

2015 PIZZA SALES ANALYSIS

```
In [1]: %matplotlib inline  
import pandas as pd  
import numpy as np  
import matplotlib.pyplot as plt  
from datetime import datetime
```

```
In [2]: order_df=pd.read_excel(r"C:\Users\HP\Desktop\Pizza_Sales_Dataset.xlsx",sheet_name=0)  
details_df=pd.read_excel(r"C:\Users\HP\Desktop\Pizza_Sales_Dataset.xlsx",sheet_name=1)  
pizza_df=pd.read_excel(r"C:\Users\HP\Desktop\Pizza_Sales_Dataset.xlsx",sheet_name=2)  
types_df=pd.read_excel(r"C:\Users\HP\Desktop\Pizza_Sales_Dataset.xlsx",sheet_name=3)
```

```
In [ ]:
```

```
In [3]: order_df.head()
```

```
Out[3]:
```

	order_id	date	time
0	1	2015-01-01	11:38:36
1	2	2015-01-01	11:57:40
2	3	2015-01-01	12:12:28
3	4	2015-01-01	12:16:31
4	5	2015-01-01	12:21:30

```
In [4]: details_df.head()
```

Out[4]:

	order_details_id	order_id	pizza_id	quantity
0	1	1	hawaiian_m	1
1	2	2	classic_dlx_m	1
2	3	2	five_cheese_l	1
3	4	2	ital_supr_l	1
4	5	2	mexicana_m	1

In [5]: `pizza_df.head()`

Out[5]:

	pizza_id	pizza_type_id	size	price
0	bbq_ckn_s	bbq_ckn	S	12.75
1	bbq_ckn_m	bbq_ckn	M	16.75
2	bbq_ckn_l	bbq_ckn	L	20.75
3	cali_ckn_s	cali_ckn	S	12.75
4	cali_ckn_m	cali_ckn	M	16.75

In [6]: `types_df.head()`

Out[6]:

	pizza_type_id	name	category	ingredients
0	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers, ...
1	cali_ckn	The California Chicken Pizza	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno ...
2	ckn_alfredo	The Chicken Alfredo Pizza	Chicken	Chicken, Red Onions, Red Peppers, Mushrooms, A...
3	ckn_pesto	The Chicken Pesto Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Spinach, Garli...
4	southw_ckn	The Southwest Chicken Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Red Onions, Ja...

In [7]: `df1 =details_df.merge(order_df, on = "order_id", how = "inner")`

In [8]: `df1.head()`

Out[8]:

	order_details_id	order_id	pizza_id	quantity	date	time
0	1	1	hawaiian_m	1	2015-01-01	11:38:36
1	2	2	classic_dlx_m	1	2015-01-01	11:57:40
2	3	2	five_cheese_l	1	2015-01-01	11:57:40
3	4	2	ital_supr_l	1	2015-01-01	11:57:40
4	5	2	mexicana_m	1	2015-01-01	11:57:40

In [9]: `df2 = types_df.merge(pizza_df, on ='pizza_type_id', how ='inner')`

In [10]: `df2.head()`

Out[10]:

	pizza_type_id	name	category	ingredients	pizza_id	size	price
0	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers, ...	bbq_ckn_s	S	12.75
1	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers, ...	bbq_ckn_m	M	16.75
2	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers, ...	bbq_ckn_l	L	20.75
3	cali_ckn	The California Chicken Pizza	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno ...	cali_ckn_s	S	12.75
4	cali_ckn	The California Chicken Pizza	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno ...	cali_ckn_m	M	16.75

In [11]: `pizza =df2.merge(df1, on ='pizza_id', how ='inner')`

In [12]: `pizza.head()`

		pizza_type_id	name	category	ingredients	pizza_id	size	price	order_details_id	order_id	quantity	date	time
0	bbq_ckn	The Barbecue Chicken Pizza	Barbecue Chicken	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75		11	6	1 2015-01-01	12:29:36
1	bbq_ckn	The Barbecue Chicken Pizza	Barbecue Chicken	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75		239	102	1 2015-01-02	17:54:04
2	bbq_ckn	The Barbecue Chicken Pizza	Barbecue Chicken	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75		294	124	1 2015-01-02	20:12:34
3	bbq_ckn	The Barbecue Chicken Pizza	Barbecue Chicken	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75		458	194	1 2015-01-03	21:21:24
4	bbq_ckn	The Barbecue Chicken Pizza	Barbecue Chicken	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75		489	208	1 2015-01-04	12:12:05

In [13]: `pizza.eval("Amount=price*quantity",inplace=True)`

In [14]: `pizza.head()`

Out[14]:

	pizza_type_id	name	category	ingredients	pizza_id	size	price	order_details_id	order_id	quantity	date	time	A
0	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75		11	6	1	2015-01-01	12:29:36
1	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75		239	102	1	2015-01-02	17:54:04
2	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75		294	124	1	2015-01-02	20:12:34
3	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75		458	194	1	2015-01-03	21:21:24
4	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75		489	208	1	2015-01-04	12:12:05

◀ ▶

In [15]: `pizza.rename(columns ={'size':'size_type'},inplace=True)`

In [16]: `pizza.info()`

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 48620 entries, 0 to 48619
Data columns (total 13 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   pizza_type_id    48620 non-null   object  
 1   name              48620 non-null   object  
 2   category          48620 non-null   object  
 3   ingredients       48620 non-null   object  
 4   pizza_id          48620 non-null   object  
 5   size_type         48620 non-null   object  
 6   price              48620 non-null   float64 
 7   order_details_id  48620 non-null   int64  
 8   order_id          48620 non-null   int64  
 9   quantity           48620 non-null   int64  
 10  date              48620 non-null   datetime64[ns]
 11  time              48620 non-null   object  
 12  Amount             48620 non-null   float64 
dtypes: datetime64[ns](1), float64(2), int64(3), object(7)
memory usage: 4.8+ MB
```

```
In [17]: pizza
```

Out[17]:

	pizza_type_id	name	category	ingredients	pizza_id	size_type	price	order_details_id	order_id	quantity	dat
0	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75	11	6	1	2015-01-0
1	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75	239	102	1	2015-01-0
2	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75	294	124	1	2015-01-0
3	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75	458	194	1	2015-01-0
4	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75	489	208	1	2015-01-0
...
48615	veggie_veg	The Vegetables +	Veggie	Mushrooms, Tomatoes, Red Peppers,	veggie_veg_l	L	20.25	48341	21230	1	2015-12-2

	pizza_type_id	name	category	ingredients	pizza_id	size_type	price	order_details_id	order_id	quantity	dat
		Vegetables Pizza		Green Pepper...							
48616	veggie_veg	The Vegetables + Vegetables Pizza	Veggie	Mushrooms, Tomatoes, Red Peppers, Green Pepper...	veggie_veg_l	L	20.25	48452	21278	1	2015 12-3
48617	veggie_veg	The Vegetables + Vegetables Pizza	Veggie	Mushrooms, Tomatoes, Red Peppers, Green Pepper...	veggie_veg_l	L	20.25	48523	21305	1	2015 12-3
48618	veggie_veg	The Vegetables + Vegetables Pizza	Veggie	Mushrooms, Tomatoes, Red Peppers, Green Pepper...	veggie_veg_l	L	20.25	48548	21317	1	2015 12-3
48619	veggie_veg	The Vegetables + Vegetables Pizza	Veggie	Mushrooms, Tomatoes, Red Peppers, Green Pepper...	veggie_veg_l	L	20.25	48588	21336	1	2015 12-3

48620 rows × 13 columns

Total Revenue is \$817,860.05

In [252...]

```
Rev = pizza['Amount'].sum()
Rev
```

```
Out[252... 817860.05
```

Number of Pizza Category is 4

```
In [253... No_Cat = pizza['category'].nunique()  
No_Cat
```

```
Out[253... 4
```

Quantity of Pizza Sold is 49,574

```
In [254... Qty_Sold = pizza['quantity'].sum()  
Qty_Sold
```

```
Out[254... 49574
```

Total Order Processed is 48,620

```
In [265... Total_Orders = pizza['order_id'].value_counts().sum()
```

```
In [266... Total_Orders
```

```
Out[266... 48620
```

```
In [18]: pizz = pizza.groupby('size_type')['quantity'].sum()
```

```
In [19]: pizz
```

```
Out[19]: size_type
L      18956
M      15635
S      14403
XL      552
XXL     28
Name: quantity, dtype: int64
```

```
In [20]: plt.style.use('fivethirtyeight')
plt.tight_layout()
plt.figure(figsize = (8,6))
plt.title('Quantity Sold By Sizes')
plt.xlabel('size_type')
plt.ylabel('Quantity')
pizz.plot(kind = 'bar',color = 'red')
plt.xticks(rotation = 0)
plt.show()
```

<Figure size 640x480 with 0 Axes>



In []:

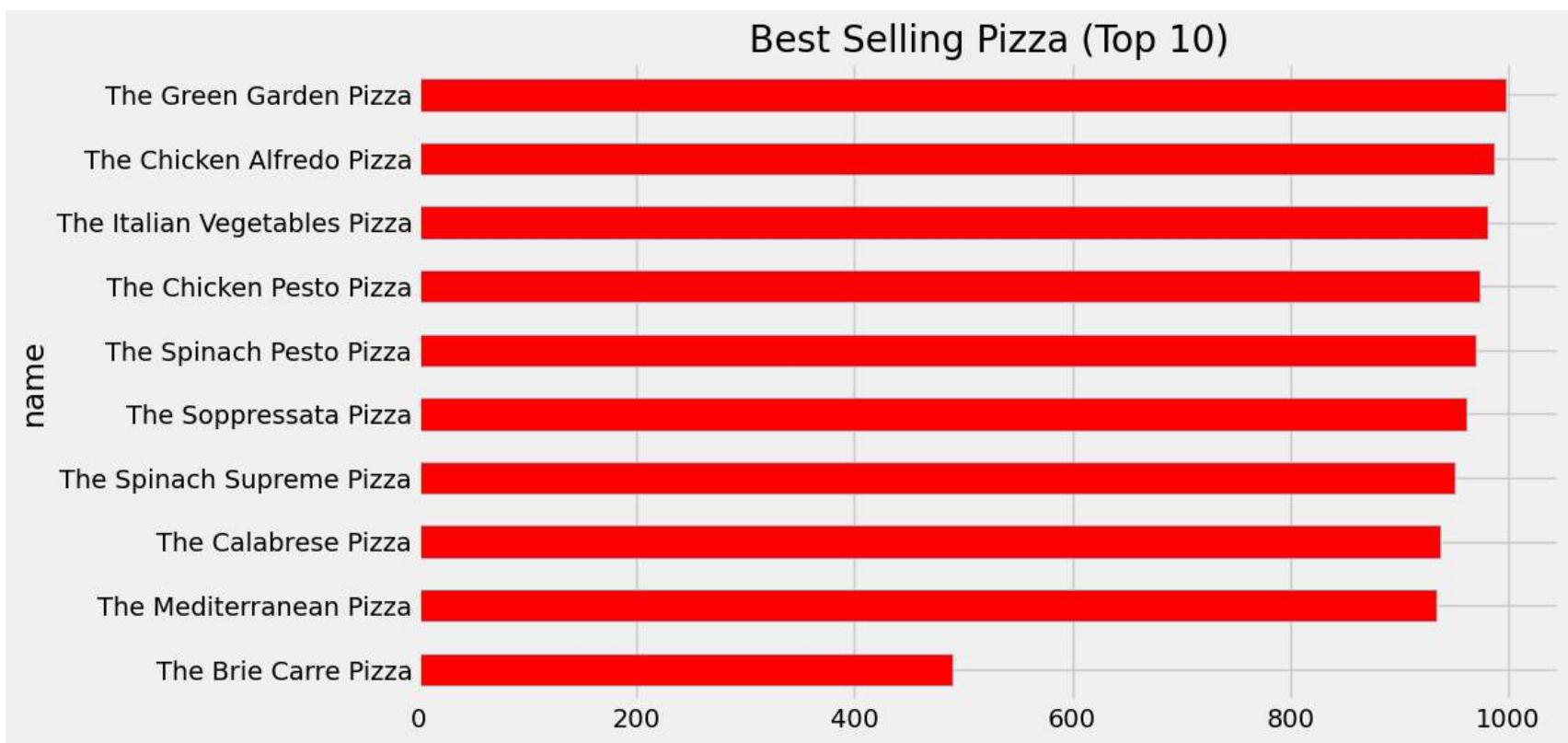
```
In [22]: pizza_top_name = pizza.groupby('name')['quantity'].sum()
pizza_top_10 = pizza_top_name.sort_values(ascending = True)
```

```
top_10 = pizza_top_10[0:10]
top_10
```

```
Out[22]: name
The Brie Carre Pizza      490
The Mediterranean Pizza   934
The Calabrese Pizza       937
The Spinach Supreme Pizza 950
The Soppressata Pizza     961
The Spinach Pesto Pizza   970
The Chicken Pesto Pizza   973
The Italian Vegetables Pizza 981
The Chicken Alfredo Pizza 987
The Green Garden Pizza    997
Name: quantity, dtype: int64
```

```
In [33]: plt.style.use('fivethirtyeight')
plt.tight_layout()
plt.figure(figsize = (10,6))
plt.title('Best Selling Pizza (Top 10)')
plt.xlabel('Name')
plt.ylabel('Quantity')
top_10.plot(kind = 'barh',color = 'red',edgecolor ='skyblue')
plt.xticks(rotation = 0)
plt.show()
```

```
<Figure size 640x480 with 0 Axes>
```

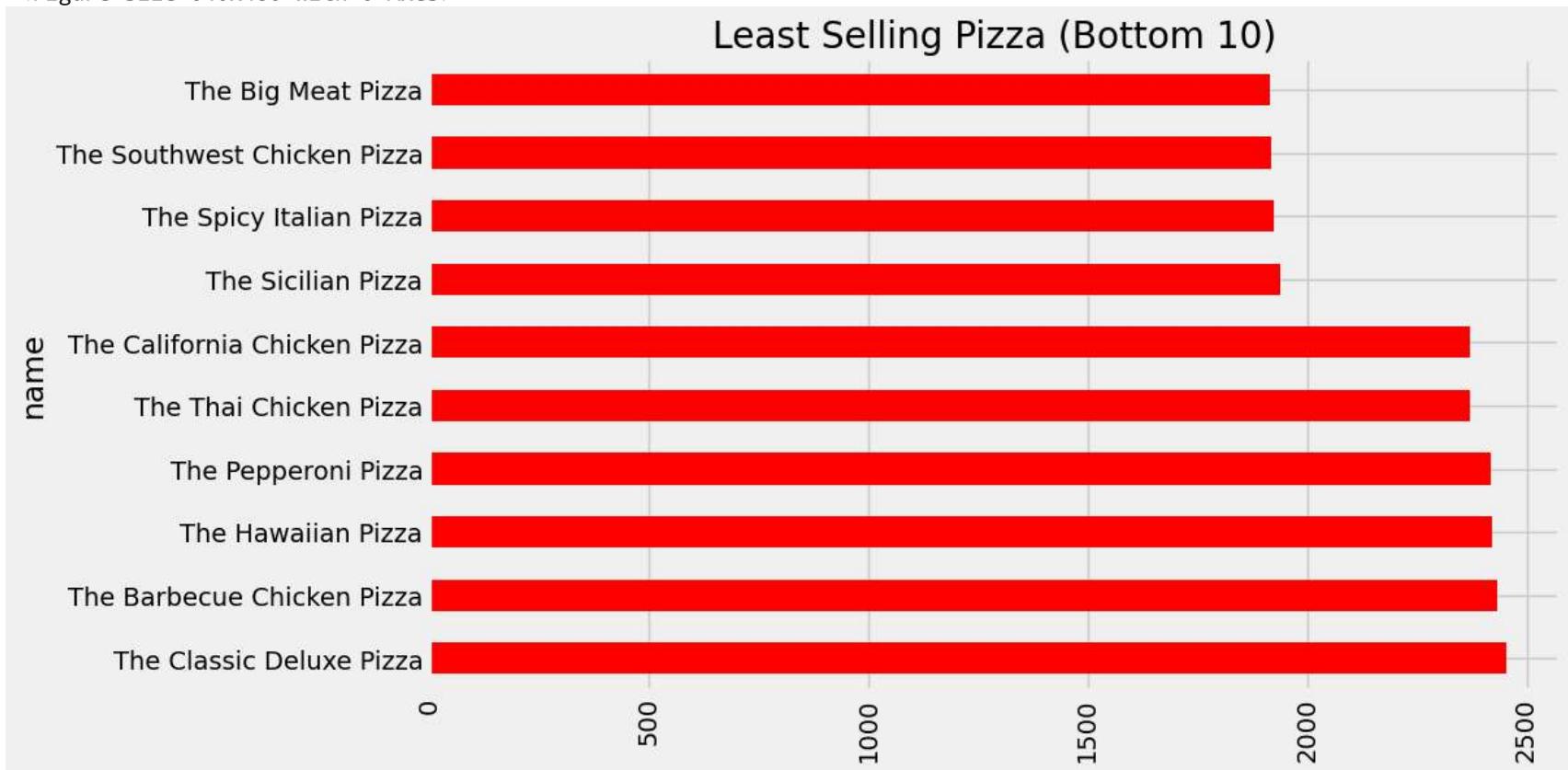


```
In [24]: pizza_bottom_name = pizza.groupby('name')['quantity'].sum()
pizza_bottom_10 = pizza_bottom_name.sort_values(ascending = False)
bottom_10 = pizza_bottom_10[0:10]
bottom_10
```

```
Out[24]: name
The Classic Deluxe Pizza      2453
The Barbecue Chicken Pizza    2432
The Hawaiian Pizza            2422
The Pepperoni Pizza           2418
The Thai Chicken Pizza        2371
The California Chicken Pizza  2370
The Sicilian Pizza            1938
The Spicy Italian Pizza       1924
The Southwest Chicken Pizza   1917
The Big Meat Pizza            1914
Name: quantity, dtype: int64
```

```
In [34]: plt.style.use('fivethirtyeight')
plt.tight_layout()
plt.figure(figsize = (10,6))
plt.title('Least Selling Pizza (Bottom 10)')
plt.xlabel('Name')
plt.ylabel('Quantity')
bottom_10.plot(kind = 'barh',color = 'red')
plt.xticks(rotation = 90)
plt.show()
```

<Figure size 640x480 with 0 Axes>

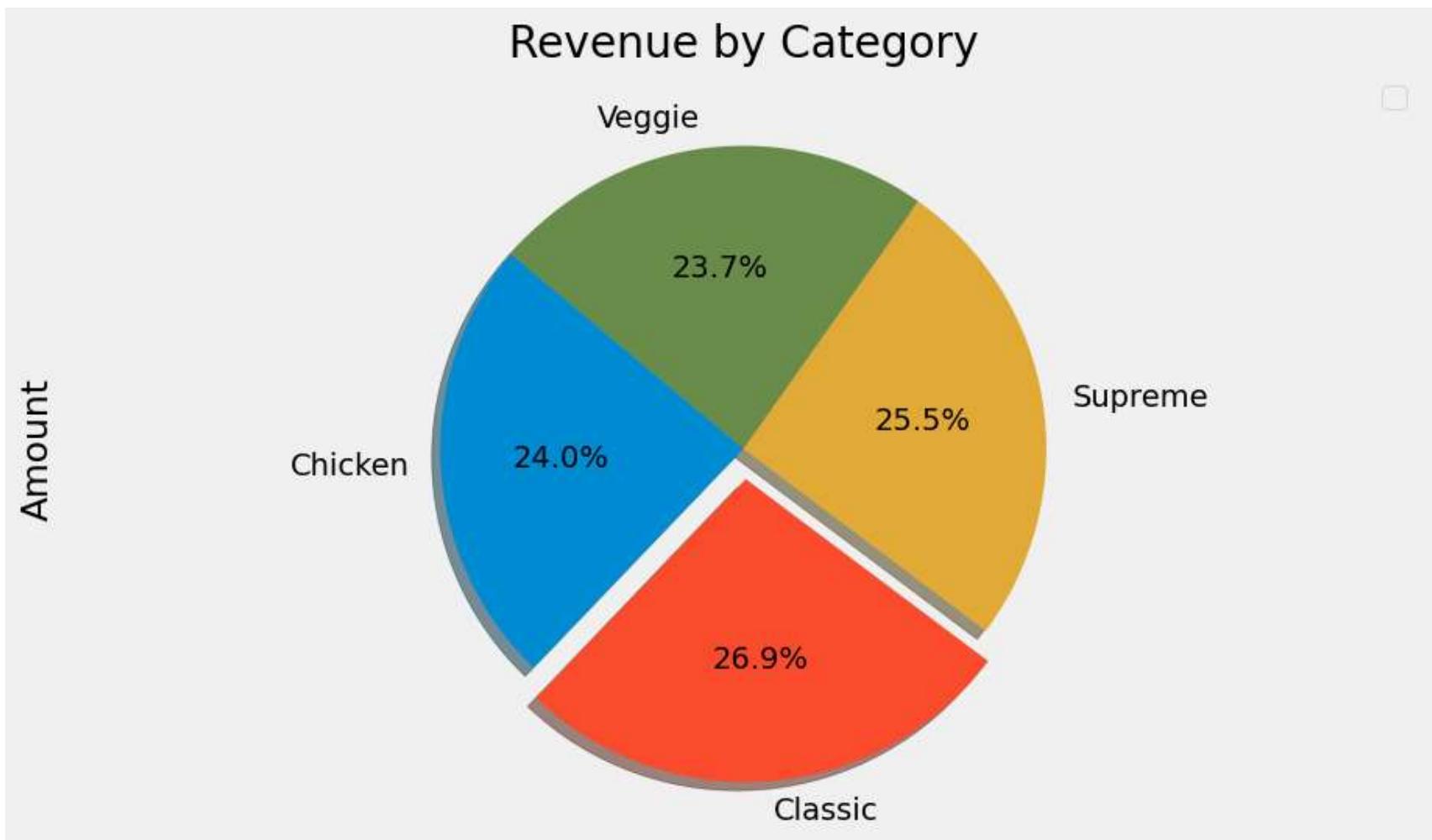


```
In [26]: pizz_cat = pizza.groupby('category')[['Amount']].sum()
pizz_cat
```

```
Out[26]: category
Chicken    195919.50
Classic    220053.10
Supreme    208197.00
Veggie     193690.45
Name: Amount, dtype: float64
```

```
In [27]: plt.style.use('fivethirtyeight')
plt.tight_layout()
plt.figure(figsize = (10,6))
plt.title('Revenue by Category')
plt.legend('Category')
plt.axis('equal')
explode = [0,0.1,0,0]
pizz_cat.plot(kind = 'pie', autopct ='%1.1f%%', startangle =140, explode = explode, shadow = True)
plt.show()
```

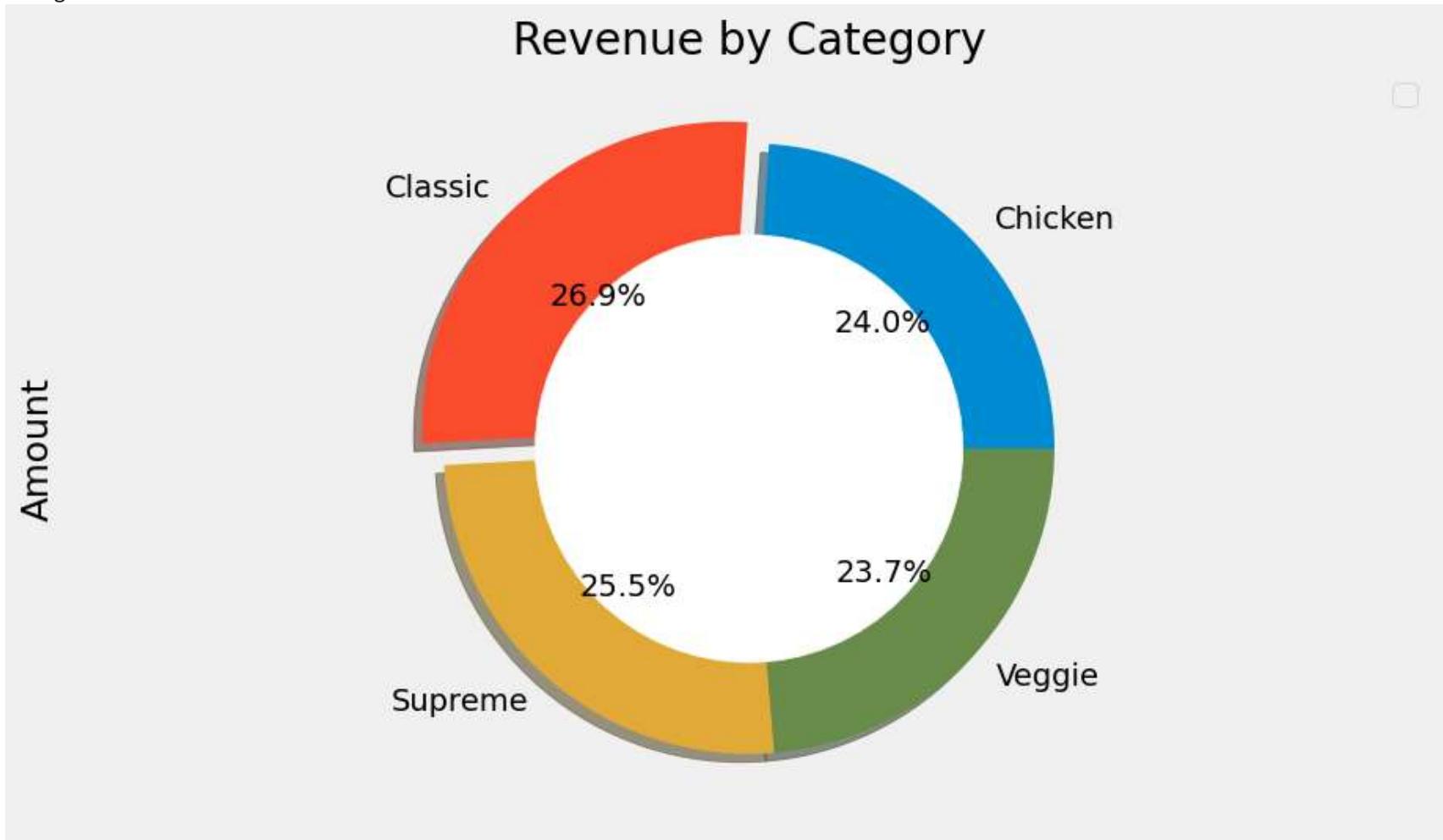
<Figure size 640x480 with 0 Axes>



```
In [28]: plt.style.use('fivethirtyeight')
plt.tight_layout()
plt.figure(figsize = (10,6))
plt.title('Revenue by Category')
plt.legend('Category')
plt.axis('equal')
explode = [0,0.1,0,0]
pizz_cat.plot(kind = 'pie', autopct = '%1.1f%%', explode = explode, shadow = True)
circle = plt.Circle((0,0,),0.7,color = 'white')
p = plt.gcf()
```

```
p.gca().add_artist(circle)  
plt.show()
```

<Figure size 640x480 with 0 Axes>



```
In [210...]: pizza['date'] = pd.to_datetime(pizza['date'])  
pizza['day'] = pizza['date'].dt.day_name()  
pizza['month'] = pizza['date'].dt.month_name()  
pizza['month'] = pizza['date'].dt.strftime('%b')
```

```
In [211...]: pizza
```

Out[211...]

	pizza_type_id	name	category	ingredients	pizza_id	size_type	price	order_details_id	order_id	quantity	dat
0	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75	11	6	1	2015-01-0
1	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75	239	102	1	2015-01-0
2	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75	294	124	1	2015-01-0
3	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75	458	194	1	2015-01-0
4	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers,...	bbq_ckn_s	S	12.75	489	208	1	2015-01-0
...
48615	veggie_veg	The Vegetables +	Veggie	Mushrooms, Tomatoes, Red Peppers,	veggie_veg_l	L	20.25	48341	21230	1	2015-12-2

	pizza_type_id	name	category	ingredients	pizza_id	size_type	price	order_details_id	order_id	quantity	dat
		Vegetables Pizza		Green Pepper...							
48616	veggie_veg	The Vegetables + Vegetables Pizza	Veggie	Mushrooms, Tomatoes, Red Peppers, Green Pepper...	veggie_veg_l	L	20.25	48452	21278	1	2015-12-3
48617	veggie_veg	The Vegetables + Vegetables Pizza	Veggie	Mushrooms, Tomatoes, Red Peppers, Green Pepper...	veggie_veg_l	L	20.25	48523	21305	1	2015-12-3
48618	veggie_veg	The Vegetables + Vegetables Pizza	Veggie	Mushrooms, Tomatoes, Red Peppers, Green Pepper...	veggie_veg_l	L	20.25	48548	21317	1	2015-12-3
48619	veggie_veg	The Vegetables + Vegetables Pizza	Veggie	Mushrooms, Tomatoes, Red Peppers, Green Pepper...	veggie_veg_l	L	20.25	48588	21336	1	2015-12-3

48620 rows × 15 columns

In [232...]

```
 pizza_day = pizza.groupby('day')['Amount'].sum()
pizza_day
```

```
C:\Users\HP\AppData\Local\Temp\ipykernel_21296\4240752700.py:1: FutureWarning: The default of observed=False is deprecated and will be changed to True in a future version of pandas. Pass observed=False to retain current behavior or observed=True to adopt the future default and silence this warning.
```

```
    pizza_day = pizza.groupby('day')['Amount'].sum()
```

```
Out[232... day
Sunday      99203.50
Monday     107329.55
Tuesday    114133.80
Wednesday  114408.40
Thursday   123528.50
Friday     136073.90
Saturday   123182.40
Name: Amount, dtype: float64
```

```
In [231... plt.style.use('fivethirtyeight')
plt.tight_layout()
plt.figure(figsize = (8,6))
plt.title('Quantity Sold By Day')
plt.xlabel('Day')
plt.ylabel('Quantity')
plt.plot(pizza_day,color = 'red', marker = '*', linewidth = 3)

plt.show()
```

```
<Figure size 640x480 with 0 Axes>
```



```
In [249]: pizza_month = pizza.groupby('month')[['Amount']].sum()  
pizza_month
```

```
C:\Users\HP\AppData\Local\Temp\ipykernel_21296\3695142594.py:1: FutureWarning: The default of observed=False is deprecated and will be changed to True in a future version of pandas. Pass observed=False to retain current behavior or observed=True to adopt the future default and silence this warning.
```

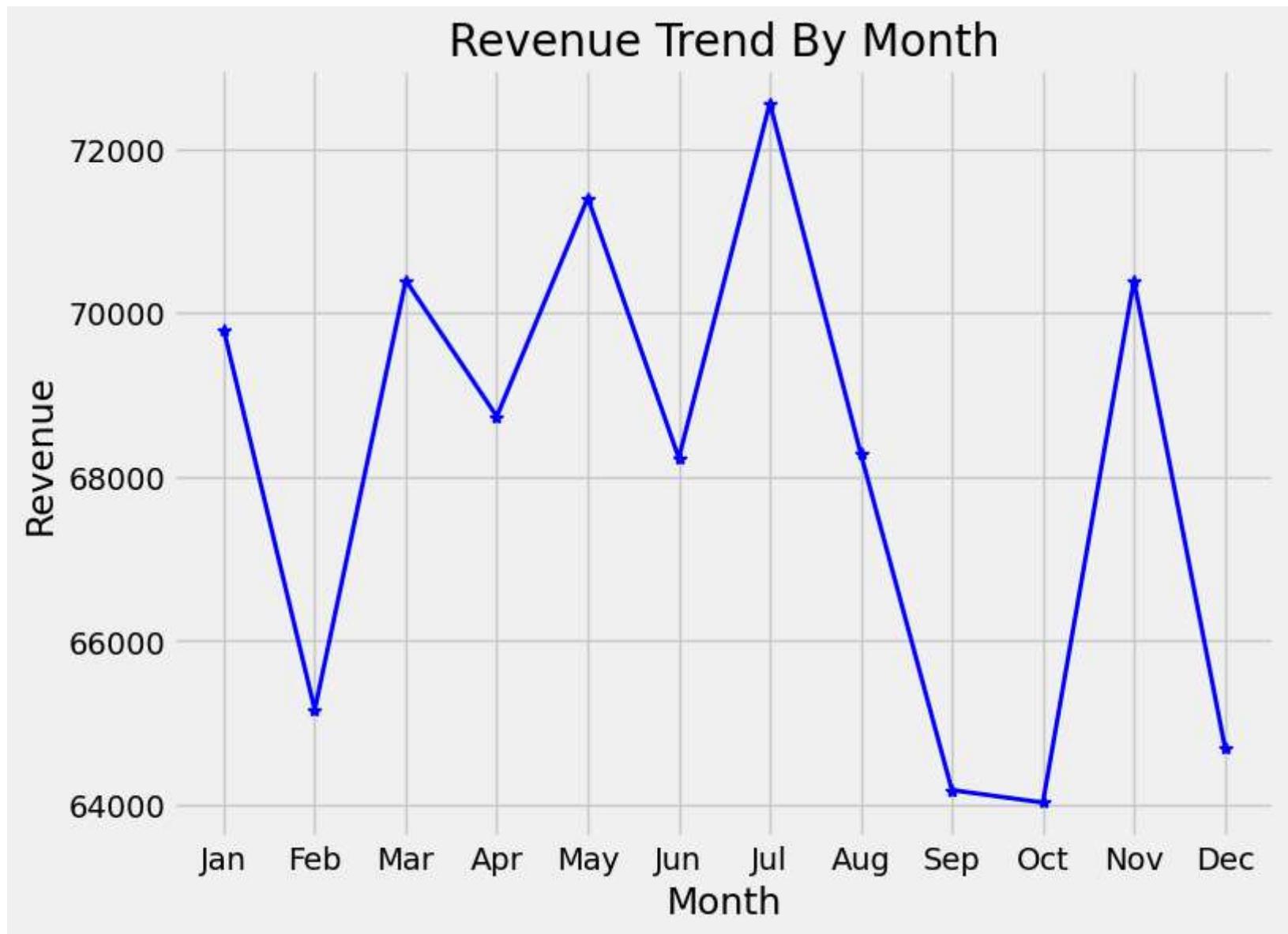
```
pizza_month = pizza.groupby('month')['Amount'].sum()
```

```
Out[249... month
Jan    69793.30
Feb    65159.60
Mar    70397.10
Apr    68736.80
May    71402.75
Jun    68230.20
Jul    72557.90
Aug    68278.25
Sep    64180.05
Oct    64027.60
Nov    70395.35
Dec    64701.15
Name: Amount, dtype: float64
```

```
In [250... plt.style.use('fivethirtyeight')
plt.tight_layout()
plt.figure(figsize = (8,6))
plt.title('Revenue Trend By Month')
plt.xlabel('Month')
plt.ylabel('Revenue')
plt.plot(pizza_month, color = 'blue', marker = '*', linewidth = 2)

plt.show()
```

```
<Figure size 640x480 with 0 Axes>
```



In []:

In []: