Nutrition Analysis Report for McDonald's Menu Items

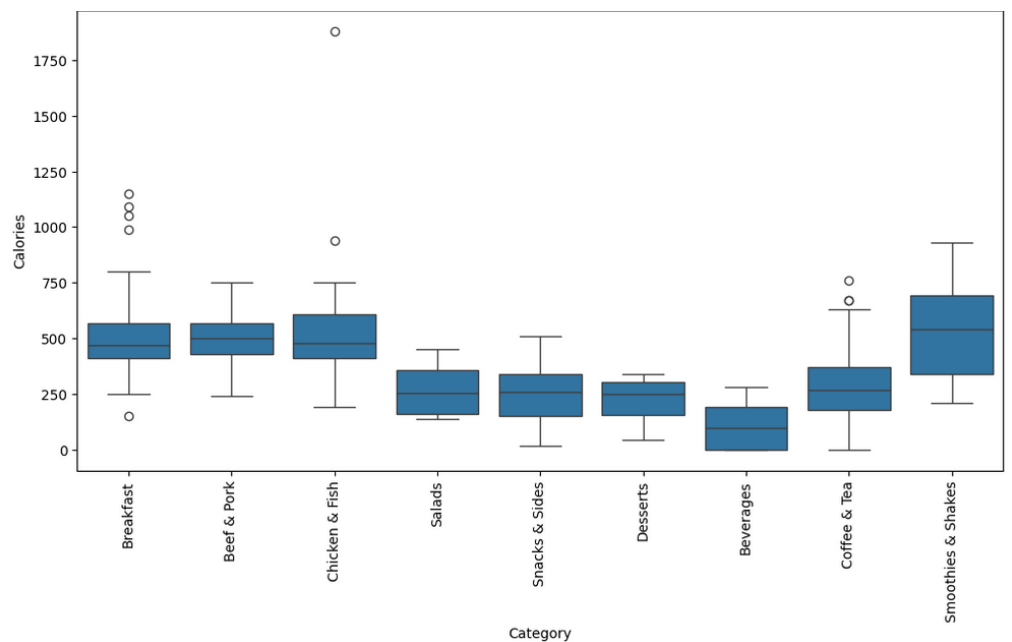**By :**

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Git hub = https://github.com/Abhi9895/McDonald-s-Menu-Nutritional-Analysis---Project.git

## Summary of Findings:

1. **Calorie Distribution:**

   o   The distribution of calorie counts across menu items is right-skewed, indicating that most items have lower calorie counts. However, there are some outliers with higher calorie counts.

Nutritional Content Variation:

o The nutritional content varies significantly across different items and categories. Some items have high levels of fat, cholesterol, sodium, etc., while others are relatively lower in these nutrients.

Average Nutritional Content by category
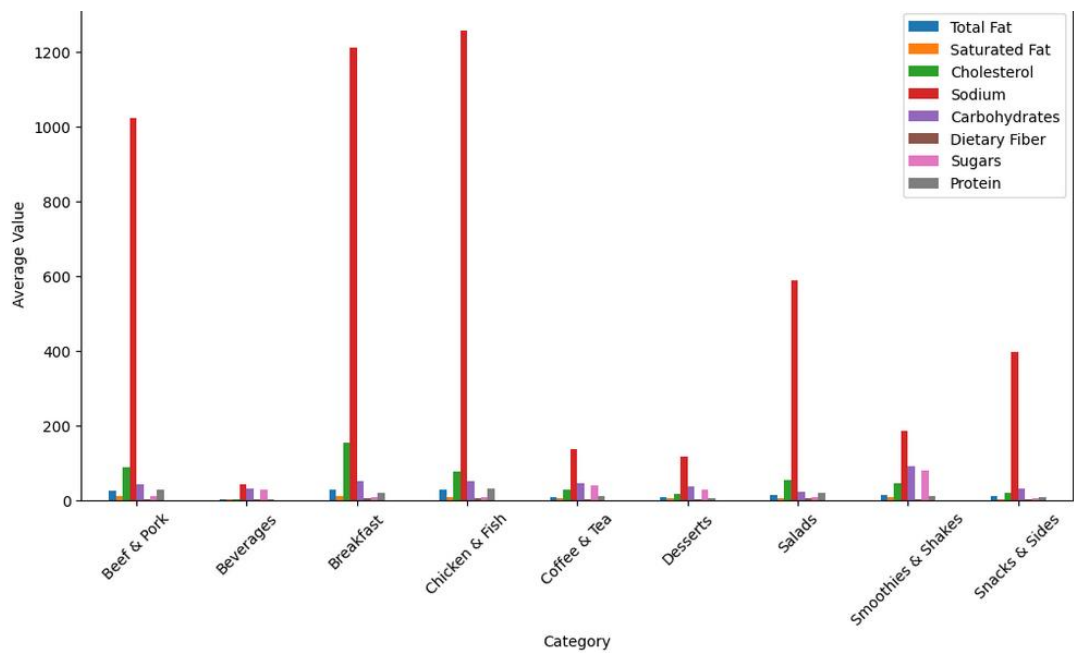
Trends in Nutritional Content:

o Trends in nutritional content can be observed across different food categories. Certain categories tend to have higher or lower levels of specific nutrients.

Calorie Counts of Menu Items:

o Menu items with the highest calorie counts tend to be larger and more indulgent options. Conversely, items with the lowest calorie counts are typically smaller or lighter choices.

Average Nutritional Content:

o The average nutritional content varies across popular menu categories, providing insights into healthier and less healthy options.

How the Nutritional Analysis Could Benefit McDonald's:

1. **Informed Choices for Customers:**
   o Clear nutritional information can help customers make more informed choices about their food, enabling them to select options that align with their dietary preferences and goals.

2. **Promotion of Healthier Options:**
   o The analysis can encourage the development and promotion of healthier menu options to cater to the needs of health-conscious customers. This can include offering more nutritious alternatives and highlighting healthier choices on the menu.

3. **Support for Menu Development:**
   o Insights from the analysis can support menu development efforts by identifying nutritional trends and preferences among customers. This can guide the creation of new menu items that meet nutritional standards and align with consumer preferences.

4. **Transparency and Accountability:**
   - By providing transparent nutritional information, McDonald's can enhance accountability in food labelling and marketing practices. This fosters trust with customers and demonstrates a commitment to transparency in the food industry.

Conclusion:

The nutrition analysis of McDonald's menu items provides valuable insights into the nutritional content and trends observed across different food categories. By leveraging these insights, McDonald's can not only empower customers to make healthier choices but also drive menu innovation and enhance transparency in food offerings.

Data Analysis Approach and Methodology:

- Loaded the dataset and inspected for structure and missing values.

- Conducted exploratory data analysis (EDA) to analyse calorie distribution, explore nutritional content, and identify trends.

- Created visualizations including histograms and bar charts to depict nutritional information.

- Identified menu items with highest and lowest calorie counts and determined average nutritional content of popular menu categories.

Exploratory Data Analysis Findings and Insights:

   - Distribution of calorie counts is right-skewed, with most items having lower calorie counts.
   - Nutritional content varies across different items and categories, with trends observed in different food categories.
   - Visualizations effectively convey calorie counts and nutritional information across menu items and categories.

Visualizations Depicting Nutritional Information:

      o   **Histograms depict the distribution of calorie counts.**
      o   **Bar charts compare nutritional characteristics of different food categories.**

Source Code Used for Data Preprocessing, Analysis, and Visualization:

```python
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

# 1. Data Preprocessing:
# Load the dataset
df = pd.read_csv("mcdonalds_menu.csv")

# Inspect the dataset
print(df.info())

# Handle missing values (if any)
print(df.isnull().sum())

# 2. Exploratory Data Analysis (EDA):
# Analyze the distribution of calorie counts
calorie_distribution = df['Calories'].describe()

# Explore nutritional content
nutritional_content = df[['Total Fat', 'Saturated Fat', 'Cholesterol',
'Sodium', 'Carbohydrates', 'Dietary Fiber', 'Sugars',
'Protein']].describe()

# Identify trends and patterns
trends_patterns = df.groupby('Category').mean()

# 3. Data Visualization:
# Distribution of calorie counts
plt.figure(figsize=(10, 6))
sns.histplot(df['Calories'], bins=20, kde=True, color='skyblue',
edgecolor='black')
plt.title('Distribution of Calorie Counts')
plt.xlabel('Calories')
plt.ylabel('Frequency')
plt.show()
# Compare nutritional characteristics of different food categories
nutritional_cols = ['Total Fat', 'Saturated Fat', 'Cholesterol', 'Sodium',
'Carbohydrates', 'Dietary Fiber', 'Sugars', 'Protein']
for col in nutritional_cols:
    plt.figure(figsize=(10, 6))
    sns.barplot(x='Category', y=col, data=df)
    plt.title(f'Average {col} by Category')
    plt.xlabel('Category')
    plt.ylabel(f'Average {col}')
    plt.xticks(rotation=45)
    plt.show()
```