

DATA ANALYSIS PYTHON PROJECT - BLINKIT ANALYSIS

Import Libraries

```
In [1]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

Import Sample Data

```
In [2]: df = pd.read_excel(r"C:\Users\HP\OneDrive\Documents\python project\blinkit_data.csv.xlsx")

In [3]: df.head(20)

Out[3]:
```

	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
0	Regular	FDX32	Fruits and Vegetables	2012	OUT049	Tier 1	Medium	Supermarket Type1	0.100014	15.10	145.4786	5.0
1	Low Fat	NCB42	Health and Hygiene	2022	OUT018	Tier 3	Medium	Supermarket Type2	0.008596	11.80	115.3492	5.0
2	Regular	FDR28	Frozen Foods	2010	OUT046	Tier 1	Small	Supermarket Type1	0.025896	13.85	165.0210	5.0
3	Regular	FDL50	Canned	2000	OUT013	Tier 3	High	Supermarket Type1	0.042278	12.15	126.5046	5.0
4	Low Fat	DRJ25	Soft Drinks	2015	OUT045	Tier 2	Small	Supermarket Type1	0.033970	19.60	55.1614	5.0
5	low fat	FDS52	Frozen Foods	2020	OUT017	Tier 2	Small	Supermarket Type1	0.005505	8.89	102.4016	5.0
6	Low Fat	NCU05	Health and Hygiene	2011	OUT010	Tier 3	Small	Grocery Store	0.098312	11.80	81.4618	5.0
7	Low Fat	NCD30	Household	2015	OUT045	Tier 2	Small	Supermarket Type1	0.026904	19.70	96.0726	5.0
8	Low Fat	FDW20	Fruits and Vegetables	2000	OUT013	Tier 3	High	Supermarket Type1	0.024129	20.75	124.1730	5.0
9	Low Fat	FDX25	Canned	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.101562	NaN	181.9232	5.0
10	LF	FDX21	Snack Foods	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.084555	NaN	109.8912	5.0
11	Low Fat	NCU41	Health and Hygiene	2017	OUT035	Tier 2	Small	Supermarket Type1	0.052045	18.85	192.1846	5.0
12	Low Fat	FDL20	Fruits and Vegetables	2022	OUT018	Tier 3	Medium	Supermarket Type2	0.128938	17.10	112.3886	5.0
13	Low Fat	NCR54	Household	2000	OUT013	Tier 3	High	Supermarket Type1	0.090487	16.35	195.2110	5.0
14	Low Fat	FDH19	Meat	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.032928	NaN	173.1738	5.0
15	Regular	FDB57	Fruits and Vegetables	2017	OUT035	Tier 2	Small	Supermarket Type1	0.018802	20.25	222.1772	5.0
16	Low Fat	FDO23	Breads	2022	OUT018	Tier 3	Medium	Supermarket Type2	0.147024	17.85	93.7436	5.0
17	Low Fat	NCB07	Household	2012	OUT049	Tier 1	Medium	Supermarket Type1	0.077628	19.20	197.6110	5.0
18	Low Fat	FDJ56	Fruits and Vegetables	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.182515	NaN	98.7700	5.0
19	Low Fat	DRN47	Hard Drinks	2022	OUT018	Tier 3	Medium	Supermarket Type2	0.016895	12.10	178.5660	5.0

```
In [4]: df.tail(15)

Out[4]:
```

	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
8508	Regular	FDU57	Snack Foods	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.089121	NaN	149.8708	4.0
8509	Regular	FDU58	Snack Foods	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.028871	NaN	188.7898	4.0
8510	Regular	FDX46	Snack Foods	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.057635	NaN	57.5562	4.0
8511	Regular	FDX57	Snack Foods	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.047037	NaN	96.4068	4.0
8512	Regular	FDY33	Snack Foods	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.096730	NaN	159.0262	4.0
8513	Regular	DRY23	Soft Drinks	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.108568	NaN	42.9112	4.0
8514	low fat	FDA11	Baking Goods	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.043029	NaN	94.7436	4.0
8515	low fat	FDK38	Canned	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.053032	NaN	149.1734	4.0
8516	low fat	FDO38	Canned	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.072486	NaN	78.9986	4.0
8517	low fat	FDG32	Fruits and Vegetables	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.175143	NaN	223.3772	4.0
8518	low fat	NCT53	Health and Hygiene	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.000000	NaN	164.5526	4.0
8519	low fat	FDN09	Snack Foods	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.034706	NaN	241.6828	4.0
8520	low fat	DRE13	Soft Drinks	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.027571	NaN	86.6198	4.0
8521	reg	FDT50	Dairy	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.107715	NaN	97.8752	4.0
8522	reg	FDM58	Snack Foods	1998	OUT027	Tier 3	Medium	Supermarket Type3	0.000000	NaN	112.2544	4.0

Size of Data

```
In [5]: print("Size of Data:", df.shape)

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

Field Info

```
In [6]: df.columns

Out[6]: 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

```
In [7]: df.dtypes

Out[7]: 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

```
In [8]: print(df['Item Fat Content'].unique())
['Regular' 'Low Fat' 'low fat' 'LF' 'reg']

In [9]: df['Item Fat Content'] = df['Item Fat Content'].replace({'LF': 'Low Fat',
                                                                'low fat': 'Low Fat',
                                                                'reg': 'Regular'})

In [10]: print(df['Item Fat Content'].unique())
['Regular' 'Low Fat']
```

BUSINESS REQUIREMENTS

KPI's REQUIREMENTS

```
In [22]: #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},.1f")
print(f"No of Items Sold:{no_of_items_sold},.0f")
print(f"Average Ratings:{avg_ratings},.1f")

Total Sales:91,201,681
Average Sales:9141.0
No of Items Sold:9,523
Average Ratings:4.0
```

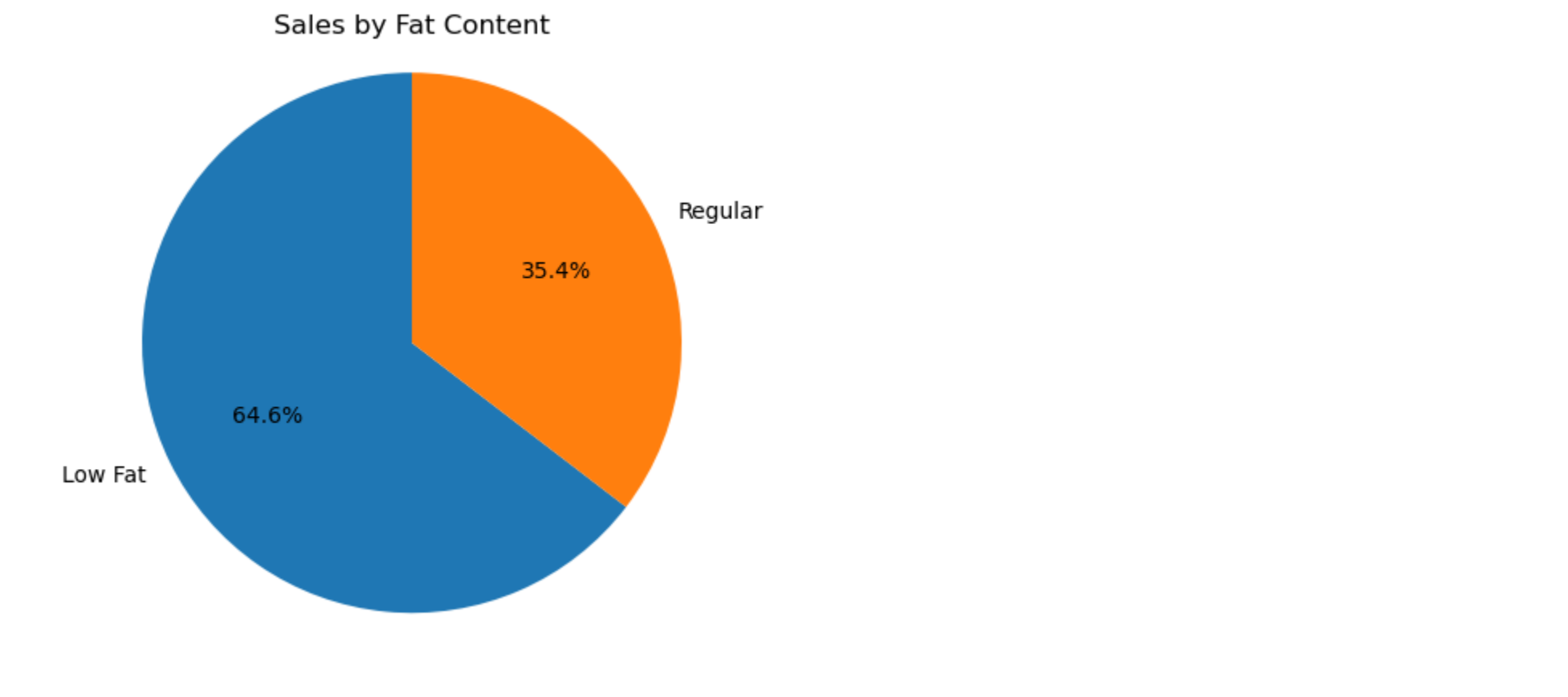
CHARTS REQUIREMENTS

Total Sales by Fat Content

```
In [26]: sales_by_fat = df.groupby('Item Fat Content')['Sales'].sum()

plt.figure(figsize=(10, 6))
bars = plt.bar(sales_by_fat.index, sales_by_fat.values,
               autopct='%1.1f%%',
               startangle = 90)

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



Total Sales by Item Type

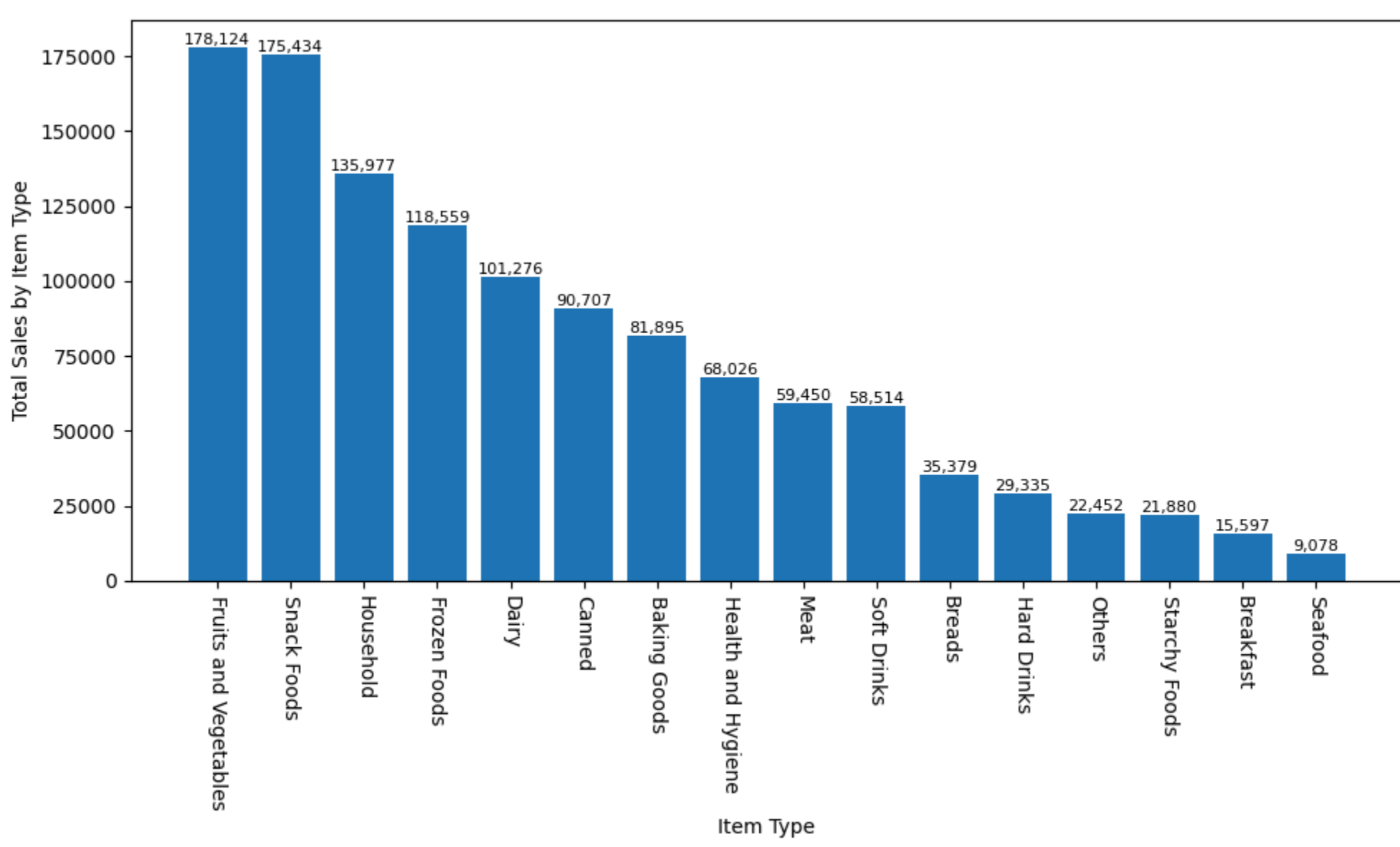
```
In [28]: sales_by_type = df.groupby('Item Type')['Sales'].sum().sort_values(ascending=False)

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 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)

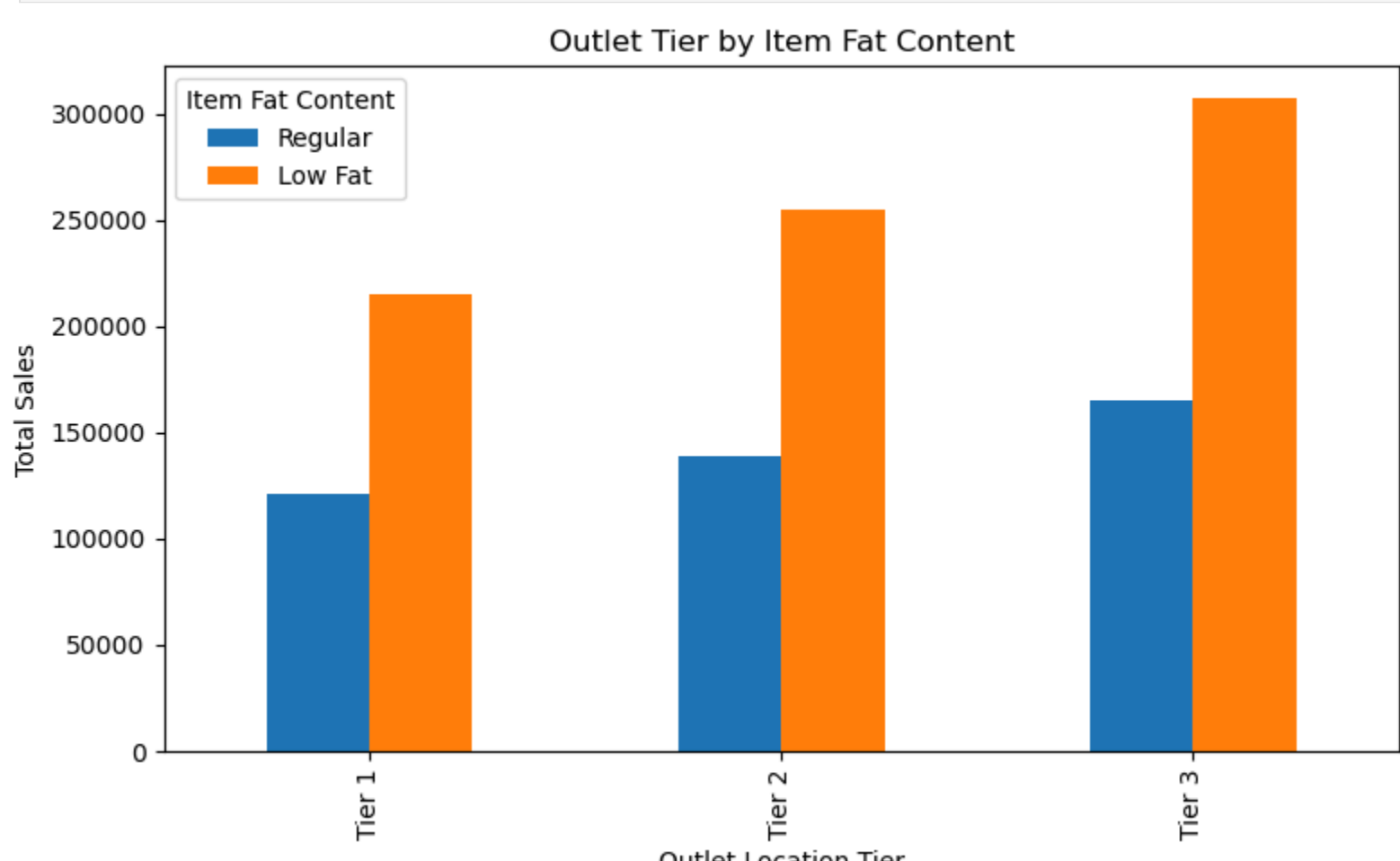
plt.tight_layout()
plt.show()
```



Fat Content by Outlet for Total Sales

```
In [33]: 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.ylabel('Total Sales')
plt.tight_layout()
plt.show()
```



Total Sales by Outlet Establishment

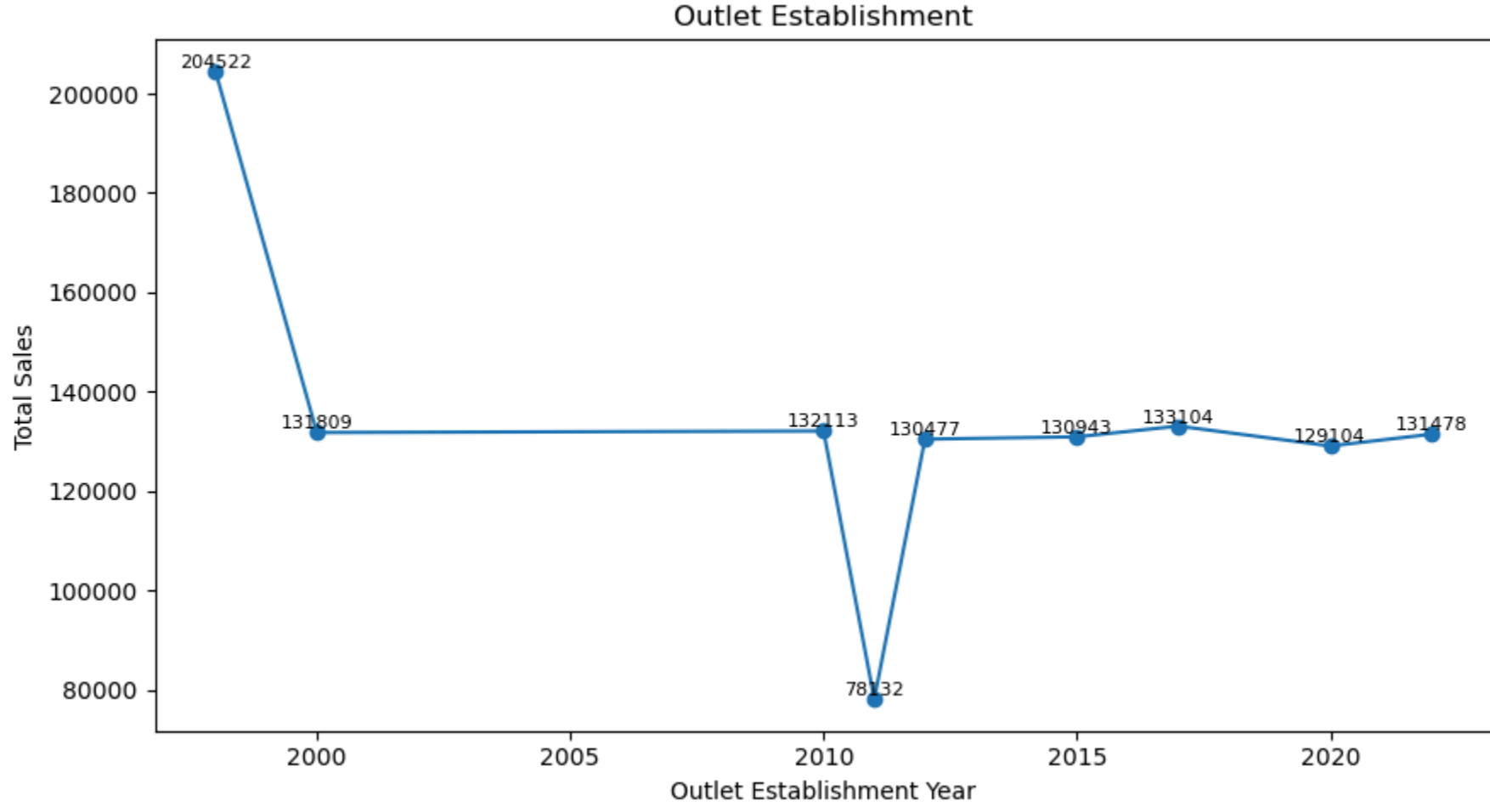
```
In [34]: sales_by_year = df.groupby('Outlet Establishment Year')['Sales'].sum().sort_index()

plt.figure(figsize=(8, 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')

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()
```

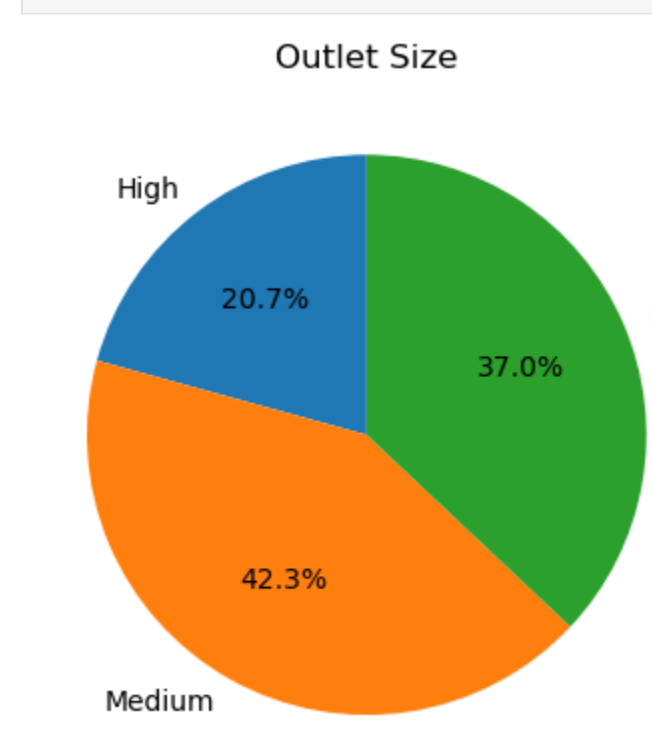


Sales by Outlet Size

```
In [35]: 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.show()
```



Sales by Outlet Location

```
In [42]: 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.title('Total Sales by Outlet Location Types')
plt.xlabel('Total Sales')
plt.ylabel('Outlet Location Type')

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

