

IMPACT OF INFLATION ON CONSUMER SPENDING IN NIGERIA

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OUTLINE



INTRODUCTION

This is my entry for the Data Analytics competition organized by [Cortouch Media](#), a leading Tech Training Organization in Ibadan, Nigeria.



OVERVIEW



Impact of inflation on consumer spending in Nigeria



OBJECTIVE

“To Analyze the Impact of Inflation on Consumer Spending in Nigeria”

Definition of Terms

- **Consumer Price Index:** The Consumer Price Index (CPI) measures the average change over time in the prices consumers pay for a representative basket of consumer goods and services. The CPI is a measure of and reflects inflation as experienced by consumers in their day-to-day living expenses. It is also known as the headline CPI.

$$\text{CPI} = (\text{Value of Basket in Current Year} / \text{Value of Basket in Base year}) \times 100$$

- **Inflation:** Inflation is a gradual loss of purchasing power that is reflected in a broad rise in prices for goods and services over time. It allows for a single-value representation of the increase in the price level of goods and services in an economy over a specified time.

$$\text{Inflation rate} = (\text{Current CPI} - \text{Old CPI} / \text{Old CPI}) \times 100$$

*where Old CPI is the CPI for comparison e.g. Base CPI or CPI of a previous year.

- **Core CPI:** This represents the consumer price index minus food and energy. It is a more stable representation of the consumer price index as the prices of food and energy tend to be volatile. It is usually preferred when making monetary policies.

Definition of Terms (cont'd)

- Monthly Index: This refers to the calculated CPI for a given month.
- 12-month Average Index: This refers to the average monthly index, calculated over a 12-month period.
- Month-on-month inflation rate: This is the percentage change in the consumer price index(month) between the current and previous month.
- Year-on-year inflation rate: This is the percentage change in the consumer price index between any month of interest and the same month in the previous year.
- 12-month Average Inflation rate: This is the percentage change in the 12-month Average Index between any month of interest and the same month in the previous year.

Dataset

- The dataset was provided by Cortouch Media.
- It contained 17 columns and about 350 rows.
- It contained the Consumer Price Index and Inflation rate for 3 categories of goods and services (All items, Food, and Core-CPI - All items less Farm produce and Energy) from January 1995 to January 2024.

Table 1 Composite Consumer Price Index (Base September 1985 = 100)																
Table 1 Composite Consumer Price Index (Base November 2009 = 100)																
		All Items Index					Food					All Items less Farm Produce and Energy				
		Monthly	12-Month Average	Month-on change (%)	Year-on change (%)	12-Month average change (%)	Monthly	12-Month Average	Month-on change (%)	Year-on change (%)	12-Month average change (%)	Monthly	12-Month Average	Month-on change (%)	Year-on change (%)	12-Month average change (%)
Weights		1000.00					507.06					405.55				
1995	Jan	14.4					20.6					20.6				
	Feb	15.0		4.6			21.2		2.9			21.2		2.9		
	Mar	15.6		3.6			21.9		3.6			21.9		3.6		
	Apr	17.0		9.0			23.3		6.1			23.3		6.1		
	May	18.0		6.2			23.8		2.1			23.8		2.1		
	Jun	18.8		4.5			24.4		2.8			24.4		2.8		
	Jul	19.4		3.3			25.2		3.0			25.2		3.0		
	Aug	20.1		3.5			25.8		2.6			25.8		2.6		
	Sep	20.5		1.7			26.4		2.3			26.4		2.3		
	Oct	20.0		-2.5			27.0		2.4			27.0		2.4		
	Nov	20.2		1.4			27.5		1.9			27.5		1.9		
	Dec	21.0	18.3	3.6			28.2	24.6	2.2			28.2	24.6	2.2		
1996	Jan	21.2	18.9	1.1	48		28.4	25.3	1.0	38.4		28.4	25.3	1.0	38.4	
	Feb	21.6	19.4	1.8	44		29.0	25.9	2.1	37.3		29.0	25.9	2.1	37.3	
	Mar	22.1	20.0	2.3	42		29.6	26.5	1.9	35.0		29.6	26.5	1.9	35.0	
	Apr	22.4	20.4	1.3	32		29.9	27.1	0.9	28.4		29.9	27.1	0.9	28.4	
	May	23.6	20.9	5.5	31		30.4	27.7	1.7	27.9		30.4	27.7	1.7	27.9	
	Jun	24.2	21.3	2.8	29		30.3	28.1	-0.2	24.2		30.3	28.1	-0.2	24.2	
	Jul	25.2	21.8	3.8	30		31.0	28.6	2.1	23.1		31.0	28.6	2.1	23.1	

Key Questions

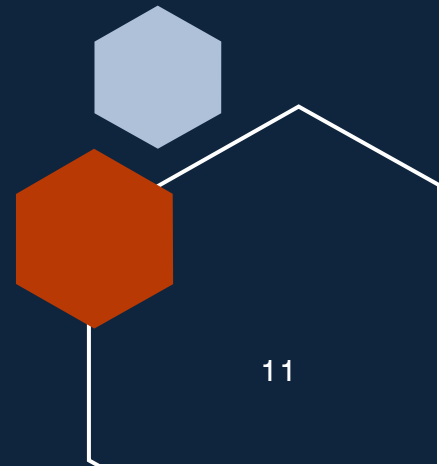
- How has the CPI changed over time?
- How does the monthly inflation trend compare to the yearly inflation trend?
- How does the current inflation rate compare to previous rates?

