# DATA ANALYSIS PYTHON PROJECT - BLINKIT ANALYSIS

## Import Libraries

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

## Import Raw Data

```
df = pd.read_csv("C:/Users/ASUS/Downloads/blinkit_data.csv")

df

     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                          2010            OUT046               Tier 1

3                          2000            OUT013               Tier 3

4                          2015            OUT045               Tier 2

...                         ...               ...                  ...

8518                       1998            OUT027               Tier 3

8519                       1998            OUT027               Tier 3

8520                       1998            OUT027               Tier 3

8521                       1998            OUT027               Tier 3

8522                       1998            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]
```

## Sample Data

```
df.head(20)
```

```
   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
5           low fat           FDS52           Frozen Foods
6           Low Fat           NCU05     Health and Hygiene
7           Low Fat           NCD30              Household
8           Low Fat           FDW20  Fruits and Vegetables
9           Low Fat           FDX25                 Canned
10               LF           FDX21            Snack Foods
11          Low Fat           NCU41     Health and Hygiene
12          Low Fat           FDL20  Fruits and Vegetables
13          Low Fat           NCR54              Household
14          Low Fat           FDH19                   Meat
15          Regular           FDB57  Fruits and Vegetables
16          Low Fat           FDO23                 Breads
17          Low Fat           NCB07              Household
18          Low Fat           FDJ56  Fruits and Vegetables
19          Low Fat           DRN47            Hard Drinks

    Outlet Establishment Year Outlet Identifier Outlet Location
Type  \
0                        2012            OUT049               Tier 1

1                        2022            OUT018               Tier 3

2                        2010            OUT046               Tier 1

3                        2000            OUT013               Tier 3

4                        2015            OUT045               Tier 2

5                        2020            OUT017               Tier 2

6                        2011            OUT010               Tier 3

7                        2015            OUT045               Tier 2

8                        2000            OUT013               Tier 3

9                        1998            OUT027               Tier 3

10                       1998            OUT027               Tier 3

11                       2017            OUT035               Tier 2

12                       2022            OUT018               Tier 3

13                       2000            OUT013               Tier 3

14                       1998            OUT027               Tier 3

15                       2017            OUT035               Tier 2
```

```
16                       2022            OUT018               Tier 3

17                       2012            OUT049               Tier 1

18                       1998            OUT027               Tier 3

19                       2022            OUT018               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
5        Small  Supermarket Type1         0.005505         8.89
102.4016
6        Small      Grocery Store         0.098312        11.80
81.4618
7        Small  Supermarket Type1         0.026904        19.70
96.0726
8         High  Supermarket Type1         0.024129        20.75
124.1730
9       Medium  Supermarket Type3         0.101562          NaN
181.9292
10      Medium  Supermarket Type3         0.084555          NaN
109.8912
11       Small  Supermarket Type1         0.052045        18.85
192.1846
12      Medium  Supermarket Type2         0.128938        17.10
112.3886
13        High  Supermarket Type1         0.090487        16.35
195.2110
14      Medium  Supermarket Type3         0.032928          NaN
173.1738
15       Small  Supermarket Type1         0.018802        20.25
222.1772
16      Medium  Supermarket Type2         0.147024        17.85
93.7436
17      Medium  Supermarket Type1         0.077628        19.20
197.6110
18      Medium  Supermarket Type3         0.182515          NaN
98.7700
```

```
19      Medium  Supermarket Type2         0.016895        12.10
178.5660

    Rating
0      5.0
1      5.0
2      5.0
3      5.0
4      5.0
5      5.0
6      5.0
7      5.0
8      5.0
9      5.0
10     5.0
11     5.0
12     5.0
13     5.0
14     5.0
15     5.0
16     5.0
17     5.0
18     5.0
19     5.0
```

```
df.tail(10)
```

```
     Item Fat Content Item Identifier              Item Type  \
8513          Regular           DRY23            Soft Drinks
8514          low fat           FDA11           Baking Goods
8515          low fat           FDK38                 Canned
8516          low fat           FDO38                 Canned
8517          low fat           FDG32  Fruits and Vegetables
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
\
8513                       1998            OUT027               Tier 3

8514                       1998            OUT027               Tier 3

8515                       1998            OUT027               Tier 3

8516                       1998            OUT027               Tier 3

8517                       1998            OUT027               Tier 3
```

```
8518                       1998            OUT027               Tier 3

8519                       1998            OUT027               Tier 3

8520                       1998            OUT027               Tier 3

8521                       1998            OUT027               Tier 3

8522                       1998            OUT027               Tier 3


     Outlet Size        Outlet Type  Item Visibility  Item Weight
Sales  \
8513      Medium  Supermarket Type3         0.108568          NaN
42.9112
8514      Medium  Supermarket Type3         0.043029          NaN
94.7436
8515      Medium  Supermarket Type3         0.053032          NaN
149.1734
8516      Medium  Supermarket Type3         0.072486          NaN
78.9986
8517      Medium  Supermarket Type3         0.175143          NaN
222.3772
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
8513     4.0
8514     4.0
8515     4.0
8516     4.0
8517     4.0
8518     4.0
8519     4.0
8520     4.0
8521     4.0
8522     4.0
```

