

Michelle Dsouza

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3 BSC DS

# **NUTRITION RECOMMENDATION APP** **DOCUMENTATION**

## **I. Project Purpose and Goals:**

The Nutrition Recommendation App is designed to assist users in making informed and personalized dietary choices based on specified nutritional criteria. Users can input values such as the number of calories, fats, protein, and carbs they aim to consume. The app then provides recommendations for ingredients that align with their dietary preferences.

## **II. Goals:**

### **Personalized Recommendations:**

Our app goes beyond generic advice. By considering user-input nutritional criteria, it crafts personalized ingredient suggestions, ensuring a diet that aligns precisely with individual health goals and preferences.

### **User-Friendly Interface:**

Navigate effortlessly through our app's intuitive design. Enjoy a seamless experience as you input nutritional values, receive recommendations, and explore the world of personalized nutrition in a user-friendly environment.

### **Data-Driven Insights:**

Elevate your dietary decisions with our app's reliance on a rich dataset. Analyzing essential nutritional information, the app delivers accurate and meaningful recommendations, providing you with insightful and data-backed insights for informed food choices.

## **III. Data Analytics Methods:**

## **The dataset used in this project contains the following columns:**

- **Grams:**  
Represents the weight of the ingredient, measured in grams. This crucial metric guides portion control and nutritional accuracy in meal planning.
- **Calories:**  
Indicates the total energy content within the ingredient, providing a fundamental measure for managing daily caloric intake and energy balance.
- **Protein:**  
Quantifies the protein content in grams, vital for muscle maintenance, repair, and overall body function.
- **Fat:**  
Reflects the fat content in grams, a key factor in understanding dietary fats and managing fat intake for overall health.
- **Sat.fat:**  
Specifies the saturated fat content in grams, helping users monitor and control their intake of saturated fats for heart health.
- **Fiber:**  
Quantifies the fibre content in grams, offering insights into digestive health, satiety, and overall nutritional balance.
- **Carbs:**  
Indicates the carbohydrate content in grams, a primary energy source, aiding in meal planning for sustained energy levels.
- **Protein\_per\_calorie:**  
Represents the protein-to-calorie ratio, a valuable metric for assessing the efficiency of protein intake in relation to overall caloric consumption.
- **Fiber\_per\_gram:**  
Reflects the fiber-to-gram ratio, providing insights into the concentration of fiber in each gram of the ingredient, aiding in fiber-rich food choices for optimal health.

## **IV. Recommendation Algorithm:**

The app utilizes a recommendation algorithm that considers user-input criteria and matches them against the dataset. It calculates the suitability of ingredients based on the specified nutritional values and recommends the top matches.

## V. User Input and Output:

### INPUT:

- Users input their desired values for calories, fats, protein, and carbs.

### OUTPUT:

- The app processes this information and provides a list of recommended ingredients that align with the user's dietary preferences.

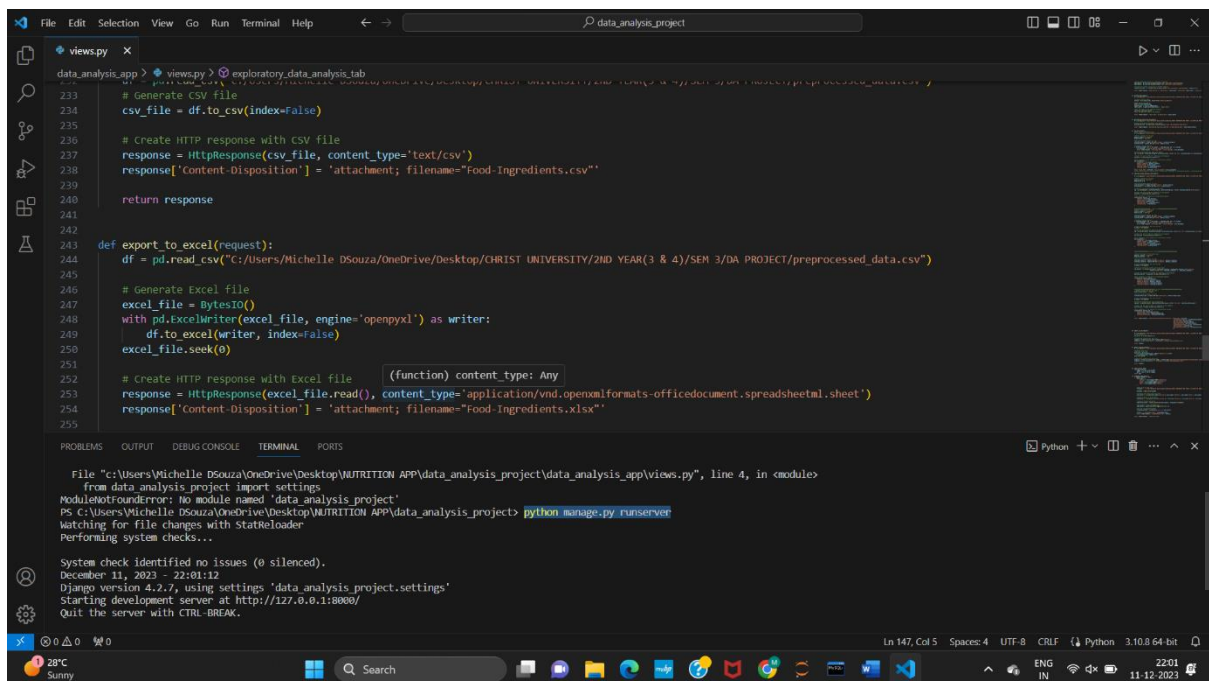
## VI. How to Run the Project:

### Prerequisites:

- Ensure Python is installed on your machine.
- Install required Python packages using `pip install -r requirements.txt`.

### Steps:

1. Run the code and enter “`python manage.py runserver`” in the terminal



```
File Edit Selection View Go Run Terminal Help
data_analysis_project

views.py X
data_analysis_app > views.py > exploratory_data_analysis_tab
233 # Generate CSV file
234 csv_file = df.to_csv(index=False)
235
236 # Create HTTP response with CSV file
237 response = HttpResponse(csv_file, content_type='text/csv')
238 response['Content-Disposition'] = 'attachment; filename="Food-Ingredients.csv"'
239
240 return response
241
242
243 def export_to_excel(request):
244     df = pd.read_csv("C:/Users/Michelle DSouza/OneDrive/Desktop/CHRIST UNIVERSITY/2ND YEAR(3 & 4)/SEM 3/DA PROJECT/preprocessed_data.csv")
245
246     # Generate Excel file
247     excel_file = BytesIO()
248     with pd.ExcelWriter(excel_file, engine='openpyxl') as writer:
249         df.to_excel(writer, index=False)
250         excel_file.seek(0)
251
252     # Create HTTP response with Excel file (function) content_type: Any
253     response = HttpResponse(excel_file.read(), content_type='application/vnd.openxmlformats-officedocument.spreadsheetml.sheet')
254     response['Content-Disposition'] = 'attachment; filename="Food-Ingredients.xlsx"'
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PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Python Python 3.10.8 64-bit

File "C:/Users/Michelle DSouza/OneDrive/Desktop/CHRIST UNIVERSITY/2ND YEAR(3 & 4)/SEM 3/DA PROJECT/preprocessed_data.csv", line 4, in <module>
from data_analysis_project import settings
ModuleNotFoundError: No module named 'data_analysis_project'
PS C:/Users/Michelle DSouza/OneDrive/Desktop/CHRIST UNIVERSITY/2ND YEAR(3 & 4)/SEM 3/DA PROJECT> python manage.py runserver
watching for file changes with StatReloader
Performing system checks...

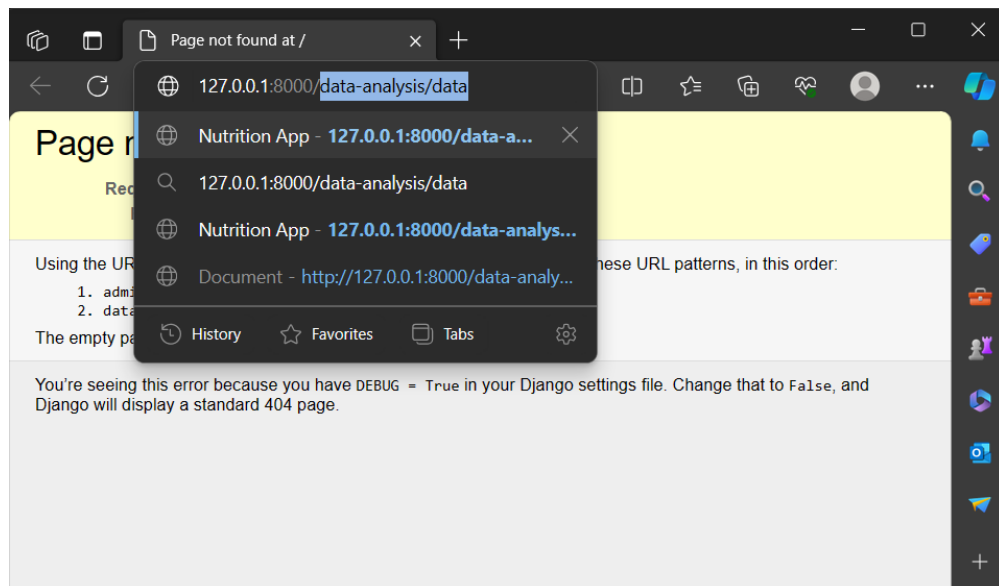
System check identified no issues (0 silenced).
December 11, 2023 - 22:01:12
Django version 4.2.7, using settings 'data_analysis_project.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CTRL-BREAK.
```

2. Go here and follow the link

```
Watching for file changes with StatReloader
Performing system checks...

System check identified no issues (0 silenced).
December 11, 2023 - 22:01:12
Django version 4.2.7, using settings 'project.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CTRL-BREAK.
```

3. After reaching here, Go to the search bar and type “/data-analysis/data” as shown below



4. Top left corner are the pages mention such as [Data, Descriptive Statistics, Exploratory Data Analysis, Data Profile and Recommend Food.] Here you'll get an over view of the nutrition dataset

28°C Sunny

127.0.0.1:8000/data-analysis/data/

Data Descriptive Statistics Exploratory Data Analysis Data Profile Recommend Food

### Data View

First 10 Rows

	Unnamed: 0	Food	Grams	Calories	Protein	Fat	Sat.Fat	Fiber	Carbs	Category	Protein_Per_Calorie	Fiber_Per_Gram
0	0	Cows' milk	976	680.0	32.0	40.0	36.0	0.0	48.0	Dairy products	4.705882	0.000000
1	2	Buttermilk	246	133.0	9.0	5.0	4.0	0.0	13.0	Dairy products	6.766917	0.000000
2	3	Evaporated, undiluted	252	340.0	16.0	20.0	18.0	0.0	24.0	Dairy products	4.705882	0.000000
3	4	Fortified milk	1419	1210.0	89.0	42.0	23.0	1.4	119.0	Dairy products	7.355372	0.000987
4	5	Powdered milk	103	516.0	27.0	28.0	24.0	0.0	39.0	Dairy products	5.232558	0.000000
5	8	Goats' milk	244	166.0	8.0	10.0	8.0	0.0	11.0	Dairy products	4.819277	0.000000
6	9	(1/2 cup ice cream)	540	592.0	24.0	24.0	22.0	0.0	70.0	Dairy products	4.054054	0.000000
7	10	Cocoa	252	235.0	8.0	11.0	10.0	0.0	26.0	Dairy products	3.404255	0.000000
8	11	skim. milk	250	160.0	18.0	4.0	3.0	1.0	13.0	Dairy products	11.250000	0.004000
9	12	(cornstarch)	248	286.0	9.0	10.0	9.0	0.0	40.0	Dairy products	3.146853	0.000000

Export to CSV Export to Excel

### Columns Information

Column Name	Data Type	Non-Null Count	Null Count
Unnamed: 0	int64	7255	0
Food	object	7255	0
Grams	int64	7255	0
Calories	float64	7255	0
Protein	float64	7255	0
Fat	float64	7255	0
Sat.Fat	float64	7254	1
Fiber	float64	7255	0
Carbs	float64	7255	0
Category	object	7255	0
Protein_Per_Calorie	float64	7227	28
Fiber_Per_Gram	float64	7255	0

5. Scroll down to get the column information

28°C Sunny

127.0.0.1:8000/data-analysis/data/

Data Descriptive Statistics Exploratory Data Analysis Data Profile Recommend Food

### Columns Information

Column Name	Data Type	Non-Null Count	Null Count
Unnamed: 0	int64	7255	0
Food	object	7255	0
Grams	int64	7255	0
Calories	float64	7255	0
Protein	float64	7255	0
Fat	float64	7255	0
Sat.Fat	float64	7254	1
Fiber	float64	7255	0
Carbs	float64	7255	0
Category	object	7255	0
Protein_Per_Calorie	float64	7227	28
Fiber_Per_Gram	float64	7255	0

6. Click on the Descriptive Statistics heading to see the it's table

Nutrition App

127.0.0.1:8000/data-analysis/descriptive-statistics/

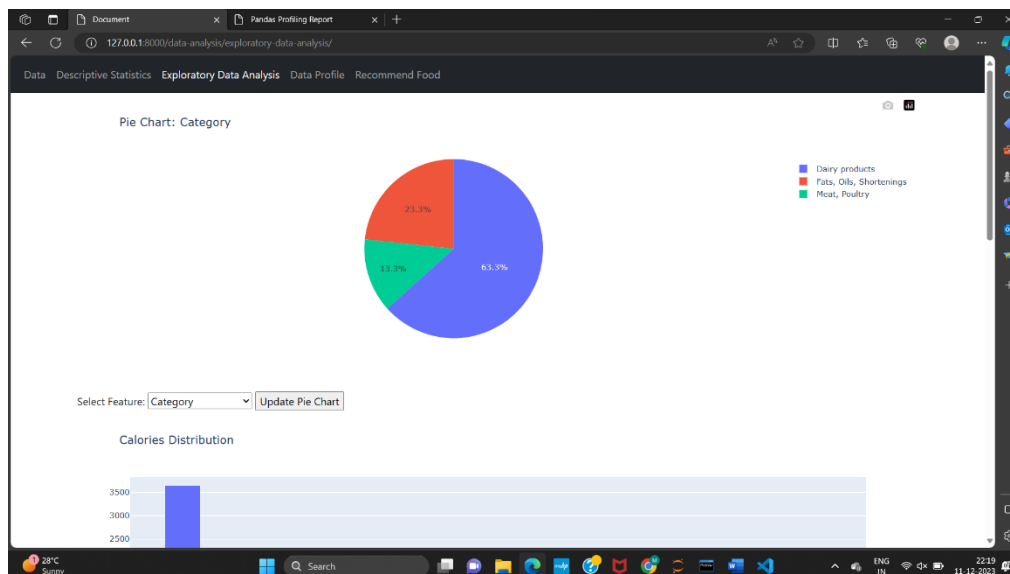
Data Descriptive Statistics Exploratory Data Analysis Data Profile Recommend Food

### Descriptive Statistics Table

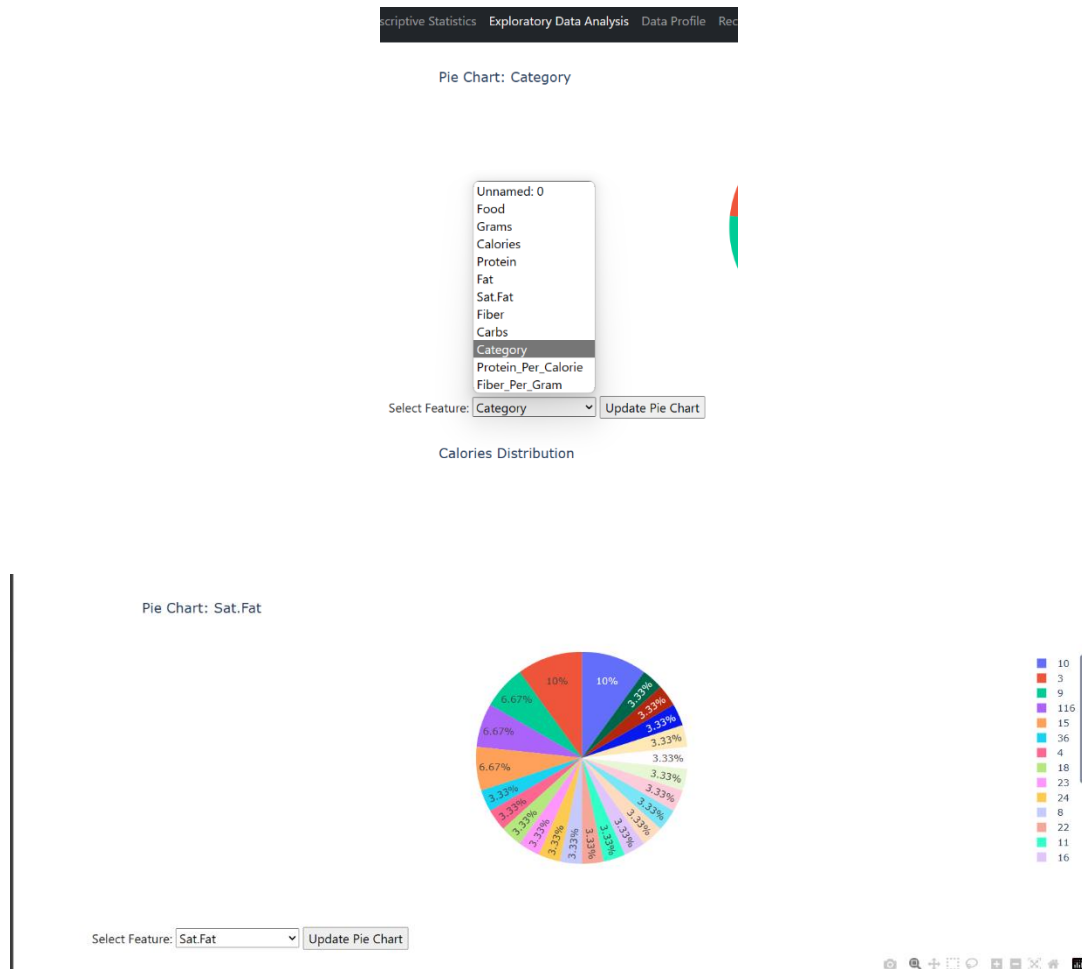
	Unnamed: 0	Grams	Calories	Protein	Fat	Sat.Fat	Fiber	Carbs	Protein_Per_Calorie	Fiber_Per_Gram
count	7255.000000	7255.000000	7255.000000	7255.000000	7255.000000	7254.000000	7255.000000	7255.000000	7227.000000	7255.000000
mean	3788.118401	101.200276	200.462445	8.712932	9.093017	2.987760	1.755811	20.943391	5.024692	0.017288
std	2097.753342	26.067842	155.486839	8.955815	11.606483	5.624518	4.269807	22.468601	4.555889	0.033126
min	0.000000	12.000000	0.000000	-1.000000	0.000000	0.000000	0.000000	0.000000	-0.719424	0.000000
25%	1976.500000	100.000000	83.350000	2.220000	2.060000	0.500000	0.100000	5.565000	1.840905	0.001000
50%	3790.000000	100.000000	165.630000	6.200000	5.550000	1.465000	1.000000	13.290000	3.719912	0.010000
75%	5603.500000	100.000000	276.640000	12.255000	12.710000	3.757500	2.100000	26.405000	6.681292	0.021000
max	7417.000000	1419.000000	3969.000000	232.000000	233.000000	234.000000	235.000000	236.000000	25.000000	1.044643

28°C Sunny 11-12-2021

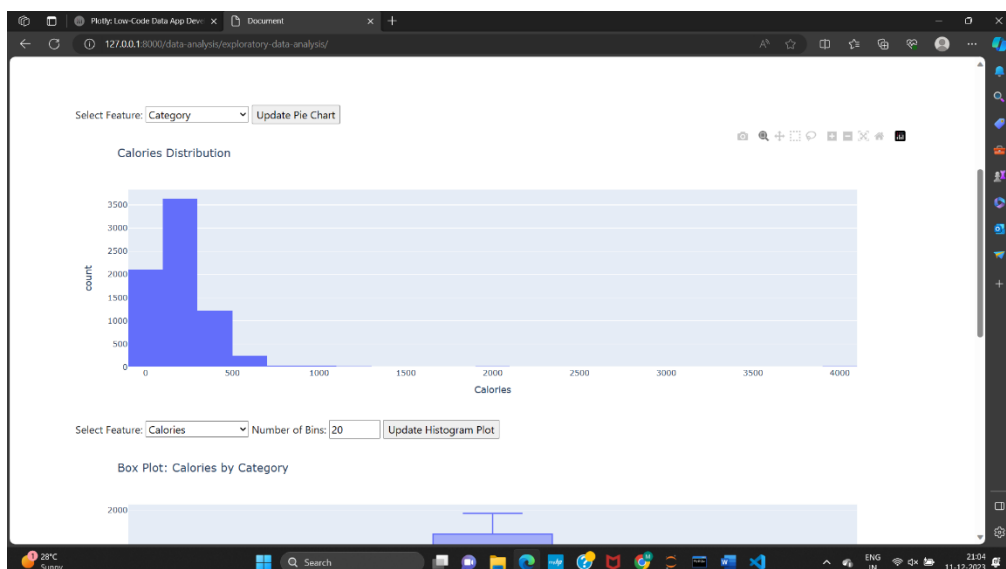
- Click on the Exploratory Data Analysis heading to see the dataset related plots. Here is an Pie Chart showing the column “Category”.



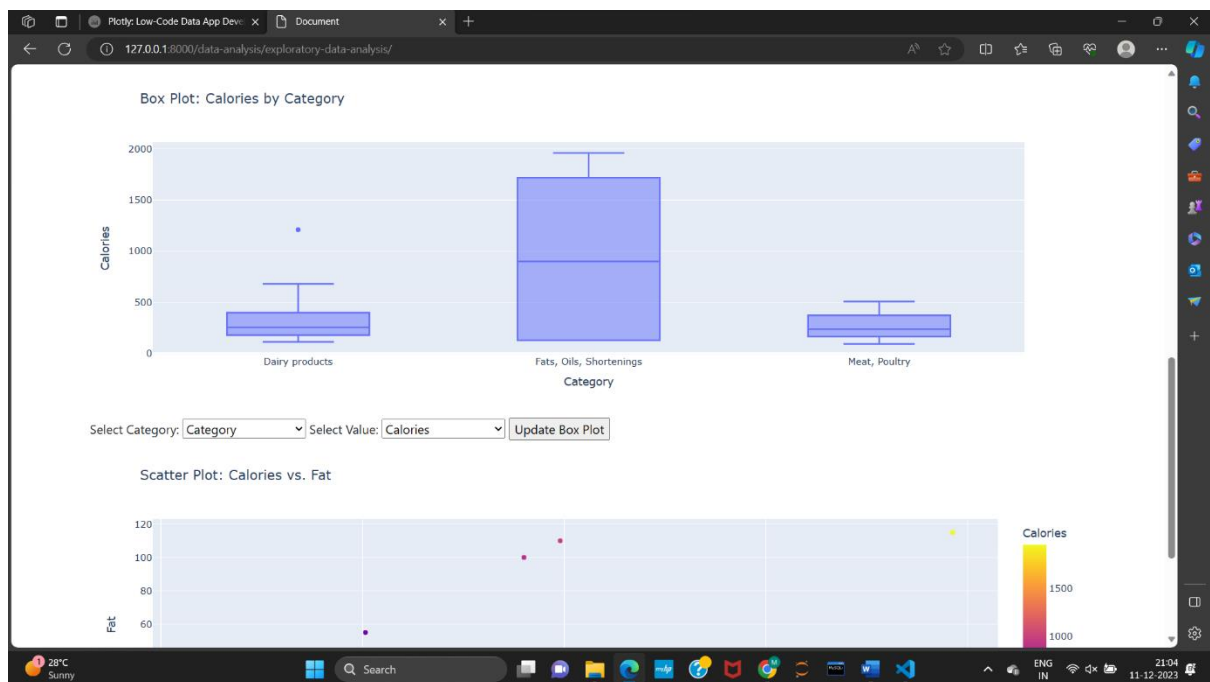
8. You can change the pie chart you your liking by changing the “**SELECT FEATURE**” and “**UPDATE THE CHART**”.



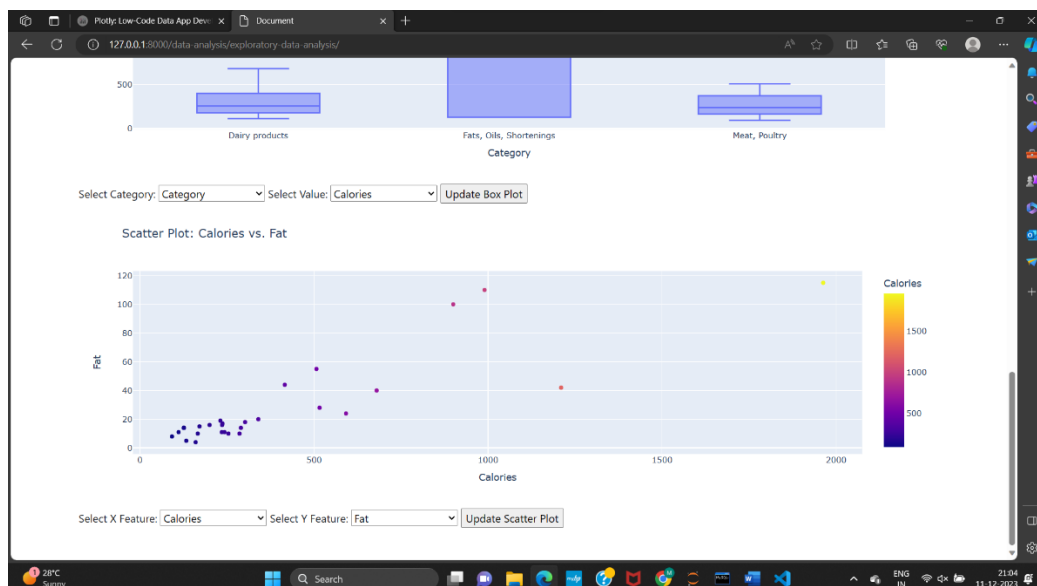
9. Scrolling down you’ll see an Histogram with the same function where “**SELECT FEATURE**” and “**UPDATE THE GRAPH**”



10. Next you'll see an Box Plot of "Calories by Category" where the same function applies of changing the column and updating the graph

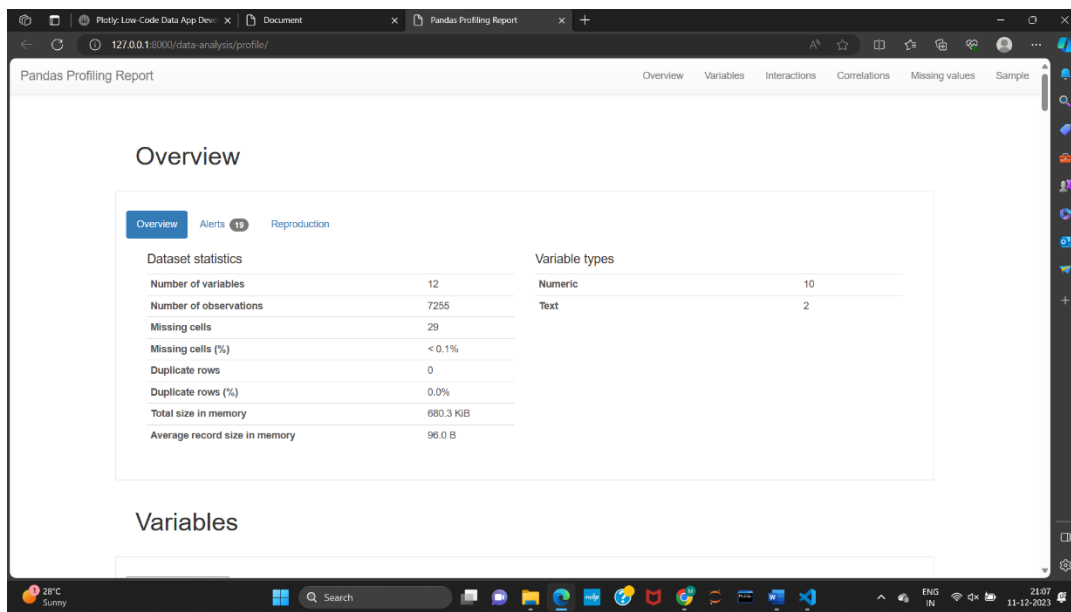


11. Next you'll see an Scatter plot of "Category" and "Calories" where the same function applies of changing the column and updating the graph

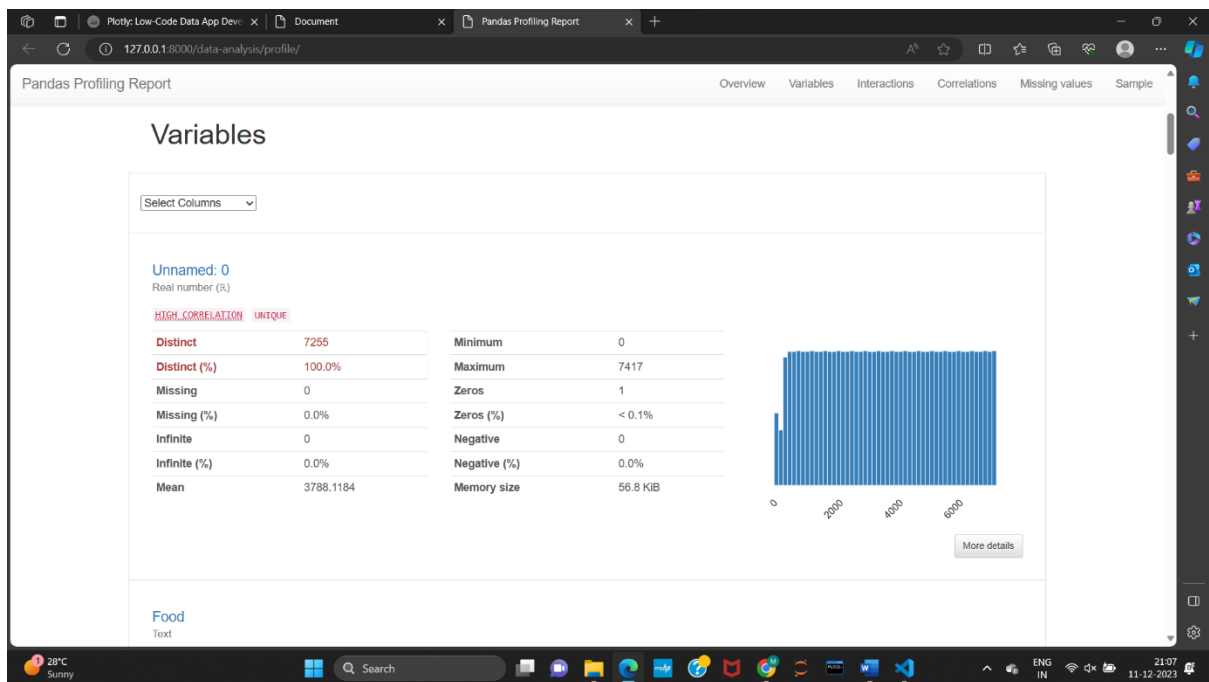


12. Now tapping onto the next page "Pandas Profiling Report" you'll see the overview of the dataset statistics

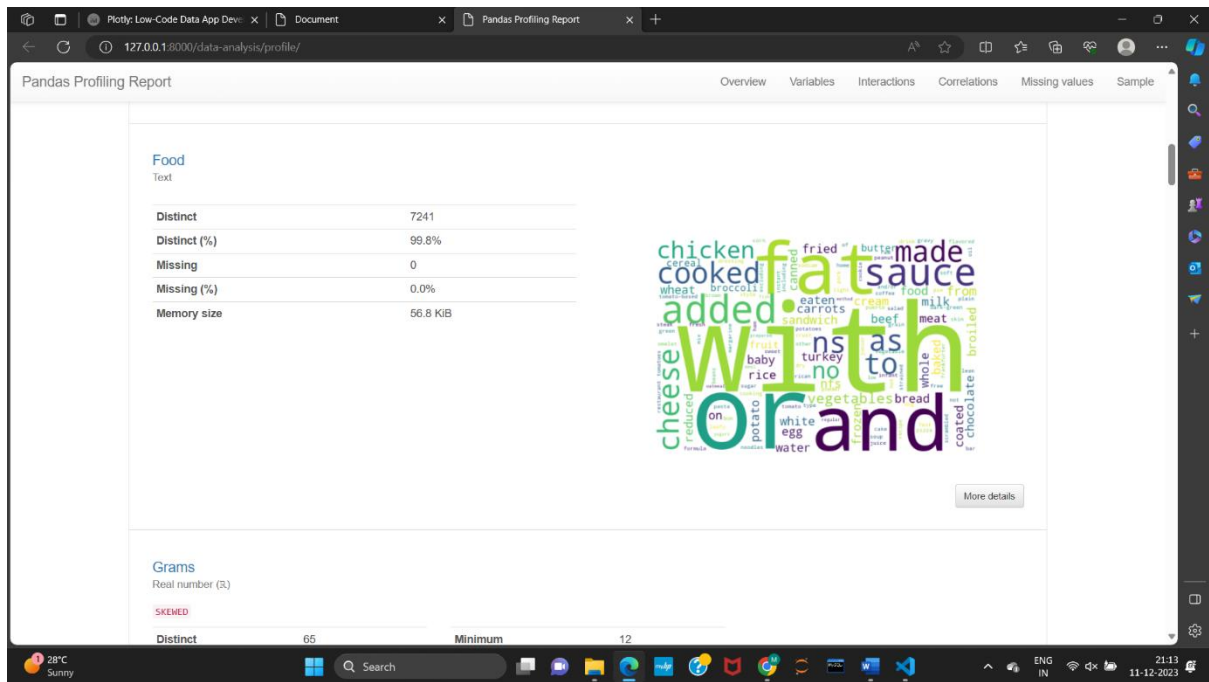




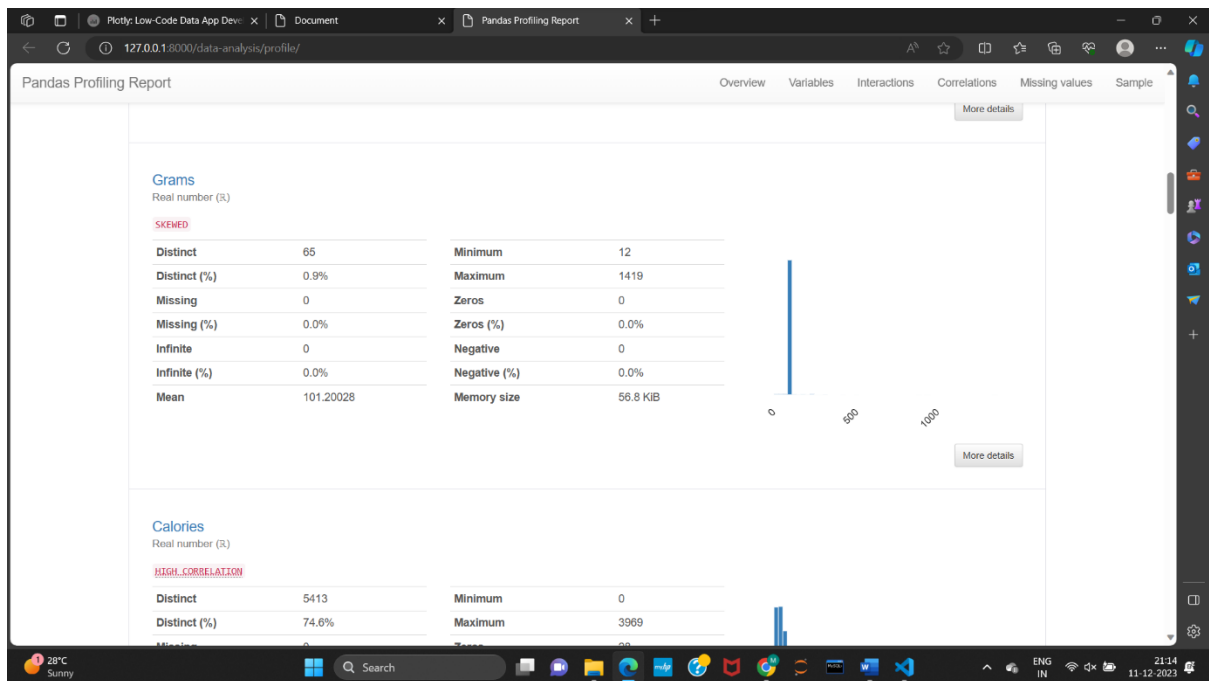
### 13. Displaying the each column, Starting with “Grams”



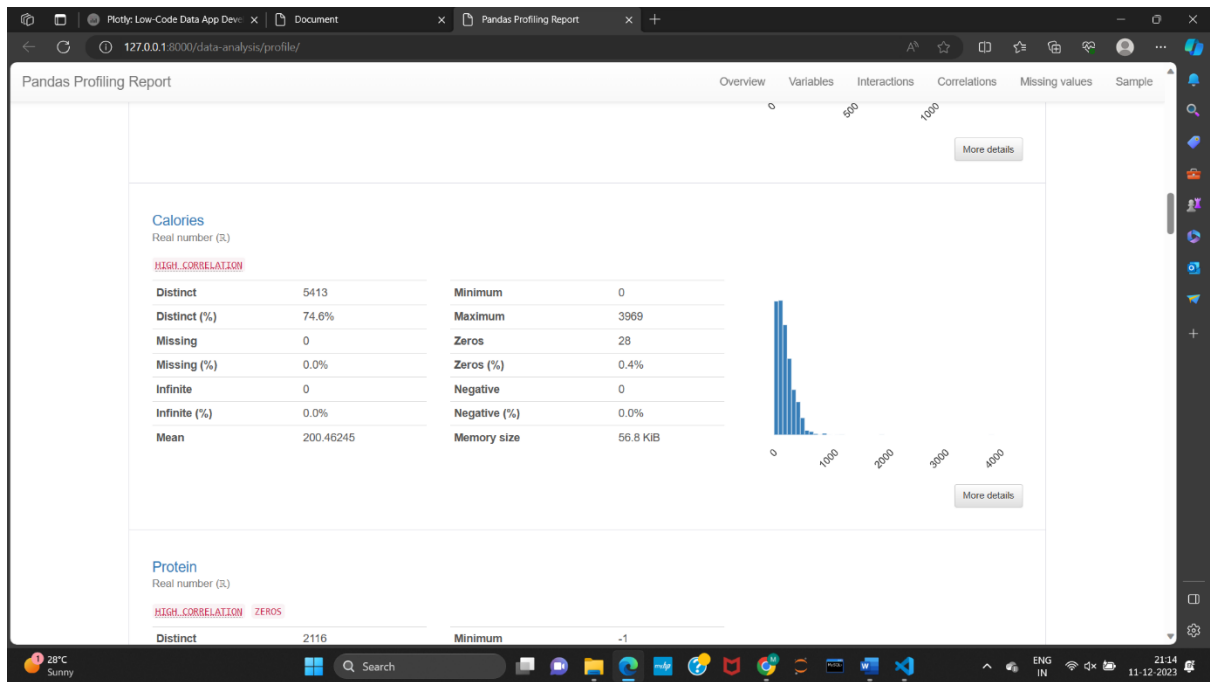
### 14. Ddvf



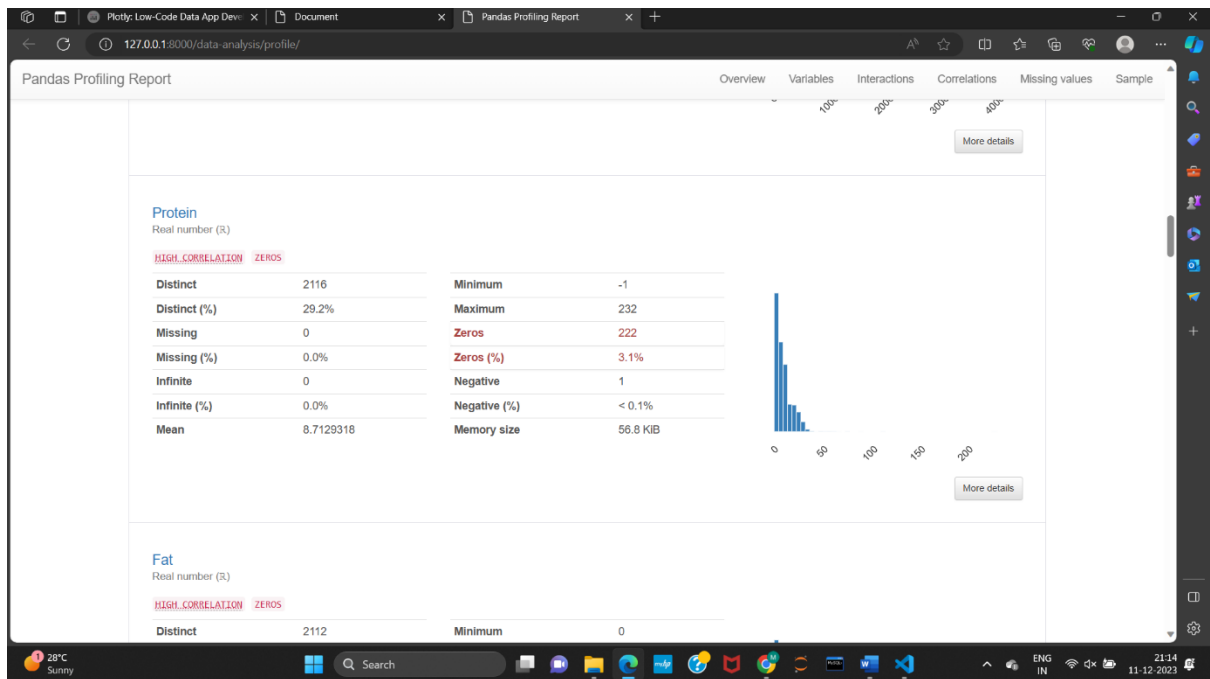
## 15. Fgdb



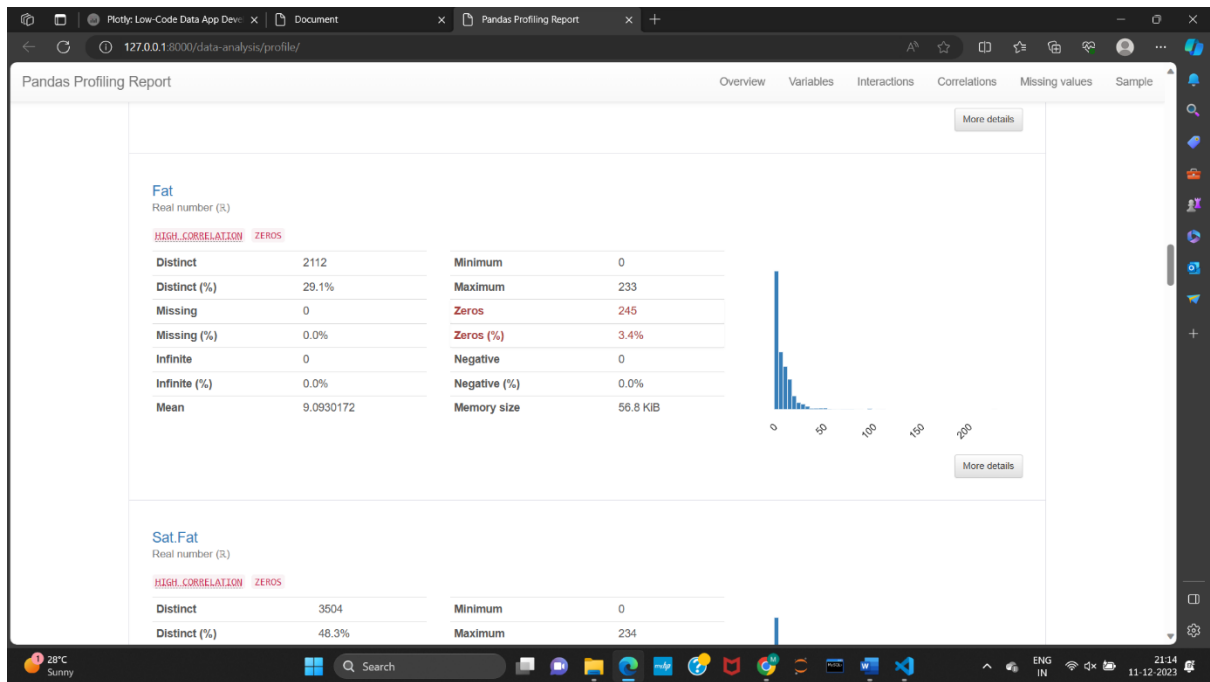
## 16. Calories



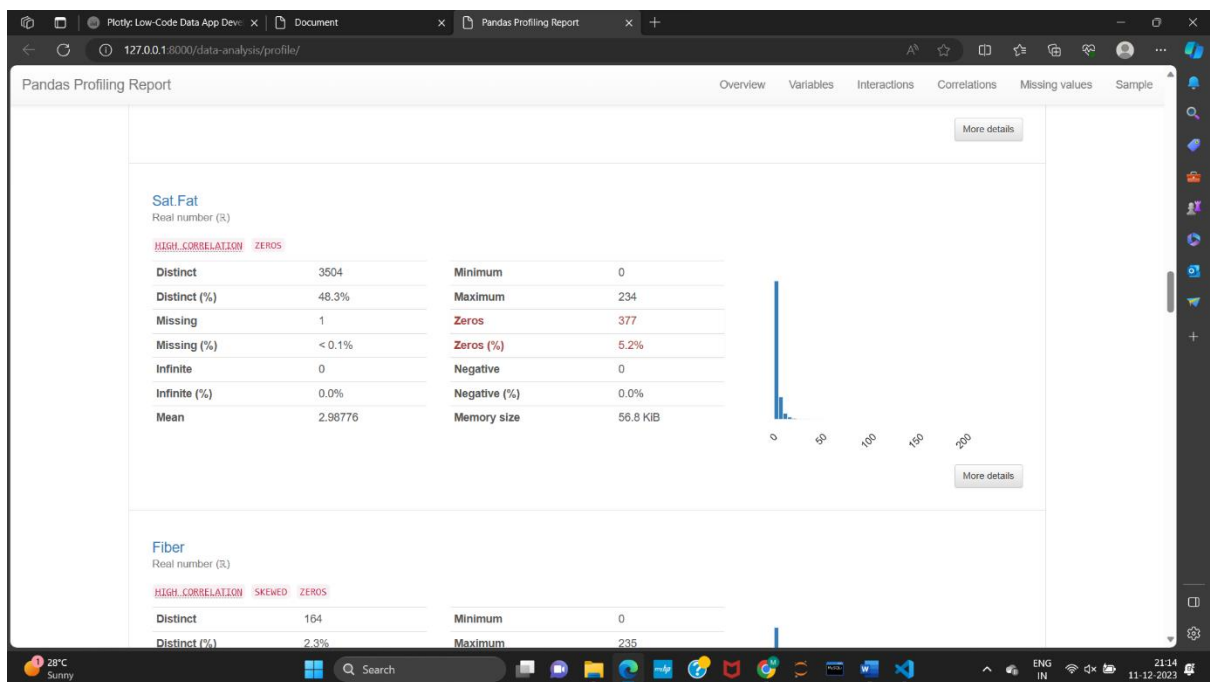
## 17. Protein



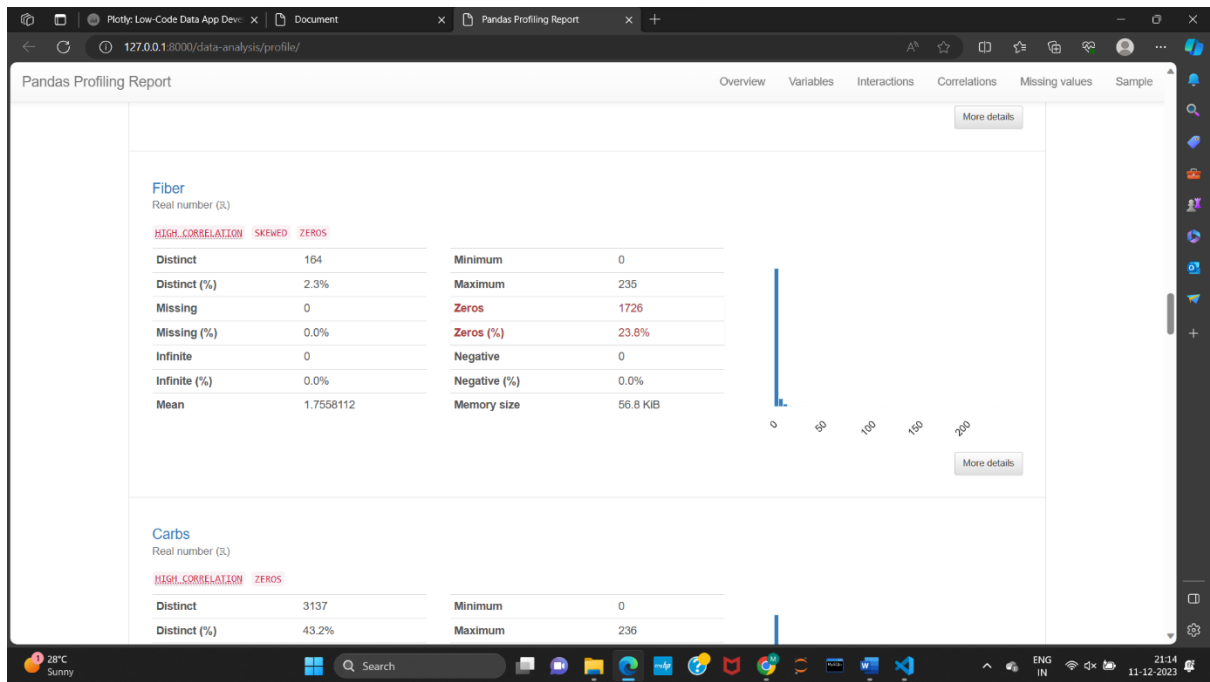
## 18. Fat



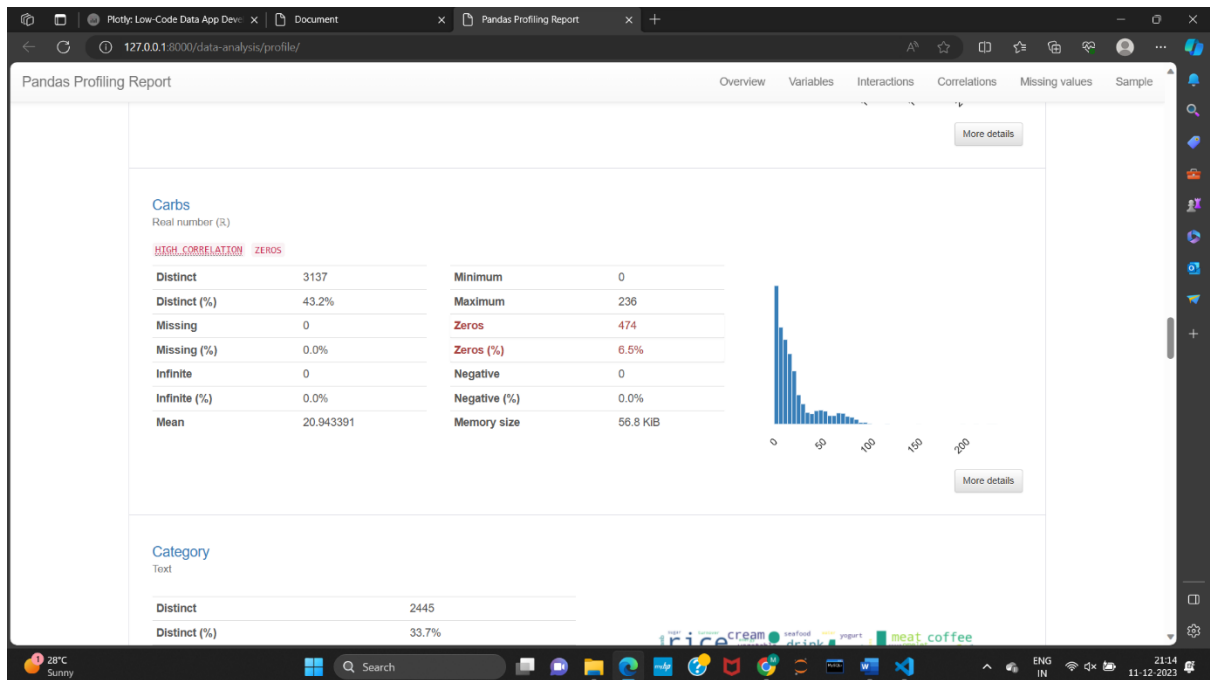
## 19. Sat.Fat



## 20. Fiber

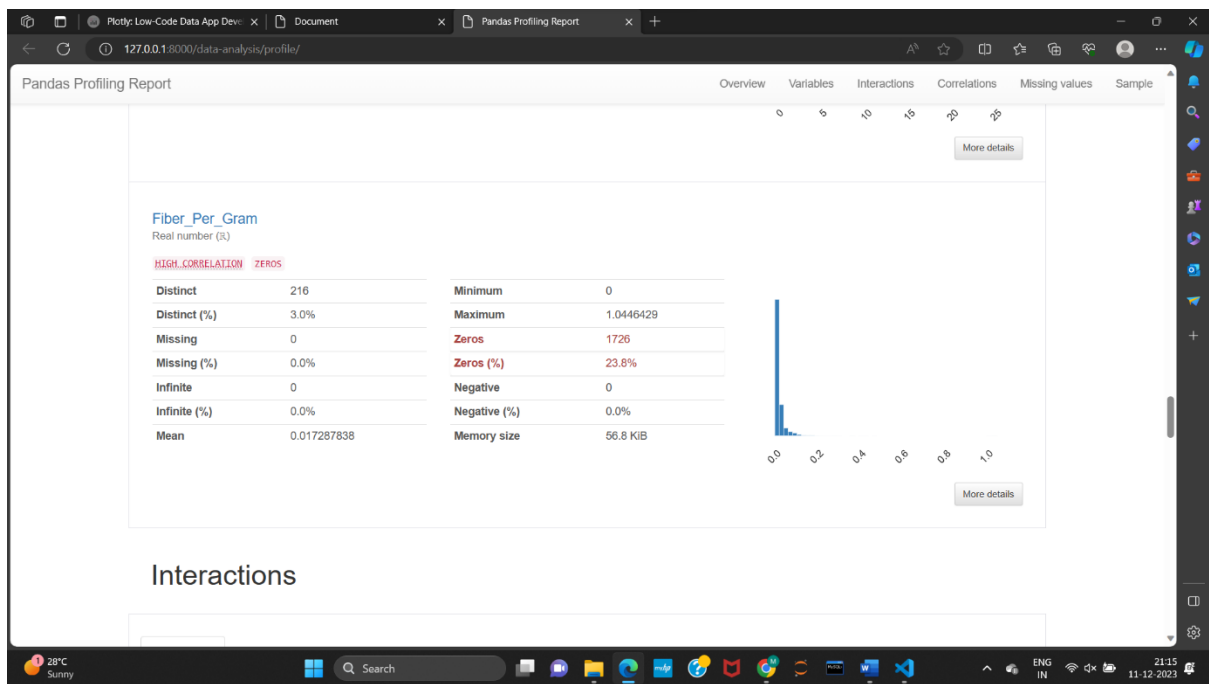


## 21. Carbs



## 22. Category





## 25. Seeing the sample

Pandas Profiling Report

Overview Variables Interactions Correlations Missing values Sample

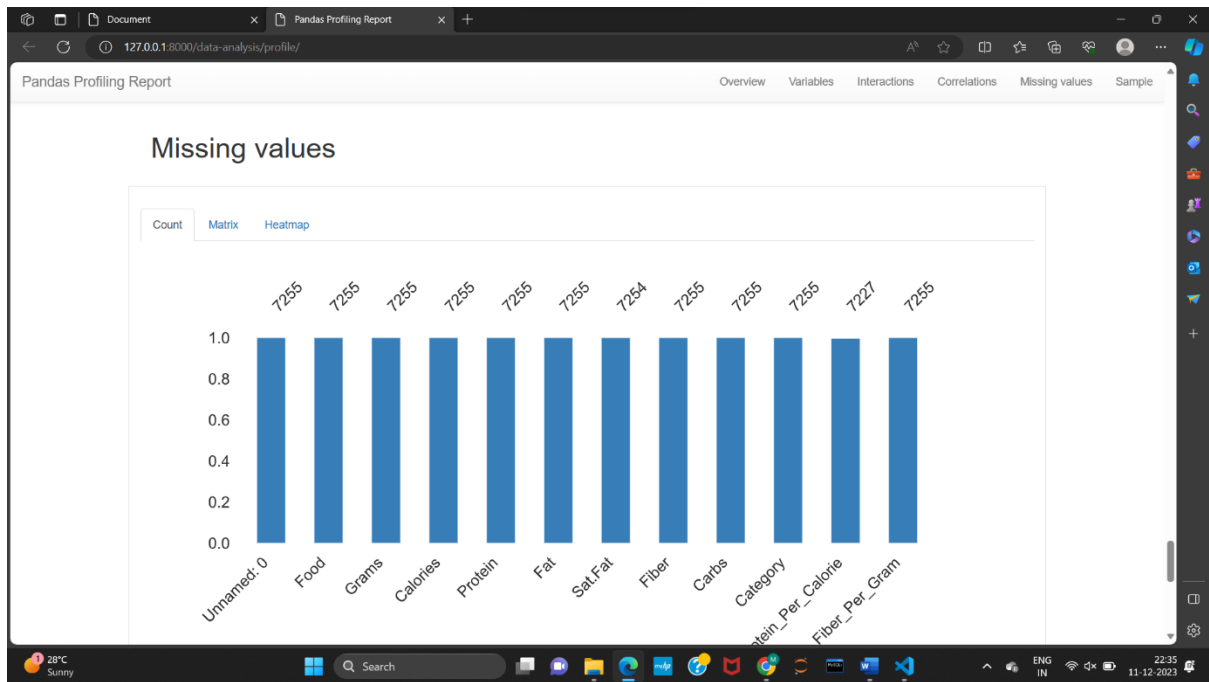
Sample

First rows Last rows

Unnamed: 0	Food	Grams	Calories	Protein	Fat	Sat.Fat	Fiber	Carbs	Category	Protein_Per_Calorie	Fiber_Per_Gram
0	0	Cows' milk	976	680.0	32.0	40.0	36.0	0.0	Dairy products	4.705882	0.000000
1	2	Buttermilk	246	133.0	9.0	5.0	4.0	0.0	Dairy products	6.766917	0.000000
2	3	Evaporated, undiluted	252	340.0	16.0	20.0	18.0	0.0	Dairy products	4.705882	0.000000
3	4	Fortified milk	1419	1210.0	89.0	42.0	23.0	1.4	Dairy products	7.355372	0.000987
4	5	Powdered milk	103	516.0	27.0	28.0	24.0	0.0	Dairy products	5.232558	0.000000
5	8	Goats' milk	244	166.0	8.0	10.0	8.0	0.0	Dairy products	4.819277	0.000000
6	9	(1/2 cup ice cream)	540	592.0	24.0	24.0	22.0	0.0	Dairy products	4.054054	0.000000
7	10	Cocoa	252	235.0	8.0	11.0	10.0	0.0	Dairy products	3.404255	0.000000
8	11	skim. milk	250	160.0	18.0	4.0	3.0	1.0	Dairy products	11.250000	0.004000
9	12	(cornstarch)	248	286.0	9.0	10.0	9.0	0.0	Dairy products	3.146853	0.000000

Report generated by YData.

## 26. Missing values



27. Going the next page “Recommend Food” ,where you enter your preferences

The image shows a web browser displaying a "Food Recommendation - Input" form. The form is titled "Enter Your Preferences" and has four input fields for "Calories:", "Protein:", "Carbs:", and "Fats:". Each field is a text input box. Below the input fields is a blue "Submit" button. The browser's address bar shows the URL "127.0.0.1:8000/data-analysis/recommend-food/". The Windows taskbar at the bottom shows the date and time as 11-12-2023, 21:15.

Enter Your Preferences

Calories:

Protein:

Carbs:

Fats:

28. Inputting values



Plotly Low-Code Data App Dev x Document x Food Recommendation - Input x +

127.0.0.1:8000/data-analysis/recommend-food/

Data Descriptive Statistics Exploratory Data Analysis Data Profile Recommend Food

## Enter Your Preferences

Calories:

123

Protein:

34

Carbs:

67

Fats:

20

Submit

28°C Sunny Search 21:16 11-12-2023

## 29. Recommended ingredients

Plotly Low-Code Data App Dev x Document x Recommendation x +

127.0.0.1:8000/data-analysis/recommend-food/

Data Descriptive Statistics Exploratory Data Analysis Data Profile Recommendation

## Recommendation

Jellies

Cane Syrup

Blueberry syrup

Soft drink, cream soda

Soft drink, chocolate flavored

28°C Sunny Search 21:16 11-12-2023

## **VII. Conclusion:**

In conclusion, our Nutrition Recommendation App provides a seamless and personalized approach to dietary choices. By incorporating user-input nutritional preferences, insightful graphs, and data-driven algorithms, the app transforms nutrition exploration into a tailored and informed experience. Empower yourself to make healthier choices effortlessly, supported by the latest dataset and a user-friendly interface. Take charge of your well-being with our app, where precision meets simplicity in the pursuit of a balanced and nourished lifestyle.

## **VIII. References:**

- <https://www.healthline.com/nutrition/top-iphone-android-apps>
- <https://www.who.int/health-topics/nutrition>