blinkit

March 23, 2025

1 BlinkIT Grocery Data Analysis

1.0.1 import all libraries

[4]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

1.0.2 import data

using pandas import blinkit grocery data

[6]:
```
data=pd.read_excel("BlinkIT Grocery Data.xlsx")
df=pd.DataFrame(data)
df
```

[6]:
```
     Item Fat Content Item Identifier              Item Type  \
0             Regular           FDX32  Fruits and Vegetables
1             Low Fat           NCB42     Health and Hygiene
2             Regular           FDR28           Frozen Foods
3             Regular           FDL50                 Canned
4             Low Fat           DRI25            Soft Drinks
…                …             …                    …
8518          low fat           NCT53     Health and Hygiene
8519          low fat           FDN09            Snack Foods
8520          low fat           DRE13            Soft Drinks
8521              reg           FDT50                  Dairy
8522              reg           FDM58            Snack Foods

      Outlet Establishment Year Outlet Identifier Outlet Location Type  \
0                          2012            OUT049               Tier 1
1                          2022            OUT018               Tier 3
2                          2016            OUT046               Tier 1
3                          2014            OUT013               Tier 3
4                          2015            OUT045               Tier 2
…                          …               …                  …
8518                       2018            OUT027               Tier 3
```

```
8519                       2018            OUT027               Tier 3
8520                       2018            OUT027               Tier 3
8521                       2018            OUT027               Tier 3
8522                       2018            OUT027               Tier 3

     Outlet Size        Outlet Type  Item Visibility  Item Weight     Sales  \
0         Medium  Supermarket Type1         0.100014        15.10  145.4786
1         Medium  Supermarket Type2         0.008596        11.80  115.3492
2          Small  Supermarket Type1         0.025896        13.85  165.0210
3           High  Supermarket Type1         0.042278        12.15  126.5046
4          Small  Supermarket Type1         0.033970        19.60   55.1614
…          …                …              …          …       …
8518      Medium  Supermarket Type3         0.000000          NaN  164.5526
8519      Medium  Supermarket Type3         0.034706          NaN  241.6828
8520      Medium  Supermarket Type3         0.027571          NaN   86.6198
8521      Medium  Supermarket Type3         0.107715          NaN   97.8752
8522      Medium  Supermarket Type3         0.000000          NaN  112.2544

      Rating
0        5.0
1        5.0
2        5.0
3        5.0
4        5.0
…      …
8518     4.0
8519     4.0
8520     4.0
8521     4.0
8522     4.0

[8523 rows x 12 columns]
```

1.0.3 Data Cleaning

step-1 : check any null or duplicate values is there or not

[9]:
```
duplicate_data=df.duplicated().sum()
null_data=df.isnull().sum()
display('Duplicate_Data',duplicate_data)
display("Null_Data",null_data)
```

```
'Duplicate_Data'

0

'Null_Data'

Item Fat Content                0
Item Identifier                 0
Item Type                       0
Outlet Establishment Year       0
Outlet Identifier               0
Outlet Location Type            0
Outlet Size                     0
Outlet Type                     0
Item Visibility                 0
Item Weight                  1463
Sales                           0
Rating                          0
dtype: int64
```

[10]:

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 8523 entries, 0 to 8522
Data columns (total 12 columns):
 #   Column                     Non-Null Count  Dtype
---  ------                     --------------  -----
 0   Item Fat Content           8523 non-null   object
 1   Item Identifier            8523 non-null   object
 2   Item Type                  8523 non-null   object
 3   Outlet Establishment Year  8523 non-null   int64
 4   Outlet Identifier          8523 non-null   object
 5   Outlet Location Type       8523 non-null   object
 6   Outlet Size                8523 non-null   object
 7   Outlet Type                8523 non-null   object
 8   Item Visibility            8523 non-null   float64
 9   Item Weight                7060 non-null   float64
 10  Sales                      8523 non-null   float64
 11  Rating                     8523 non-null   float64
dtypes: float64(4), int64(1), object(7)
memory usage: 799.2+ KB
```

So there is no duplicate values

And there are Null values in Item Weight column we can fill it with mean value

[12]:

