**Executive Report on Exploratory Data Analysis (EDA) for Food Prices in Nigeria**

**Executive Summary:**

This report presents an exploratory data analysis (EDA) of historical food price data in Nigeria. The objective of this analysis is to gain insights into the trends, distribution, and correlations within the dataset. The dataset used in this analysis contains information on food prices, geographic locations, categories, and more. The analysis provides valuable insights for policymakers, stakeholders, and consumers regarding food price trends and their implications.

**Data Overview:**

The dataset contains a total of 64,221 entries and 18 columns. These columns include information such as date, state, local government, market name, latitude, longitude, category, commodity, unit, price flag, price type, currency, price in Nigerian Naira (NGN), price in United States Dollars (USD), year, month, season, and inflation.

**Data Integrity**: There are no missing values or duplicate entries in the dataset, ensuring data integrity.

**Key Findings:**

**Geographical Distribution:**

Geographic Concentration: The data is primarily concentrated in the northern region of Nigeria, indicating a higher density of recorded commodity prices in this area.

**Category-wise Analysis:**

"Cereals and tubers" have the highest count of commodities, followed by "pulses and nuts" and "vegetables and fruits."

"Milk and dairy" has the lowest count of commodities.

**State-wise Analysis:**

"Yobe" has the highest count of data records, followed by "Borno" and "Kaduna."

"Sokoto" has the lowest count of data records.

**Commodity Analysis:**

"Millet" is the most frequently occurring commodity, followed by "Rice (imported)" and "Rice (local)."

"Oil (palm)" and "Yam" are also among the top five commodities by occurrence count.

**Year-wise Analysis:**

"2021" has the highest count of data records, followed by "2020" and "2019."

"2004" has the lowest count of data records.

**Market-wise Analysis:**

"Potiskum" has the highest count of data records, followed by "Dawanau" and "Ibadan."

"Bolori Stores" has the lowest count of data records.

**State Analysis:**

Out of Nigeria's 32 states, data was gathered from 14 states. Yobe, Borno, and Kaduna have the highest number of records, while Sokoto has the lowest.

**Price Distribution by State:**

The analysis reveals significant variations in food prices across different states in Nigeria. Abia, Adamawa, and Kebbi exhibit notably higher food prices compared to other states, indicating regional disparities.

**Price Distribution by Category:**

Certain food categories are associated with higher prices. "Milk and dairy" stands out with the highest prices, followed by "oil and fats" and "meat, fish, and eggs." On the other hand, "pulses and nuts" and "vegetables and fruits" have notably lower prices.

**Price Distribution by Food Commodity:**

Food prices vary significantly among different commodities. "Yam (Abuja)" has the highest price, followed by "Yam" and "Milk." Conversely, "Watermelons," "Tomatoes," and "Bananas" are among the commodities with notably lower prices.

**Price Distribution by Season:**

Food prices exhibit seasonal fluctuations. Prices are highest during the "Peak Rainy Season," followed by the "Early Rainy Season" and "Late Rainy Season." In contrast, prices are comparatively lower during the "Dry Season." This seasonal variation is crucial for understanding consumer price trends.

**Food Price Trends:**

There are significant fluctuations in food prices over the years, with notable spikes from 2020 to 2021 to 2022. Inflation rates have been gradually increasing over the years, impacting the cost of living and food commodities.

**Correlation Analysis:**

There is a positive correlation between NGN food prices and inflation, indicating that increased food prices in NGN are associated with a slight increase in inflation. However, there is a very weak positive correlation between NGN and USD food prices, suggesting minimal influence on each other.

**Retail vs. Wholesale Prices:**

"Meat, fish, and eggs," "Milk and dairy," "Vegetables and fruits," "Miscellaneous food," and "Non-food" only have Retail Prices. "Oil and fats," "Cereals and tubers," and "Pulses and nuts" have both Retail and Wholesale Prices.

**Outliers:**

The boxplots of sale's prices grouped by the 'unit' column, shows that there are outlier values on the prices of 'yam', 'bread', and 'eggs' commodity

**Conclusion:**

The EDA of historical food price data in Nigeria has provided valuable insights into the dataset, including geographical distribution, category-wise and commodity-wise analysis, and correlation findings. Notably, the analysis highlights the importance of monitoring inflation rates and their correlation with food prices. Additionally, understanding the distribution of data across states, markets, and categories is crucial for informed decision-making.

These findings are instrumental for policymakers, stakeholders, and consumers to make data-driven decisions, monitor food price trends, and plan strategies to mitigate food price inflation. The analysis forms the foundation for further predictive modeling and decision support tools in addressing food price challenges in Nigeria.