



Do weather changes affect online food orders?

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Background Information

A foodpanda spokesman said the weather and factors such as restaurant promotions for the festive season could have caused the spike in the number of orders seen last week.

[The Straits Times, Dec 2019](#)

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Dataset: Online Food & Beverage (F&B) Sales Proportion (in percentage)
(from Department of Statistics Singapore)

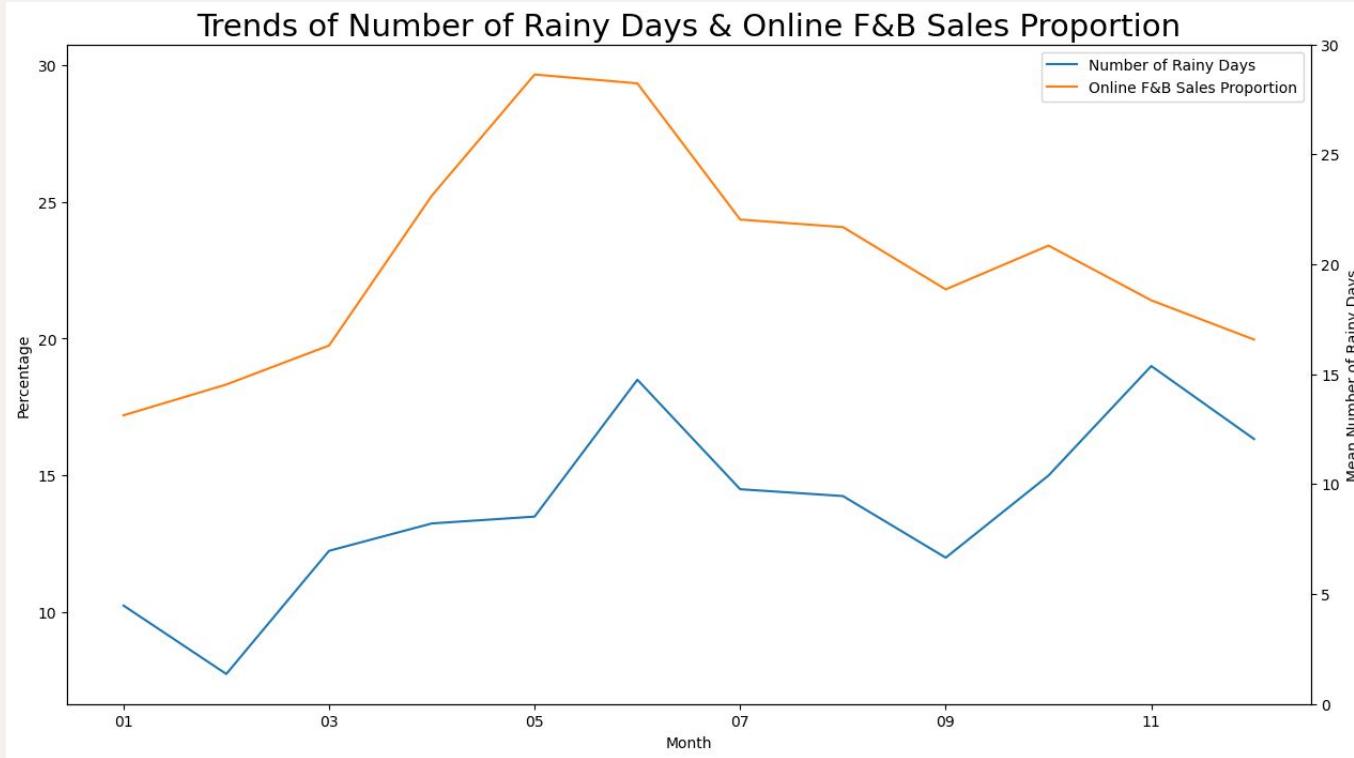
Time Period: January 2019 to August 2022

Problem Statement

We analyse how and when weather changes affect online F&B businesses.
For example, on rainy days, do online F&B sales proportion go up?