```
df.fillna(df['Item Weight'].mean(),inplace=True)
df
```

[12]:

```
     Item Fat Content Item Identifier              Item Type  \
0             Regular           FDX32  Fruits and Vegetables
1             Low Fat           NCB42     Health and Hygiene
2             Regular           FDR28           Frozen Foods
3             Regular           FDL50                 Canned
4             Low Fat           DRI25            Soft Drinks
…                 …              …                      …
```

```
8518          low fat           NCT53     Health and Hygiene
8519          low fat           FDN09            Snack Foods
8520          low fat           DRE13            Soft Drinks
8521              reg           FDT50                  Dairy
8522              reg           FDM58            Snack Foods

      Outlet Establishment Year Outlet Identifier Outlet Location Type  \
0                          2012            OUT049               Tier 1
1                          2022            OUT018               Tier 3
2                          2016            OUT046               Tier 1
3                          2014            OUT013               Tier 3
4                          2015            OUT045               Tier 2
…                         …               …                  …
8518                       2018            OUT027               Tier 3
8519                       2018            OUT027               Tier 3
8520                       2018            OUT027               Tier 3
8521                       2018            OUT027               Tier 3
8522                       2018            OUT027               Tier 3

     Outlet Size        Outlet Type  Item Visibility  Item Weight     Sales  \
0         Medium  Supermarket Type1         0.100014    15.100000  145.4786
1         Medium  Supermarket Type2         0.008596    11.800000  115.3492
2          Small  Supermarket Type1         0.025896    13.850000  165.0210
3           High  Supermarket Type1         0.042278    12.150000  126.5046
4          Small  Supermarket Type1         0.033970    19.600000   55.1614
…          …                …              …          …       …
8518      Medium  Supermarket Type3         0.000000    12.857645  164.5526
8519      Medium  Supermarket Type3         0.034706    12.857645  241.6828
8520      Medium  Supermarket Type3         0.027571    12.857645   86.6198
8521      Medium  Supermarket Type3         0.107715    12.857645   97.8752
8522      Medium  Supermarket Type3         0.000000    12.857645  112.2544

      Rating
0        5.0
1        5.0
2        5.0
3        5.0
4        5.0
…      …
8518     4.0
8519     4.0
8520     4.0
8521     4.0
8522     4.0

[8523 rows x 12 columns]
```

we filled null values with mean

Now we are going to replace lowfat,LF with Low Fat and then reg with Regular

[15]:
```
df.replace({'LF':'Low Fat','low fat':'Low Fat','reg':'Regular'},inplace=True)
df
```

[15]:
```
     Item Fat Content Item Identifier              Item Type  \
0             Regular           FDX32  Fruits and Vegetables
1             Low Fat           NCB42     Health and Hygiene
2             Regular           FDR28           Frozen Foods
3             Regular           FDL50                 Canned
4             Low Fat           DRI25            Soft Drinks
…               …             …                    …
8518          Low Fat           NCT53     Health and Hygiene
8519          Low Fat           FDN09            Snack Foods
8520          Low Fat           DRE13            Soft Drinks
8521          Regular           FDT50                  Dairy
8522          Regular           FDM58            Snack Foods

      Outlet Establishment Year Outlet Identifier Outlet Location Type  \
0                          2012            OUT049               Tier 1
1                          2022            OUT018               Tier 3
2                          2016            OUT046               Tier 1
3                          2014            OUT013               Tier 3
4                          2015            OUT045               Tier 2
…                         …               …                  …
8518                       2018            OUT027               Tier 3
8519                       2018            OUT027               Tier 3
8520                       2018            OUT027               Tier 3
8521                       2018            OUT027               Tier 3
8522                       2018            OUT027               Tier 3

