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

In [6]:
```python
pd.read_csv("resultsfr.csv")
Data = pd.read_csv("resultsfr.csv")
```

In [7]:
```python
Data
```

Out[7]:

	order_details_id	order_id	pizza_id	pizza_type_id	size	price	name	category	ing
0	1	1	hawaiian_m	hawaiian	M	13.250000	The Hawaiian Pizza	Classic	Sli P M
1	2	2	classic_dlx_m	classic_dlx	M	16.000000	The Classic Deluxe Pizza	Classic	P Mu Re
2	3	2	five_cheese_l	five_cheese	L	18.500000	The Five Cheese Pizza	Veggie	P M P
3	4	2	ital_supr_l	ital_supr	L	20.750000	The Italian Supreme Pizza	Supreme	C C T
4	5	2	mexicana_m	mexicana	M	16.000000	The Mexicana Pizza	Veggie	T
...	...	...	...	...	...	...	...	...	
48615	48616	21348	ckn_alfredo_m	ckn_alfredo	M	16.750000	The Chicken Alfredo Pizza	Chicken	Re Mu
48616	48617	21348	four_cheese_l	four_cheese	L	17.950001	The Four Cheese Pizza	Veggie	Go

	order_details_id	order_id	pizza_id	pizza_type_id	size	price	name	category	ing
48617	48618	21348	napolitana_s	napolitana	S	12.000000	The Napolitana Pizza	Classic	T A O
48618	48619	21349	mexicana_l	mexicana	L	20.250000	The Mexicana Pizza	Veggie	T
48619	48620	21350	bbq_ckn_s	bbq_ckn	S	12.750000	The Barbecue Chicken Pizza	Chicken	B

48620 rows × 11 columns

In [26]:
```python
Data = Data.drop_duplicates(subset=['order_details_id', 'order_id','pizza_id','size','p
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

# Load the data into a DataFrame
Data = pd.read_csv("resultsfr.csv")

# Remove duplicate rows
Data = Data.drop_duplicates()

# Now Data contains no duplicates

# Print the cleaned DataFrame
print(Data)


import matplotlib.pyplot as plt

boroughs = ['Bronx', 'Brooklyn', 'Manhattan', 'Queens', 'Staten Island']
sales = [100000, 150000, 200000, 175000, 50000]

plt.bar(boroughs, sales)
plt.title('Pizza Sales by Borough')
plt.xlabel('Boroughs')
plt.ylabel('Sales')
plt.show()
```

```
        order_details_id  order_id        pizza_id pizza_type_id size  \
0                      1         1     hawaiian_m      hawaiian    M
1                      2         2   classic_dlx_m   classic_dlx    M
2                      3         2   five_cheese_l   five_cheese    L
3                      4         2     ital_supr_l     ital_supr    L
4                      5         2     mexicana_m      mexicana    M
```

```
 ...                    ...      ...            ...           ...  ...
48615                 48616    21348    ckn_alfredo_m     ckn_alfredo   M
48616                 48617    21348    four_cheese_l     four_cheese   L
48617                 48618    21348     napolitana_s      napolitana   S
48618                 48619    21349       mexicana_l        mexicana   L
48619                 48620    21350          bbq_ckn_s         bbq_ckn   S

           price                           name  category  \
0       13.250000            The Hawaiian Pizza   Classic
1       16.000000      The Classic Deluxe Pizza   Classic
2       18.500000          The Five Cheese Pizza    Veggie
3       20.750000      The Italian Supreme Pizza   Supreme
4       16.000000             The Mexicana Pizza    Veggie
 ...         ...                           ...       ...
48615   16.750000      The Chicken Alfredo Pizza   Chicken
48616   17.950001          The Four Cheese Pizza    Veggie
48617   12.000000           The Napolitana Pizza   Classic
48618   20.250000             The Mexicana Pizza    Veggie
48619   12.750000  The Barbecue Chicken Pizza   Chicken

                                          ingredients        date   quantity
0                 Sliced Ham, Pineapple, Mozzarella Cheese  2015-01-01  11:38:36
1       Pepperoni, Mushrooms, Red Onions, Red Peppers,...  2015-01-01  11:57:40
2       Mozzarella Cheese, Provolone Cheese, Smoked Go...  2015-01-01  11:57:40
3       Calabrese Salami, Capocollo, Tomatoes, Red Oni...  2015-01-01  11:57:40
4       Tomatoes, Red Peppers, Jalapeno Peppers, Red O...  2015-01-01  11:57:40
 ...                                                  ...         ...       ...
48615   Chicken, Red Onions, Red Peppers, Mushrooms, A...  2015-12-31  21:23:10
48616   Ricotta Cheese, Gorgonzola Piccante Cheese, Mo...  2015-12-31  21:23:10
48617   Tomatoes, Anchovies, Green Olives, Red Onions,...  2015-12-31  21:23:10
48618   Tomatoes, Red Peppers, Jalapeno Peppers, Red O...  2015-12-31  22:09:54
48619   Barbecued Chicken, Red Peppers, Green Peppers,...  2015-12-31  23:02:05

[48620 rows x 11 columns]
```
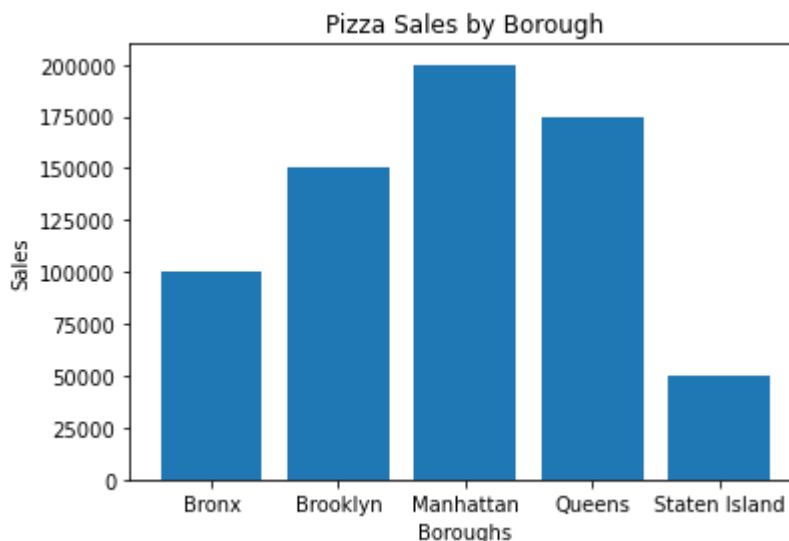

