realtor-analysis-oregon

April 27, 2024

[2]:
```
import pandas as pd

df = pd.read_csv("scraped_data_oregon.csv")

# Preprocessing:
df['Bathrooms'] = df['Bathrooms'].replace({25: 2.5, 21:2.5, 15: 1.5, 55: 5.5,␣
↪35: 3.5, 45:4.5})

# Function to add a comma before "Portland" in each address for geocoding
def add_comma_before_portland(address):
    if isinstance(address, str):
        return address.replace("Portland", ", Portland")
    else:
        return None

df['Address'] = df['Address'].apply(add_comma_before_portland)
print(df)
```

```
         Price  Bedrooms  Bathrooms    Sqft  \
0    1599995.0       7.0        6.0  4591.0
1     549000.0       4.0        2.5  1452.0
2    1050000.0       4.0        3.0  2895.0
3    1025000.0       4.0        3.0  3506.0
4     510000.0       3.0        2.5  2355.0
..         …       …          …      …
281  2150000.0       3.0        3.5  3814.0
282   300000.0       2.0        1.0  7047.0
283   675000.0       3.0        2.0  2062.0
284   468900.0       2.0        2.0  1206.0
285        NaN       NaN        NaN     NaN

                                          Address  ZIP Code
0         15661 NW Gooderham St, Portland, OR 97229   97229.0
1              2601 SE 141st St, Portland, OR 97236   97236.0
2              2505 NE 45th Ave, Portland, OR 97213   97213.0
3           1528 SW Westwood Ct, Portland, OR 97239   97239.0
4              8644 NE Dyer St, Portland, OR 97220   97220.0
..                                              …       …
```

```
281    1414 SW 3rd Ave Apt 3001, Portland, OR 97201   97201.0
282              8316 SE 74th Ave, Portland, OR 97206   97206.0
283              3327 SW 12th Ave, Portland, OR 97239   97239.0
284  1710 S Harbor Way Unit 304, Portland, OR 97201   97201.0
285                                             None       NaN

[286 rows x 6 columns]
```

[3]:
```
df.dropna(inplace=True)
```

[4]:
```
df.to_csv("preprocessed_scraped_oregon.csv", index=False)
```

[5]:
```
OR_df = pd.read_csv("preprocessed_scraped_oregon.csv")
```

[6]:
```
OR_df.tail()
```

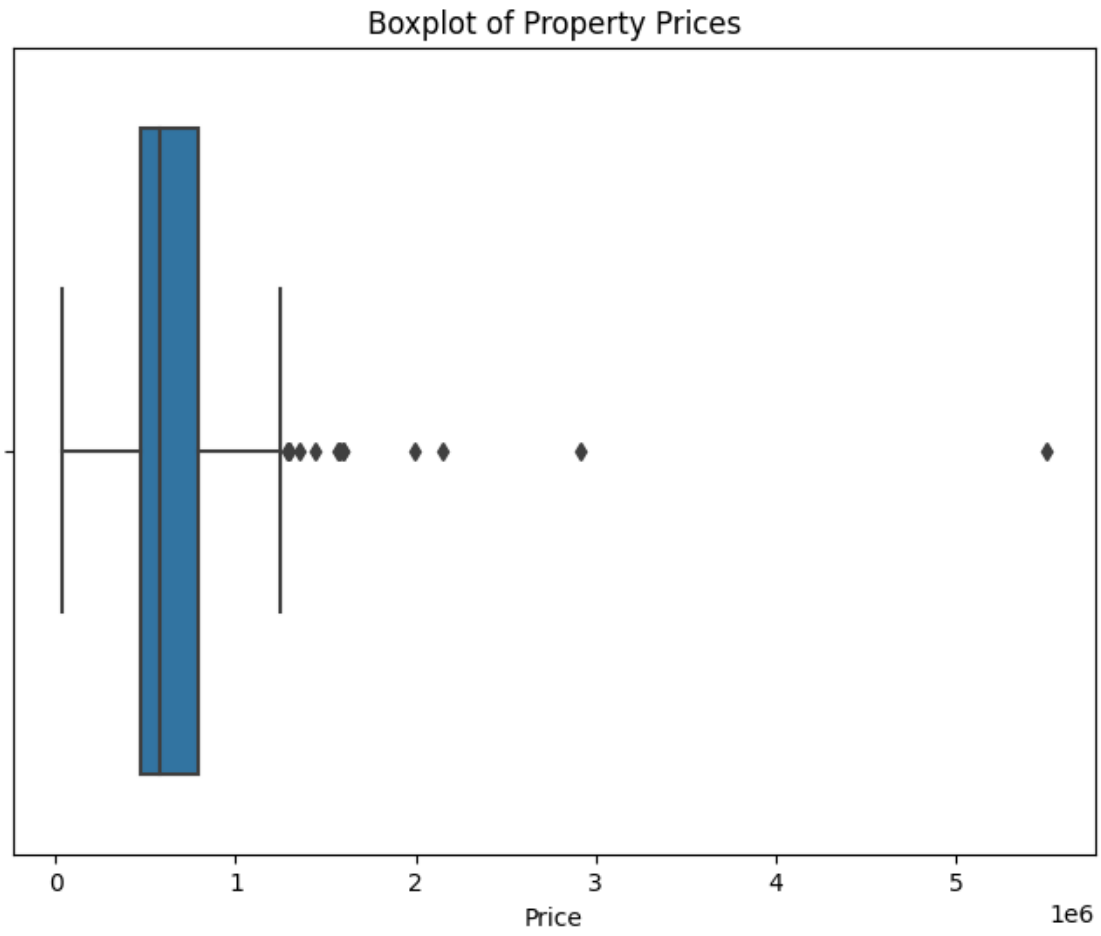
[6]:
```
         Price  Bedrooms  Bathrooms    Sqft  \
235   339777.0       1.0        1.5  7247.0
236  2150000.0       3.0        3.5  3814.0
237   300000.0       2.0        1.0  7047.0
238   675000.0       3.0        2.0  2062.0
239   468900.0       2.0        2.0  1206.0

                                          Address  ZIP Code
235  81 N Hayden Bay Dr Unit BLD-D, Portland, OR 97217   97217.0
236       1414 SW 3rd Ave Apt 3001, Portland, OR 97201   97201.0
237               8316 SE 74th Ave, Portland, OR 97206   97206.0
238               3327 SW 12th Ave, Portland, OR 97239   97239.0
239     1710 S Harbor Way Unit 304, Portland, OR 97201   97201.0
```

[7]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

average_price = OR_df['Price'].mean()

most_expensive_property = OR_df.loc[OR_df['Price'].idxmax()]
least_expensive_property = OR_df.loc[OR_df['Price'].idxmin()]

print("Average property price:", average_price)
print("_____________________________________________________________")
print("Most expensive property:\n", most_expensive_property)
print("_____________________________________________________________")
print("Least expensive property:\n", least_expensive_property)
```

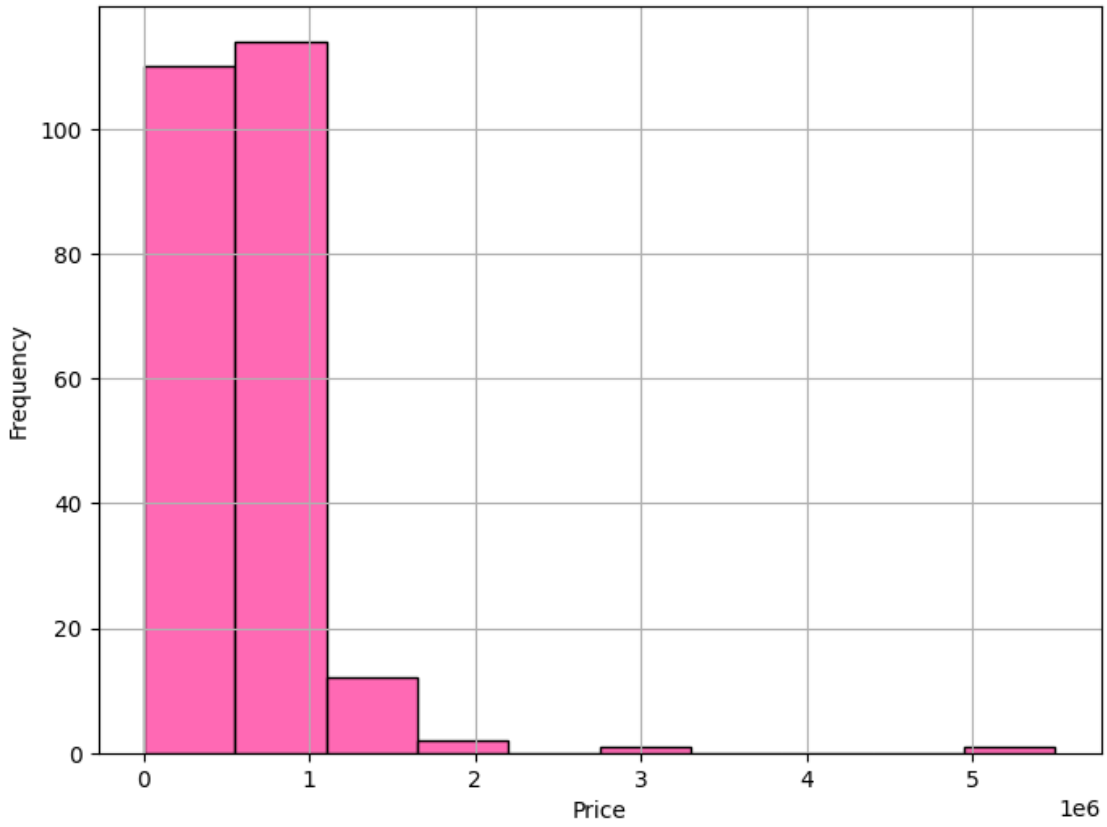
```
Average property price: 675666.2333333333

-------------------------------------------------------------
Most expensive property:
```

```
 Price                                              5500000.0
Bedrooms                                                6.0
Bathrooms                                               5.5
Sqft                                                 9831.0
Address      1816 SW Hawthorne Ter, Portland, OR 97201
ZIP Code                                            97201.0
Name: 57, dtype: object
------------------------------------------------------------
Least expensive property:
 Price                                                36000.0
Bedrooms                                                1.0
Bathrooms                                               1.0
Sqft                                                 4804.0
Address      16745 SE Division St Unit 53, Portland, OR 97236
ZIP Code                                            97236.0
Name: 128, dtype: object
```

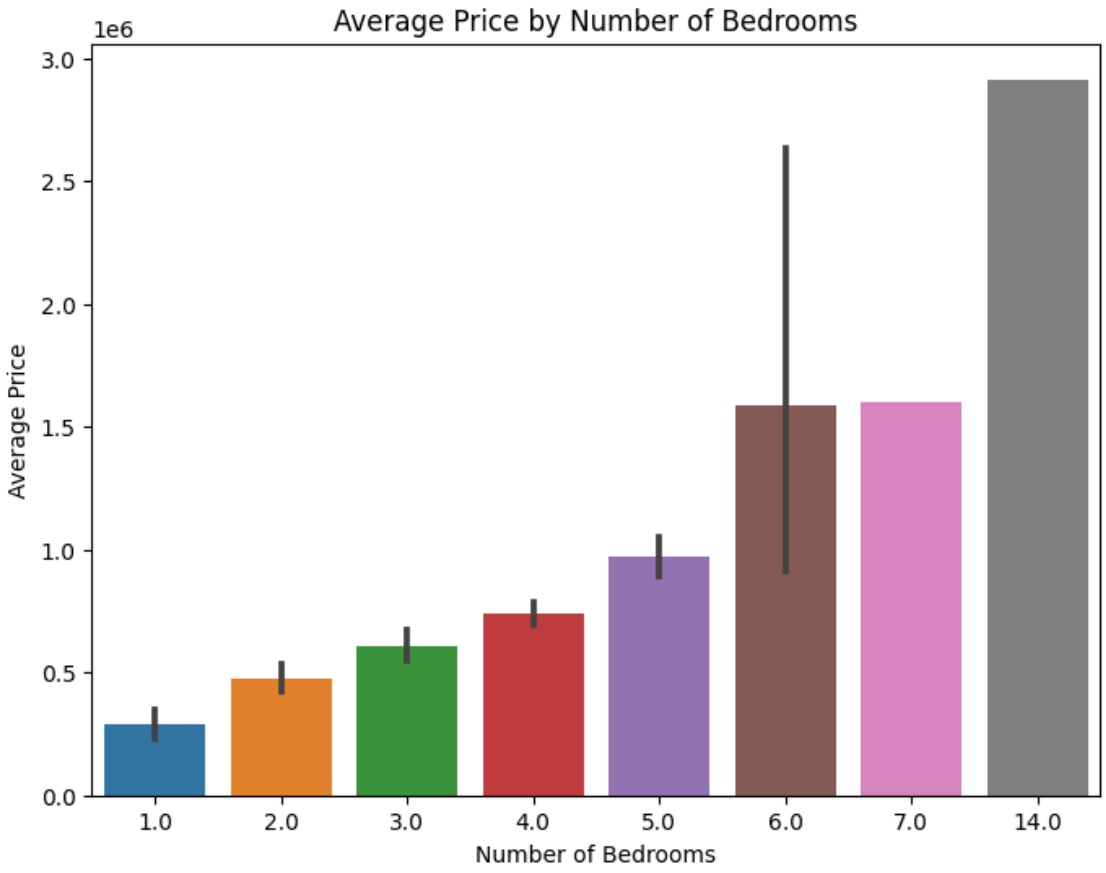
[8]:
```
plt.figure(figsize=(8, 6))
sns.boxplot(x='Price', data=OR_df, orient='h')
plt.title('Boxplot of Property Prices')
plt.xlabel('Price')
plt.show()
```



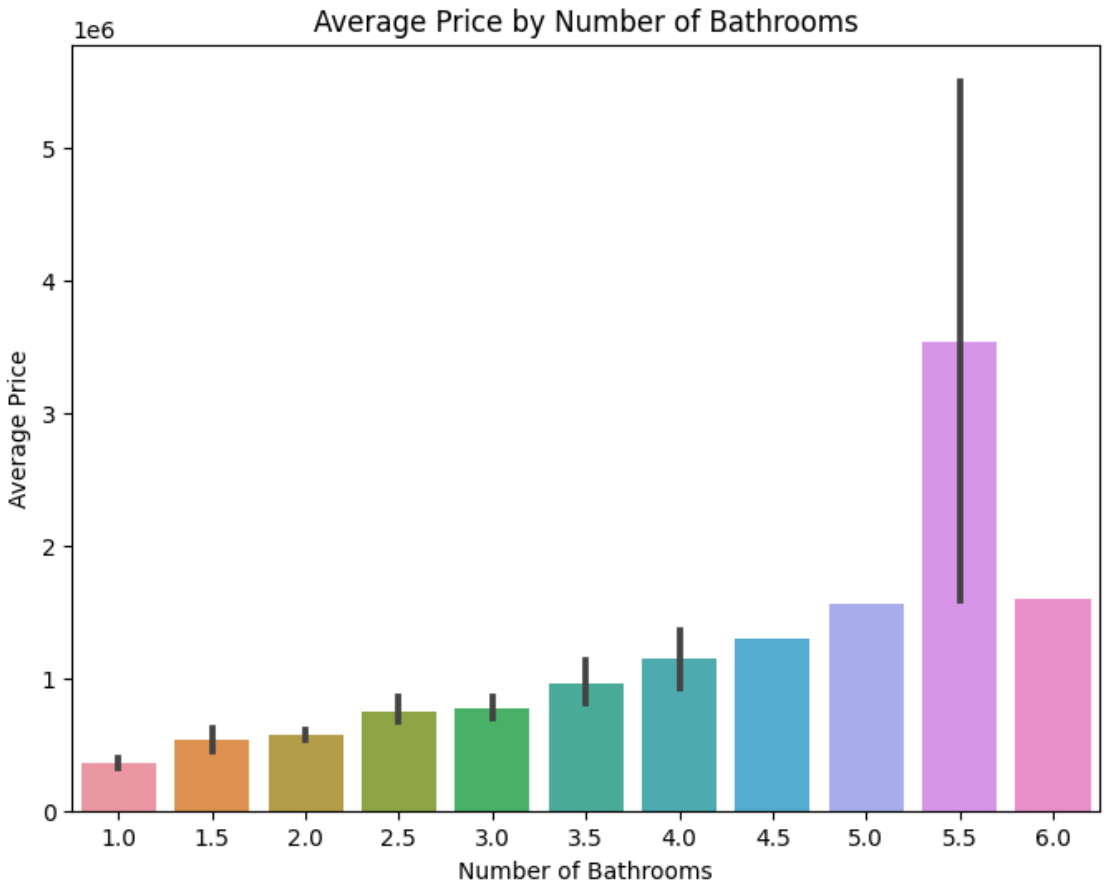
[9]:
```
price_range = (0, max(OR_df['Price']))