     Outlet Size        Outlet Type  Item Visibility  Item Weight     Sales  \
0         Medium  Supermarket Type1         0.100014    15.100000  145.4786
1         Medium  Supermarket Type2         0.008596    11.800000  115.3492
2          Small  Supermarket Type1         0.025896    13.850000  165.0210
3           High  Supermarket Type1         0.042278    12.150000  126.5046
4          Small  Supermarket Type1         0.033970    19.600000   55.1614
…          …                …              …          …       …
8518      Medium  Supermarket Type3         0.000000    12.857645  164.5526
8519      Medium  Supermarket Type3         0.034706    12.857645  241.6828
8520      Medium  Supermarket Type3         0.027571    12.857645   86.6198
8521      Medium  Supermarket Type3         0.107715    12.857645   97.8752
8522      Medium  Supermarket Type3         0.000000    12.857645  112.2544

      Rating
0        5.0
```

```
1        5.0
2        5.0
3        5.0
4        5.0
…       …
8518     4.0
8519     4.0
8520     4.0
8521     4.0
8522     4.0

 [8523 rows x 12 columns]
```

we replaced the lowfat,LF with Low Fat and then reg with Regular

1.0.4 cleaning process is completed

1.1 Exploratory Data Analysis

1.1.1 Statistics

```
[20]: display('Statical Data')
      df.describe()
```

```
'Statical Data'
```

```
[20]:        Outlet Establishment Year  Item Visibility  Item Weight        Sales  \
count                    8523.000000      8523.000000  8523.000000  8523.000000
mean                     2016.450546         0.066132    12.857645   140.992783
std                         3.189396         0.051598     4.226124    62.275067
min                      2011.000000         0.000000     4.555000    31.290000
25%                      2014.000000         0.026989     9.310000    93.826500
50%                      2016.000000         0.053931    12.857645   143.012800
75%                      2018.000000         0.094585    16.000000   185.643700
max                      2022.000000         0.328391    21.350000   266.888400