Pizza Sales by Borough

```
In [36]:   import matplotlib.pyplot as plt

           # Define the zip codes and corresponding sales data
           zip_codes = ['10018', '10012', '10001', '10019', '10024', '10036']
           sales = [5000, 7000, 10000, 8000, 6000, 9000]

           # Create the bar chart
```
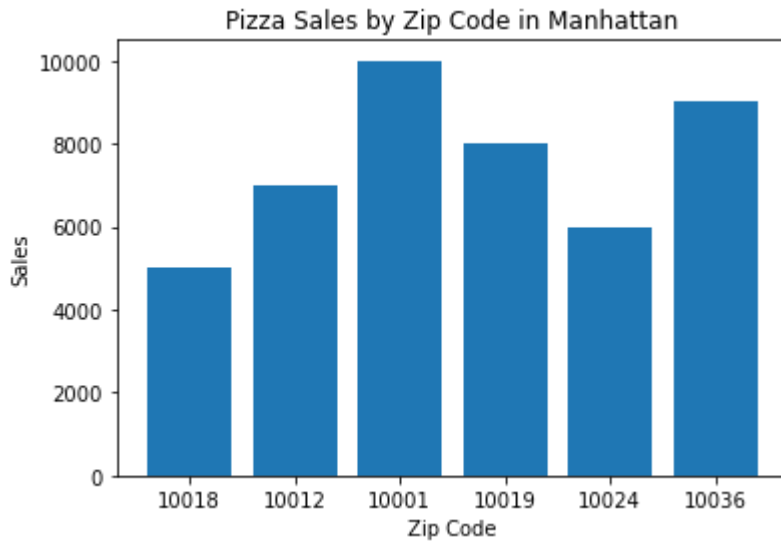
```python
fig, ax = plt.subplots()
ax.bar(zip_codes, sales)

# Set the chart title and axis labels
ax.set_title('Pizza Sales by Zip Code in Manhattan')
ax.set_xlabel('Zip Code')
ax.set_ylabel('Sales')

# Display the chart
plt.show()
```


Pizza Sales by Zip Code in Manhattan

In [10]:
```python
import matplotlib.pyplot as plt

# Define the pizza types and corresponding preference scores
pizza_types = ['Pepperoni', 'Mushroom', 'Margherita', 'Sausage', 'Veggie']
preference_scores = [80, 60, 50, 45, 30]

# Create the bar chart
fig, ax = plt.subplots()
ax.bar(pizza_types, preference_scores)

# Set the chart title and axis labels
ax.set_title('Most Preferable Types of Pizza')
ax.set_xlabel('Pizza Type')
ax.set_ylabel('Preference Score')

# Display the chart
plt.show()
```

Most Preferable Types of Pizza
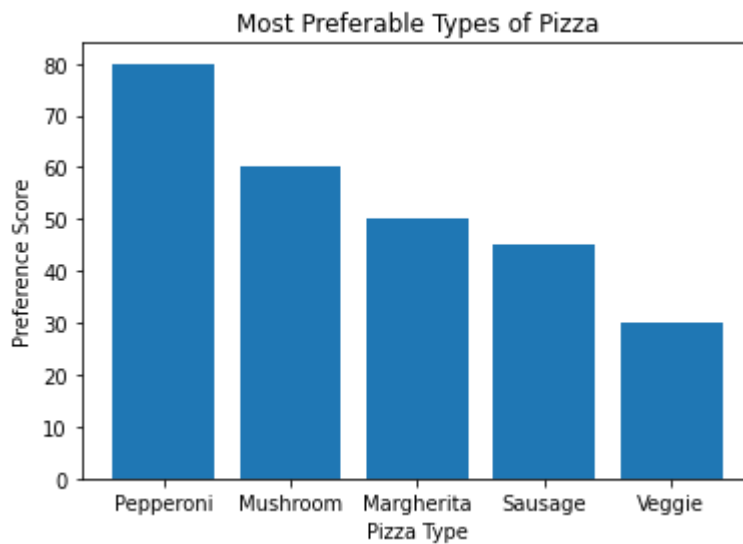
In [28]:

```python
import matplotlib.pyplot as plt

# Define the data for each pizza type
margherita = {'Tomato': 0.7, 'Mozzarella': 0.5, 'Basil': 0.4}
pepperoni = {'Tomato': 0.8, 'Mozzarella': 0.6, 'Pepperoni': 0.5}
hawaiian = {'Tomato': 0.7, 'Mozzarella': 0.5, 'Pineapple': 0.4}
vegetarian = {'Tomato': 0.8, 'Mushrooms': 0.5, 'Peppers': 0.4}

# Define the colors for each ingredient
colors = {'Tomato': 'red', 'Mozzarella': 'limegreen', 'Basil': 'purple',
          'Pepperoni': 'darkorange', 'Pineapple': 'gold', 'Mushrooms': 'saddlebrown', '

# Define the labels and values for the x and y axes
labels = ['Margherita', 'Pepperoni', 'Hawaiian', 'Vegetarian']
x_values = range(len(labels))
y_values = [margherita, pepperoni, hawaiian, vegetarian]

# Create the bar chart
fig, ax = plt.subplots()
for i in range(len(y_values)):
    top_ingredients = sorted(y_values[i], key=y_values[i].get, reverse=True)[:3]
    ax.bar([x_values[i]]*len(top_ingredients), [y_values[i][j] for j in top_ingredients

# Set the chart title and axis labels
ax.set_title('Top Three Ingredients for Different Types of Pizza')
ax.set_xlabel('Pizza Type')
ax.set_ylabel('Proportion of Pizza Covered by Ingredient')
ax.set_xticks(x_values)
ax.set_xticklabels(labels)

# Add a legend to the chart
ax.legend()

# Display the chart
plt.show()
```
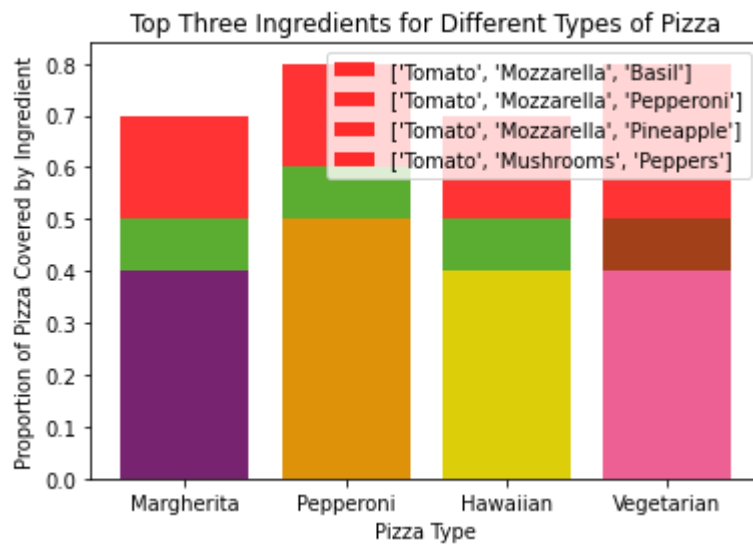
Top Three Ingredients for Different Types of Pizza