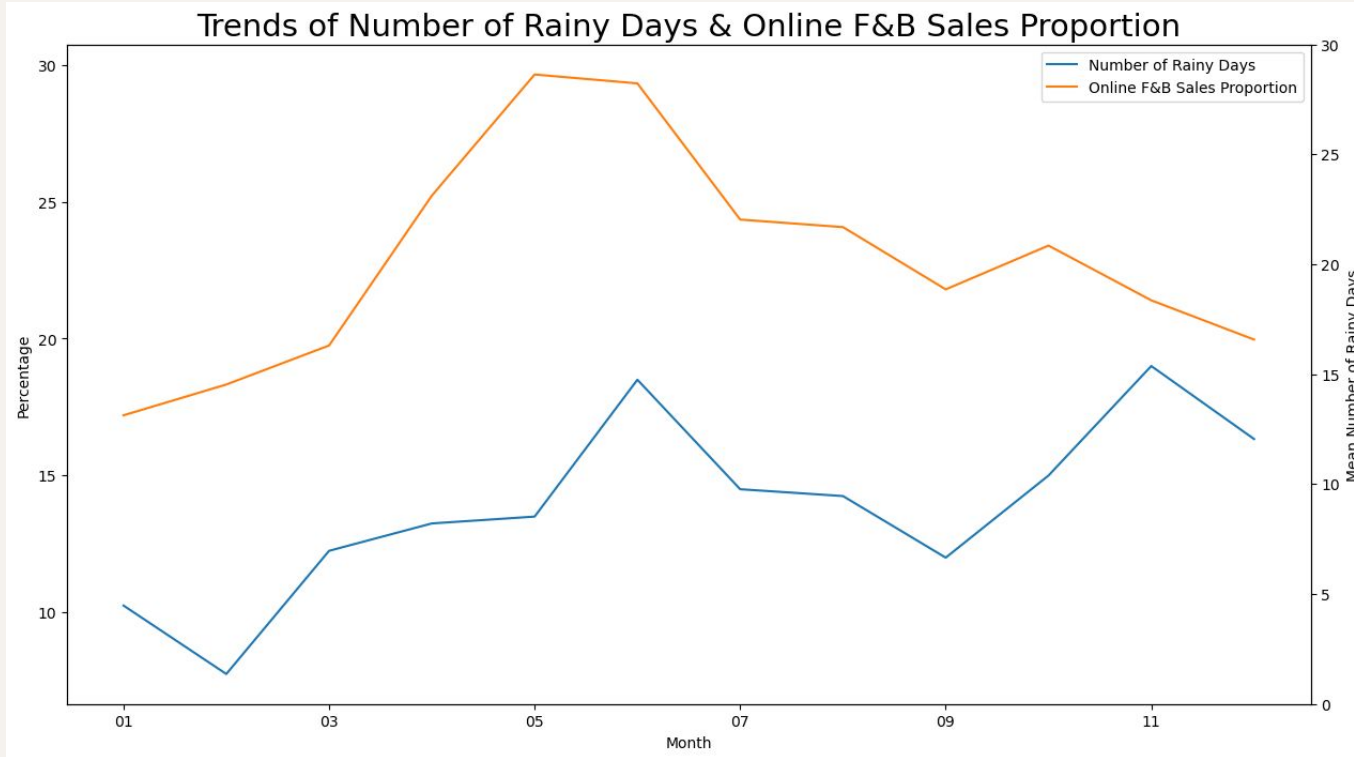
The ideal outcome is to provide F&B businesses with relevant information to manage resources as rainy conditions and temperature fluctuates in different parts of the year.