            Rating
count  8523.000000
mean      3.965857
std       0.605651
min       1.000000
25%       4.000000
50%       4.000000
75%       4.200000
max       5.000000
```

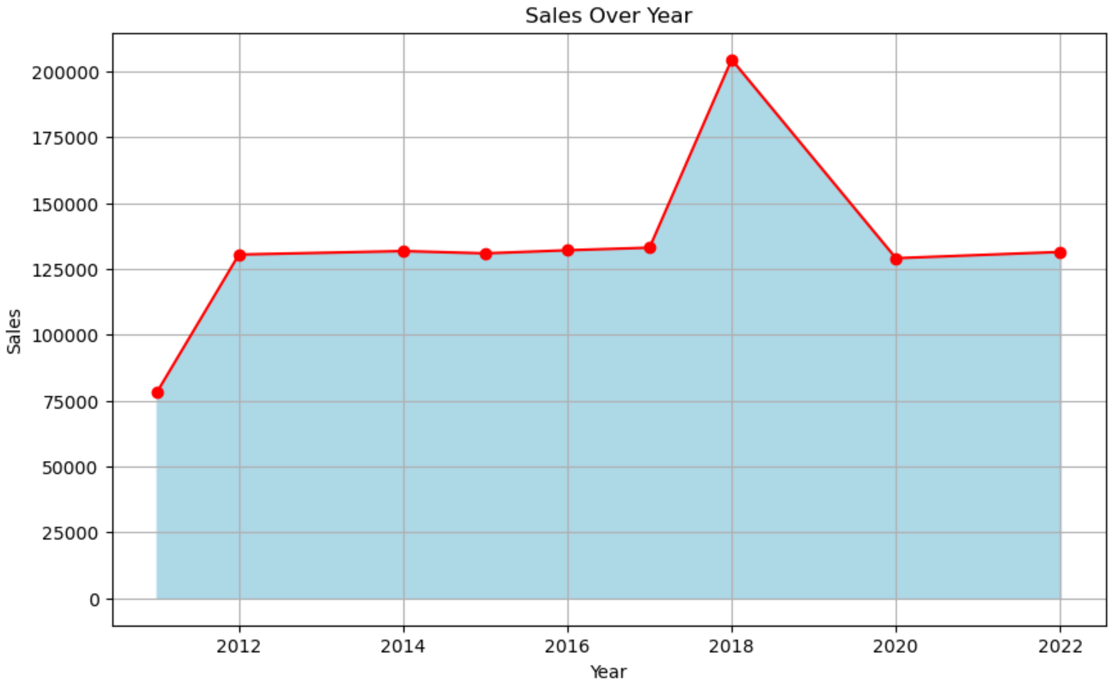
1.1.2 Now Visualize the Data with different Patterns

First we check the trend in Sales Over Year

1.1.3 Use Line Chart For the Trend Analysis

[24]:

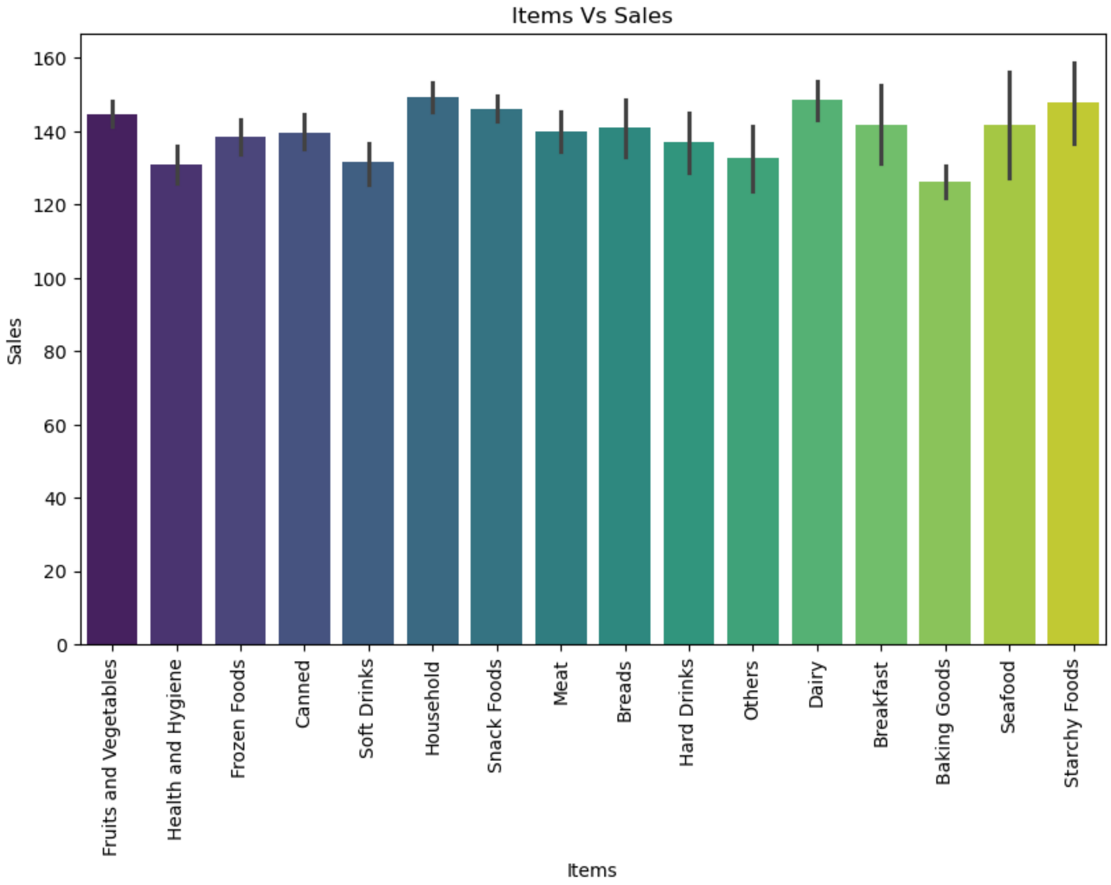
```
trend=df.groupby("Outlet Establishment Year")["Sales"].sum().reset_index()
plt.figure(figsize=(10,6))
plt.fill_between(trend["Outlet Establishment␣
 ↪Year"],trend["Sales"],color='lightblue')
