Consumer Price Index (CPI) Jamaica

In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px
```

Data prep

In [2]:
```
file_path = r"C:\Users\nicho\Downloads\DZ-2024-06-17-12-35-28.csv"

data = pd.read_csv(file_path)

# Rename columns for easier manipulation
data.columns = ['Series Title'] + pd.date_range(start='2020-05-01', periods=48, fre

# Reshape the data to a long format
data_long = pd.melt(data, id_vars=['Series Title'], var_name='Date', value_name='CP

# Convert 'Date' to datetime
data_long['Date'] = pd.to_datetime(data_long['Date'])

# Display the first few rows of the cleaned dataset
data_long.head()
```

Out[2]:

	Series Title	Date	CPI
0	ALL DIVISIONS - ALL ITEMS	2020-05-01	0.1
1	FOOD AND NON-ALCOHOLIC BEVERAGES	2020-05-01	1.1
2	FOOD	2020-05-01	1.1
3	Cereals and cereal products (ND)	2020-05-01	0.6
4	Meat and other parts of slaughtered land...	2020-05-01	0.6

In [14]:
```
# Calculate summary statistics
summary_stats = data_long.groupby('Series Title').describe()
summary_demo = data_long.head(20).groupby('Series Title').describe()

summary_demo
```

Out[14]:

	Date								
	count	mean	min	25%	50%	75%	max	std	count	mean
Series Title										
Tubers, Plantains and cooking Banana (Starchy Foods)	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	2.9
Vegetables	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	2.1
Cereals and cereal products (ND)	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	0.6
Coffee, Tea, Cocoa	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	0.8