## Size of Data

```
print("Size of Data:", df.shape)
```

```
Size of Data: (8523, 12)
```

## Field info

```
df.columns
```

```
Index(['Item Fat Content', 'Item Identifier', 'Item Type',
       'Outlet Establishment Year', 'Outlet Identifier',
       'Outlet Location Type', 'Outlet Size', 'Outlet Type', 'Item
Visibility',
       'Item Weight', 'Sales', 'Rating'],
      dtype='object')
```

## Data Types

```
df.dtypes
```

```
Item Fat Content              object
Item Identifier               object
Item Type                     object
Outlet Establishment Year      int64
Outlet Identifier             object
Outlet Location Type          object
Outlet Size                   object
Outlet Type                   object
Item Visibility              float64
Item Weight                  float64
Sales                        float64
Rating                       float64
dtype: object
```

## Data Cleaning

```
print(df['Item Fat Content'].unique())
```

```
['Regular' 'Low Fat' 'low fat' 'LF' 'reg']
```

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

print(df['Item Fat Content'].unique())
```

```
['Regular' 'Low Fat']
```

# BUSINESS REQUIREMENTS

## KPI'S REQUIREMENTS

```python
#Total Sales
total_sales = df['Sales'].sum()

#Average Sales
avg_sales = df['Sales'].mean()

#No of Items Sold
no_of_items_sold = df['Sales'].count()

#Average Ratings
avg_ratings = df['Rating'].mean()

#Display
print(f"Total Sales: ${total_sales:,.0f}")
print(f"Average Sales: ${avg_sales:,.0f}")
print(f"No of Items Sold: {no_of_items_sold:,.0f}")
print(f"Average Ratings: {avg_ratings:,.1f}")
```

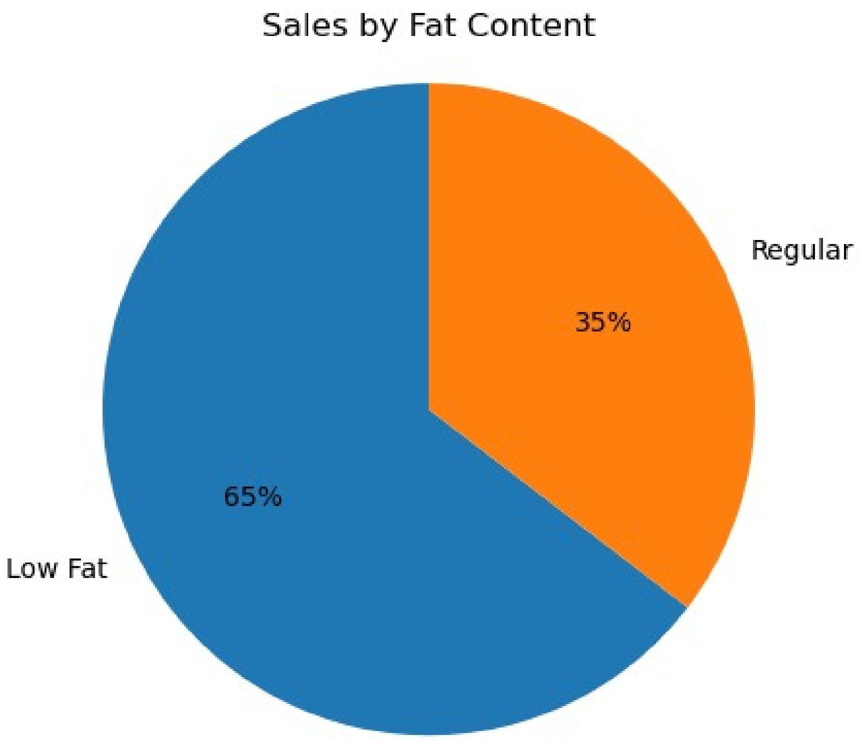
```
Total Sales: $1,201,681
Average Sales: $141
No of Items Sold: 8,523
Average Ratings: 4.0
```

# CHARTS REQUIREMENT

## Total Sales by Fat Content

