Visualizing Data Cleaning using python

In [ ]:
```
import psycopg2
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import matplotlib.ticker as mtick
```

Database Connection

The code first establishes a connection to a PostgreSQL database named "DataCleaning" on localhost using the psycopg2 library. The username is "postgres", and the password is hidden for security reasons.

Data Extraction

It then uses pandas to execute a SQL query that selects all records from the "datacleaning" table in the database. The result is stored in a DataFrame named df.

In [ ]:
```
try:
    # Connect to your postgres DB
    conn = psycopg2.connect(
        dbname="DataCleaning",
        user="postgres",
        password="", #Hidden for security
        host="localhost",
        port="5432"
    )

except Exception as e:
    print("Unable to connect to the database")
    print(e)
```

Data Cleaning

The 'saleprice' column in the DataFrame is converted to numeric values, with any errors coerced.

Data Filtering

The DataFrame is filtered to include only properties with sale prices between $50,000 and$100,000. The filtered data is stored in df_filtered.

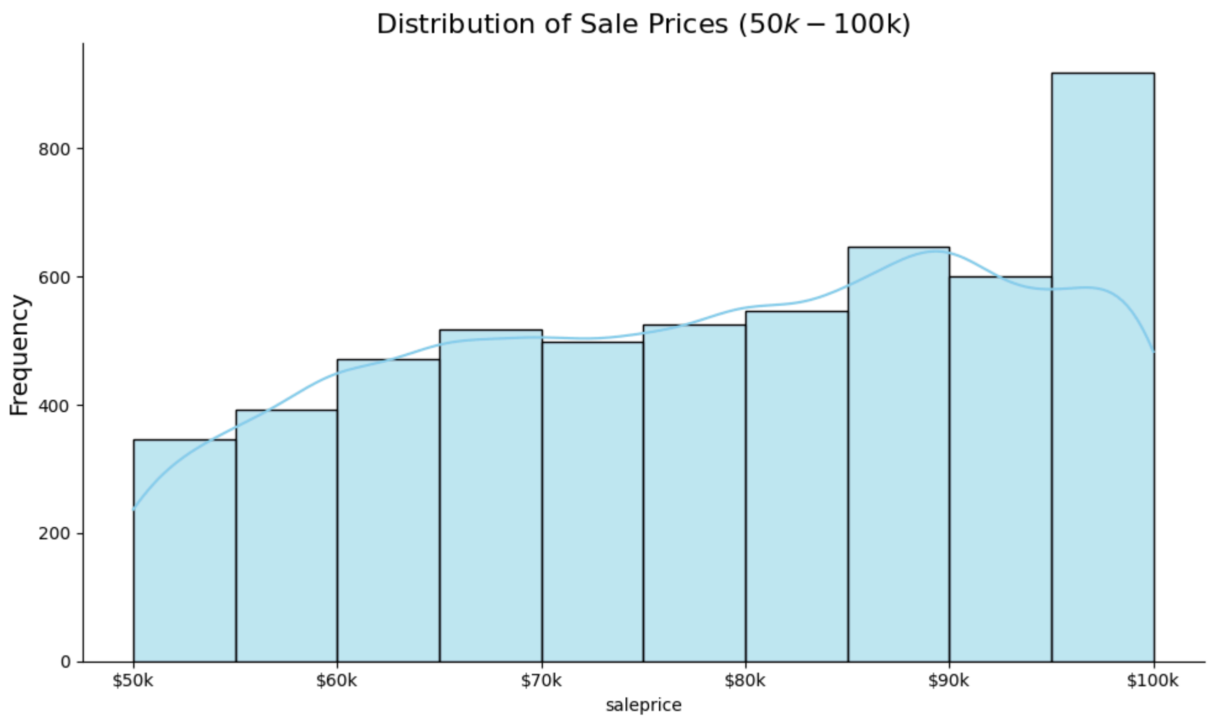
```
In [ ]: # Use pandas to execute SQL query and store the result in a DataFrame
        df = pd.read_sql_query('SELECT * FROM datacleaning', conn)

        # Convert 'saleprice' to numeric
        df['saleprice'] = pd.to_numeric(df['saleprice'], errors='coerce')

        # Filter DataFrame to include only properties with sale prices between $50,0
        df_filtered = df[(df['saleprice'] >= 50000) & (df['saleprice'] <= 100000)]
```

```
/var/folders/fs/k5g2qs7d3sv6p4b7blz3xqbr0000gn/T/ipykernel_44196/3757747823.
py:2: UserWarning: pandas only supports SQLAlchemy connectable (engine/conne
ction) or database string URI or sqlite3 DBAPI2 connection. Other DBAPI2 obj
ects are not tested. Please consider using SQLAlchemy.
  df = pd.read_sql_query('SELECT * FROM datacleaning', conn)
```