Fish and Seafood (ND)	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	0.9
Fruit and vegetable juices (ND)	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	0.8
Fruits and nuts (ND)	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	1.8
Meat and other parts of slaughtered land animals (ND)	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	0.6
Milk, other dairy products and eggs (ND)	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	0.6
Oils and Fats (ND)	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	0.8
Ready-made food and other food products n.e.c. (ND)	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	-1.1
Sugar, confectionery and desserts (ND)	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	1.2
Vegetables, tubers, plantains, cooking	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	2.3

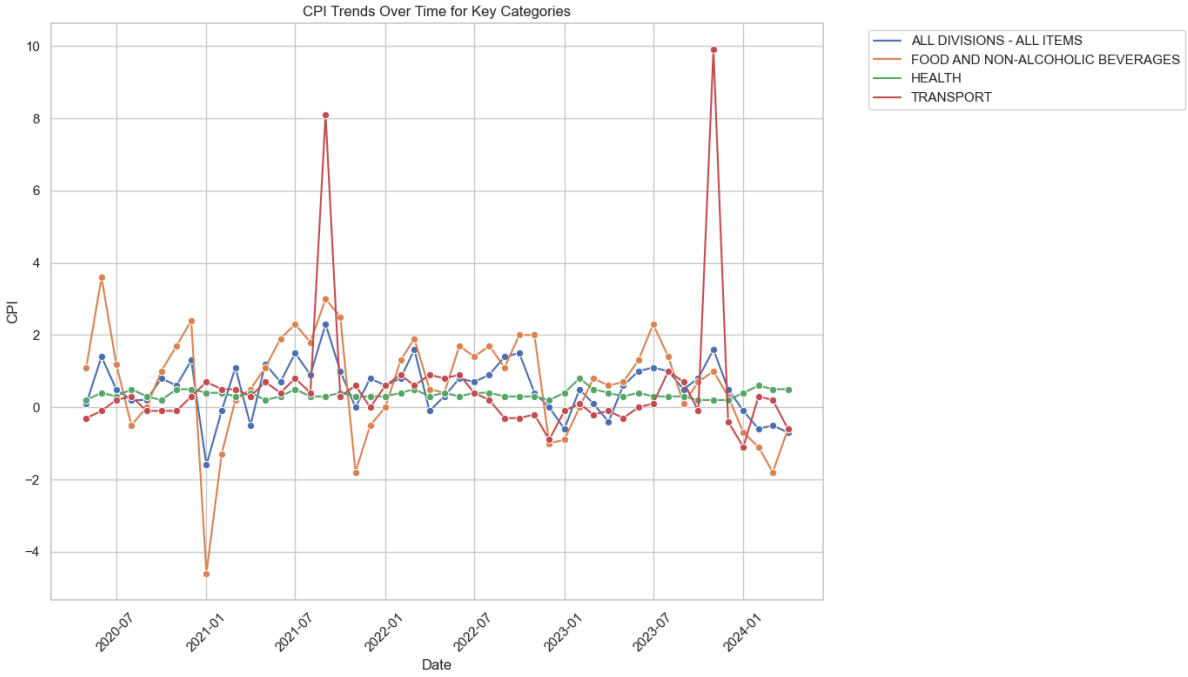
								Date		
	count	mean	min	25%	50%	75%	max	std	count	mean
Series Title										
bananas and pulses (ND)										
Water, Soft drinks and Other non-alcholic beverages	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	0.5
FOOD	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	1.1
NON-ALCOHOLIC BEVERAGES	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	0.8
ALCOHOLIC BEVERAGES TOBACCO AND NARCOTICS	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	0.6
ALL DIVISIONS - ALL ITEMS	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	0.1
