



Food Prices



Co-funded by
the European
Union



Forecasting

Data science graduation project

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Agenda



1 Introduction

2 Quick recap

3 Objective

4 Work flow

5 Conclusion

Introduction

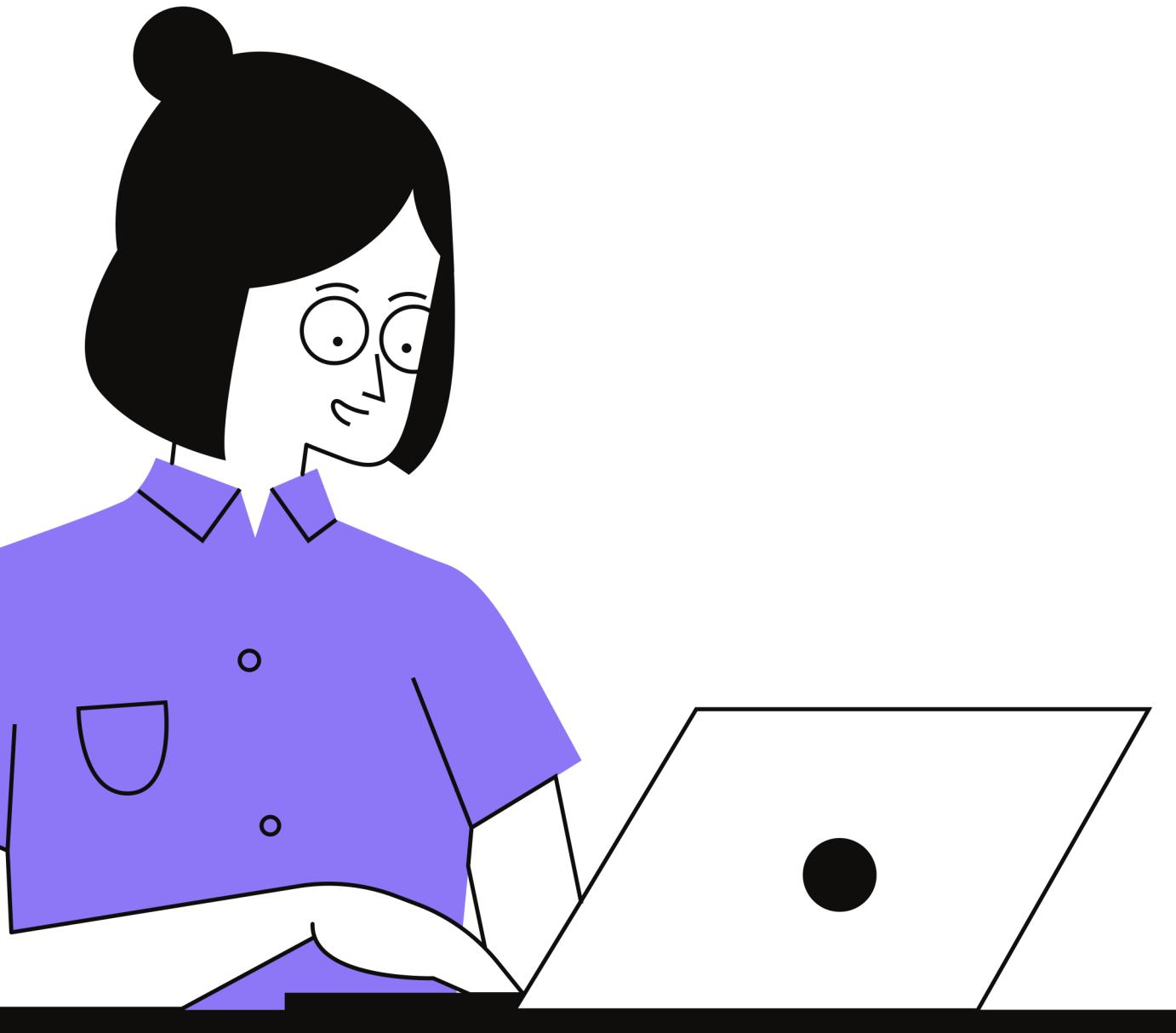
1 What is price prediction?

The predicting of the price of a commodity, product, or service by analyzing factors such as characteristics, demand, or seasonal trends.

2 Why we need machine learning?

The accuracy of traditional pricing methods is not very reliable, as most conventional methods value intuition and subjective opinion over hard data.





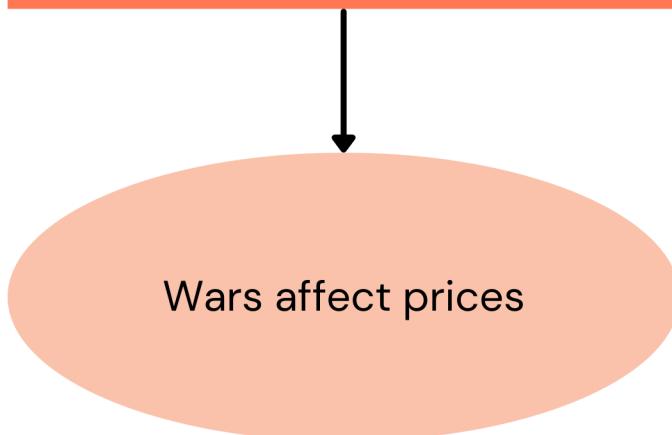
Basic question

- ① What is the pattern of changing prices between Jordan's governorates?
- ② What are the reasons for changing the prices of products?

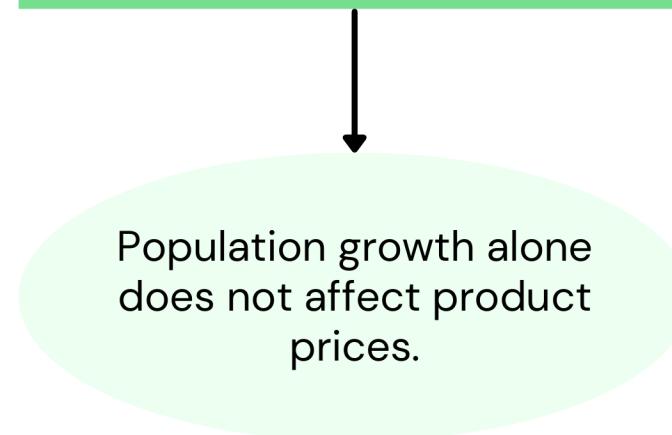


Hypothesis summary

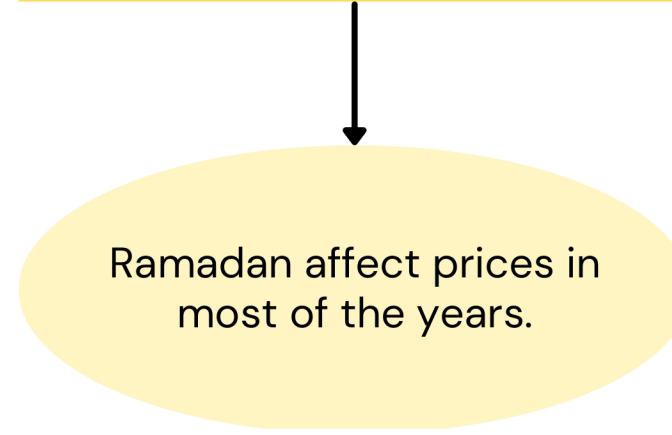
wars



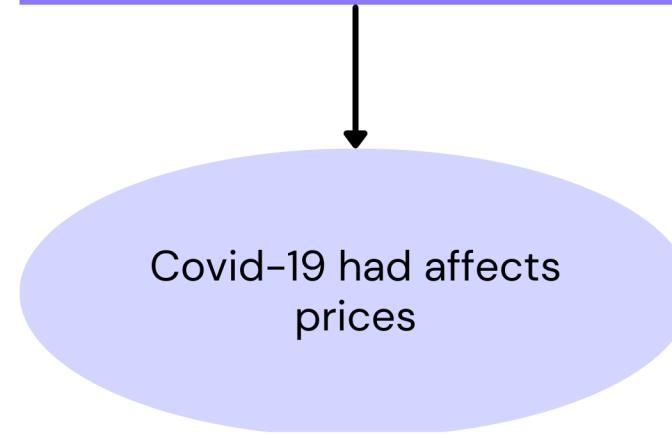
Population



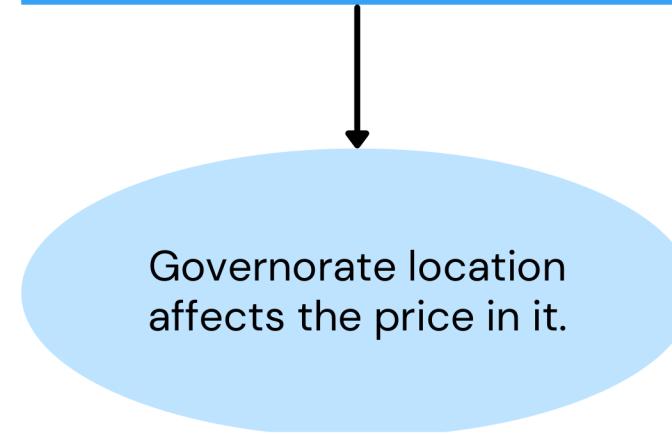
Ramdan



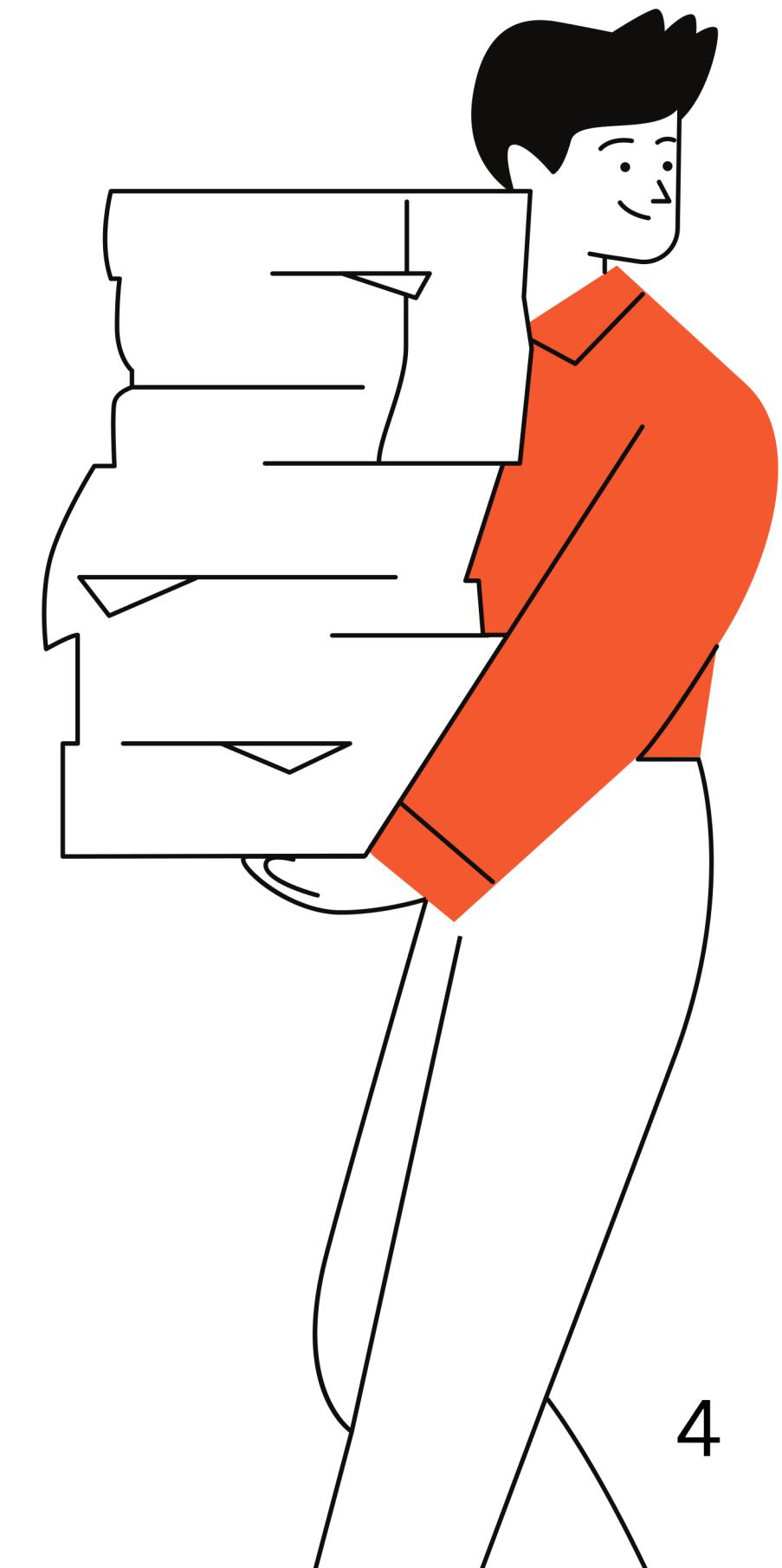
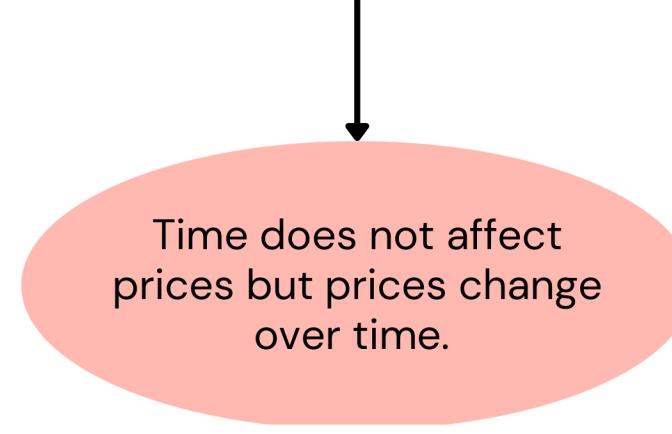
Covid-19



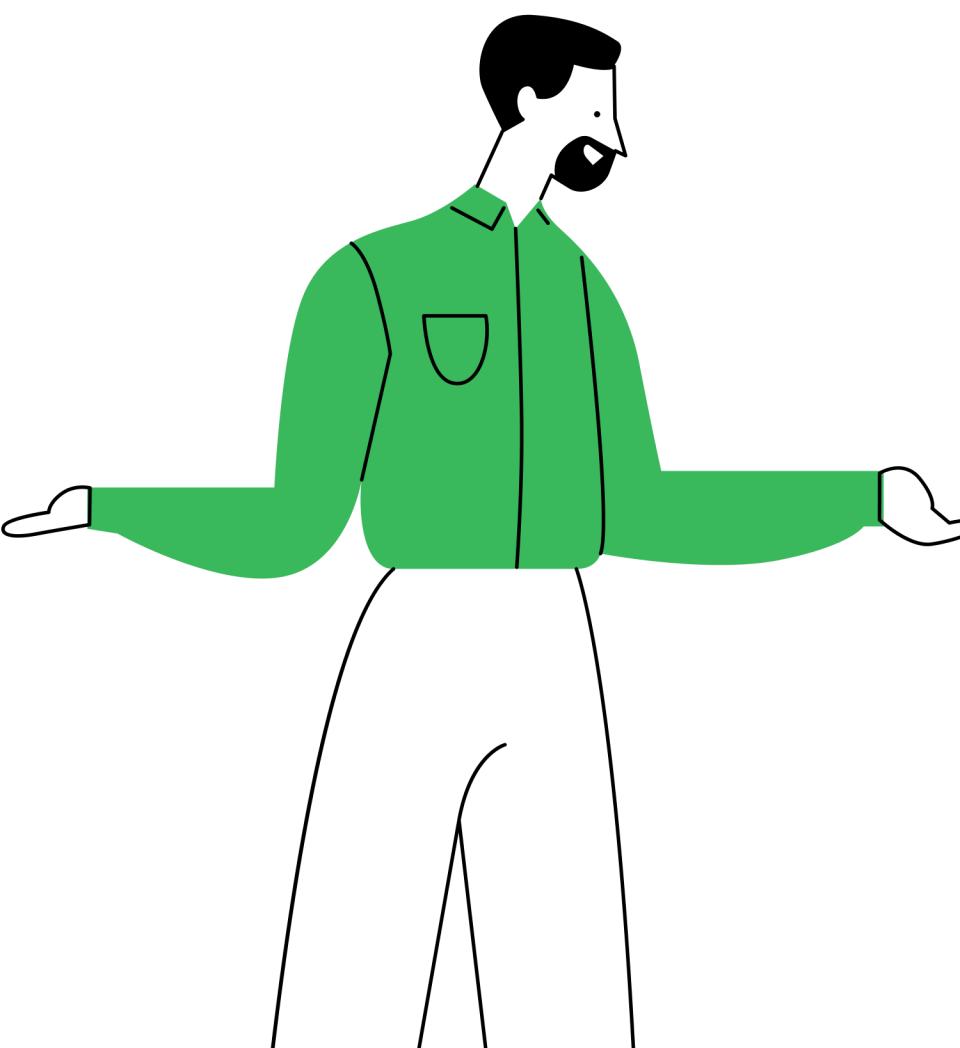
Location



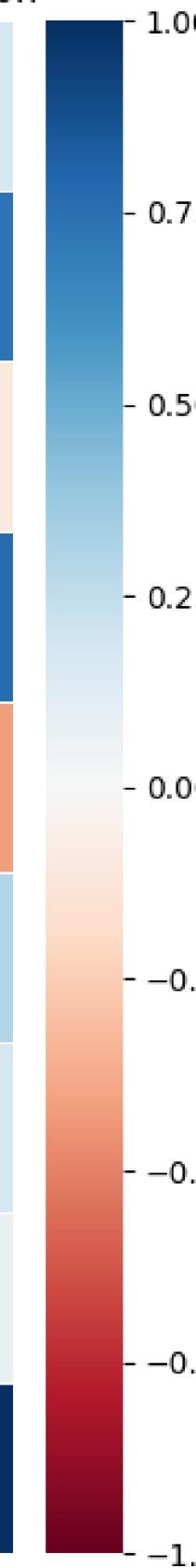
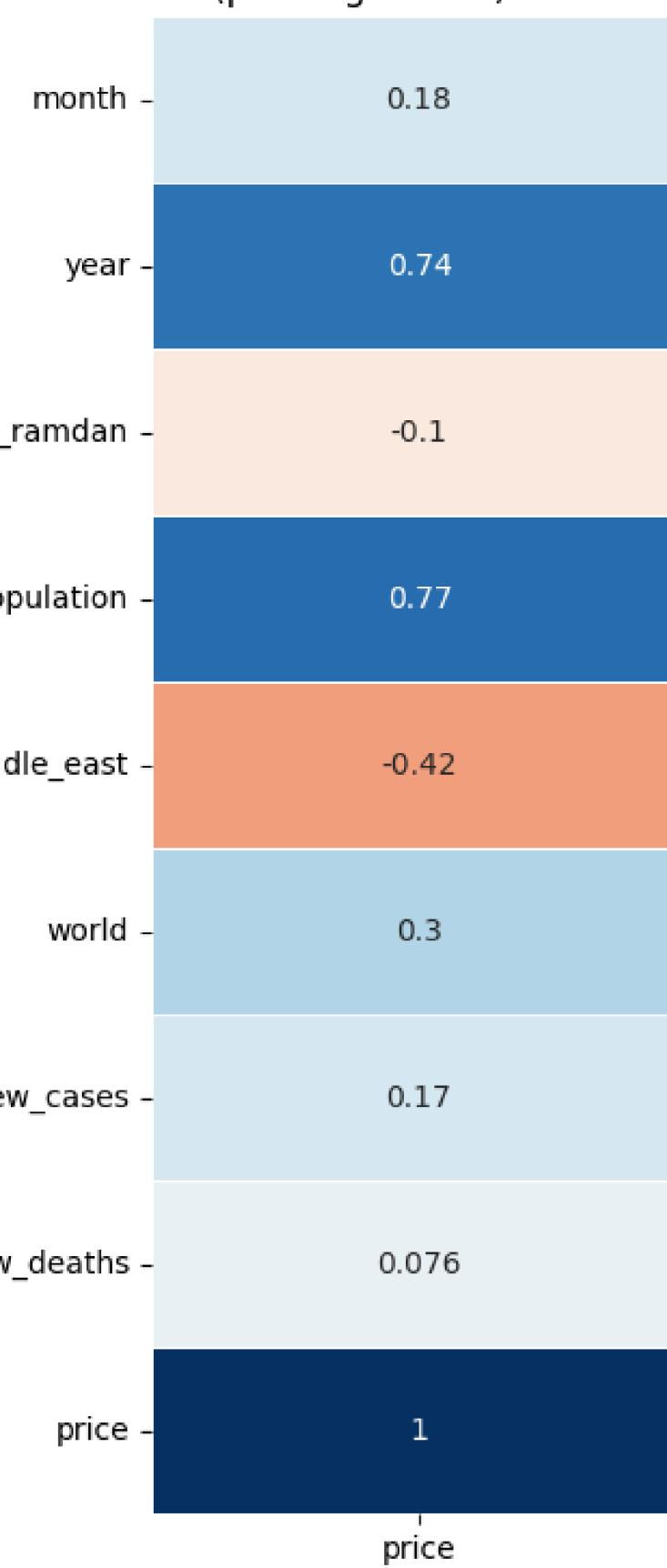
Time



Correlation



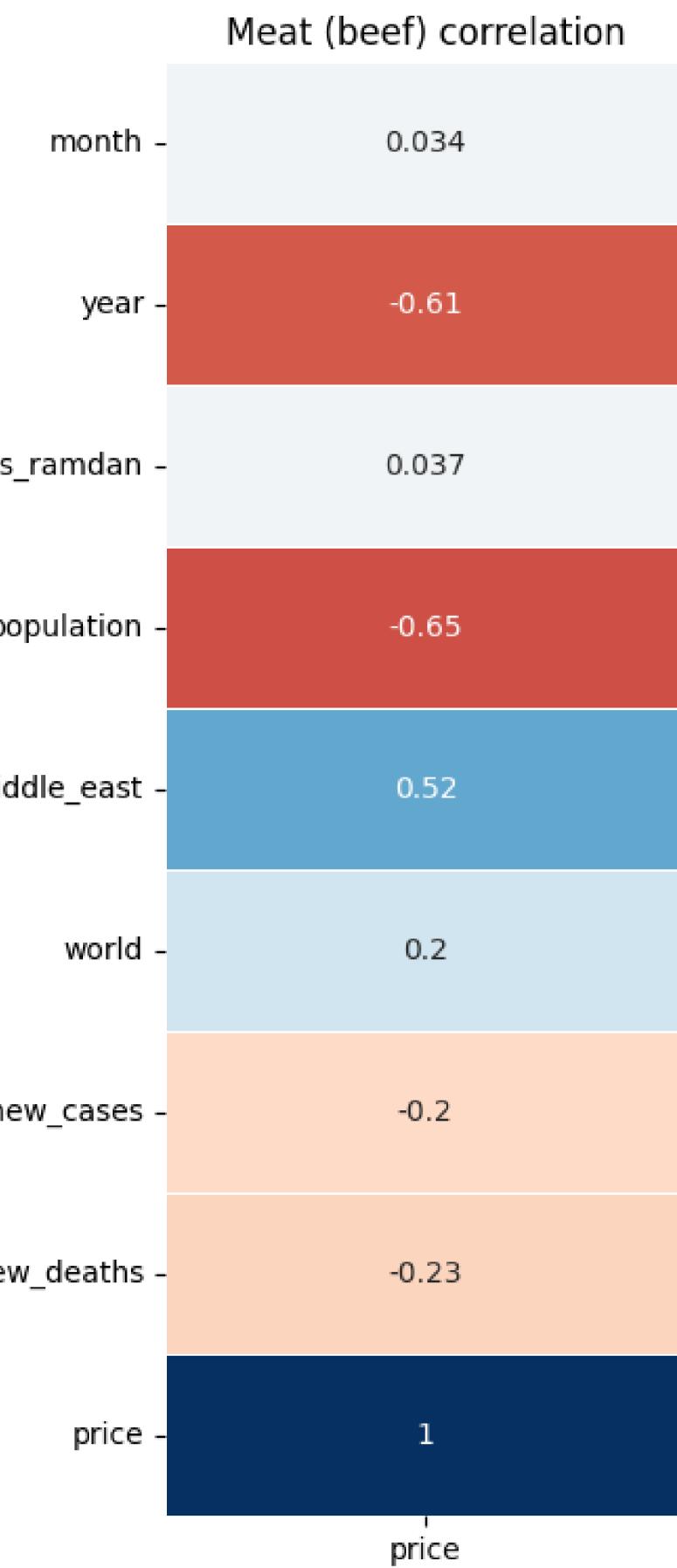
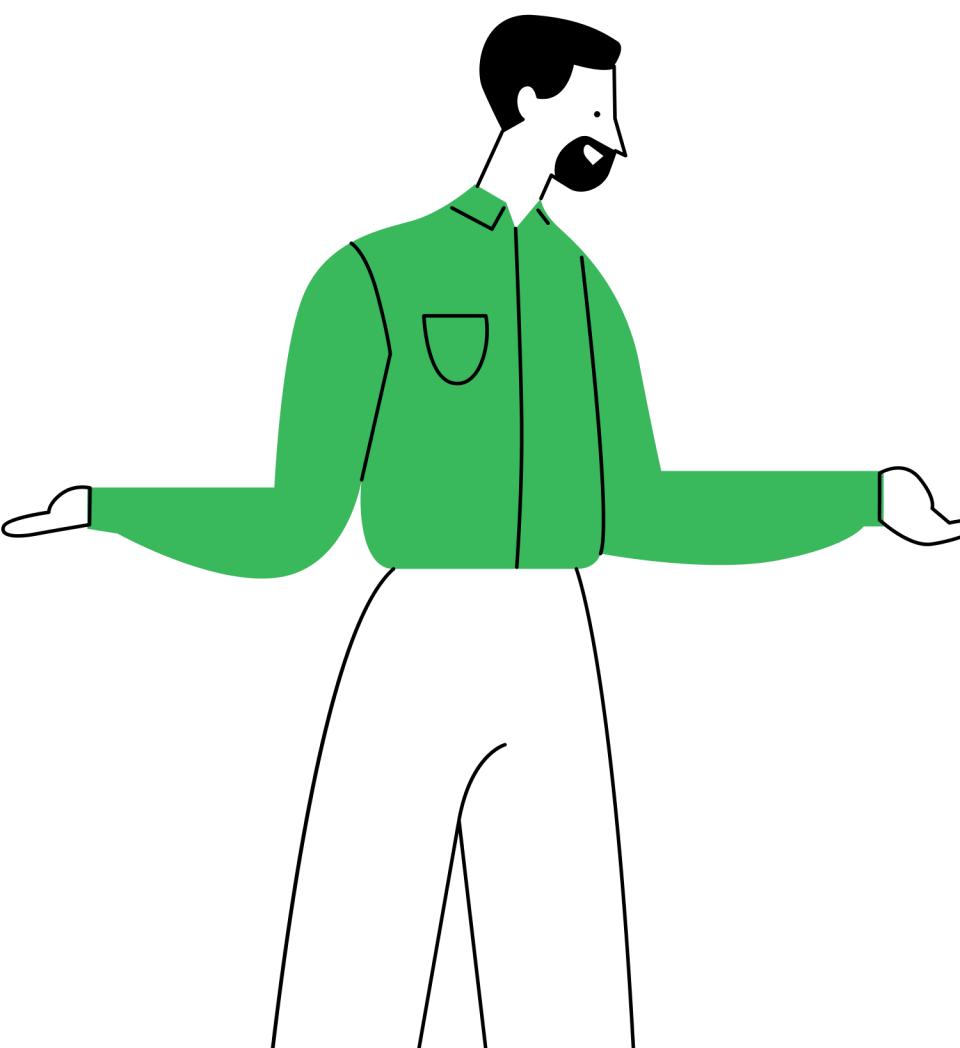
Fuel (petrol-gasoline) correlation



Fuel (diesel) correlation

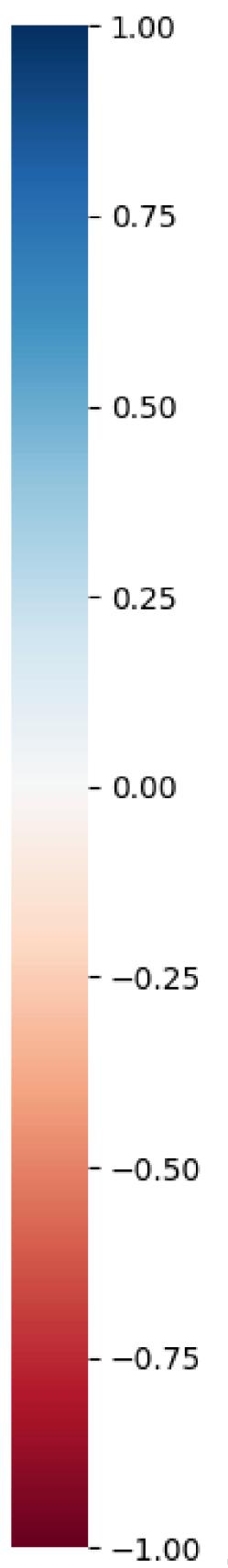
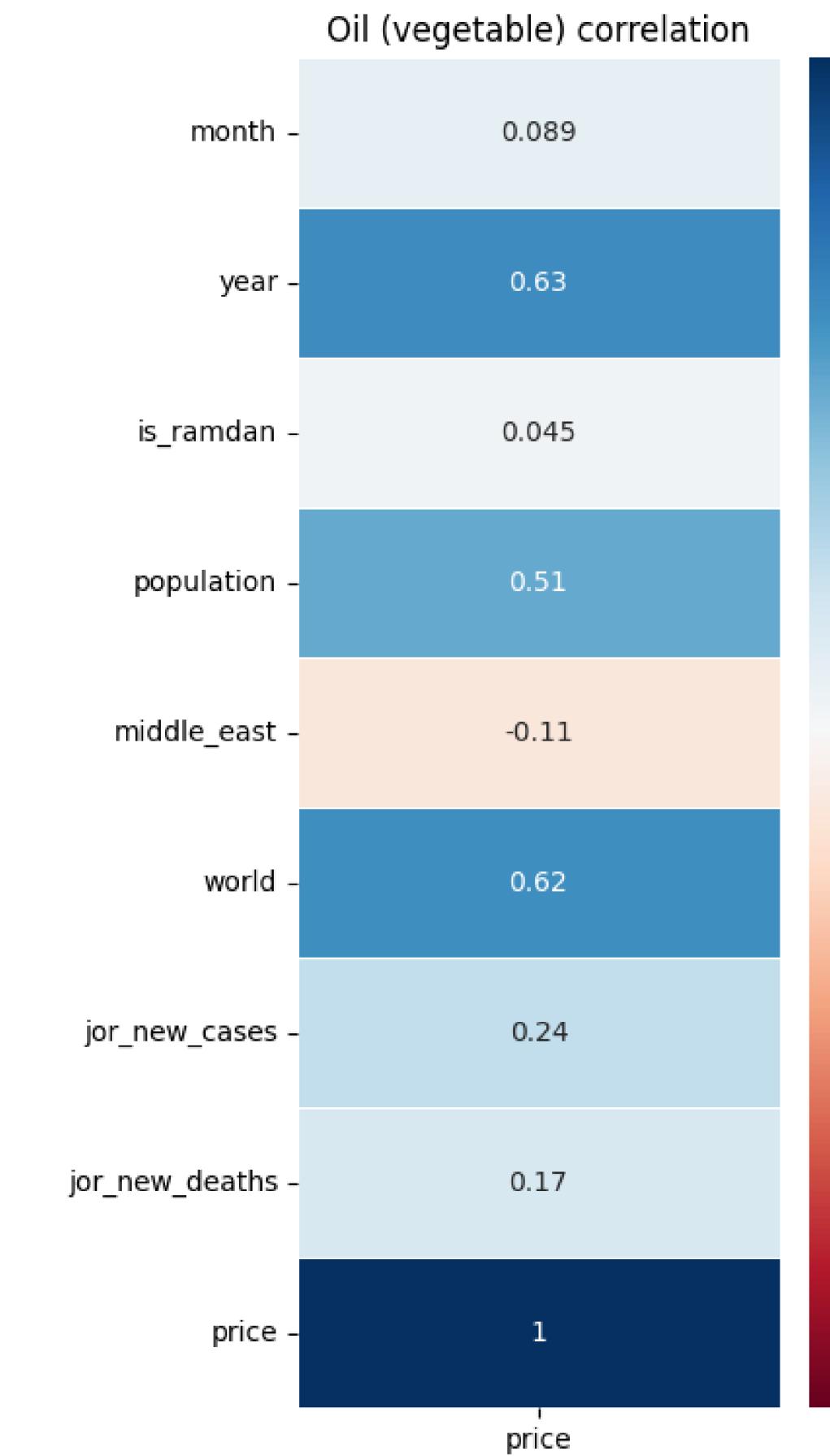
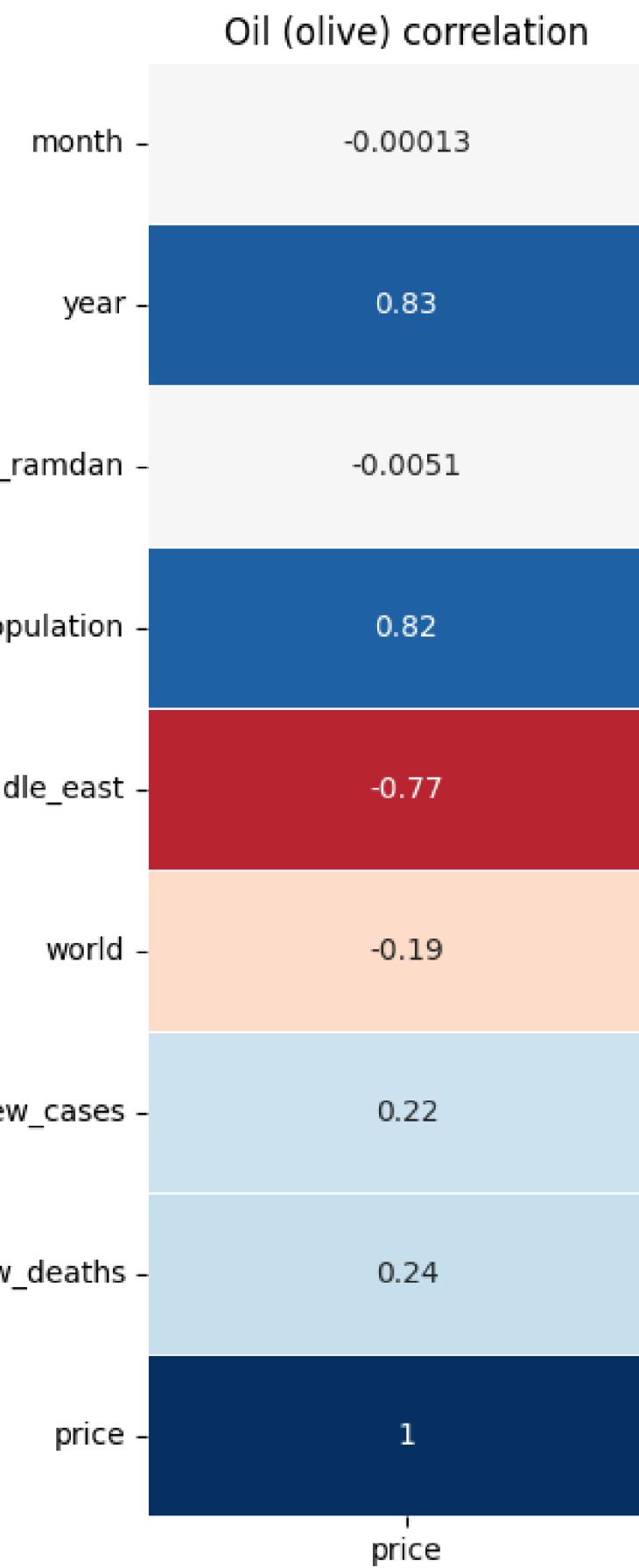
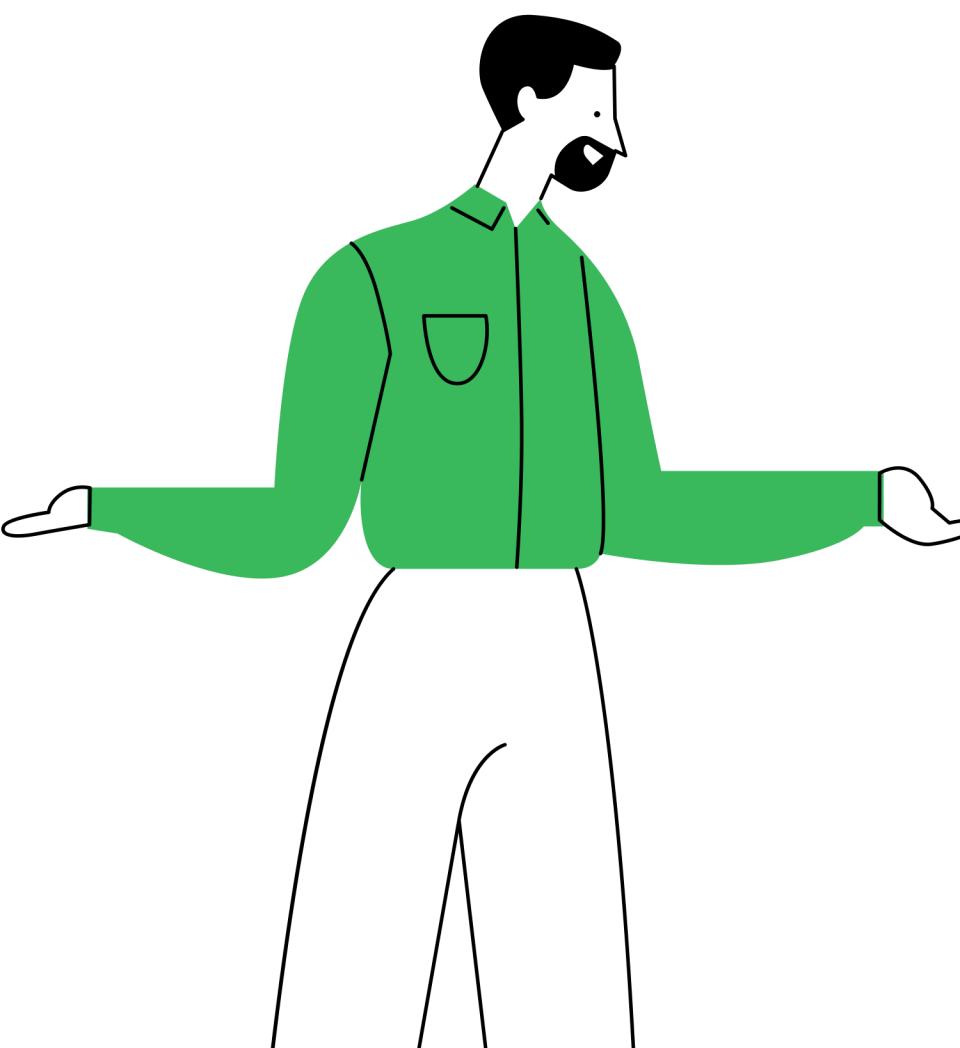