Initial Findings



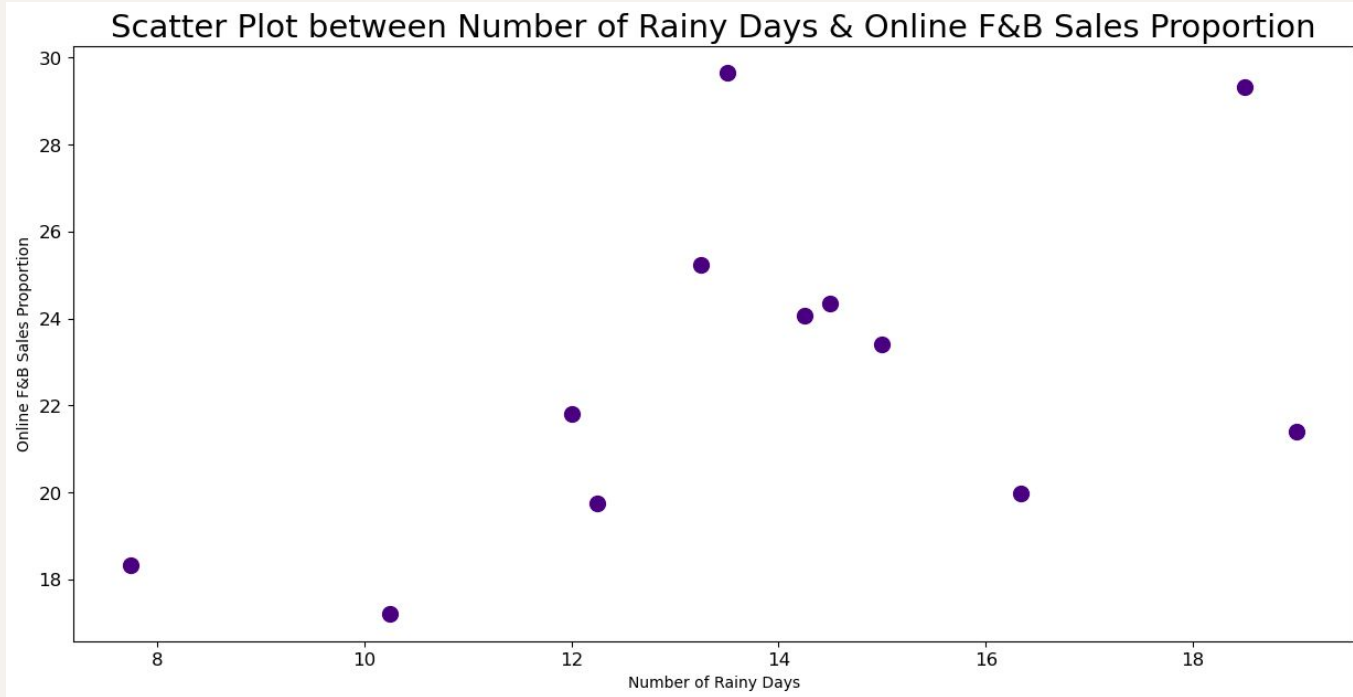
- Each point on the line represents the mean value of each month in 2019 to 2022

Initial Findings



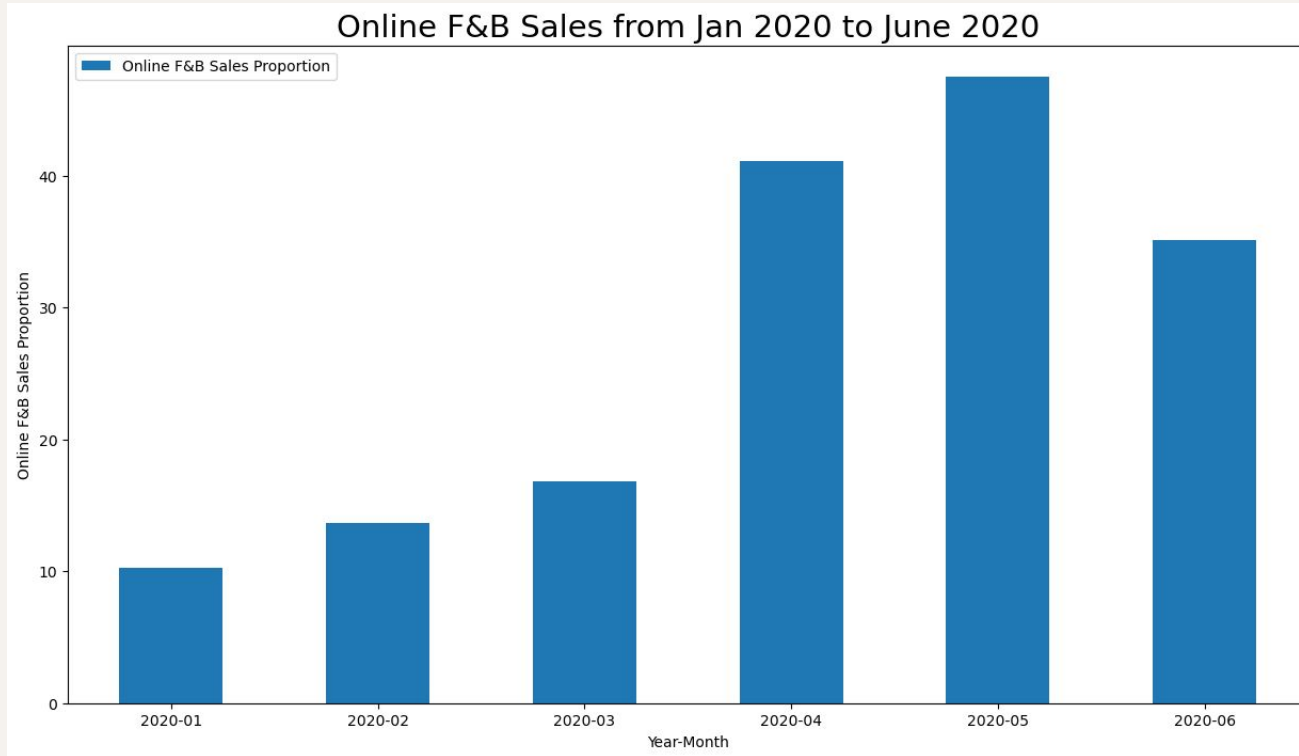
- Each point on the line represents the mean value of each month in 2019 to 2022
- The trends look **very similar**, especially **June to October**
- **June** and **November** have **more rainy days** than other months

How correlated are they?



- **Moderate positive correlation** between the two variables (over a year)
- As the number of rainy days **increases**, online F&B sales proportion tends to **increase moderately**

COVID-19 as an external factor



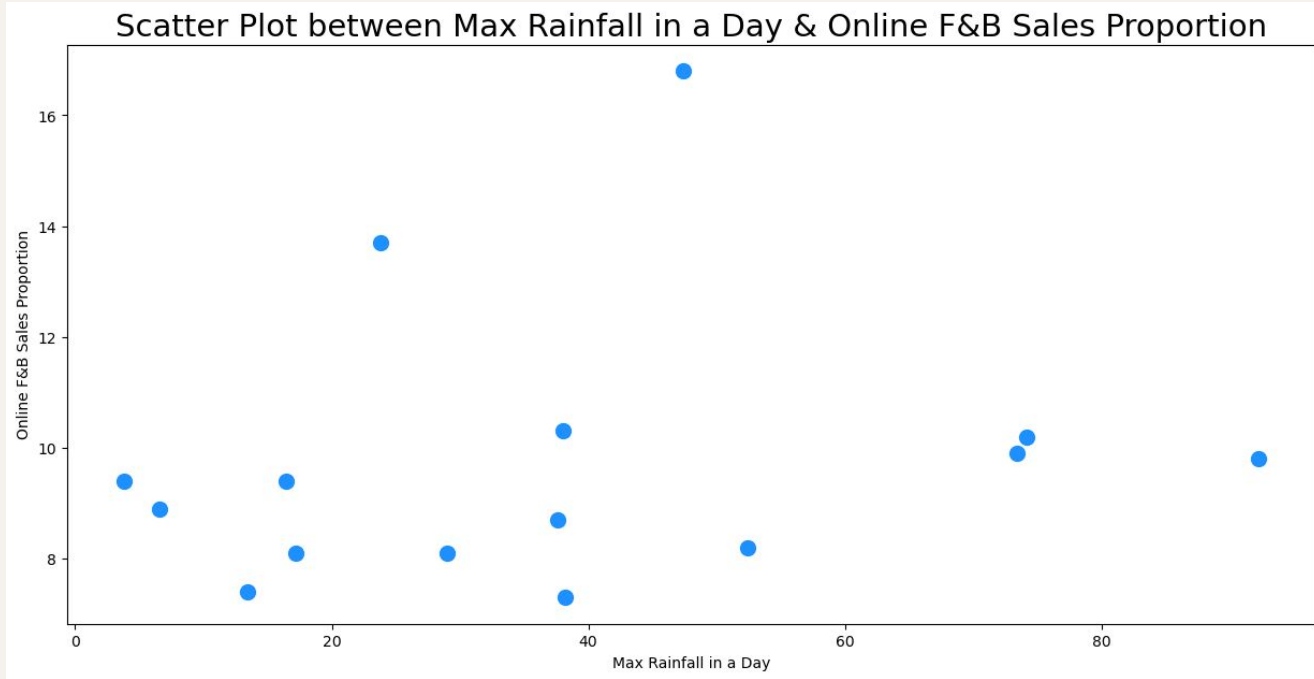
- **Spike** in the number of online F&B sales proportion from March 2020 to April 2020

Before Circuit Breaker:
January 2019 to March 2020

During Circuit Breaker:
April 2020 to July 2021

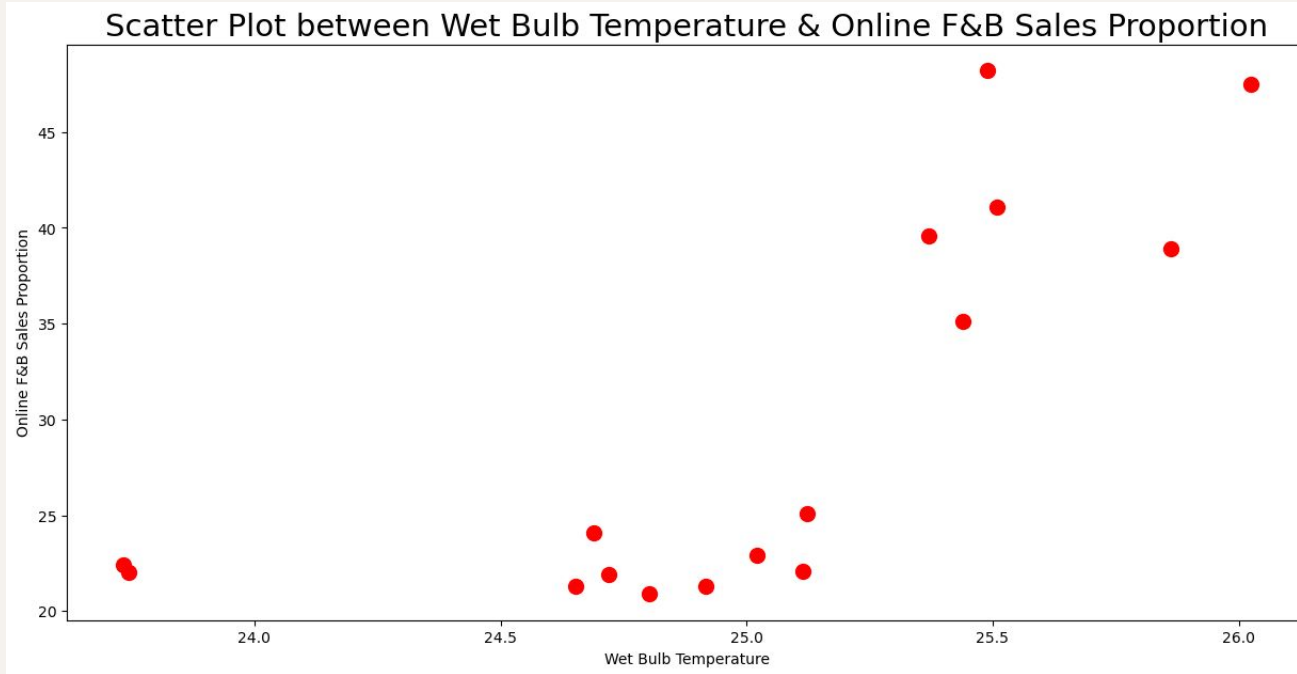
After Circuit Breaker:
August 2021 to August 2022

Before Circuit Breaker



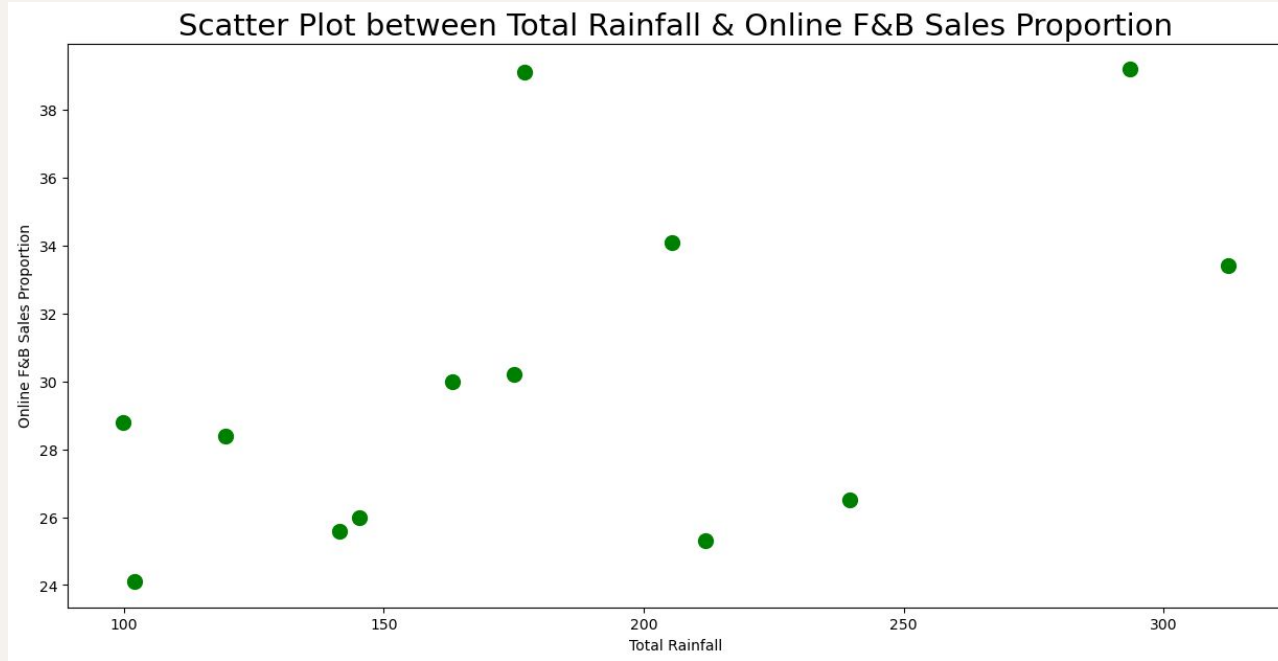
- **Weak positive correlation** between the two variables
- As the value of maximum rainfall in a day **increases**, online F&B sales proportion **increases slightly**

During Circuit Breaker



- **Strong positive correlation** between the two variables
- As the wet bulb temperature **increases**, online F&B sales proportion **increases**
- Since this is during Circuit Breaker, it might not be an accurate correlation

After Circuit Breaker



- **Moderate positive correlation** between the two variables
- As the total rainfall **increases**, online F&B sales proportion **increases moderately**

Summary

- Over a year (Jan-Dec), very similar trends observed between number of rainy days and online F&B sales proportion.
 - More rainy days are expected in June and November.
 - Before Circuit Breaker, as max rainfall in a day increases, online F&B sales proportion increase slightly.
 - During Circuit Breaker, there was a strong correlation between wet bulb temperature and online F&B sales proportion. (But external factor should be considered)
 - After Circuit Breaker, as total rainfall rises, there was a moderate rise in online F&B sales proportion.
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Recommendations

- Based on the findings, it is likely that rainy days will boost online F&B sales proportion.
 - As mentioned, more rainy days are expected in June and November.
 - During these periods, more resources such as containers for packing food and delivery riders can be prepared.
 - F&B businesses can also ensure that the online order application system is able to handle an increase in the amount of order.
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Thank You

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