



McDonald's Menu Nutritional Analysis

Submitted by:

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INTRODUCTION

- **Business Problem Framing**

With increasing health consciousness among the consumers, McDonald is trying to bring improvements to the menu. Fast food chains have faced a lot of flak for keeping unhealthy items on their menu and McDonald's does not want to lose on its market share

- **Conceptual Background of the Domain Problem**

The company is finding a new perspective to improve their menu. The aim is to analyse data and find insights on how McDonald's could improve the nutritional profile of their menu.

- **Motivation for the Problem Undertaken**

The motive behind this analysis is to focus on areas that can help incrementally improve the overall nutritional quality of McDonald's expansive menu. Some of them include promoting items with high nutritive value, using alternative sweeteners, simplifying ingredients, add items with healthy fats, introducing low sodium items on the menu. It will help customers make informed choices, highlights lower calorie options for McDonald's, allows customers to balance higher sodium items and shows McDonald's nutrition transparency.

Analytical Problem Framing

- **Mathematical/ Analytical Modelling of the Problem**
 - The serving size column as data in different measurements oz as well as gm. For liquids, it is ml and fl oz and carton. The data had to be streamlined to one unit of measurement – ml(for liquids) and gms.
 - There are many outliers , hence median was taken for visualizations instead of average to capture this type of data better, which had a range.
 - Capping is the ideal method to remove outliers. I have used it for Calorie column
 - There is no gender mentioned. According to the health organizations males consume more calories than females, females should consume 2000 calories whereas, males consume 2500 calories, because of the gender not mentioned. the thresholds is taken to be 2500 calories as an average, which can impact accuracy, especially when determining thresholds(for example dividing data into high sodium levels and low sodium levels), especially for bad nutrients such as cholesterol, sodium, saturated fat, etc.

- **Data Sources and their formats**

Following formats are used:

- ✓ Scatter plots
- ✓ Correlation plot
- ✓ Bokeh plots
- ✓ Joint plots
- ✓ Skewness table
- ✓ Box plots
- ✓ Reset index
- ✓ Used histogram to view distribution of all the numeric variables

Libraries Used:

- Data Processing

Following steps are used for data cleaning:

1. All units were centralised for serving size columns. The column data type was changed from object to float. Another numeric serving size column was created and the old one was discarded.

2. Used groupby function to get top 10 items for all nutrients

2.1 These are the top 10 items with **most saturated fat** in the menu

McFlurry with M&M's Candies (Medium)	20.0
Big Breakfast with Hotcakes (Large Biscuit)	20.0
Chicken McNuggets (40 piece)	20.0
Frappé Chocolate Chip (Large)	20.0
Double Quarter Pounder with Cheese	19.0
Big Breakfast with Hotcakes (Regular Biscuit)	19.0
Big Breakfast (Large Biscuit)	18.0
Frappé Mocha (Large)	17.0
Frappé Chocolate Chip (Medium)	17.0
Big Breakfast (Regular Biscuit)	17.0

These are the top 10 items with **least saturated fat** in the menu

Coca-Cola Classic (Large)	0.0
Nonfat Hazelnut Latte (Medium)	0.0
Nonfat Hazelnut Latte (Large)	0.0
Nonfat French Vanilla Latte (Small)	0.0
Nonfat French Vanilla Latte (Medium)	0.0
Nonfat French Vanilla Latte (Large)	0.0
Mango Pineapple Smoothie (Small)	0.0
Fat Free Chocolate Milk Jug	0.0
Minute Maid 100% Apple Juice Box	0.0
Dr Pepper (Small)	0.0

2.2. Top 10 items with **most Trans fat**

Double Quarter Pounder with Cheese	2.5
Quarter Pounder Deluxe	1.5
Quarter Pounder with Bacon & Cheese	1.5
Bacon Clubhouse Burger	1.5
Quarter Pounder with Bacon Habanero Ranch	1.5
Quarter Pounder with Cheese	1.5
Steak, Egg & Cheese Bagel	1.5

Frappé Caramel (Large)	1.5
Frappé Chocolate Chip (Large)	1.5
Vanilla Shake (Small)	1.0

Top 10 items with **least Trans fat**

1% Low Fat Milk Jug	0.0
McFlurry with Oreo Cookies (Snack)	0.0
McFlurry with Reese's Peanut Butter Cups (Snack)	0.0
McRib	0.0
Medium French Fries	0.0
Minute Maid 100% Apple Juice Box	0.0
Minute Maid Orange Juice (Large)	0.0
Minute Maid Orange Juice (Medium)	0.0
Minute Maid Orange Juice (Small)	0.0
Mocha (Medium)	0.0

2.3. Top 10 items with **maximum calories**

Chicken McNuggets (40 piece)	1880
Big Breakfast with Hotcakes (Large Biscuit)	1150
Big Breakfast with Hotcakes (Regular Biscuit)	1090
Big Breakfast with Hotcakes and Egg Whites (Large Biscuit)	1050
Big Breakfast with Hotcakes and Egg Whites (Regular Biscuit)	990
Chicken McNuggets (20 piece)	940
McFlurry with M&M's Candies (Medium)	930
Chocolate Shake (Large)	850
Strawberry Shake (Large)	850
Shamrock Shake (Large)	820

Top 10 items with **least calories**

Diet Dr Pepper (Child)	0
Diet Dr Pepper (Small)	0
Diet Dr Pepper (Medium)	0
Iced Tea (Child)	0
Iced Tea (Large)	0
Iced Tea (Medium)	0
Diet Coke (Small)	0
Coffee (Large)	0
Iced Tea (Small)	0
Diet Dr Pepper (Large)	0

2.4. Top 10 items with most cholesterol

Big Breakfast with Hotcakes (Regular Biscuit)	575
Big Breakfast with Hotcakes (Large Biscuit)	575
Big Breakfast (Large Biscuit)	555
Big Breakfast (Regular Biscuit)	555
Steak & Egg McMuffin	300
Steak, Egg & Cheese Bagel	295
Sausage McMuffin with Egg	285
Steak & Egg Biscuit (Regular Biscuit)	280
Bacon, Egg & Cheese Bagel	275
Chicken McNuggets (40 piece)	265

Top 10 items with least cholesterol

Coca-Cola Classic (Child)	0
Diet Dr Pepper (Large)	0
Large French Fries	0
Dr Pepper (Small)	0
Dr Pepper (Medium)	0
Dr Pepper (Large)	0
Dr Pepper (Child)	0
Minute Maid Orange Juice (Small)	0
Minute Maid Orange Juice (Medium)	0
Minute Maid Orange Juice (Large)	0

2.5 Top 10 items with most Sodium

Chicken McNuggets (40 piece)	3600
Big Breakfast with Hotcakes and Egg Whites (Large Biscuit)	2290
Big Breakfast with Hotcakes (Large Biscuit)	2260
Big Breakfast with Hotcakes and Egg Whites (Regular Biscuit)	2170
Big Breakfast with Hotcakes (Regular Biscuit)	2150
Chicken McNuggets (20 piece)	1800
Bacon Clubhouse Crispy Chicken Sandwich	1720
Big Breakfast with Egg Whites (Large Biscuit)	1700
Big Breakfast (Large Biscuit)	1680
Big Breakfast with Egg Whites (Regular Biscuit)	1590

Top 10 items with least Sodium

Coca-Cola Classic (Child)	0
Minute Maid Orange Juice (Small)	0
Minute Maid Orange Juice (Medium)	0
Coca-Cola Classic (Small)	0

Coffee (Medium)	0
Coffee (Small)	0
Dasani Water Bottle	0
Coffee (Large)	0
Apple Slices	0
Iced Tea (Child)	5

2.6 Top 10 items with most Carbohydrates.

Chocolate Shake (Large)	141
Strawberry Shake (Large)	140
McFlurry with M&M's Candies (Medium)	139
Vanilla Shake (Large)	135
Shamrock Shake (Large)	135
Chicken McNuggets (40 piece)	118
Big Breakfast with Hotcakes (Large Biscuit)	116
Big Breakfast with Hotcakes and Egg Whites (Large Biscuit)	115
McFlurry with Reese's Peanut Butter Cups (Medium)	114
Chocolate Shake (Medium)	114

Top 10 items with least Carbohydrates.

Iced Tea (Child)	0
Coffee (Large)	0
Diet Dr Pepper (Small)	0
Diet Dr Pepper (Medium)	0
Diet Dr Pepper (Large)	0
Diet Dr Pepper (Child)	0
Iced Tea (Large)	0
Iced Tea (Small)	0
Diet Coke (Medium)	0
Diet Coke (Small)	0

2.7 Top 10 items with most Dietary Fiber

Premium Southwest Salad with Grilled Chicken	7
Big Breakfast with Hotcakes (Large Biscuit)	7
Premium Southwest Salad with Crispy Chicken	7
Big Breakfast with Hotcakes and Egg Whites (Large Biscuit)	7
Big Breakfast with Hotcakes and Egg Whites (Regular Biscuit)	6
Chicken McNuggets (40 piece)	6
Premium Southwest Salad (without Chicken)	6
Big Breakfast with Hotcakes (Regular Biscuit)	6
Premium McWrap Southwest Chicken (Crispy Chicken)	5
Blueberry Pomegranate Smoothie (Large)	5

Top 10 items with least Dietary Fiber

1% Low Fat Milk Jug	0
Iced Coffee with Sugar Free French Vanilla Syrup (Medium)	0
Iced Coffee with Sugar Free French Vanilla Syrup (Large)	0
Iced Caramel Mocha (Small)	0
Hot Caramel Sundae	0
Hazelnut Iced Coffee (Small)	0
Hazelnut Iced Coffee (Medium)	0
Hazelnut Iced Coffee (Large)	0
French Vanilla Iced Coffee (Small)	0
French Vanilla Iced Coffee (Medium)	0

2.8 Top 10 items with most Sugar

McFlurry with M&M's Candies (Medium)	128
Strawberry Shake (Large)	123
Chocolate Shake (Large)	120
Shamrock Shake (Large)	115
McFlurry with Reese's Peanut Butter Cups (Medium)	103
Vanilla Shake (Large)	101
Strawberry Shake (Medium)	100
Frappé Chocolate Chip (Large)	99
Chocolate Shake (Medium)	97
Shamrock Shake (Medium)	93

Top 10 items with least Sugar

Medium French Fries	0
Coffee (Large)	0
Coffee (Medium)	0
Coffee (Small)	0
Dasani Water Bottle	0
Diet Coke (Child)	0
Diet Coke (Large)	0
Diet Coke (Medium)	0
Diet Coke (Small)	0
Diet Dr Pepper (Child)	0

2.9 Top 10 items with most protein

McFlurry with M&M's Candies (Medium)	128
Strawberry Shake (Large)	123
Chocolate Shake (Large)	120
Shamrock Shake (Large)	115
McFlurry with Reese's Peanut Butter Cups (Medium)	103
Vanilla Shake (Large)	101

Strawberry Shake (Medium)	100
Frappé Chocolate Chip (Large)	99
Chocolate Shake (Medium)	97
Shamrock Shake (Medium)	93

Top 10 items with **least protein**

Coca-Cola Classic (Small)	0
Dr Pepper (Medium)	0
Dr Pepper (Large)	0
Dr Pepper (Child)	0
Iced Tea (Child)	0
Iced Tea (Large)	0
Iced Tea (Medium)	0
Minute Maid 100% Apple Juice Box	0
Coca-Cola Classic (Child)	0
Coca-Cola Classic (Large)	0

2.10 Top 10 items with most Vitamin_C

Minute Maid Orange Juice (Large)	240
Minute Maid Orange Juice (Medium)	160
Apple Slices	160
Fruit & Maple Oatmeal without Brown Sugar	130
Fruit & Maple Oatmeal	130
Minute Maid Orange Juice (Small)	130
Minute Maid 100% Apple Juice Box	100
Large French Fries	70
Strawberry Banana Smoothie (Large)	45
Medium French Fries	45

Top 10 items with least Vitamin_C

Iced Nonfat Caramel Mocha (Large)	0
Iced Tea (Child)	0
Iced Tea (Large)	0
Iced Tea (Medium)	0
Iced Tea (Small)	0
Kids Ice Cream Cone	0
Latte (Large)	0
Latte (Medium)	0
Latte (Small)	0
Latte with Sugar Free French Vanilla Syrup (Large)	0

2.10 Top 10 items with most Vitamin A %

Premium Southwest Salad with Crispy Chicken	170
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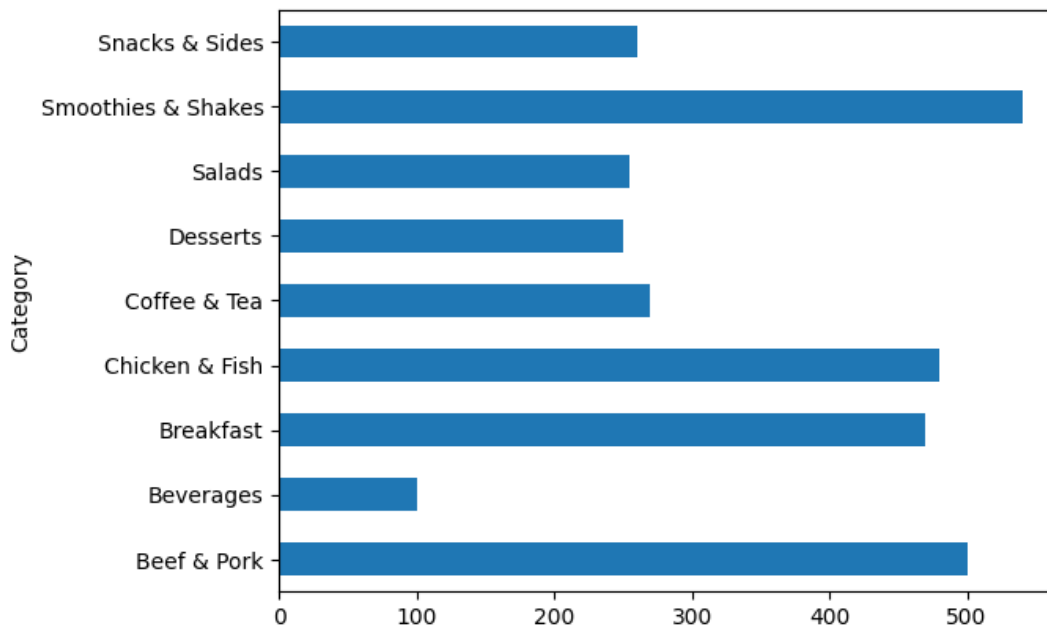
Premium Southwest Salad with Grilled Chicken	170
Premium Bacon Ranch Salad (without Chicken)	170
Premium Southwest Salad (without Chicken)	160
Premium Bacon Ranch Salad with Grilled Chicken	110
Premium Bacon Ranch Salad with Crispy Chicken	100
Premium McWrap Southwest Chicken (Grilled Chicken)	70
Premium McWrap Chicken & Bacon (Crispy Chicken)	60
Premium McWrap Chicken & Bacon (Grilled Chicken)	60
Premium McWrap Chicken & Ranch (Crispy Chicken)	60

Top 10 items with least Vitamin A %

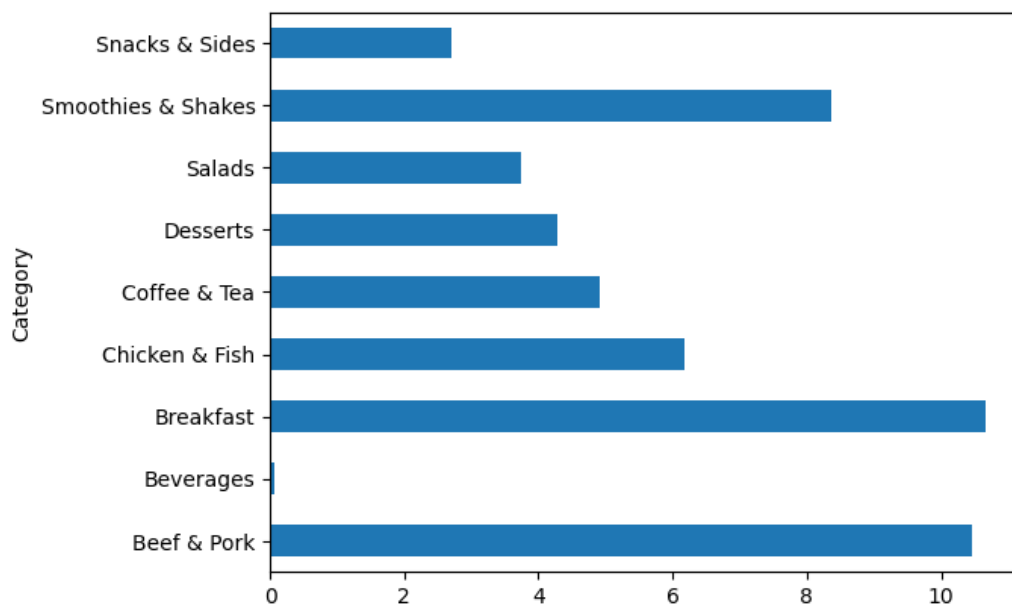
1% Low Fat Milk Jug	0
Latte (Small)	0
Latte (Medium)	0
Kids Ice Cream Cone	0
Iced Tea (Small)	0
Iced Tea (Medium)	0
Iced Tea (Large)	0
Iced Tea (Child)	0
Vanilla Shake (Medium)	0
Iced Coffee with Sugar Free French Vanilla Syrup (Small)	0

EDA

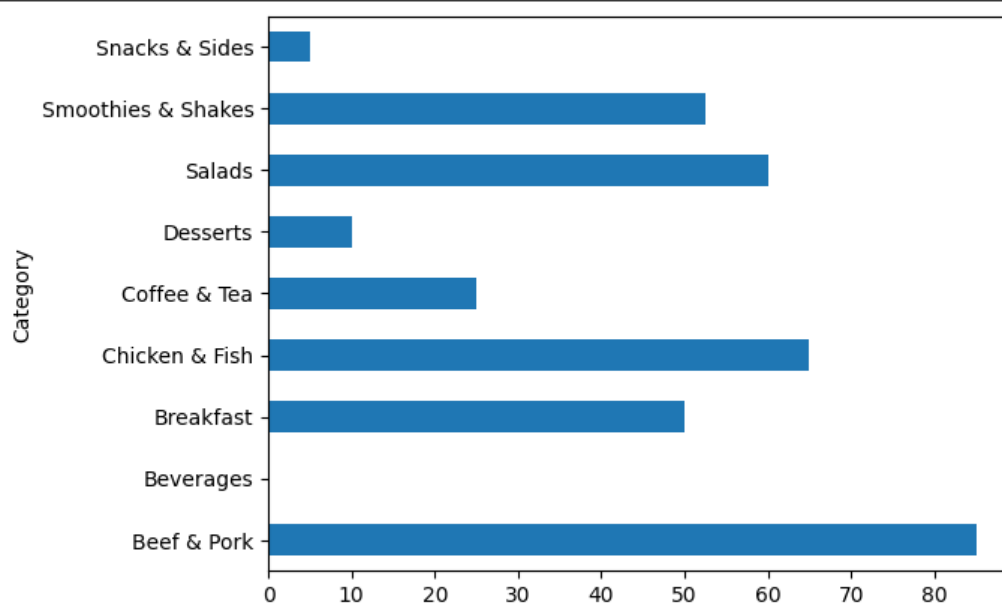
1. **Smoothies & Shakes category** has the highest calories - 550 calories, whereas **Beverages** has about 100 calories



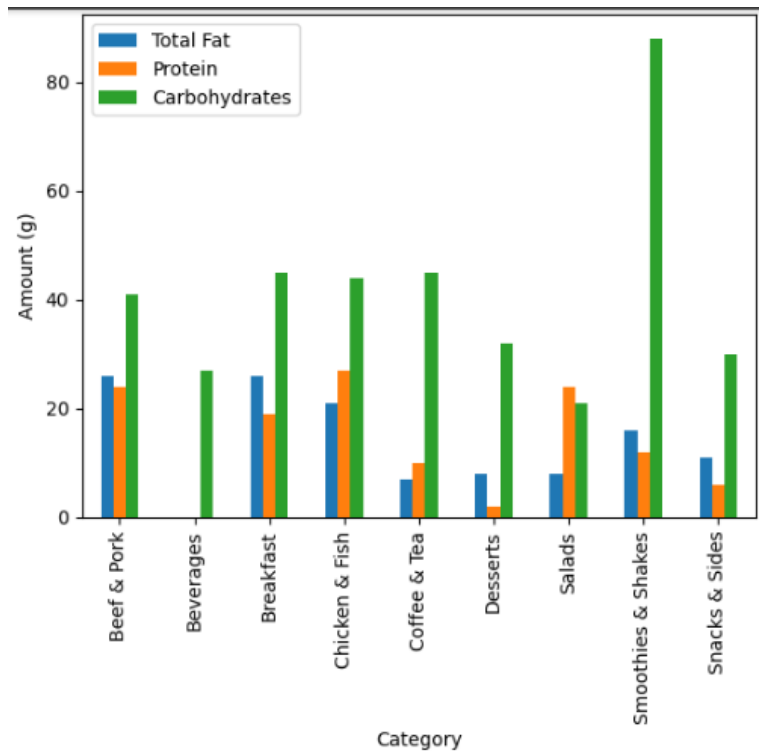
2. **Beverages** category has the lowest saturated fat, whereas **Breakfast** category has the highest saturated fat



3. Beverages category has the lowest cholesterol, whereas Beef and Pork category has the highest cholesterol content

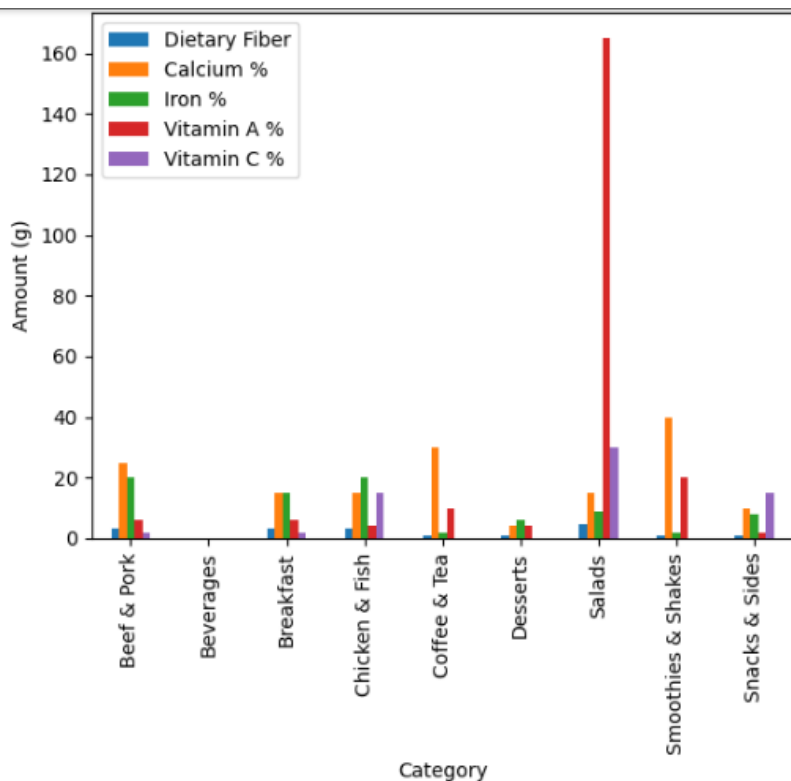


4. Beef and Pork category as well as the Breakfast categories has the highest fat content, whereas coffee & Tea category has the lowest fat content (high protein diet) Chicken & Fish category has the highest protein content whereas desserts has the lowest protein content (keto diet) Smoothies & shakes category has the highest carb content whereas salads category has the least carb among other categories

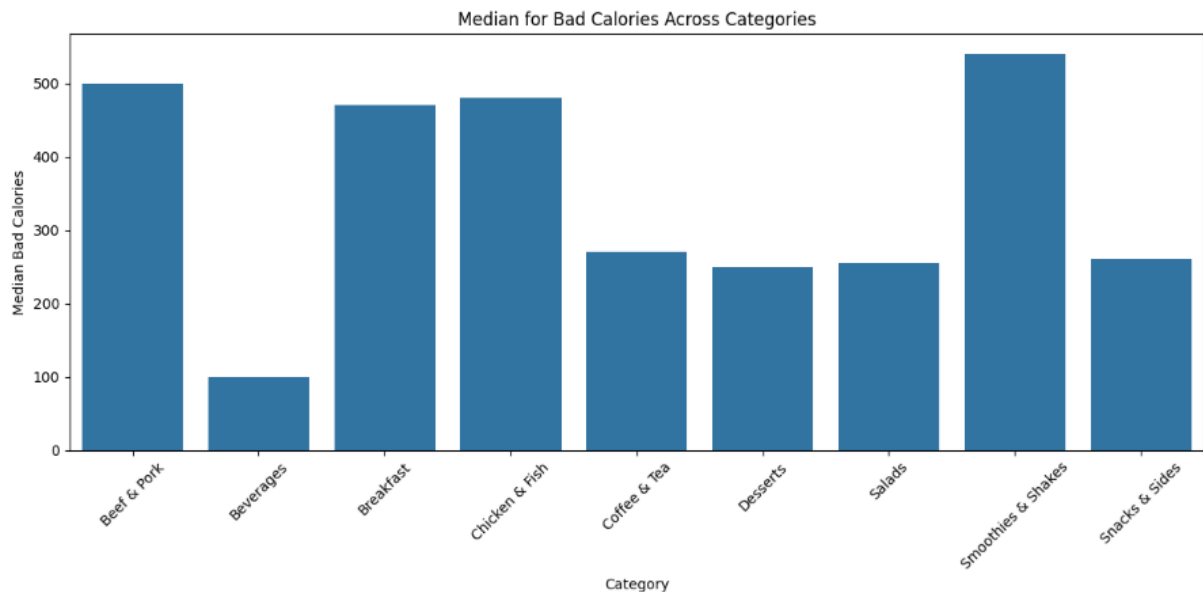


5. Good Nutrients (Iron, Calcium, Vitamin A, Vitamin C, Dietary Fibre): Salads category has the most dietary fibre content. Smoothies & shakes category has the highest calcium content whereas desserts has the least calcium content

Beef & Pork has the highest iron category whereas desserts category and Smoothies & Shakes has the lowest



6. Bad Nutrients group: ('Calories', 'Cholesterol', 'Sugars', 'Trans Fat', 'Saturated Fat', 'Sodium', 'Carbohydrates')



The unhealthiest category is Smoothies and Shakes, while beverage is the healthiest.

IDENTIFYING RELATIONS

1. The maximum sodium intake should not exceed 1500 mg as per However, the American Heart Association (AHA). so we will find the high sodium intake items that exceed 1500 mg
The query function is used to set low and high sodium categories.(above and below the 1500 mg threshold

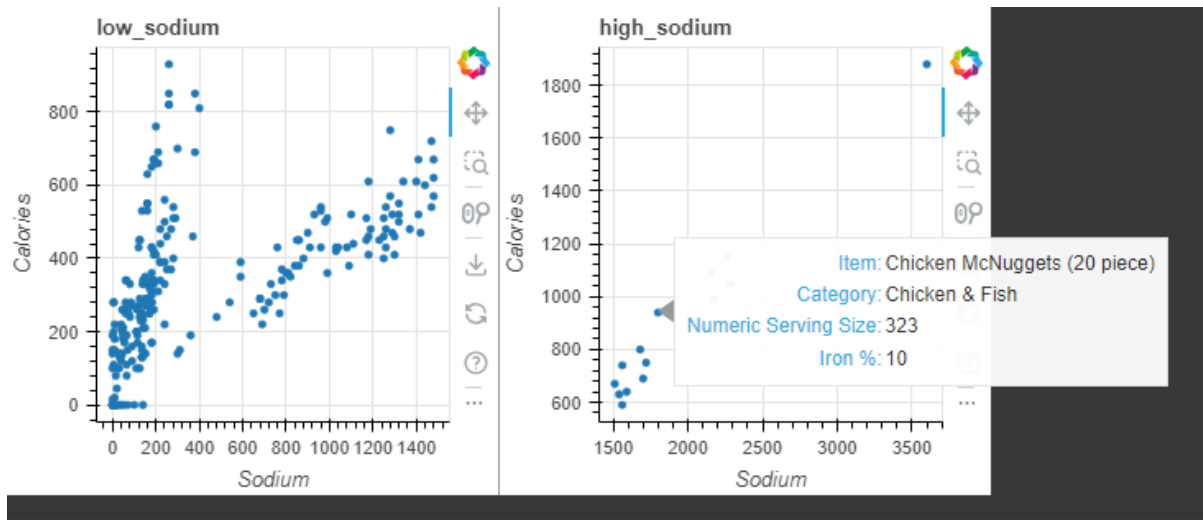
```
[37] low_sodium = df.query('Sodium <= 1500')
      low_sodium['Sodium'].mean()

413.6788617886179

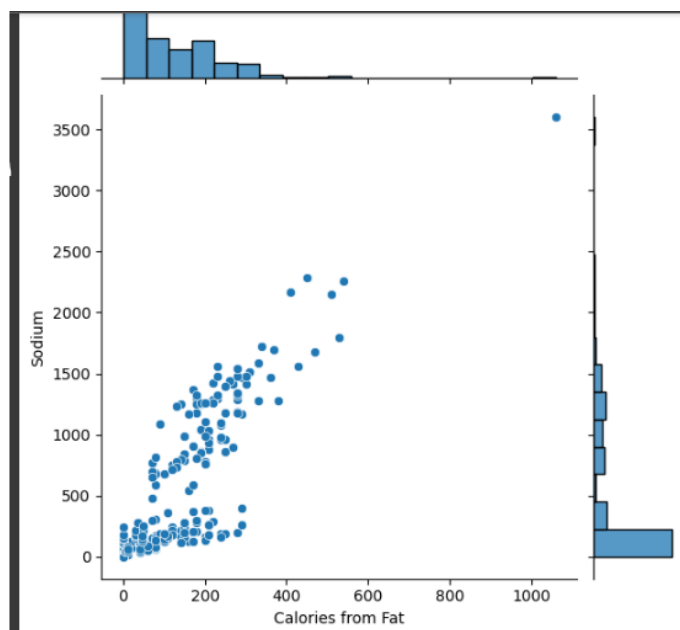
low_sodium = low_sodium.sort_values(by='Sodium', ascending=True)
low_sodium[['Sodium', 'Item', 'Category']].head(10)
```

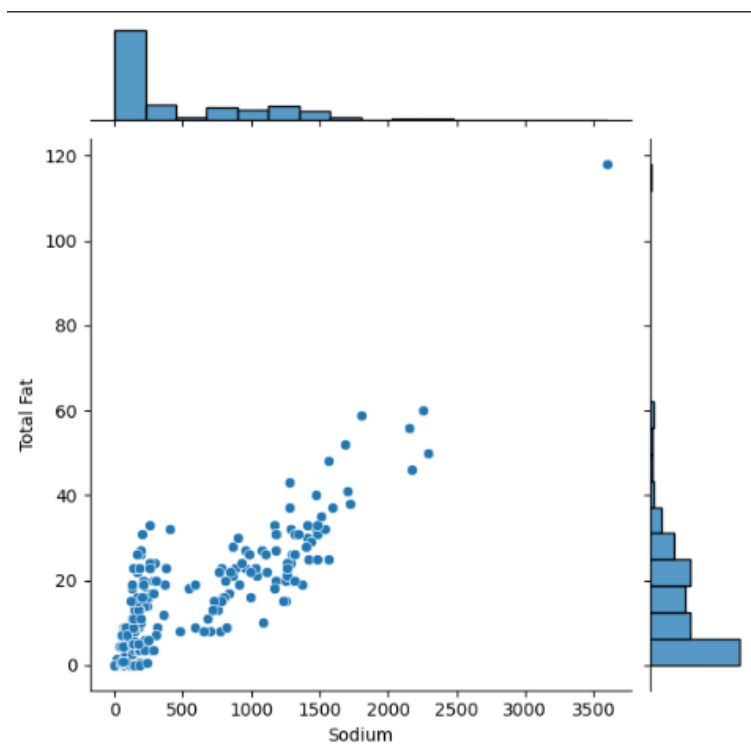
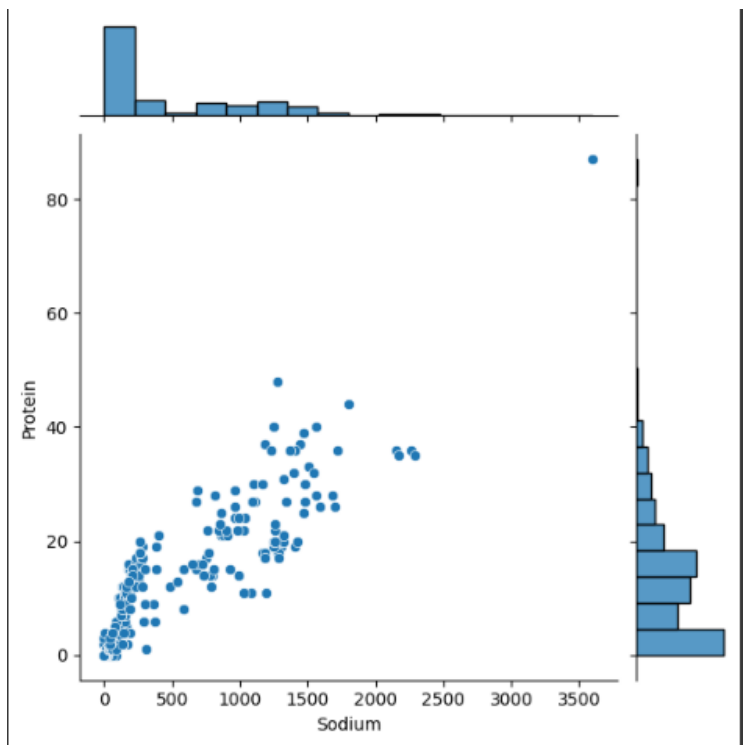
Used the Bokeh feature for visualization

Tooltips: Item, Category, Numeric Serving Size, Iron



- There is a clear linear relationship between high sodium intake (above 1500 mg) and calories. As the sodium intake increases, so does the calories.
- However, we can see a disruption between low sodium levels (140 mg - 400mg), we suddenly see a spike in calories. Let us investigate further.
- We can also observe there seems to be a relation between iron and sodium as well as Sodium and Protein/Total fat.
- This disruption is for items in the Smoothies and Shakes category and Tea/Coffee category. Items in these two categories seem to have low sodium, but high calories. The spike is only for these two categories. Also, most items are large.
- Hence, after examining the serving size, we can see most of these items have a serving size of above 350 ml and all of them are beverages in these 3 categories.





As we can see Sodium also has a relationship with protein and Calories from fat

2. ANALYSING SUGAR CONTENT

American Heart Association (AHA) and the World Health Organization (WHO), it's generally advised to limit added sugar intake to no more than 25 grams (6 teaspoons) per day for women and 36 grams (9 teaspoons) per day for men. So, as gender is not mentioned, we will take anything above 36 gm as high sugar intake

```
low_sugar = df.query('Sugars <= 36')
low_sugar['Sugars'].mean()

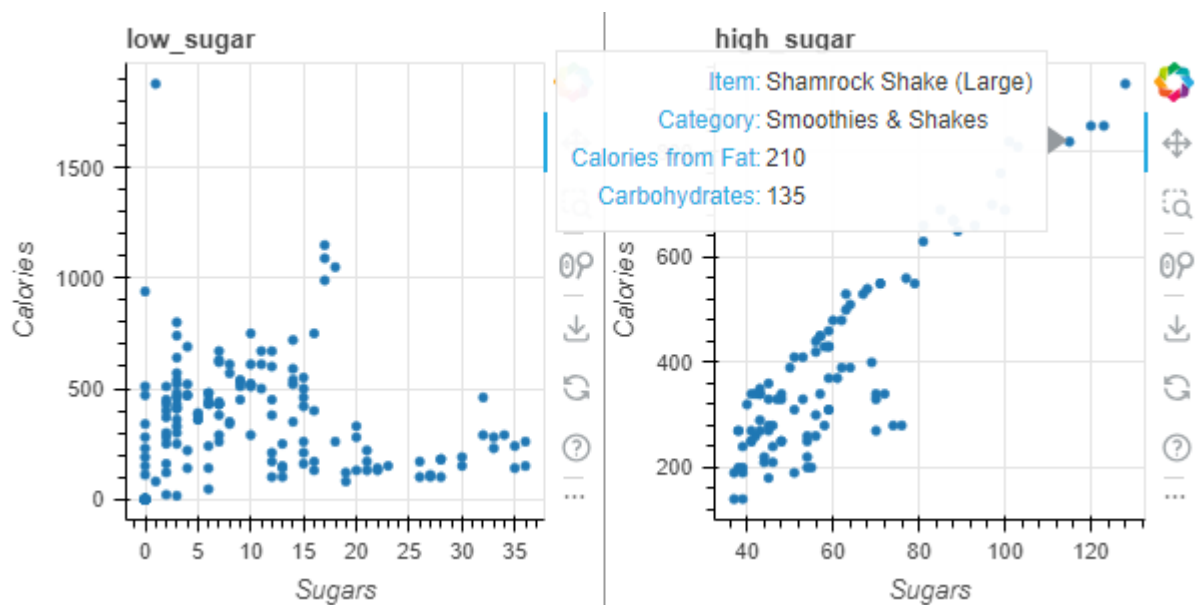
10.211180124223603

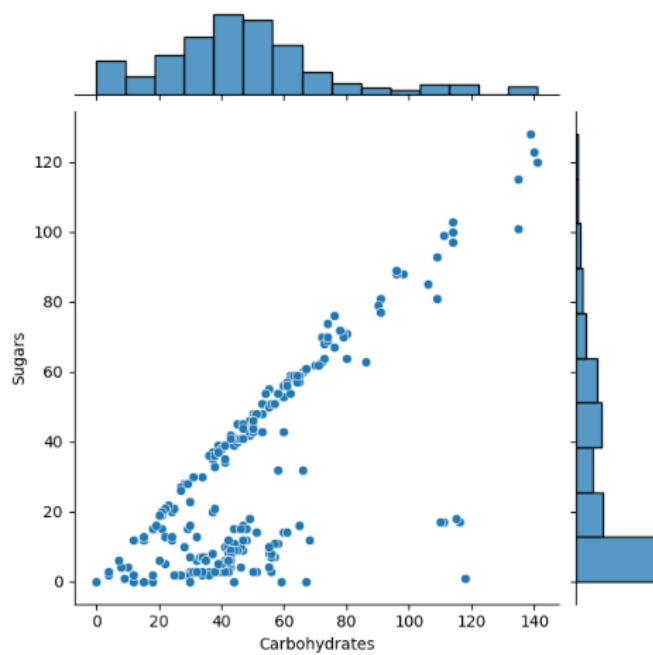
low_sugar = low_sugar.sort_values(by='Sugars', ascending=True)
low_sugar[['Sugars', 'Item', 'Category']].head(10)
```

Note: Same method to cap for high sugar level

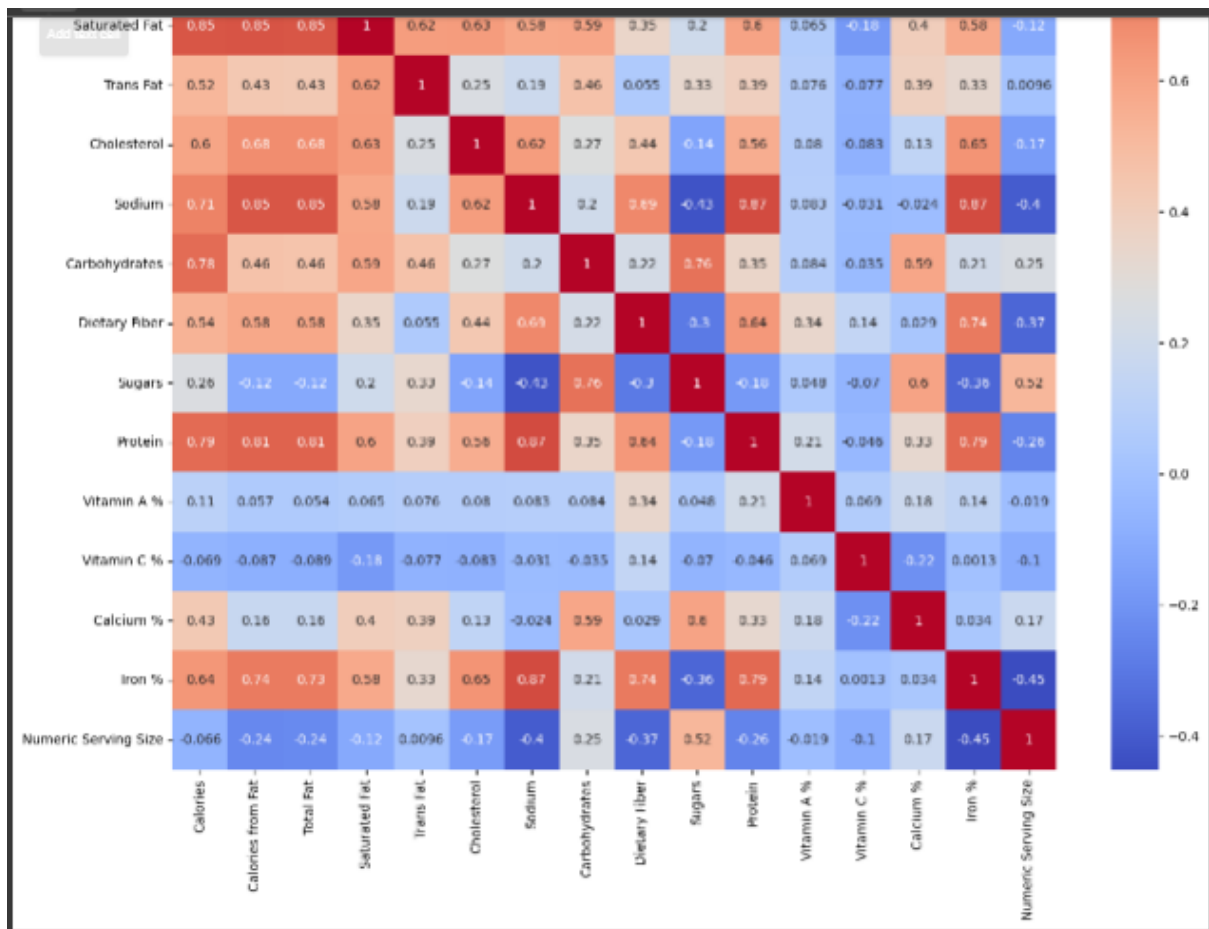
Used the Bokeh feature for data visualization

Tooltips: Item, Category, Calories from fat, Carbohydrates



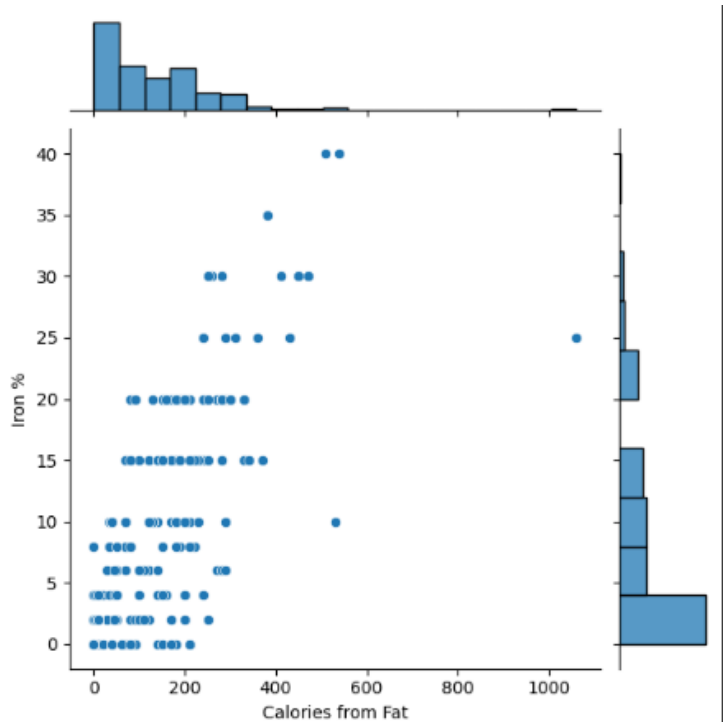


3. Correlation Matrix

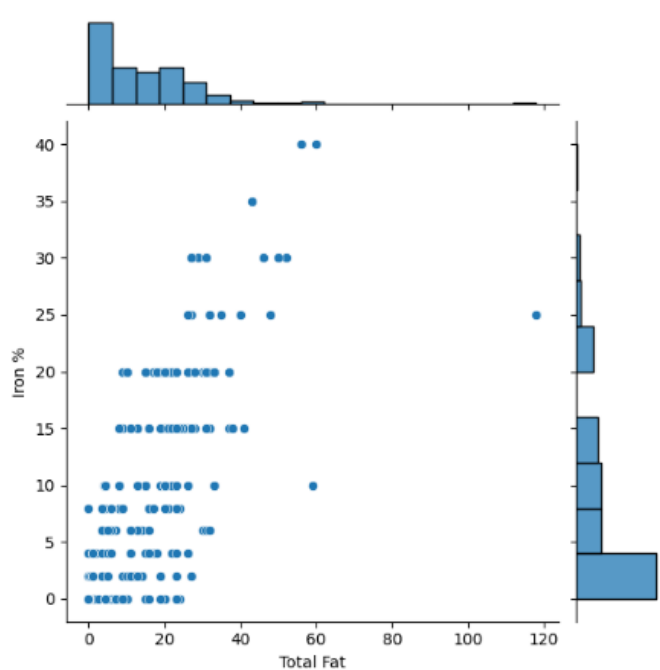


Calories from fat & Iron, Calories from fat & Sodium, Total fat & Iron, Sodium & Iron, Protein & Iron, Protein & Calories, Protein & Sodium, Protein & Total fat, Protein & Calories from fat, Sugar & Carbs, Dietary fibre and Iron, Carbs & Calories, Sodium & Calories, Sodium & Total Fat, Total fat & calories, Saturated fat & calories, saturated fat & Total Fat, Saturated fat & calories from fat, Calories from fat and Calories

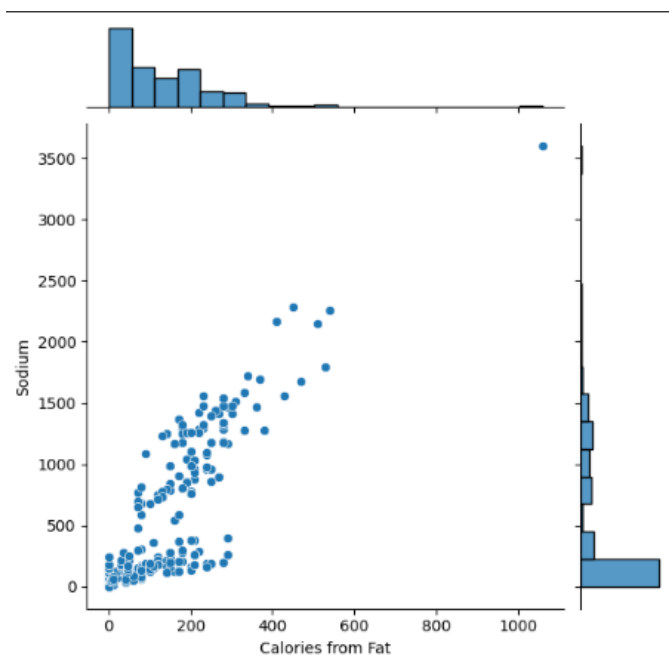
i. There is not a very strong relation between Calories from fat and Iron



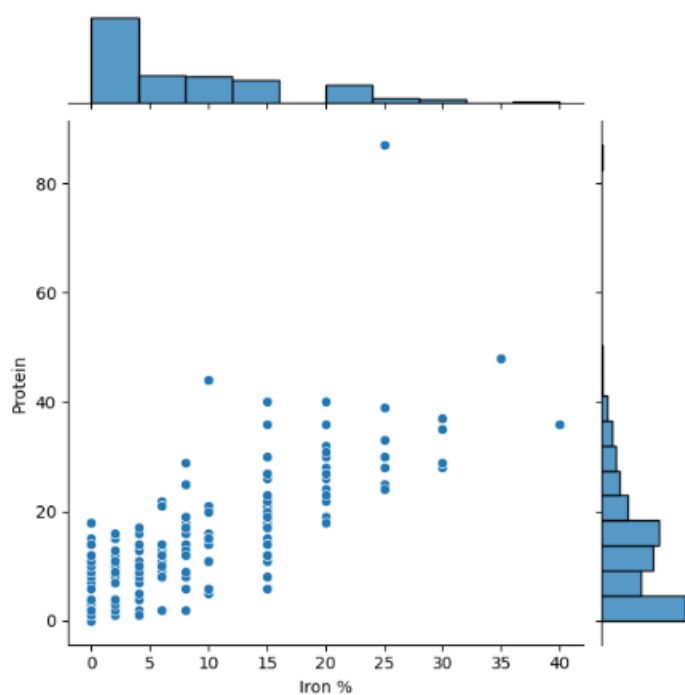
ii. There is not a strong relation between Iron % and Total Fat



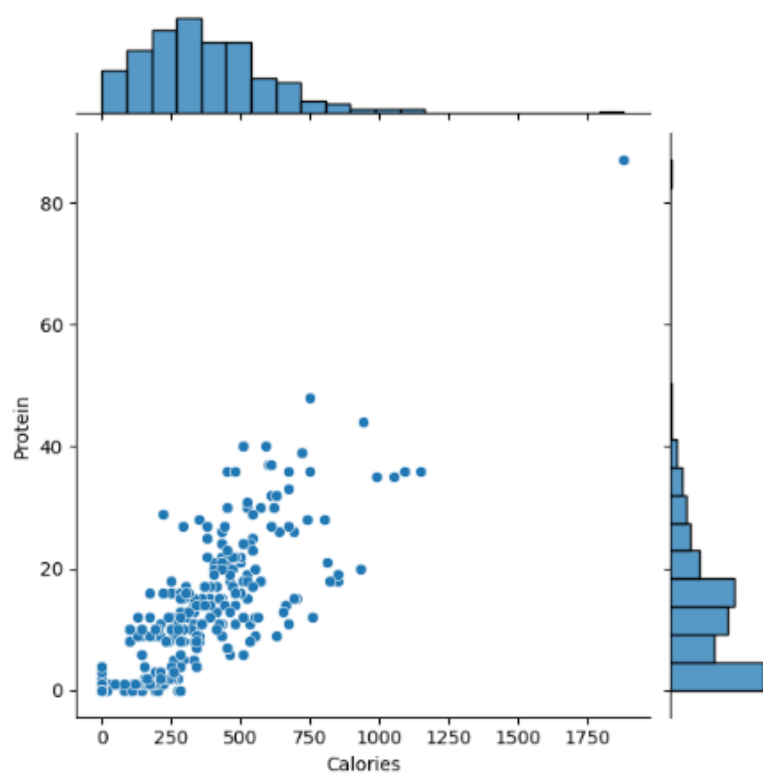
iii. There is a correlation between Calories in Fat and sodium



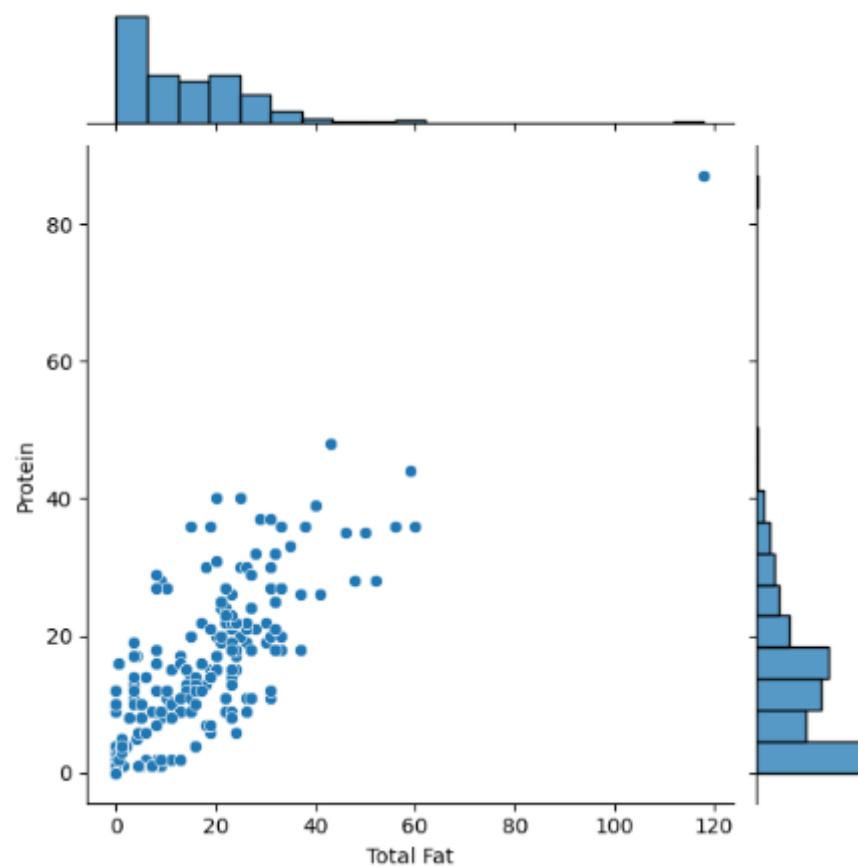
iv. There is a relationship between Protein and Iron %



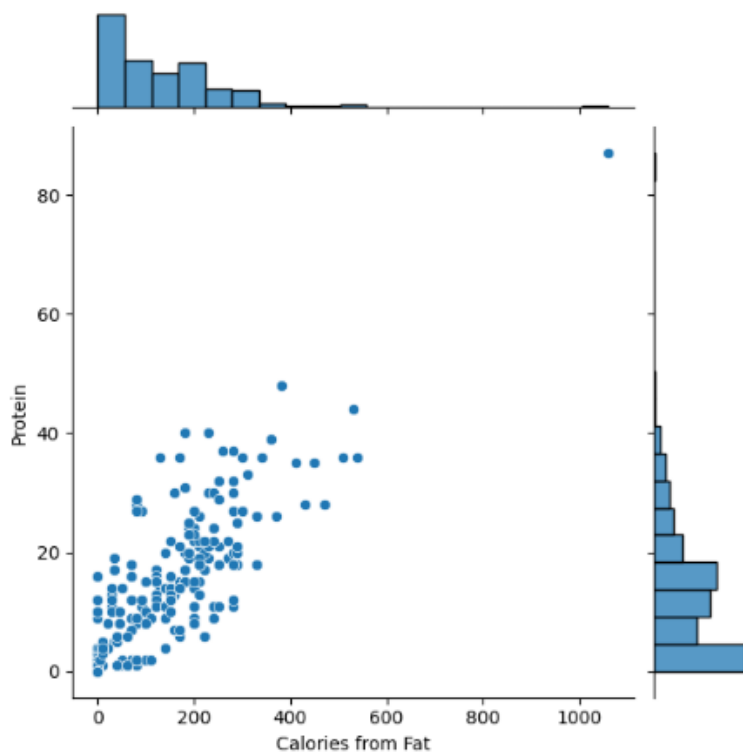
v. There is a correlation between Calories and Protein



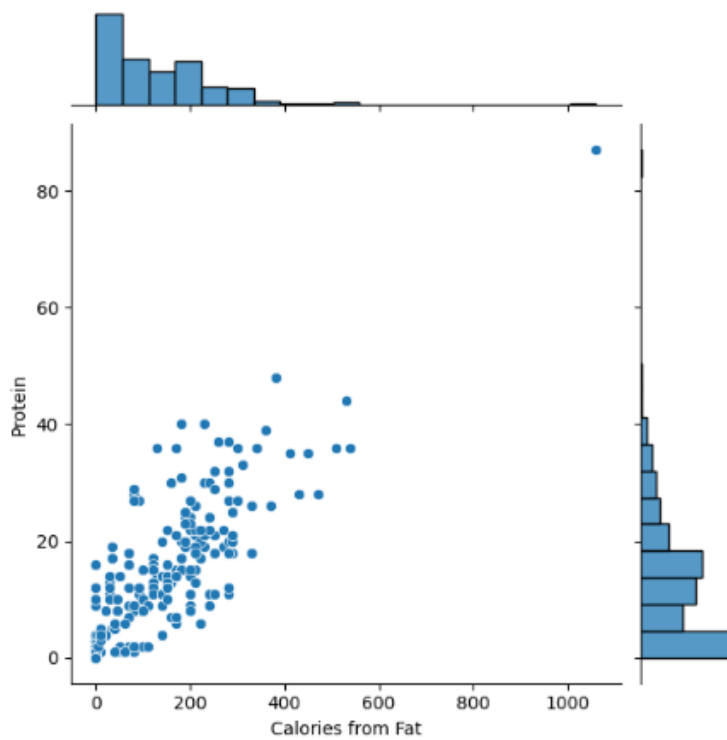
vi. There is a relationship between Protein and Total fat



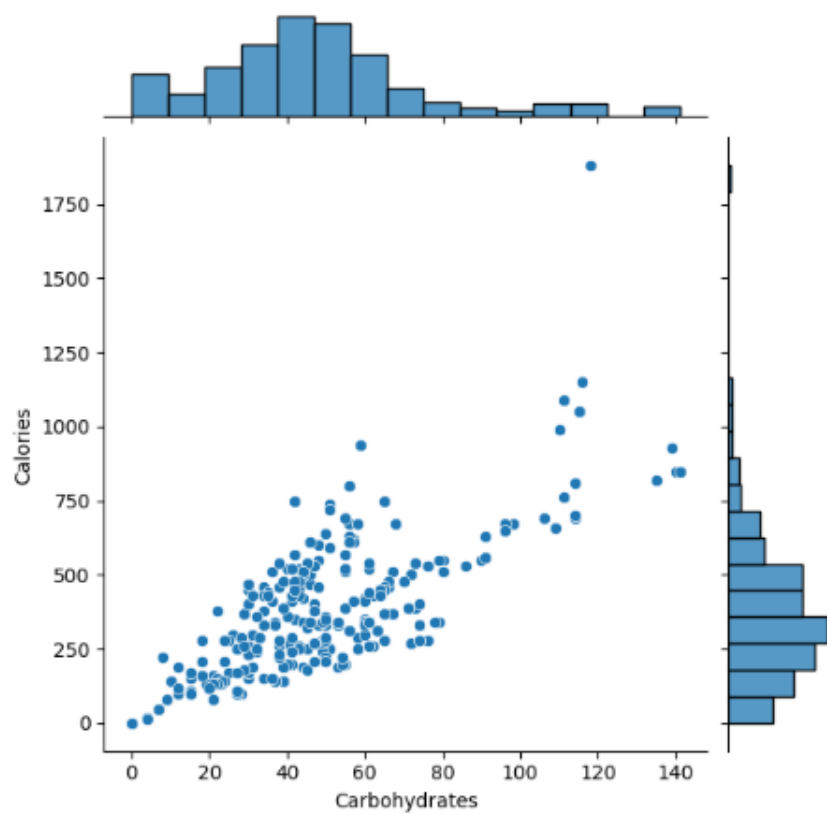
Vii. There is a relationship between Protein and Calories from fat



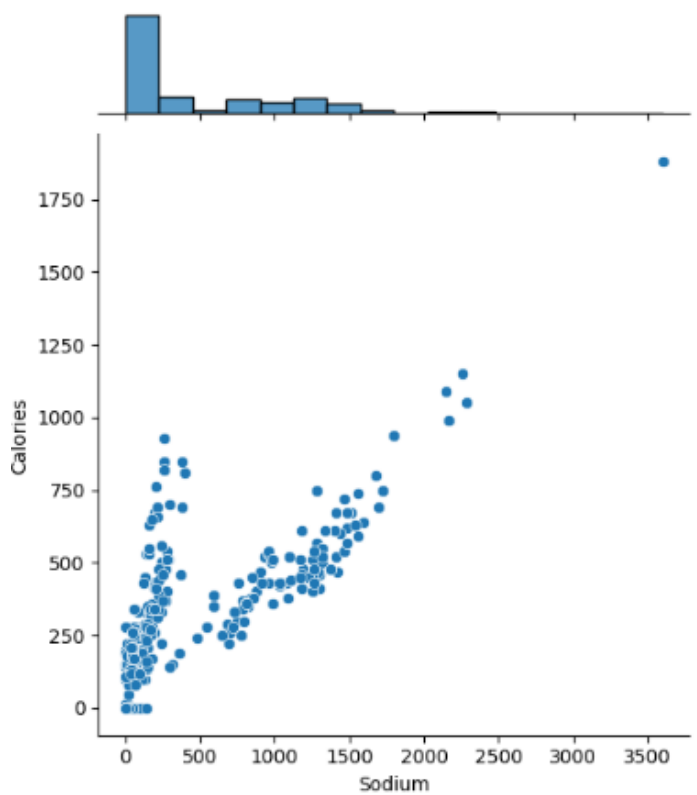
viii. There is a correlation between Protein and calories form fat



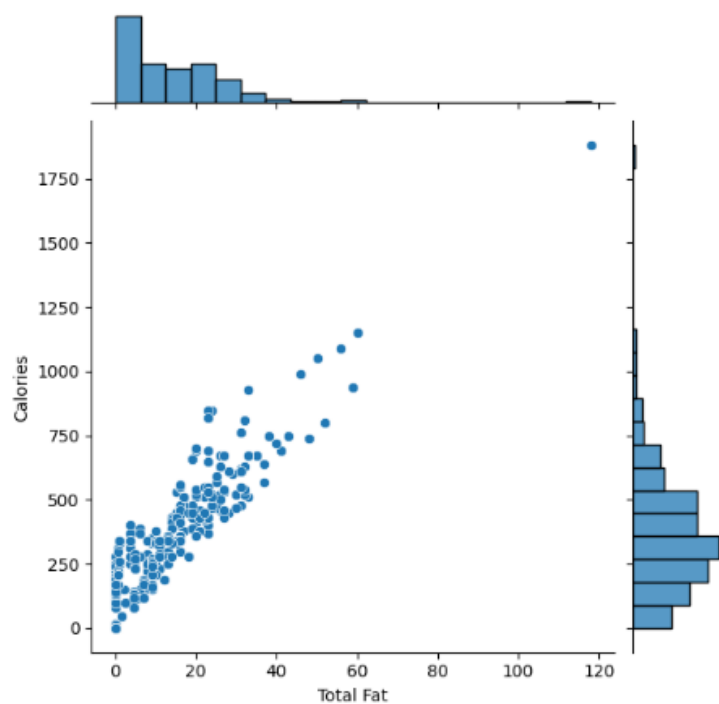
ix. There is a correlation between Calories and Carbohydrates



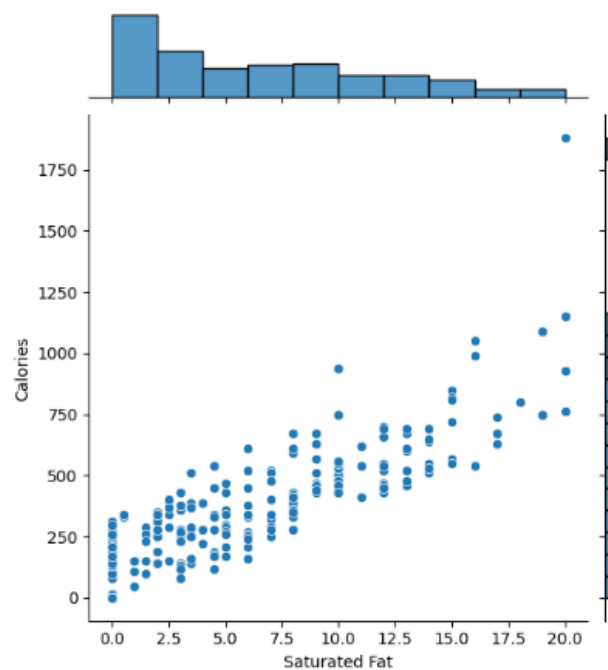
x. There is a relationship between Sodium and Calories



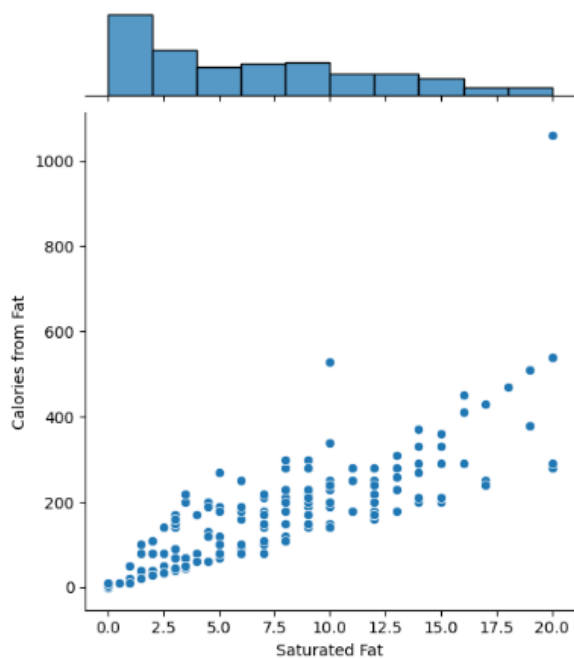
xi. There is a relationship between Calories and Total fat



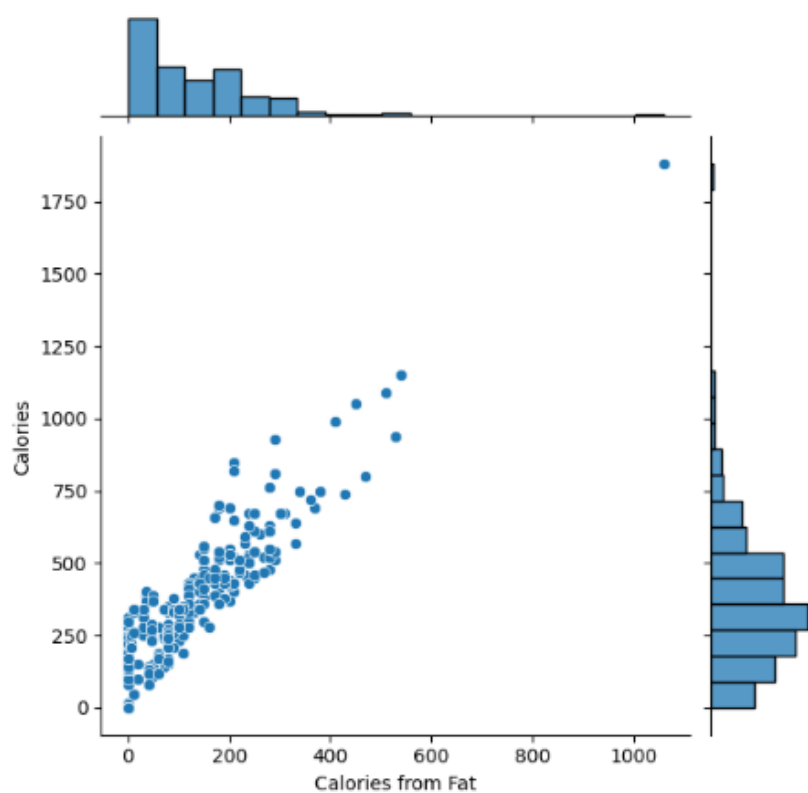
xi. There is a relationship between Calories and Saturated fat



Xiii. There is a relationship between Saturated Fat and Calories from fat



xiv. There is a relationship between Calories and Calories from fat



Analysing Total fat % and calories

According to the Dietary Guidelines for Americans, it is recommended that adults get 20% to 35% of their daily calories from fat.

A threshold for anything above 35% is considered to be high fat %. I have created a threshold for low and high fat levels

Note: Taken median as outliers in the dataset and median would work better instead of mean

Also as we have seen in the correlation plot, following columns have a correlation with Total Fat %, which will be rechecked with joint plot and included as tool tip in boke plots:

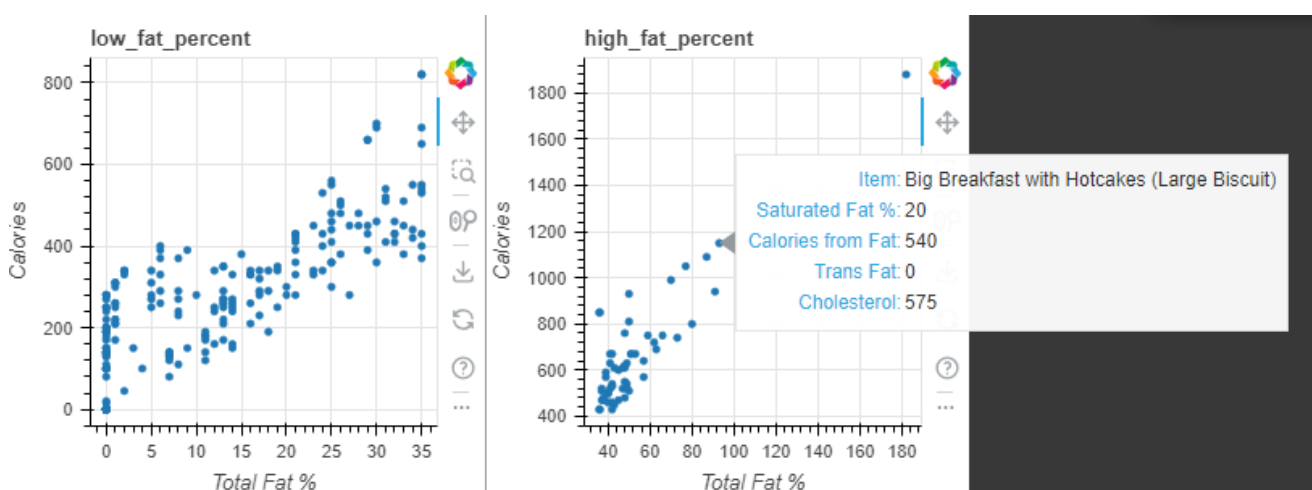
Calories and Total fat %, Iron % and Total fat %, Protein and Total fat %, Sodium and Total fat %, Saturated Fat and Total fat %

```
[82] low_TotalFatPercent = df.query('`Total Fat %` <= 35')
      median_TotalFatPercent = low_TotalFatPercent['Total Fat %'].median()

[83] low_TotalFatPercent = low_TotalFatPercent.sort_values(by='Total Fat %', ascending=True)
      low_TotalFatPercent[['Total Fat %', 'Item', 'Category', 'Saturated Fat %']].head(10)

[84] high_TotalFatPercent = df.query('`Total Fat %` > 35')
      median_highFatPercent = high_TotalFatPercent['Total Fat %'].median()

[85] high_TotalFatPercent = high_TotalFatPercent.sort_values(by='Total Fat %', ascending=True)
      high_TotalFatPercent[['Total Fat %', 'Item', 'Category', 'Saturated Fat %']].head(10)
```



There is a strong relation between calories and Total fat %. Saturated fat, Calories from fat, Cholesterol(to some extent) increases as the total fat % increases with calories. The serving size of the item also has an impact on the increase in total fat % and calories.

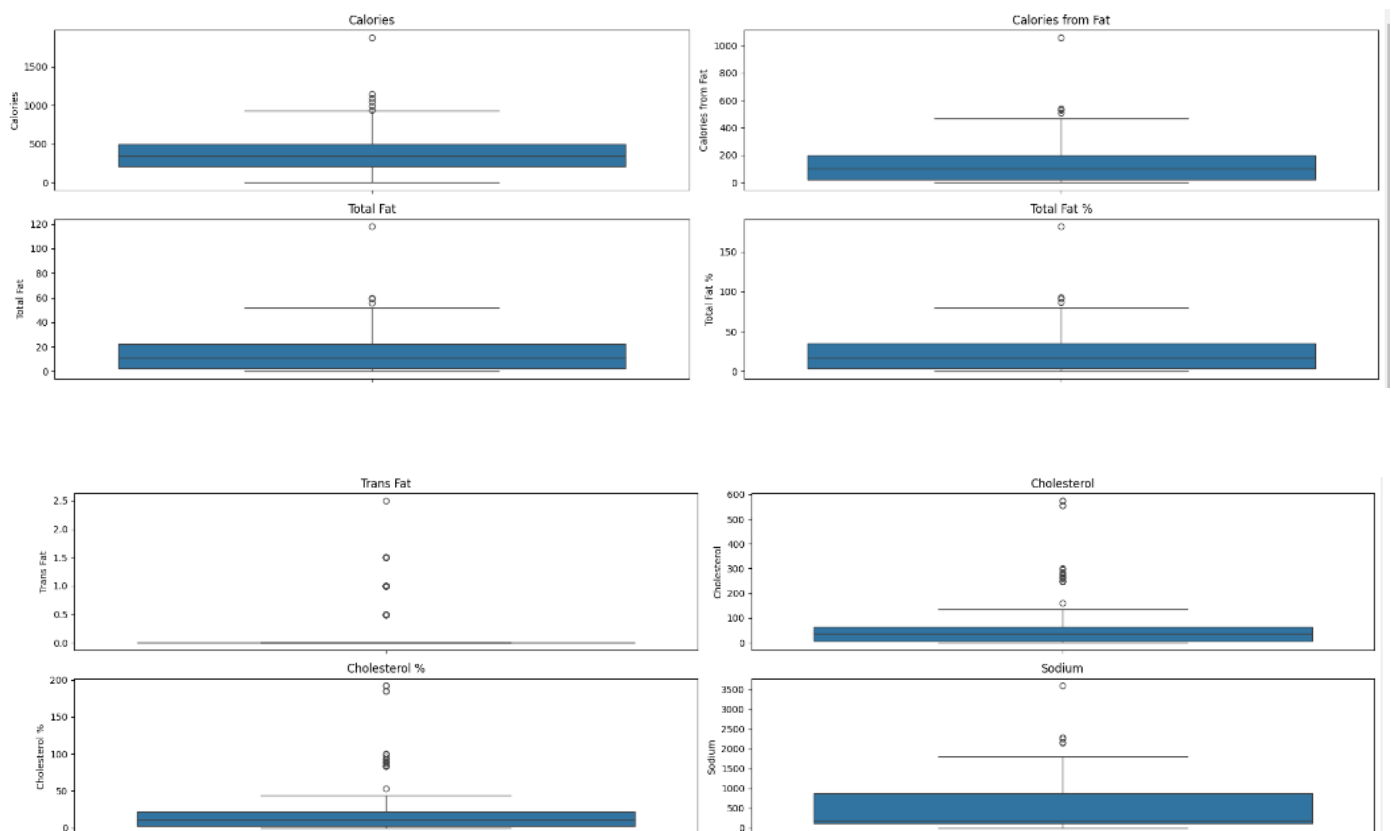
The Chicken McNuggets(40 piece) has the largest Total fat %. It has 1060 calorie from fat, 20 % saturated fat and 265 cholesterol, whereas the lowest is Coffee(small, medium, large) , apple slices and side salad with zero saturate fat, total fat, trans fat, cholesterol and calories

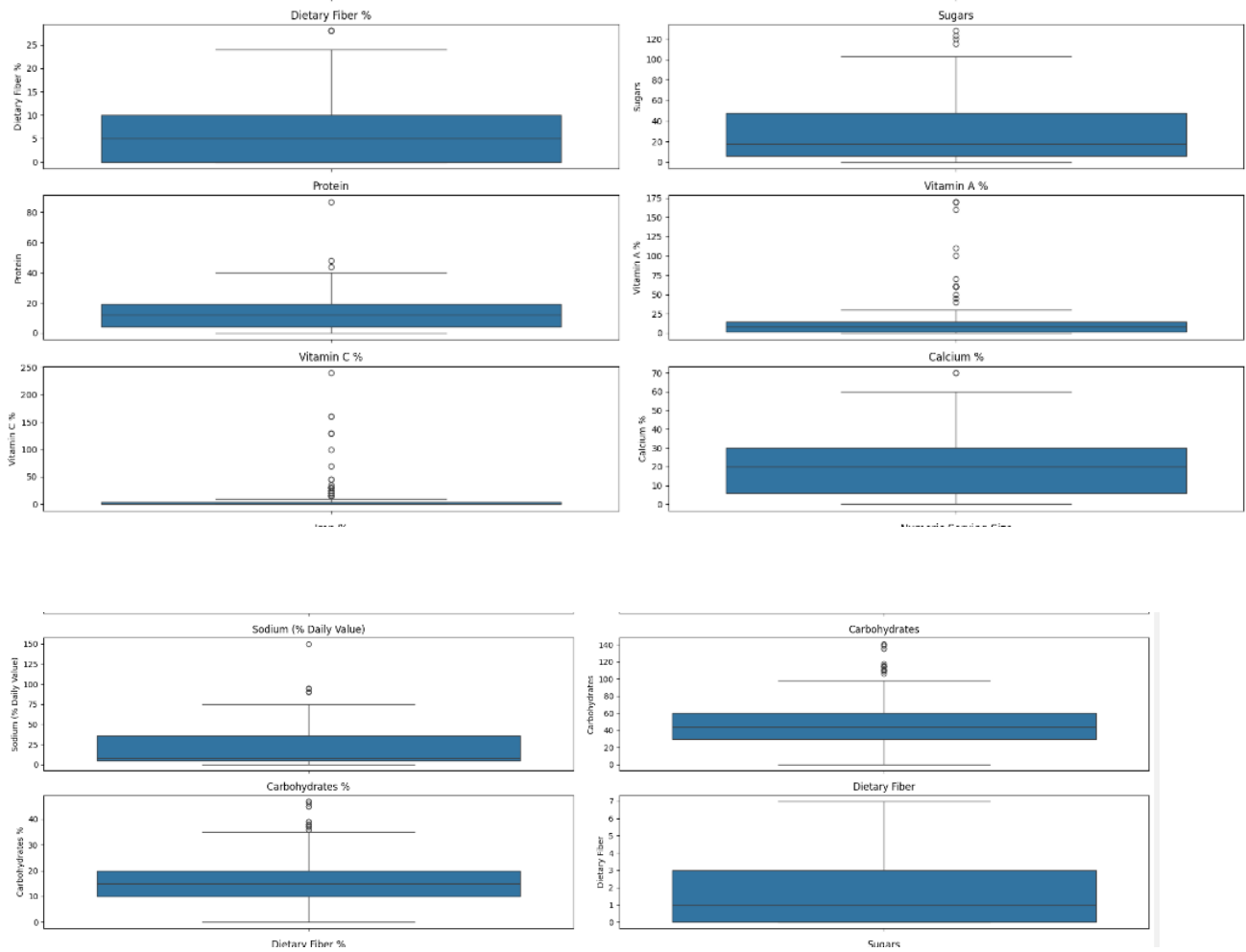
There is also a positive relation between Total Fat% and sodium. As the Total Fat % increases so does the sodium and calories. There is also a positive correlation between sodium and Calories as seen in the correlation plot. Hence this must also be taken into consideration.

OULIERS

Following columns have outliers, hence have used median instead of mean throughout the dataset.

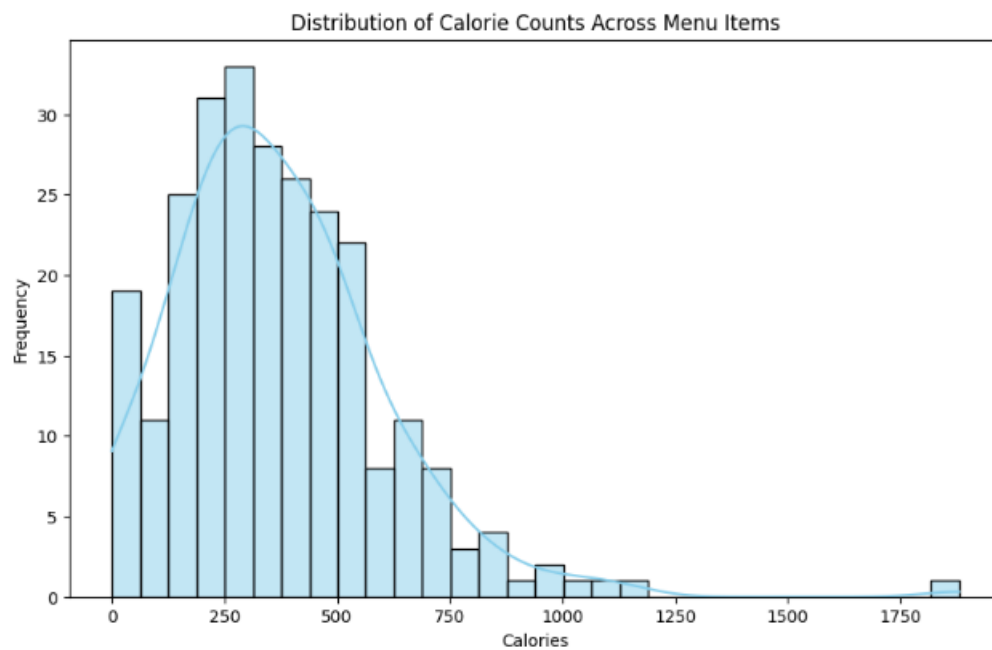
Calories, Calories from fat, Total fat %, Total fat, Cholesterol, Cholesterol %, Sodium, Sodium %, Carbohydrates, carbohydrate %, Sugars, Pritein, Vitamin A %, Vitamin C %, Calcium %, Iron % and Numeric serving size



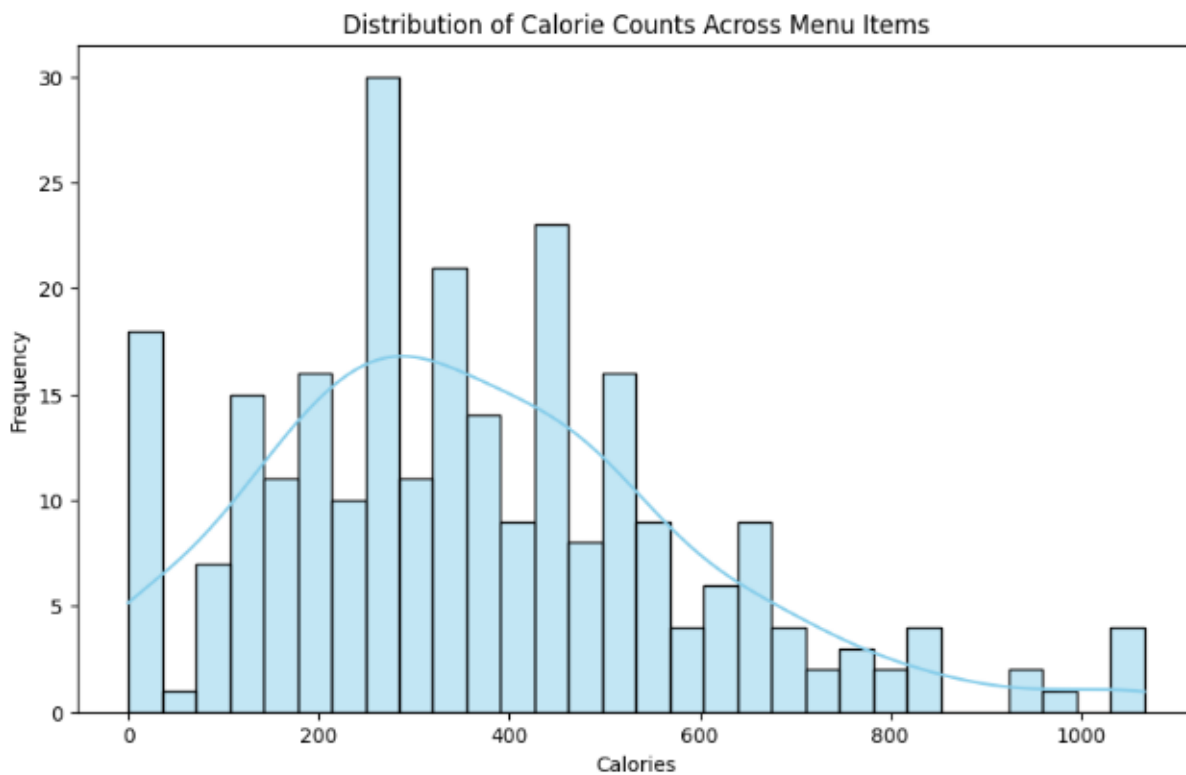


Have used capping method for Calories column to view the distribution.

Before capping for outliers



After capping for 99 percentile



Correlation matrix for Calories

Following columns were highly correlated (used df.skew())

Calories_Capped	1.000000
Calories	0.978566
Saturated Fat %	0.867074
Saturated Fat	0.865395
Calories from Fat	0.862180
Total Fat	0.861818
Total Fat %	0.861317
Carbohydrates %	0.799012
Carbohydrates	0.798879
Protein	0.751058

INSIGHTS

1. The category with most calories is Smoothies and shakes, whereas the category with least calories is Beverage

2. Following items in **the lunch/dinner/main course category (which is Beef and Pork & Chicken & fish)** with high sodium and high calories as well as low sodium and low calorie

Top 3 High calorie and high sodium items in Beef & category:

- Bacon Clubhouse Burger: 720 Calories, 1470 mg Sodium
- Quarter Pounder with Bacon & Cheese: 600 Calories, 1440 mg Sodium
- Double Quarter Pounder with Cheese: 750 Calories, 1280 mg Sodium

Low calorie and low sodium item option in Beef & category:

- Hamburger: 240 Calories, 480 mg Sodium

Top 2 High calorie and high sodium items in Chicken & Fish category:

- Chicken McNuggets (40 piece): 1880 Calories, 3600 mg Sodium
- Chicken McNuggets (20 piece): 940 Calories, 1800 mg Sodium

Low calorie and low sodium item options in Chicken & Fish category:

- Chicken McNuggets (4 piece): 190 Calories, 360 mg Sodium
- Chicken McNuggets (6 piece): 280 Calories, 540 mg Sodium

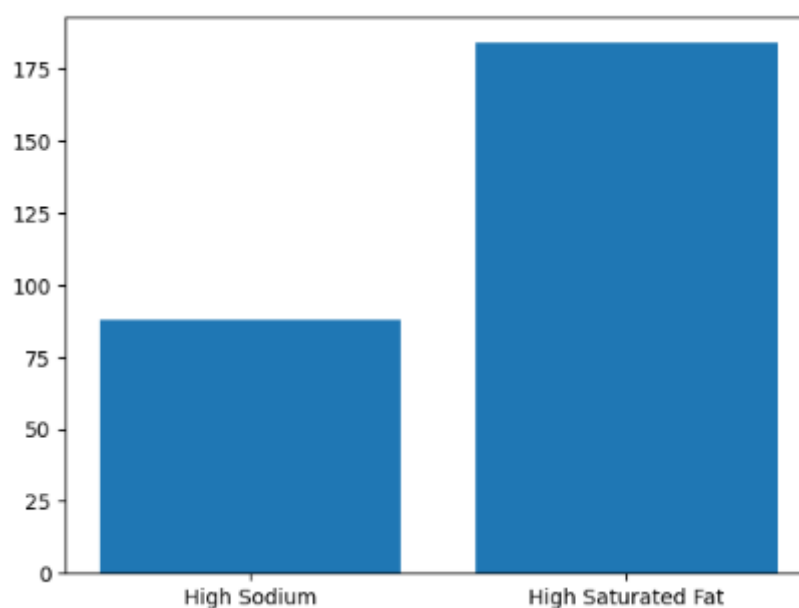
Top 5 Low calorie and low carbohydrate options in Chicken (main course/lunch):

- McChicken: 360 Calories, 40 g Carbohydrates
- Filet-O-Fish: 390 Calories, 39 g Carbohydrates
- Chicken McNuggets (10 piece): 470 Calories, 30 g Carbohydrates
- Chicken McNuggets (6 piece): 280 Calories, 18 g Carbohydrates
- Chicken McNuggets (4 piece): 190 Calories, 12 g Carbohydrates

Top 5 Low calorie and low carbohydrate options in Beef & Pork category (main course/Lunch/dinner)

- Jalapeño Double: 430 Calories, 35 g Carbohydrates
- McDouble: 380 Calories, 34 g Carbohydrates
- Daily Double: 430 Calories, 34 g Carbohydrates
- Cheeseburger: 290 Calories, 33 g Carbohydrate
- Hamburger: 240 Calories, 32 g Carbohydrates

3. Proportion of saturated fat to high sodium



4. High calorie items in breakfast and Milkshake and Smoothies categories

Breakfast	Big Breakfast with Hotcakes (Large Biscuit)	1150
Breakfast	Big Breakfast with Hotcakes (Regular Biscuit)	1090
Breakfast	Big Breakfast with Hotcakes and Egg Whites (Large)	1050
Breakfast	Big Breakfast with Hotcakes and Egg Whites	990
Smoothies & Shakes	McFlurry with M&M's Candies (Medium)	930
Smoothies & Shakes	Strawberry Shake (Large)	850
Smoothies & Shakes	Chocolate Shake (Large)	850
Smoothies & Shakes	Shamrock Shake (Large)	820

Low calorie items in breakfast and Milkshake and Smoothies categories

Smoothies & Shakes	Blueberry Pomegranate Smoothie (Medium)	260
Breakfast	Fruit & Maple Oatmeal without Brown Sugar	260
Smoothies & Shakes	Strawberry Banana Smoothie (Medium)	250
Breakfast	Egg White Delight	250
Smoothies & Shakes	Blueberry Pomegranate Smoothie (Small)	220
Smoothies & Shakes	Mango Pineapple Smoothie (Small)	210

5. Top 10 Low calorie desserts category (under 250 calories and low sugar)

Sugar and Calorie Content for 'Desserts' Items (Sorted by Sugars):

- Chocolate Chip Cookie: 160 Calories, 15 g Sugars
- Baked Apple Pie: 250 Calories, 13 g Sugars

- Oatmeal Raisin Cookie: 150 Calories, 13 g Sugars
- Kids Ice Cream Cone: 45 Calories, 6 g Sugars

6. Top 10 Beverages category - low cal and low sugar

Diet Dr Pepper (Medium): 0 Calories, 0 g Sugars

- Diet Dr Pepper (Child): 0 Calories, 0 g Sugars
- Diet Dr Pepper (Large): 0 Calories, 0 g Sugars
- Diet Dr Pepper (Small): 0 Calories, 0 g Sugars
- Diet Coke (Child): 0 Calories, 0 g Sugars
- Diet Coke (Large): 0 Calories, 0 g Sugars
- Dasani Water Bottle: 0 Calories, 0 g Sugars
- Diet Coke (Small): 0 Calories, 0 g Sugars
- Diet Coke (Medium): 0 Calories, 0 g Sugars
- 1% Low Fat Milk Jug: 100 Calories, 12 g Sugars

7. Top 3 Smoothies and Shakes low cal (under 250)

- Blueberry Pomegranate Smoothie (Small): 220 Calories, 44 g Sugars
- Strawberry Banana Smoothie (Small): 210 Calories, 44 g Sugars
- Mango Pineapple Smoothie (Small): 210 Calories, 46 g Sugars

8. Chicken McNuggets (40 piece) has the most calories from Fat and Nonfat Latte (Medium) , Nonfat Latte (Small), Diet Coke (Child) , Dr Pepper (Small) , Coca-Cola Classic (Medium) has the lowest

9. Top 5 breakfast menu items with the highest carbohydrate content:

Big Breakfast with Hotcakes (Large Biscuit)

Big Breakfast with Hotcakes and Egg Whites

Big Breakfast with Hotcakes (Regular Biscuit)

Big Breakfast with Hotcakes and Egg Whites

Cinnamon Melts

10. Low-calorie options within the Smoothies & Shakes category (under 300 cal)

Blueberry Pomegranate Smoothie (Small) 220

Blueberry Pomegranate Smoothie (Medium) 260

Strawberry Banana Smoothie (Small) 210

Strawberry Banana Smoothie (Medium) 250

Mango Pineapple Smoothie (Small) 210

Mango Pineapple Smoothie (Medium) 260

11. Items under 500 calories (Breakfast category)

Egg McMuffin 300

Egg White Delight 250

Sausage McMuffin 370

Sausage McMuffin with Egg 450

Sausage McMuffin with Egg Whites 400

12. Non-carbonated healthier drink options under 20 gm sugar:

Minute Maid 100% Apple Juice Box 19 gm

13. Unsweetened tea options

Iced Tea (Small)

Iced Tea (Medium)

Iced Tea (Large)

Iced Tea (Child)

14. Unsweetened coffee options

Coffee (Small)

Coffee (Medium)

Coffee (Large)

Summary & Recommendations

- The menu has all items that mostly have carbohydrates under the threshold of 60% of the total calorie intake or 281 to 406 grams.
- Items that have high protein, low carbs and low fat are only 2 and under the salad category only. There is total 260 items on the menu. Items with such profiles should be increased under all categories.

Item(Category)	Protein	Fat	Carbohydrates
Premium Bacon Ranch Salad with Grilled Chicken (Salad)	29	8	8
Premium Southwest Salad with Grilled Chicken (Salad)	27	8	28

- The most popular category is Coffee & tea followed by breakfast. The least popular are the salads and desserts, hence there is a room for improvement in these categories.

Coffee & Tea	95
Breakfast	42
Smoothies & Shakes	28
Beverages	27
Chicken & Fish	27
Beef & Pork	15
Snacks & Sides	13
Desserts	7
Salads	6

- **Most Nutritive category**

Beverage category has the lowest calorie out of all categories. Salads category have the highest Vitamin A%, Vitamin C % and dietary fibre. Chicken & Fish as well as Beef and Pork have the highest iron % in spite of having the most calories.

Smoothies and Shakes category have the highest calcium.

Chicken and Fish has the highest protein.

Thus, we can conclude that Salads is one of the healthiest categories as it has a more balanced nutrients as compared to other categories – Vitamin A, Vitamin C and dietary fibre. Even though beverage has the lowest calories, it is one of the least healthy categories as it does not have much nutritive value.

Note: Salads is the healthiest, but the least popular category on the menu.

- Breakfast category has the highest sodium levels among all categories, whereas beverages has the lowest. Beef and Pork as well as the Breakfast categories have the highest fat content, the lowest being beverages. The highest calories is from the milkshake and smoothies category, the lowest being beverages.

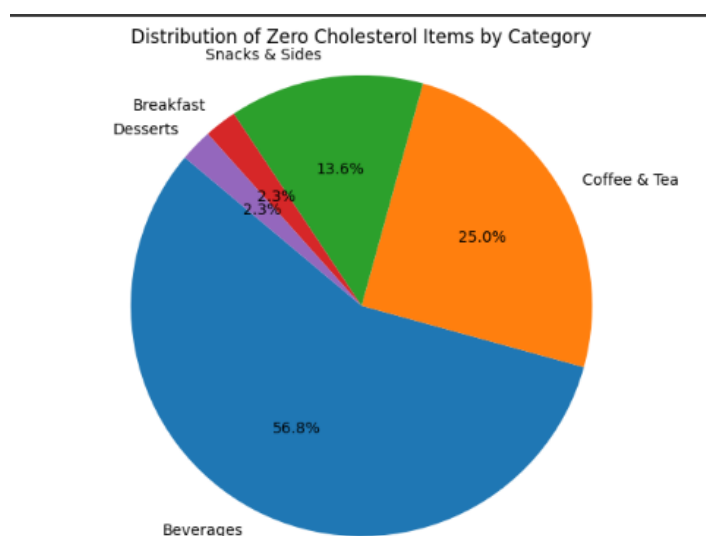
Note: It is to be noted that beverage is a fairly popular category with healthy options for consumers.

- Breakfast category has the highest sodium levels among all categories, whereas beverages has the lowest. Beef and Pork as well as the Breakfast categories have the highest fat content, the lowest being beverages. The highest calories is from the milkshake and smoothies category, the lowest being beverages.

It is to be noted that beverage is a popular category with healthy options for consumers.

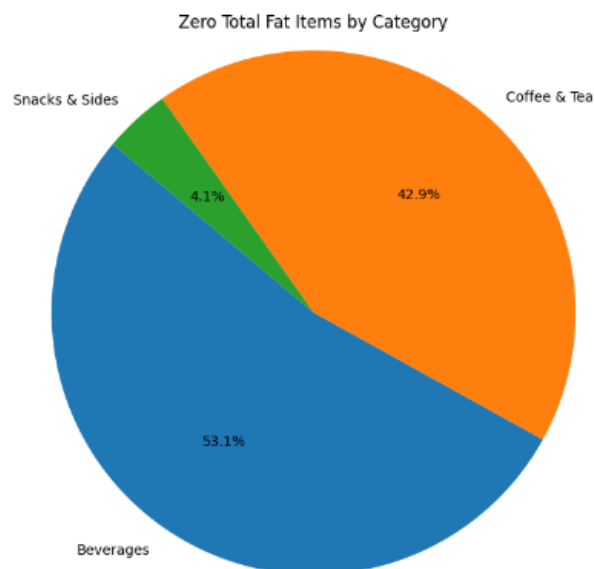
- **Zero Value Items**

i. There are 44 (out of 260 items) zero cholesterol items, most of them being from the beverage category followed by Coffee and Tea section. Most cholesterol items are in Breakfast and dessert category

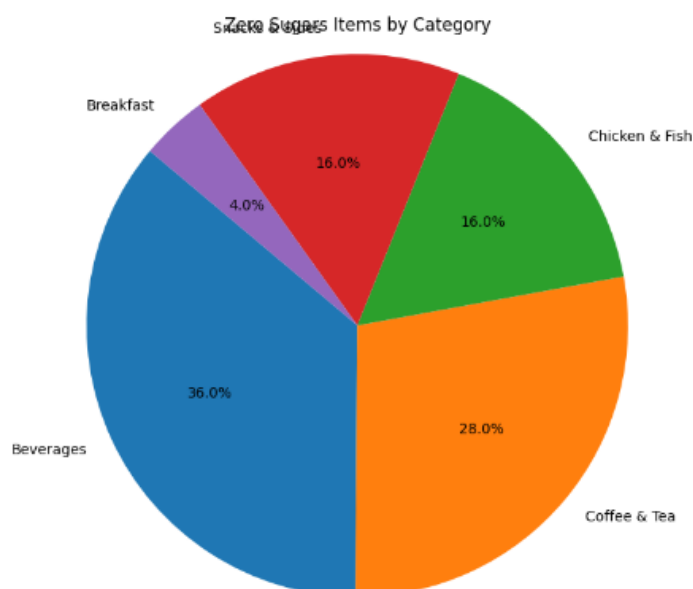


ii. There are 49 items (out of 260 items) with zero total fat, mainly in the Beverages, followed by Coffee & Tea. The other categories have no zero Total Fat items. Tea and Coffee has a good balance

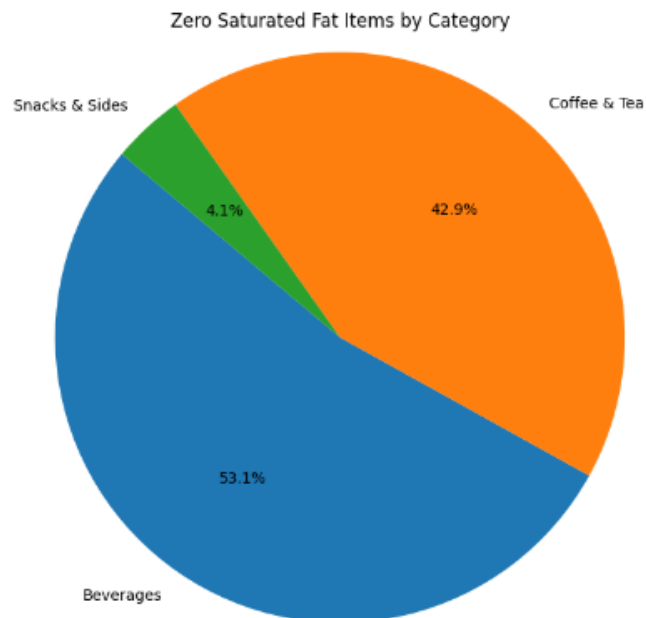
of low fat options and is the top performing category. One can categorize these items in Tea & Coffee as low fat – Tea & Coffee items separately to offer clear choices.



iii. There are 25 items (out of 260 items) with zero sugar, mainly in the Beverages, followed by Coffee & Tea. These items are found least in the breakfast category. Tea and Coffee has a good balance of low fat options and is the top performing category. One can categorize these items in Tea & Coffee as low fat /low sugar – Tea & Coffee items separately to offer clear choices. Same goes for beverage Category.

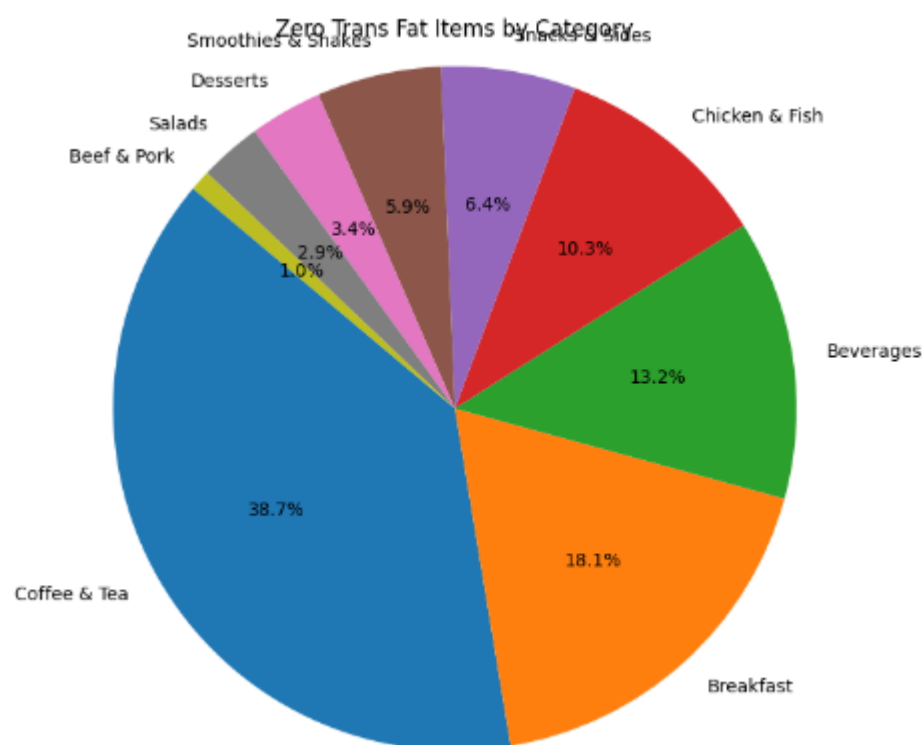


iv. There are 60 items (out of 260 items) with zero saturated fat, mainly in the Beverages, followed by Coffee & Tea. These items are found least in the snacks and sides category. However, there are no other categories that have items that are completely free of saturated fat.



v. There are 204 items (out of 260 items) with zero Coffee & Tea, mainly in the Beverages, followed by Breakfast. These items are found least in the Beef & Pork categories.

Note: Most items in the menu are Trans fat free, which is an upside.



- The smallest serve is the Kids Ice Cream Cone with 29 gm serving portion, whereas the highest is French Vanilla Iced Coffee (Large) , French Vanilla Iced Coffee (Large), Iced Coffee with Sugar Free French Vanilla Syrup, Hazelnut Iced Coffee (Large), Caramel Iced Coffee (Large) and Regular Iced Coffee (Large). All of these have 946.352 gm serving portion.
- There are 60 low-calorie, low sugar, low sodium, low fat options (below 200 calories). The total items are 260. The number of these items are 26% of the total menu items. Such items can be increased in the menu.