Retail_dataset

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[6]:
```
!pip install wordcloud
from wordcloud import WordCloud
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
```

```
Collecting wordcloud
  Downloading wordcloud-1.9.4-cp313-cp313-macosx_10_13_x86_64.whl.metadata (3.4
kB)
Requirement already satisfied: numpy>=1.6.1 in
/opt/anaconda3/lib/python3.13/site-packages (from wordcloud) (2.1.3)
Requirement already satisfied: pillow in /opt/anaconda3/lib/python3.13/site-
packages (from wordcloud) (11.1.0)
Requirement already satisfied: matplotlib in /opt/anaconda3/lib/python3.13/site-
packages (from wordcloud) (3.10.0)
Requirement already satisfied: contourpy>=1.0.1 in
/opt/anaconda3/lib/python3.13/site-packages (from matplotlib->wordcloud) (1.3.1)
Requirement already satisfied: cycler>=0.10 in
/opt/anaconda3/lib/python3.13/site-packages (from matplotlib->wordcloud)
(0.11.0)
Requirement already satisfied: fonttools>=4.22.0 in
/opt/anaconda3/lib/python3.13/site-packages (from matplotlib->wordcloud)
(4.55.3)
Requirement already satisfied: kiwisolver>=1.3.1 in
/opt/anaconda3/lib/python3.13/site-packages (from matplotlib->wordcloud) (1.4.8)
Requirement already satisfied: packaging>=20.0 in
/opt/anaconda3/lib/python3.13/site-packages (from matplotlib->wordcloud) (24.2)
Requirement already satisfied: pyparsing>=2.3.1 in
/opt/anaconda3/lib/python3.13/site-packages (from matplotlib->wordcloud) (3.2.0)
Requirement already satisfied: python-dateutil>=2.7 in
/opt/anaconda3/lib/python3.13/site-packages (from matplotlib->wordcloud)
(2.9.0.post0)
Requirement already satisfied: six>=1.5 in /opt/anaconda3/lib/python3.13/site-
packages (from python-dateutil>=2.7->matplotlib->wordcloud) (1.17.0)
Downloading wordcloud-1.9.4-cp313-cp313-macosx_10_13_x86_64.whl (172 kB)
```

```
Installing collected packages: wordcloud
Successfully installed wordcloud-1.9.4
```

[16]:
```
data = pd.read_csv("/Users/hatemelgenedy/Desktop/All_Data_Aldi.csv")
df = data
```

[17]:
```
df = data
```

[18]:
```
df.head()
```

[18]:

	supermarket	prices_(¬£)	prices_unit_(¬£)	unit	names	date	category	own_brand
0	Aldi	1.45	0.64	l	Cowbelle British Semi-skimmed Milk 1.7% Fat 4 …	20240129	fresh_food	False
1	Aldi	1.99	1.99	unit	Eat & Go Fish Selection Sushi Bar 129g	20240129	fresh_food	False
2	Aldi	0.45	2.80	kg	Brooklea Light Smooth Toffee Yogurt 160g	20240129	fresh_food	False
3	Aldi	1.99	13.30	kg	Ashfield Farm Cooked Chicken Breast Slices 150g	20240129	fresh_food	False
4	Aldi	2.49	6.20	kg	Inspired Cuisine Chicken & Bacon Pasta Bake 400g	20240129	fresh_food	False

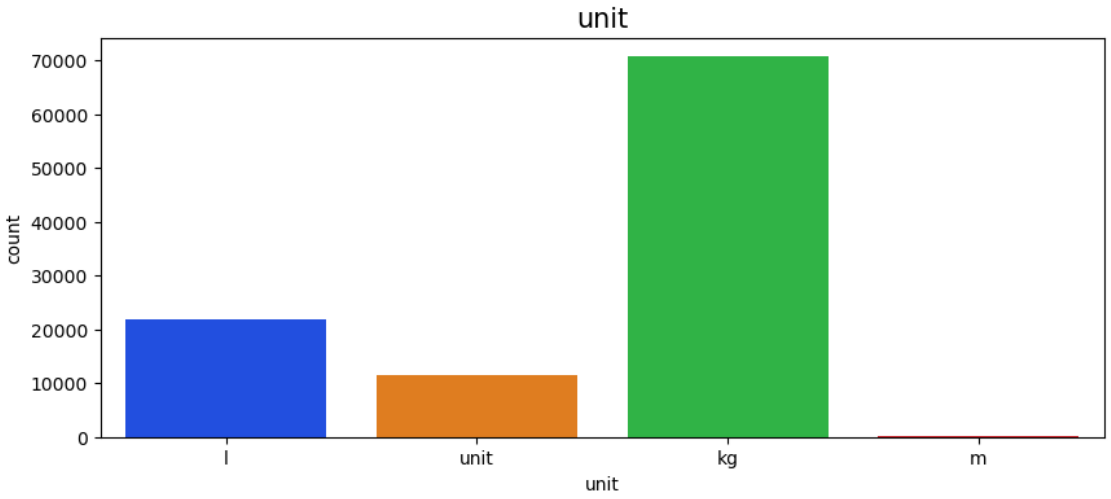
[19]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 104055 entries, 0 to 104054
Data columns (total 8 columns):
 #   Column            Non-Null Count   Dtype
---  ------            --------------   -----
 0   supermarket       104055 non-null  object
 1   prices_(¬£)       104055 non-null  float64
 2   prices_unit_(¬£)  104053 non-null  float64
 3   unit              104053 non-null  object
 4   names             104055 non-null  object
 5   date              104055 non-null  int64
 6   category          104055 non-null  object
 7   own_brand         104055 non-null  bool
dtypes: bool(1), float64(2), int64(1), object(4)
memory usage: 5.7+ MB
```

[20]:
```
df.isnull().sum()
```

[20]:
```
supermarket          0
prices_(¬£)           0
prices_unit_(¬£)      2
unit                 2
names                0
date                 0
category             0
own_brand            0
dtype: int64
```

[21]:
```
plt.figure(figsize = (10,4))
sns.countplot(x = df['unit'], palette = 'bright')
plt.title('unit' , fontsize = 15)
plt.show()
```



[22]:
```
print(df['category'].unique())
```

```
['fresh_food' 'bakery' 'household' 'health_products' 'food_cupboard'
 'baby_products' 'drinks' 'frozen' 'free-from' 'pets']
```

[23]:
```
print(df['own_brand'].unique())
```

```
[False  True]
```

[24]:
```
print("Dates in range:", df[df['date'].between(2022, 2024)].shape[0])
print("Fresh food rows:", df[df['category'] == 'fresh_food'].shape[0])
print("Unit kg rows:", df[df['unit'] == 'kg'].shape[0])
```

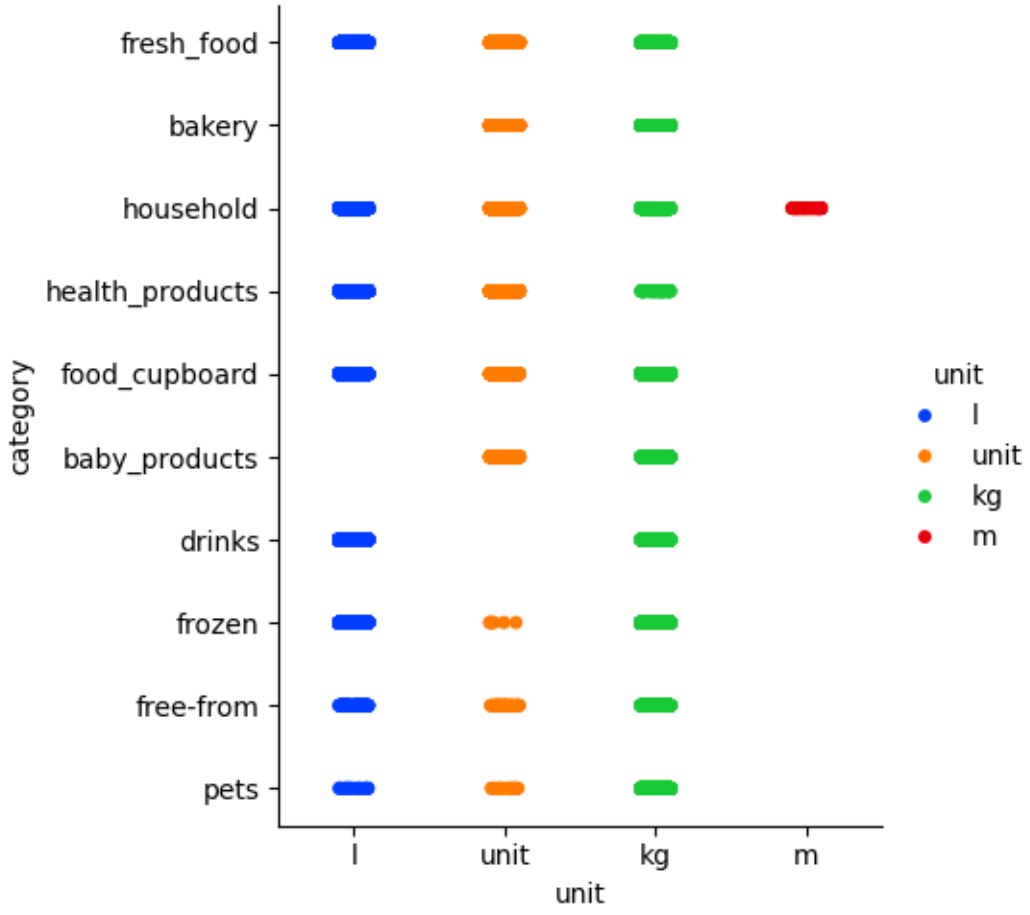
```
Dates in range: 0
```

```
Fresh food rows: 35465
Unit kg rows: 70680
```

[25]:
```
print(df['date'].head())
print(df['date'].dtype)
```

```
0    20240129
1    20240129
2    20240129
3    20240129
4    20240129
Name: date, dtype: int64
int64
```

[26]:
```
sns.catplot(data = df  , x = 'unit', y = 'category' , kind = 'strip' ,hue =␣
 ↪'unit', palette = 'bright')
plt.show()
```



[27]:
```
top10 = data.sort_values('unit', ascending=False).head(10)
print(top10)
```

```
      supermarket  prices_(¬£)  prices_unit_(¬£)  unit  \
30947        Aldi         1.75             1.75  unit
41647        Aldi         2.49             0.42  unit
41636        Aldi         1.99             1.99  unit
75638        Aldi         2.29             0.02  unit
94865        Aldi         1.29             0.22  unit
13465        Aldi         1.99             0.50  unit
75641        Aldi         1.99             0.03  unit
75643        Aldi         4.39             0.22  unit
13471        Aldi         2.89             0.06  unit
94859        Aldi         0.75             0.75  unit

                                                names      date  \
30947                 Eat & Go Cheese Layered Salad 365g  20240123
41647                 Organic Large Scottish Eggs 6 Pack  20240121
41636  Eat & Go Chicken, Tomato & Basil Topped Pasta …  20240121
75638               Activ-max Vitamin D Tablets 105 Pack  20240114
94865                            Organic Bananas 6 Pack  20240110
13465                        Frasers Scotch Pies 4 Pack  20240127
75641  Activ Max A-Z Multivitamin & Minerals Food Sup…  20240114
75643  Tena Lady Discreet Extra Incontinence Pads 20 …  20240114
13471        Mamia Ultra-fit Maxi Nappies 48 Pack/Size 4  20240127
94859                 Nature's Pick Iceberg Lettuce Each  20240110

              category  own_brand
30947       fresh_food      False
41647       fresh_food      False
41636       fresh_food      False
75638  health_products      False
94865       fresh_food      False
13465       fresh_food      False
75641  health_products      False
75643  health_products      False
13471    baby_products      False
94859       fresh_food      False
```

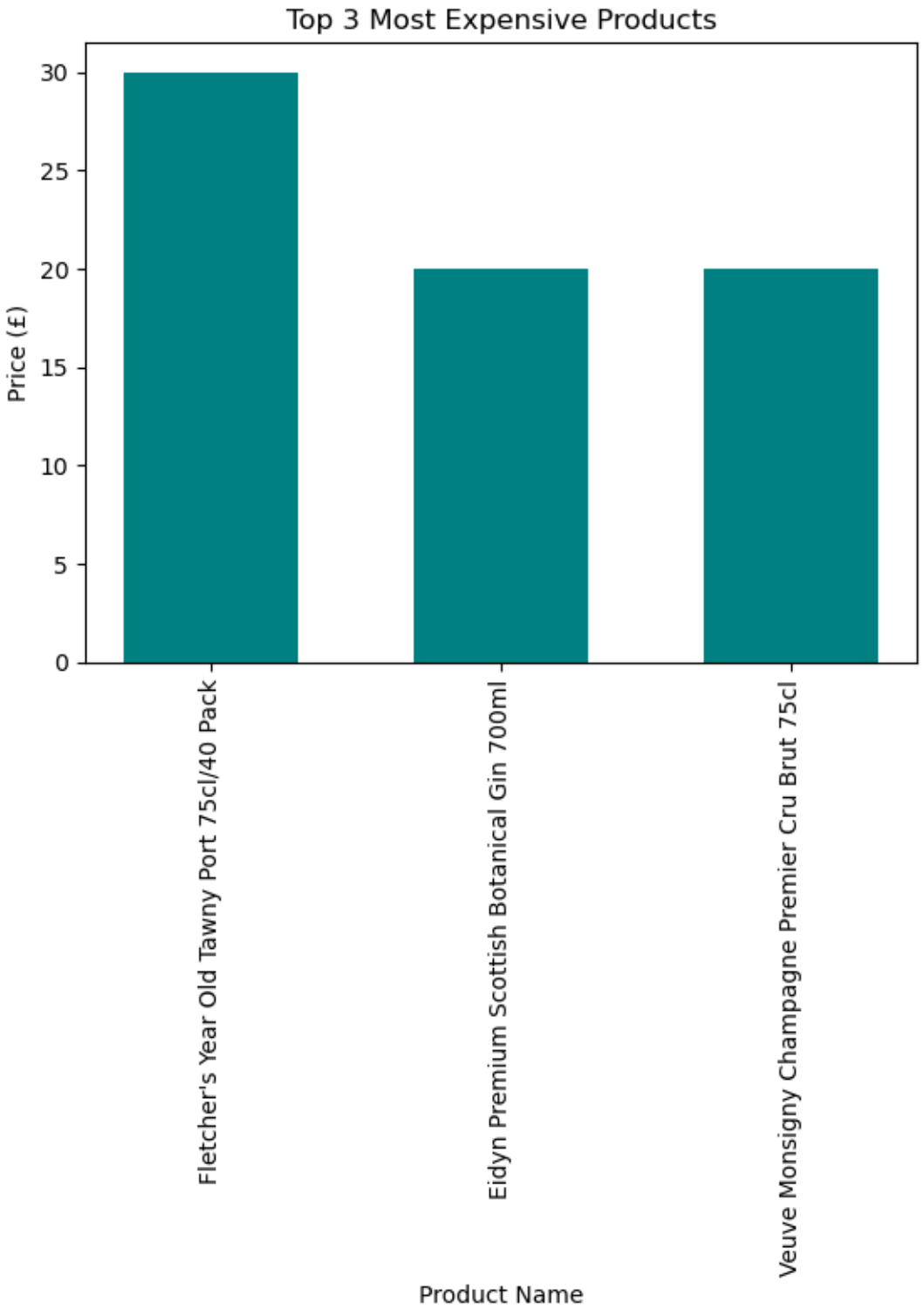
[28]:
```
top10 = data.sort_values('category',  ascending = False).head(10)
print(top10)
```

```
       supermarket  prices_(¬£)  prices_unit_(¬£) unit  \
104054        Aldi         0.39              3.90   kg
83722         Aldi         4.59              2.55   kg
72631         Aldi         0.49              5.76   kg
72630         Aldi         0.75              1.88   kg
2958          Aldi         0.75              1.88   kg
```

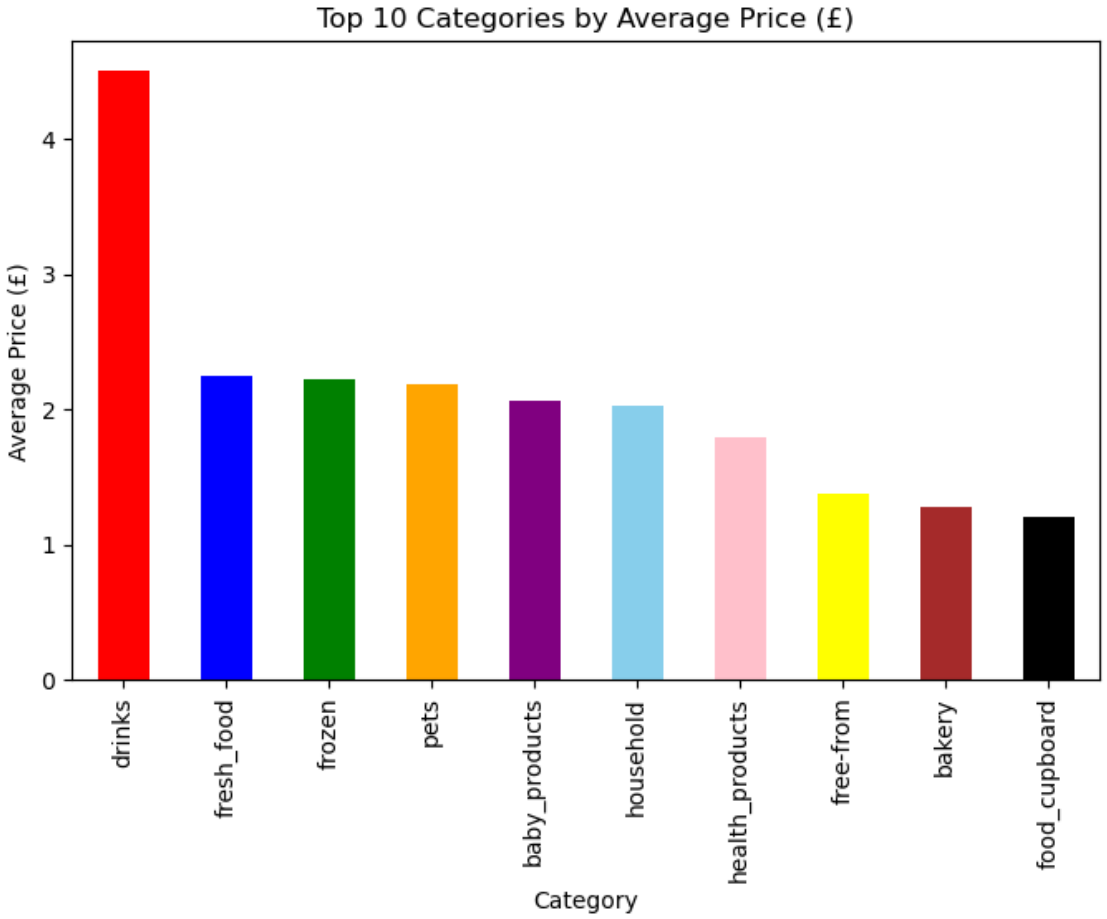
```
2959          Aldi         0.49              3.30   kg
2960          Aldi         5.49              2.32   kg
39490         Aldi         1.79             19.89   kg
39491         Aldi         0.65              2.17   kg
39492         Aldi        10.99              2.29   kg

                                                 names      date category  \
104054          Vitacat Select With Chicken In Jelly 100g  20240109     pets
83722           Earls Tender Pate Meaty Selection 12x150g  20240113     pets
72631   Vitacat Select Gourmet Mousse With Ocean Fish 85g  20240115     pets
72630            Vitacat Cat Cans - Chicken In Jelly 400g  20240115     pets
2958             Vitacat Cat Cans - Chicken In Jelly 400g  20240129     pets
2959    Earls Select Tender P√¢t√© With Beef And Turke…  20240129     pets
2960    Earl's Langham's Dog Food Tray - Grain Free Mi…  20240129     pets
39490            Langham's Chicken Sticks With Carrot 90g  20240122     pets
39491               Earls Tender P√¢t√© With Chicken 300g  20240122     pets
39492            Vitacat Meaty Selection In Gravy 48x100g  20240122     pets

        own_brand
104054      False
83722       False
72631       False
72630       False
2958        False
2959        False
2960        False
39490       False
39491       False
39492       False
```

[29]:
```
data['unit'] = pd.to_numeric(data['unit'], errors='coerce')
```

[30]:
```
top3_products = data.sort_values('prices_(¬£)', ascending=False).head(10)

plt.bar(top3_products['names'], top3_products['prices_(¬£)'], color='teal',␣
↪width=0.6)
plt.title("Top 3 Most Expensive Products")
plt.xlabel("Product Name")
plt.ylabel("Price (£)")
plt.xticks(rotation=90)
plt.show()
```


Top 3 Most Expensive Products
Price (£)
30
25
20
15
10
5
0
Fletcher's Year Old Tawny Port 75cl/40 Pack
Eidyn Premium Scottish Botanical Gin 700ml
Veuve Monsigny Champagne Premier Cru Brut 75cl
Product Name

[31]:
```
category_avg = data.groupby('category')['prices_(¬£)'].mean().
 ↪sort_values(ascending=False).head(10)
colors = ['red', 'blue' , 'green', 'orange' , 'purple' , 'skyblue' , 'pink' , ␣
 ↪'yellow','brown', 'black']
category_avg.plot(kind='bar', color= colors, figsize=(8,5))
plt.title("Top 10 Categories by Average Price (£)")
plt.xlabel("Category")
plt.ylabel("Average Price (£)")
plt.show()
```



[32]:
```
text = " ".join(data['names'].astype(str))


wordcloud = WordCloud(width=800, height=400,
                      background_color='white',
                      colormap='viridis',
                      max_words=100).generate(text)
```

```
plt.figure(figsize=(10,6))
plt.imshow(wordcloud, interpolation='bilinear')
plt.axis("off")
plt.title("Word Cloud of Product Names")
plt.show()
```