INDIA CPI INFLATION CASE STUDY

Overview: In INDIA , the CPI (Consumer Price Index) is used to measure inflation and it invlolves a fixed basket of goods and services. The basket is comphrensive and includes a wide array of items that an Indian consumer uses. These items are not limited to just food and clothing but extend to transportation, medical care, electricity, education and almost every other category that involves expenditure of money. The CPI is calculated by comparing the general price level in the markets during a particular time period with a base year. The items in the CPI basket are calssified across various categories like food and beverages, clothing , housing, fuel and light and recreation among others.

The CPI basket contains categories like food and beverages, housing, apparel, transportation ,medical care and more. The weight of each category in the total index might differ based on iths relative importance to the average consumer expenditure but for the purpose of this analysis consider equal weights across all categories.

PROBLEM STATEMENT:

YOU ARE WORKING WITH THE NATIONAL STATISTICAL OFFICE WHICH IS EQUIPPED TO RELEASE INFLATION NUMBERS IN INDIA. AS AN ANALYST YOU ARE PROVIDED WITH CPI DATA AND ARE EQUIPPED TO FIND OUT INSIGHTS FROM THE DATA. YOUR SENIOR WANTS YOU TO FIND KEY TRENDS

AND DEEP DIVE INTTO THE DATA TO ANSWER THE FOLLOWING QUESTION –

**Q1.)** BASED ON THE LATEST MONTH’S DATA, IDENTIFY THE CONTRIBUTION OF DIFFERENT BROADER CATEGORIES(FOOD, ENERGY, TRANSPORTATION,EDUCATION ETC) TOWARDS THE CPI BASKET.

BROADER CATEGORIES(BUCKETS) CANB BE CREATED BY COMBINING SIMILAR CATEGORIES INTO ONE BUCKET; EX: MEALS, BEVERAGES, CEREALS CAN BE CLUBBED TO CREATE “FOOD” CATEGORY ETC

* WHICH BROADER CATEGORY HAS THE HIGHESTCONTRIBUTION TOWARDS CPI CALCULATION
* CONTRIBUTION IS CALCULATED BY EVALUATING THE UNDERLYING INDEX VALUES FOR BROADER CATEGORYAND SHOULD ADD TO 100% WHEN CONTRIBUTION FROM DIFFERENT BROADER CATEGORIES ARE ADDED.

**Q2.)** A trend of Y-O-Y Increase in CPI (Rural+Urban) inflation starting 2017 for the entire baskets of products combined.

* Create a graph depicting the growth rate Y-O-Y and identify the year with highest inflation rate.
* Highlight the reason why the year has the highest inflation (based on research)

**Q3.)** With India’s retail inflation reaching a 3 month high of 5.55% in November 2023, largely due to a sharp rise in food prices. Analyze the following for 12 months ending May’ 23.

* Investigate the trends in the prices of broader food bucket category and evaluate month on month changes. Highlight month with highest and lowest food inflation.
* Identify the absolute changes in inflation over the same 12 months period and identify the biggest individual category contributor (only with broader food category) towards inflation.

**Q4.)** Investigatehow the onset and progression of the COVID-19 pandemic affected inflation rates in India . Analyze the impact of key pandemic milestone**(first** lockdown**) on the CPI** inflation % , specially focus on categories like healthcare, food and essential services.

Hint: You can consider Mar’20 as the onset of Covid and can compare the inflationTrend before and after Mar’20 to see if there is a change in inflation % before and after.

**Q5.)** Investigate how major global economic events (like imported crude oil price fluctuations ) have influenced India’s inflation. This can include an analysis of imported goods and price trends.

* For the purpose of this analysis, focus only on the imported oil price fluctuations for year 2021 to 2023(Month on Month)
* Identify trends in oil price change with change in inflation prices of all the categories and identify categories whose inflation prices strongly changes with fluctuations in imported oil price.(Hint : you can use =correl function.)

**OTHER INFORMATION:**

* PERCENTAGE CHANGE: TO UNDERSTAND INFLATION OR DEFLATION TRENDS, CALCAULTE THE PERCENTAGE CHANGE IN CPI BETWEEN TWO PERIODS(E.G., YEAR OVER YEAR OR MONTH OVER MONTH).THIS SHOWS HOW MUCH PRICES HAVE INCREASED OR DECREASED RELAETIVE TO THE EARLIER PERIOD.
* FOR EXAMPLE , TO CALCULATE THE MONTHLY INFLATION RATE BETWEEN TWO CONSECUTIVE MONTHS :

MONTHLY INFLATION RATE=(CPI IN CURRENT MONTH-CPI IN PREVIOUS MONTH)\*100

* ANNUAL INFLATION RATE : FOR LONGER PERIODS, SUCH AS YEARLY INFLATION, USE THE CPI VALUES AT THE START AND END OF THE PERIOD . THIS HELPS IN UNDERSTANDING THE OVERALL INFLATION EXPERIENCED OVER THE YEAR.

ANNUAL INFLATION RATE: ((CPI AT END OF THE YEAR - CPI AT START OF THE YEAR)/CPI AT START OF THE YEAR)\*100

ANY MONTH CAN BE CONSIDERED AS THE START OF THE YEAR, THEN END OF THE YEAR MONTH WILL BE CONSIDERED 12 MONTHS AFTER THE MONTH YOU HAVE SELECTED FOR START OF THE YEAR.