Graph 1:

Distribution of Sale Prices This histogram shows the distribution of sale prices for properties within the $50k-$100k range. The x-axis represents the sale price, and the y-axis represents the frequency of properties sold at that price. The bin width is set to $5000, meaning each bar represents a$5000 range of sale prices.

```
In [ ]: # Distribution of sale prices
        plt.figure(figsize=(10,6))
        ax = sns.histplot(df_filtered['saleprice'], kde=True, color='skyblue', binwi
        plt.title('Distribution of Sale Prices ($50k - $100k)', fontsize=16)
        plt.ylabel('Frequency', fontsize=14)
        plt.xticks([50000, 60000, 70000, 80000, 90000, 100000], ['$50k', '$60k', '$7
        ax.yaxis.set_major_formatter(mtick.StrMethodFormatter('{x:,.0f}'))
        sns.despine()
        plt.tight_layout()
        plt.show()
```

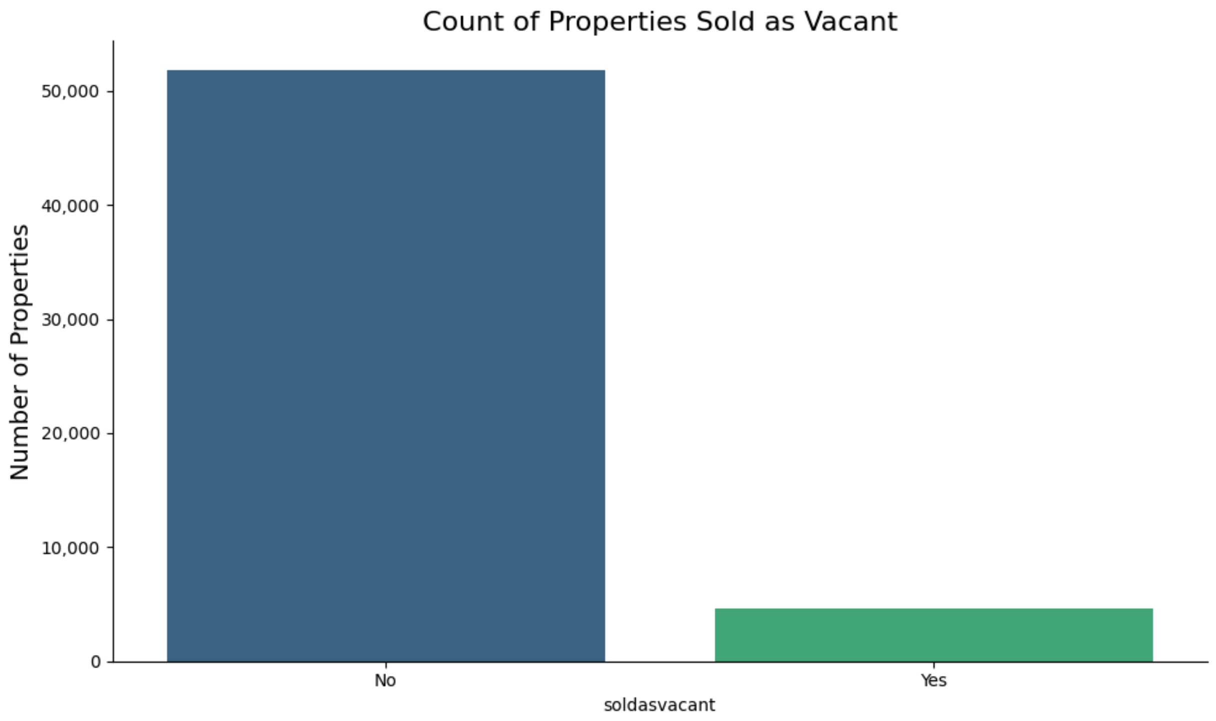


Graph 2:

Count of Properties Sold as Vacant This bar chart shows the number of properties sold as vacant or not. The x-axis represents whether the property was sold as vacant, and the y-axis represents the number of properties.