plt.figure(figsize=(8, 6))
plt.hist(OR_df['Price'], bins=10, range=price_range, color='hotpink',␣
 ↪edgecolor='black')

plt.xlabel('Price')
plt.ylabel('Frequency')
plt.grid(True)
plt.show()
```



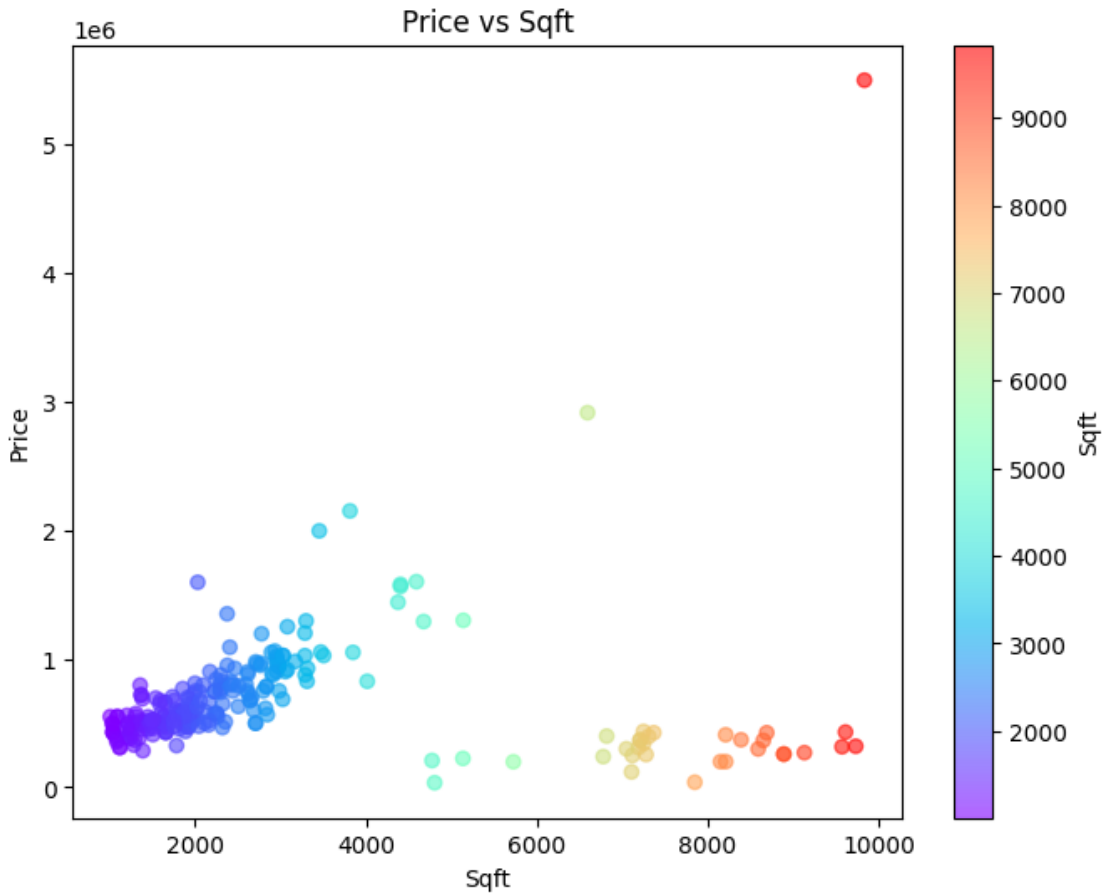
[10]:
```
# Barplot to visualize the average price by number of bedrooms
plt.figure(figsize=(8, 6))
sns.barplot(x='Bedrooms', y='Price', data=OR_df)
plt.title('Average Price by Number of Bedrooms')
plt.xlabel('Number of Bedrooms')
plt.ylabel('Average Price')
plt.show()
```



[11]:
```
# Barplot to visualize the average price by number of bathrooms
plt.figure(figsize=(8, 6))
sns.barplot(x='Bathrooms', y='Price', data=OR_df)
plt.title('Average Price by Number of Bathrooms')
plt.xlabel('Number of Bathrooms')
plt.ylabel('Average Price')
plt.show()
```

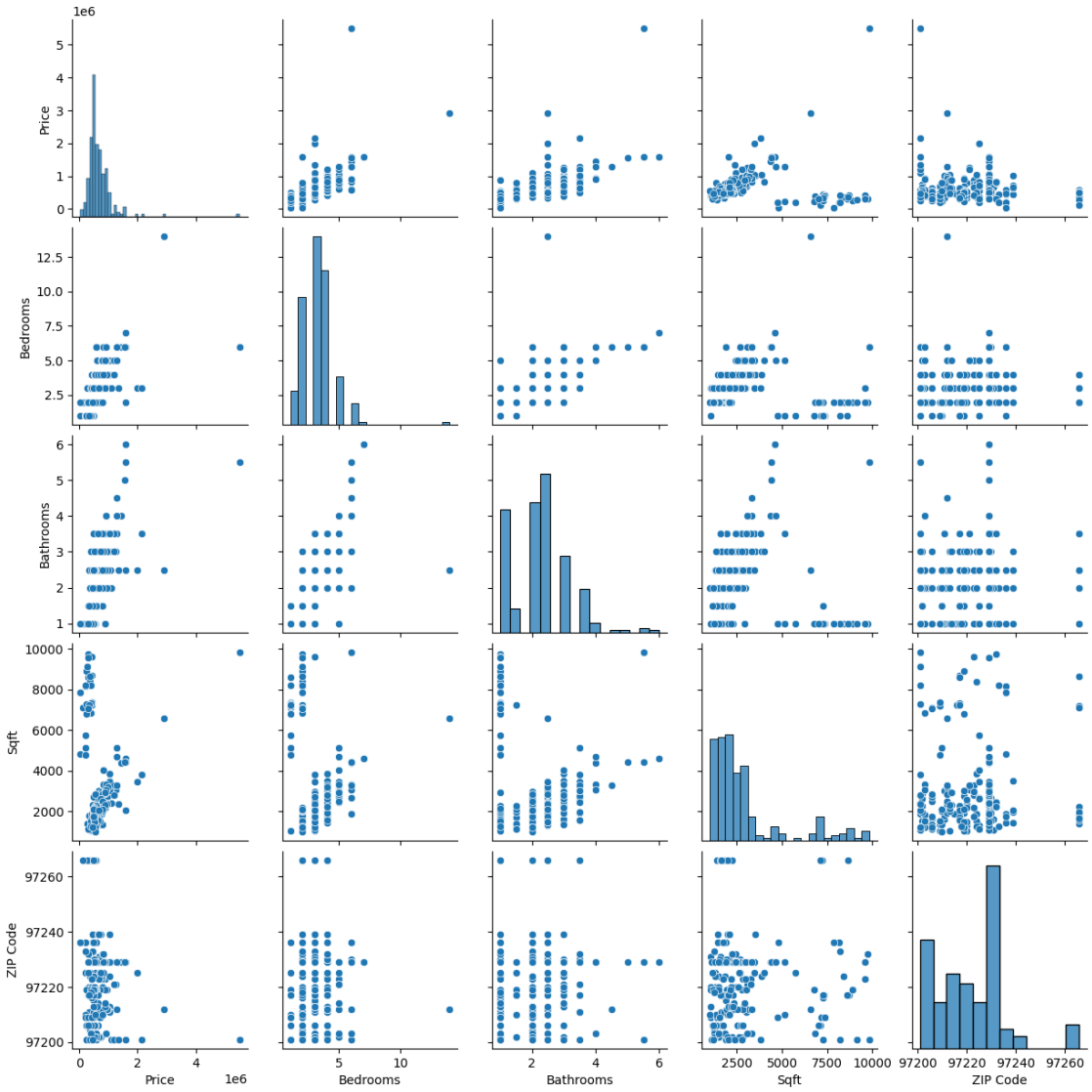


[12]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

plt.figure(figsize=(8, 6))
cmap = plt.cm.rainbow
norm = plt.Normalize(OR_df['Sqft'].min(), OR_df['Sqft'].max())
plt.scatter(OR_df['Sqft'], OR_df['Price'], c=OR_df['Sqft'], cmap=cmap,␣
 ↪norm=norm, alpha=0.6)

cbar = plt.colorbar()
cbar.set_label('Sqft')

# Add labels and title
plt.title('Price vs Sqft')
plt.xlabel('Sqft')
plt.ylabel('Price')
plt.show()
```

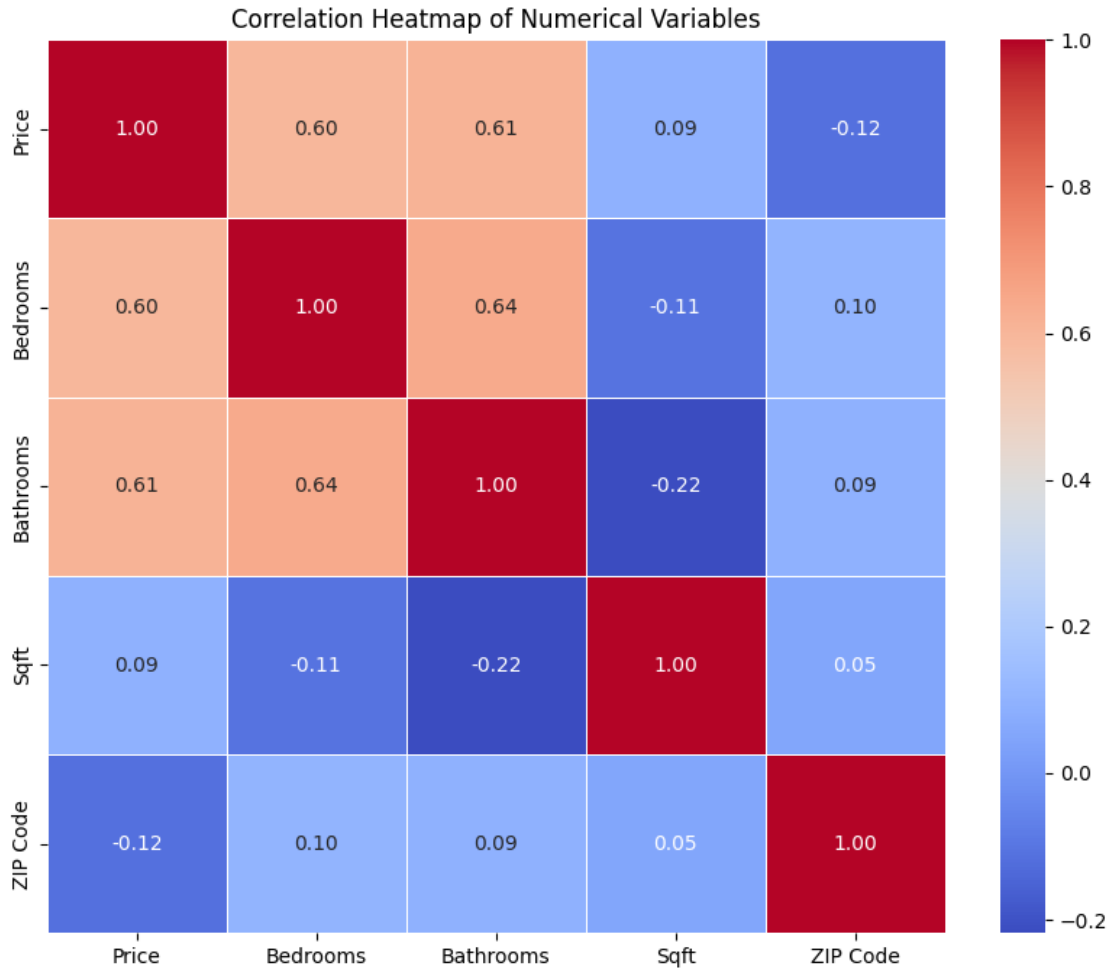


[13]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

sns.color_palette("magma")

plt.figure(figsize=(10, 8))
sns.pairplot(OR_df)
plt.show()
```

```
<Figure size 1000x800 with 0 Axes>
```



[14]:
```
import seaborn as sns
import matplotlib.pyplot as plt

corr_matrix = OR_df.corr()

plt.figure(figsize=(10, 8))
sns.heatmap(corr_matrix, annot=True, cmap='coolwarm', fmt=".2f", linewidths=0.5)
plt.title('Correlation Heatmap of Numerical Variables')
plt.show()
```



[17]:
```
import folium
import pandas as pd
from geopy.geocoders import Nominatim
import re

portland_map = folium.Map(location=[45.5051, -122.6750], zoom_start=10)

# Geocoder to get lat and long from address
geolocator = Nominatim(user_agent="portland_explorer")

for index, row in OR_df.iterrows():
    price = row['Price']
    bedrooms = row['Bedrooms']
    bathrooms = row['Bathrooms']
    sqft = row['Sqft']
    address = row['Address']
    zip_code = row['ZIP Code']
```

```
    # Geocode address to obtain latitude and longitude
    location = geolocator.geocode(address)
    if location:
        latitude = location.latitude
        longitude = location.longitude
        folium.Marker(location=[latitude, longitude],
                      popup=f"Price: ${price}, Bedrooms: {bedrooms}, Bathrooms:␣
↪{bathrooms}, Sqft: {sqft}, Address: {address}").add_to(portland_map)
    else:
        address_tigard = re.sub(r'Portland', 'Tigard', address, flags=re.
↪IGNORECASE)
        location_tigard = geolocator.geocode(address_tigard)
        if location_tigard:
            latitude = location_tigard.latitude
            longitude = location_tigard.longitude
            folium.Marker(location=[latitude, longitude],
                          popup=f"Price: ${price}, Bedrooms: {bedrooms},␣
↪Bathrooms: {bathrooms}, Sqft: {sqft}, Address: {address_tigard}").
↪add_to(portland_map)
        else:
            continue

portland_map.save("folium_oregon.html")
```

[23]:
```
portland_map
```

[23]:
```
<folium.folium.Map at 0x7de4a50af4d0>
```