CLOTHING AND FOOTWEAR	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	0.4
FOOD AND NON-ALCOHOLIC BEVERAGES	1	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	2020-05-01 00:00:00	NaN	1.0	1.1

Main Categories

In [9]:

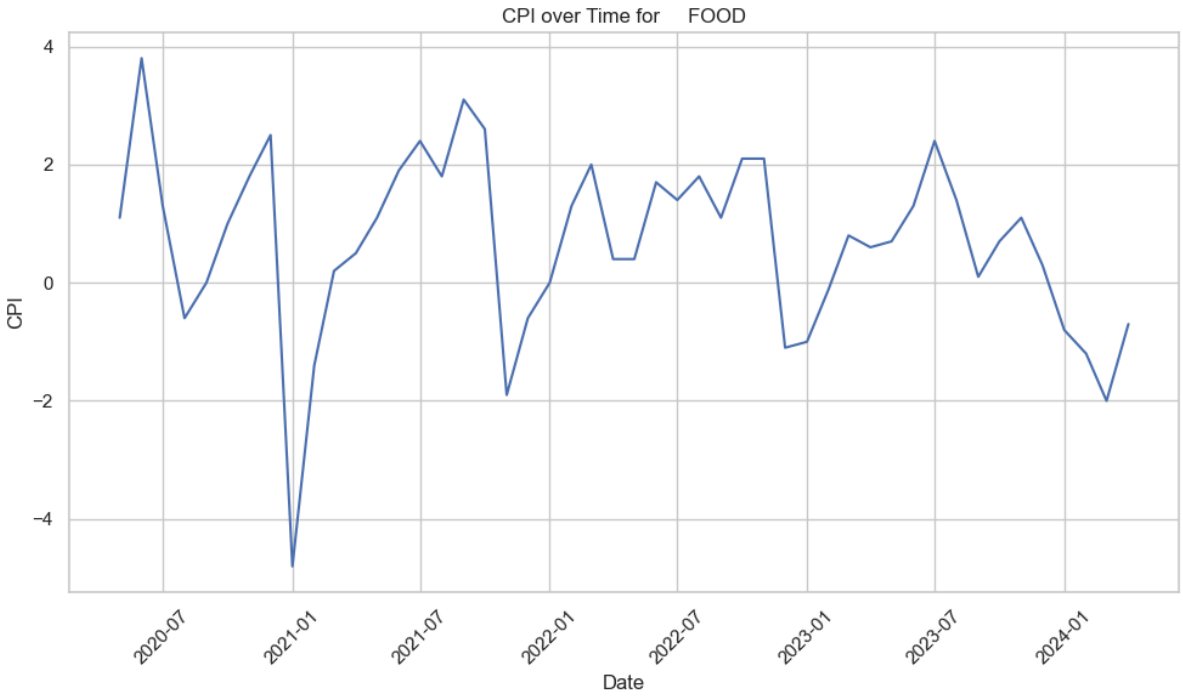
```
key_categories = [
    'ALL DIVISIONS - ALL ITEMS',
    'FOOD AND NON-ALCOHOLIC BEVERAGES',
    'HOUSING, WATER, ELECTRICITY, GAS AND OTHER FUELS',
    'TRANSPORT',
    'HEALTH'
]

# Filter data for key categories
data_key_categories = data_long[data_long['Series Title'].isin(key_categories)]

# Plot CPI trends over time for key categories
plt.figure(figsize=(14, 8))
sns.lineplot(data=data_key_categories, x='Date', y='CPI', hue='Series Title', marke

# Customize the plot
plt.title('CPI Trends Over Time for Key Categories')
plt.legend(bbox_to_anchor=(1.05, 1), loc='upper left')
plt.xticks(rotation=45)
plt.tight_layout()
```

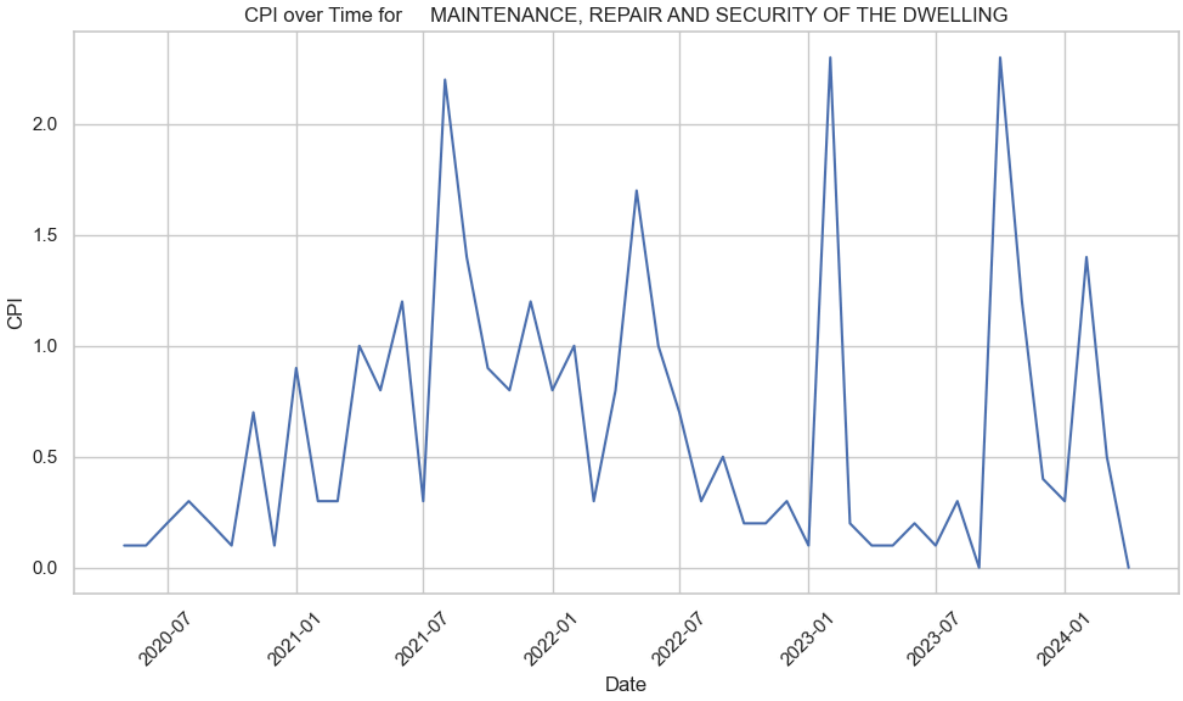
```
# Show the plot
plt.show()
```

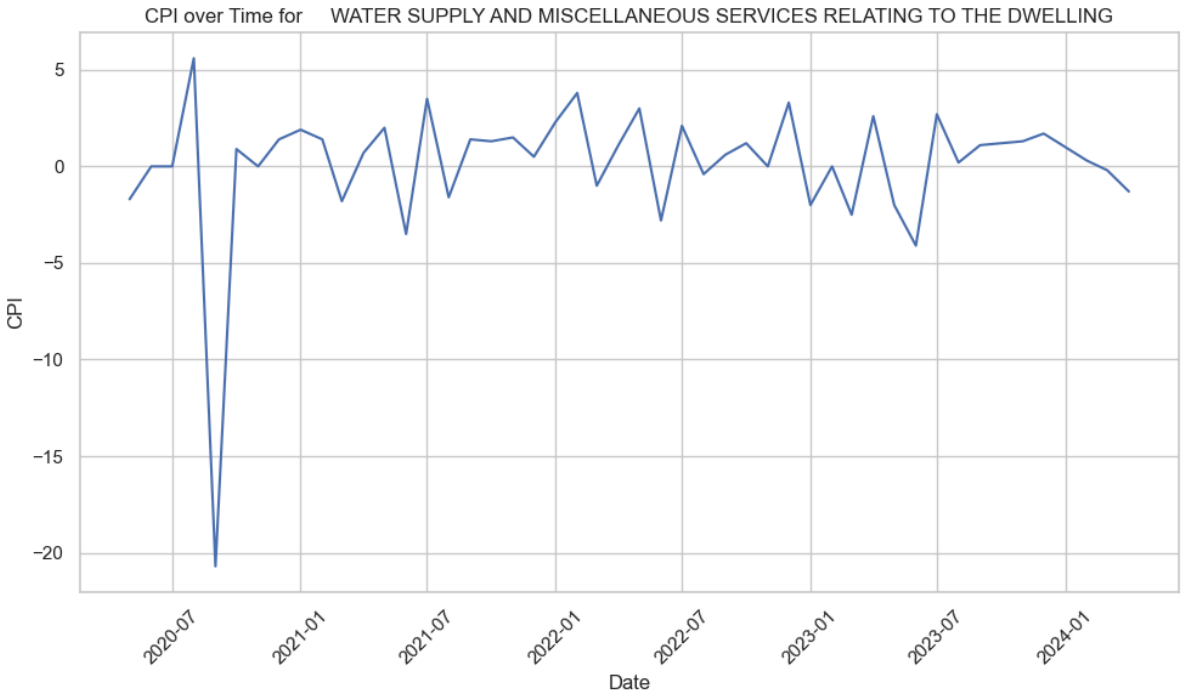


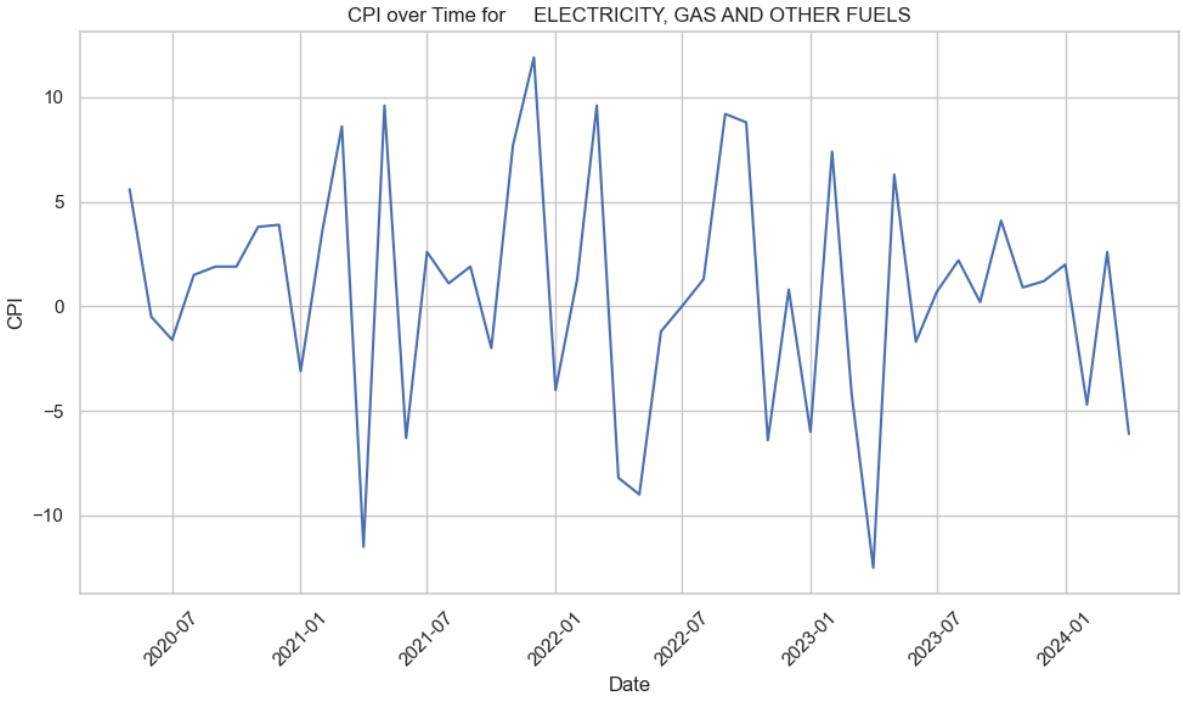
In [8]:
```
other_categories_data['Date'] = pd.to_datetime(other_categories_data['Date'])
other_categories_data.sort_values('Date', inplace=True)

# Plot each category separately
for category in other_categories_data['Series Title'].unique():
    category_data = other_categories_data[other_categories_data['Series Title'] ==

    plt.figure(figsize=(10, 6))
    sns.lineplot(data=category_data, x='Date', y='CPI')
    plt.title(f'CPI over Time for {category}')
    plt.xlabel('Date')
    plt.ylabel('CPI')
    plt.xticks(rotation=45)
    plt.tight_layout()

    # Save the plot
    plt.savefig(f'{category}.png')  # Save each plot with the category name
    plt.show()
```

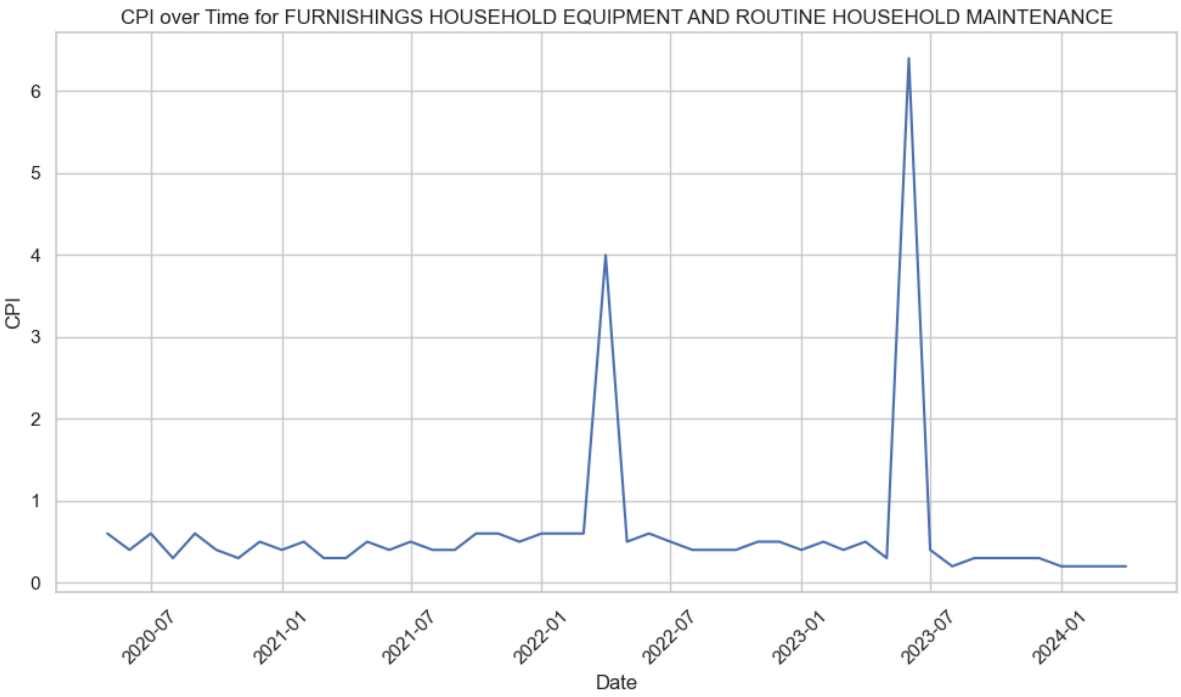
```
C:\Users\nicho\AppData\Local\Temp\ipykernel_2044\1041156087.py:1: SettingWithCopyW
arning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stabl
e/user_guide/indexing.html#returning-a-view-versus-a-copy
  other_categories_data['Date'] = pd.to_datetime(other_categories_data['Date'])
C:\Users\nicho\AppData\Local\Temp\ipykernel_2044\1041156087.py:2: SettingWithCopyW
arning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stabl
e/user_guide/indexing.html#returning-a-view-versus-a-copy
  other_categories_data.sort_values('Date', inplace=True)
```

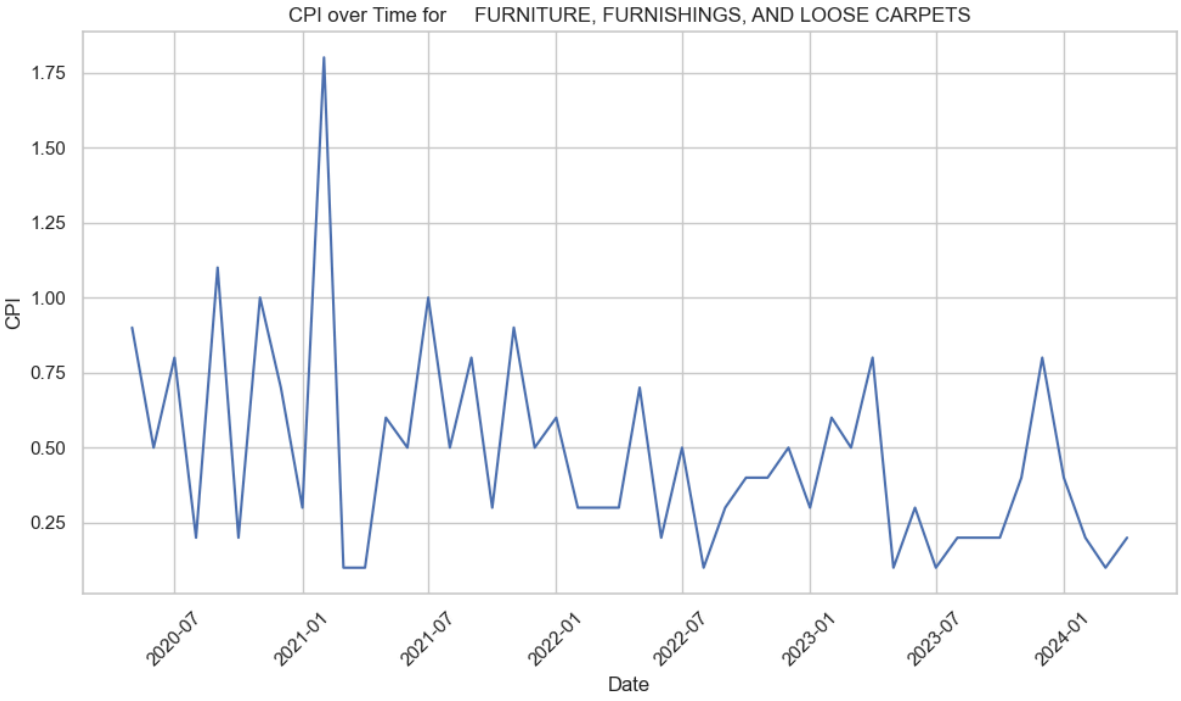

CPI over Time for FOOD
CPI
4
2
0
−2
−4
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

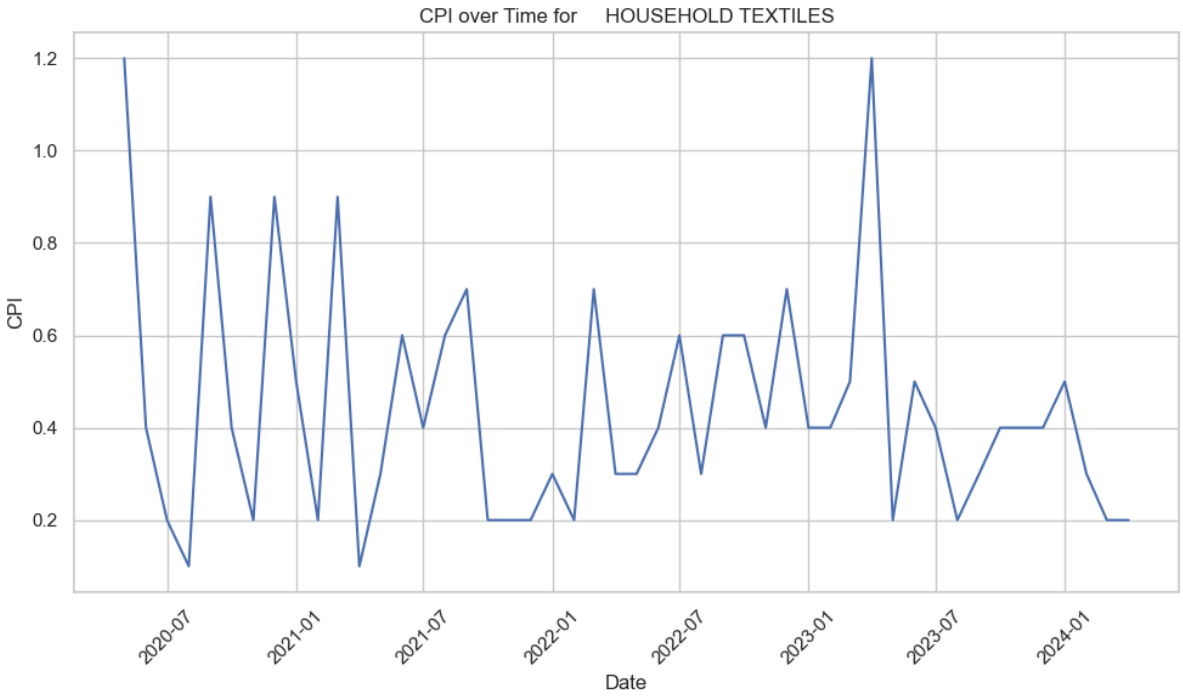

CPI over Time for MAINTENANCE, REPAIR AND SECURITY OF THE DWELLING
CPI
2.0
1.5
1.0
0.5
0.0
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

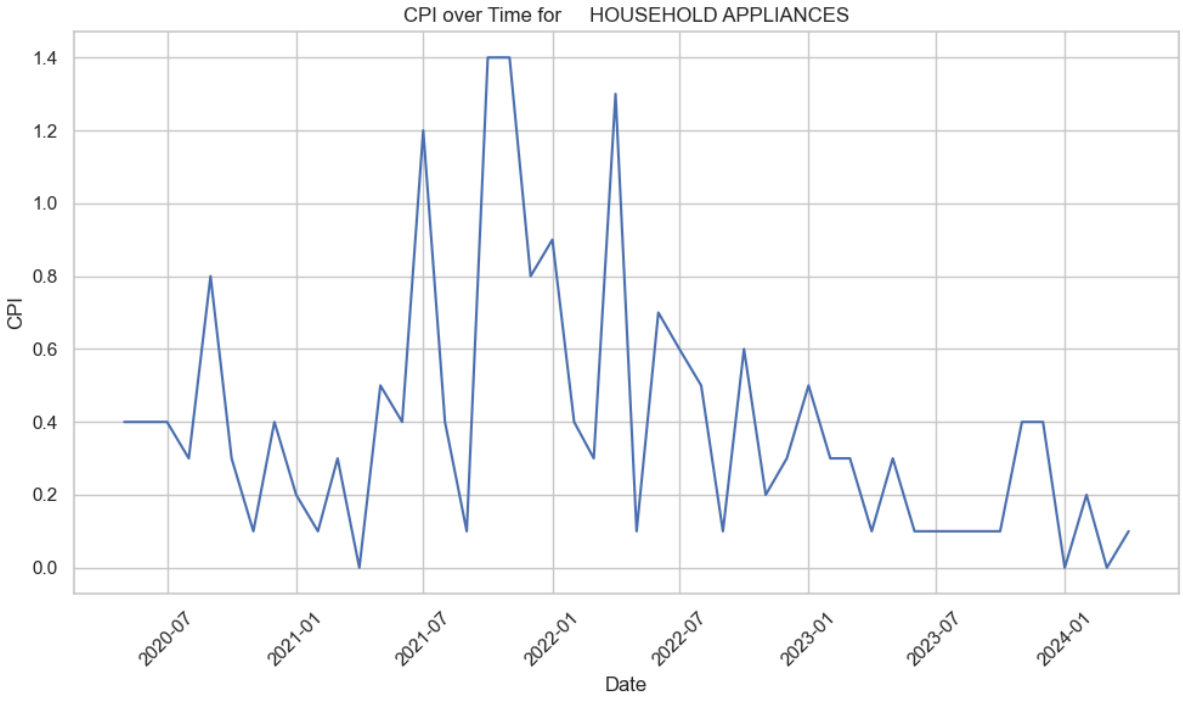

CPI over Time for WATER SUPPLY AND MISCELLANEOUS SERVICES RELATING TO THE DWELLING
CPI
5
0
−5
−10
−15
−20
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

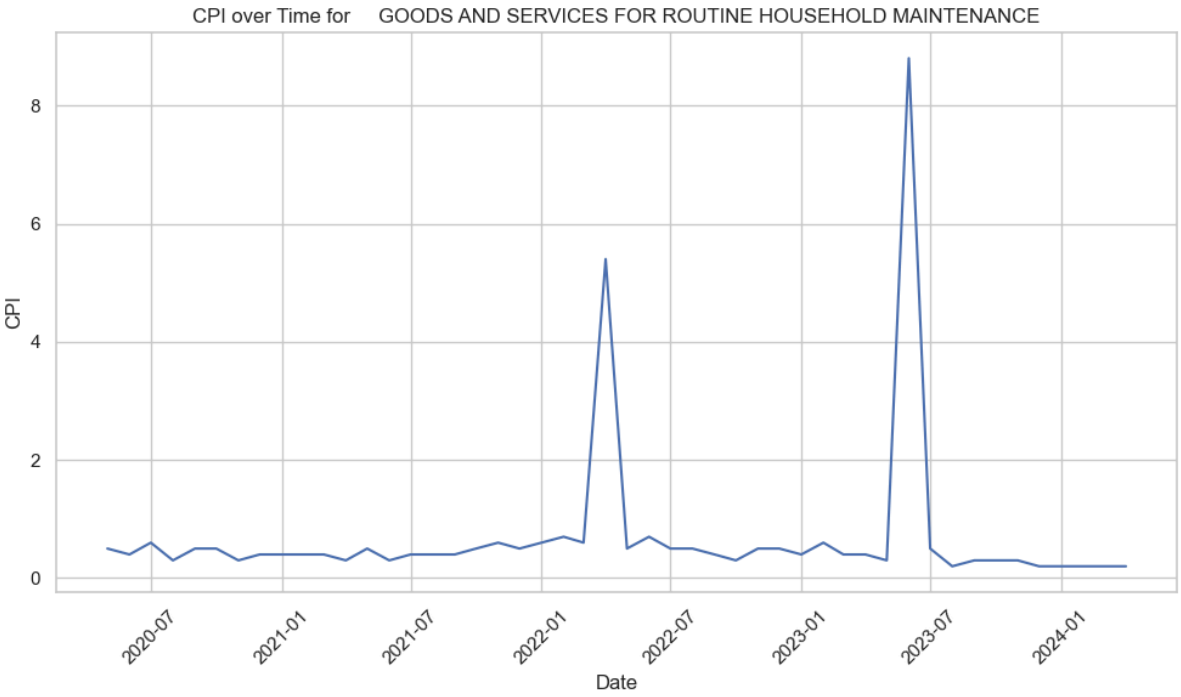

CPI over Time for ELECTRICITY, GAS AND OTHER FUELS
CPI
10
5
0
−5
−10
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

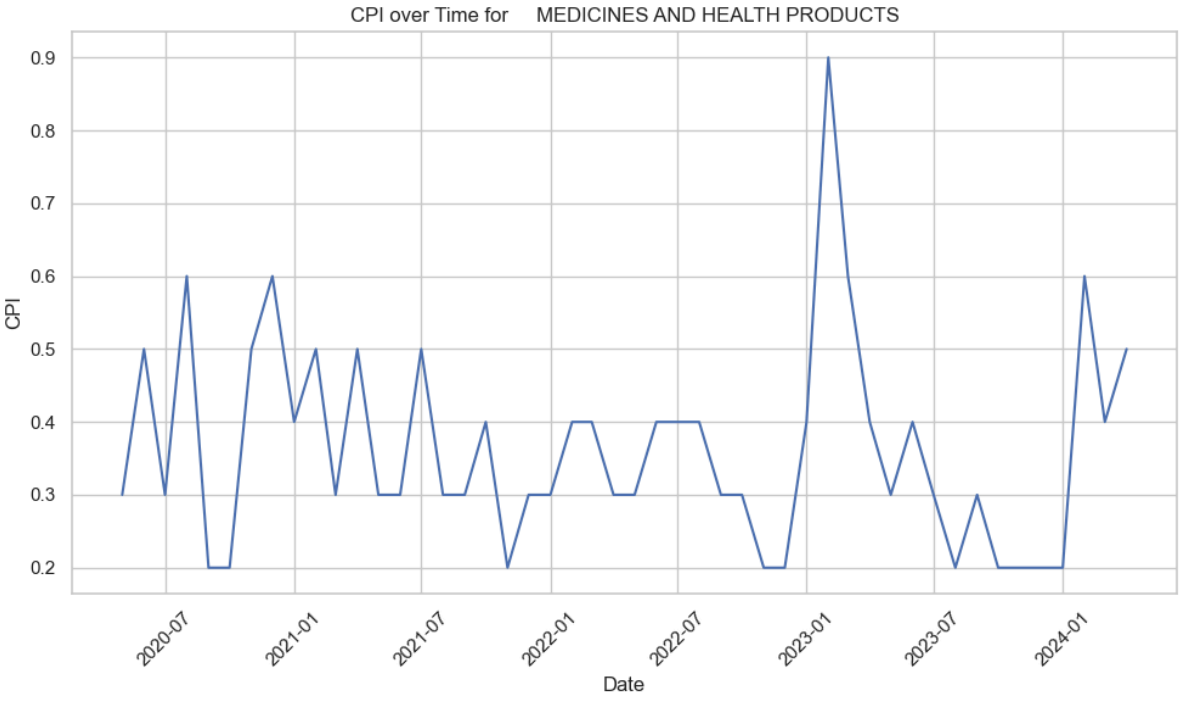

CPI over Time for FURNISHINGS HOUSEHOLD EQUIPMENT AND ROUTINE HOUSEHOLD MAINTENANCE
CPI
0
1
2
3
4
5
6
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

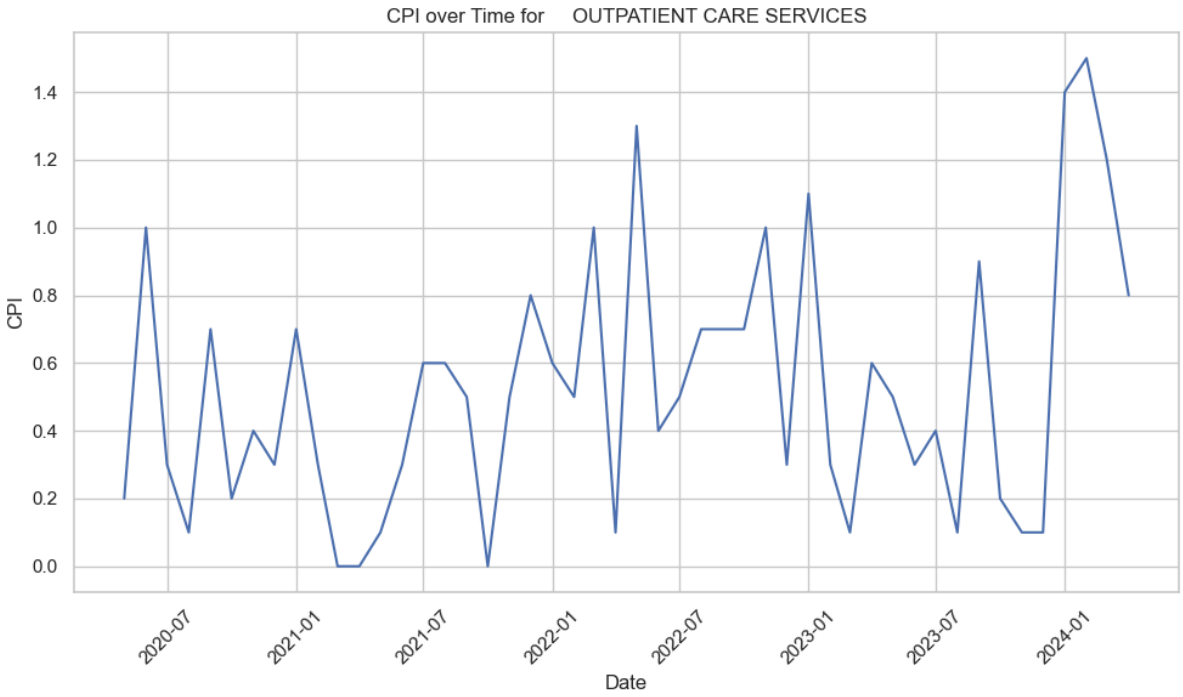

CPI over Time for FURNITURE, FURNISHINGS, AND LOOSE CARPETS
CPI
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

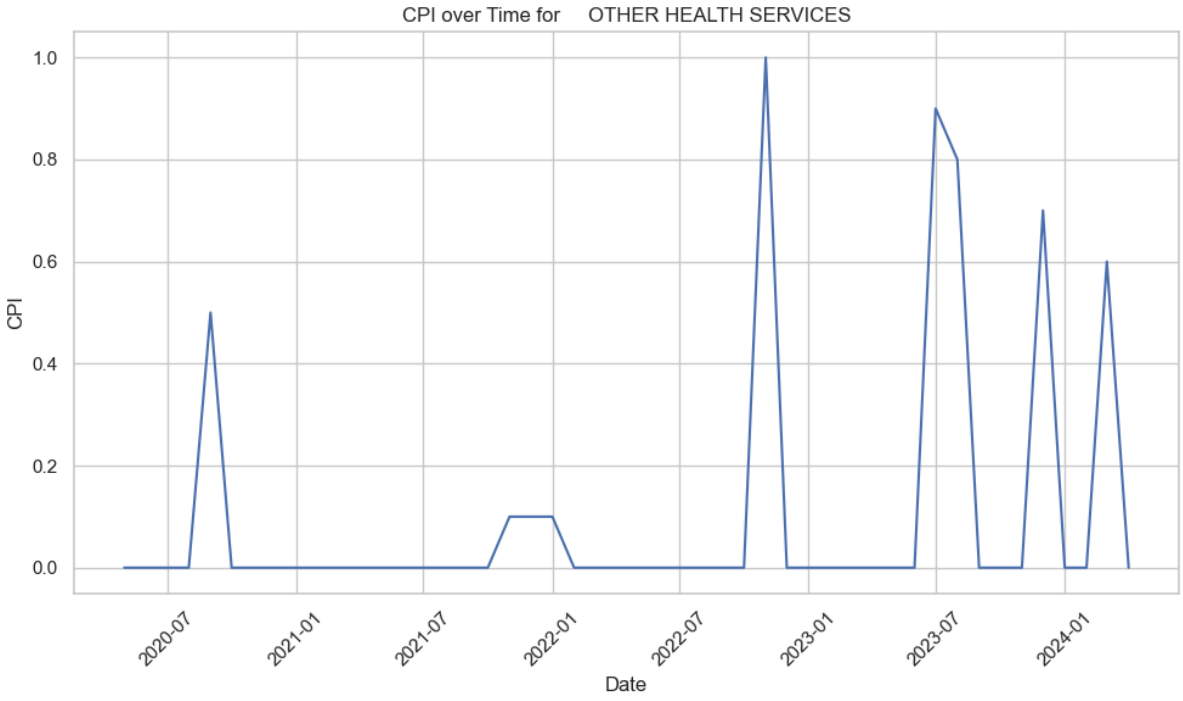

CPI over Time for HOUSEHOLD TEXTILES
CPI
1.2
1.0
0.8
0.6
0.4
0.2
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

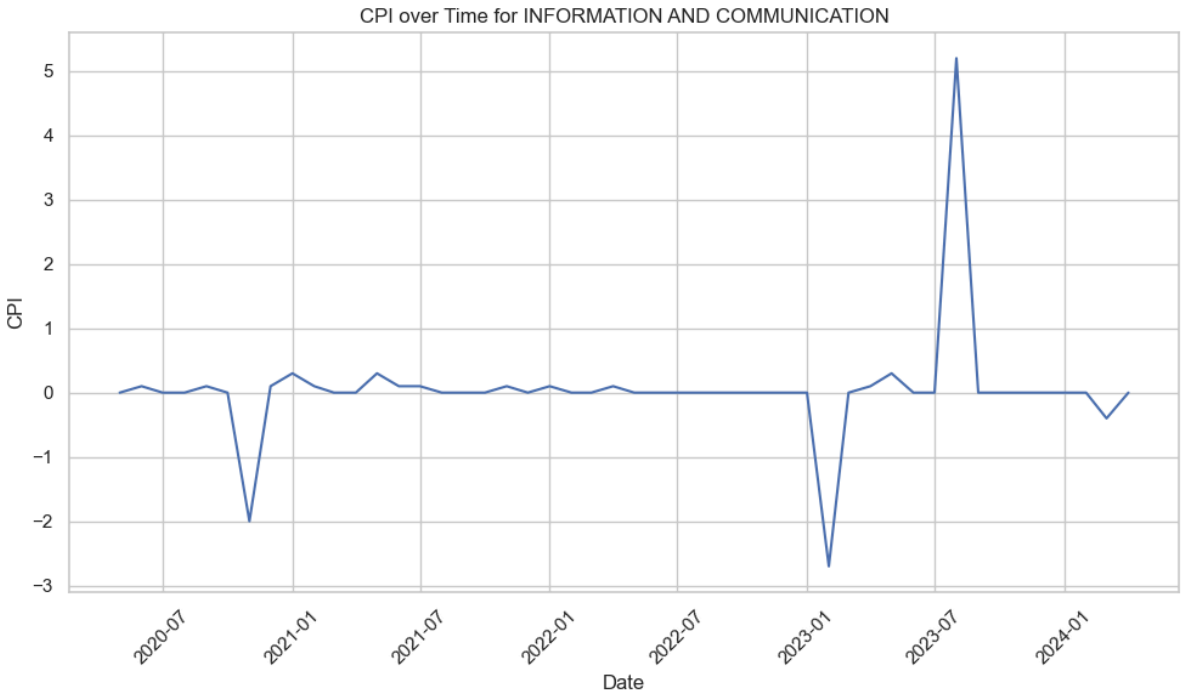

CPI over Time for HOUSEHOLD APPLIANCES
CPI
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

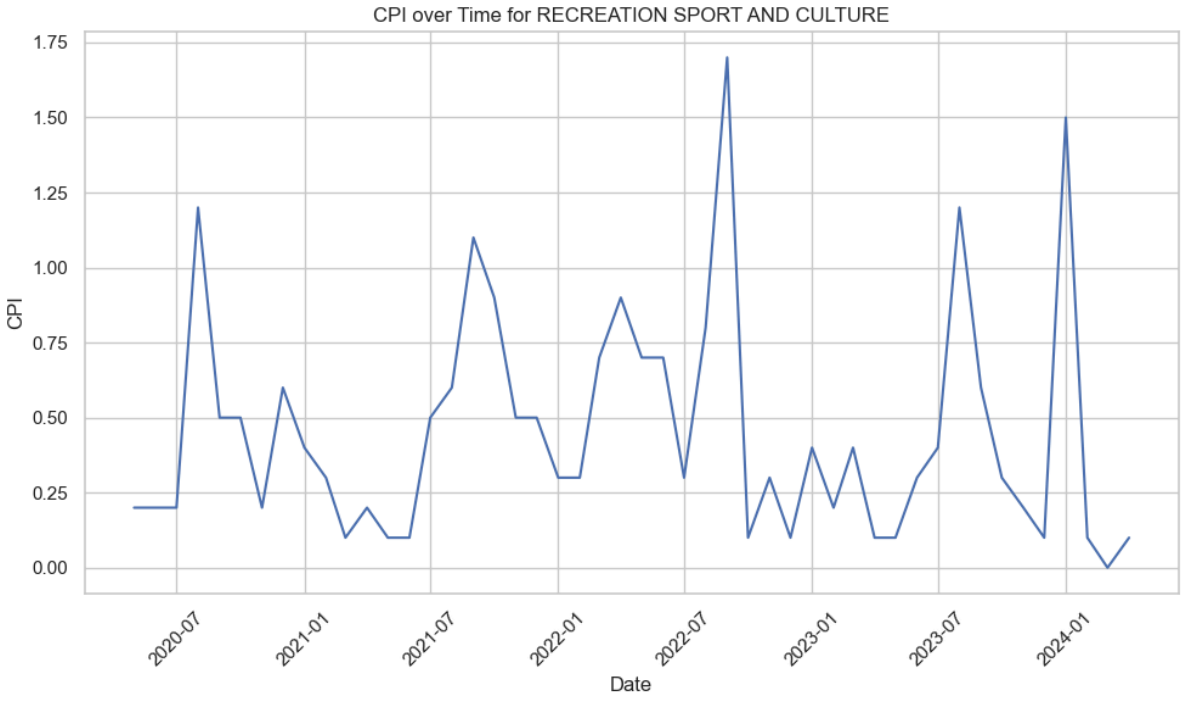

CPI over Time for GOODS AND SERVICES FOR ROUTINE HOUSEHOLD MAINTENANCE
CPI
0
2
4
6
8
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

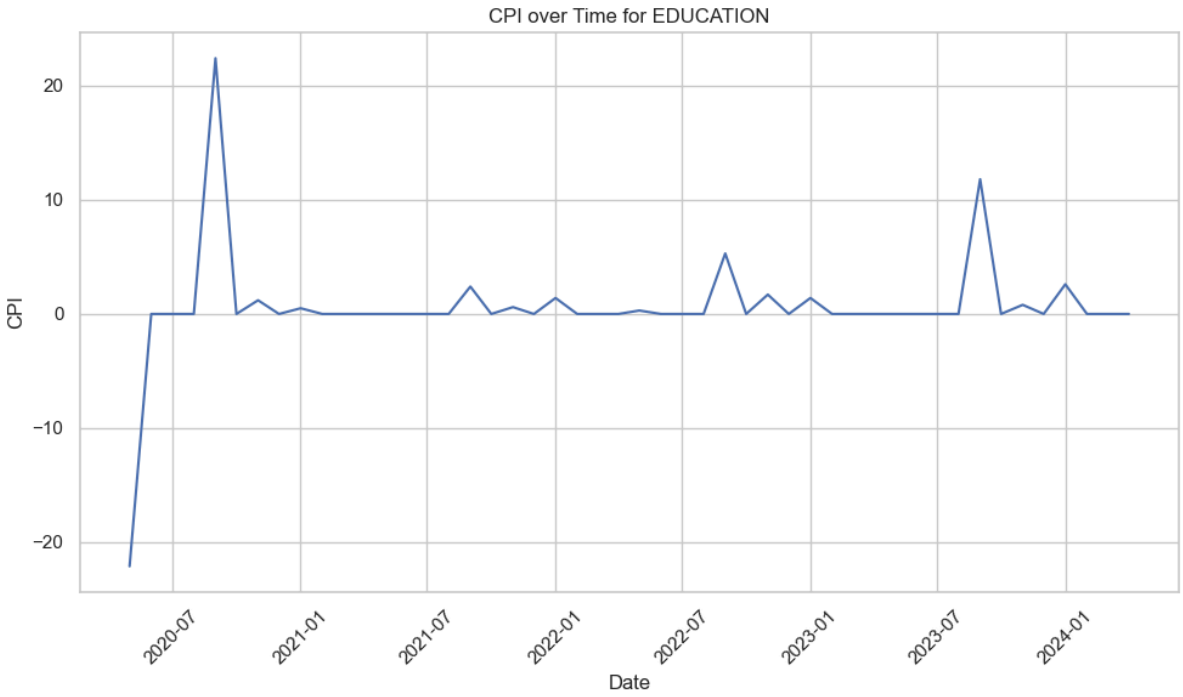

CPI over Time for MEDICINES AND HEALTH PRODUCTS
CPI
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

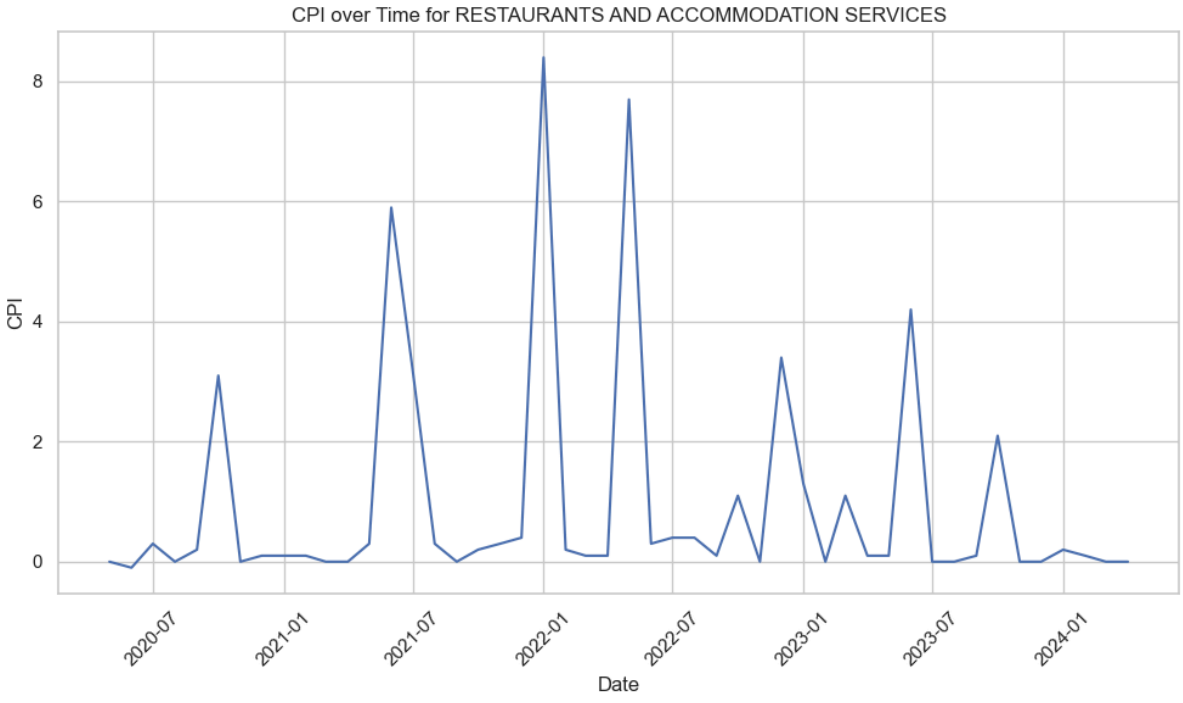

CPI over Time for OUTPATIENT CARE SERVICES
CPI
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

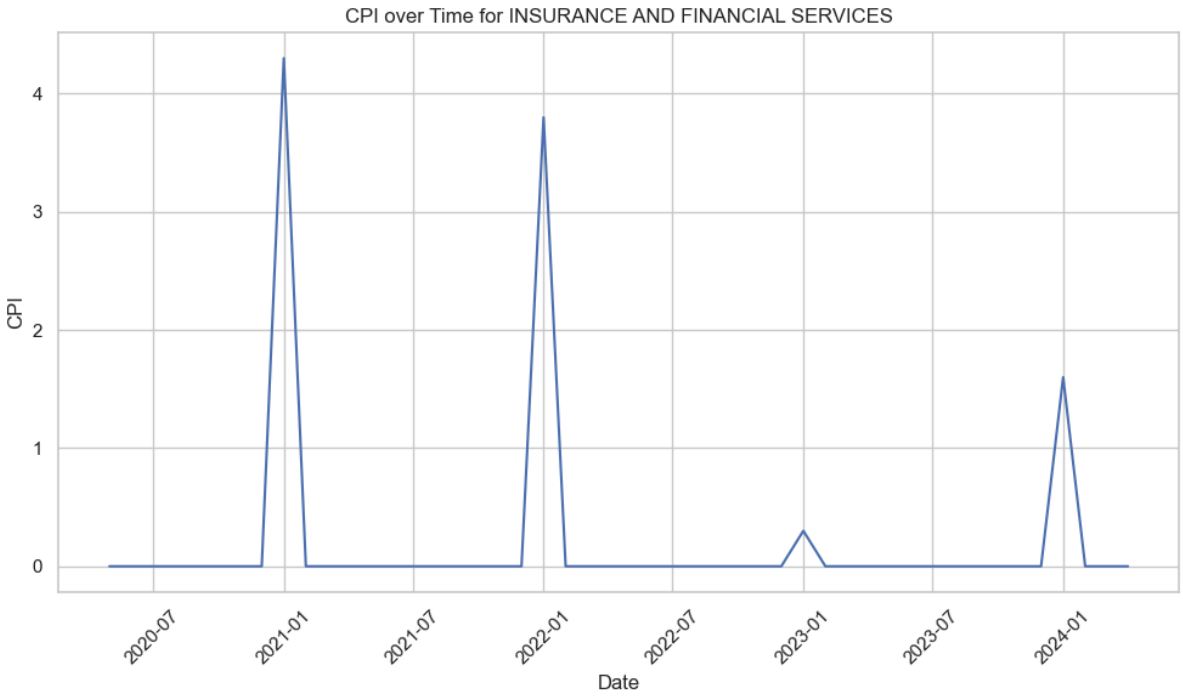

CPI over Time for OTHER HEALTH SERVICES
CPI
1.0
0.8
0.6
0.4
0.2
0.0
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

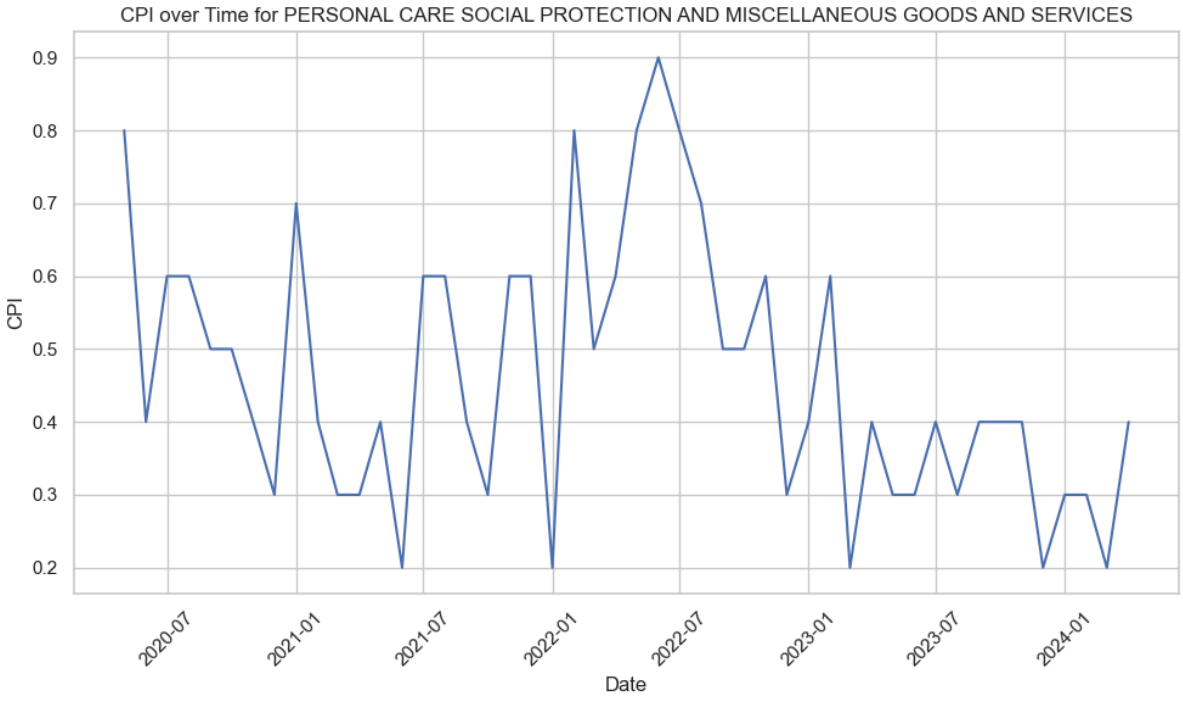

CPI over Time for INFORMATION AND COMMUNICATION
CPI
5
4
3
2
1
0
−1
−2
−3
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

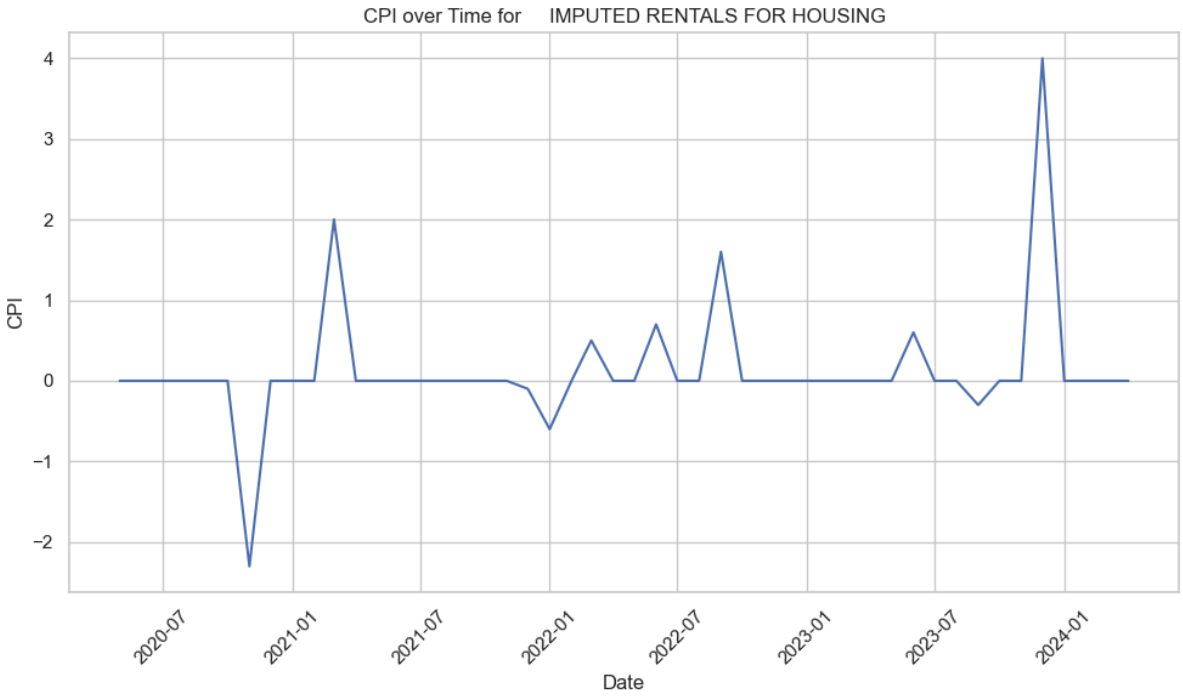

CPI over Time for RECREATION SPORT AND CULTURE
CPI
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

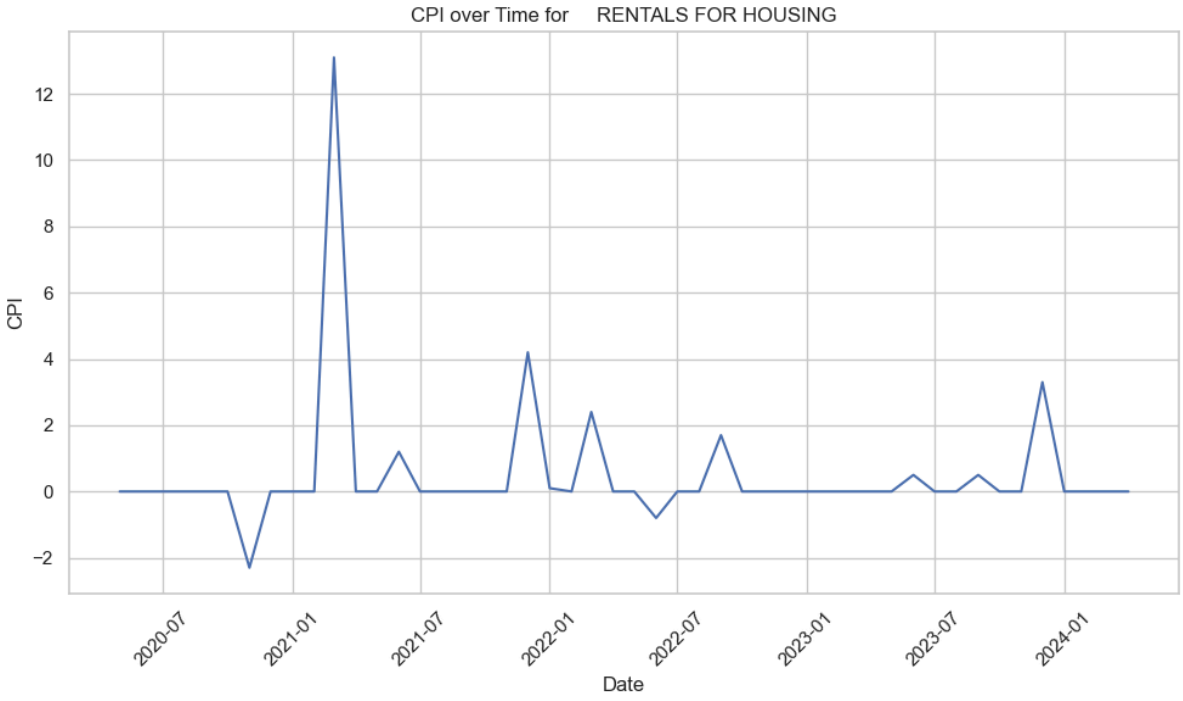

CPI over Time for EDUCATION
CPI
20
10
0
−10
−20
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

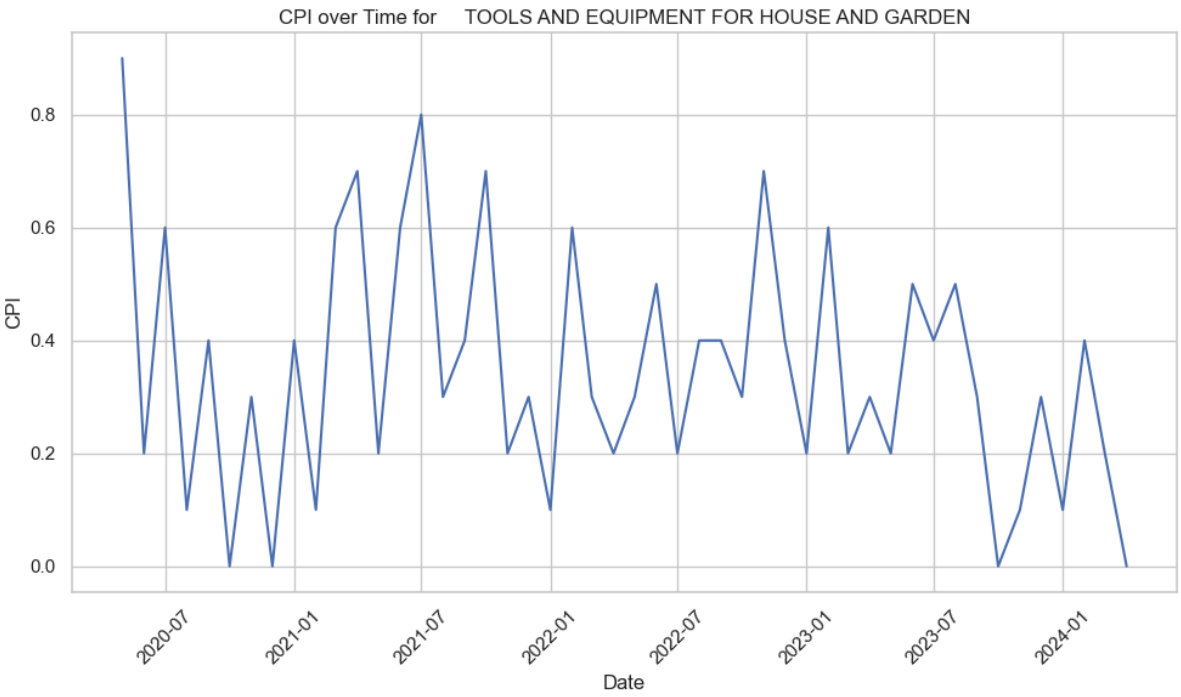

CPI over Time for RESTAURANTS AND ACCOMMODATION SERVICES
CPI
8
6
4
2
0
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

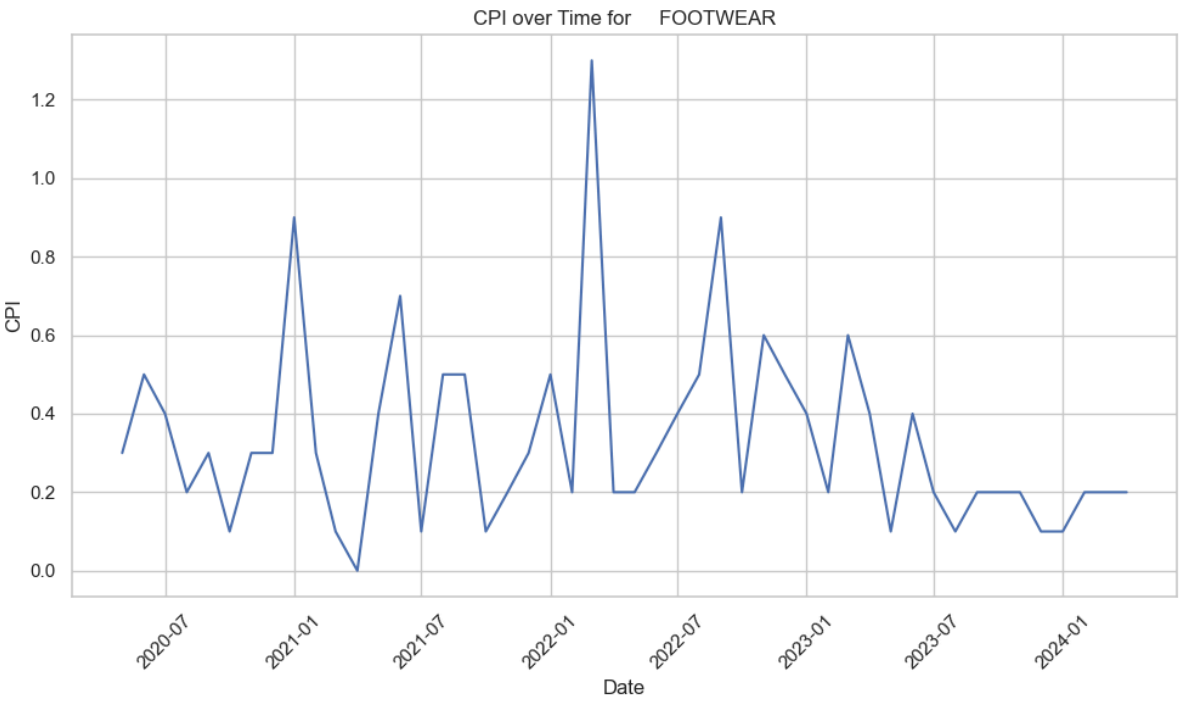

CPI over Time for INSURANCE AND FINANCIAL SERVICES
CPI
Date
0
1
2
3
4
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01

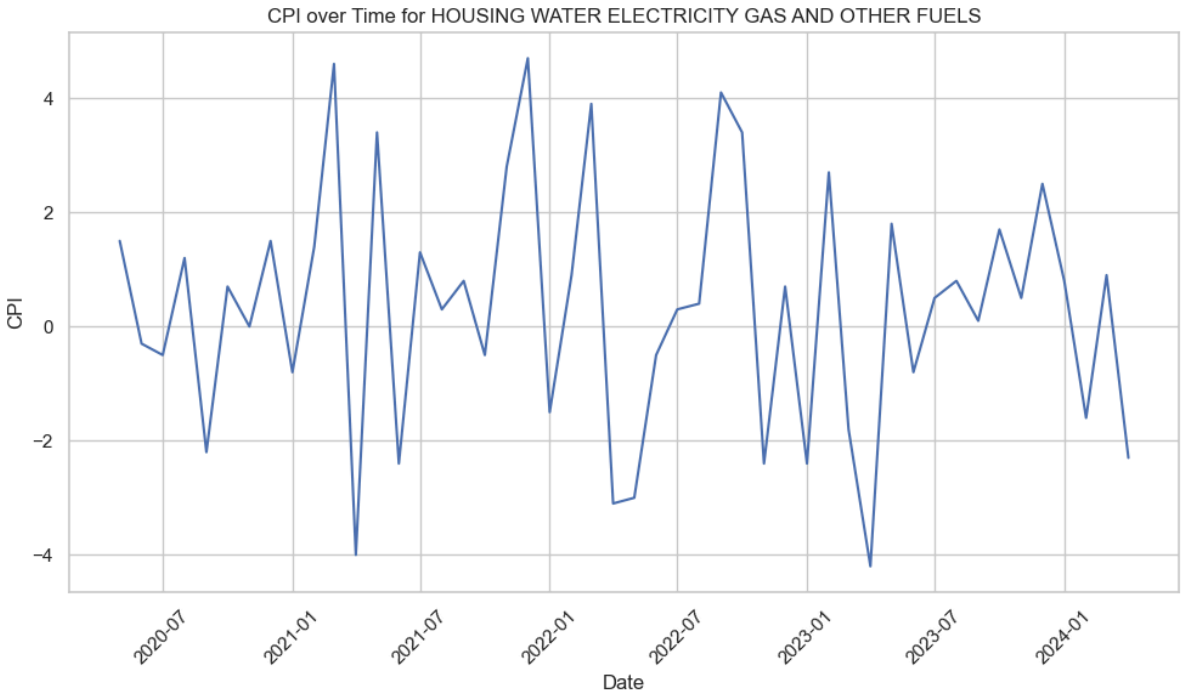

CPI over Time for PERSONAL CARE SOCIAL PROTECTION AND MISCELLANEOUS GOODS AND SERVICES
CPI
Date
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01

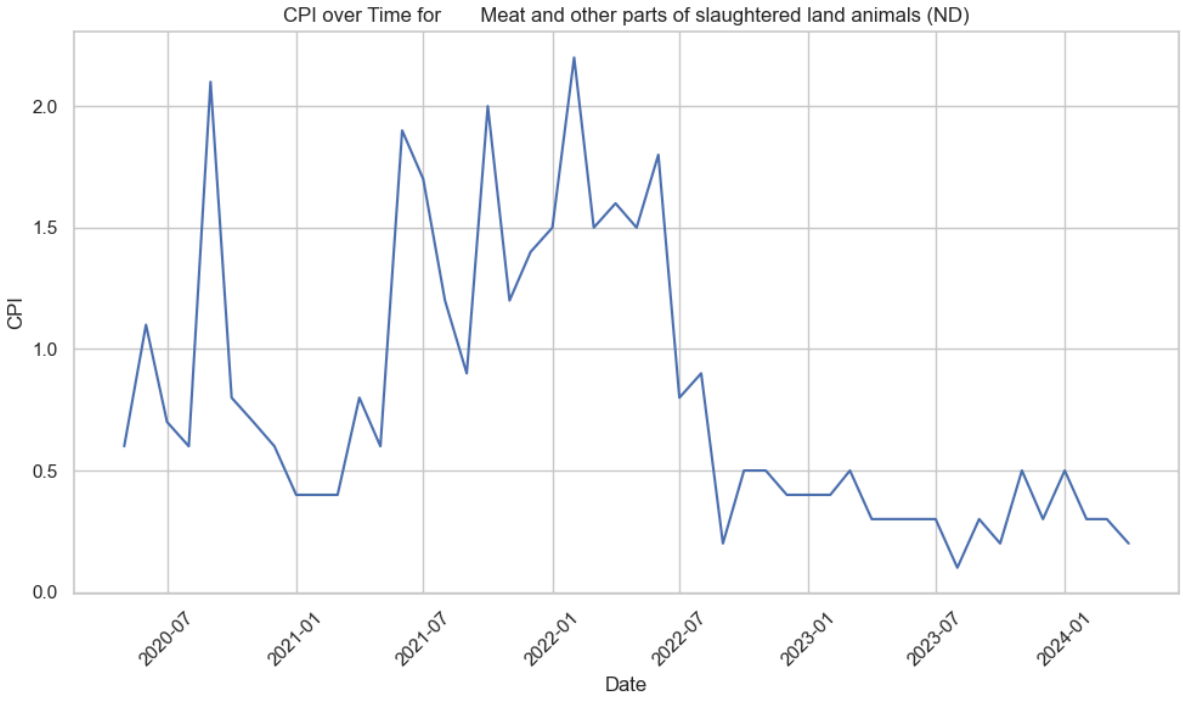

CPI over Time for IMPUTED RENTALS FOR HOUSING
CPI
Date
4
3
2
1
0
−1
−2
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01

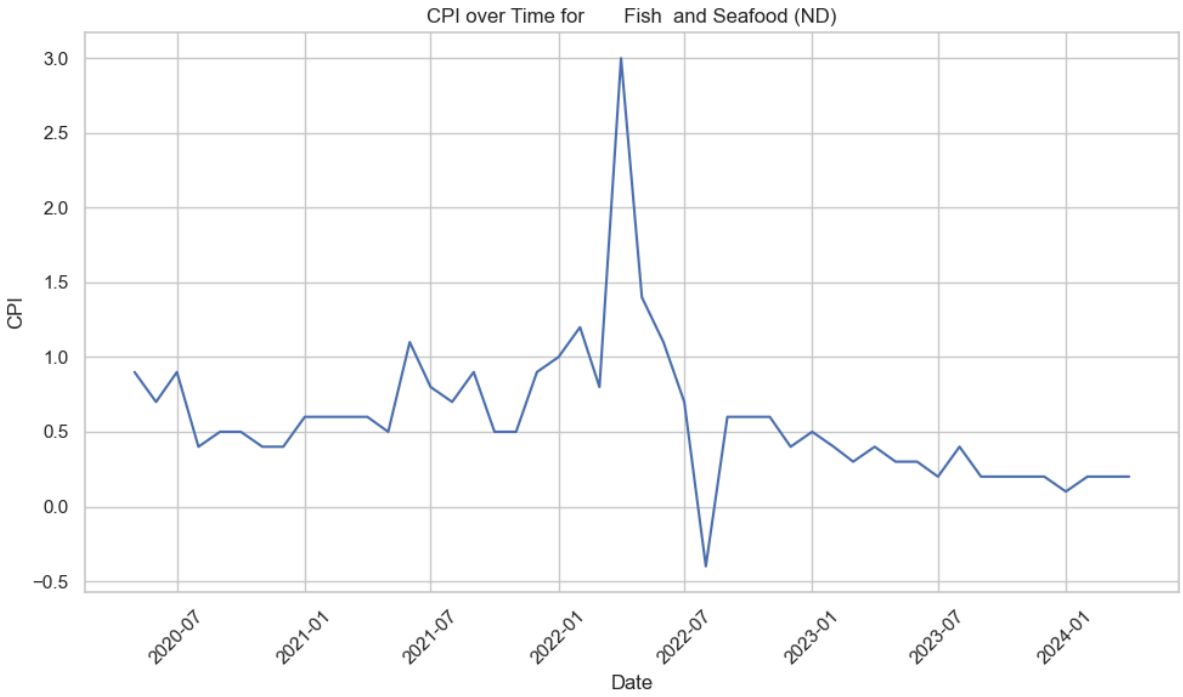

CPI over Time for RENTALS FOR HOUSING
CPI
Date
12
10
8
6
4
2
0
−2
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01

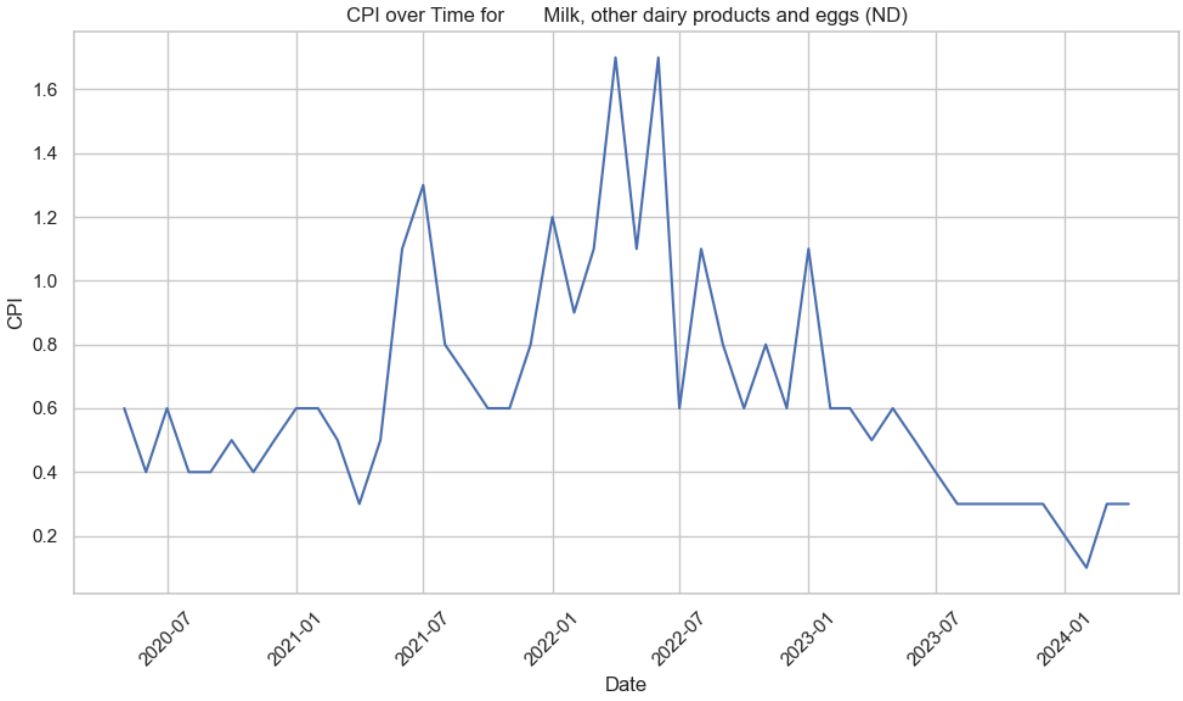

CPI over Time for TOOLS AND EQUIPMENT FOR HOUSE AND GARDEN
CPI
0.0
0.2
0.4
0.6
0.8
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

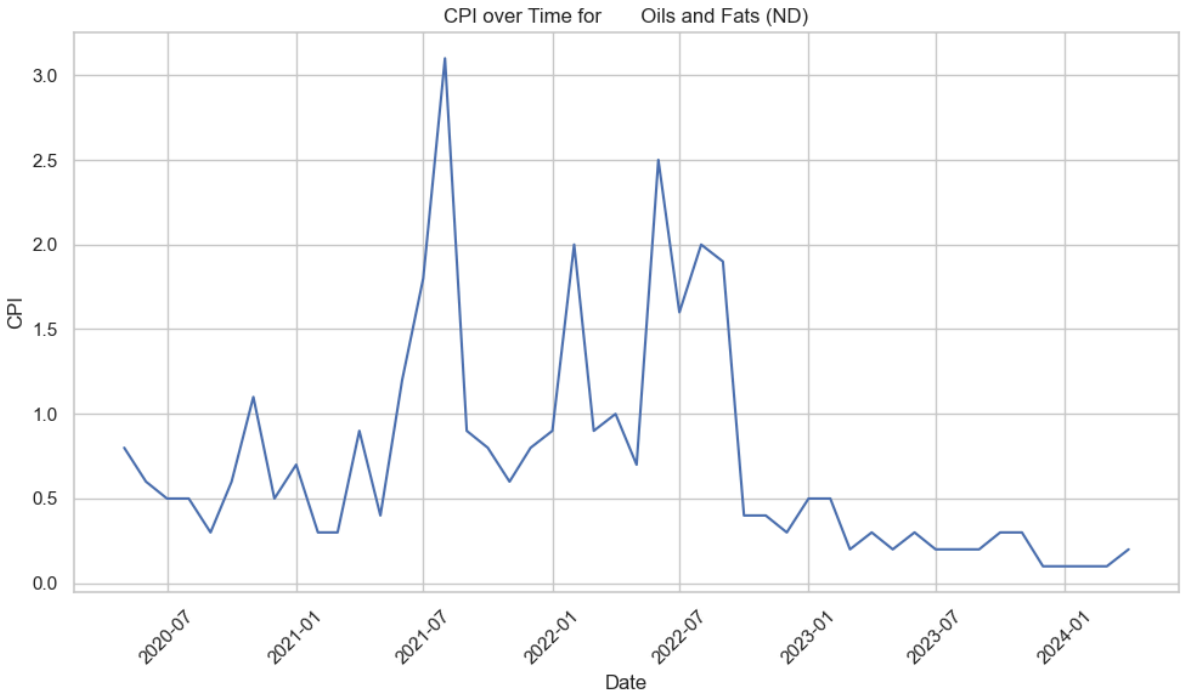

CPI over Time for FOOTWEAR
CPI
0.0
0.2
0.4
0.6
0.8
1.0
1.2
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

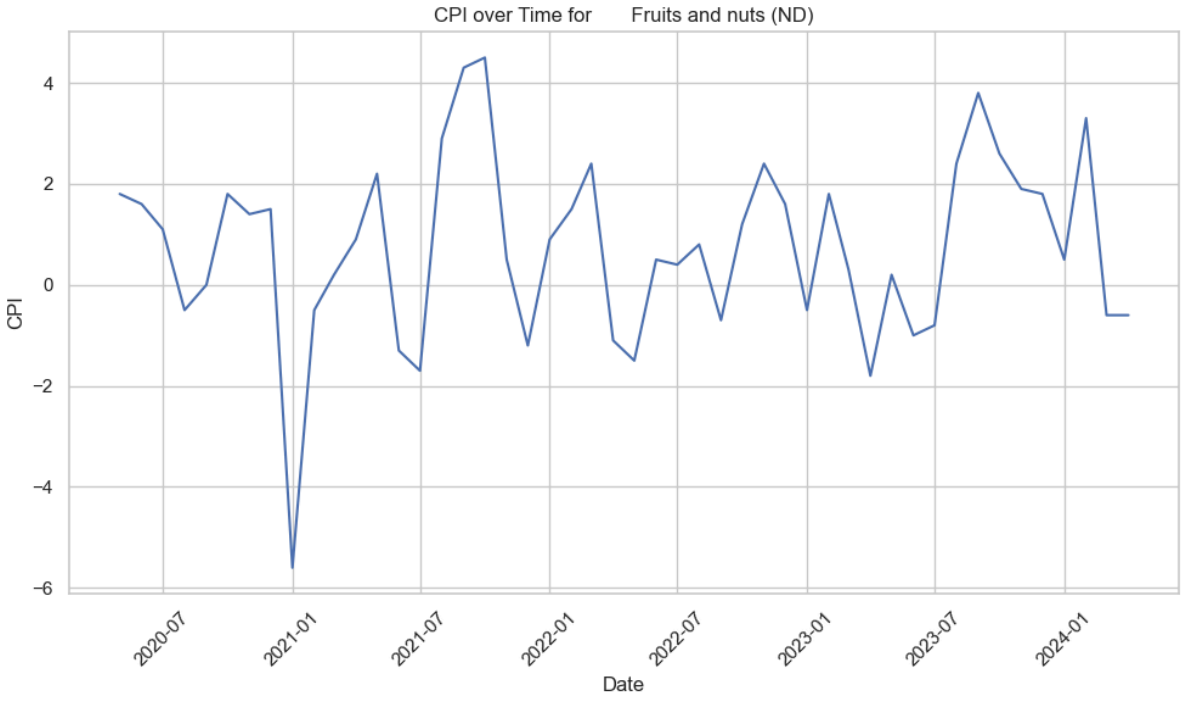

CPI over Time for HOUSING WATER ELECTRICITY GAS AND OTHER FUELS
CPI
4
2
0
−2
−4
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

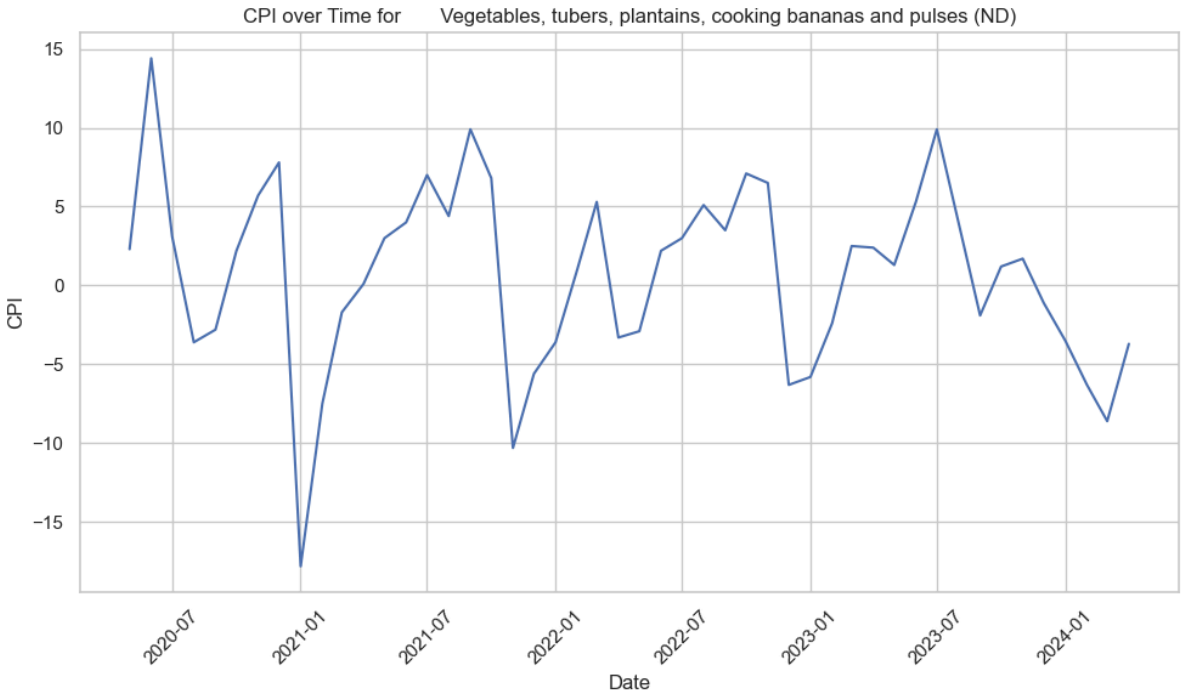

CPI over Time for Meat and other parts of slaughtered land animals (ND)
CPI
2.0
1.5
1.0
0.5
0.0
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

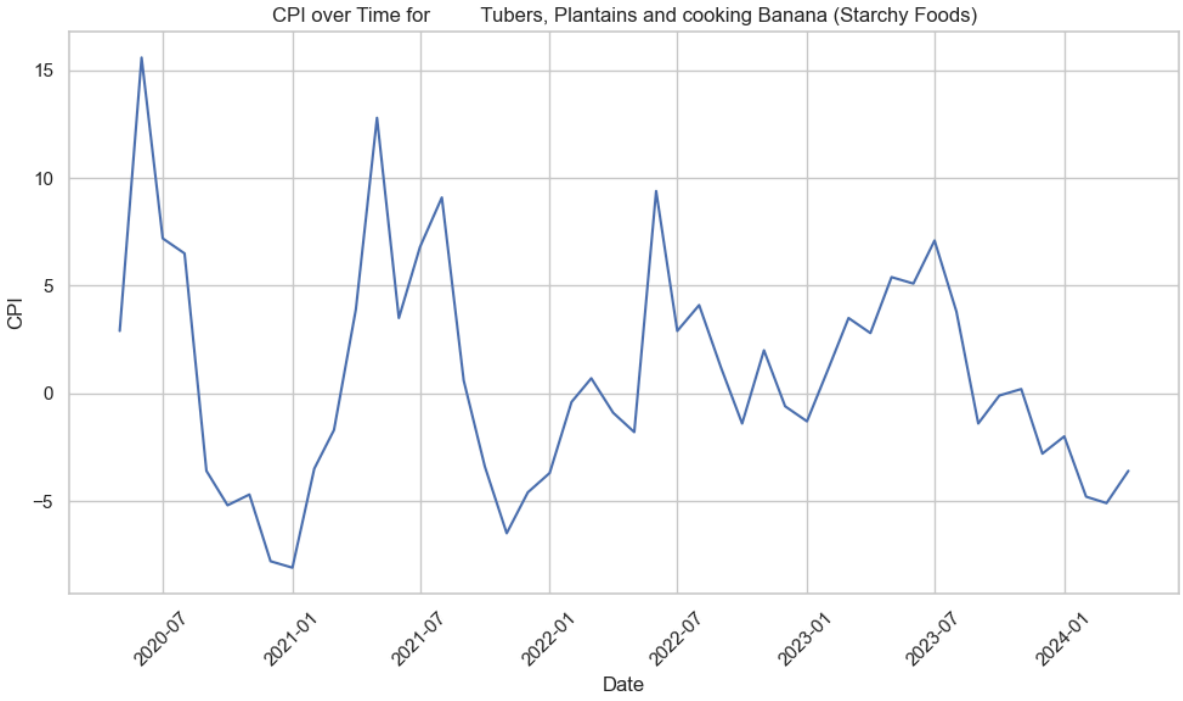

CPI over Time for Fish and Seafood (ND)
CPI
3.0
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

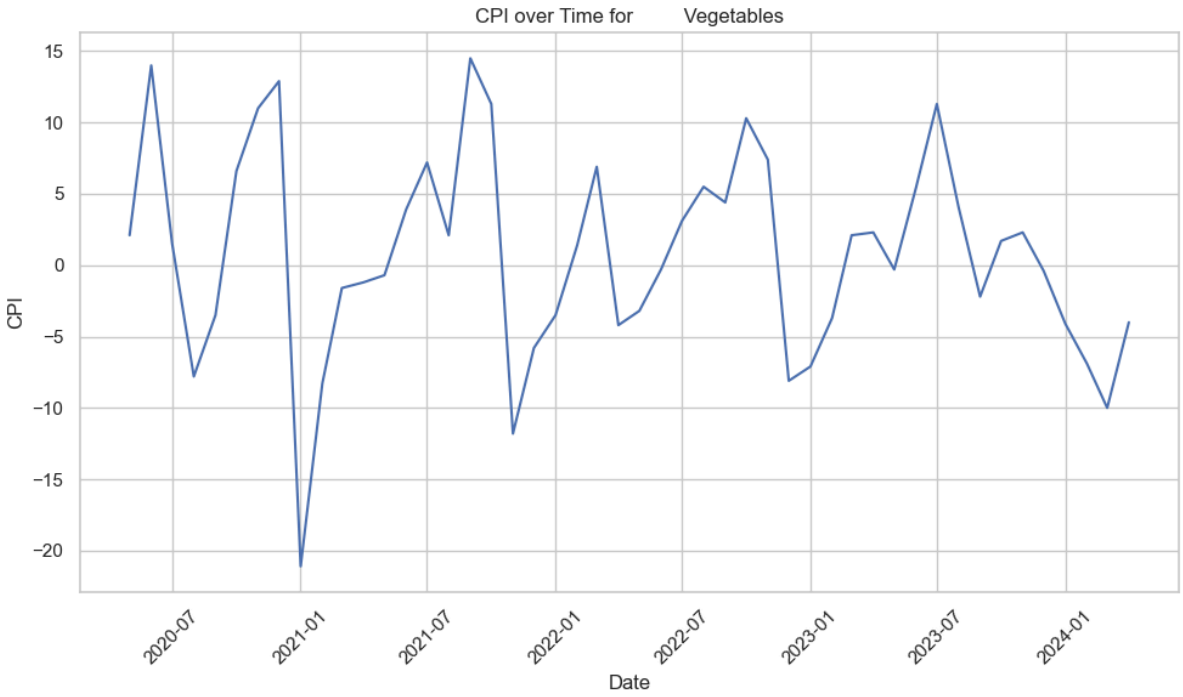

CPI over Time for Milk, other dairy products and eggs (ND)
CPI
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

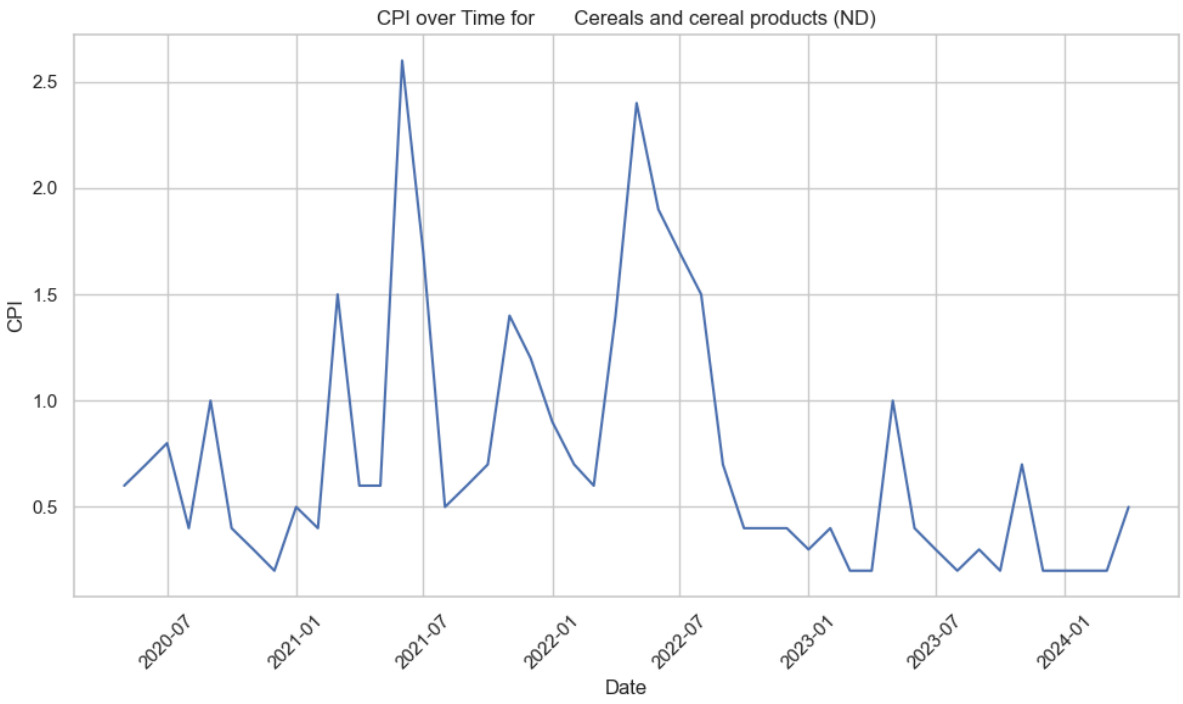

CPI over Time for Oils and Fats (ND)
CPI
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

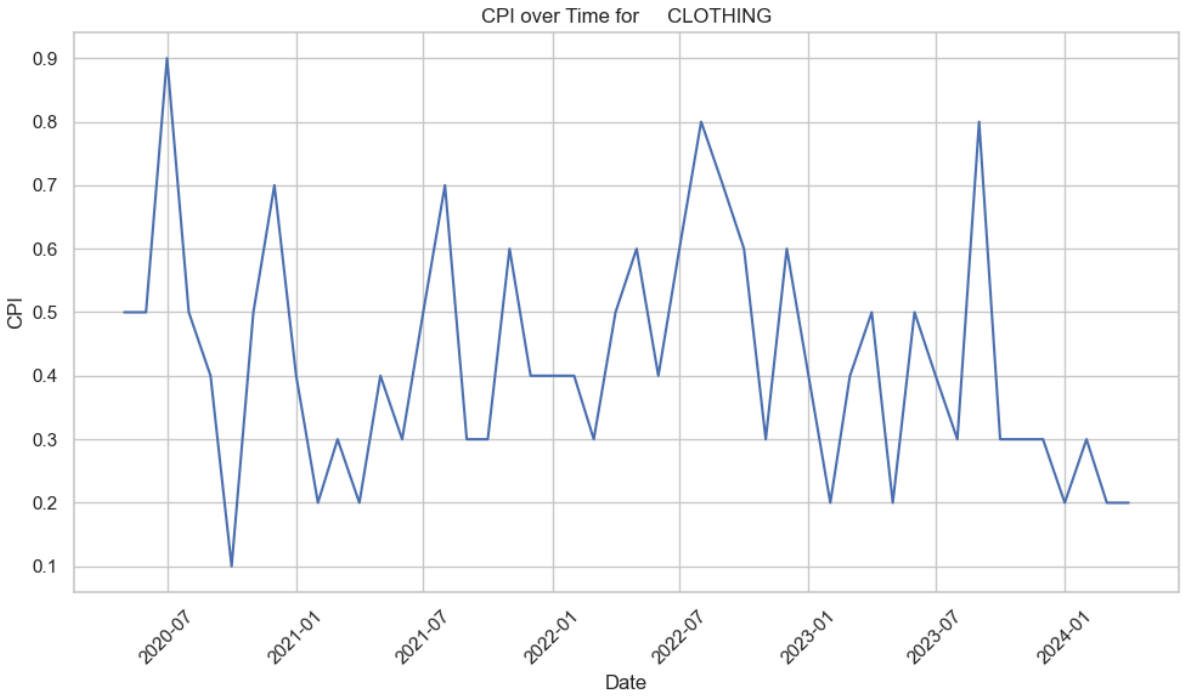

CPI over Time for Fruits and nuts (ND)
CPI
4
2
0
−2
−4
−6
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

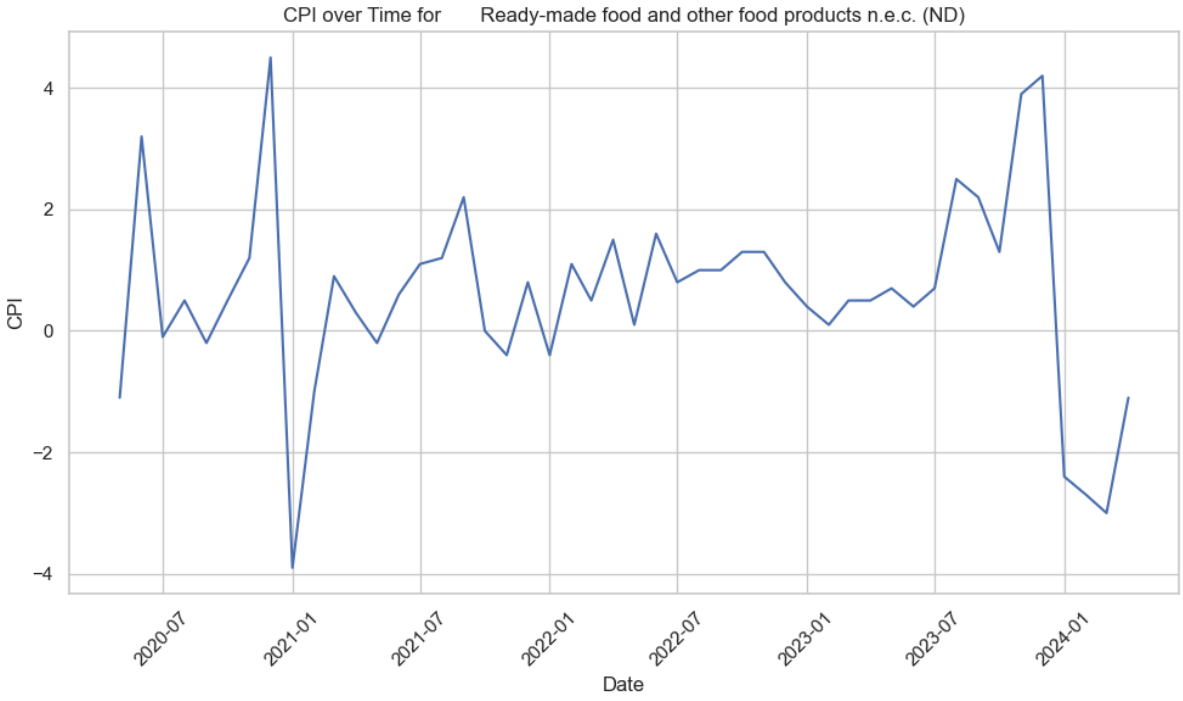

CPI over Time for Vegetables, tubers, plantains, cooking bananas and pulses (ND)
CPI
15
10
5
0
−5
−10
−15
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

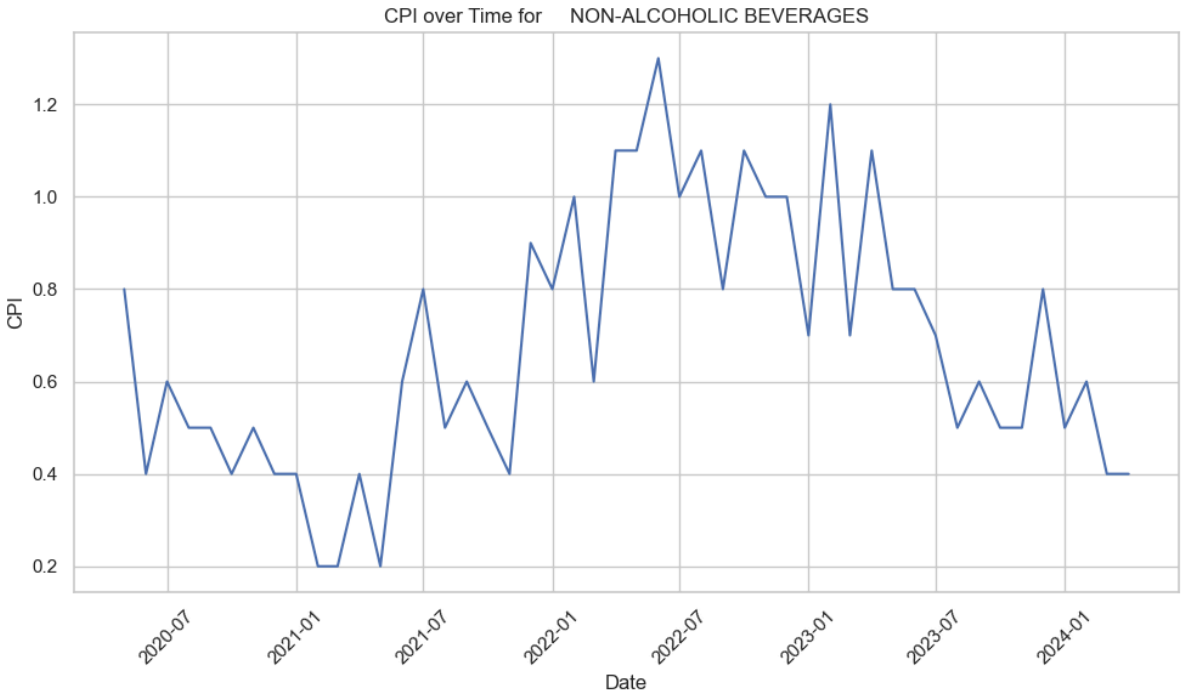

CPI over Time for Tubers, Plantains and cooking Banana (Starchy Foods)
CPI
15
10
5
0
−5
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

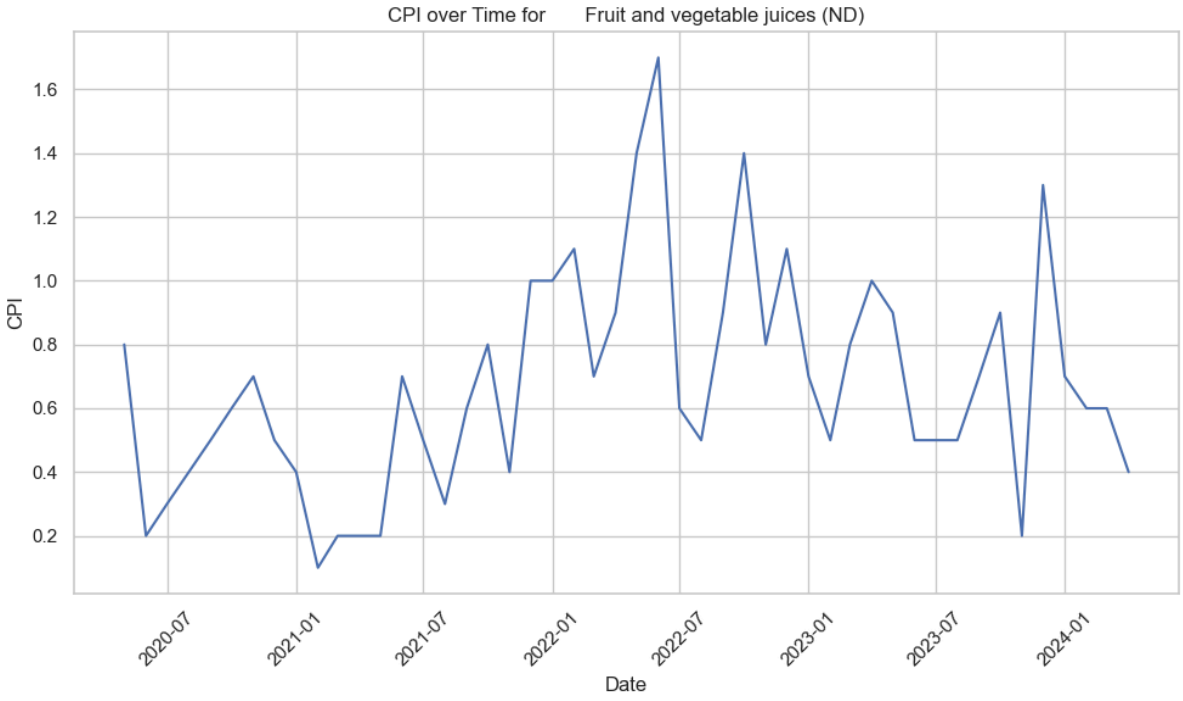

CPI over Time for Vegetables
CPI
15
10
5
0
−5
−10
−15
−20
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

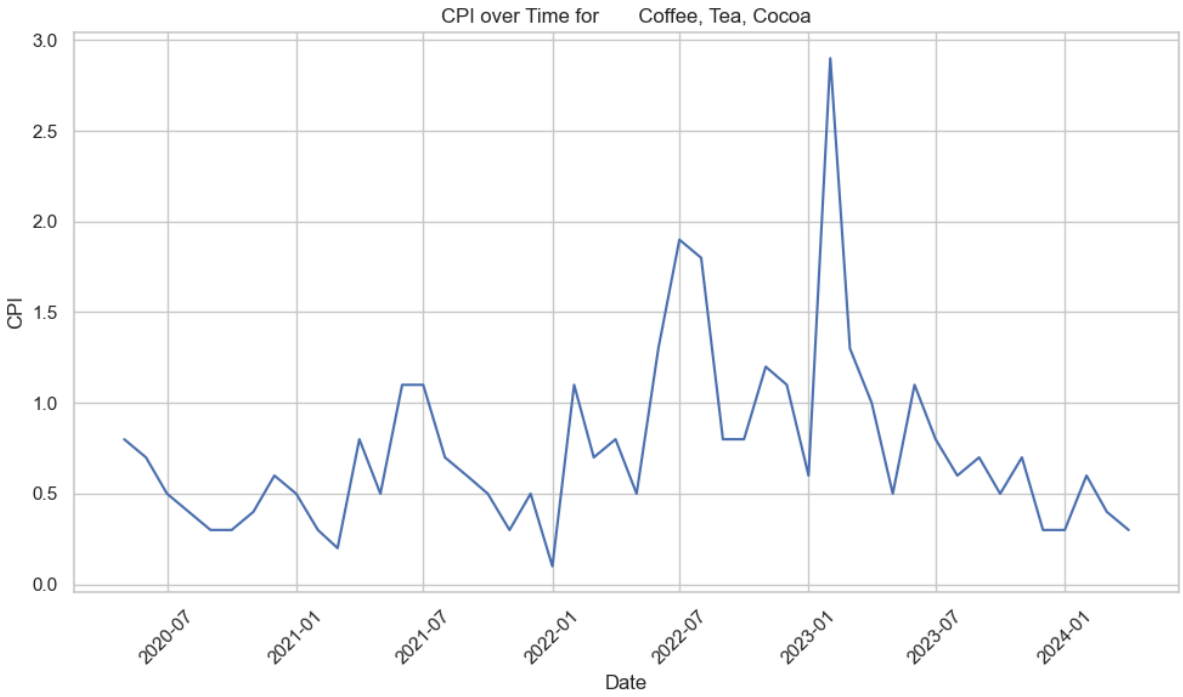

CPI over Time for Cereals and cereal products (ND)
CPI
2.5
2.0
1.5
1.0
0.5
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

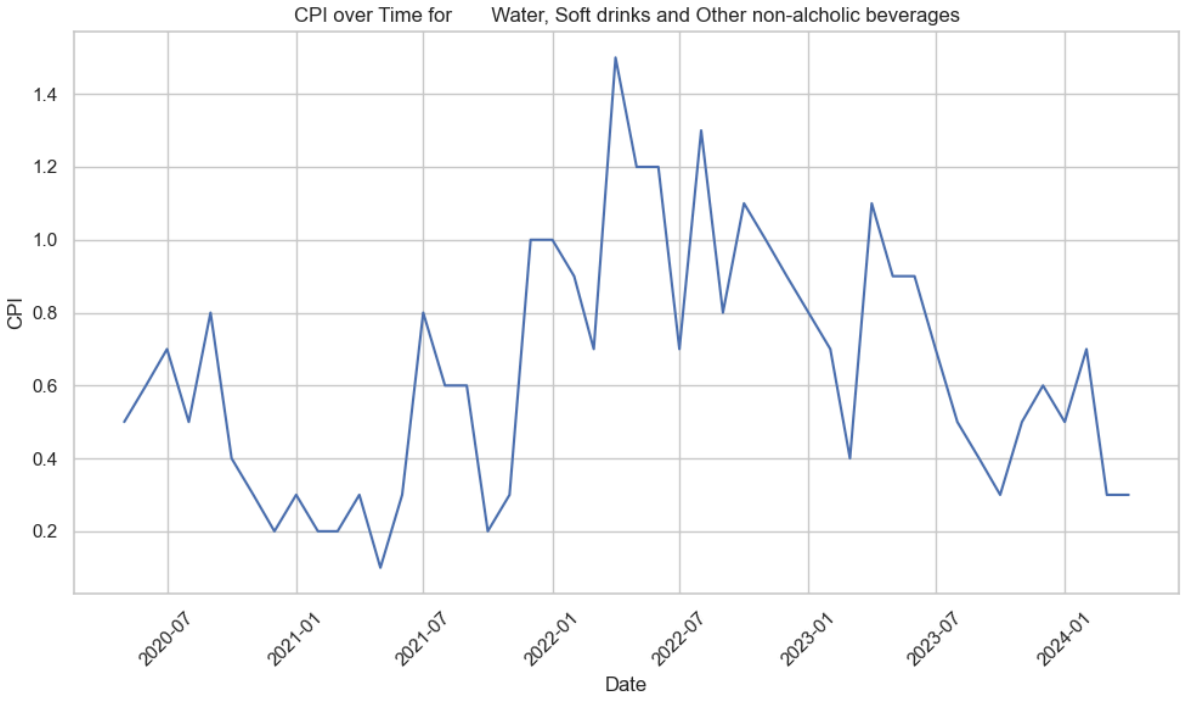

CPI over Time for CLOTHING
CPI
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

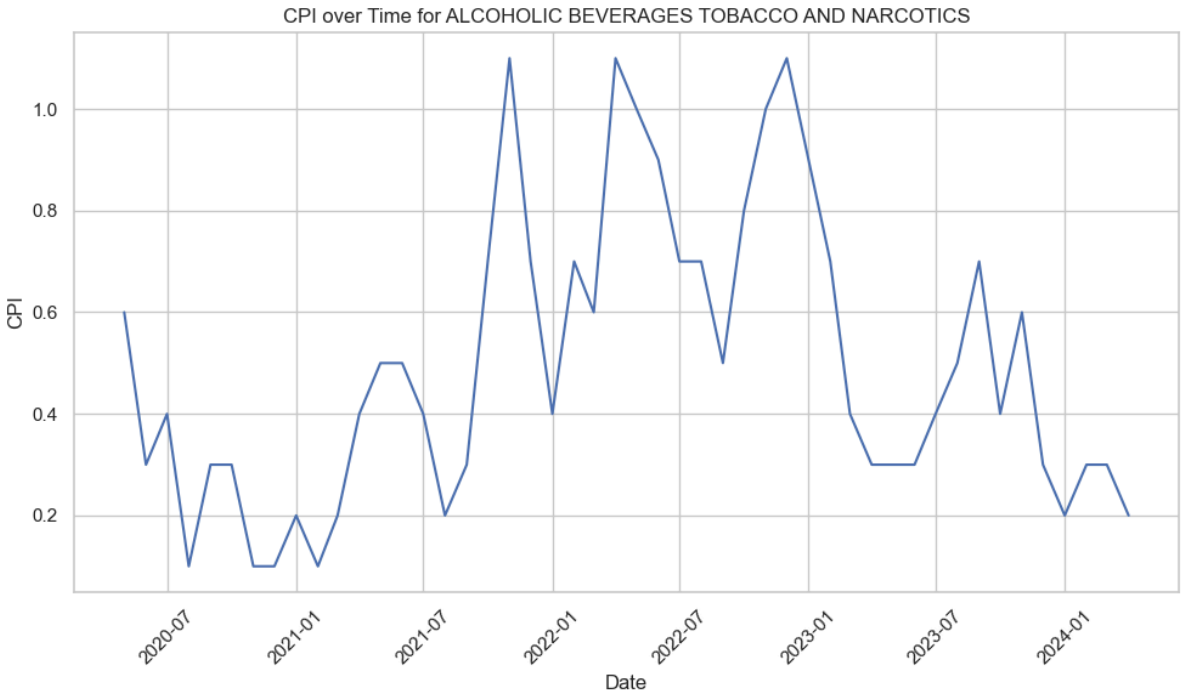

CPI over Time for Ready-made food and other food products n.e.c. (ND)
CPI
4
2
0
−2
−4
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

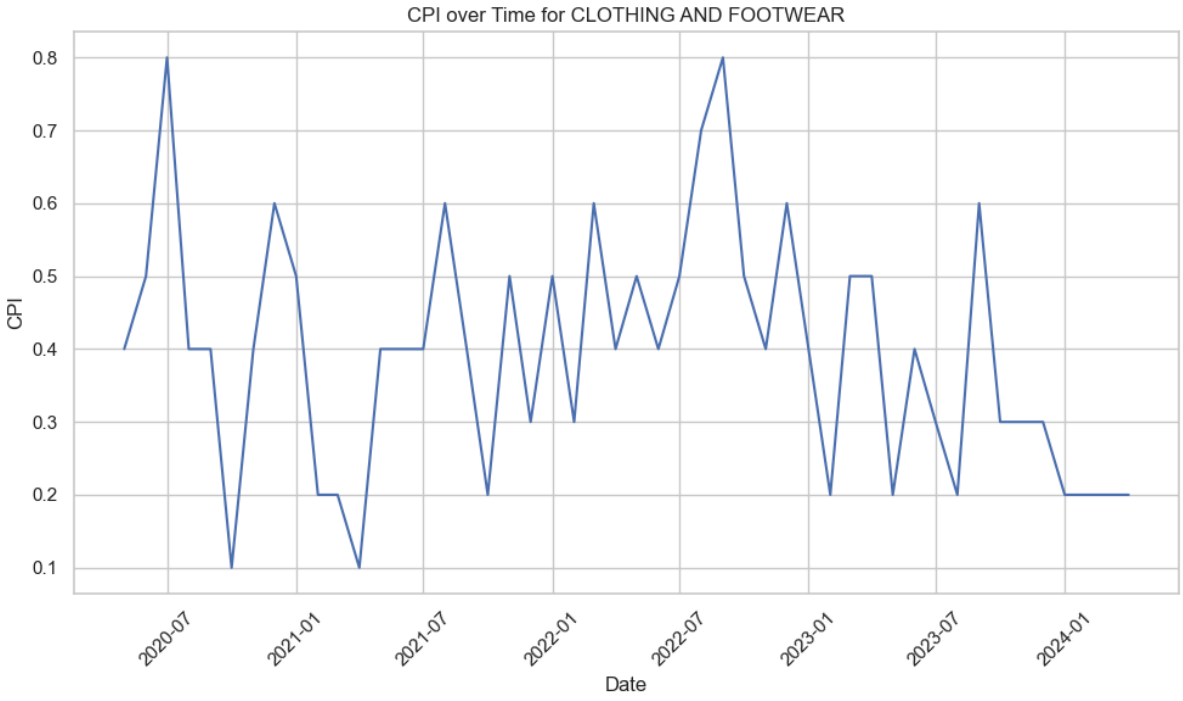

CPI over Time for NON-ALCOHOLIC BEVERAGES
CPI
1.2
1.0
0.8
0.6
0.4
0.2
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date

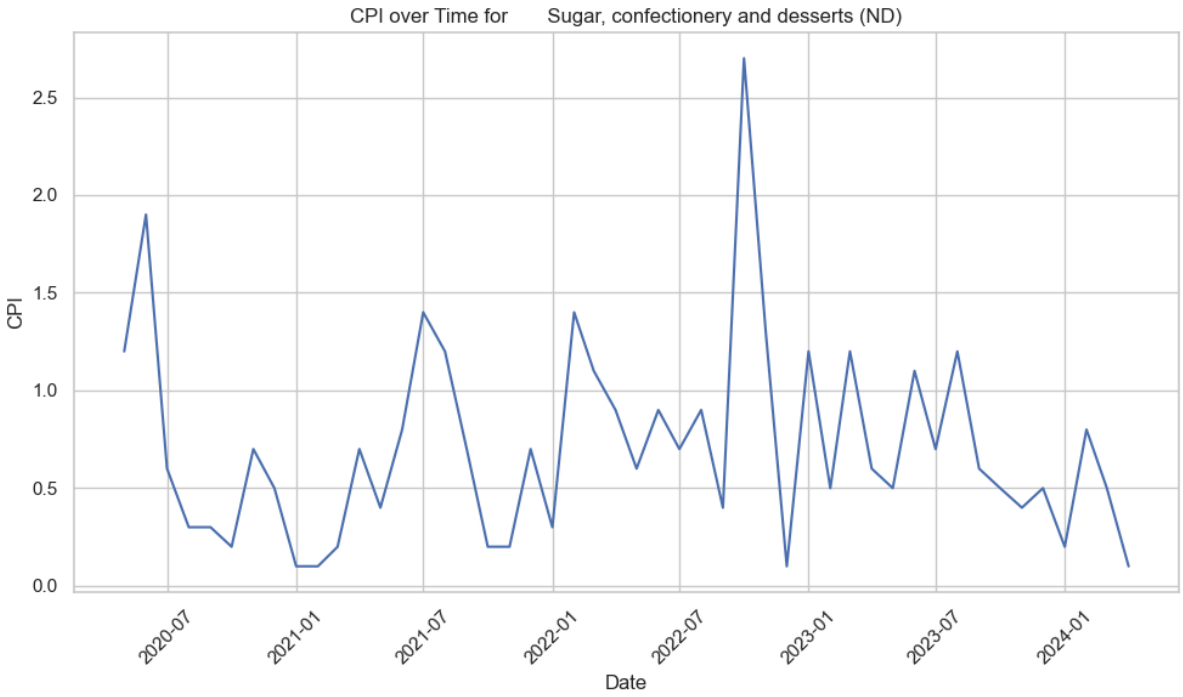

CPI over Time for Fruit and vegetable juices (ND)
CPI
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date


CPI over Time for Coffee, Tea, Cocoa
CPI
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date


CPI over Time for Water, Soft drinks and Other non-alcholic beverages
CPI
1.4
1.2
1.0
0.8
0.6
0.4
0.2
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date


CPI over Time for ALCOHOLIC BEVERAGES TOBACCO AND NARCOTICS
CPI
1.0
0.8
0.6
0.4
0.2
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date


CPI over Time for CLOTHING AND FOOTWEAR
CPI
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date


CPI over Time for Sugar, confectionery and desserts (ND)
CPI
2.5
2.0
1.5
1.0
0.5
0.0
2020-07
2021-01
2021-07
2022-01
2022-07
2023-01
2023-07
2024-01
Date