```python
sales_by_fat = df.groupby('Item Fat Content')['Sales'].sum()

plt.pie(sales_by_fat, labels= sales_by_fat.index,
                        autopct = '%.0f%%',
                        startangle = 90)

plt.title('Sales by Fat Content')
plt.axis('equal')
plt.show
```

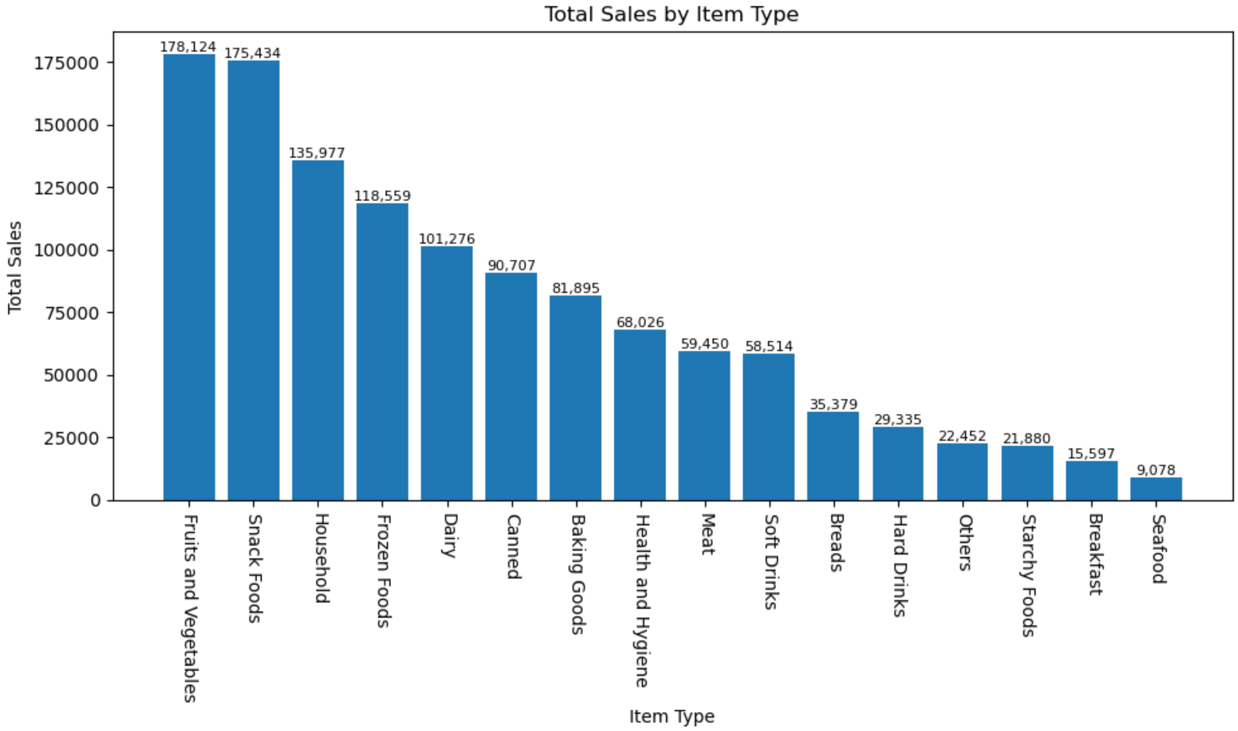
```
<function matplotlib.pyplot.show(close=None, block=None)>
```



## Total Sales by Item Type

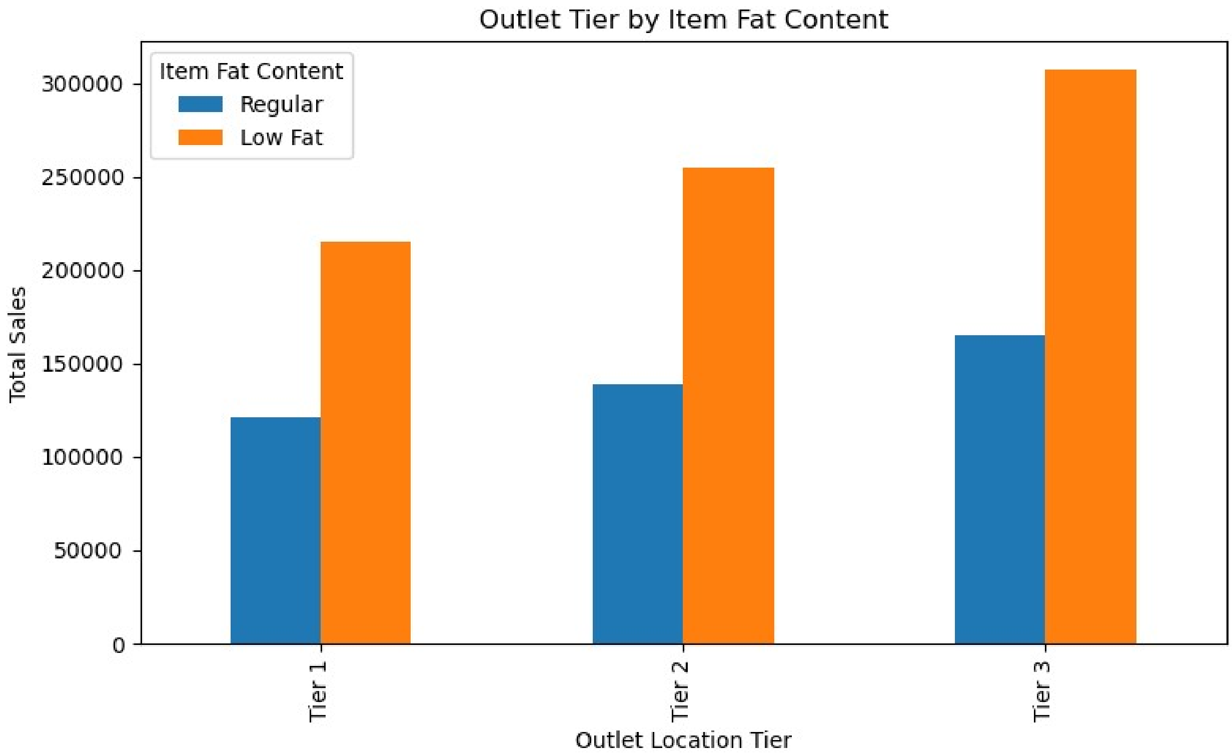
```python
sales_by_type = df.groupby('Item Type')
['Sales'].sum().sort_values(ascending=False)

plt.figure(figsize=(10, 6))
bars = plt.bar(sales_by_type.index, sales_by_type.values)

plt.xticks(rotation=-90)
plt.xlabel('Item Type')
plt.ylabel('Total Sales')
plt.title('Total Sales by Item Type')

for bar in bars:
    plt.text(bar.get_x() + bar.get_width() / 2, bar.get_height(),
             f'{bar.get_height():,.0f}', ha='center',
va='bottom',fontsize=8)

plt.tight_layout()
plt.show
```

```
<function matplotlib.pyplot.show(close=None, block=None)>
```



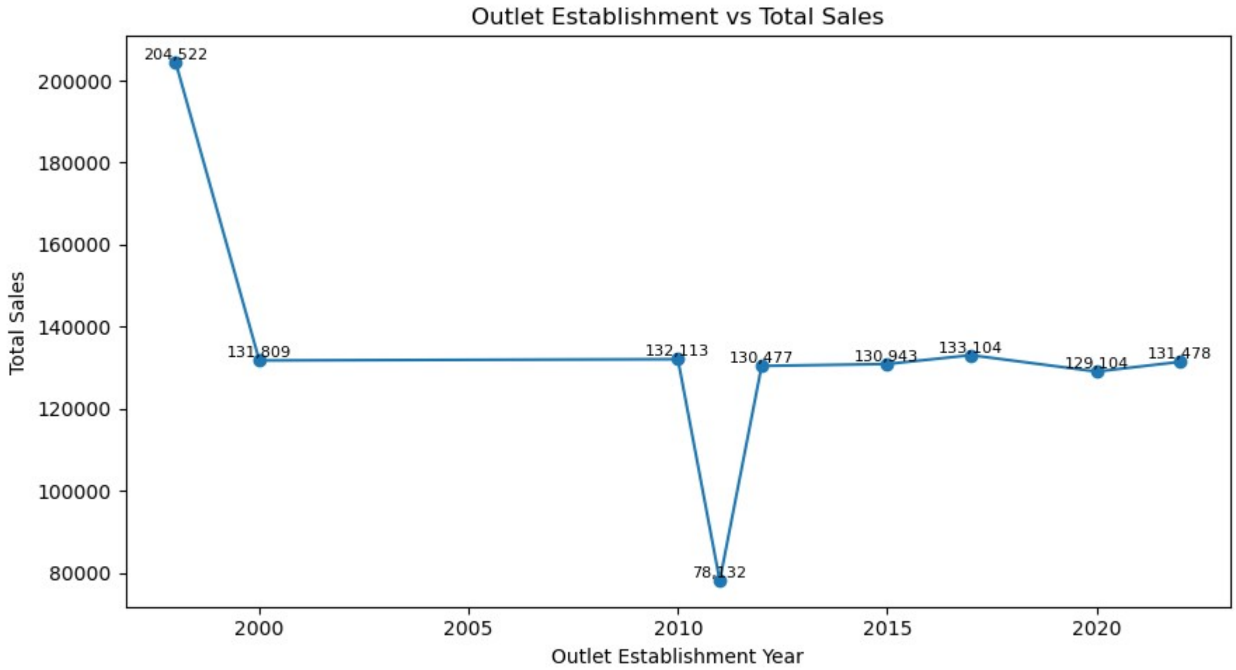
Fat Content by Outlet For Total Sales

```
grouped = df.groupby(['Outlet Location Type', 'Item Fat Content'])
['Sales'].sum().unstack()
grouped = grouped[['Regular','Low Fat']]

ax = grouped.plot(kind='bar',figsize=(8, 5), title='Outlet Tier by
Item Fat Content')
plt.xlabel('Outlet Location Tier')
plt.ylabel('Total Sales')
plt.legend(title='Item Fat Content')


plt.tight_layout()
plt.show

<function matplotlib.pyplot.show(close=None, block=None)>
```



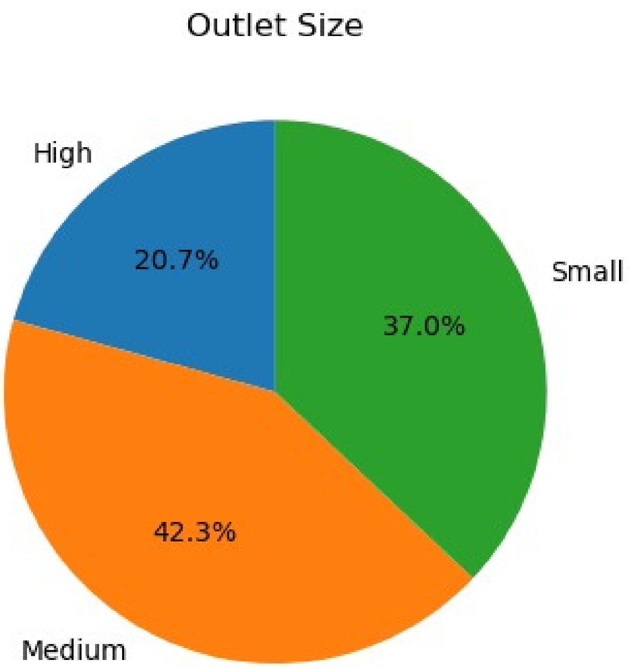
## Total Sales by Outlet Establishment

```
sales_by_year = df.groupby('Outlet Establishment Year')
['Sales'].sum().sort_index()

plt.figure(figsize=(9, 5))
plt.plot(sales_by_year.index, sales_by_year.values, marker='o',
linestyle='-')

plt.xlabel('Outlet Establishment Year')
plt.ylabel('Total Sales')
plt.title('Outlet Establishment vs Total Sales')

# Add labels to each data point
for x, y in zip(sales_by_year.index, sales_by_year.values):
    plt.text(x, y, f'{y:,.0f}', ha='center', va='bottom', fontsize=8)

plt.tight_layout()
plt.show()
```



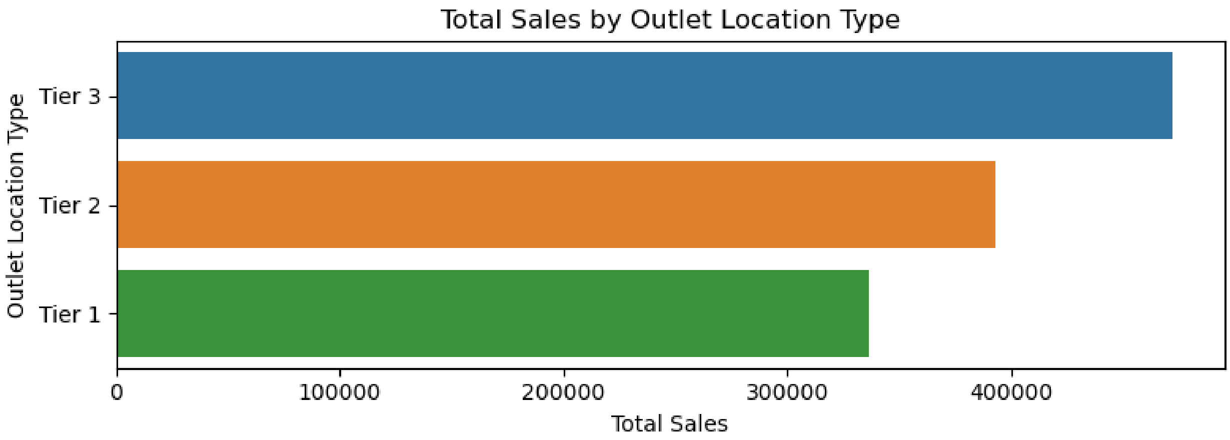
Sales by Outlet Size

```
sales_by_size = df.groupby('Outlet Size')['Sales'].sum()

plt.figure(figsize=(4,4))
plt.pie(sales_by_size, labels=sales_by_size.index, autopct='%1.1f%
%',startangle=90)
plt.title('Outlet Size')

plt.tight_layout()
plt.show()
```



Sales by Outlet Location

```
# Group by Outlet Location Type and sum Sales
sales_by_location = df.groupby('Outlet Location Type')
['Sales'].sum().reset_index()
sales_by_location = sales_by_location.sort_values('Sales',
ascending=False)

plt.figure(figsize=(8, 3))  # Smaller height,enough width
ax = sns.barplot(x='Sales',y= 'Outlet Location Type', data =
sales_by_location)

plt.xlabel('Total Sales')
plt.ylabel('Outlet Location Type')
plt.title('Total Sales by Outlet Location Type')


plt.tight_layout()   # Ensures layout fits without scroll
plt.show()
```


Total Sales by Outlet Location Type
Outlet Location Type
Tier 3
Tier 2
Tier 1
0
100000
200000
300000
400000
Total Sales