BLINKIT SALES ANALYSIS

BASIC DATA ANALYSIS TECHNIQUES*

In [1]:
```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
import math
import plotly.express as px
from wordcloud import wordcloud
from datetime import datetime
import warnings
warnings.filterwarnings('ignore')
df=pd.read_csv('/content/drive/MyDrive/blinkit_data.csv')
df
```

Out[1]:

	Item Fat Content	Item Identifier	Item Type	Outlet Establishment Year	Outlet Identifier	Outlet Location Type	Outlet Size	Out
0	Regular	FDX32	Fruits and Vegetables	2012	OUT049	Tier 1	Medium	Supe
1	Low Fat	NCB42	Health and Hygiene	2022	OUT018	Tier 3	Medium	Supe
2	Regular	FDR28	Frozen Foods	2010	OUT046	Tier 1	Small	Supe
3	Regular	FDL50	Canned	2000	OUT013	Tier 3	High	Supe
4	Low Fat	DRI25	Soft Drinks	2015	OUT045	Tier 2	Small	Supe
...	...	...	...	...	...	...	...	
8518	low fat	NCT53	Health and Hygiene	1998	OUT027	Tier 3	Medium	Supe
8519	low fat	FDN09	Snack Foods	1998	OUT027	Tier 3	Medium	Supe
8520	low fat	DRE13	Soft Drinks	1998	OUT027	Tier 3	Medium	Supe
8521	reg	FDT50	Dairy	1998	OUT027	Tier 3	Medium	Supe
8522	reg	FDM58	Snack Foods	1998	OUT027	Tier 3	Medium	Supe

8523 rows × 12 columns

In [2]:
```
df.columns
```

Out[2]:
```
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')
```

In [3]:
```
df.shape
```

Out[3]:
```
(8523, 12)
```

In [4]:
```
df.size
```

Out[4]:
```
102276
```

In [6]:
```
df.ndim
```

Out[6]:
```
2
```

In [5]:
```
df.dtypes
```

Out[5]:

	0
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

In [7]:
```
df.value_counts()
```

Out[7]:

Item Fat Content	Item Identifier	Item Type	Outlet Establishment Year	Outlet Identifier	Outlet Location Type	Outlet Size	Outlet Type
reg	FDZ59	Baking Goods	2011	OUT010	Tier 3	Small	Grocery Store
LF	DRA12	Soft Drinks	2017	OUT035	Tier 2	Small	Supermarket Type1
	DRD12	Soft Drinks	2022	OUT018	Tier 3	Medium	Supermarket Type2
	DRD25	Soft Drinks	2022	OUT018	Tier 3	Medium	Supermarket Type2
reg	FDW09	Snack Foods	2000	OUT013	Tier 3	High	Supermarket Type1
...	...	...	...	...	...	...	...
LF	DRE48	Soft Drinks	2017	OUT035	Tier 2	Small	Supermarket Type1
	DRE37	Soft Drinks	2022	OUT018	Tier 3	Medium	Supermarket Type2
	DRE25	Soft Drinks	2020	OUT017	Tier 2	Medium	Supermarket Type1
	DRD60	Soft Drinks	2022	OUT018	Tier 3	Medium	Supermarket Type2
	DRD49	Soft Drinks	2010	OUT046	Tier 1	Small	Supermarket Type1

7060 rows × 1 columns

dtype: int64

In [8]:
```
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
```

In [9]:
```
df.describe(include='all')
```

Out[9]:

	Item Fat Content	Item Identifier	Item Type	Outlet Establishment Year	Outlet Identifier	Outlet Location Type	Outlet Size	O
count	8523	8523	8523	8523.000000	8523	8523	8523	
unique	5	1559	16	NaN	10	3	3	
top	Low Fat	FDW13	Fruits and Vegetables	NaN	OUT027	Tier 3	Medium	Su
freq	5089	10	1232	NaN	935	3350	3631	
mean	NaN	NaN	NaN	2010.831867	NaN	NaN	NaN	
std	NaN	NaN	NaN	8.371760	NaN	NaN	NaN	
min	NaN	NaN	NaN	1998.000000	NaN	NaN	NaN	
25%	NaN	NaN	NaN	2000.000000	NaN	NaN	NaN	
50%	NaN	NaN	NaN	2012.000000	NaN	NaN	NaN	
75%	NaN	NaN	NaN	2017.000000	NaN	NaN	NaN	
max	NaN	NaN	NaN	2022.000000	NaN	NaN	NaN	