Findings & Insights



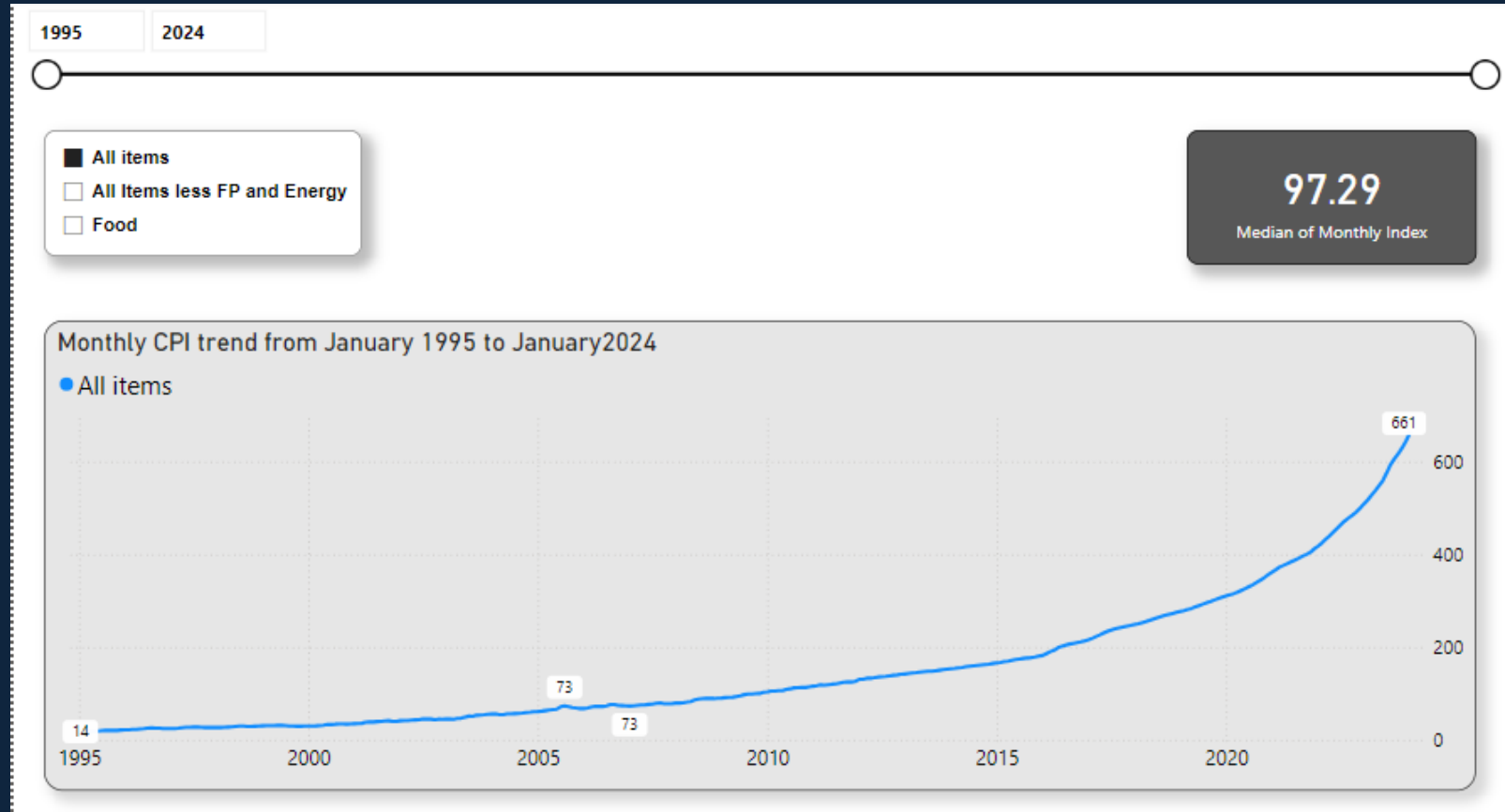
Findings & Insights - Overview

- The base year was 2009, precisely in November with a CPI of 100.
- A weighted average index of 1000 was used to represent the average total index of all goods and services.
- Total Food Index is 507.06, contributing 50.7% of the weighted average, while the core CPI contributes 40.6% (405.55).
- A line chart best demonstrates the trend of a variable over time.



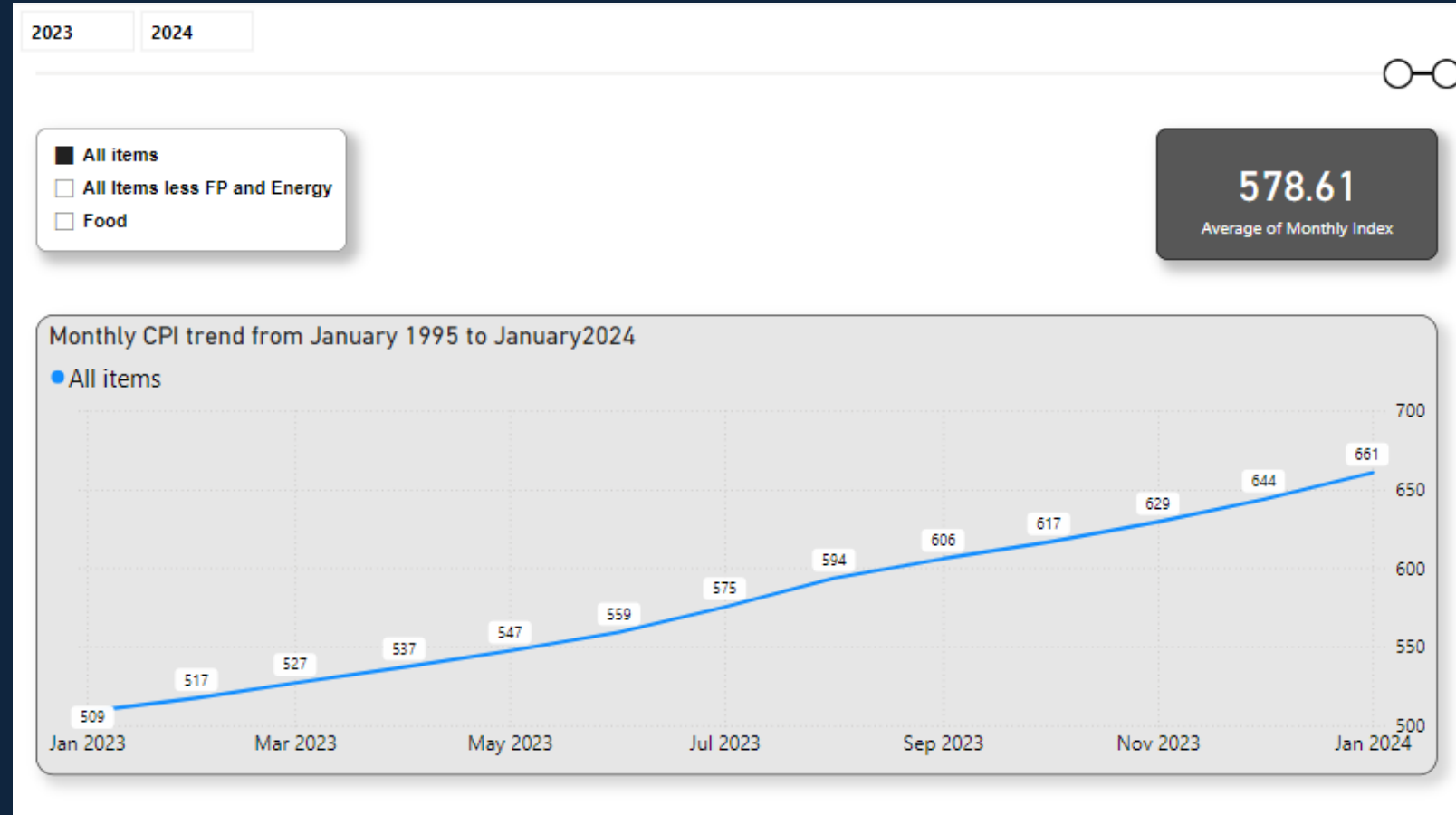
How has the CPI changed over time?

- There's been a gradual increase in the monthly price index for all items from 1995 to 2024.
- The lowest Monthly CPI was 14.30 in Jan 1995, and the highest was 660.78 in Jan 2024, with an average CPI of 97.29. This implies an approximately 46-fold (4500%) increase in the prices of goods and services over 29 years.



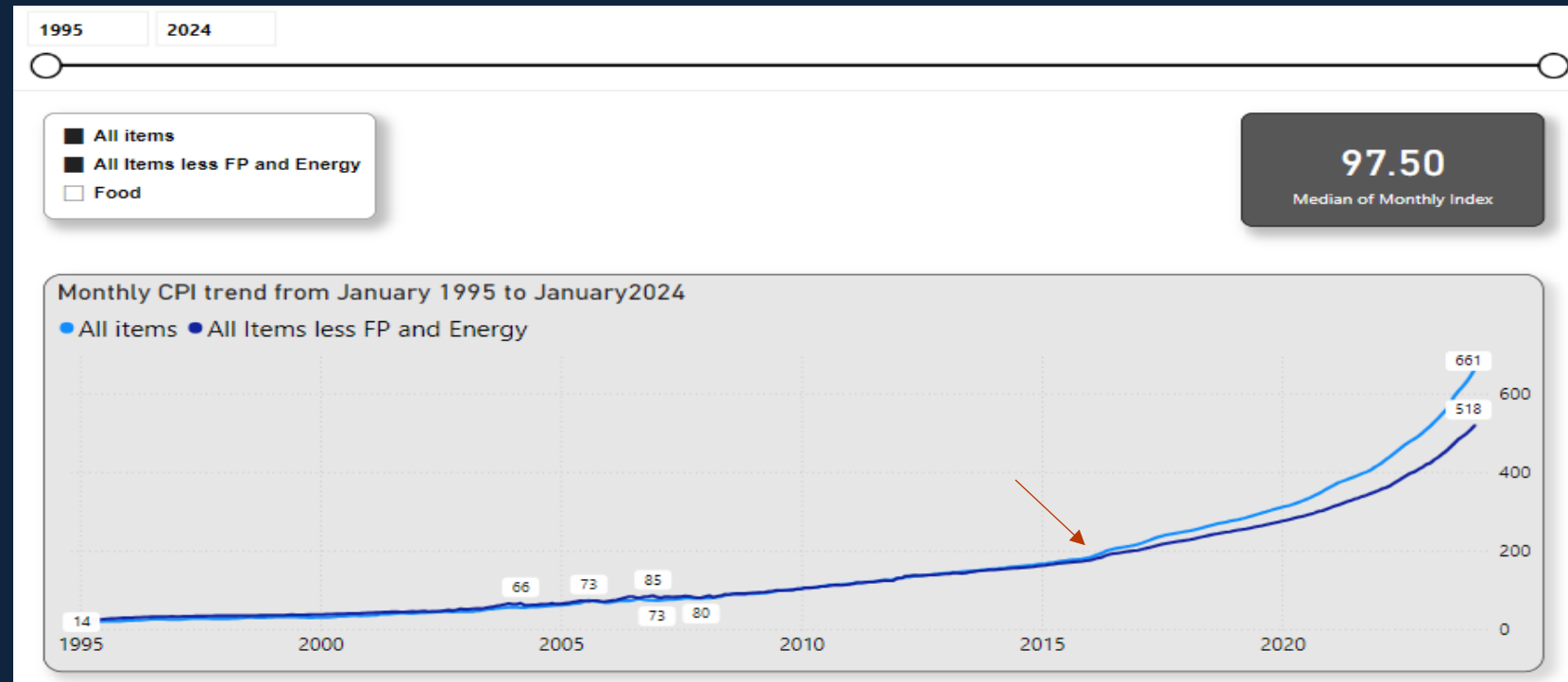
How has the CPI changed over time?

- A more recent comparison from Jan 2023 to Jan 2024 would help understand the current state.
- CPI average from Jan 2023 to Jan 2024 was 578.81.
- The CPI in Jan 2023 was 508.69 and rose to 660.78 in Jan 2024, a significant increase of 152.09 points.



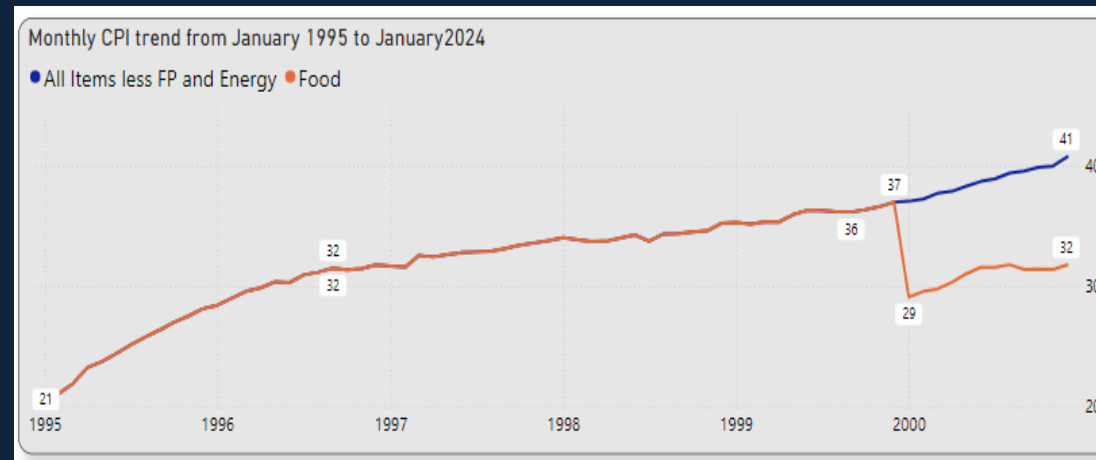
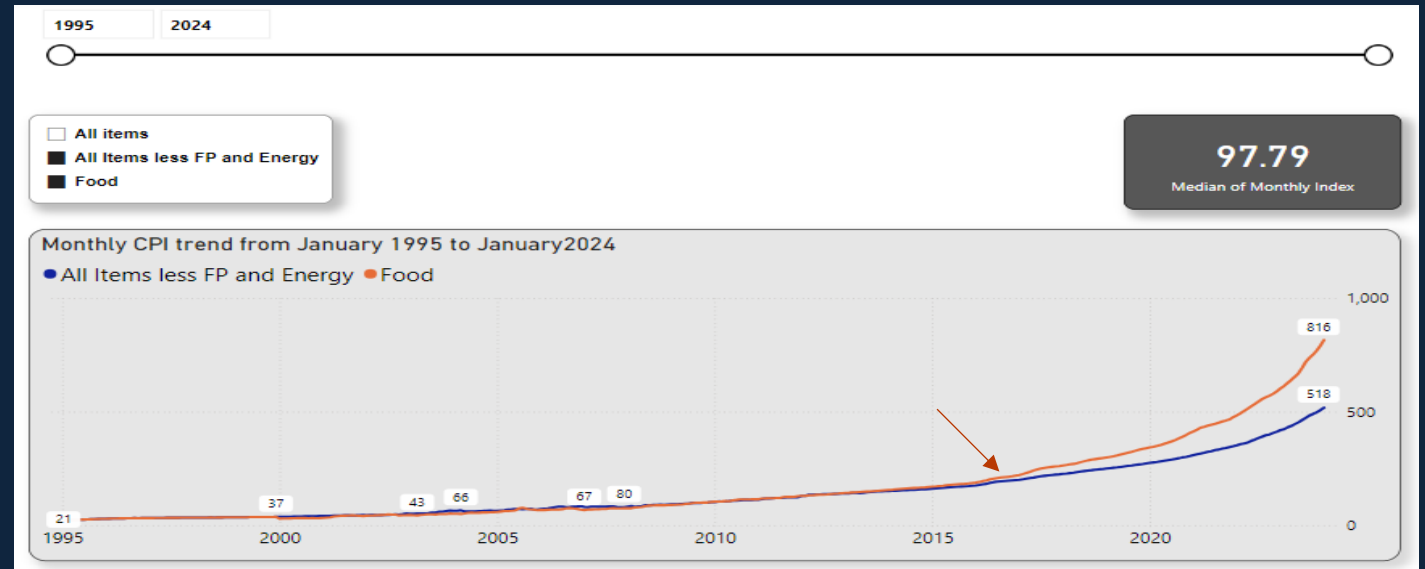
How has the CPI changed over time?

- The core CPI (All Items less Farm produce and Energy) was not significantly different from the All-items CPI from 1995 until about 2016 when they became significantly different.
- This sharp difference (All Items index > core CPI) indicates a significant rise in Farm produce and Energy prices, which are known to be volatile.
- However, the core CPI index still rose to a maximum of 518.21 in Jan 2024, accounting for a 1.24-fold (about 25%) price increase from Jan 2023.



How has the CPI changed over time?

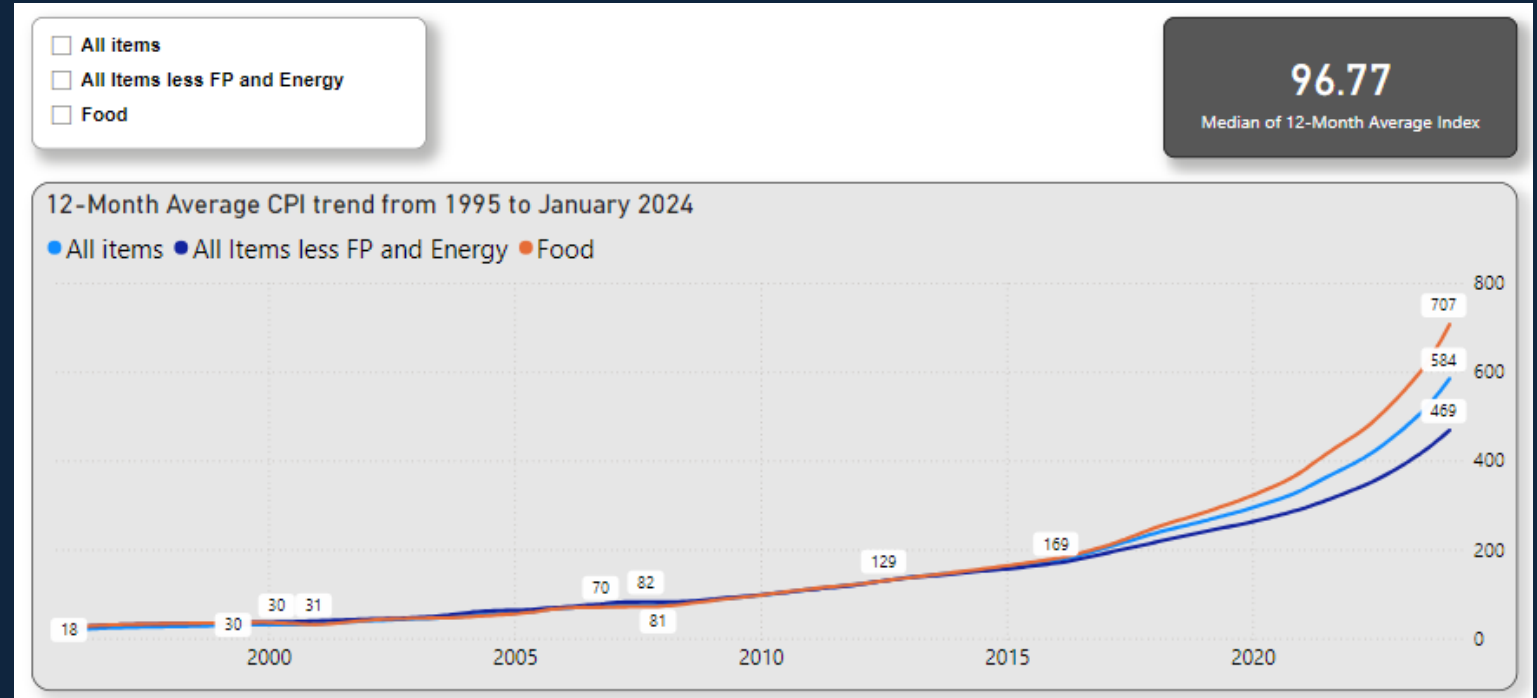
- A similar trend is seen when comparing core cpi to the food price index with a bifurcation in the price indices around 2016.
- The monthly food index and core cpi index were the same until 2000.
- Food contributes significantly (50.7%) to the overall consumer price index (All Items).



Year	All Items less FP and Energy	Food
1995	24.60	24.60
1996	30.50	30.50
1997	32.79	32.79
1998	34.21	34.21
1999	36.00	36.00
2000	38.78	30.91
2001	42.98	39.57
2002	46.46	44.76
2003	55.65	47.43

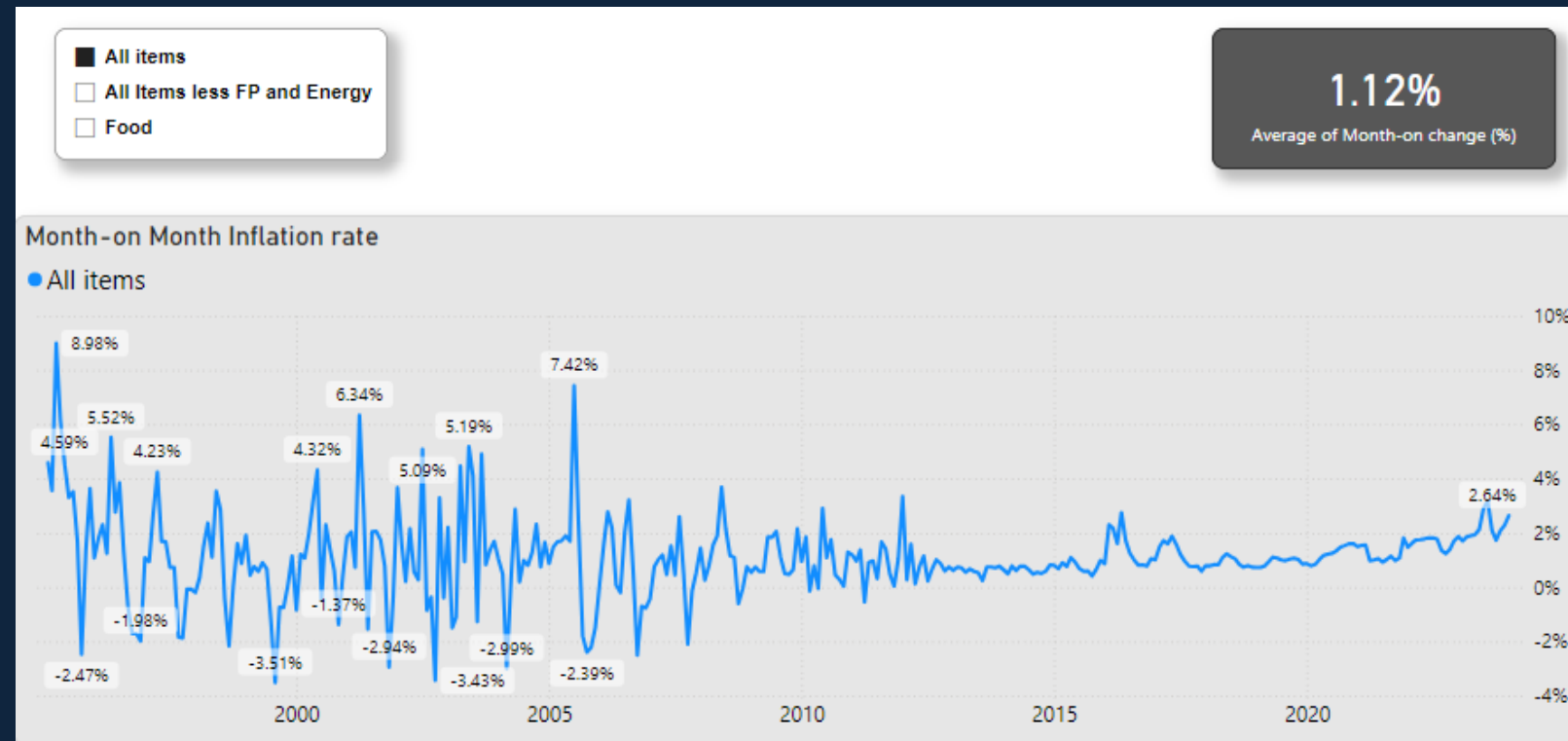
12-Month Average CPI Trend

- The 12-Month Average CPI data shows a similar trend to the Monthly CPI trend.
- The impact of farm produce and energy price index is obvious on the All Item price index when compared with the core index in Jan 2024 12-Month average CPI, a difference of 115.82.



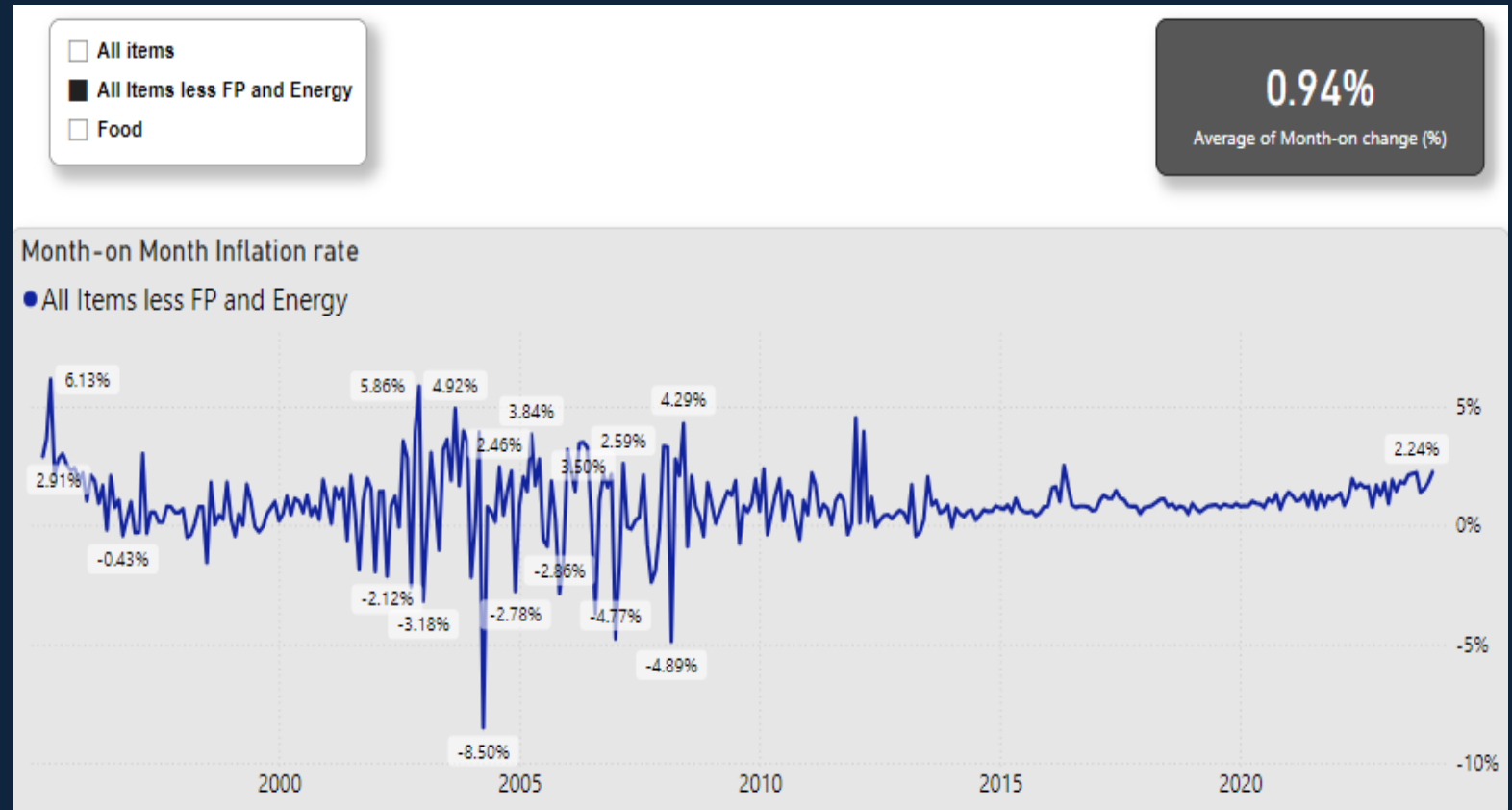
Month-on-Month Inflation – All Items

- Initially, we see high variability in the month-on-month inflation pattern for all items, which later tapers off into a less variable pattern after 2010.
- Between 1995 and 2024 January, the prices of goods and services rose by an average of 1.12% monthly.
- The highest rate of 8.98% occurred in April 1995, and the lowest (-3.51%) in August 1999.
- The prices of all items increased by 2.64% between Dec 2023 and Jan 2024, about 0.35% more than the rate in Dec 2023 (2.26%).



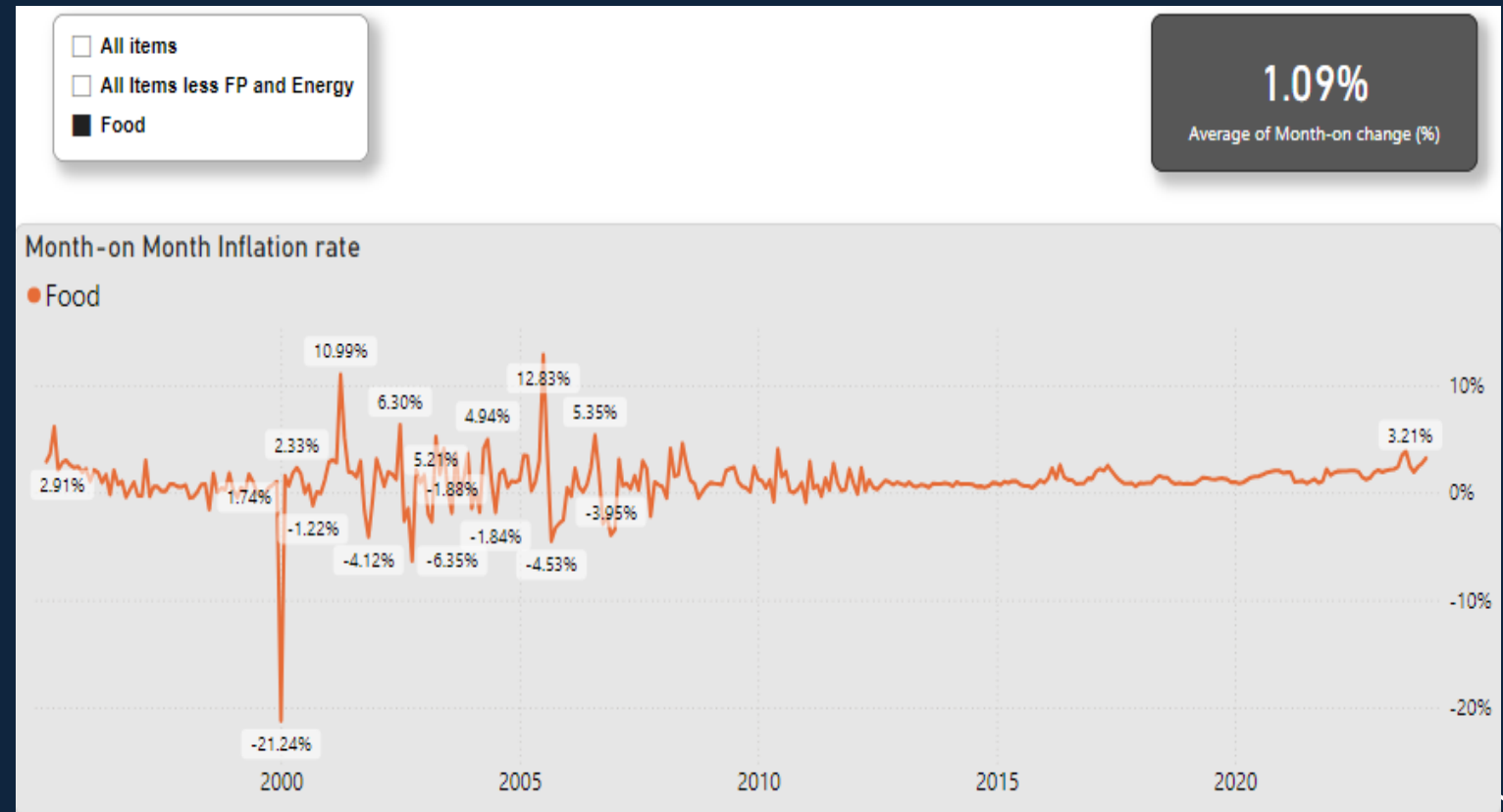
Month-on-Month Inflation – Core CPI

- We observe a similar pattern here for the core inflation rates, high variability initially (especially between 2001 and 2012) and then a less variable pattern in more recent years.
- Between 1995 and 2024 January, the prices of goods and services rose by 0.94% monthly on average.
- The highest rate of 6.13% also occurred in April 1995, while the lowest (-8.50%) in April 2004.
- The prices of core items increased by 2.24% between Dec 2023 and Jan 2024, about 0.42% more than the rate in Dec 2023 (1.82%).



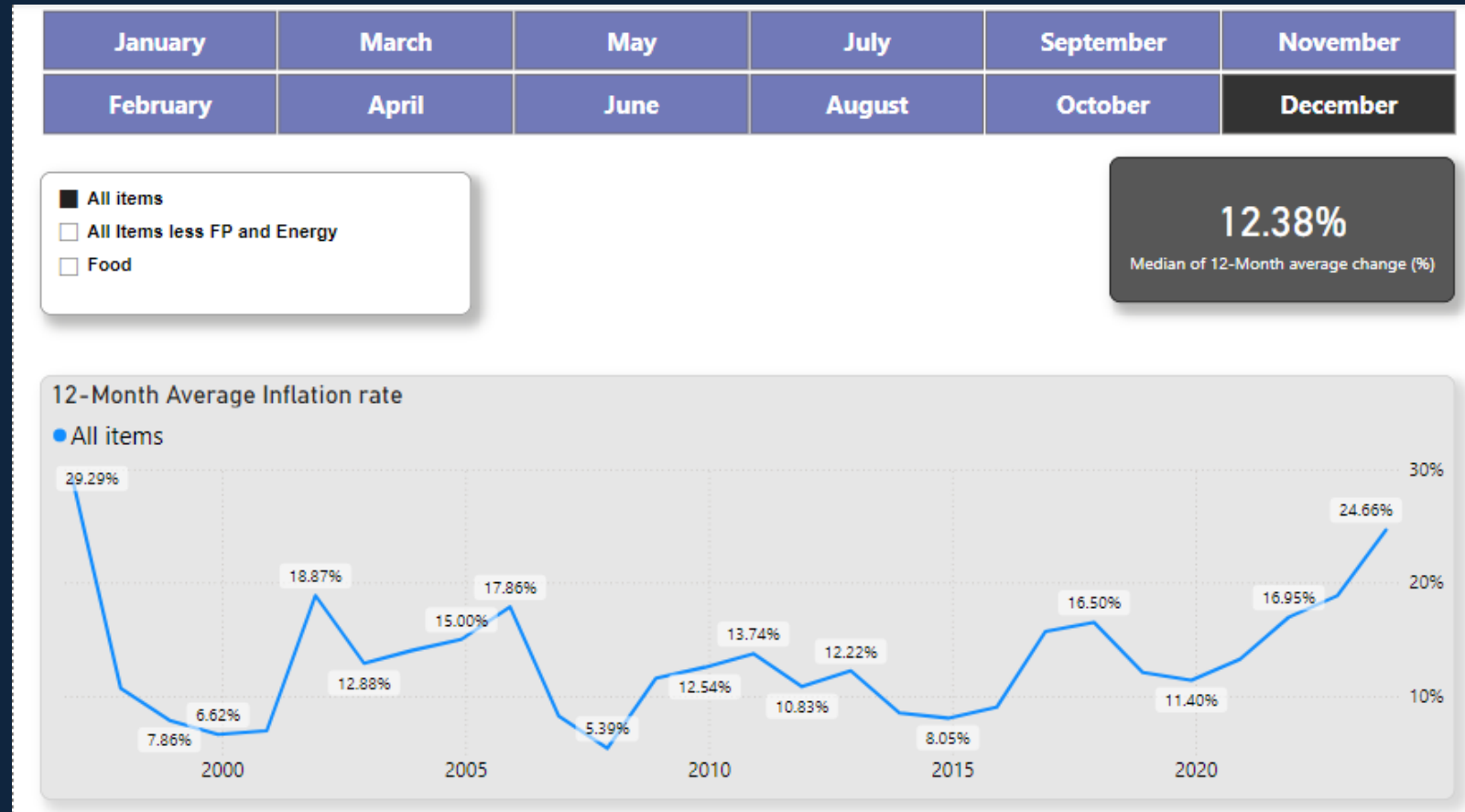
Month-on-Month Inflation – Food

- The period when much variability in food prices was between 2000 to about 2008, followed by a less variable pattern in more recent years.
- Between 1995 and 2024 January, the price of food items rose on average by 1.09% monthly.
- Food inflation rose to its all-time highest in July 2005 with a rate of 12.83% and took a maximum dip in Jan 2000 with a rate of -21.24%.
- The prices of food items increased by 3.21% between Dec 2023 and Jan 2024, about 0.49% more than the rate in Dec 2023 (2.72%).



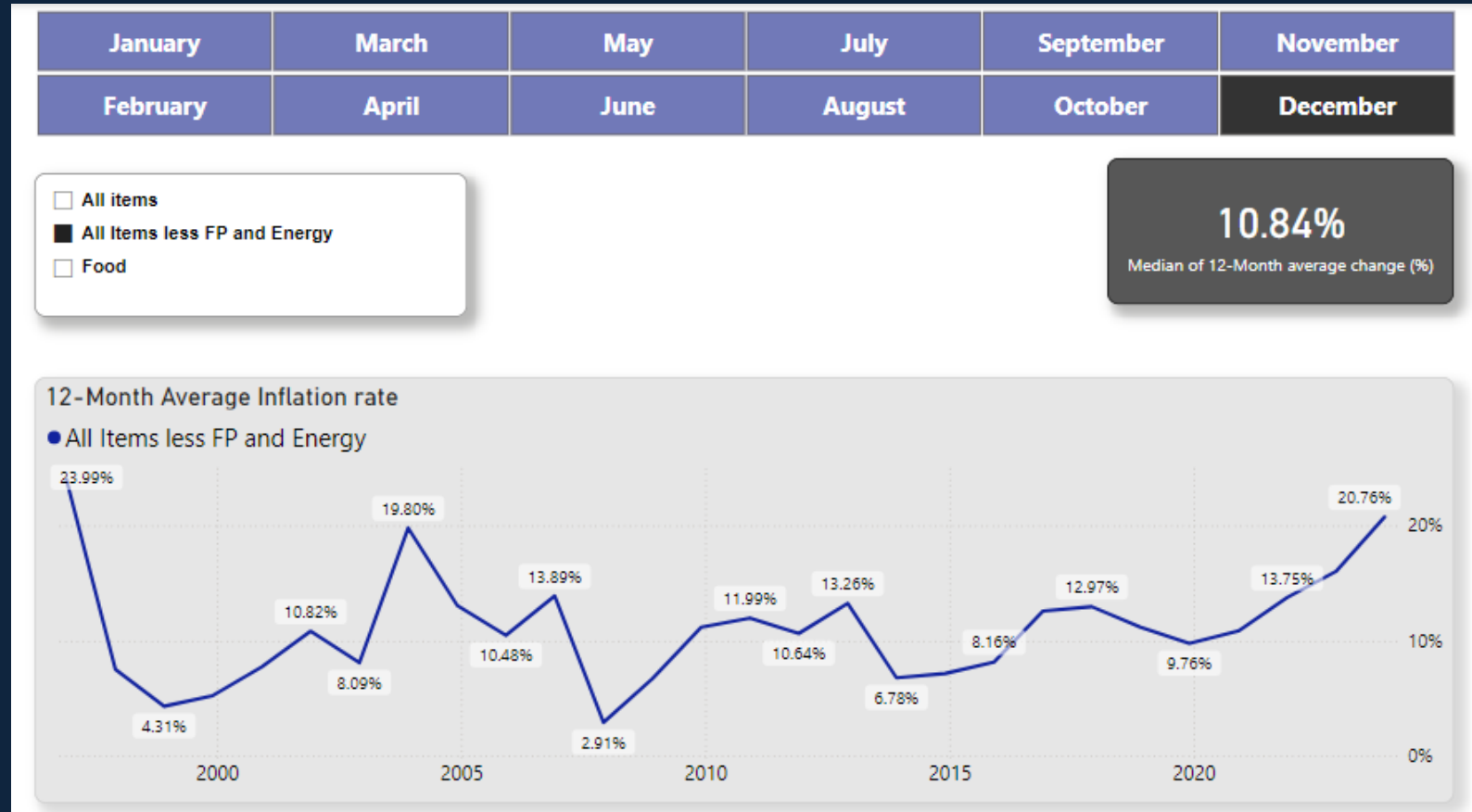
12-Month Average Inflation – All Items

- This describes the inflation rate between yearly averages, for example, the inflation rate between the 12-Month CPI average of two consecutive years.
- Using the December 12-Month Average CPI as focal point, we can observe the trend from year to year.
- The average inflation rate between each year is 12.38%, if the outliers are not taken into consideration.
- The largest inflation occurred between 1995 and 1996 at 29.29%, and the least (5.39%), between 2006 and 2007.
- In more recent times, Inflation tended towards the high side at 24.66% between 2022 and 2023, and in Jan 2024, it was 25.35%.



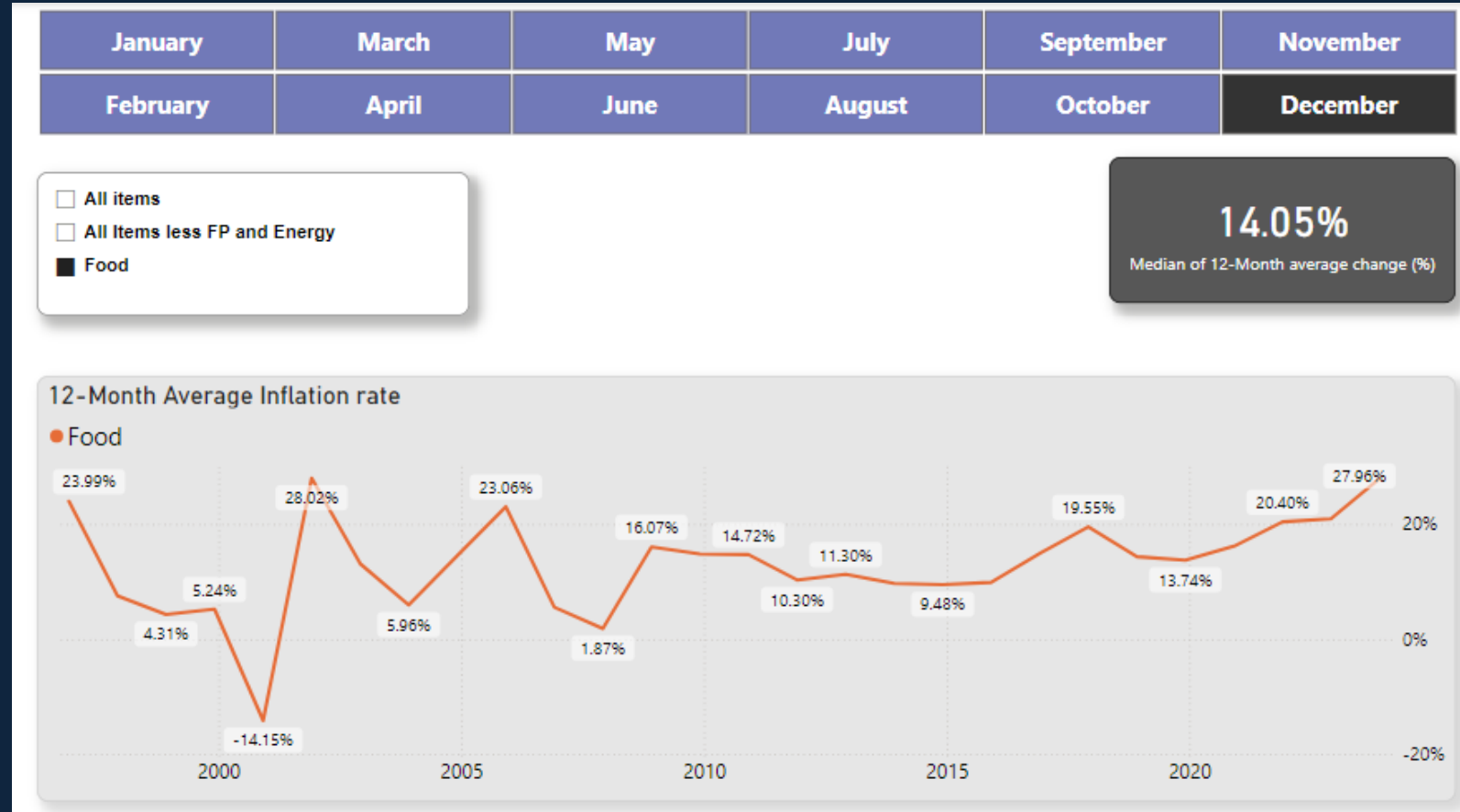
12-Month Average Core Inflation

- A similar trend can be observed for the core inflation.
- The average inflation rate between each year is 10.84%.
- The largest inflation occurred between 1995 and 1996 at 23.99%, and the least, between 2006 and 2007 and 2.91%.
- Between 2022 and 2023, core items prices rose by 20.76%, about 4% less than All item inflation.
- By Jan 2024, it was 21.15%.
- It's important to note that a line descent in the chart doesn't imply a reduction in price except when the values are negative.



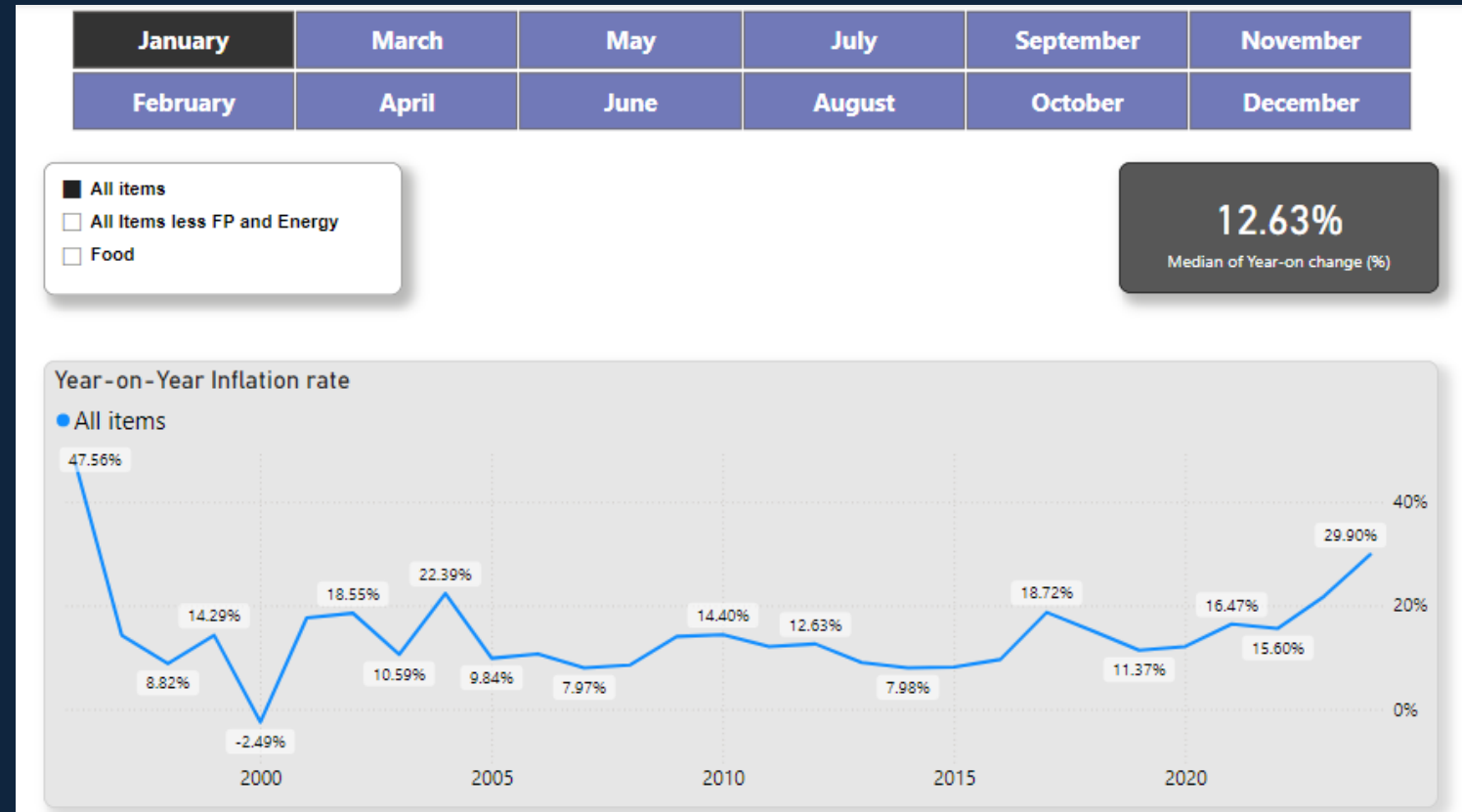
12-Month Average Food Inflation

- The average inflation rate between each year is 14.05%
- The food inflation trend reveals some wonderful insights. In the year 2000, the price of food items decreased by 14.15% (the only time a deflation occurred in 29 years), its all-time lowest, and increased by 28.02% the following year, its all-time highest.
- The corresponding values for the All-item inflation for the same years were 6.94% and 18.87% respectively, while core inflation was 7.73% and 10.82% respectively.
- Food inflation was 27.96% in 2023, the second all-time highest.
- By Jan 2024, the 12-month average inflation was 28.91%.



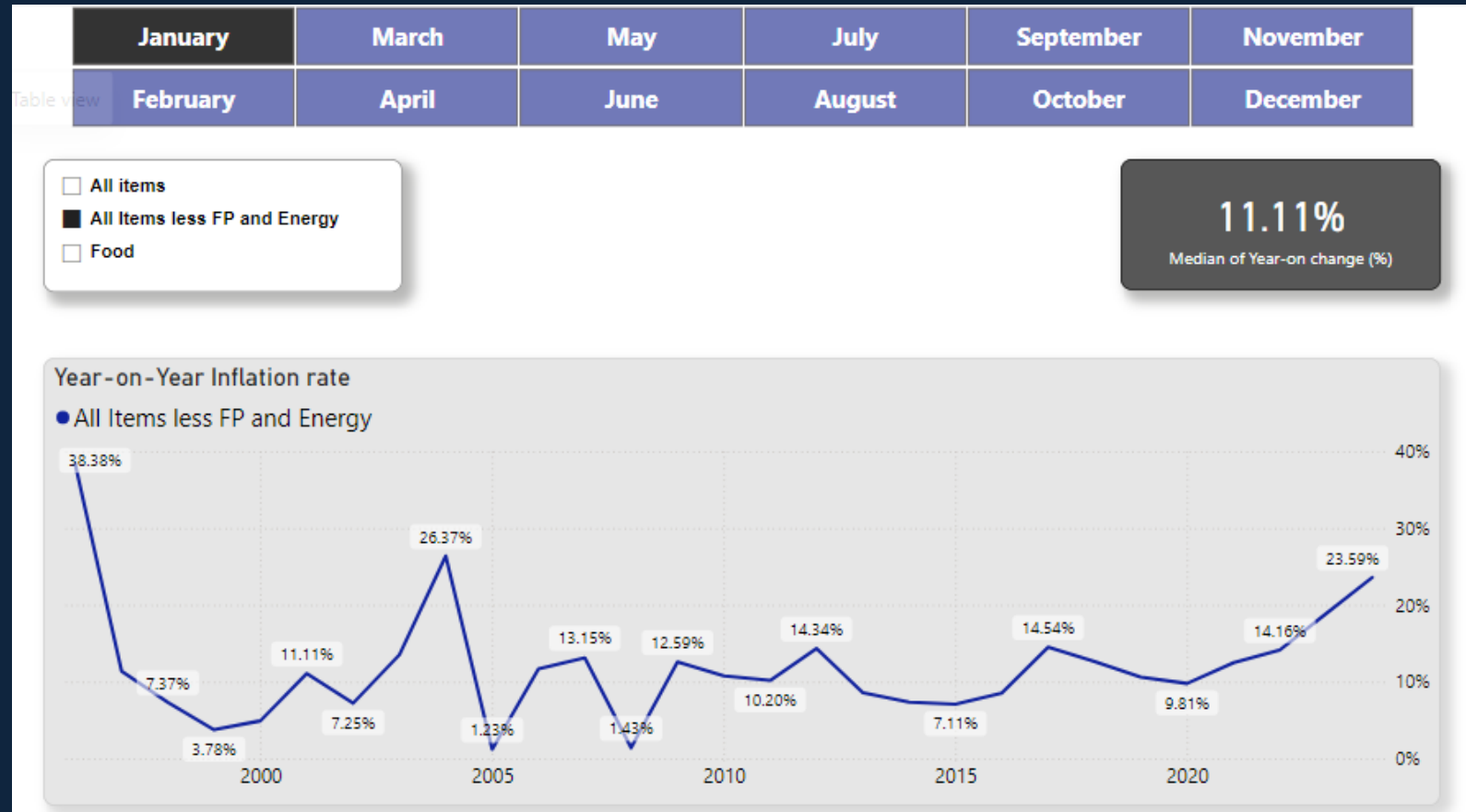
Year-on-year Inflation – All Items

- This describes the inflation rate between a month and the same month in the previous year.
- Using January for easy comparison, we can observe the trend from year to year.
- The average inflation rate for all items between each year is 12.63%, after removing outliers.
- The largest inflation occurred between 1995 and 1996 at 47.56%, and the least in Jan 2000 where prices decreased by -2.49% (the only deflation in 29 years).
- In Jan 2024, prices went up by 29.90%, which is 8.08% more than the rate in Jan 2023 (21.82%).



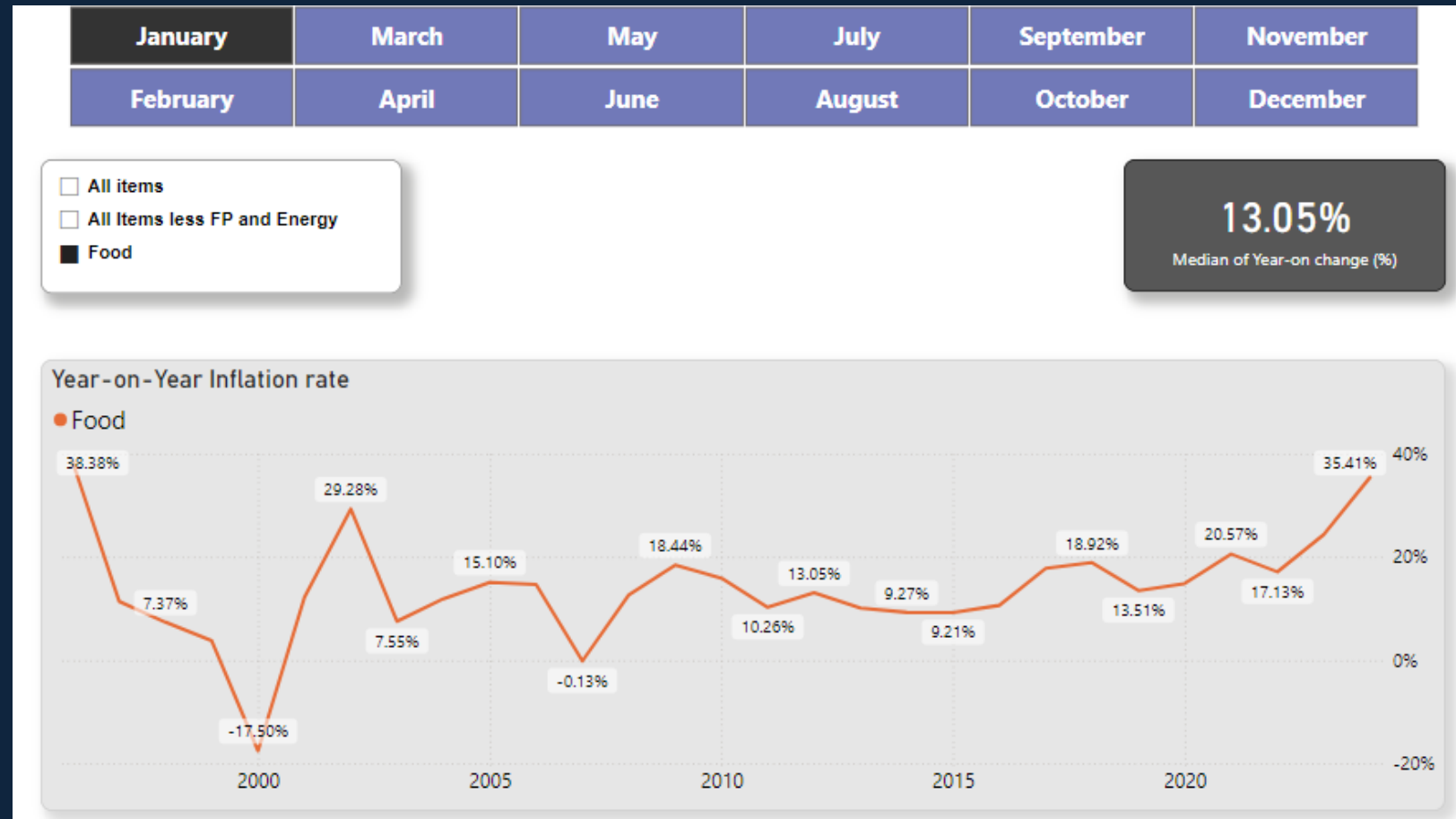
Year-on-year Inflation – Core Inflation

- Core Item prices increased by 11.11% on average every year.
- The largest inflation occurred between 1995 and 1996 at 38.38%, and the least in Jan 2005 at 1.23%.
- In Jan 2024, prices went up by 23.59%, which is 4.71% more than the rate in Jan 2023 (18.88%).



Year-on-year Inflation – Food

- Food prices increased by 13.05% on average every year.
- The largest inflation occurred between 1995 and 1996 at 38.38%, and the lowest was a deflation of 17.50% in Jan 2000. The second deflation occurred in Jan 2007 at -0.13%. These were the only two in the dataset time span.
- In Jan 2024, prices went up by 35.41%, which is 11.09% more than the rate in Jan 2023 (24.32%).



Summary

- Both monthly and 12-month average CPIs have a generally increasing trend. Although there are occasional periods where CPI decreases.
- The price of all items went up by 1.12% on average on a monthly basis, 0.94% for core items and 1.09% for food. The current rates are 2.64%, 2.24% and 3.21% respectively.
- On a yearly basis, average inflation for all items was 12.63%, 11.11% for core items, and food price went up by 13.05%. This is currently at 29.90%, 23.59%, and 35.41%.
- The 12-month average inflation for all items was 12.38%, 10.84% for core items, and 14.05% for food. This is currently at 25.35%, 21.15%, and 28.91% respectively.



Conclusion

- From 1995 to 2024, consumer price Indices have risen substantially, with the food sector contributing the largest share to the CPI.
- Recent data show sharp increases in inflation rates, which signals a heightened economic strain on consumers.
- Food and energy prices need to be stabilized as this would positively impact the consumer's purchasing power.
- You can interact with the PowerBi report [here](#).

References

- <https://www.investopedia.com/terms/c/consumerpriceindex.asp>
- <https://www.bls.gov/cpi/questions-and-answers.htm>

A decorative pattern of hexagons in various shades of blue, orange, and white. Some hexagons contain images: a market stall with umbrellas, three people working on a laptop, a close-up of data charts, and a stylized illustration of business people and technology.

Thank you

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