



Food Prices Forecasting

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Agenda

01

Introduction

02

Data Collection &
Data Cleaning

03

Hypothesis

04

Analysis

05

Features
Extraction

06

Future work

Why is it important?

consumers :

Price prediction tool motivates users to engage with a brand or evaluate offers in order to spend their money wisely.



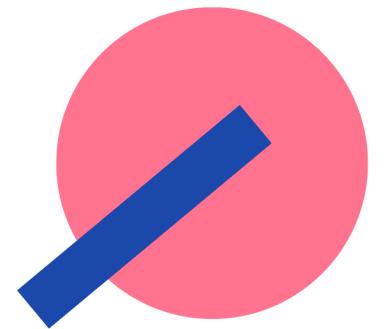
businesses :

Price prediction enables businesses to set pricing in a manner that builds customer engagement and loyalty.

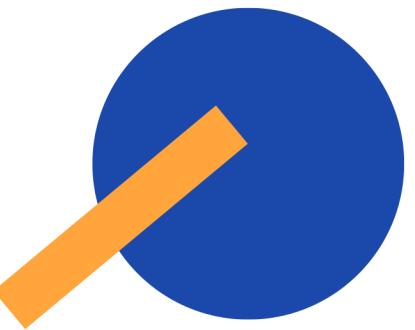
price prediction in different industries



- Retail
- Marketing
- Housing
- Stock Picking



Problem Definition



Basic question

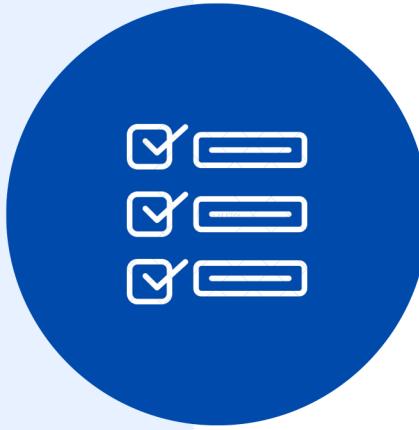
What are the reasons for changing the prices of products? & what is the pattern of changing prices between Jordan's governorates?

Initial situation

Product prices change constantly whether they rise or fall without a clear reason or pattern that causes them to change.

Problem Definition

Success criteria



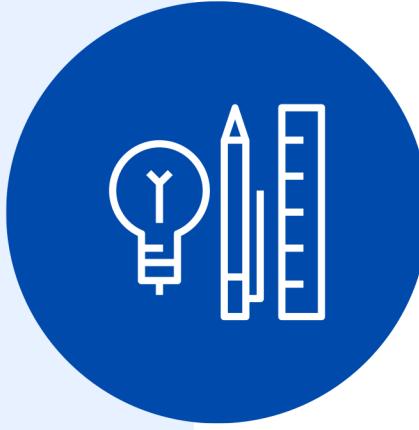
- Finding reasons for price change, and Proving their link to price changes using analysis and visualization.
- Finding a Changing Pattern of Prices between Governorates

Constraints



- Limited features in the original data.
- Prices change for many reasons that are difficult to measure.

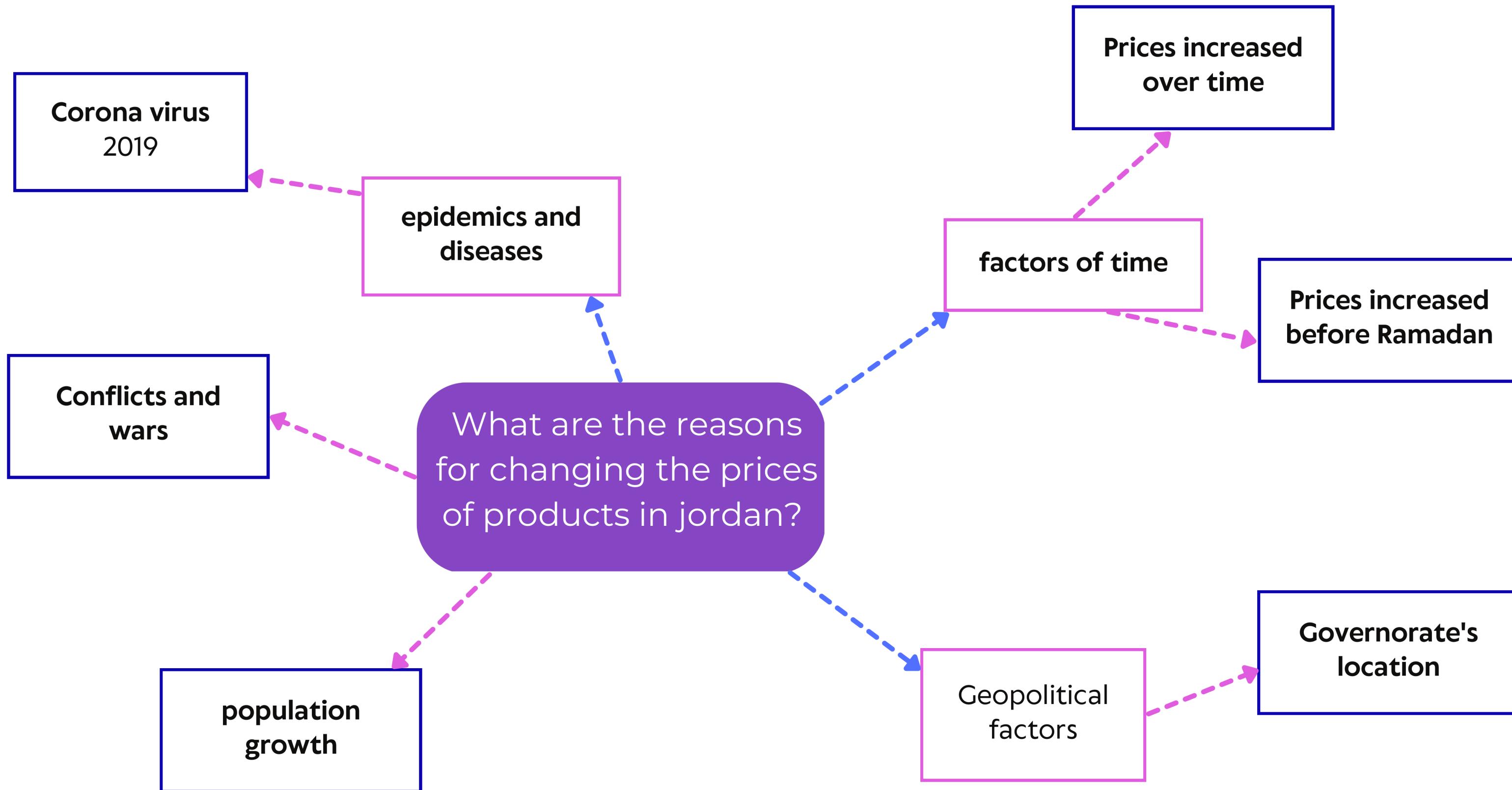
Project scope



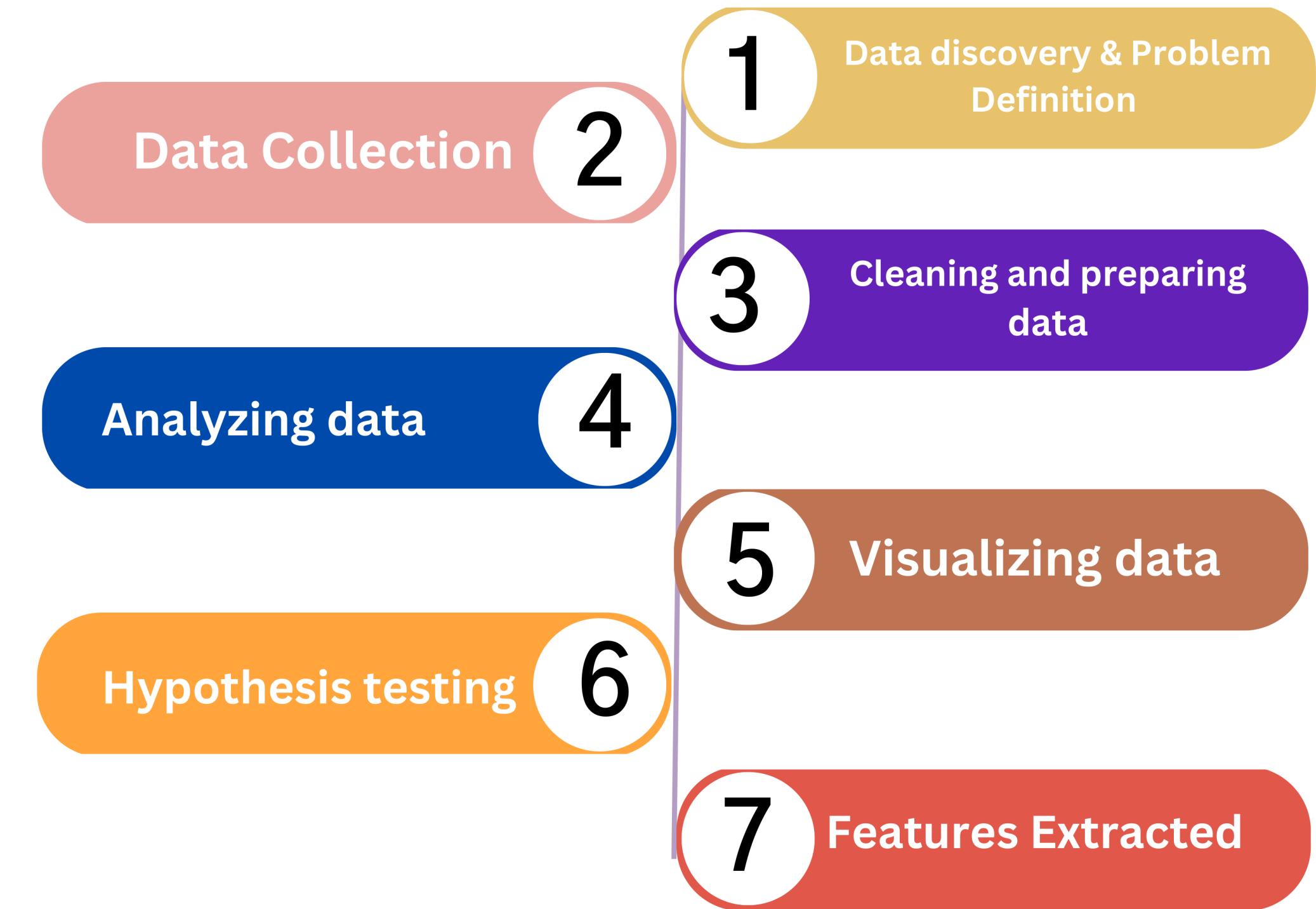
- Focus on five governorates.
- Focus on four categories.

Problem Structuring

Hypothesis Tree



Task identification



Overview in our dataset

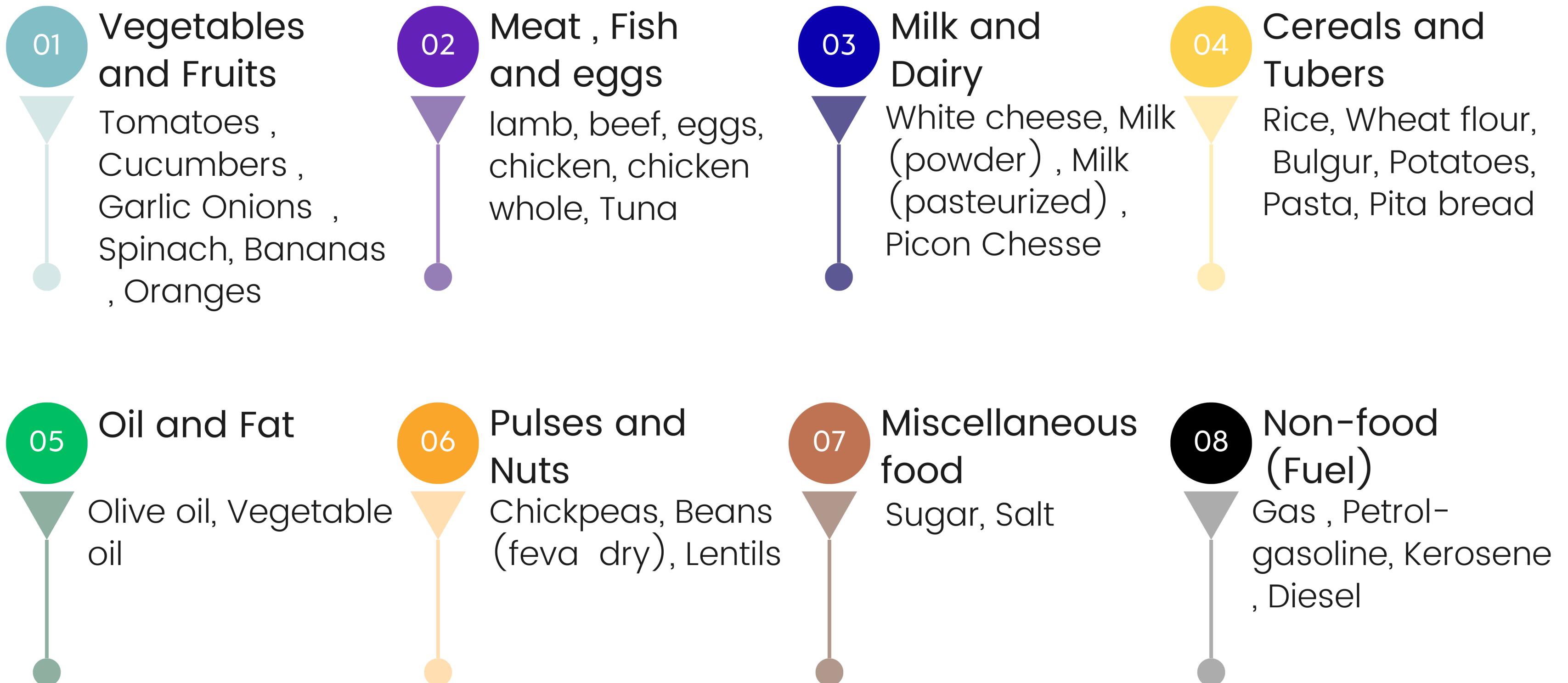
Jordan
food price:

- 11 Columns
- 28,830 Rows

Jordan food price

Date	Admin1	Admin2	Market
the year and month where the data is recorded	Governorate name	Market name	Governorate name
latitude	longitude	Category	Commodity
latitude of the market	longitude of the market	Category name	Commodity name
Unit	Price	usdprice	
weight or size of the commodity	the price in JOD	the price in USD	

Categories and commodities





Market

01 National Average

- From 2011 to 2016
- 1309 Rows

02 Amman

- From 2016 to 2022
- 2323 Rows

03 Ajloun

- From 2016 to 2022
- 2308 Rows

04 Al Aqaba

- From 2016 to 2022
- 2209 Rows

05 Al Balqa

- From 2016 to 2022
- 2306 Rows

06 Al Karak

- From 2016 to 2022
- 2324 Rows

07 Al Mafraq

- From 2016 to 2022
- 2210 Rows

08 Al Tafilah

- From 2016 to 2022
- 2369 Rows

09 Irbid

- From 2016 to 2022
- 2320 Rows

10 Jarash

- From 2016 to 2022
- 2307 Rows

11 Maan

- From 2016 to 2022
- 2267 Rows

12 Madaba

- From 2016 to 2022
- 2281 Rows

13 Zarqa

- From 2016 to 2022
- 2308 Rows

Data Collection

Jordan Food Prices

- Prices between 2012 - 2022
- 12 Market
- 8 Categories
- 36 Commodities
- data.humdata.org

Population In Jordan

- Population between 2012 - 2022
- Annual change
- populationof.net

Number Of Covid-19 Cases And Deaths

- New cases and new deaths between 2020 - 2022
- All Countries
- covid19.who.int

Number Of War Deaths

- Number of deaths between 2012 - 2022
- Number of war deaths in middle east
- Number of war deaths in all countries
- ourworldindata.org

Data Cleaning

01

Dropping unnecessary columns for our analysis

02

Dealing with outliers

03

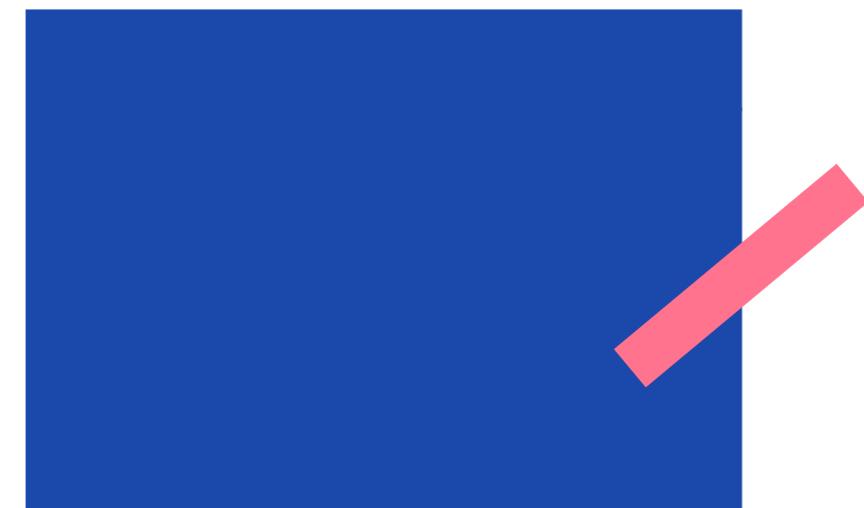
Joining different data sets

04

Creating new features

01

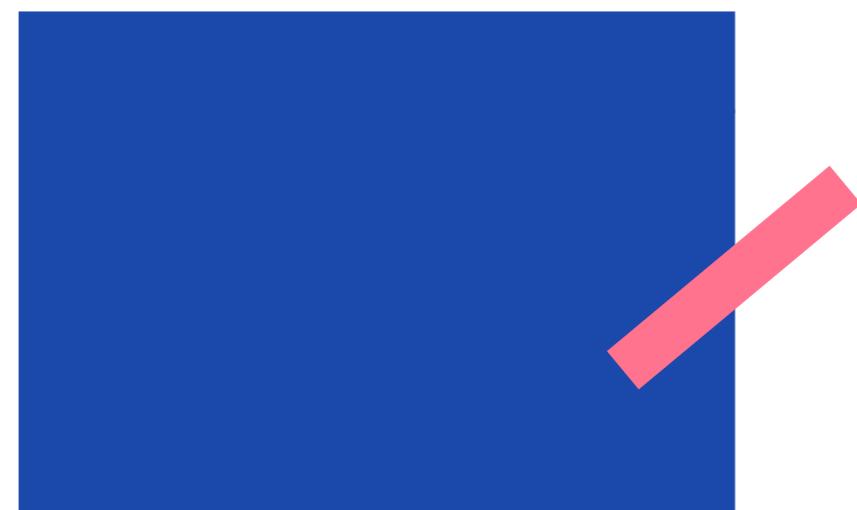
Dropping unnecessary columns for our analysis



date	the year and month where the data is recorded
admin1	Governorate name
admin2	market name
market	Governorate name
latitude	latitude of the market
longitude	longitude of the market
category	category name
commodity	commodity name
unit	weight or size of the commodity
price	the price in JOD
usdprice	the price in USD

01

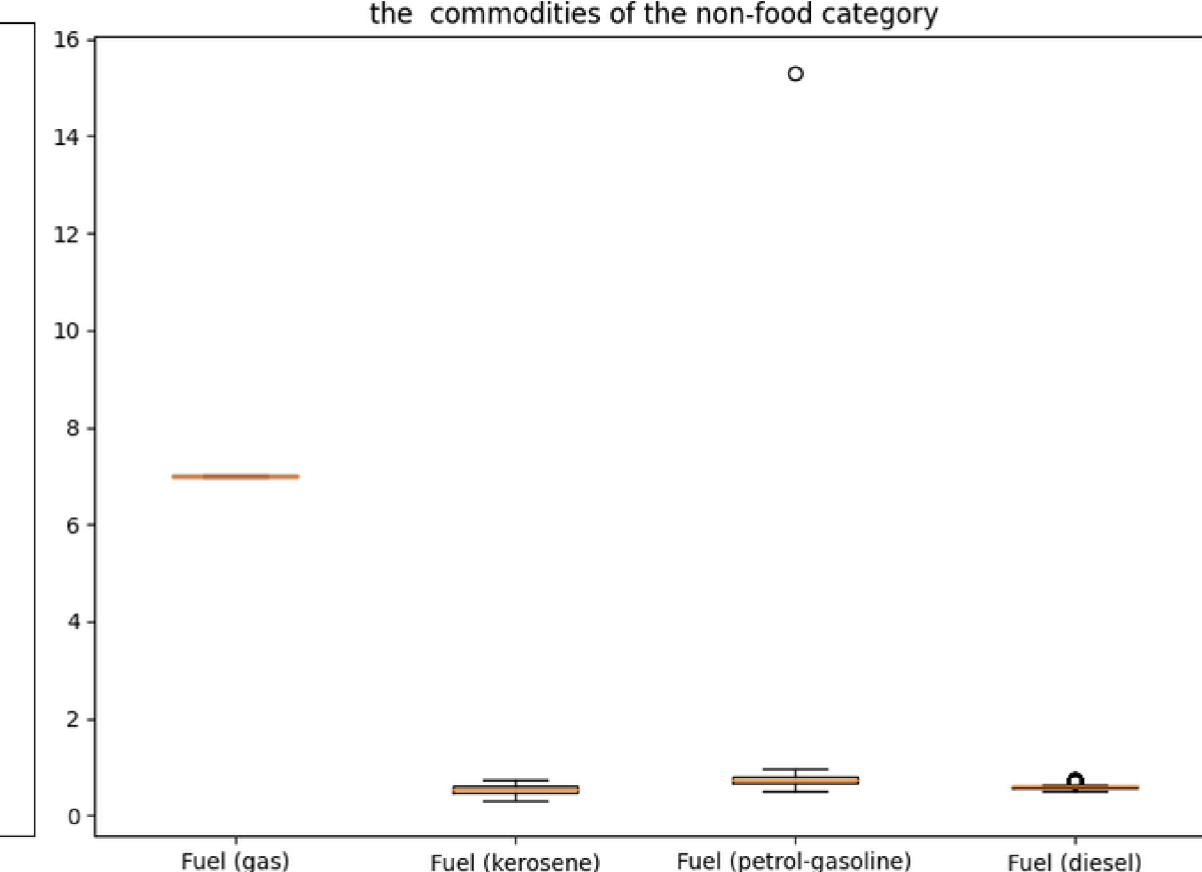
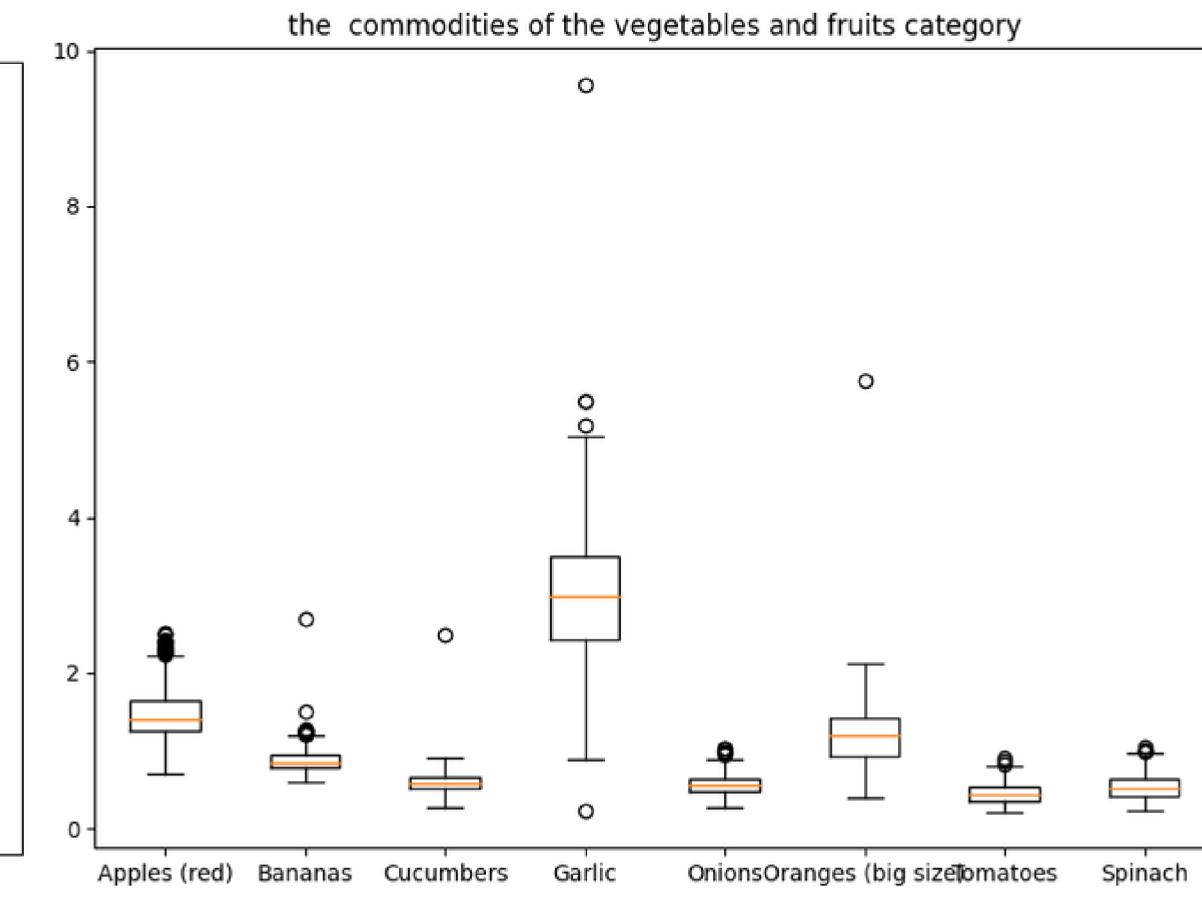
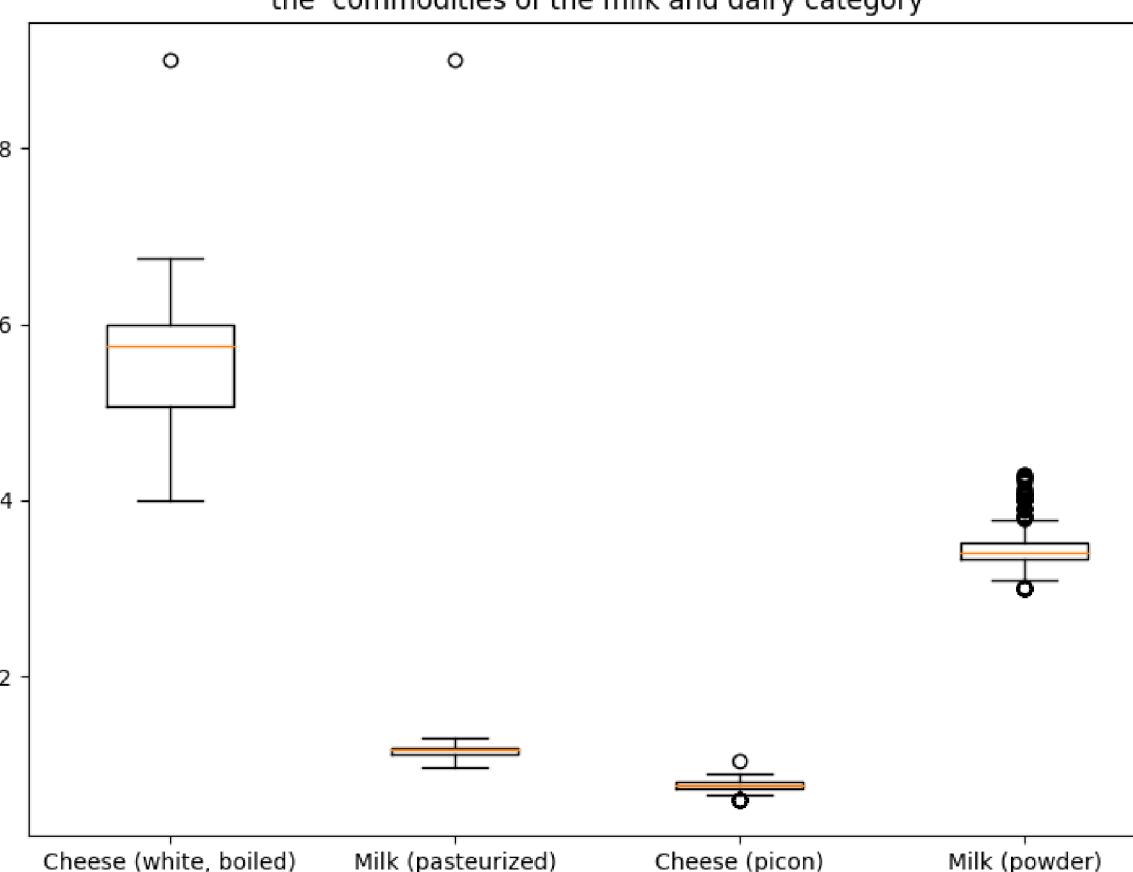
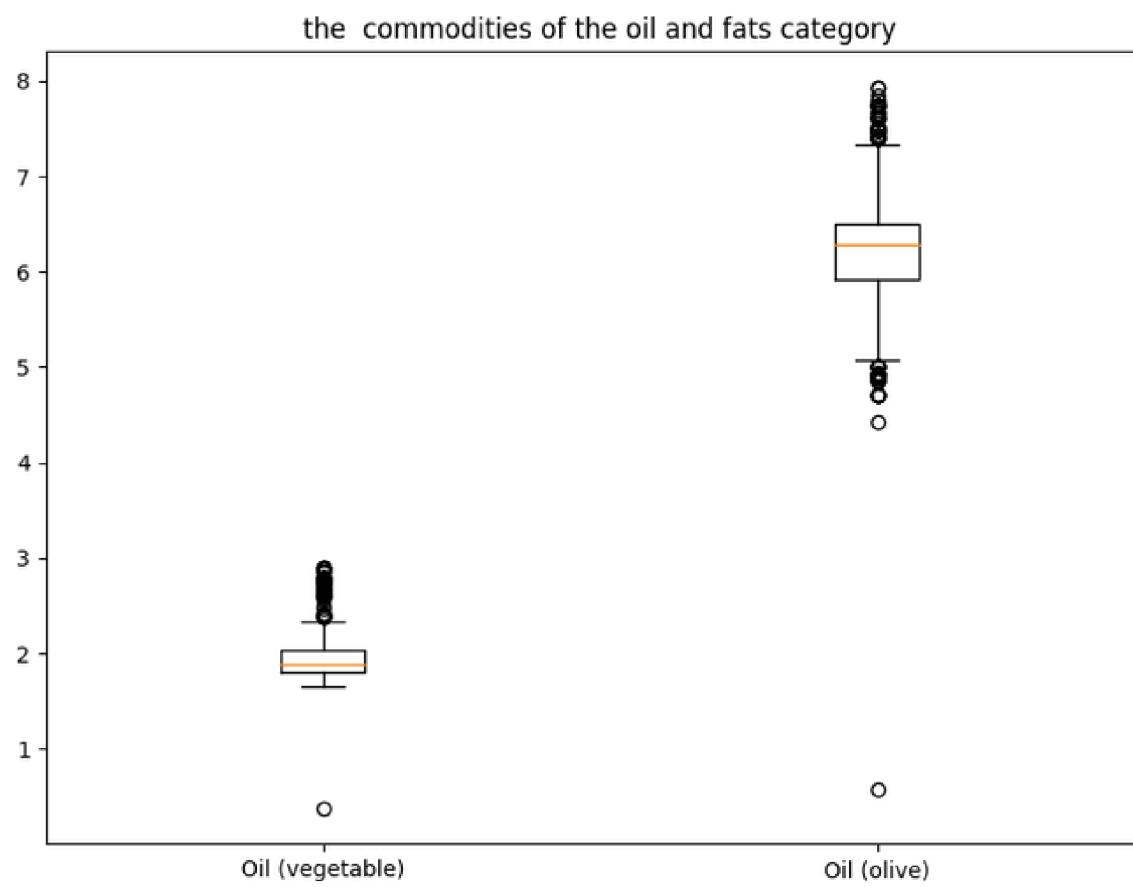
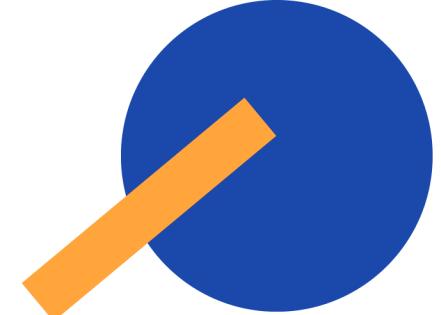
Dropping unnecessary columns for our analysis



date	the year and month where the data is recorded
admin1	Governorate name
admin2	market name
market	Governorate name
latitude	latitude of the market
longitude	longitude of the market
category	category name
commodity	commodity name
unit	weight or size of the commodity
price	the price in JOD
usdprice	the price in USD

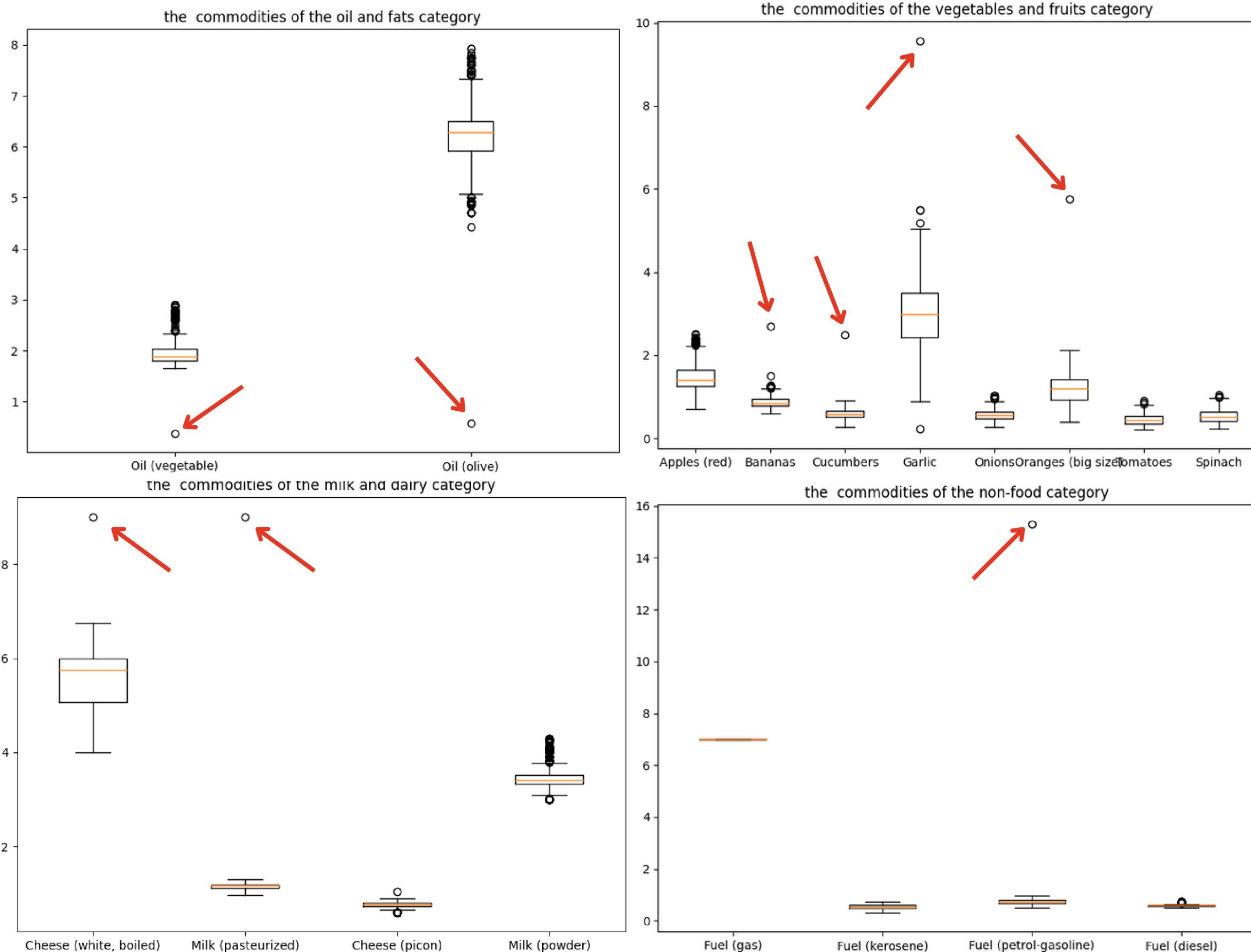
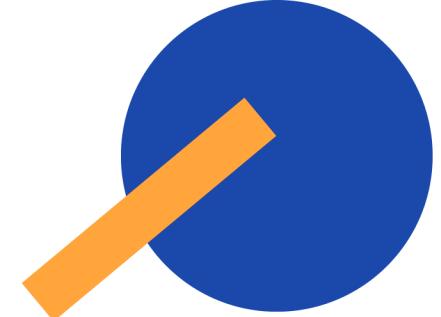
02 Dealing with outliers

15

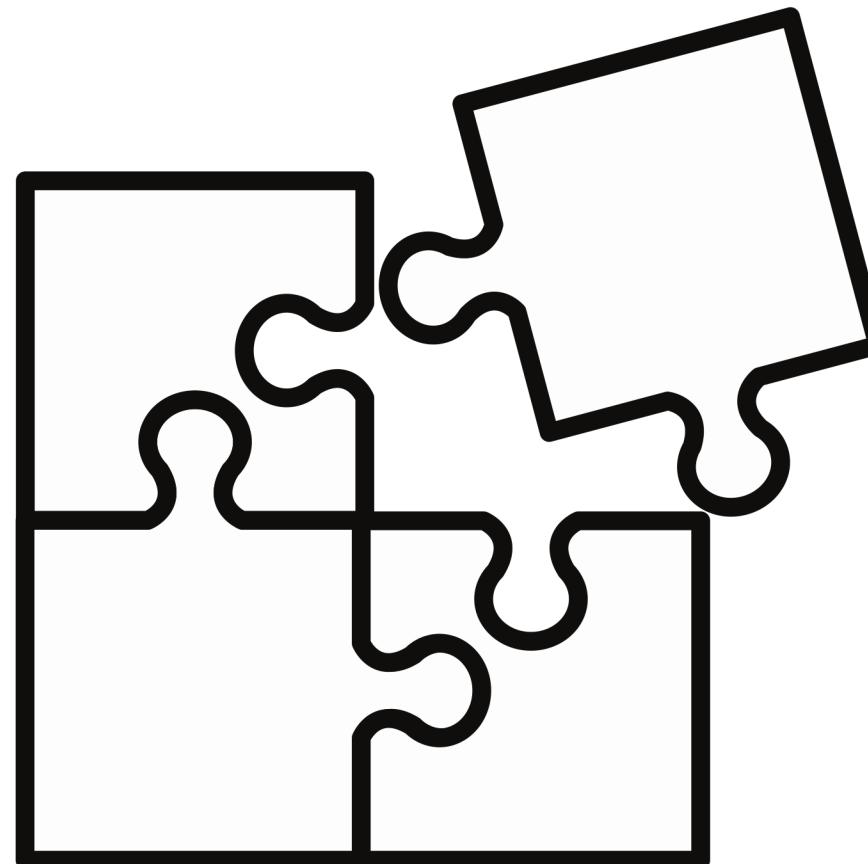


02 Dealing with outliers

16



03 Joining different data sets



Food Prices data set	date	The year where the data is recorded
	price	The price in JOD
Jordan Population data set	population	Population of Jordan
	annual_change	the change percentage of the population

Food Prices data set	date	The year where the data is recorded
	price	The price in JOD
war deaths data set	middle east	Number of war deaths in middle east
	world	Number of war deaths in world

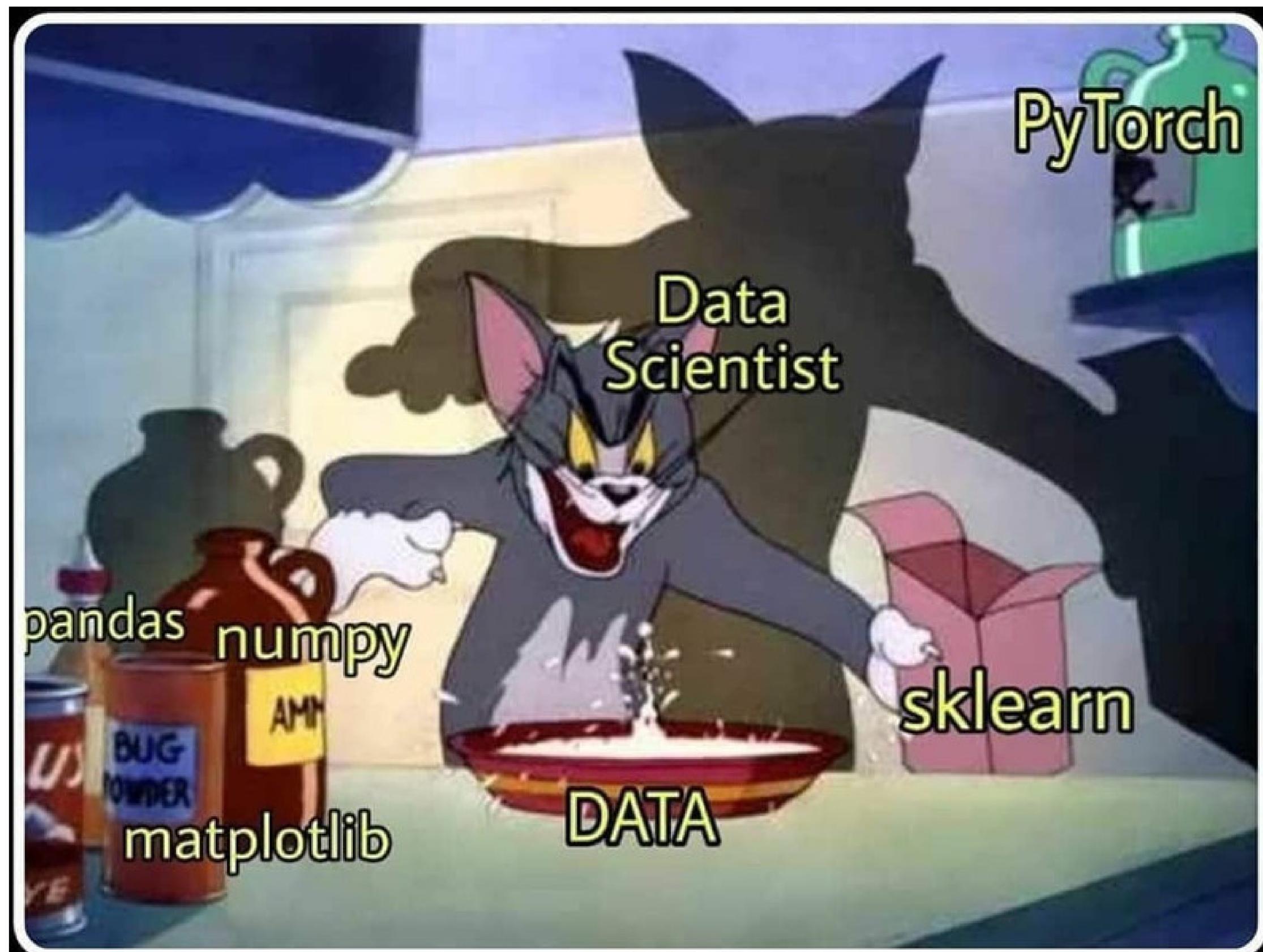
04 Creating new features

New	date	the year and month where the data is recorded
	H-date	the year and month in Hijri calendar
New	price	The price in JOD
New	price_change	the change percentage of the price

Hypothesis

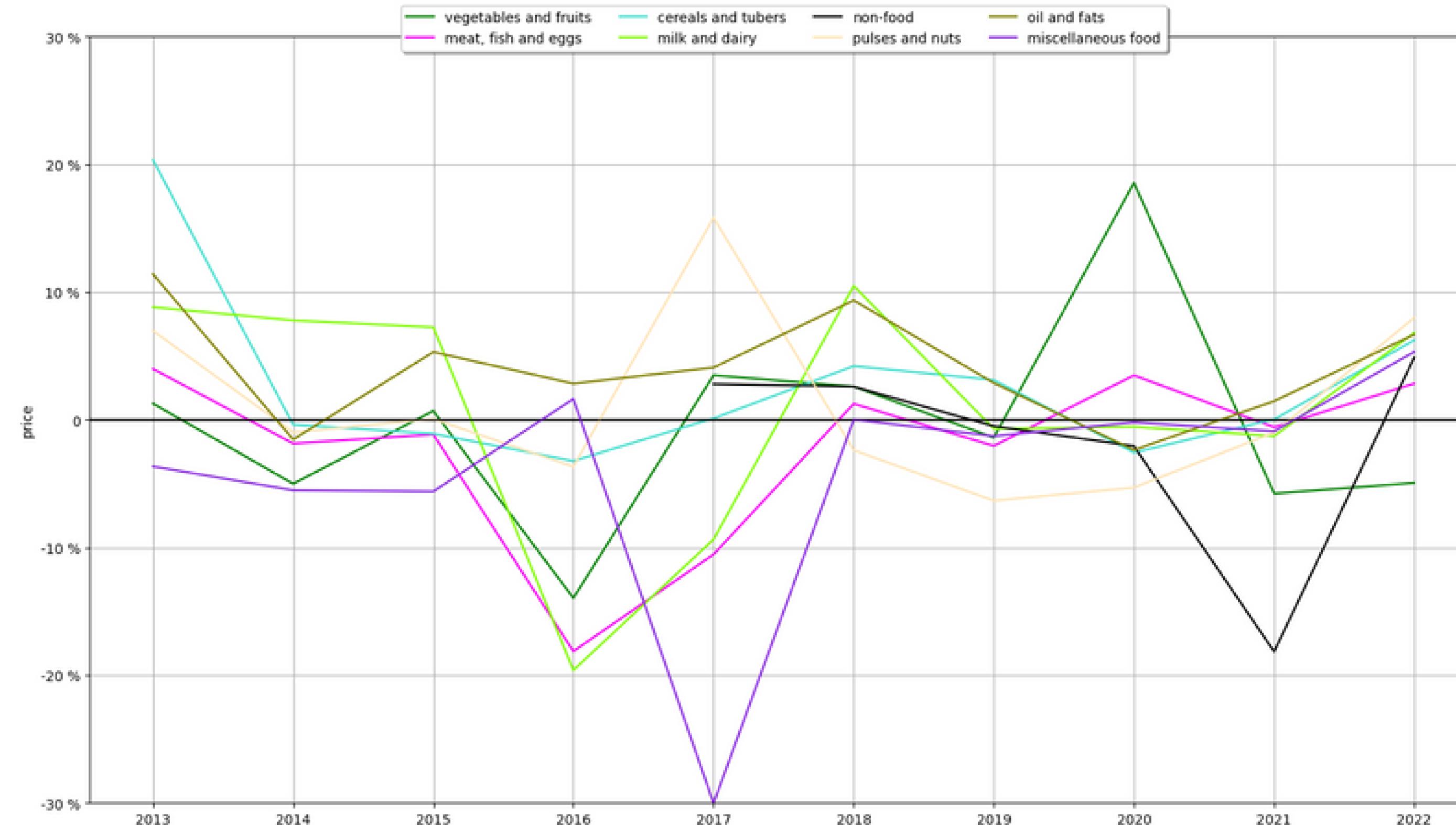
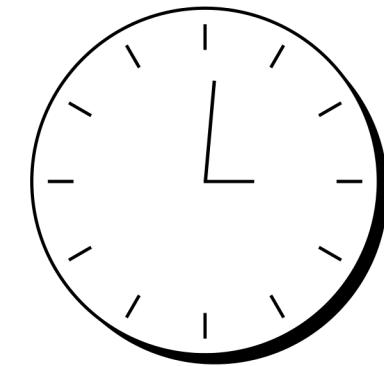


Data Analyzing



price changes over time

comparison of prices over 11 years



price changes over time



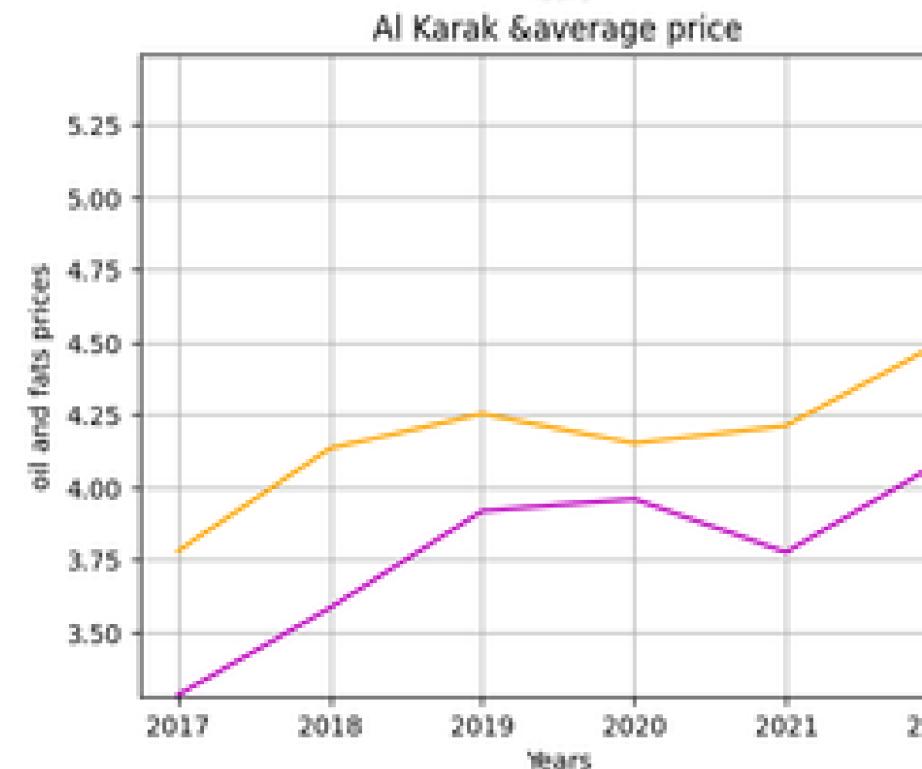
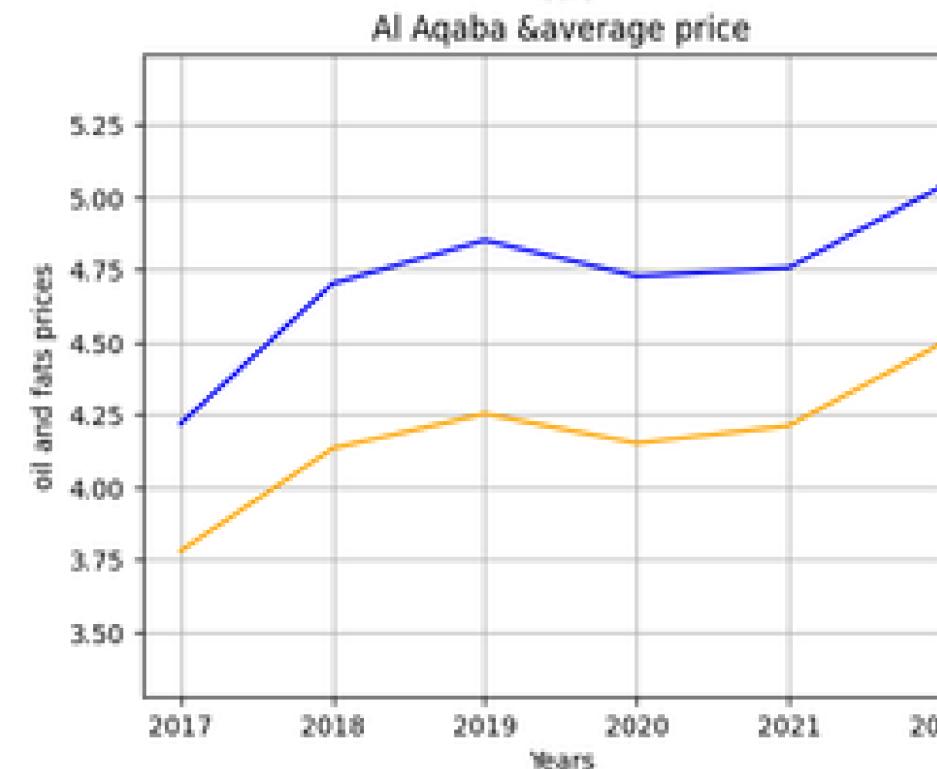
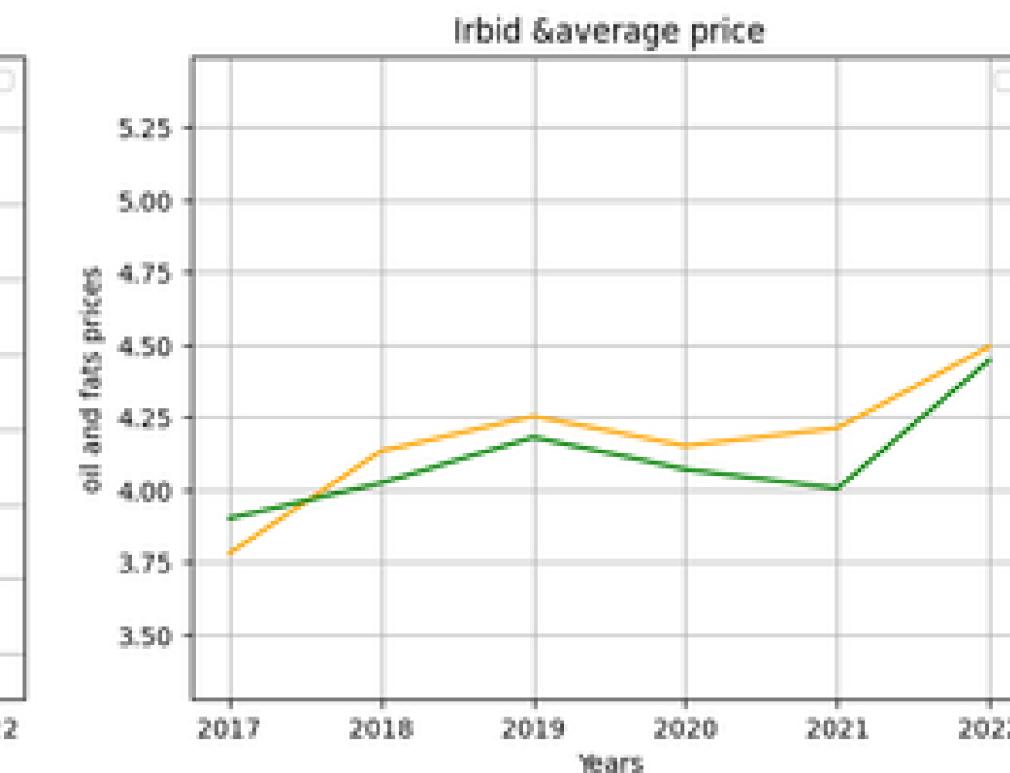
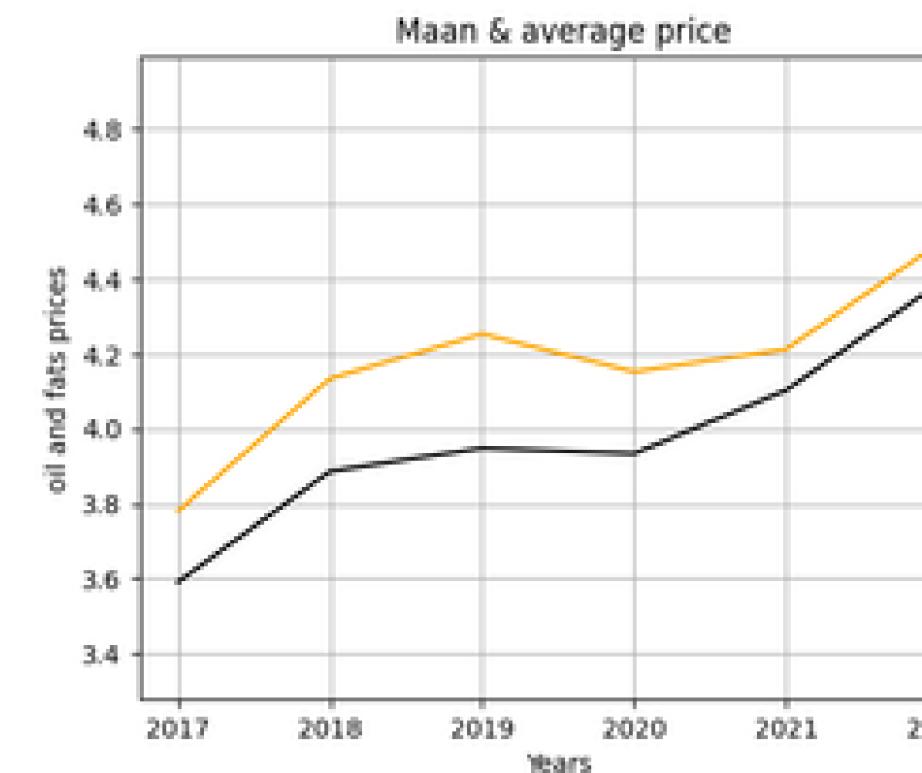
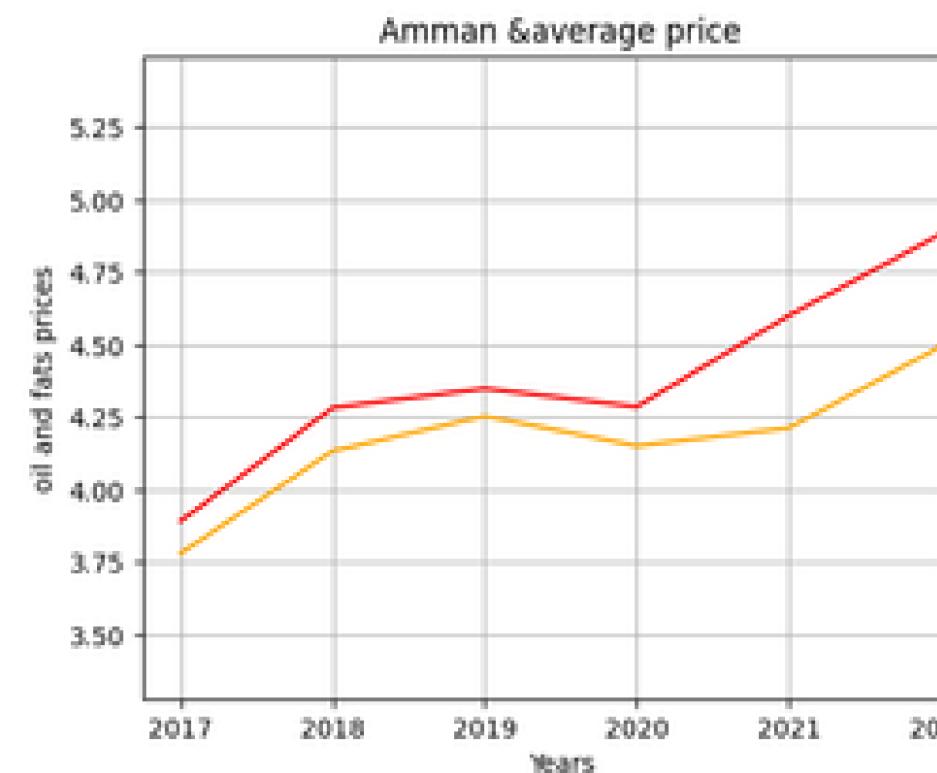
On Conclusion

- The factor of time
alone does not affect
the prices

price changes by location



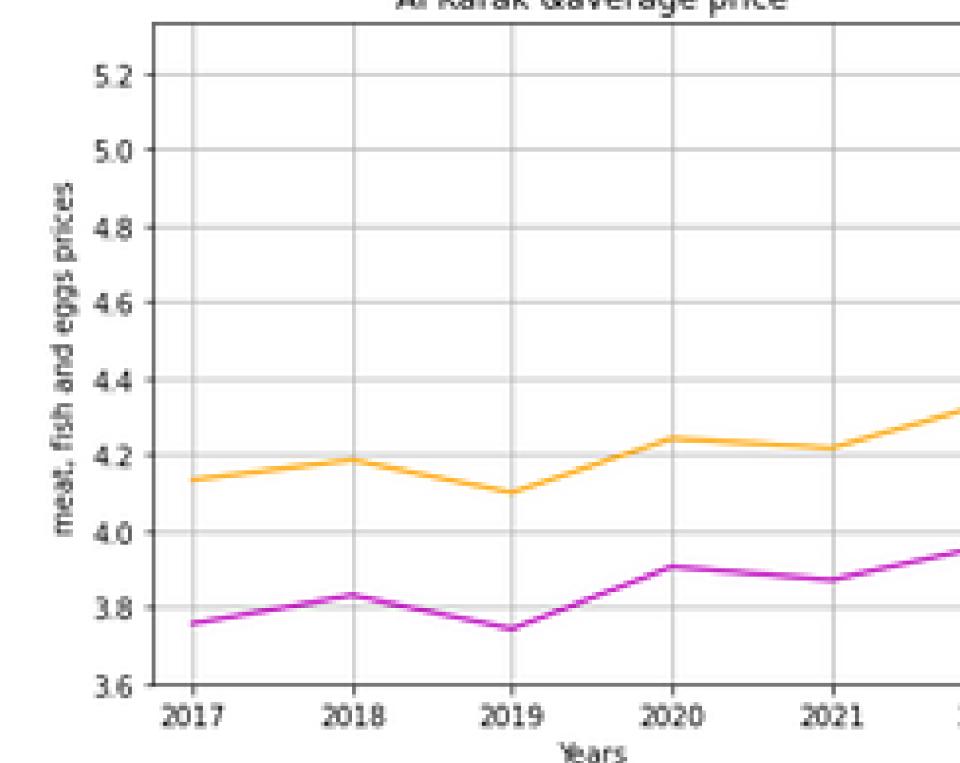
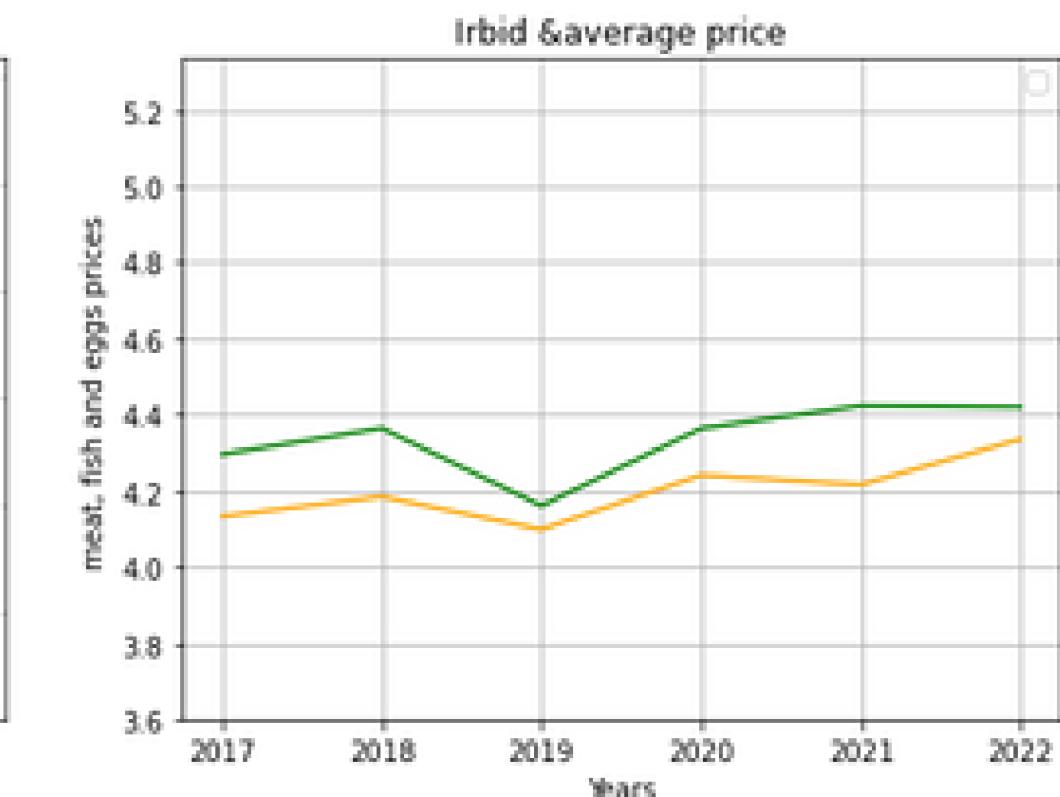
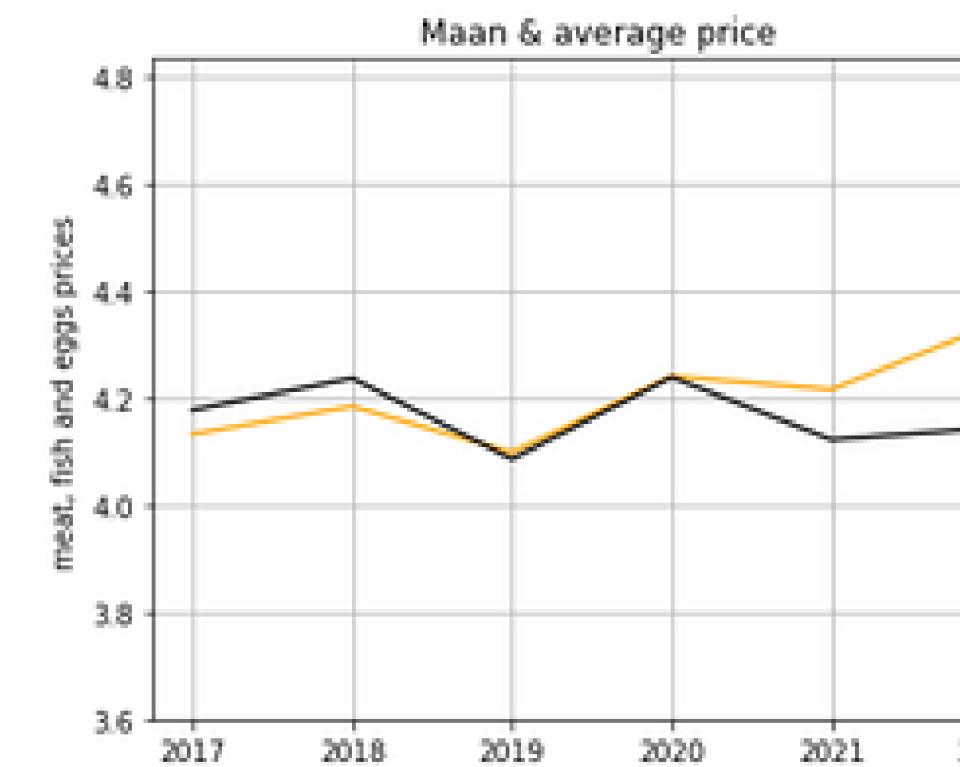
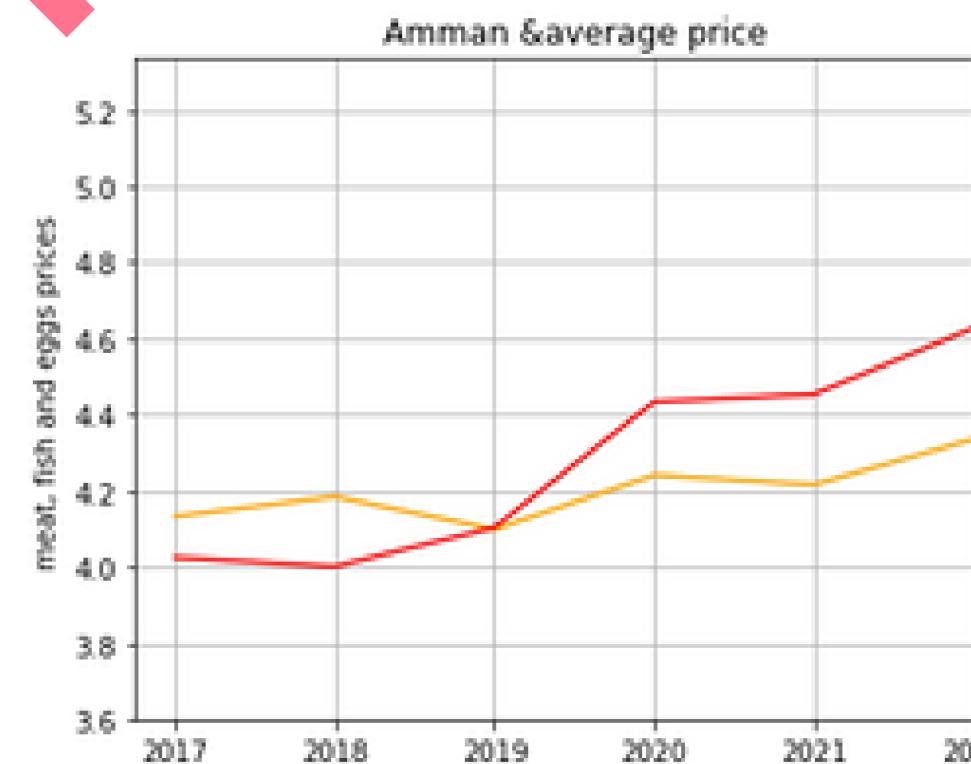
Comparison of price change between Market and the average price(oil and fats)



- average price —
- Amman —
- Maan —
- Irbid —
- Al Aqaba —
- Al Karak —

price changes by location

Comparison of price change between Market and the average price(meat, fish and eggs)

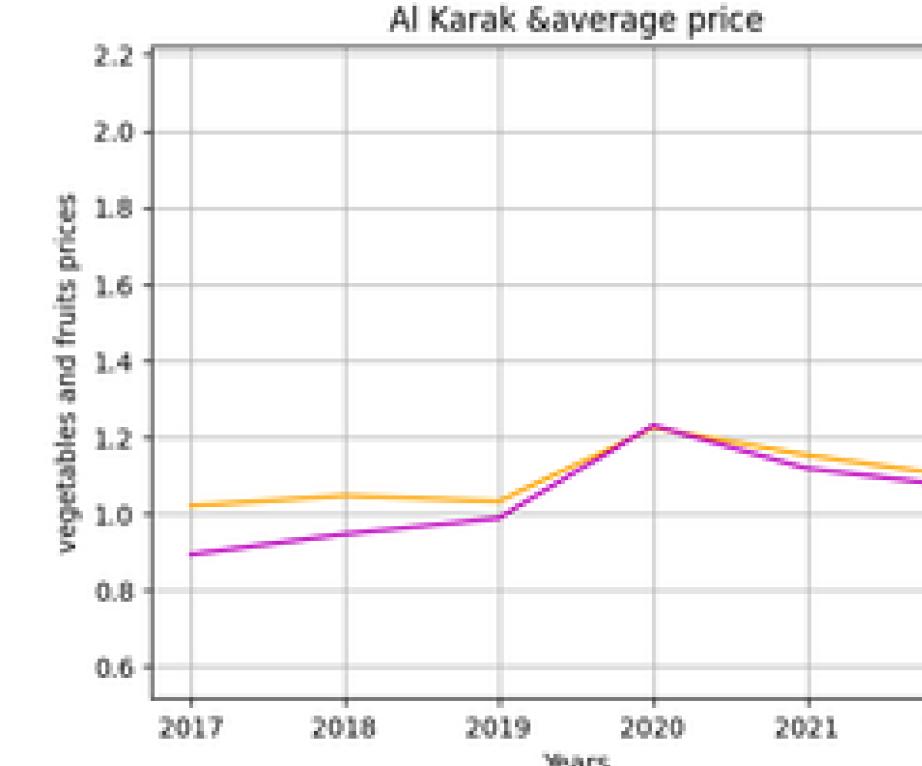
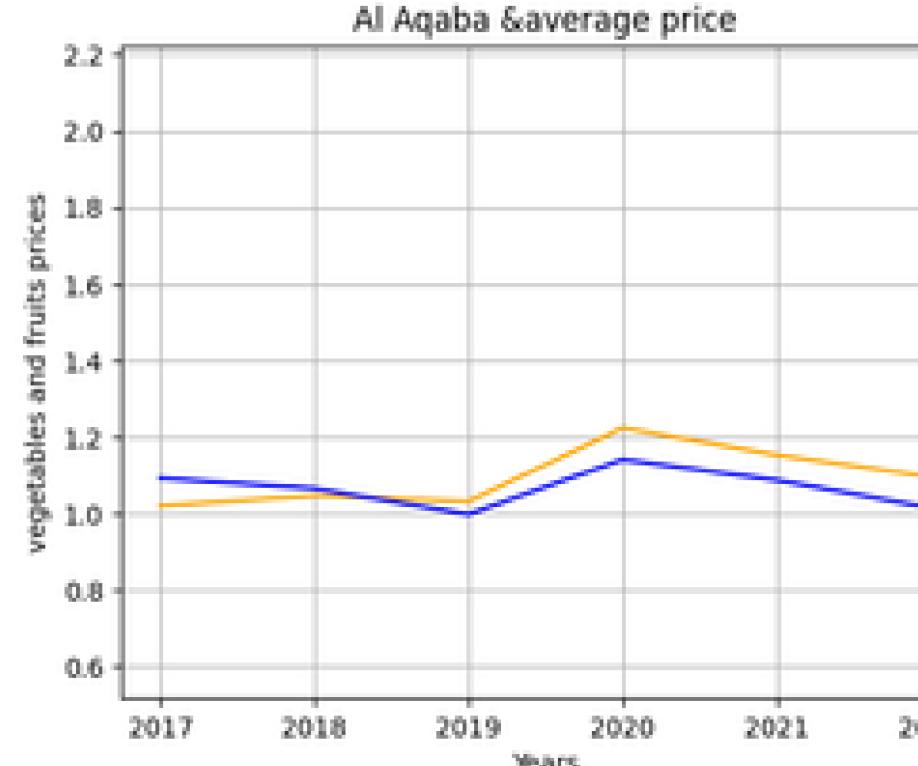
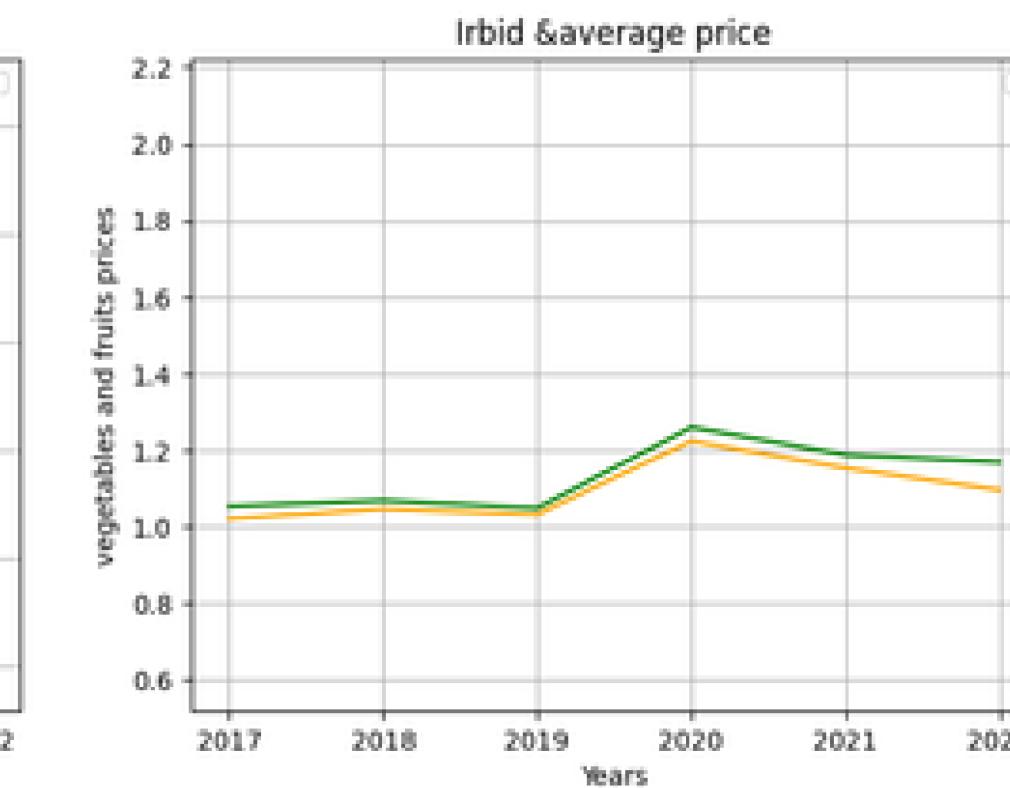
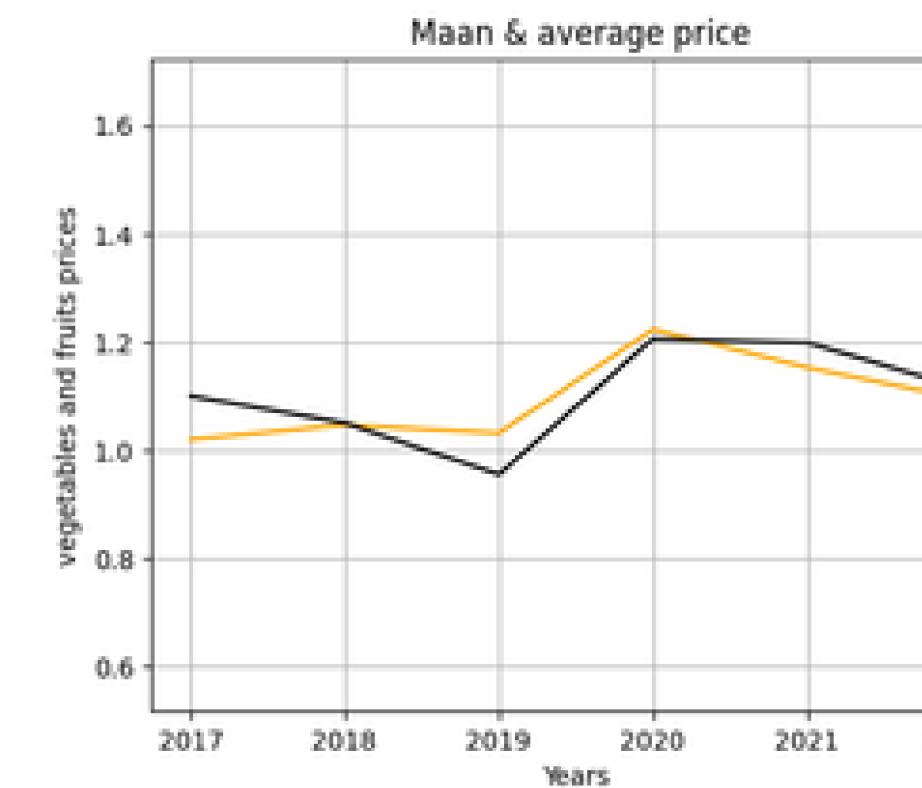
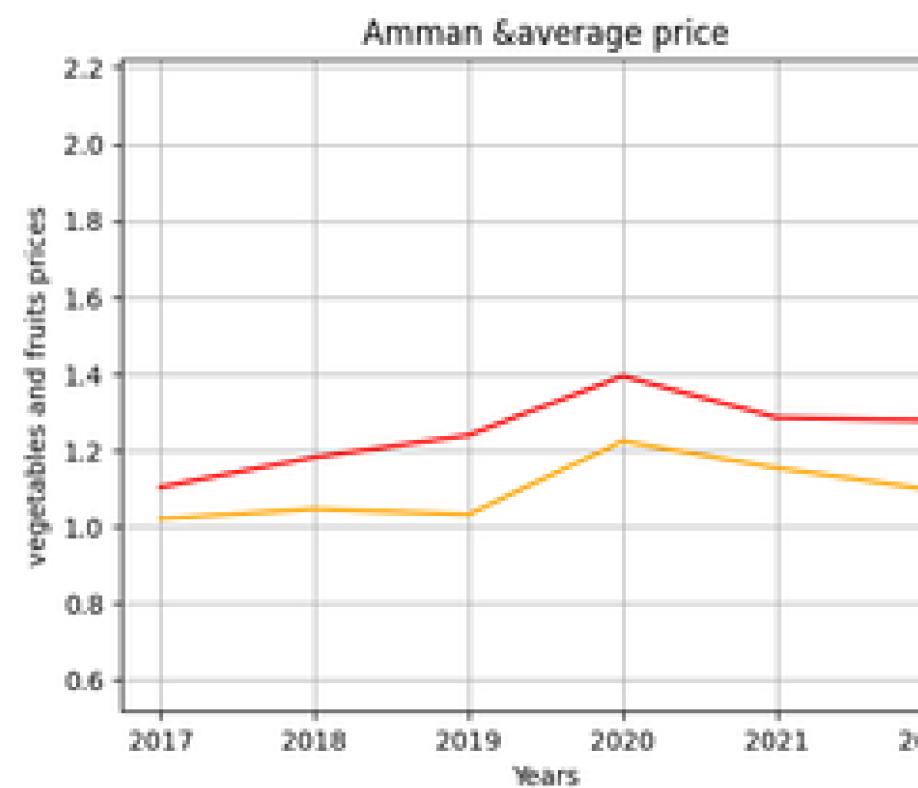


- average price ——————
- Amman ——————
- Maan ——————
- Irbid ——————
- Al Aqaba ——————
- Al Karak ——————

price changes by location



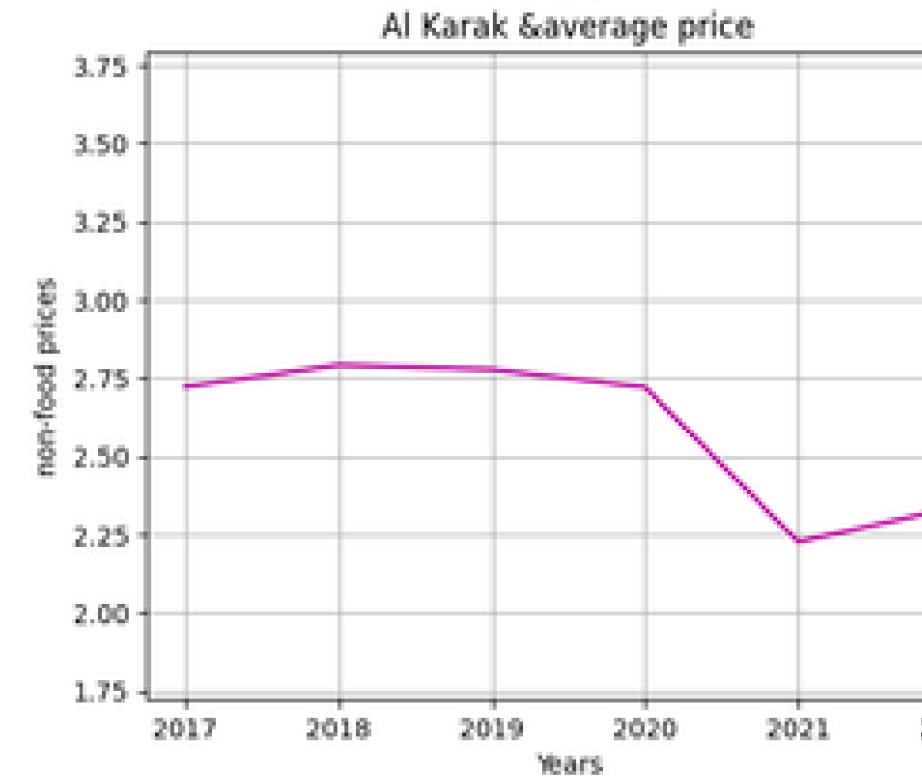
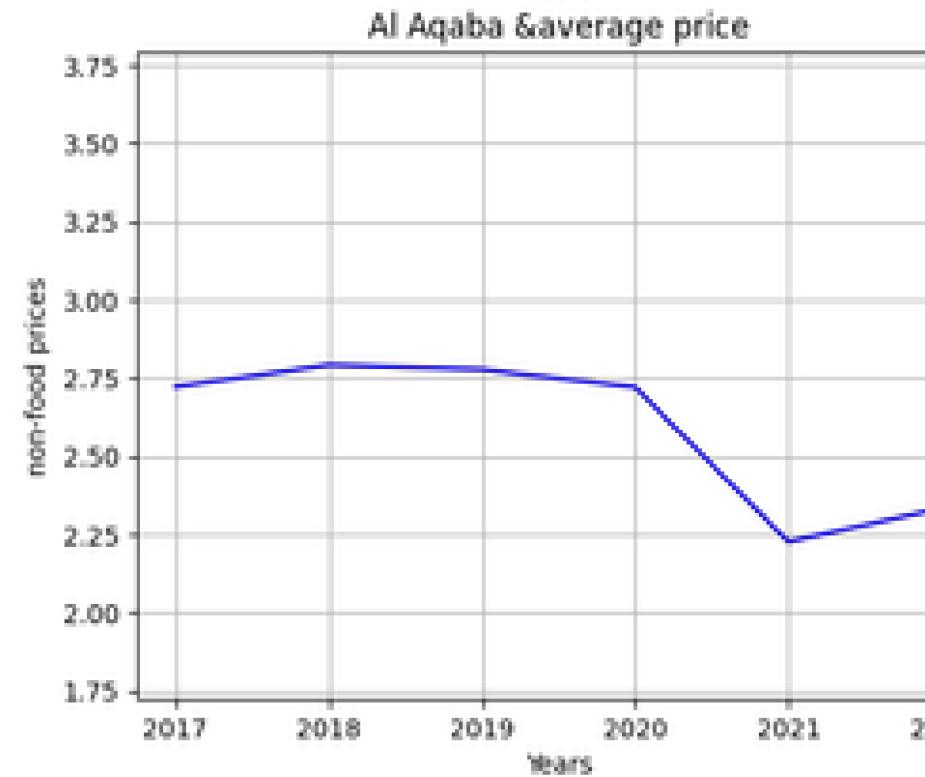
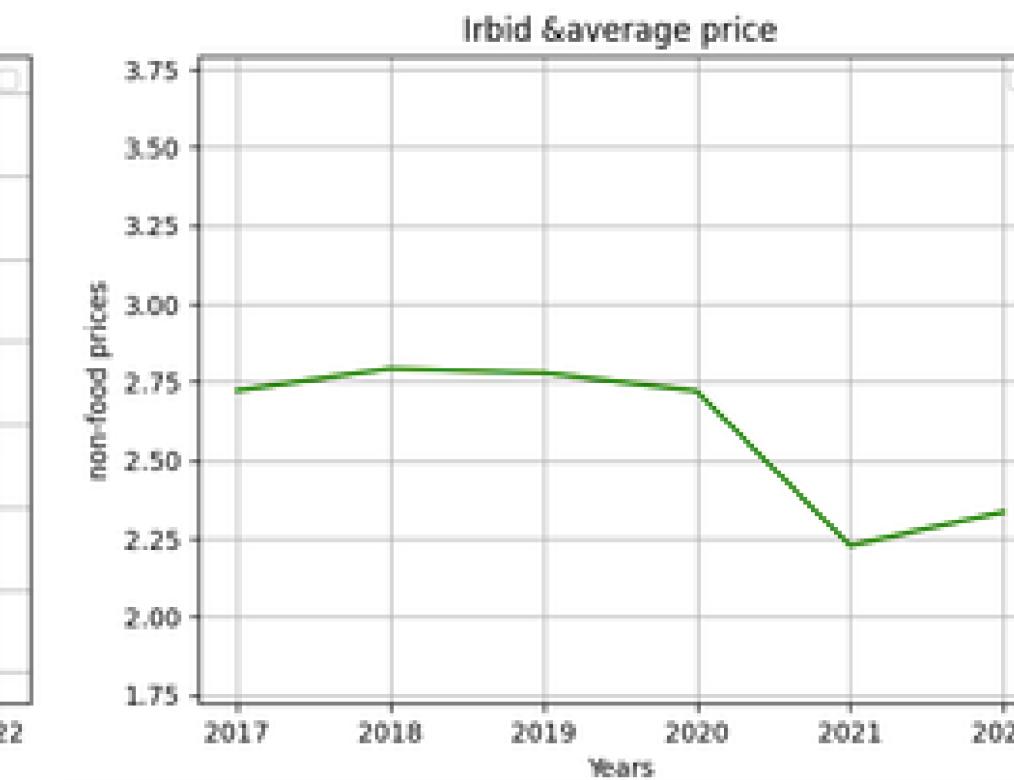
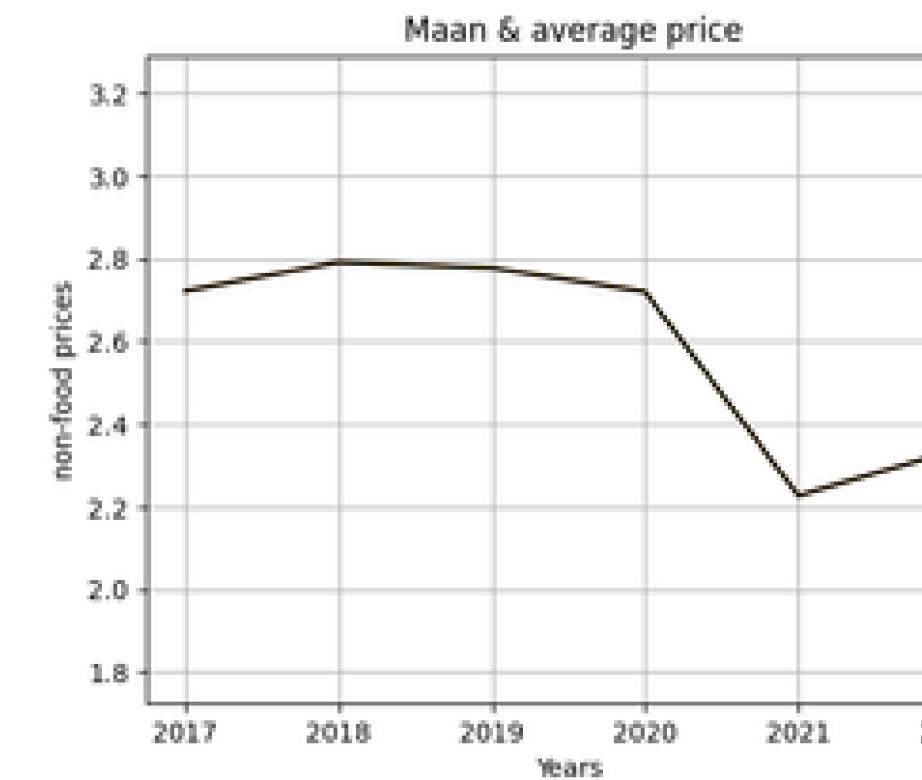
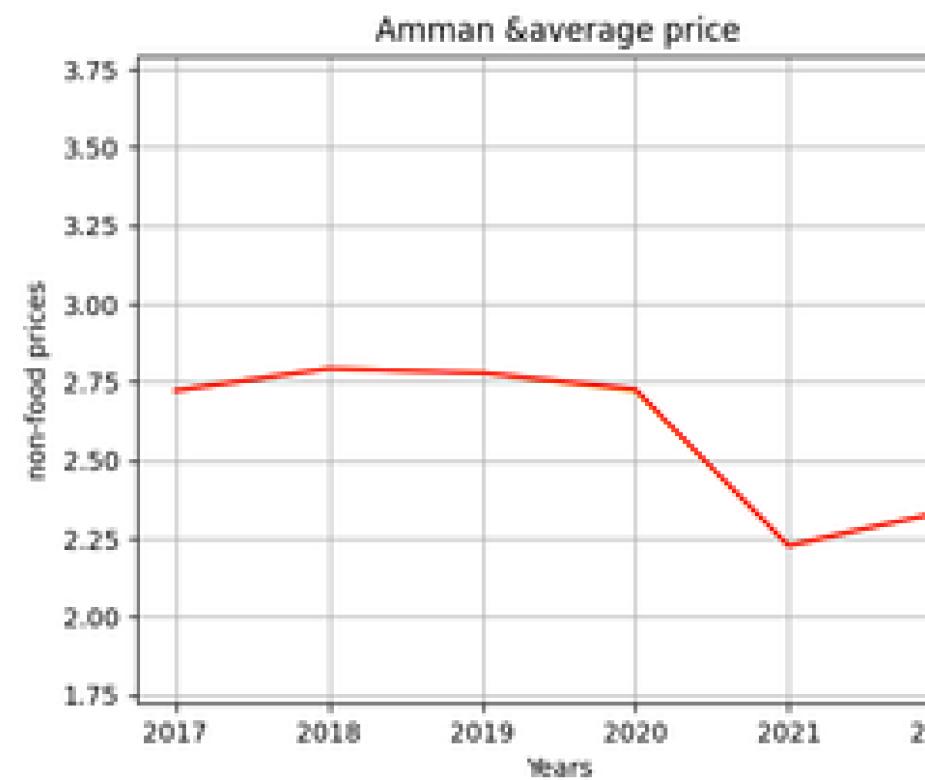
Comparison of price change between Market and the average price(vegetables and fruits)



price changes by location



Comparison of price change between Market and the average price(non-food)



- average price
- Amman
- Maan
- Irbid
- Al Aqaba
- Al Karak

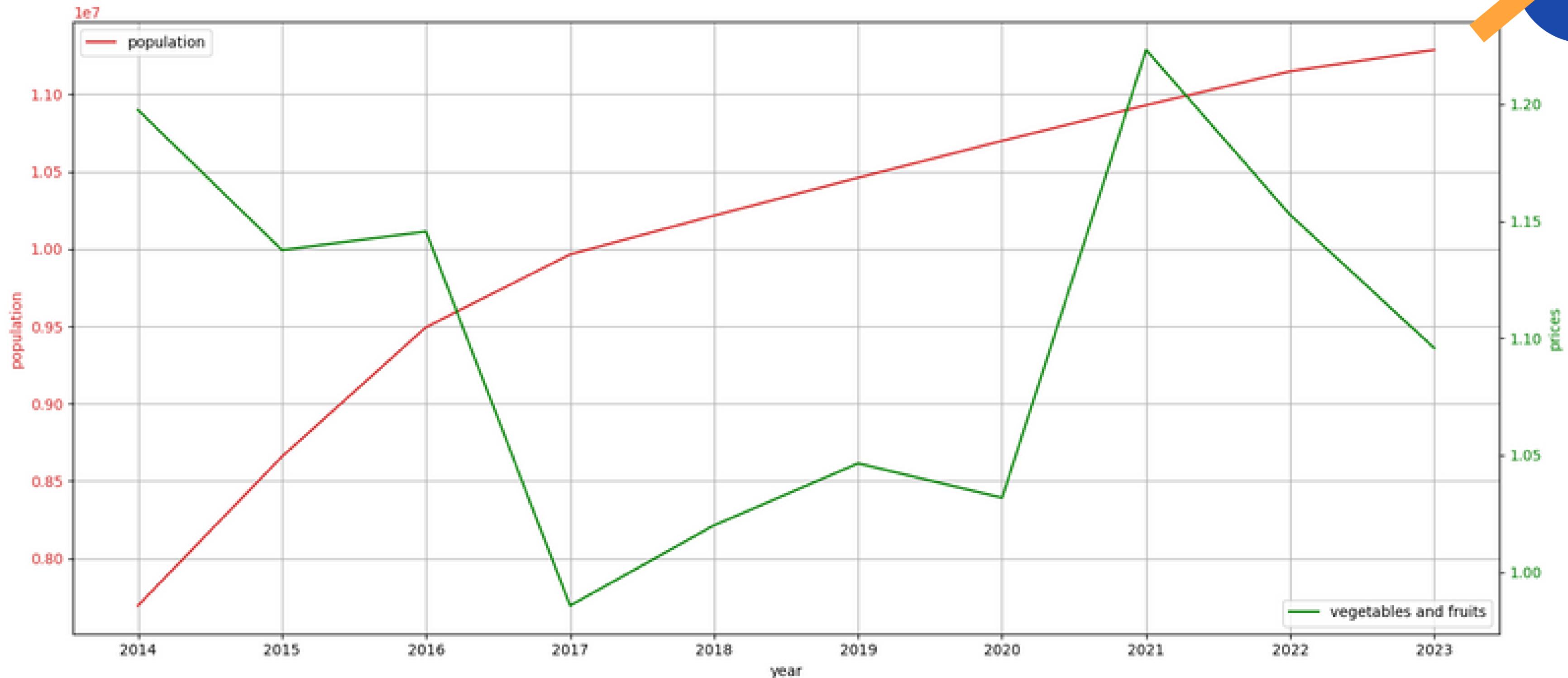
On Conclusion

- Fuel prices do not change between governate
- Aqaba has the highest overall prices
- Amman has the highest prices for vegetables and fruits

price changes with Population



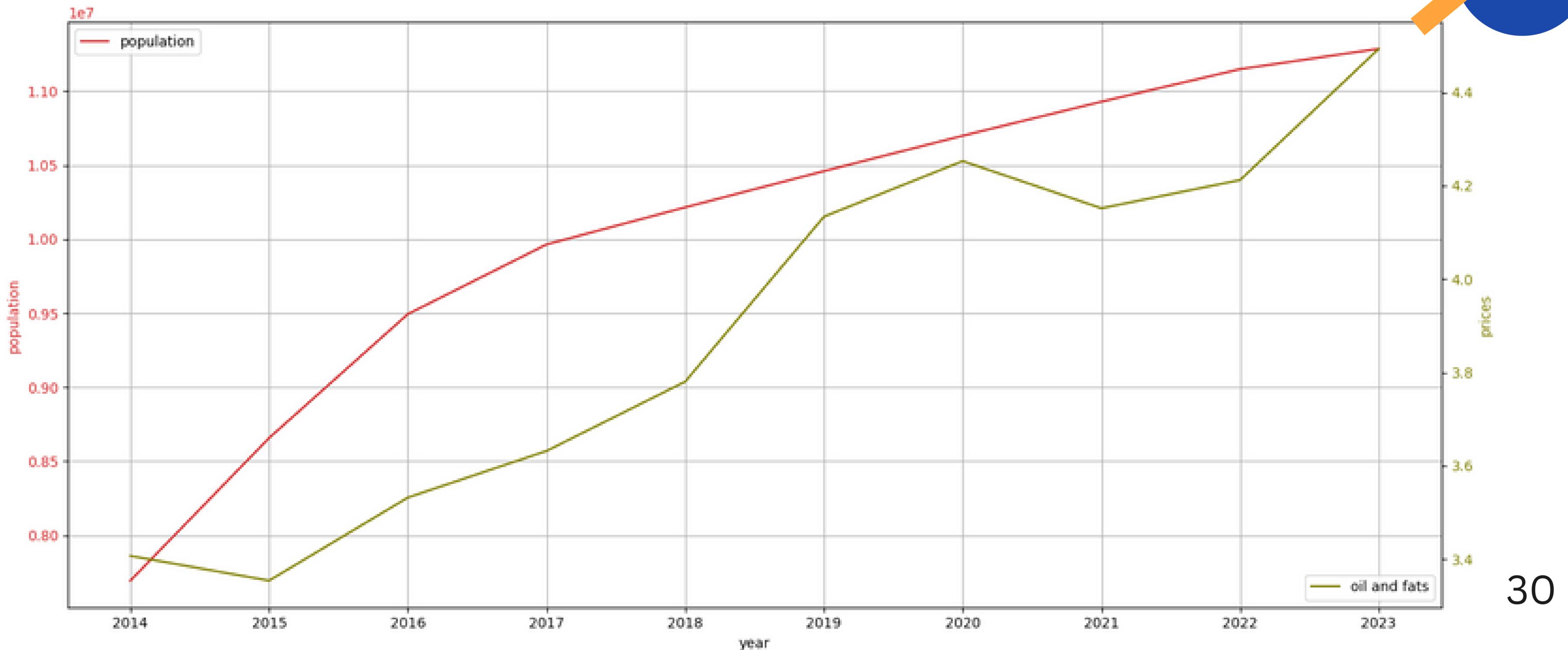
The change of vegetables and fruits prices vs population



price changes with Population



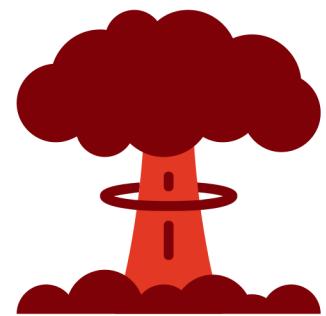
The change of oil and fats prices vs population



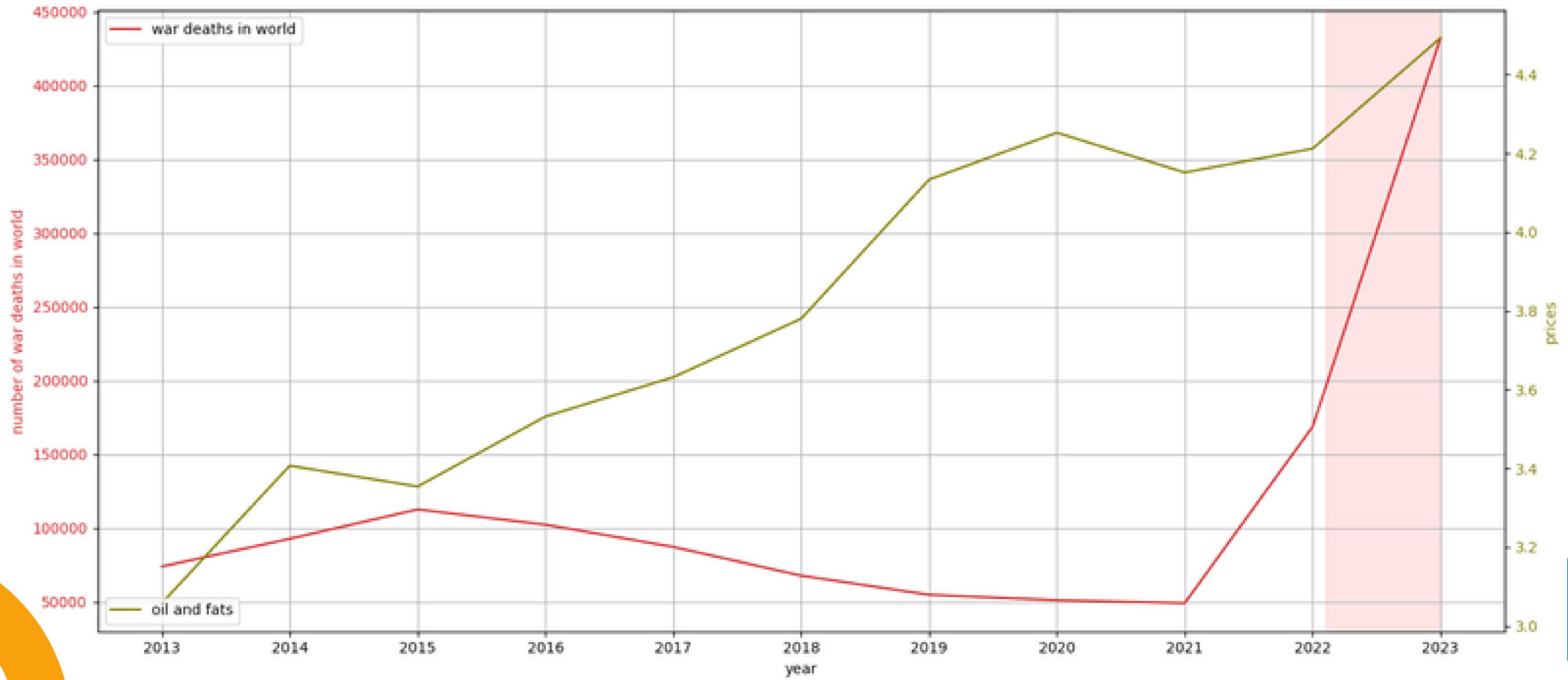
On Conclusion

- the increase in population affects the prices of some categories

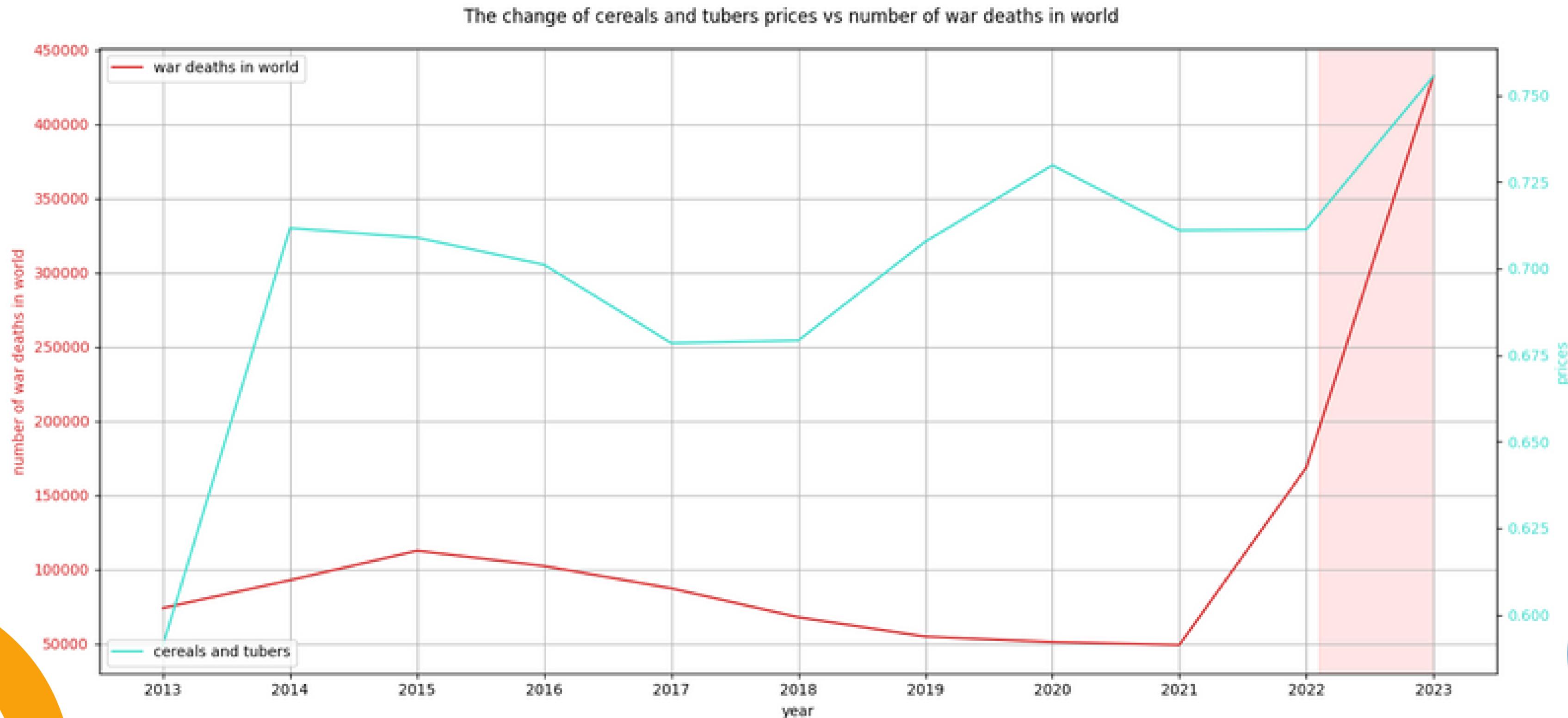
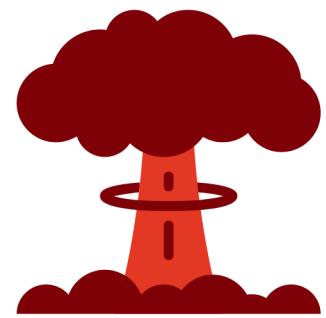
price changes with wars



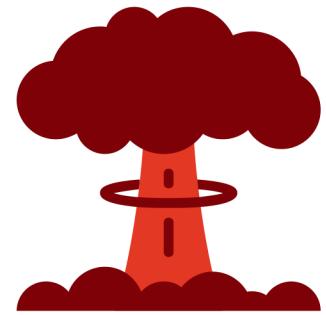
The change of oil and fats prices vs number of war deaths in world



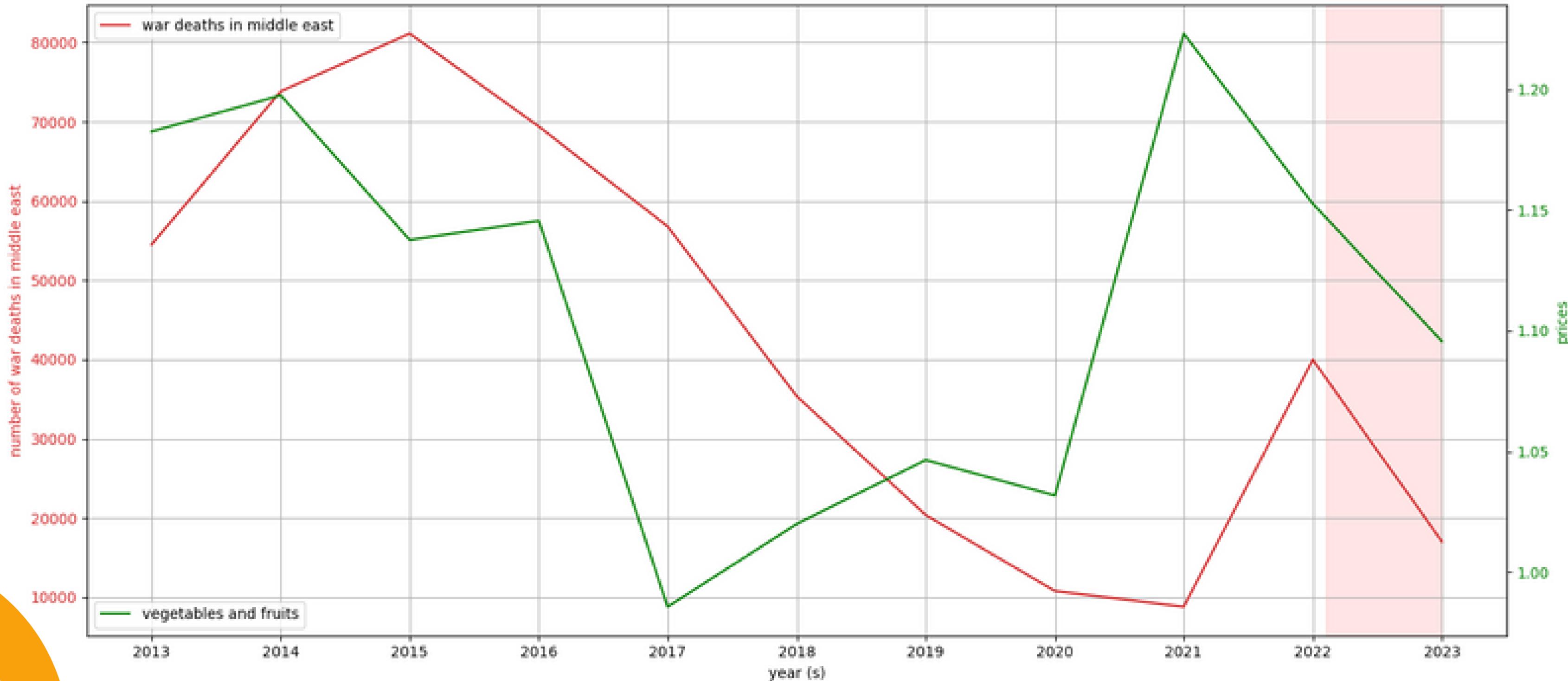
price changes with wars



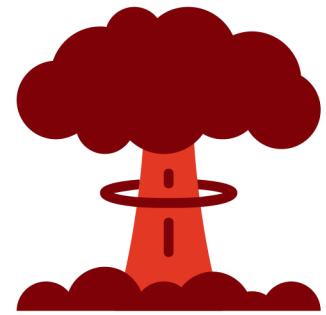
price changes with wars



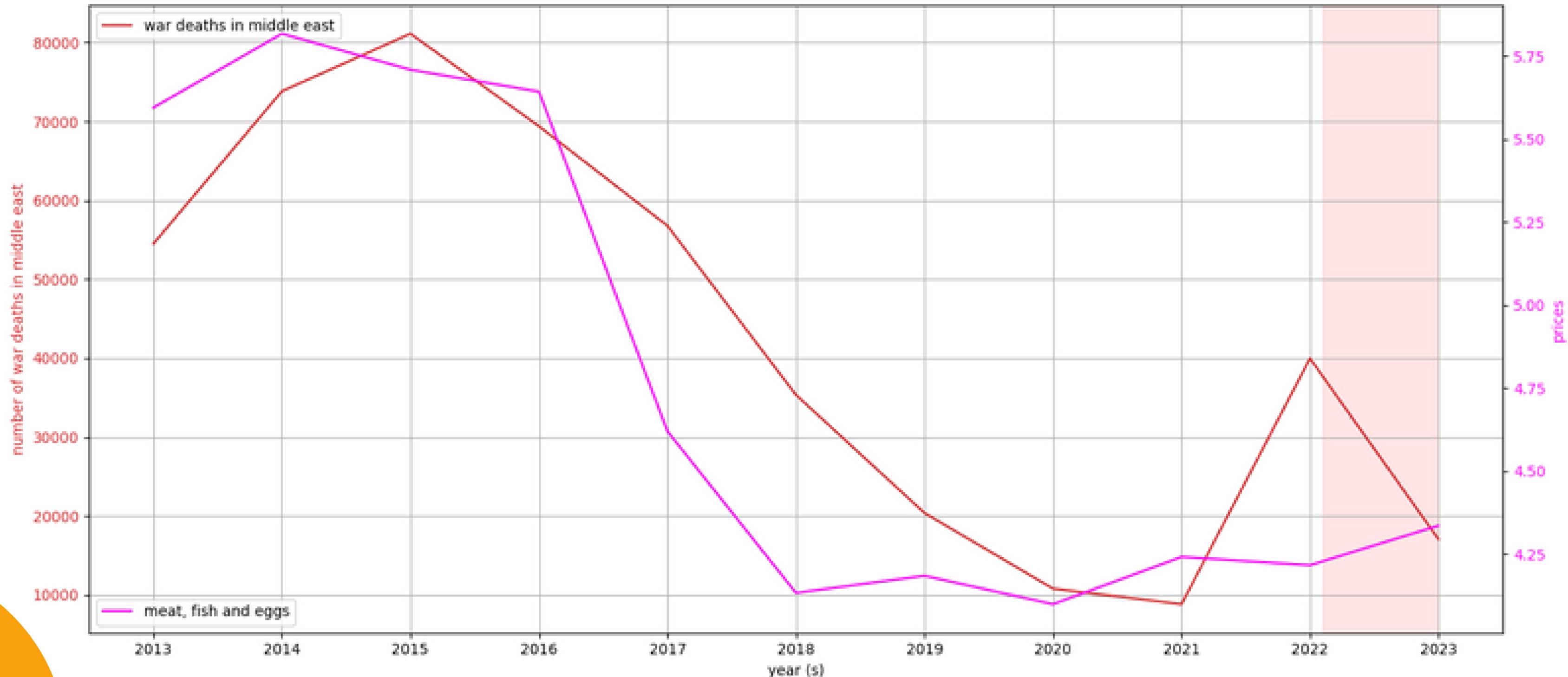
The change of vegetables and fruits prices vs number of war deaths in middle east



price changes with wars



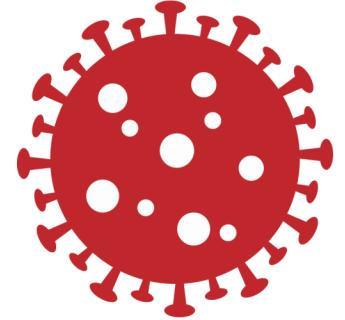
The change of meat, fish and eggs prices vs number of war deaths in middle east



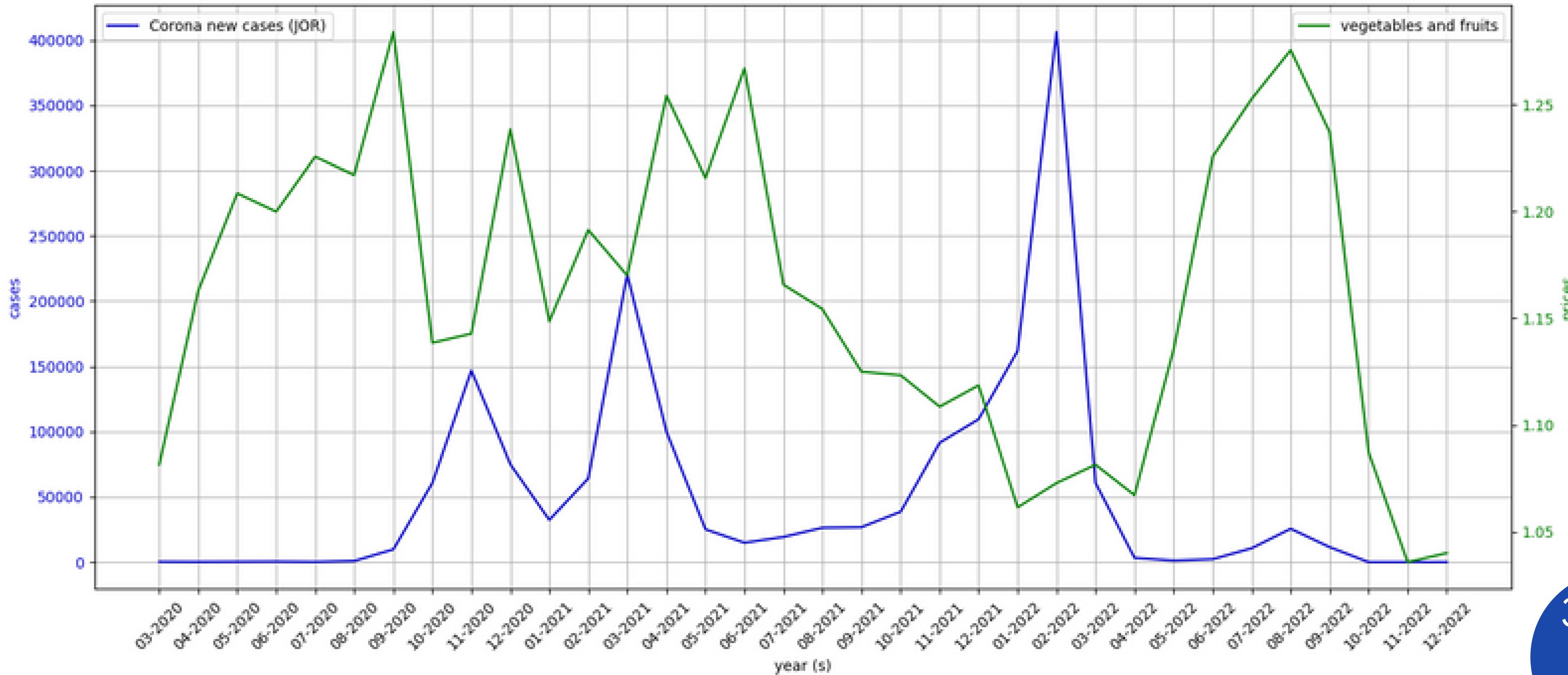
On Conclusion

- Middle East wars affect the price of meat, fish and eggs, vegetables, and fruits.
- World wars affect the price of oil and fats, cereals, and tuber.

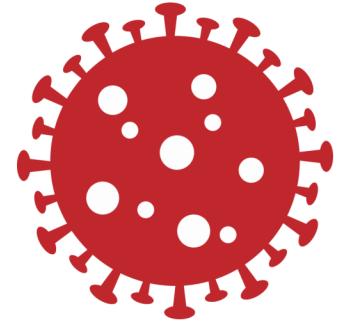
price changes with Covid-19



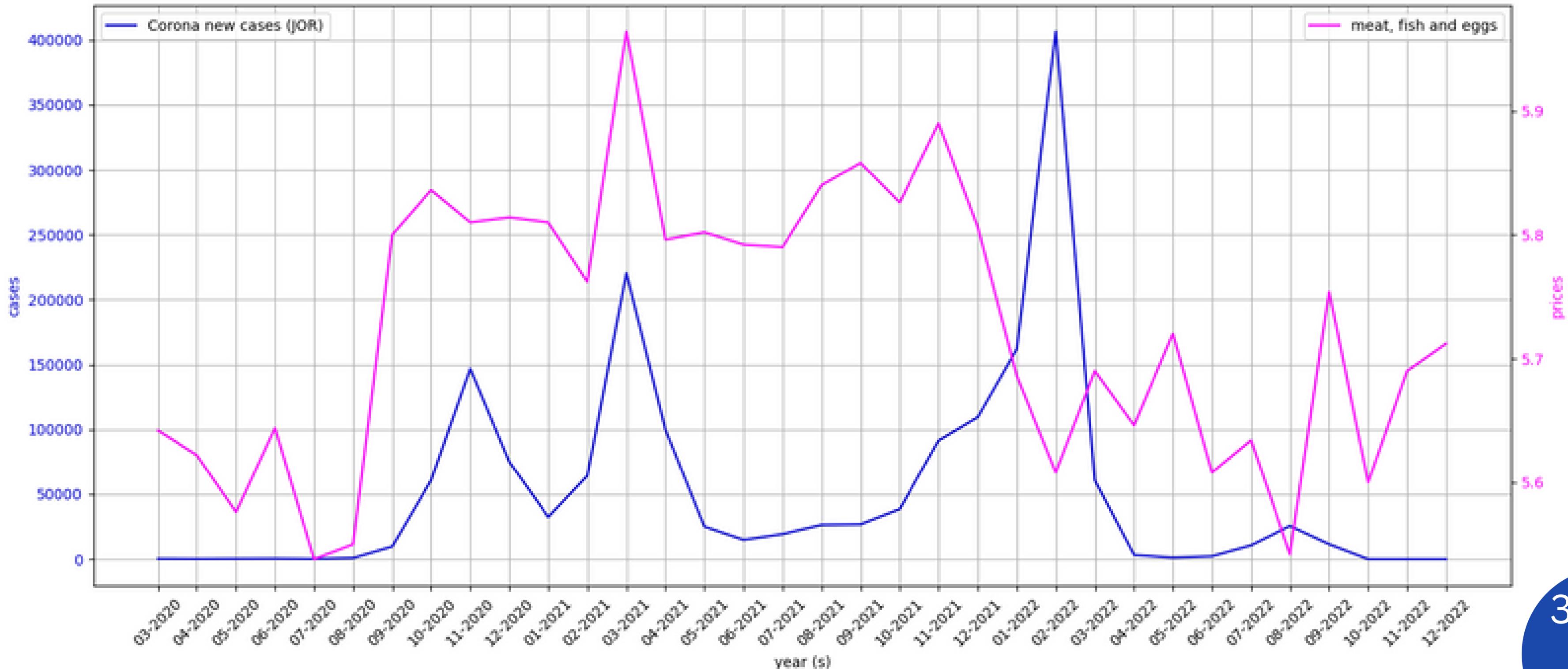
comparison between corona cases (JOR) & vegetables and fruits price



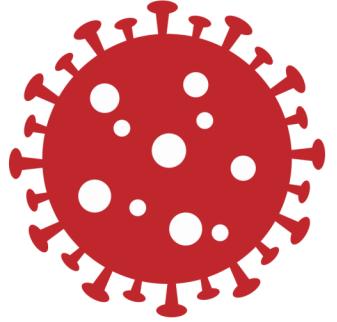
price changes with Covid-19



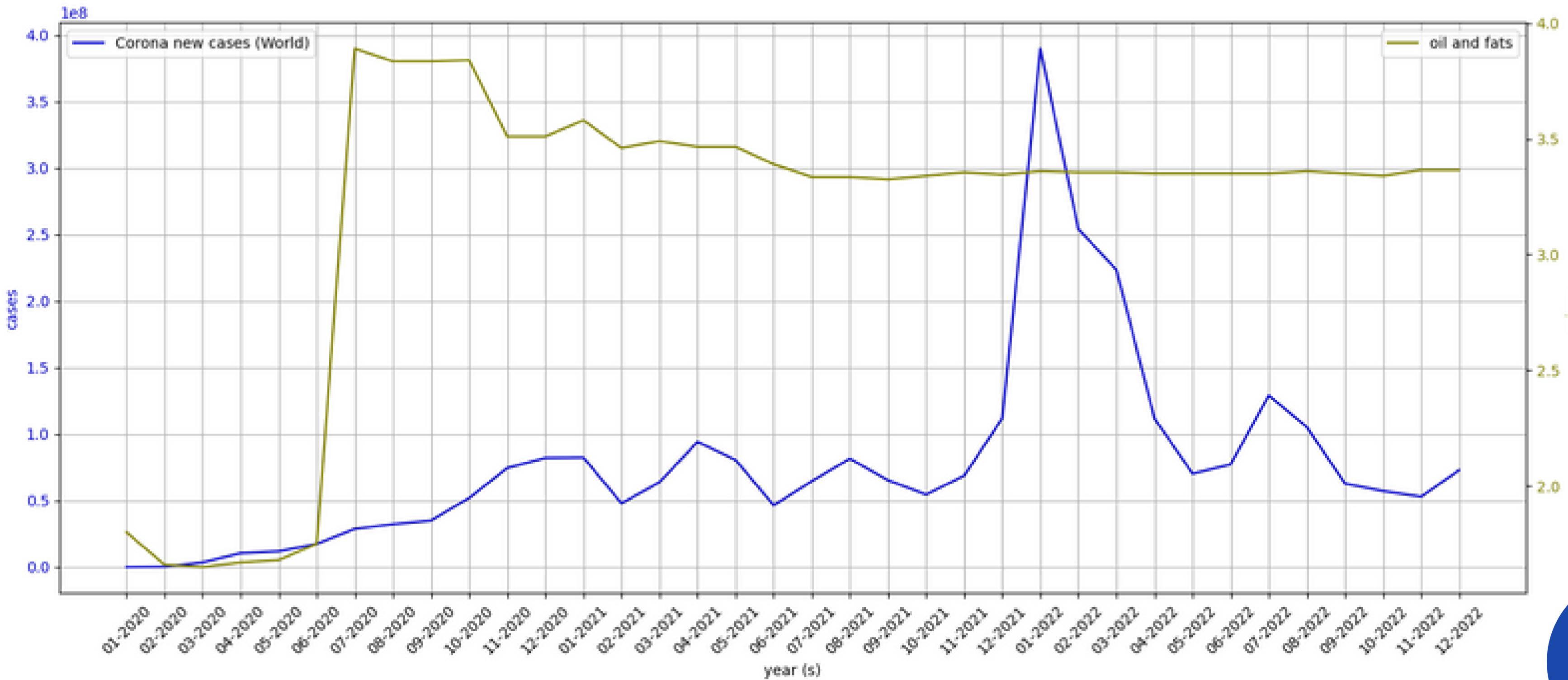
comparison between corona cases (JOR) & meat, fish and eggs price



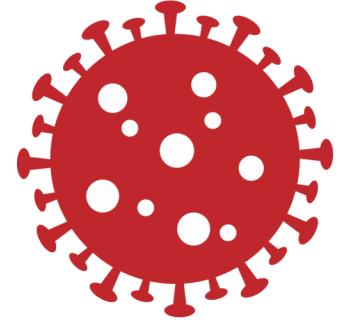
price changes with Covid-19



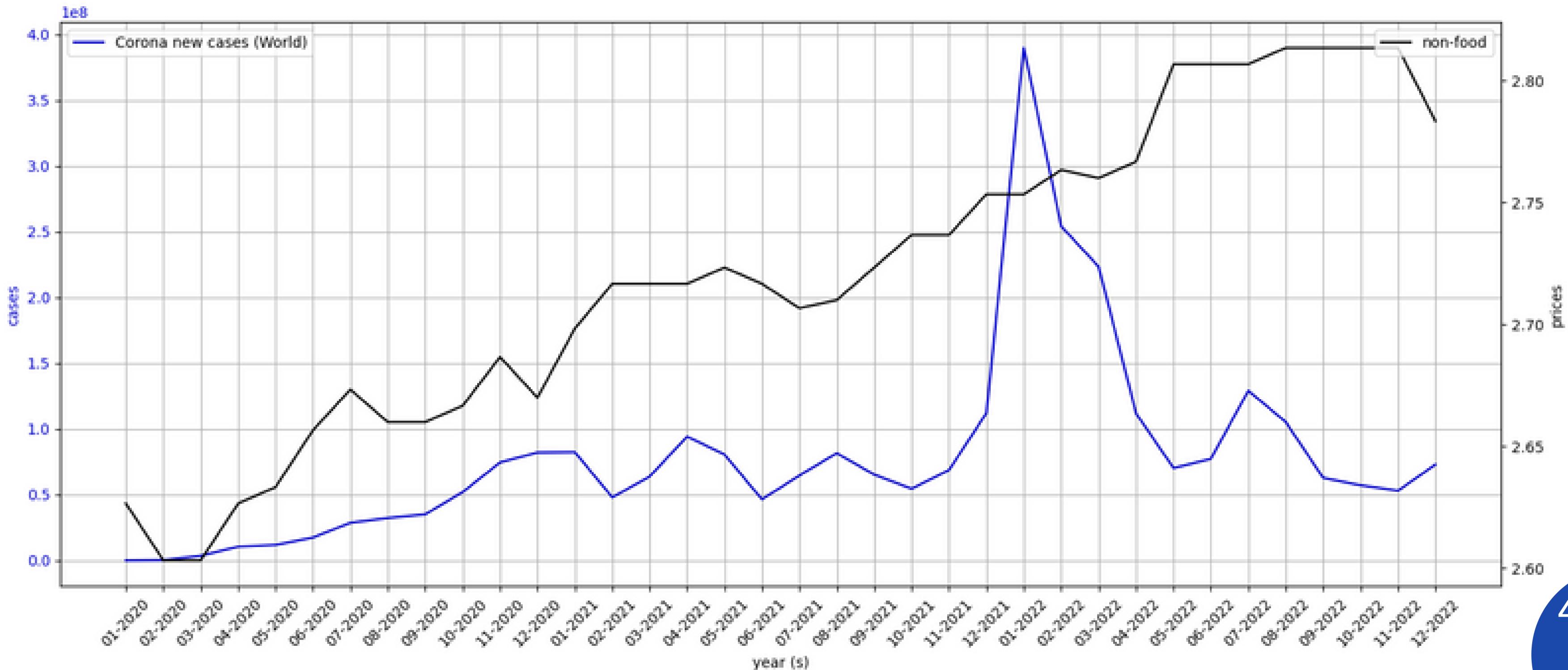
comparison between corona cases (World) & oil and fats price



price changes with Covid-19



comparison between corona cases (World) & non-food price



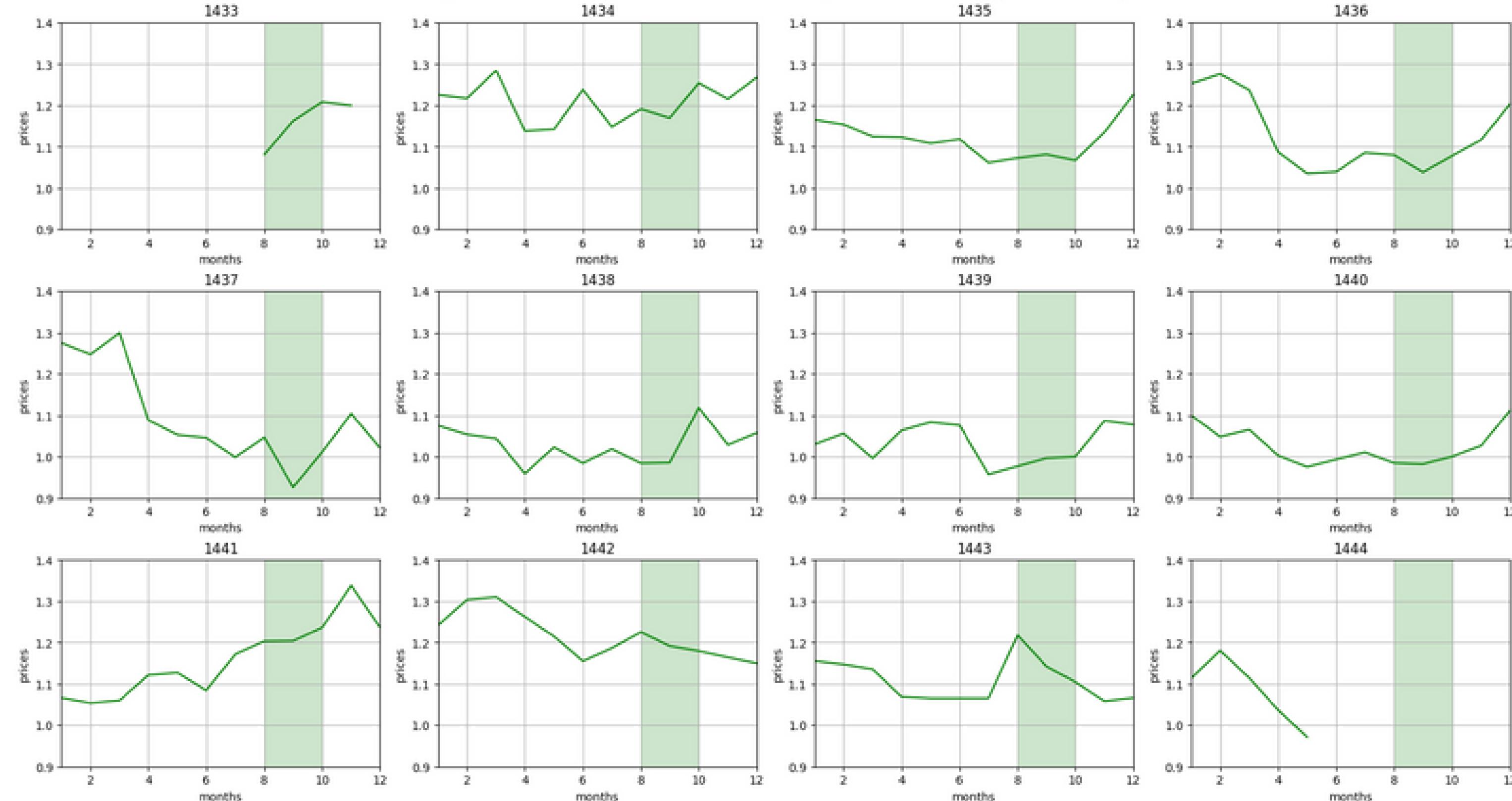
On Conclusion

- coronavirus waves affect prices in different ways

price changes with Ramadan



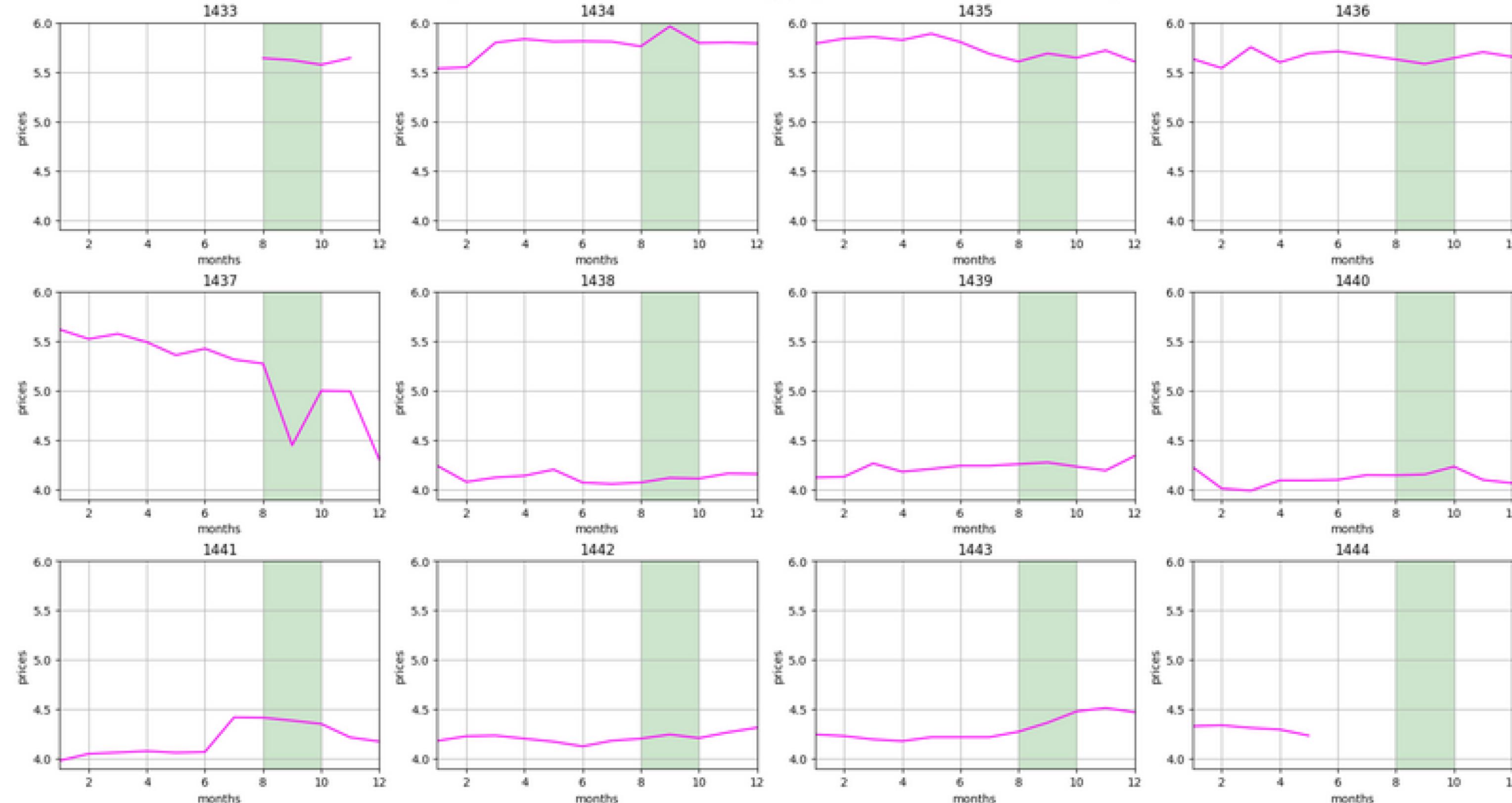
comparison of vegetables and fruits prices over 12 years in Hijri

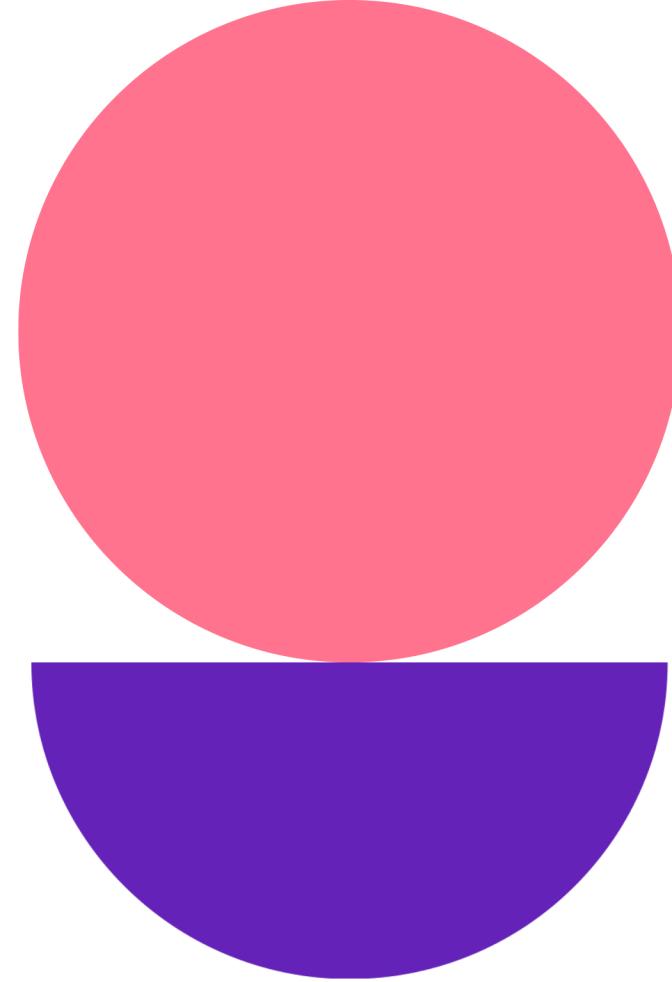


price changes with Ramadan



comparison of meat, fish and eggs prices over 12 years in Hijri



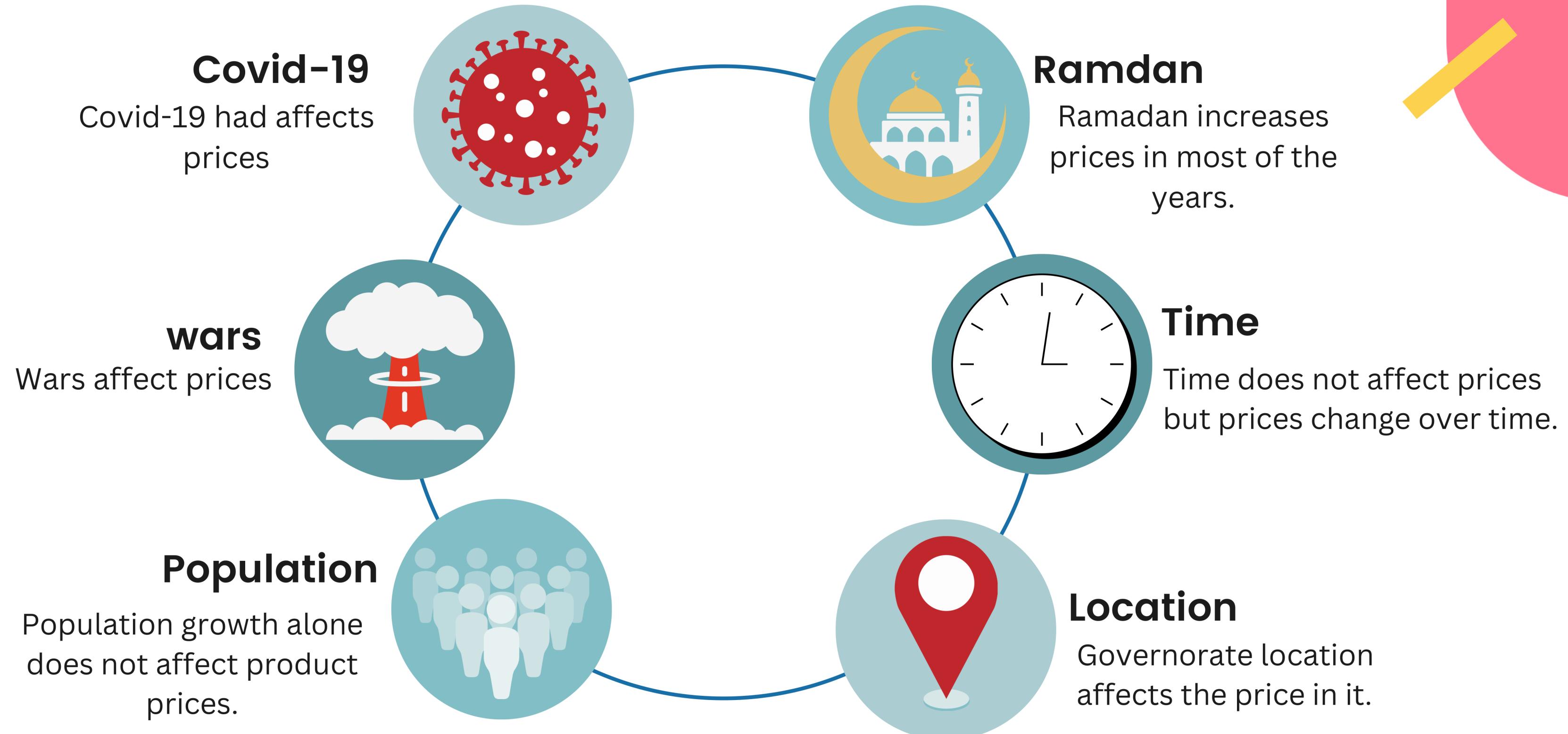


On Conclusion

- Ramadan increases prices in most of the years

Hypothesis summary

Hypothesis summary



Features Extraction



Features Extraction



admin2
admin1
latitude
longitude
usdprice

Drop

date
market
category
commodity
unit

Join

Jordan Population data set
population annual_change

Join

war deaths data set
middle east world

Join

Corona cases data set
Corona cases Corona deaths

Hijri date
price_change

New columns

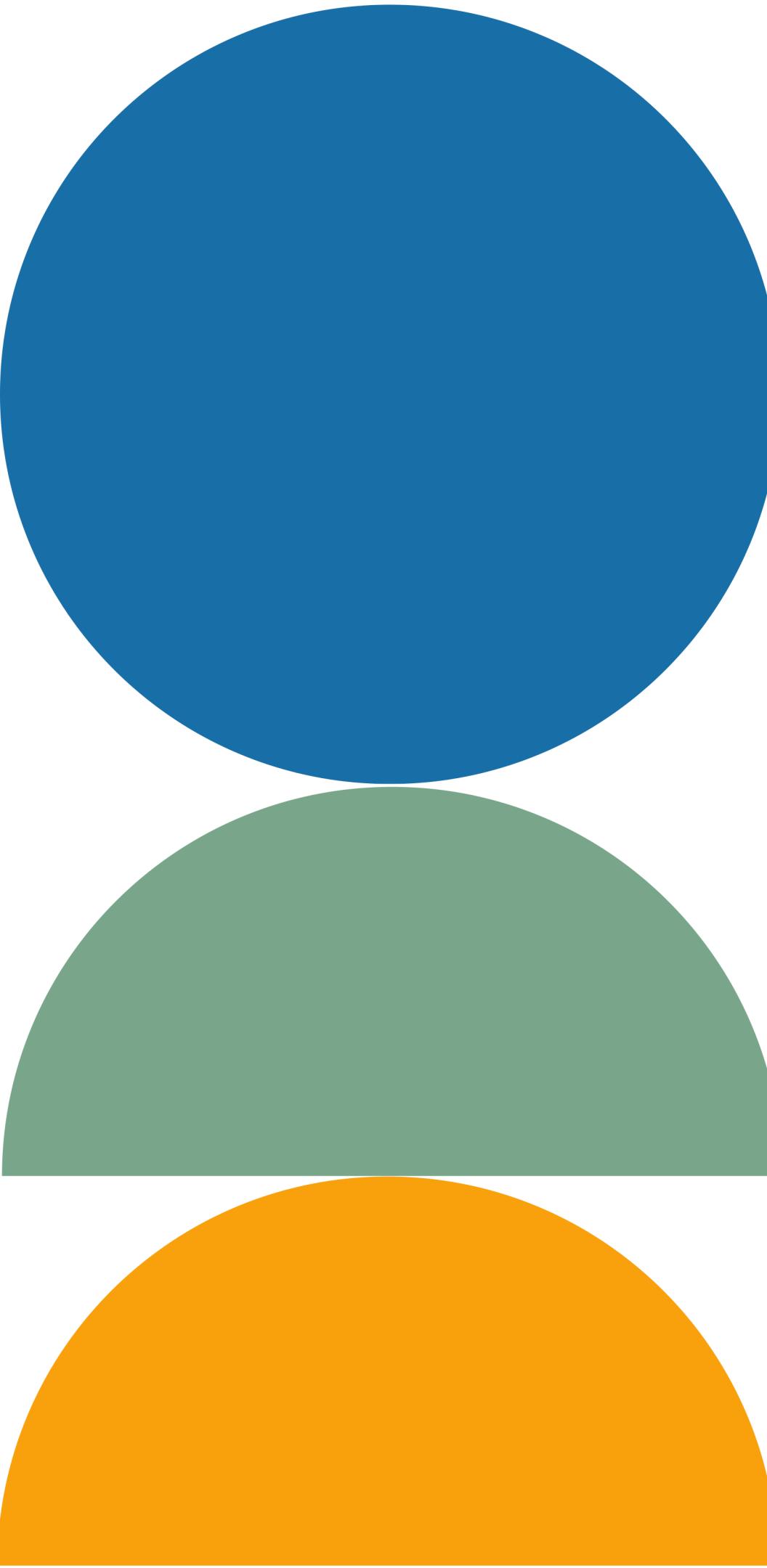
Create

Future work

Future work

planning on using this different feature for a machine learning model that can predict prices with good accuracy and a low margin of error





**THANK YOU
ANY QUESTIONS?**