In [ ]:
```
plt.figure(figsize=(10,6))
ax = sns.countplot(x='soldasvacant', data=df, palette="viridis")
plt.title('Count of Properties Sold as Vacant', fontsize=16)
plt.ylabel('Number of Properties', fontsize=14)
plt.xticks(fontsize=10)
ax.yaxis.set_major_formatter(mtick.StrMethodFormatter('{x:,.0f}'))
sns.despine()
plt.tight_layout()
plt.show()
```

```
/var/folders/fs/k5g2qs7d3sv6p4b7blz3xqbr0000gn/T/ipykernel_44196/2585481402.
py:2: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed
in v0.14.0. Assign the `x` variable to `hue` and set `legend=False` for the
same effect.

  ax = sns.countplot(x='soldasvacant', data=df, palette="viridis")
```

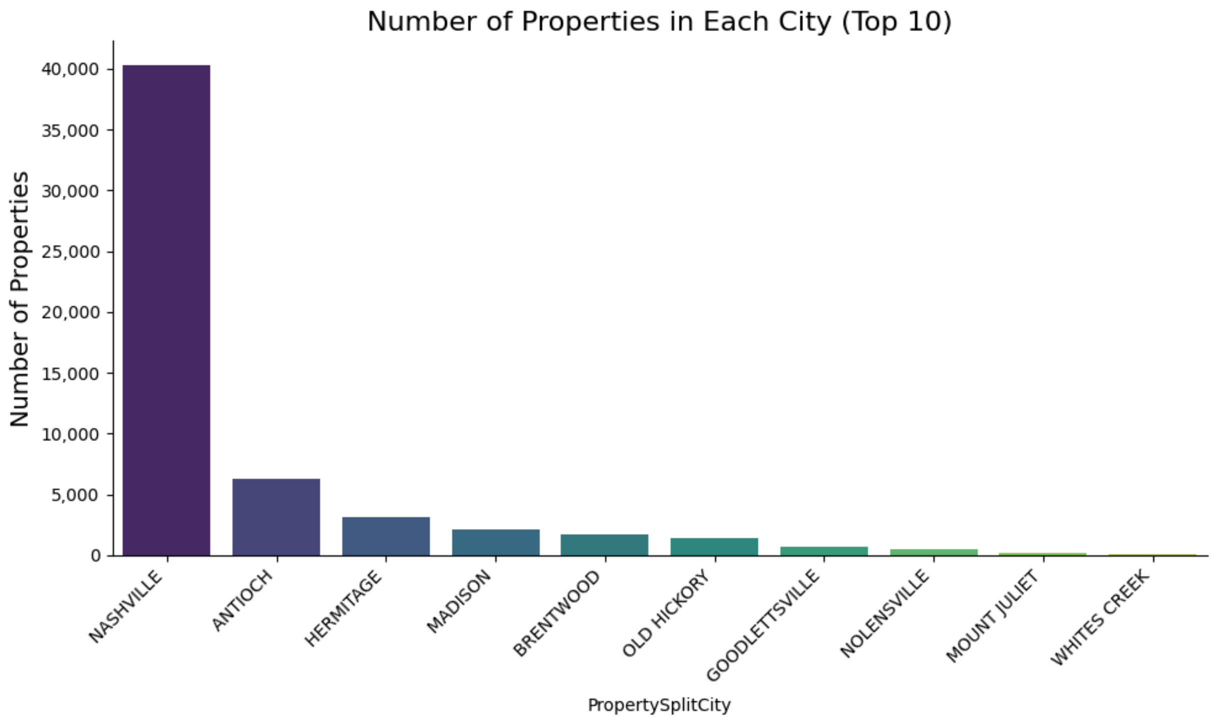


Graph 3:

Number of Properties in Each City This bar chart shows the number of properties in each city, limited to the top 10 cities. The x-axis represents the city, and the y-axis represents the number of properties in that city.

In [ ]:
```
city_counts = df['PropertySplitCity'].value_counts()
city_counts = city_counts[:10]  # Limit to top 10 cities
plt.figure(figsize=(10,6))
ax = sns.barplot(x=city_counts.index, y=city_counts.values, palette="viridis
plt.title('Number of Properties in Each City (Top 10)', fontsize=16)
plt.ylabel('Number of Properties', fontsize=14)
plt.xticks(rotation=45, ha='right', fontsize=10)
ax.yaxis.set_major_formatter(mtick.StrMethodFormatter('{x:,.0f}'))
sns.despine()
plt.tight_layout()
plt.show()
```

```
/var/folders/fs/k5g2qs7d3sv6p4b7blz3xqbr0000gn/T/ipykernel_44196/250103376.p
y:4: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed
in v0.14.0. Assign the `x` variable to `hue` and set `legend=False` for the
same effect.

  ax = sns.barplot(x=city_counts.index, y=city_counts.values, palette="virid
is")
```


Number of Properties in Each City (Top 10)
Number of Properties
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
NASHVILLE
ANTIOCH
HERMITAGE
MADISON
BRENTWOOD
OLD HICKORY
GOODLETTSVILLE
NOLENSVILLE
MOUNT JULIET
WHITES CREEK
PropertySplitCity