

# Project 1: Data Analysis of Singapore Rainfall [Impact on Food Delivery]

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# Problem statement

Food delivery affected by rainy weather in Singapore

Heavy rain especially, may affect food deliveries in terms of surge in orders, less delivery riders and delays in deliveries.

Analyse weather patterns in Singapore to identify what strategies food delivery companies can adopt to better manage rainy weather.

## Problems:



Food orders



Delivery riders



Delivery delays

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## Manage through:

Expected delivery times

Peak charges

Delivery completion initiatives

# Methodology

## 10 year rainfall data

- days rained
- rain volume
- by year / month

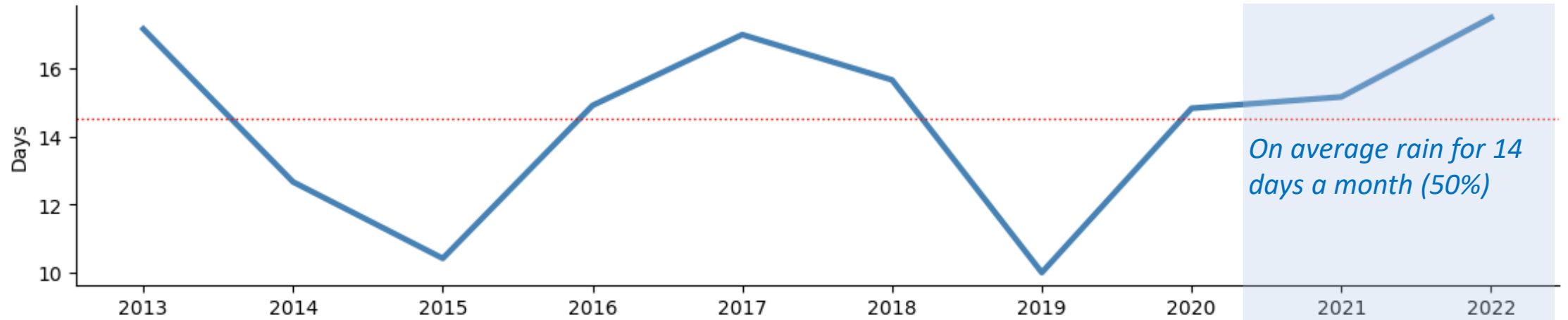
## 2 year **heavy** rainfall data

- days rained
- rain volume
- by month / region

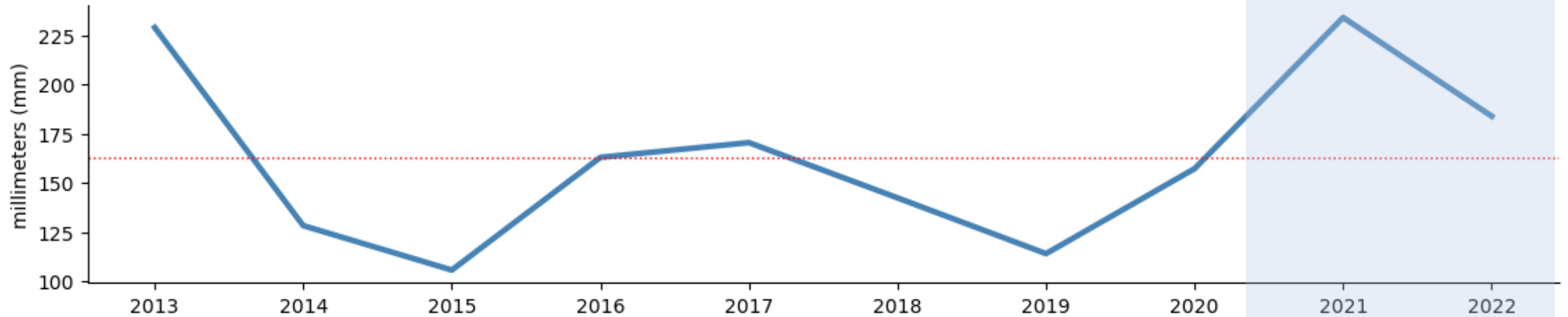
Heavy rain = more than 3.8mm of rain over 30 minutes for that day

Region = Highest populated residential areas with rainfall information + CBD

Average days rained in a month by year, between 2013 and 2022

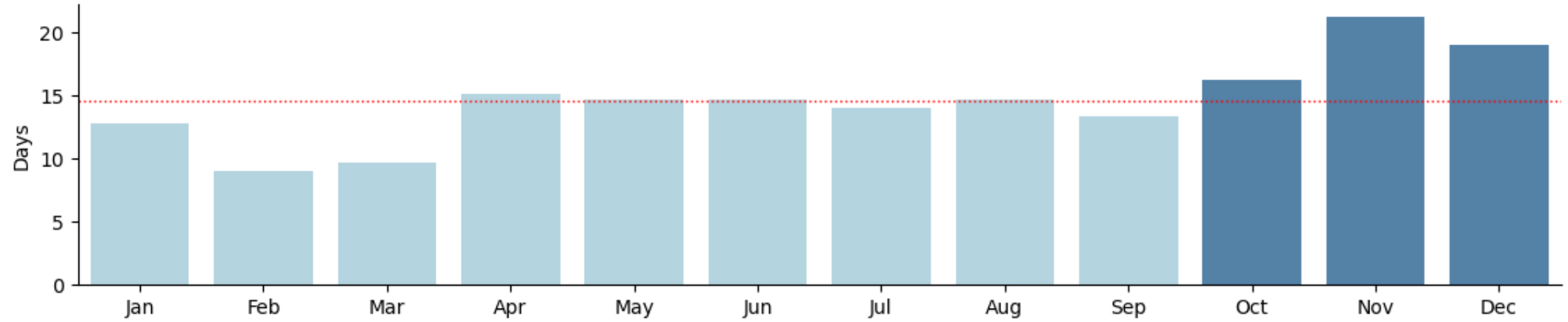


Average monthly rainfall by year, between 2013 and 2022

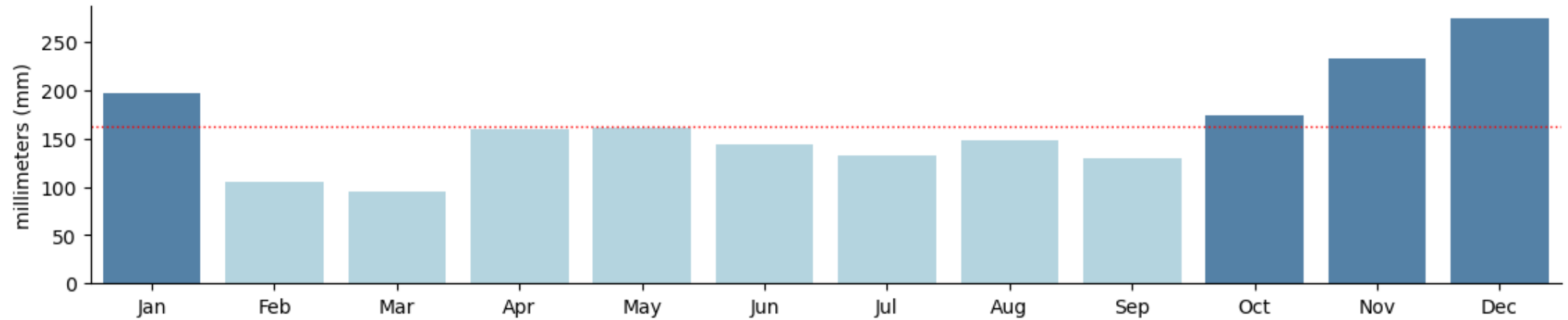


Higher than average  
rainfall in 2021 and 2022

Average days rained in a month, between 2013 and 2022

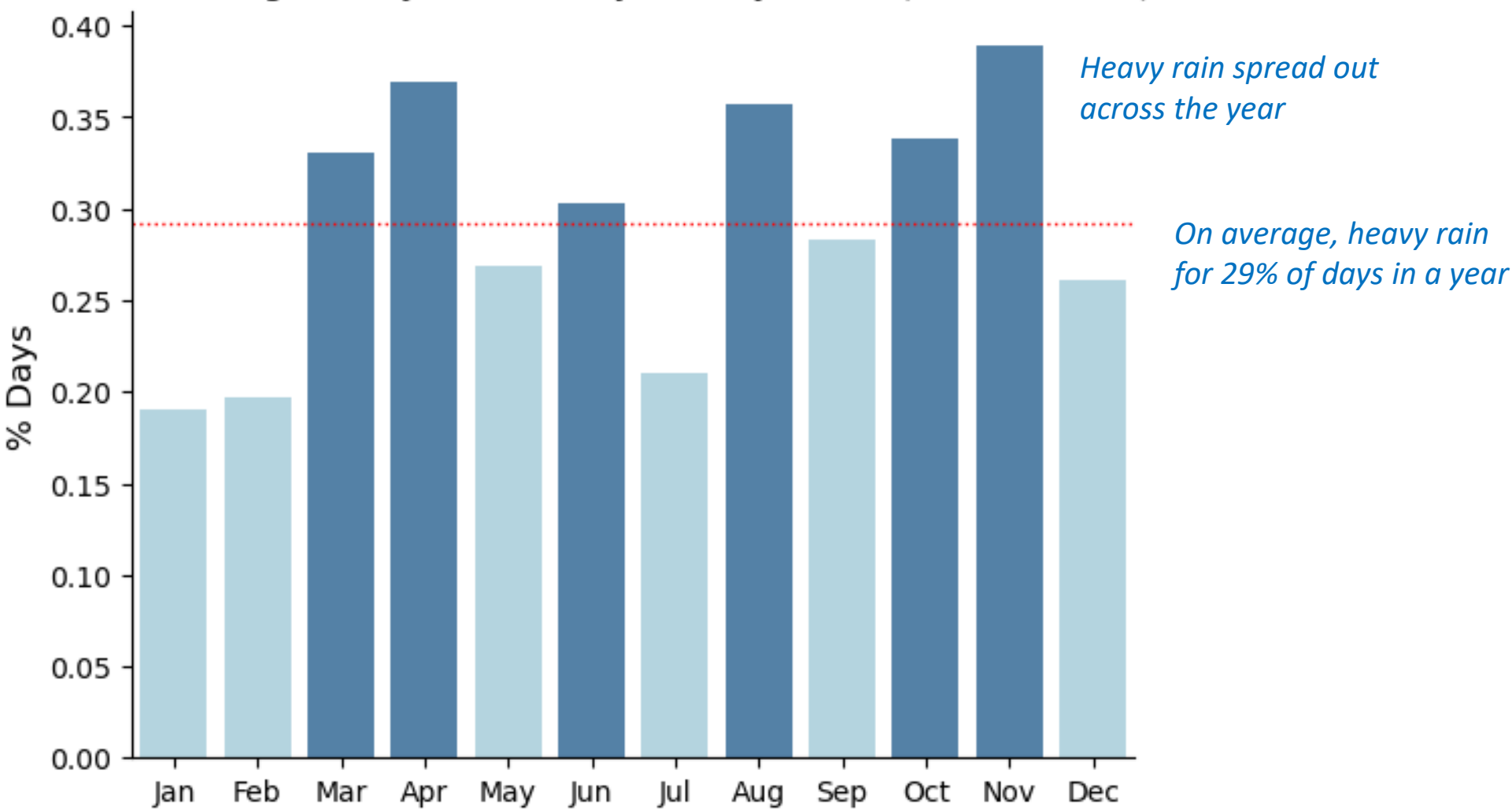


Average rainfall in a month, between 2013 and 2022

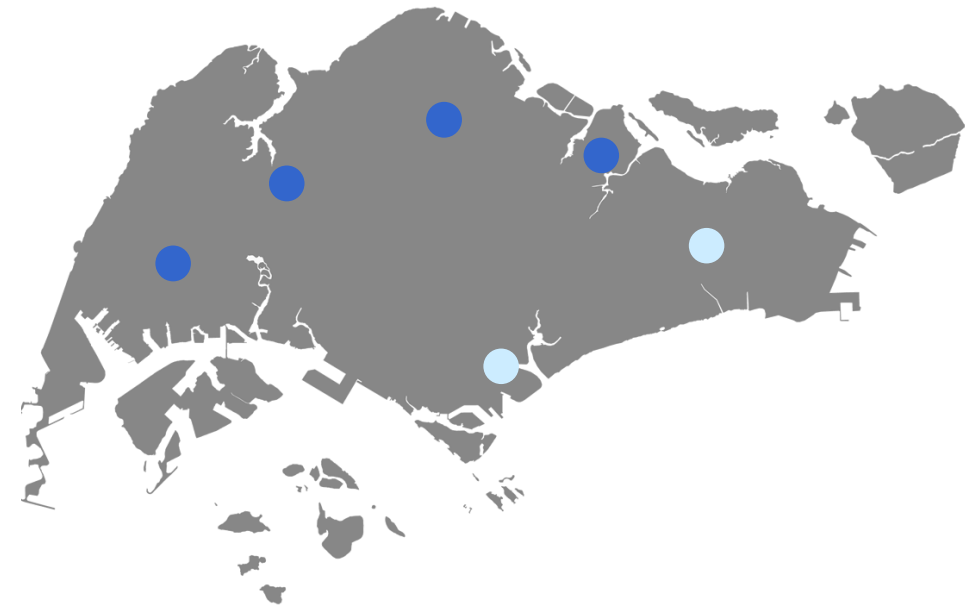
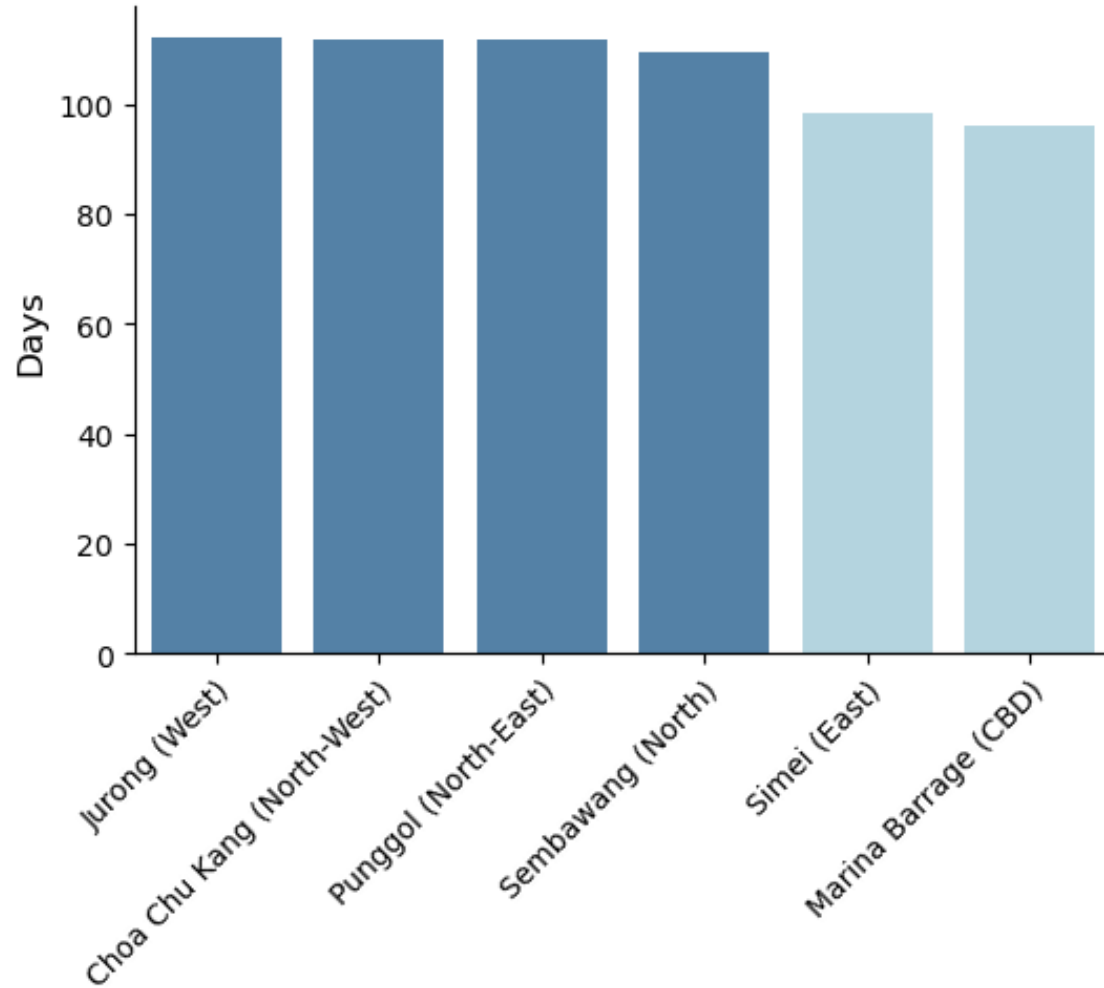


*Higher than average  
in Oct to Jan*

Percentage of days with heavy rain, by Month (2021 to 2022)



Days in a year with heavy rain, by Geographic Area (2021 to 2022)



*Slightly more days of heavy rain in the North, West and North-East compared to the South and East (15 more days or 4% more days in a year)*



# Recommendations

Expect higher than average rain in 2023

Plan and manage from Oct to Jan:

- Set longer expectations for delivery times
- Less marketing promotions
- More recruitment efforts
- Better delivery completion initiatives

Expect heavy rain throughout year:

- More detailed information collection
- Identify real-time rain durations and intensity
- Set peak charges and delivery time expectations

Consider some residential areas have slightly higher rainfall

# Limitations

Public data on food delivery unavailable, to compare against rainfall data and make detailed recommendations  
*e.g. number of additional riders needed*