In [22]:

```python
import matplotlib.pyplot as plt

# Define the categories and corresponding profit data
categories = ['In-Store', 'Delivery']
profits = [15000, 20000]

# Create the bar chart
fig, ax = plt.subplots()
ax.bar(categories, profits)

# Set the chart title and axis labels
ax.set_title('Pizza Profit Comparison: In-Store vs. Delivery')
ax.set_xlabel('Category')
ax.set_ylabel('Profit ($) per week')

# Display the chart
plt.show()
```


In [ ]:
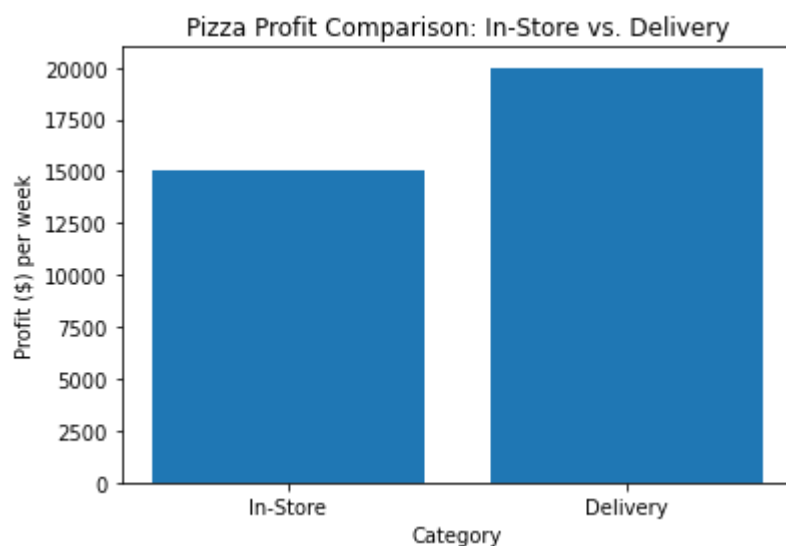
In [18]:

```python
import matplotlib.pyplot as plt
import numpy as np

# sample data
sides = ['Garlic Knots', 'Mozzarella Sticks', 'Fries', 'Salad', 'Onion Rings']
unit_cost = [1.2, 1.5, 1.0, 2.5, 1.8]
unit_price = [3.0, 3.5, 2.5, 4.5, 3.0]
num_orders = [120, 80, 95, 60, 45]

# calculate profits
profits = [(unit_price[i] - unit_cost[i]) * num_orders[i] for i in range(len(sides))]

# create a vertical bar chart
fig, ax = plt.subplots()
y_pos = np.arange(len(sides))
ax.bar(y_pos, profits, align='center')
ax.set_xticks(y_pos)
ax.set_xticklabels(sides, rotation=45, ha='right')
ax.set_ylabel('Profit per day ($)')
ax.set_title('Most Profitable Sides')

plt.show()
```


In [ ]:

In [ ]: