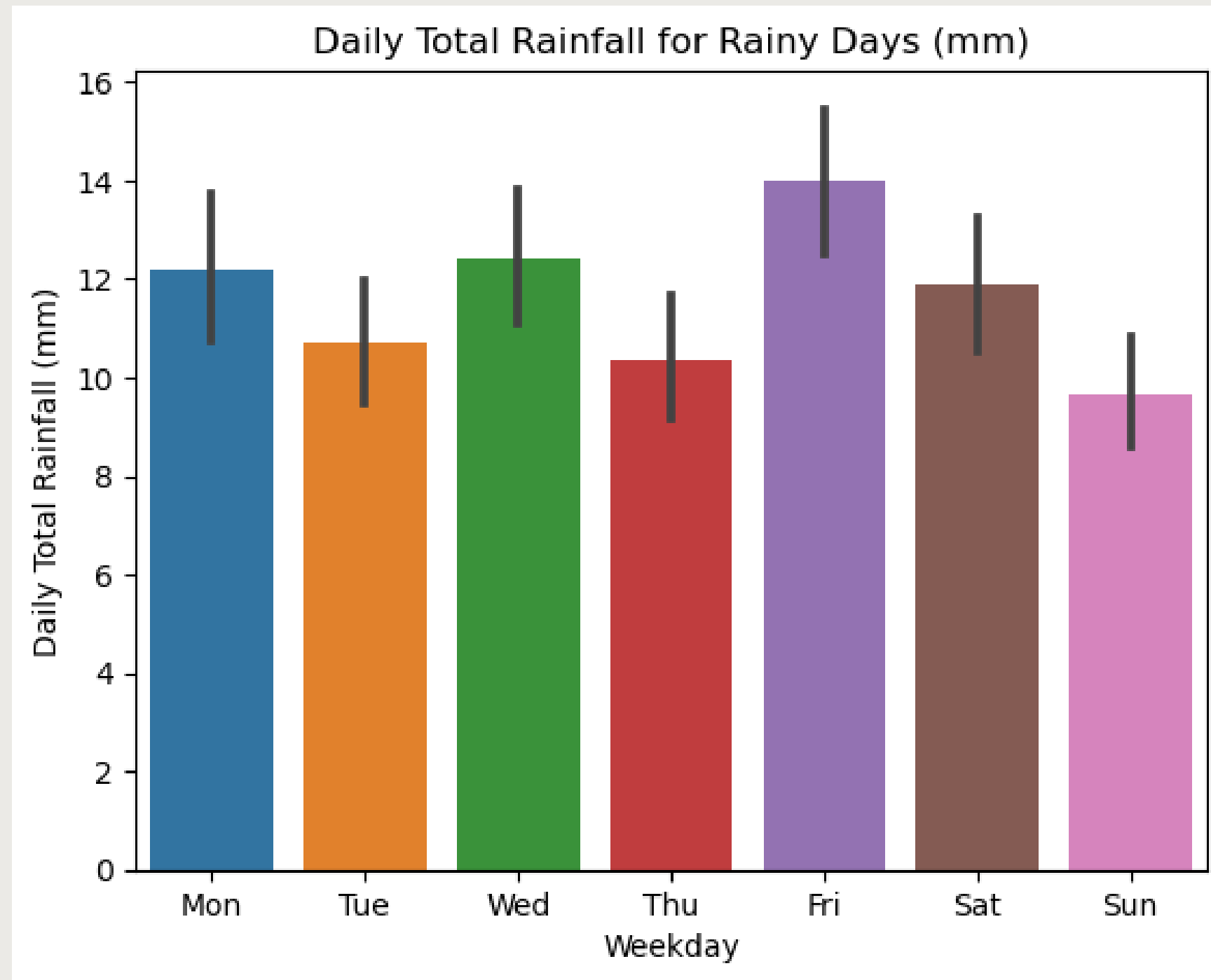


1. **Wednesdays (54.4%)** have the **highest** probability of raining.
2. **Monday and Thursday (45.5%, 46.8%)** have the **lowest** probability of raining.

*A day is considered to have “rained” if the total rainfall for that day is 0.2mm or more (<http://www.weather.gov.sg/climate-climate-of-singapore/>)*



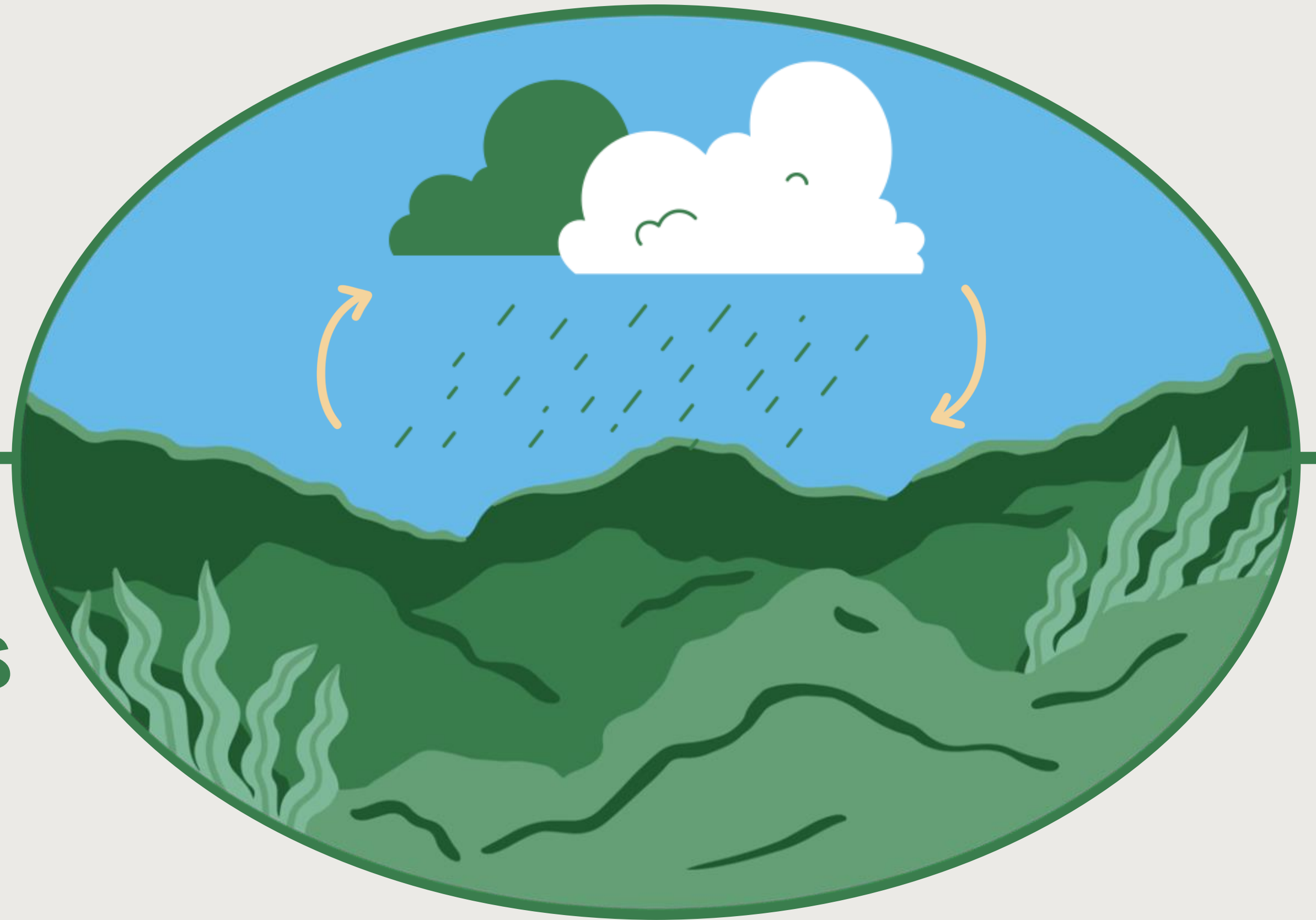
# How heavy is the rain?



*This graph only includes rainy days (>0.2mm/day)*

**1. Friday (14mm)** has the **heaviest** rain.

**2. Sunday (9.6mm)** has the **lightest** rain.



**Conclusions**

# Weekdays Matter!

## Wednesday



### Highest chance

# 54.4%

Mean = 48.9%

Monday = 45.5%

## Friday



### Heaviest Rain

# 14mm

Mean = 11.6 mm

Sunday = 9.7 mm

## Thursday



### Best overall

Second lightest rain (10.4mm)

Second least likely to rain (46.7%)



# February is the Ideal Month

## Lowest



Total Rainfall



Number of Rainy Days



Relative Humidity



4<sup>th</sup> lowest temperature

## Highest



Sunshine Hours



Wind Speeds

# Nov / Dec are the wettest months



**19 rainy days**

Mean = 14 days

February = 8 days



**311 mm of rainfall in Dec**

Mean = 177 mm

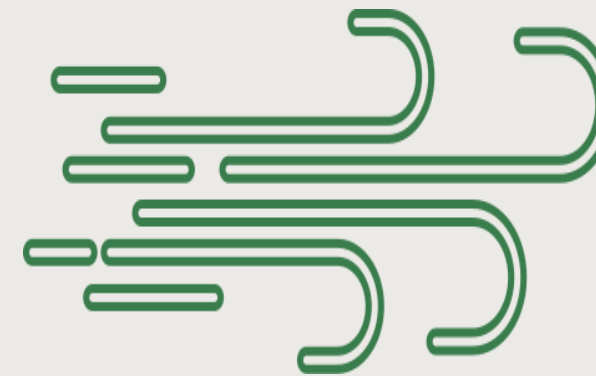
February = 104 mm

# Changi offers favorable weather throughout the year



## Lowest daily rainfall

Changi (4.6 mm) <  
Ang Mo Kio (6.2 mm) <  
Tuas (6.3 mm)



## Highest wind speed

Changi (9.1 km/h) >  
Ang Mo Kio (7.6 km/h) >  
Tuas (6.4 km/h)



# Recommendations

# Thursdays may be ideal

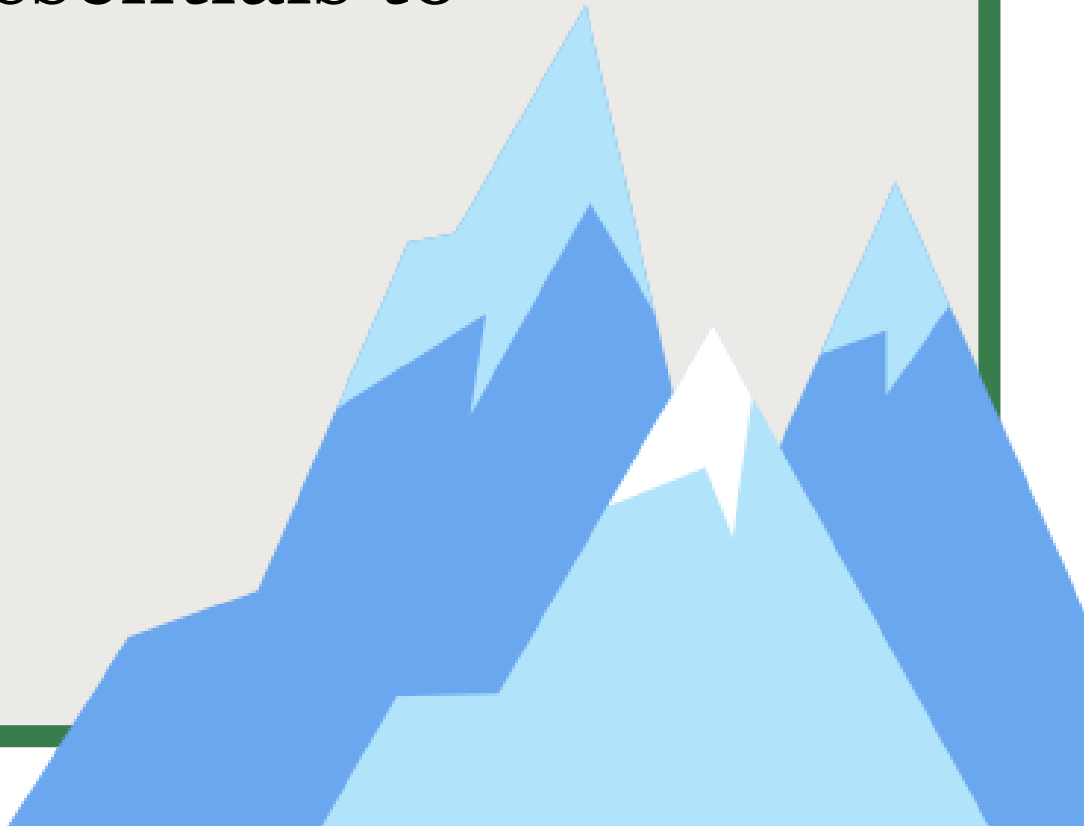
- Thursdays have the second lowest chance of rain and rainfall volume
- **Avoid Wednesdays** (highest probability of rain) and **Fridays** (heaviest rain)





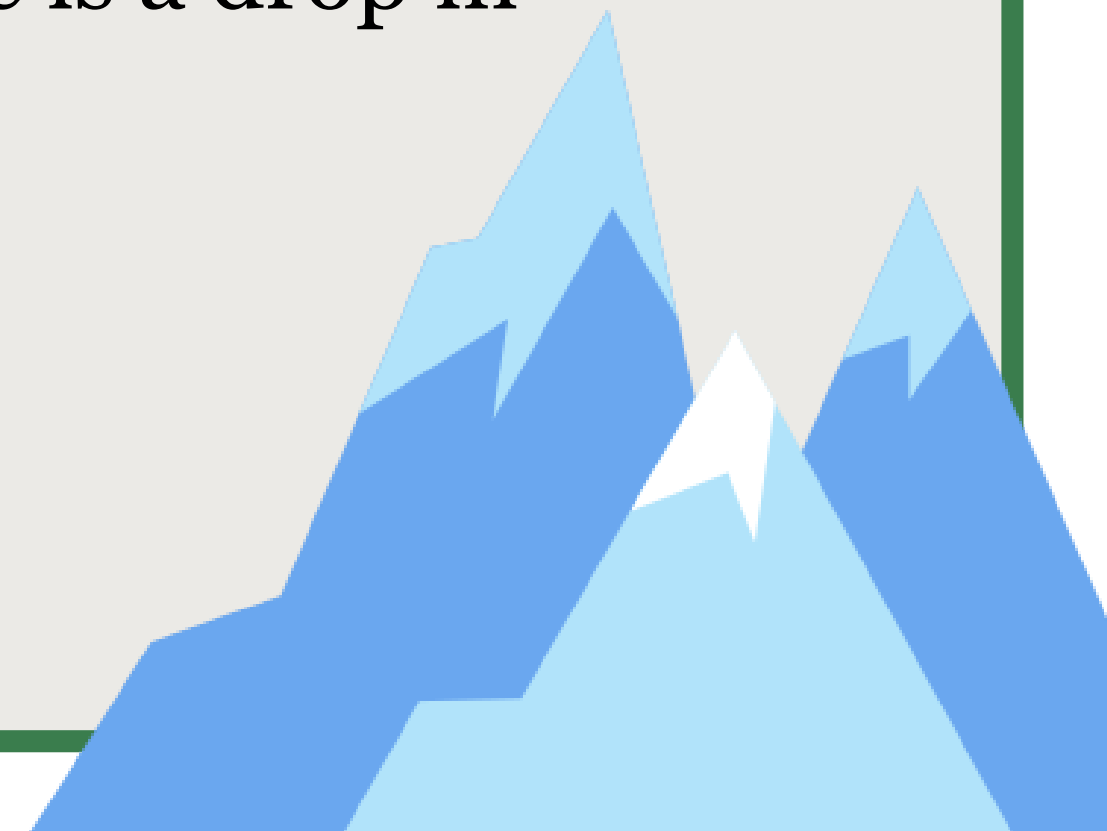


## Promote February as Picnic Month

- February has the lowest rainfall and humidity, and has the highest sunshine hours and wind speed
  - Promote, schedule and encourage customers to plan picnics during February by highlighting the benefits
  - Offer special promotions and discounts on picnic essentials to attract customers during this ideal period
- 


# Align inventory and product mix with seasons

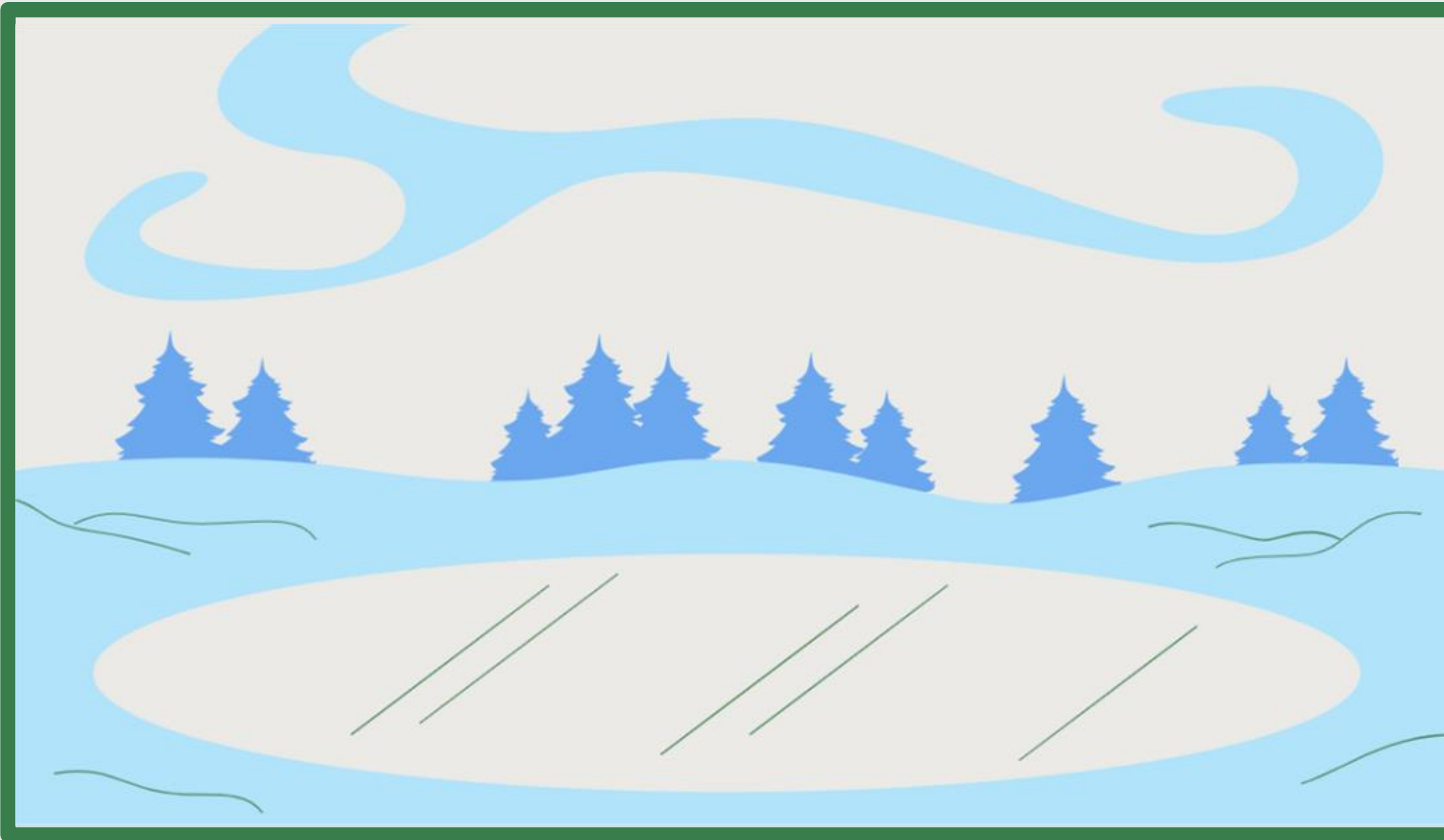
- Provide picnic essentials such as water-resistant mats, umbrellas, or raincoats during November/December.
- Create packages that include contingency items like board/card games during the rainy season.
- Cut back on inventory during these periods if there is a drop in sales (further analysis needed).





## Focused kite-flying promotions

- Changi has the best wind conditions.
  - Dry monsoon periods (Jan-Mar, Jul-Sep) has the best wind conditions.
  - Promote kite rentals/sales or organize kite-flying events in the East and during the dry monsoon periods.
  - East picnic locations: Changi Beach, East Coast Park, Pasir Ris Park
- 



**Thank  
you**

# Citations

- <https://www.nationalkitemonth.org/how-to-fly-a-kite/>
- <http://www.weather.gov.sg/climate-climate-of-singapore/>
- <https://www.hellopicneeds.com/>