Correlation

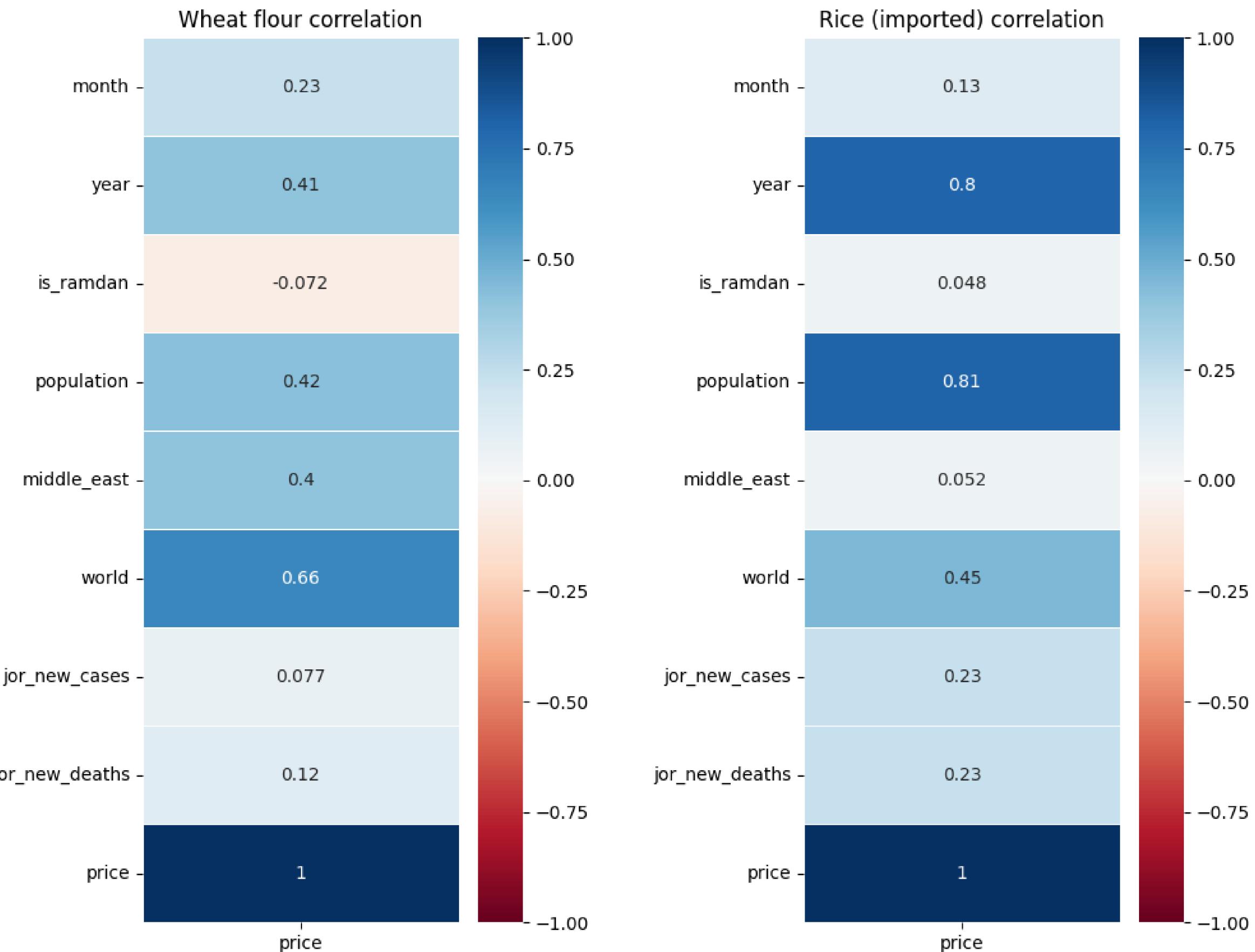
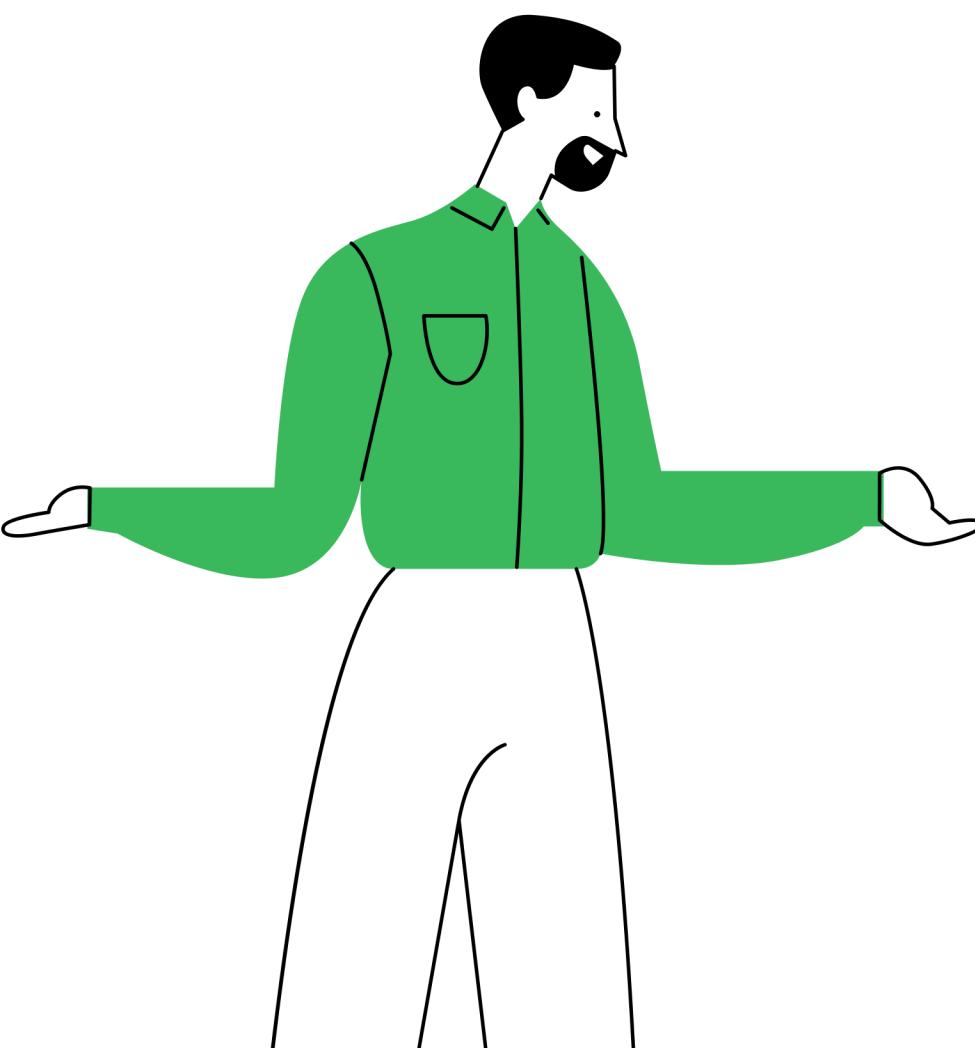




Correlation



Correlation



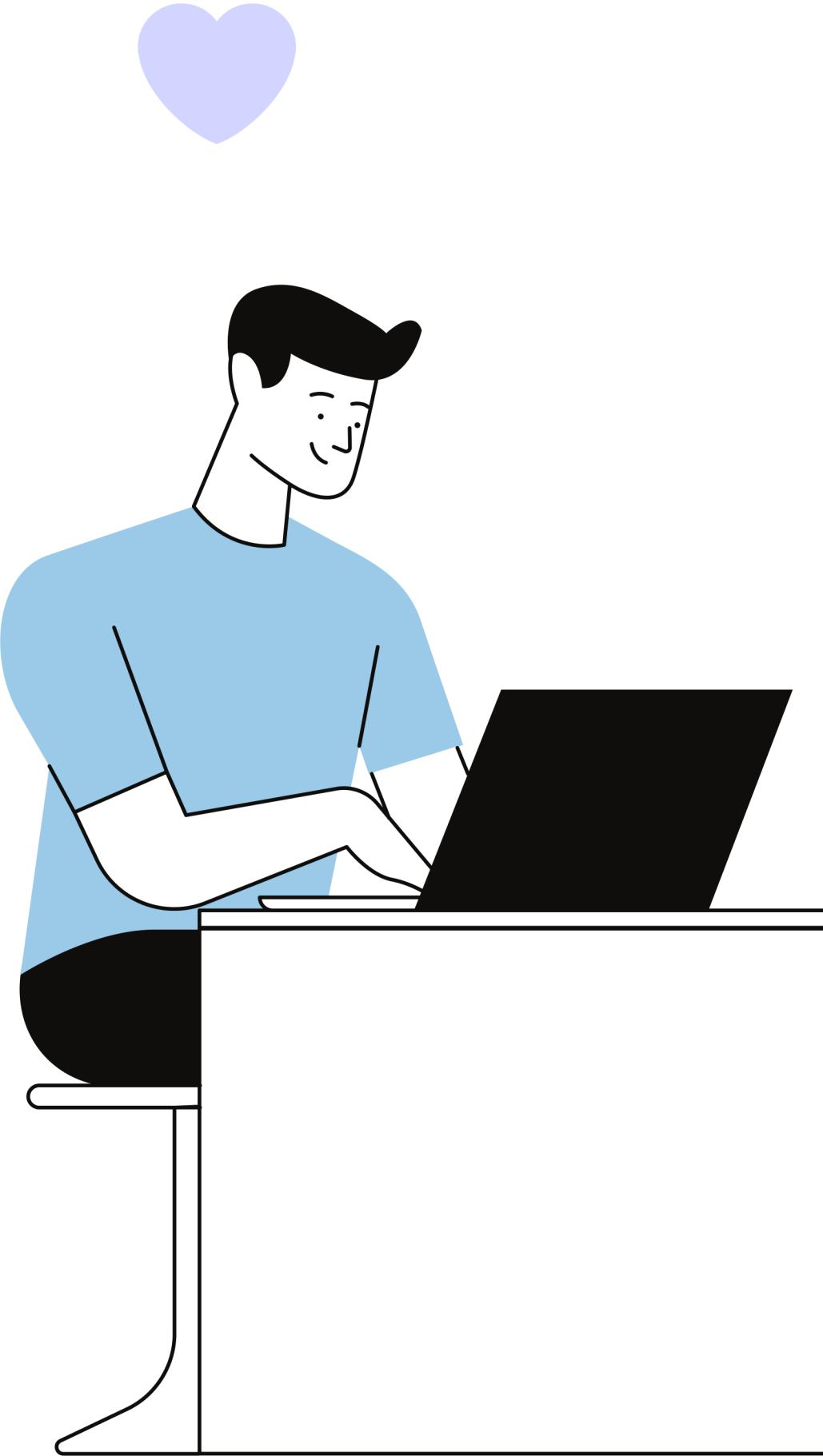
Before we go

Let us explain our data and the target

these data are collected and merged from 4 different data sets .

The data from 2012 to 2022.

type	Column name	Description
Input	category	category name
Input	commodity	commodity name
Input	month	when the data is recorded
Input	year	when the data is recorded
Input	Is Ramadan	True / False
Input	Population	Population in that time
Input	Middle east war deaths	Number of deaths in middle east
Input	world war deaths	Number of deaths in world
The Target	price	The price in JOD



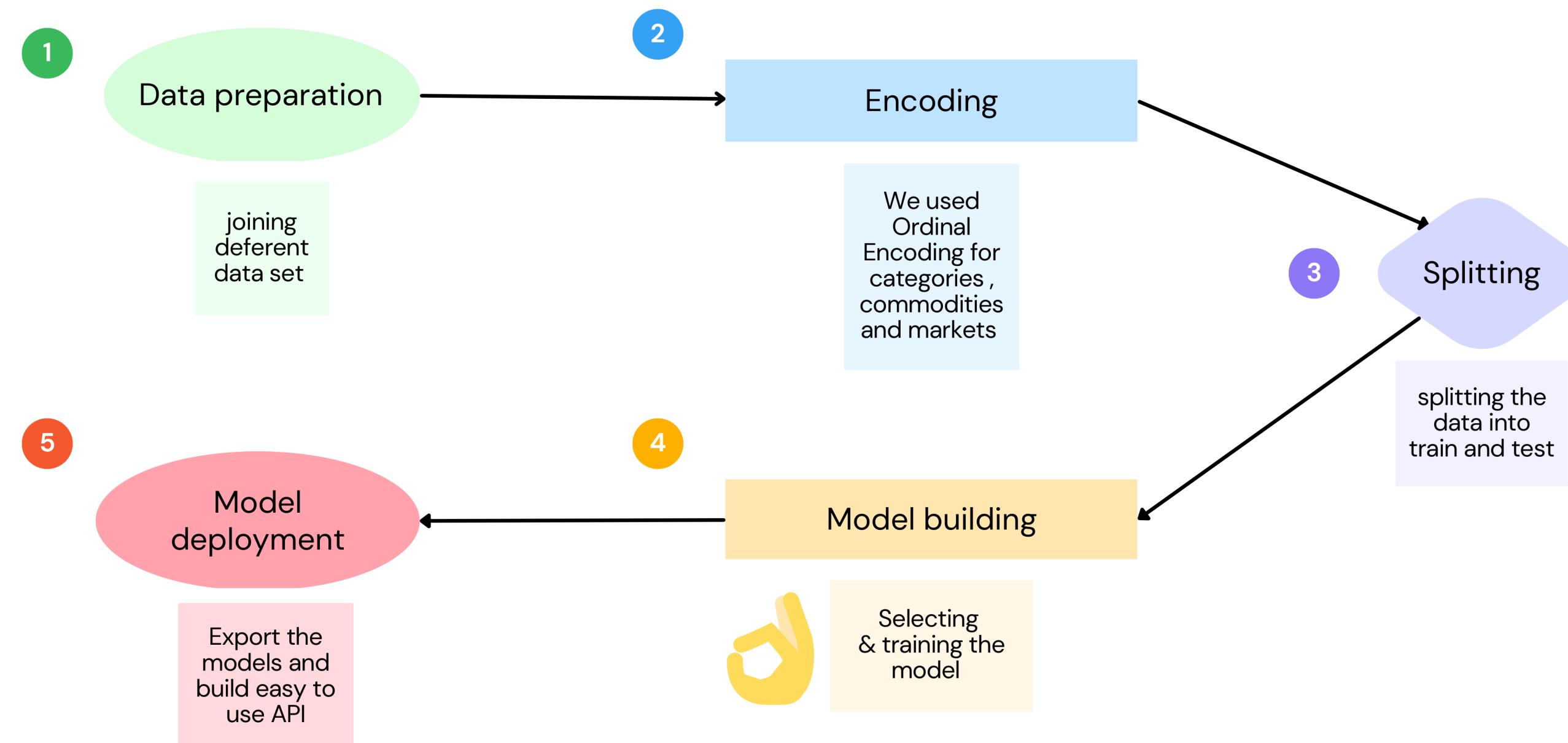
Objective

Using data to train a supervised machine learning model that can predict prices with good accuracy and a low margin of error .

LET'S BEGIN!



Work Flow



1

Data preparation

- joining different data sets.
- dropping unneeded columns.
- calculating if the month in Ramadan.

2

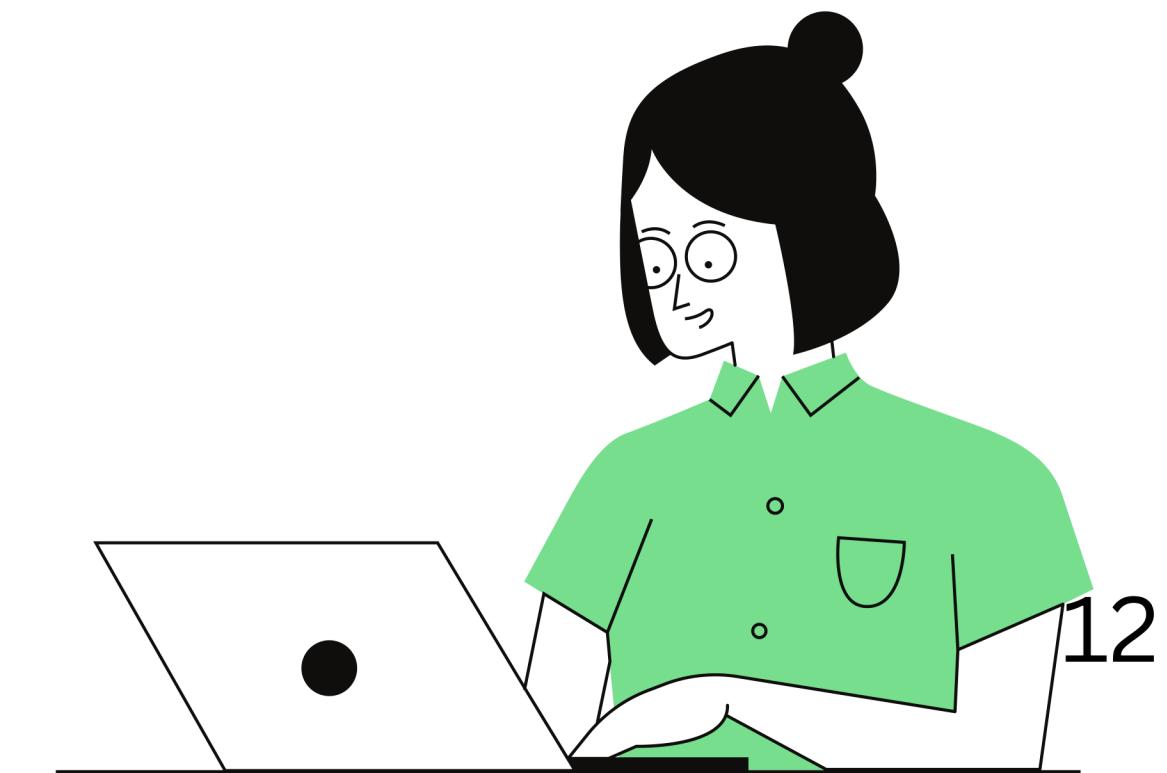
Encoding

- Ordinal Encoding for categories, commodities and markets

3

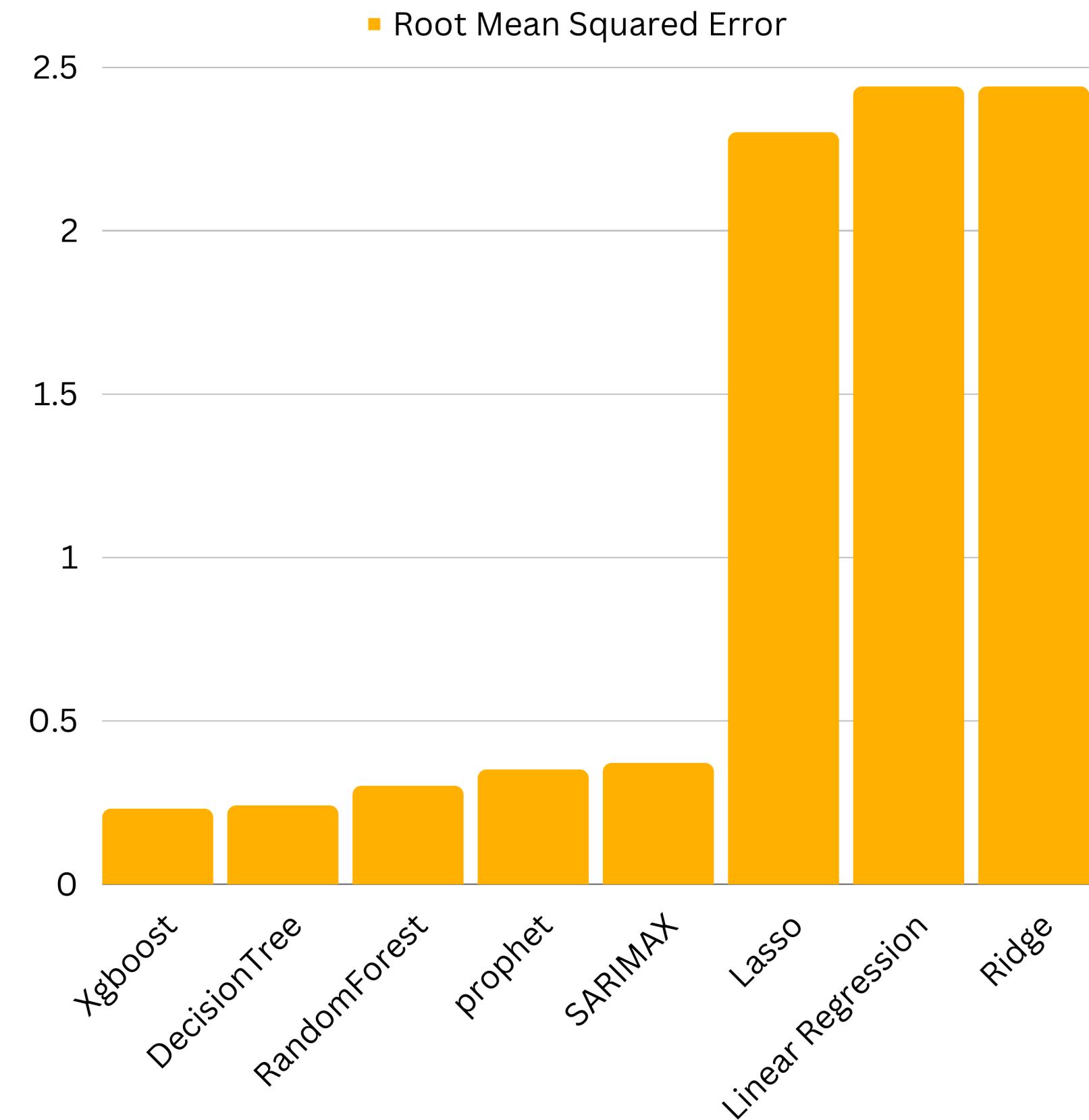
Data splitting

- Split the data into train and test.
- the train data was the first 80% of our data.
- the test data the last 20% of our data



Model building

- Selecting the best model for our case study
- Training the model
- Testing the model with unseen data
- double testing with new released data



Model building



In our project 3 main models were built

Average price model

- It predicts average price of each commodity at a particular date and many other inputs.
- Xgboost model.
- The accuracy 90%

Market model

- It predicts the price of the commodity in each governorate based on the average price
- Xgboost model.
- The accuracy 93%

Forecasting model

- It predicts the prices of each commodity for 2023-2025.
- Prophet model.
- The accuracy 80%

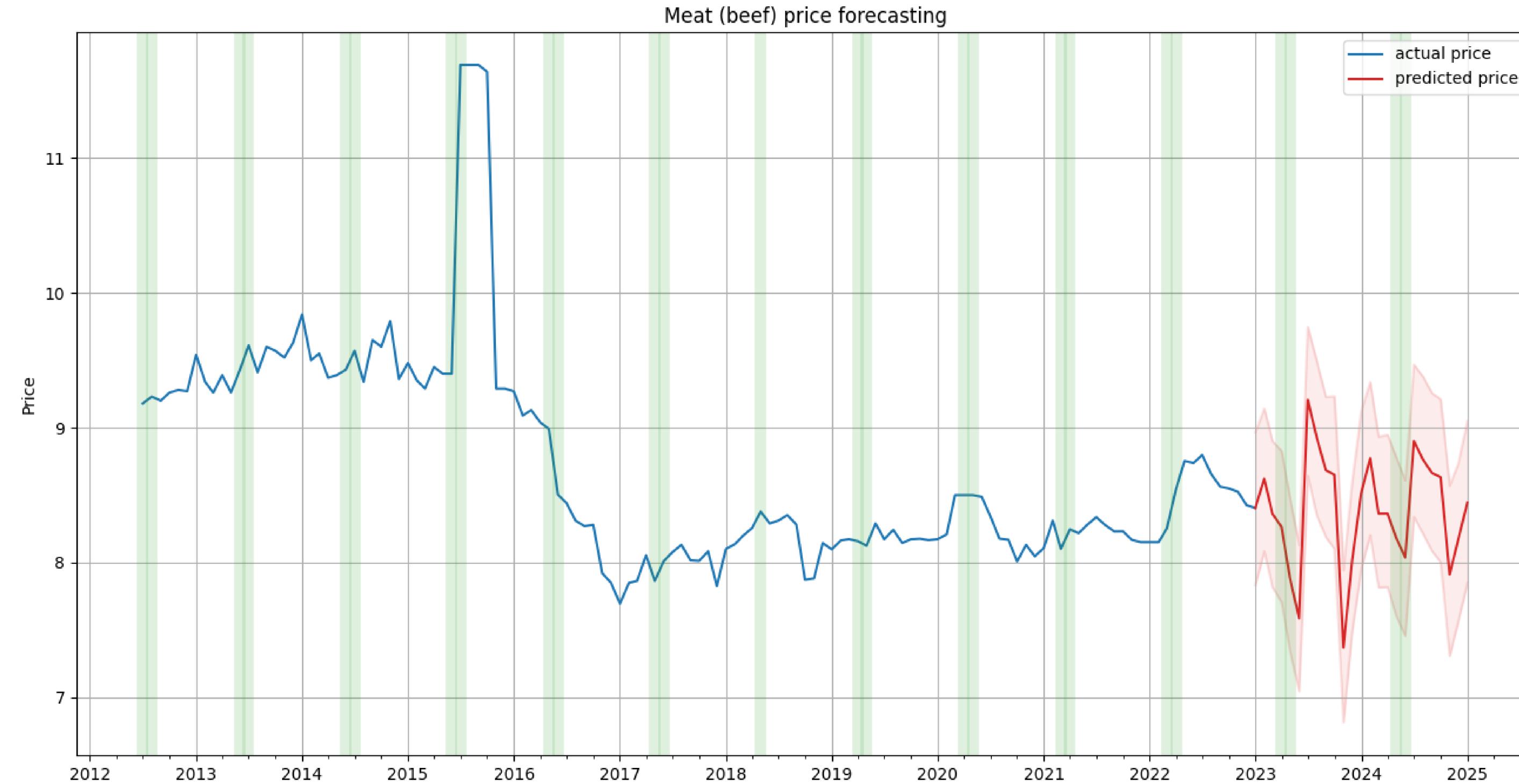
5

Model deployment

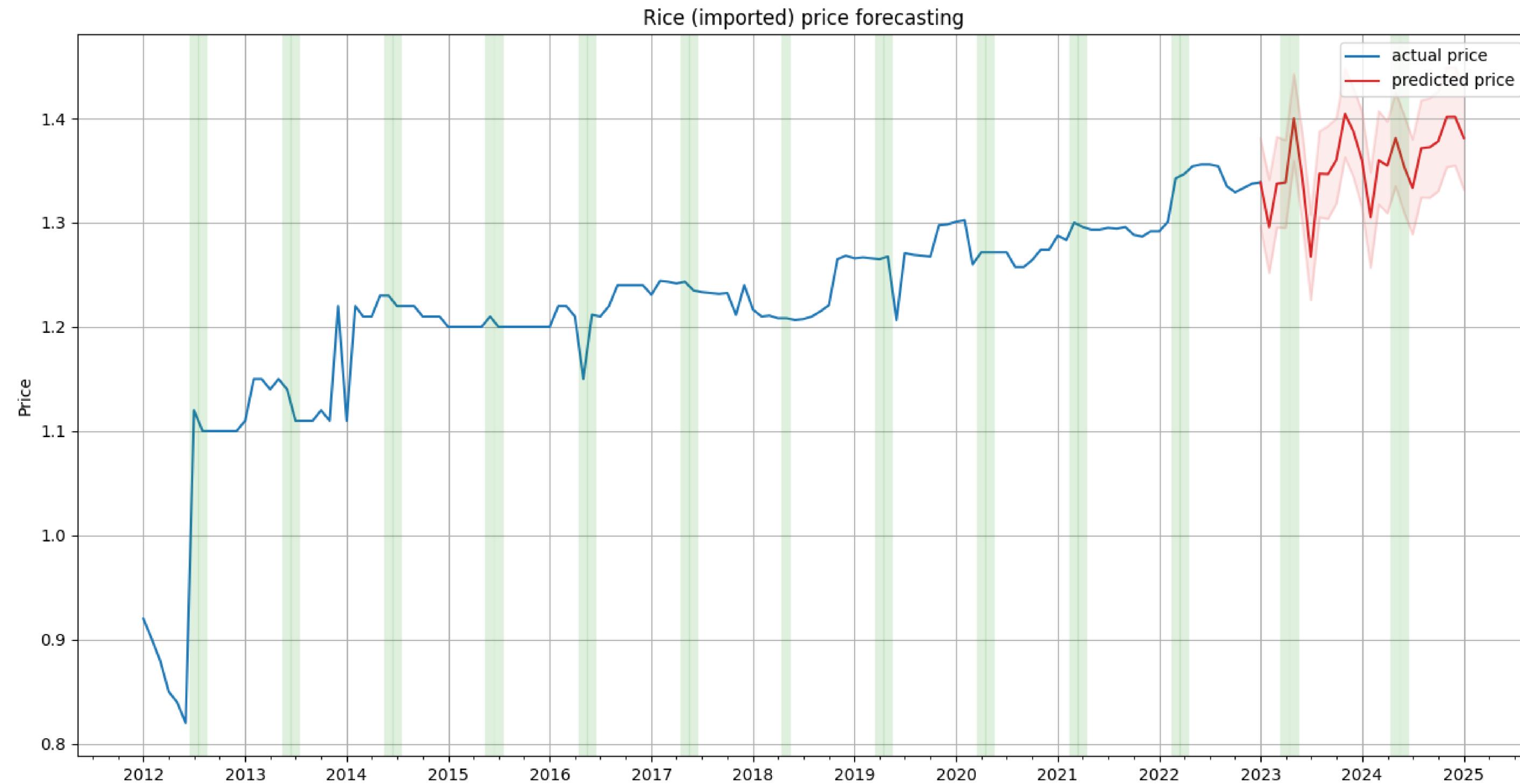
- Export the models into pkl files
- Fast API
- Mobile application to demonstrate how the API works
- Python Application



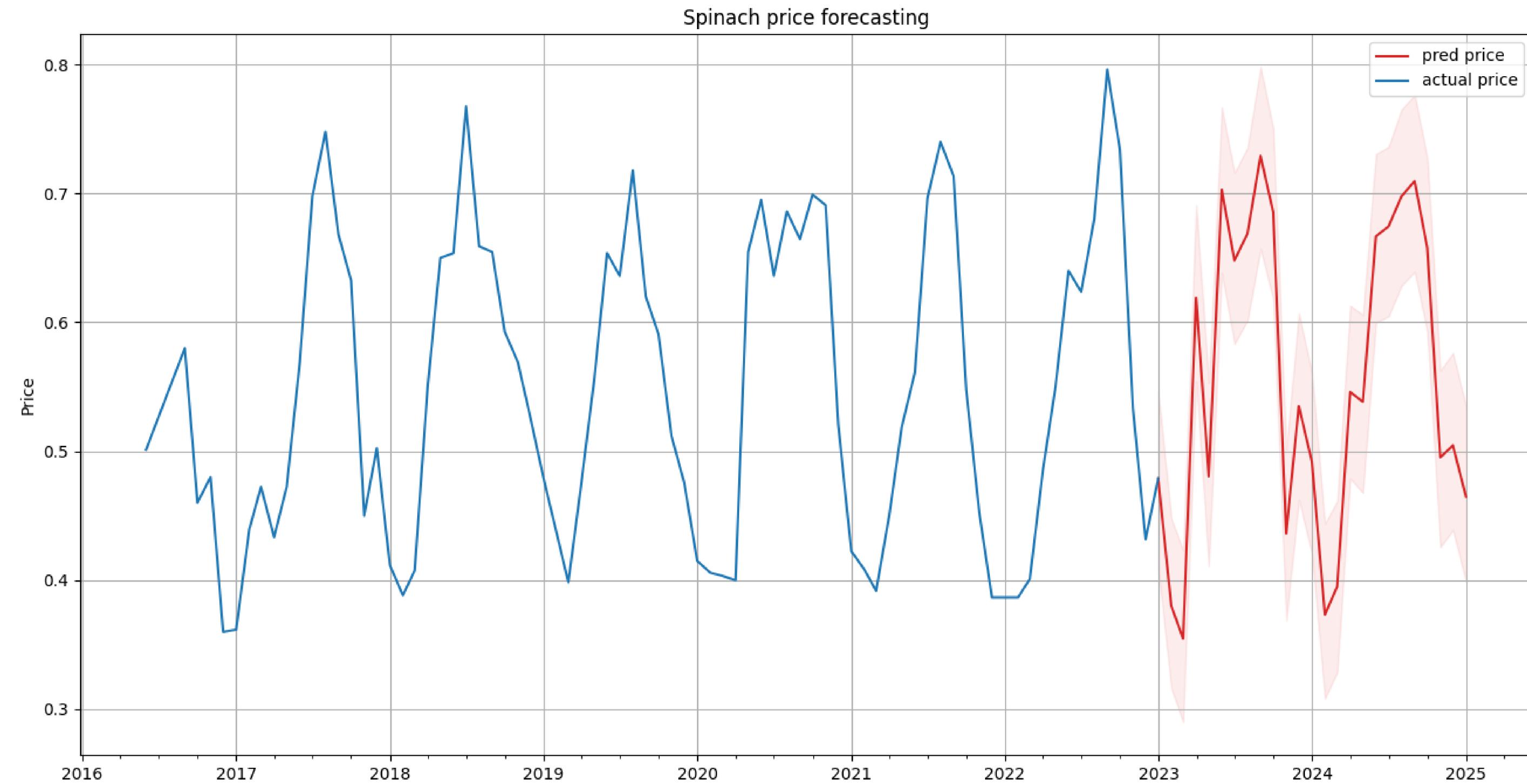
Price forecasting



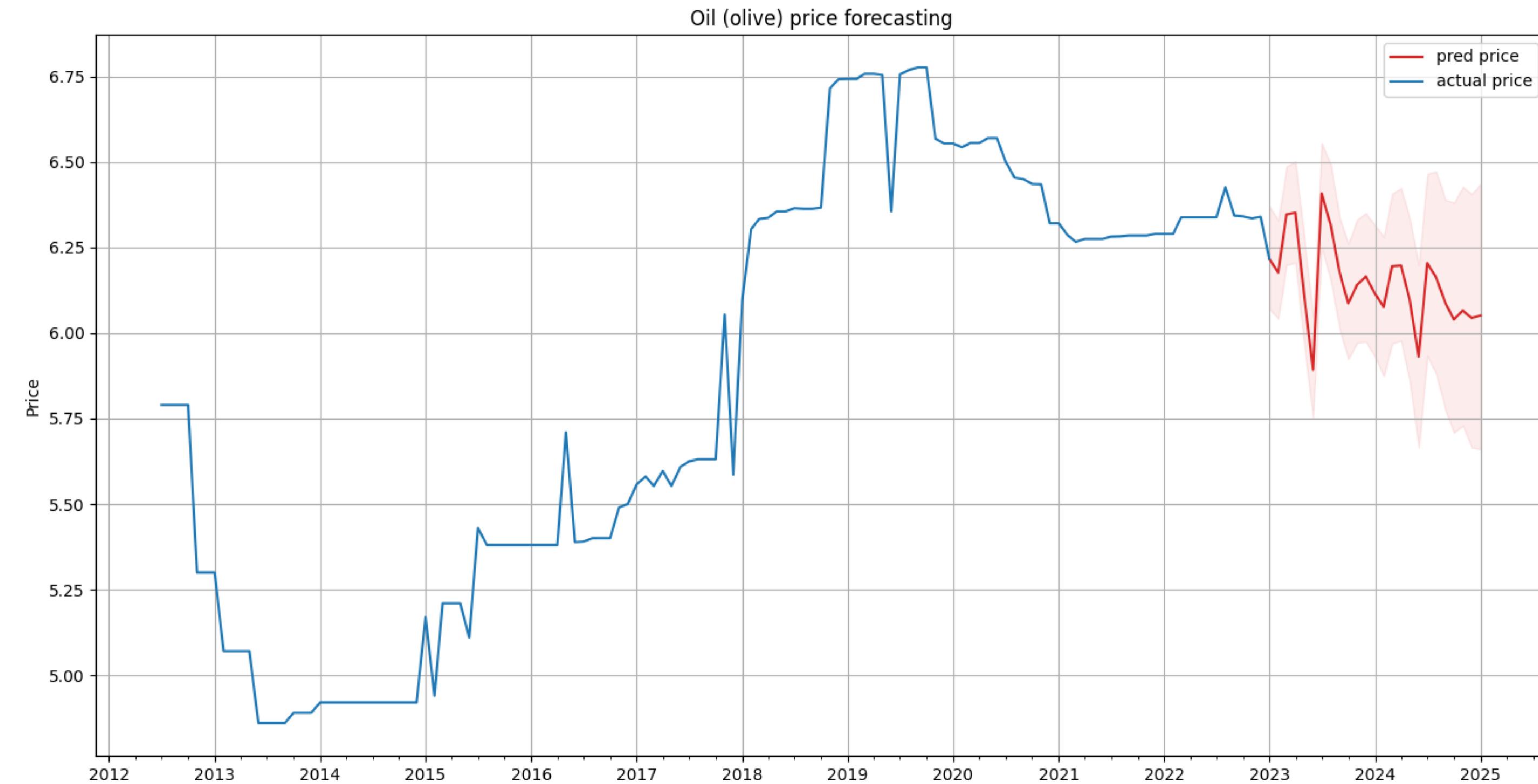
Price forecasting



Price forecasting



Price forecasting





Conclusion

- 1 The prices of each commodity change differently from the other.
- 2 The price difference of each commodity between governorates is almost constant.
- 3 The model could predict with reasonable accuracy when tested on real-life data.

Thanks and Gratitude



- Thanks to Orange Coding Academy for giving us this great opportunity
- We also thank the trainer, Aya Miqdadi and Emran Mohammad for their efforts in this course and their great role in developing our skills.



QUESTIONS?