In [10]:
```
df.describe()
```

Out[10]:

	Outlet Establishment Year	Item Visibility	Item Weight	Sales	Rating
count	8523.000000	8523.000000	7060.000000	8523.000000	8523.000000
mean	2010.831867	0.066132	12.857645	140.992782	3.965857
std	8.371760	0.051598	4.643456	62.275067	0.605651
min	1998.000000	0.000000	4.555000	31.290000	1.000000
25%	2000.000000	0.026989	8.773750	93.826500	4.000000
50%	2012.000000	0.053931	12.600000	143.012800	4.000000
75%	2017.000000	0.094585	16.850000	185.643700	4.200000
max	2022.000000	0.328391	21.350000	266.888400	5.000000

NULL VALUE CHECK

In [11]:
```
df.isnull().sum()
```

Out[11]:

	0
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

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In [12]:
```
df.columns
```

Out[12]:
```
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')
```

SALES INFORMATION

In [13]:
```
# 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:,.0f}")
```

```
Total Sales: $1,201,681
Average Sales: $141
No of Items Sold: 8,523
Average Ratings: 4
```

ITEM TYPE WISE SALES

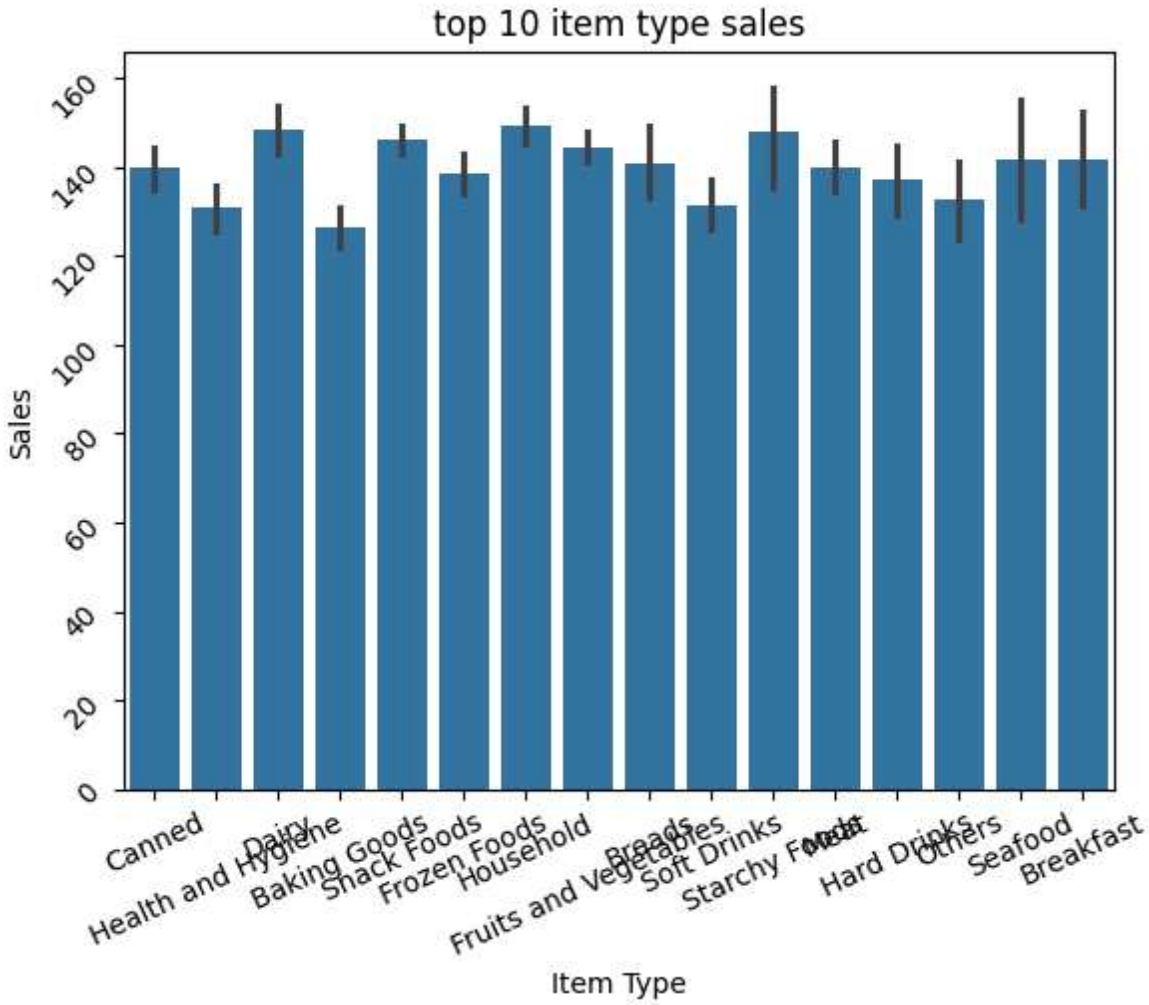
In [14]:
```
import matplotlib
import importlib
import matplotlib.pyplot as plt

# reload the pyplot module to restore original functions
importlib.reload(matplotlib.pyplot)

# verify restored
print("plt.figure restored:", callable(plt.figure))
```

```
plt.figure restored: True
```

In [16]:
```
dftop10=df.sort_values(by='Sales', ascending=False)
```

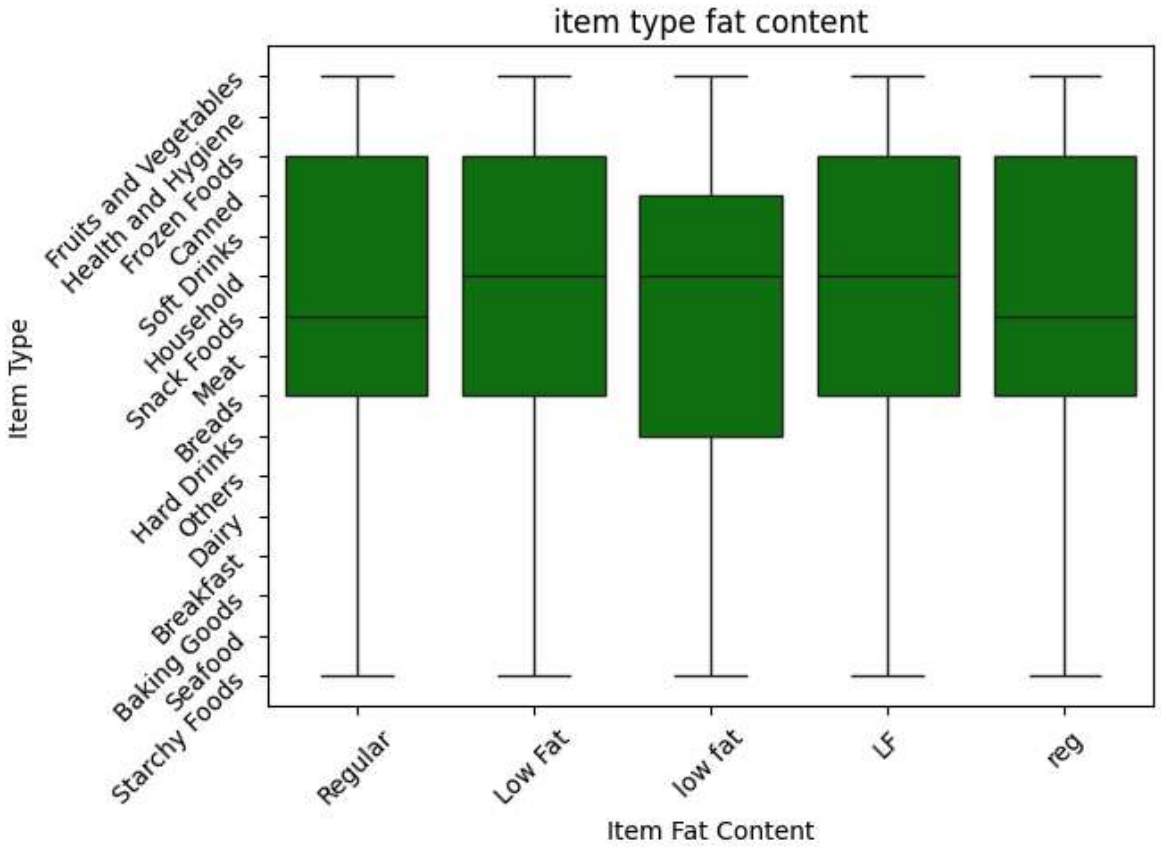
In [17]:
```
sns.barplot(x='Item Type',y='Sales',data=dftop10)
plt.xticks(rotation=25)
plt.yticks(rotation=45)
plt.title('top 10 item type sales')
```

Out[17]:
```
Text(0.5, 1.0, 'top 10 item type sales')
```



In [21]:
```
sns.boxplot(x='Item Fat Content',y='Item Type',data=df,color='green')
plt.xticks(rotation=45)
plt.yticks(rotation=45)
plt.title('item type fat content')
```

Out[21]:
```
Text(0.5, 1.0, 'item type fat content')
```

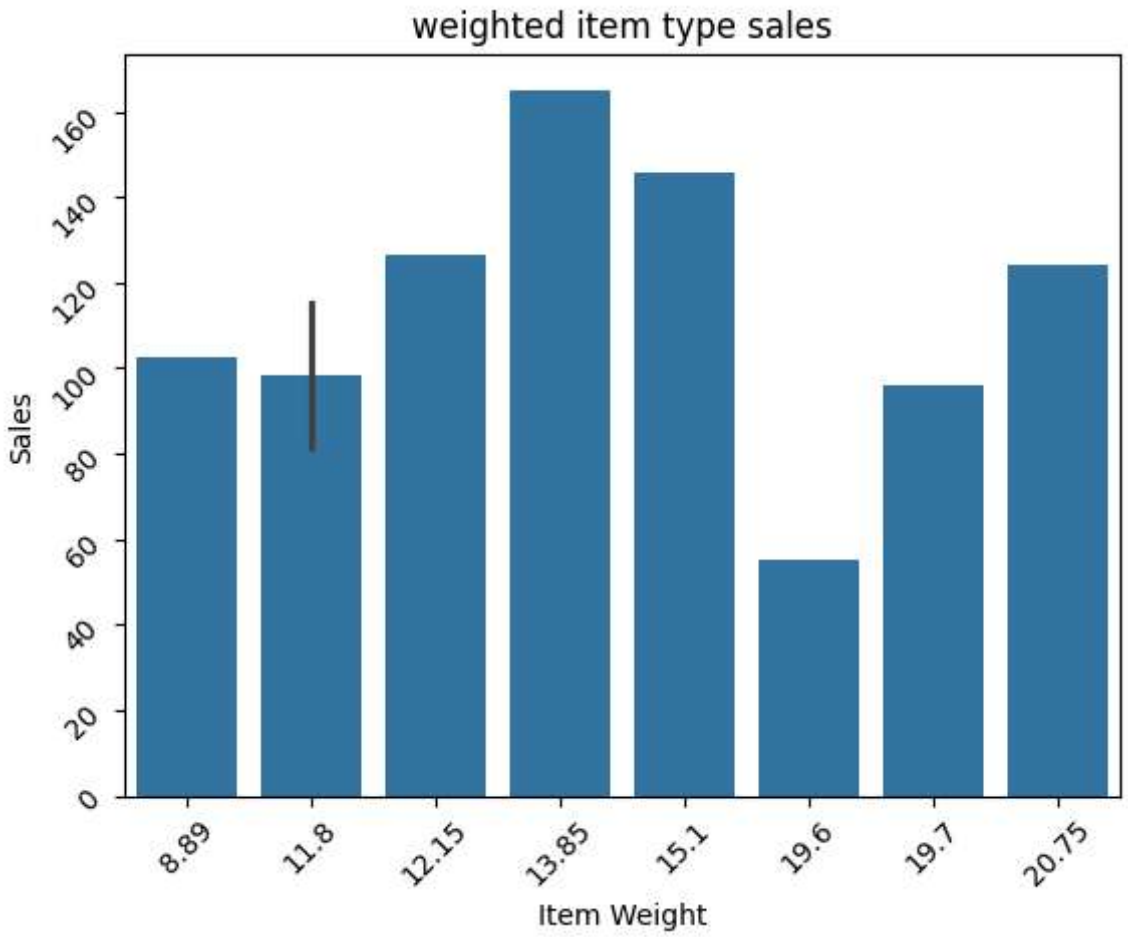


In [ ]:
```
df.columns
```

Out[ ]:
```
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')
```

In [22]:
```
sns.barplot(x='Item Weight',y='Sales',data=df.head(10))
plt.xticks(rotation=45)
plt.yticks(rotation=45)
plt.title('weighted item type sales')
```

Out[22]:
```
Text(0.5, 1.0, 'weighted item type sales')
```

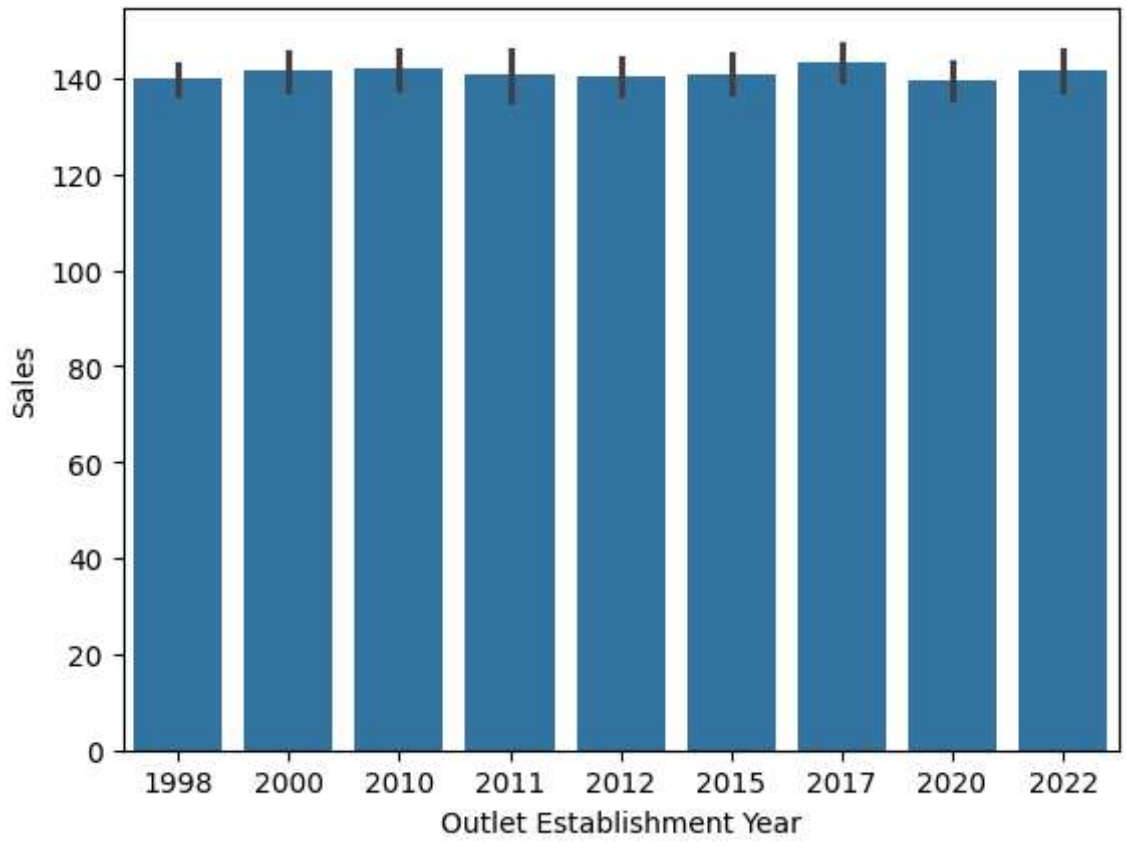


In [ ]:
```
df.columns
```

Out[ ]:
```
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')
```

In [ ]:
```
#outlet establishmnent year wise sales
sns.barplot(x='Outlet Establishment Year',y='Sales',data=df)
```

Out[ ]:
```
<Axes: xlabel='Outlet Establishment Year', ylabel='Sales'>
```



In [ ]:
```
df.columns
```

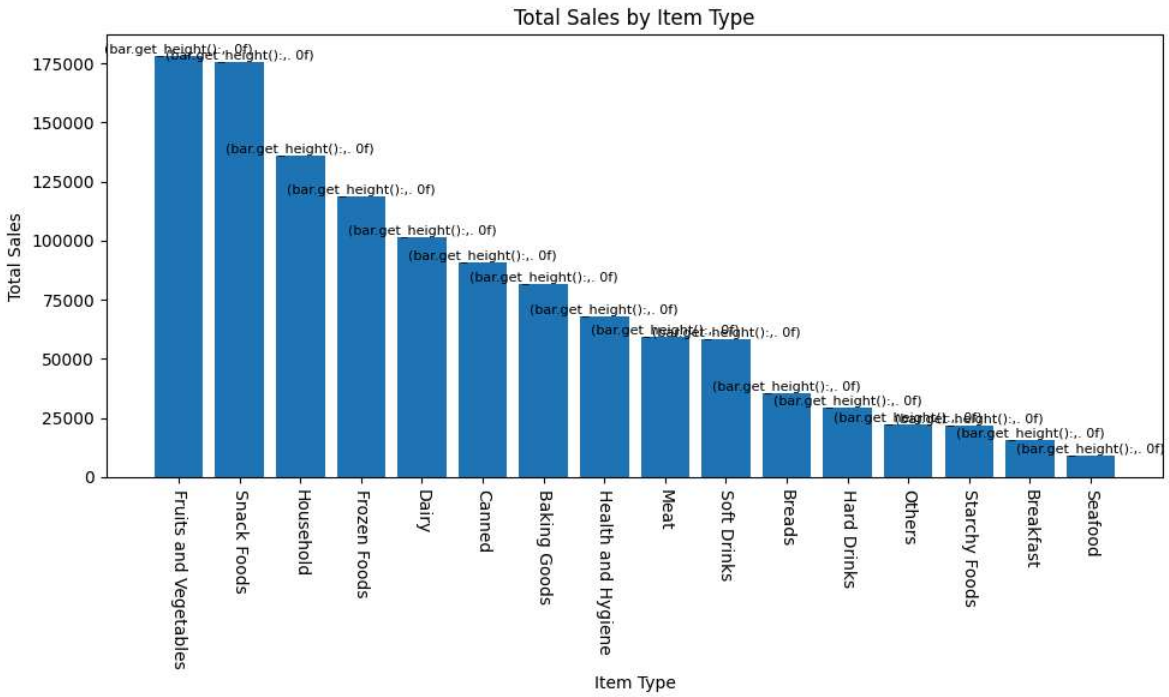
Out[ ]:
```
Index(['Item Fat Content', 'Item Identifier', 'Item Type',
       'Outlet Establishment Year', 'Outlet Identifier',
       'Outlet Location Type', 'Outlet Size', 'Outlet Type', 'Item Visibility',
       'Item Weight', 'Sales', 'Rating'],
      dtype='object')
```

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

plt.pie(sales_by_fat,
        labels=sales_by_fat.index,
        autopct='%.1f%%',
        startangle=90)

plt.title('Sales by Fat Content')
plt.axis('equal')  # Equal aspect ratio ensures that pie is drawn as a circle.
plt.show()
```

TOTAL SALES BY ITEM TYPE

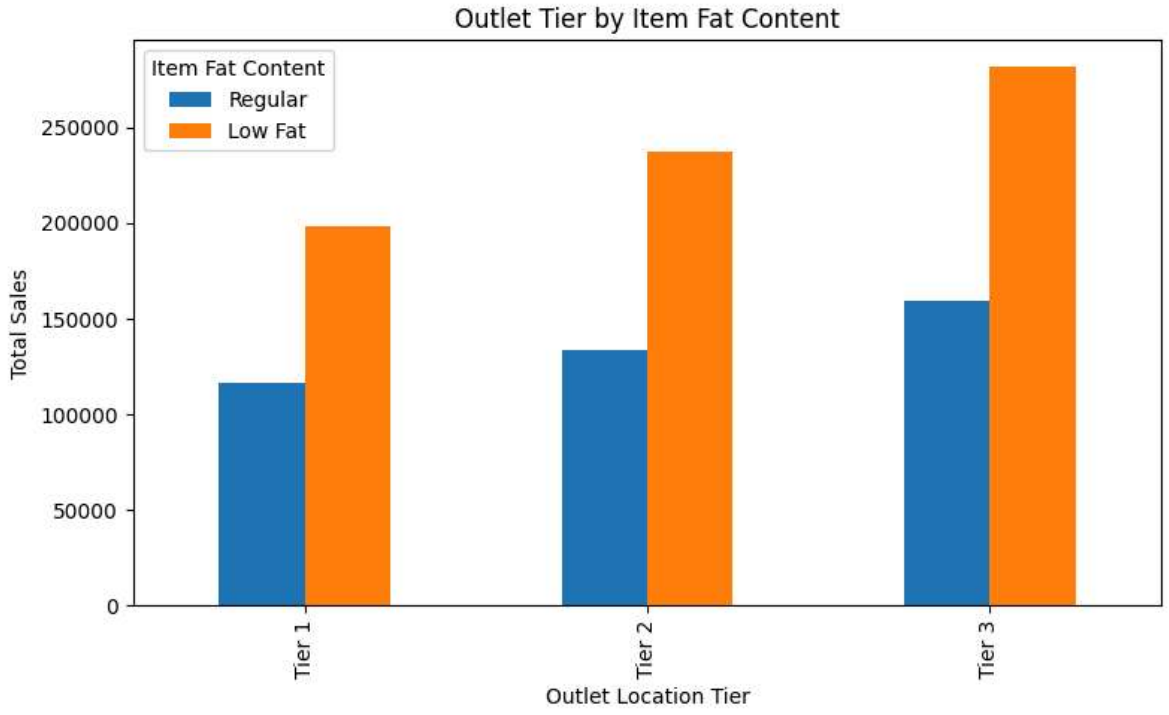
In [24]:
```
sales_by_type = df.groupby('Item Type') ['Sales'].sum().sort_values(ascending=Fa
plt.figure(figsize=(10, 6))
bars = plt.bar(sales_by_type.index, sales_by_type.values)
plt.xticks(rotation=-90)
plt.xlabel('Item Type')
plt.ylabel('Total Sales')
plt.title('Total Sales by Item Type')
for bar 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()
```



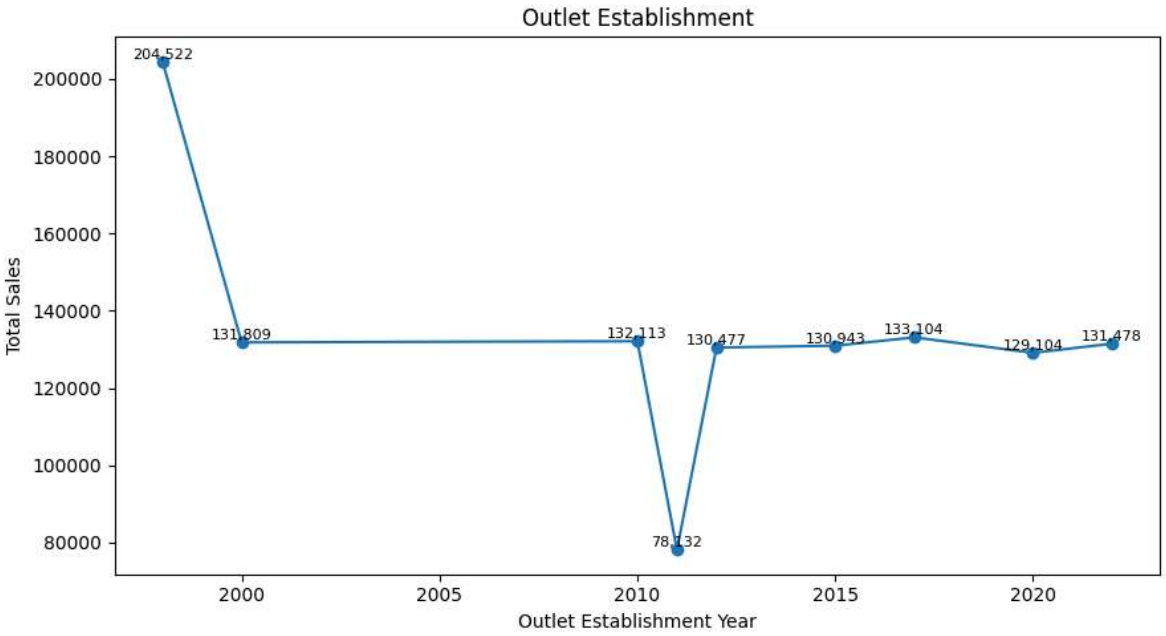
OUTLET TIER BY ITEM FAT CONTENT

In [23]:
```
grouped = df.groupby(['Outlet Location Type', 'Item Fat Content'])['Sales'].sum(
grouped = grouped[['Regular', 'Low Fat']]  # Optional filtering order

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



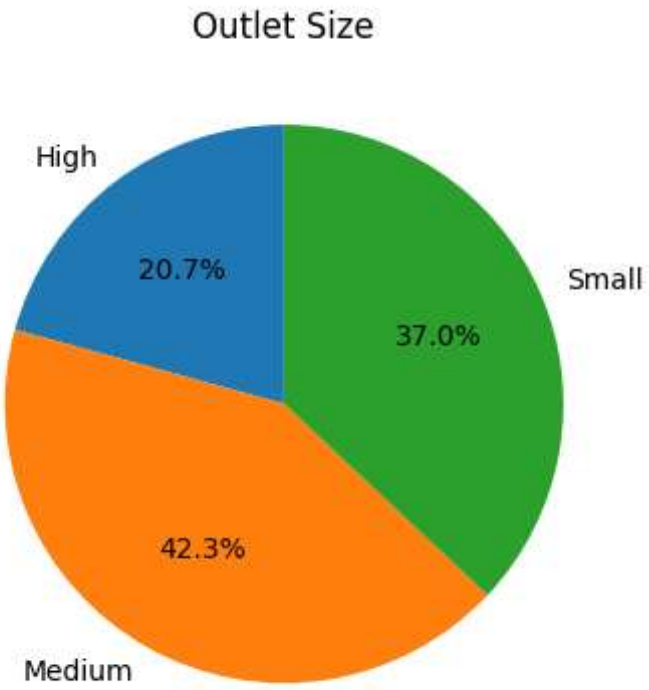
Total Sales By Outlet Establishment Year

In [25]:
```
sales_by_year = df.groupby('Outlet Establishment Year')['Sales'].sum().sort_inde

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')

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()
```



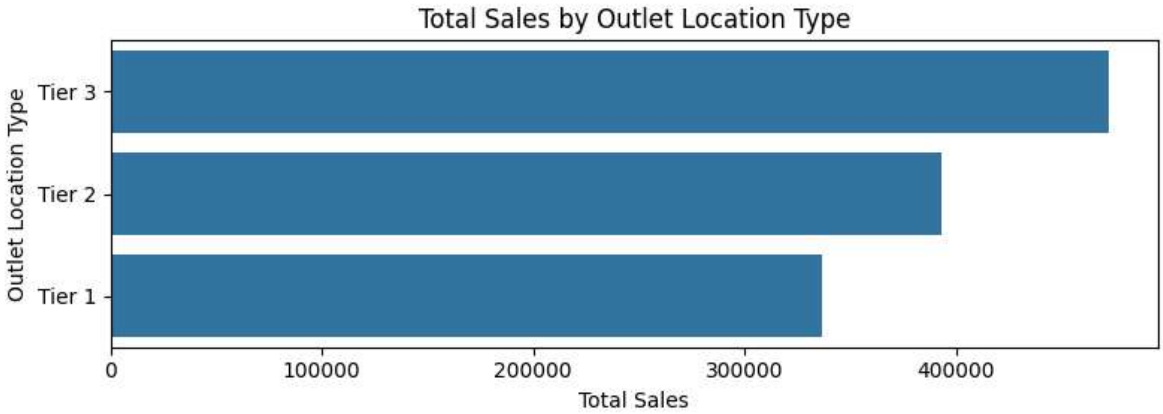
SALES BY OUTLET SIZE

In [26]:
```
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()
```



SALERS BY LOCATION

In [27]:
```
sales_by_location = df.groupby('Outlet Location Type')['Sales'].sum().reset_inde
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 Type')
plt.xlabel('Total Sales')
plt.ylabel('Outlet Location Type')
plt.tight_layout()  # Ensures layout fits without scroll
plt.show()
```



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