plt.plot(trend["Outlet Establishment Year"],trend["Sales"],color='r',marker='o')
plt.title('Sales Over Year')
plt.xlabel('Year')
plt.ylabel('Sales')
plt.grid(True)
plt.show()
```



1.1.4 Use Bar chart to compare item types and sales

[26]:

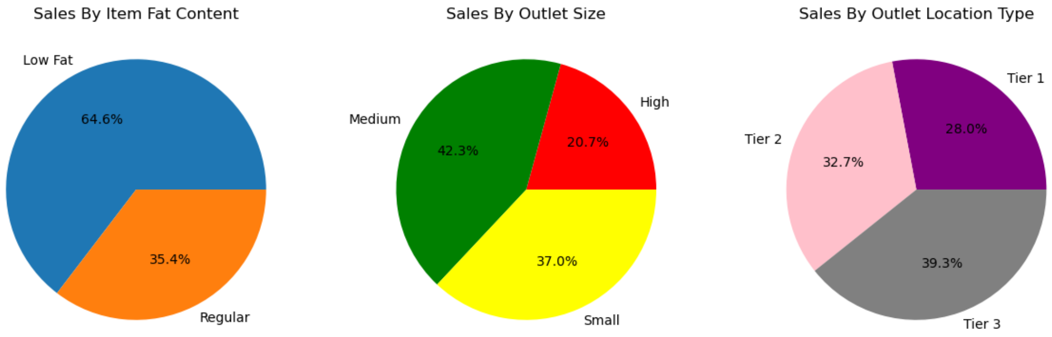
```
plt.figure(figsize=(10,6))
sns.barplot(x="Item Type",y="Sales",data=df,hue='Item Type',palette='viridis')
plt.title('Items Vs Sales')
plt.xlabel('Items')
plt.xticks(rotation=90)
plt.ylabel('Sales')
plt.grid(False)
plt.show()
```



1.1.5 Use Pie chart to proportion change in Sales By item fat content

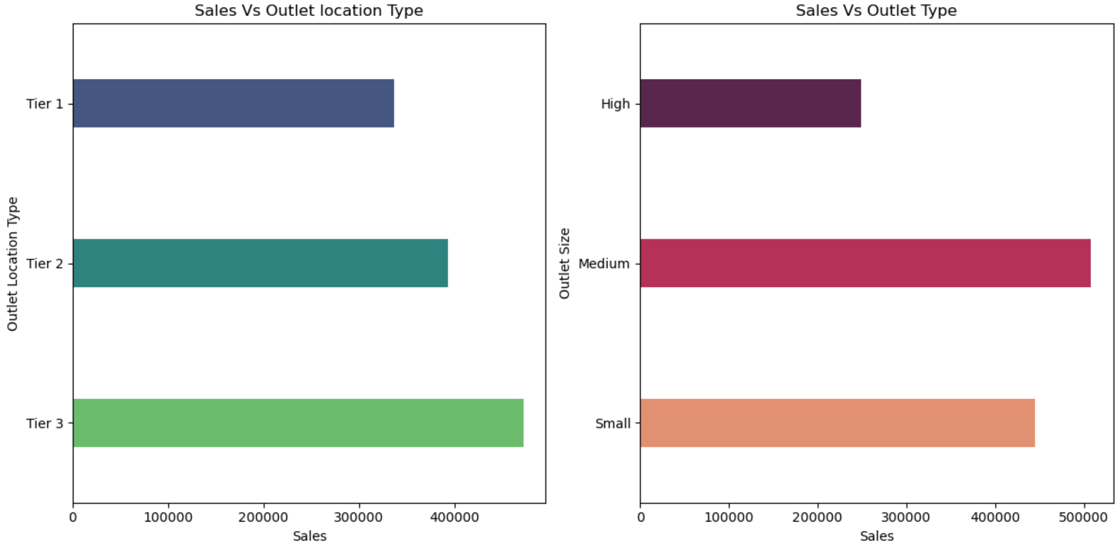
[75]:

```
pie=df.groupby('Item Fat Content')['Sales'].sum().reset_index()
pie1=df.groupby('Outlet Size')['Sales'].sum().reset_index()
pie2=df.groupby('Outlet Location Type')['Sales'].sum().reset_index()
fig,axes=plt.subplots(1,3,figsize=(15,10))
axes[0].pie(pie['Sales'],labels=pie['Item Fat Content'],autopct='%1.1f%%')
axes[0].set_title('Sales By Item Fat Content')
axes[1].pie(pie1['Sales'],labels=pie1['Outlet Size'],autopct='%1.
  ↪1f%%',colors=['red','green','yellow'])
axes[1].set_title('Sales By Outlet Size')
axes[2].pie(pie2['Sales'],labels=pie2['Outlet Location Type'],autopct='%1.
  ↪1f%%',colors=['purple','pink','gray'])
axes[2].set_title('Sales By Outlet Location Type')
plt.show()
```



1.1.6 Column Chart to compare Outlet location type,Outlet Type and Sales

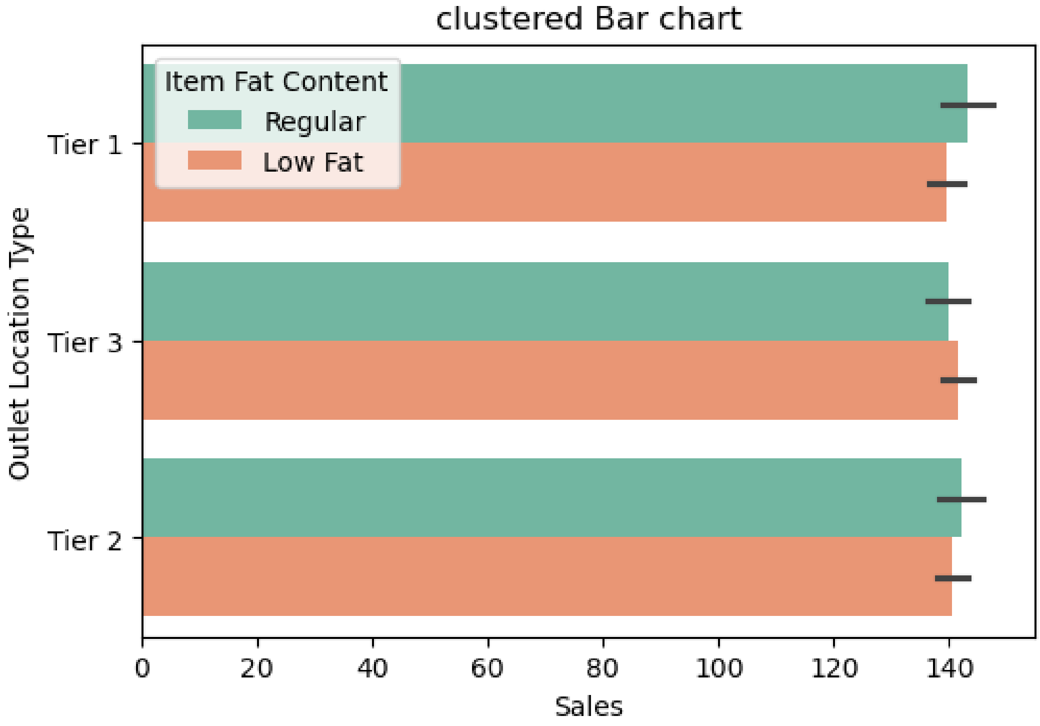
```
[89]: c1=df.groupby('Outlet Location Type')['Sales'].sum().reset_index()
c2=df.groupby('Outlet Size')['Sales'].sum().reset_index()
fig,axes=plt.subplots(1,2,figsize=(12,6))
sns.barplot(x='Sales',y='Outlet Location␣
  ↪Type',data=c1,palette='viridis',hue='Outlet Location Type',width=0.
  ↪3,ax=axes[0])
axes[0].set_title('Sales Vs Outlet location Type')
sns.barplot(x='Sales',y='Outlet Size',data=c2,palette='rocket',hue='Outlet␣
  ↪Size',width=0.3,ax=axes[1])
axes[1].set_title('Sales Vs Outlet Type')
plt.tight_layout()
plt.show()
```



1.1.7 Clustered Bar Chart

[105]:

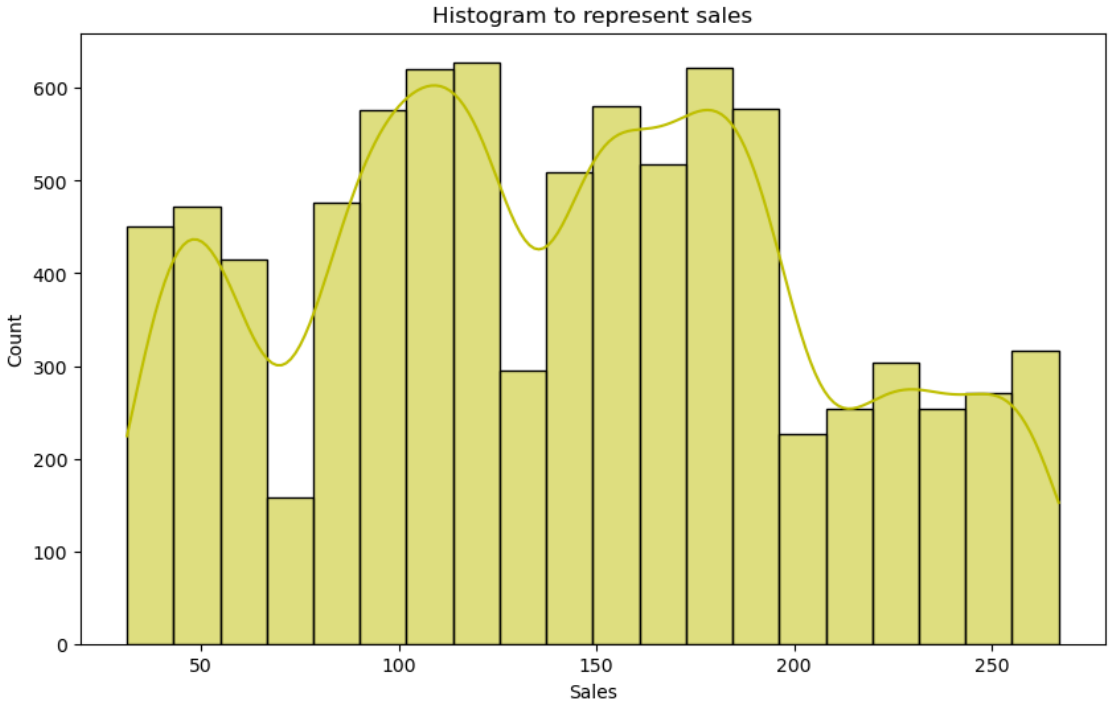
```
plt.figure(figsize=(6,4))
sns.barplot(x='Sales',y='Outlet Location Type',hue='Item Fat Content',data=df,palette='Set2')
plt.title("clustered Bar chart")
plt.show()
```



1.1.8 histogrm plot to repressent sales count

[126]:

```
plt.figure(figsize=(10,6))
sns.histplot(x='Sales',bins=20,kde=True,data=df,color='y')
plt.title('Histogram to represent sales')
plt.show()
```


Histogram to represent sales
Count
600
500
400
300
200
100
0
50
100
150
200
250
Sales

[ ]:

[ ]:

[ ]: