📊 Exploratory Data Analysis of Nifty 50 Historical Data

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🛠 Step 1: Import libraries

📥 Step 2: Load data

```
import pandas as pd

# Read the CSV file
df = pd.read_csv('/content/Nifty 50 Historical Data.csv')

# Show the first few rows to check
df.head()
```

	Date	Price	Open	High	Low	Vol.	Change %
0	07/04/2025	25,461.00	25,428.85	25,470.25	25,331.65	193.51M	0.22%
1	07/03/2025	25,405.30	25,505.10	25,587.50	25,384.35	293.43M	-0.19%
2	07/02/2025	25,453.40	25,588.30	25,608.10	25,378.75	309.83M	-0.35%
3	07/01/2025	25,541.80	25,551.35	25,593.40	25,501.80	260.67M	0.10%
4	06/30/2025	25,517.05	25,661.65	25,669.35	25,473.30	270.98M	-0.47%

Next steps: Generate code with df | View recommended plots | New interactive sheet

🧹 Step 3: Data cleaning

- Converted columns to numeric
- Converted Date column to datetime
- Sorted data by Date

```
# Check number of rows and columns
print(df.shape)

# Check data types and non-null counts
df.info()
```

```
(248, 7)
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 248 entries, 0 to 247
Data columns (total 7 columns):
 #   Column    Non-Null Count  Dtype 
---  ------    --------------  ----- 
 0   Date      248 non-null    object
 1   Price     248 non-null    object
 2   Open      248 non-null    object
 3   High      248 non-null    object
 4   Low       248 non-null    object
 5   Vol.      248 non-null    object
 6   Change %  248 non-null    object
dtypes: object(7)
memory usage: 13.7+ KB
```

```
print(df.isnull().sum())
```

```
Date        0
Price       0
Open        0
High        0
Low         0
Vol.        0
Change %    0
dtype: int64
```

📊 Step 4: Descriptive statistics

- Overview of data: mean, median, min, max

```
# Convert numeric columns to proper numbers
cols_to_numeric = ['Price', 'Open', 'High', 'Low', 'Vol.', 'Change %']
for col in cols_to_numeric:
    df[col] = df[col].replace({',': '', 'M': 'e6', '%': ''}, regex=True)
    df[col] = pd.to_numeric(df[col], errors='coerce')

# Check again to confirm changes
df.info()

# Show basic stats
print(df.describe())
```

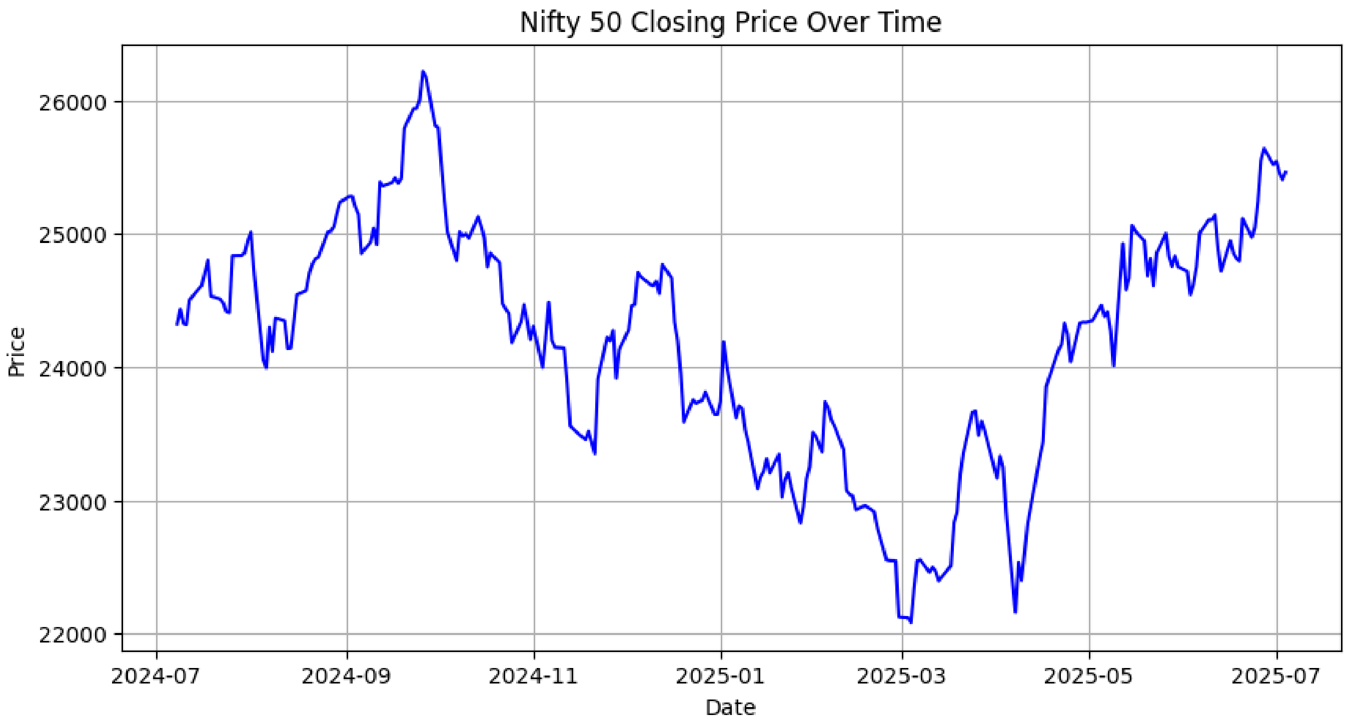
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 248 entries, 0 to 247
Data columns (total 7 columns):
 #   Column    Non-Null Count  Dtype  
---  ------    --------------  -----  
 0   Date      248 non-null    object 
 1   Price     248 non-null    float64
 2   Open      248 non-null    float64
 3   High      248 non-null    float64
 4   Low       248 non-null    float64
 5   Vol.      248 non-null    float64
 6   Change %  248 non-null    float64
dtypes: float64(6), object(1)
memory usage: 13.7+ KB
              Price          Open          High           Low          Vol.  \
count    248.000000    248.000000    248.000000    248.000000  2.480000e+02   
mean   24209.683468  24216.030847  24331.751210  24086.303024  3.166391e+08   
std      896.467258    900.541862    890.882244    903.990947  9.804912e+07   
min    22082.650000  21758.400000  22105.050000  21743.650000  3.881000e+07   
25%    23531.150000  23543.387500  23689.762500  23430.912500  2.572000e+08   
50%    24340.000000  24354.300000  24459.350000  24207.650000  2.981050e+08   
75%    24853.212500  24856.200000  24982.687500  24740.400000  3.578625e+08   
max    26216.050000  26248.250000  26277.350000  26151.400000  8.538900e+08   

         Change %  
count  248.000000  
```

```
     mean      0.022379
     std       0.858583
     min      -3.240000
     25%      -0.400000
     50%      -0.010000
     75%       0.452500
     max       3.820000
```

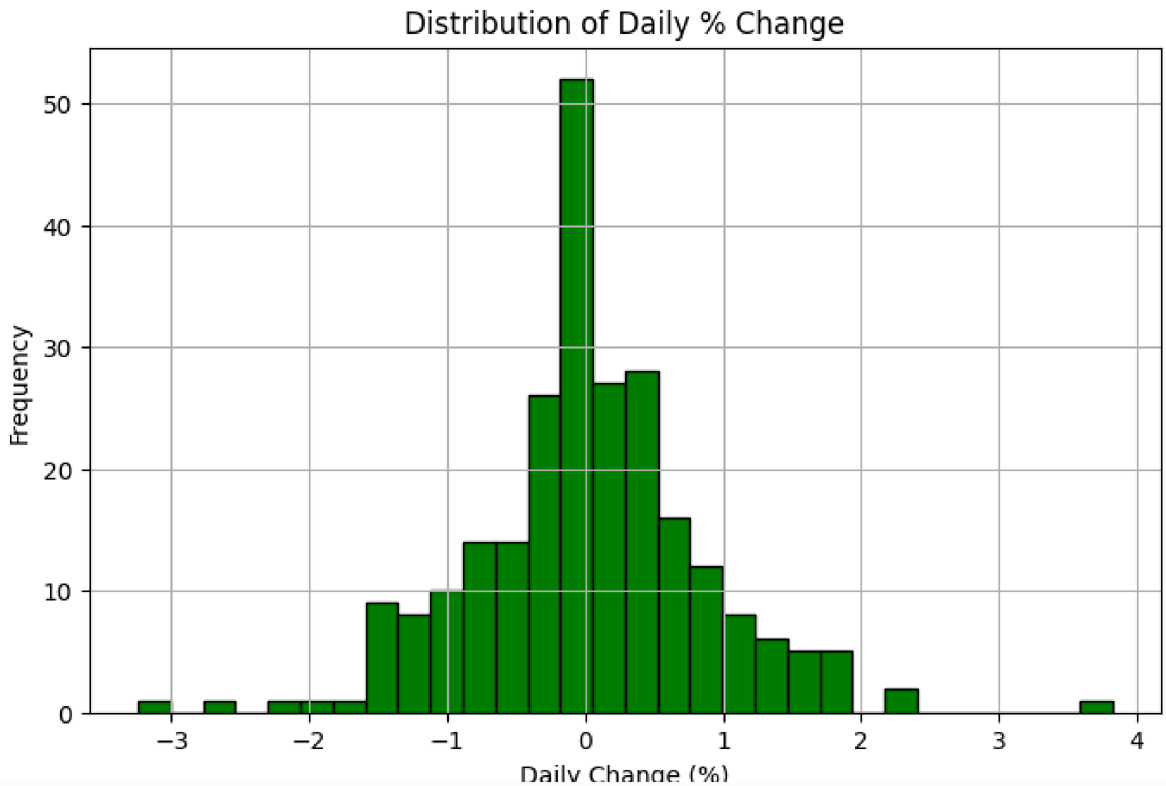
📈 Step 5: Visual exploration

- Line plot: Nifty 50 price over time
- Histogram: daily change %
- Correlation heatmap

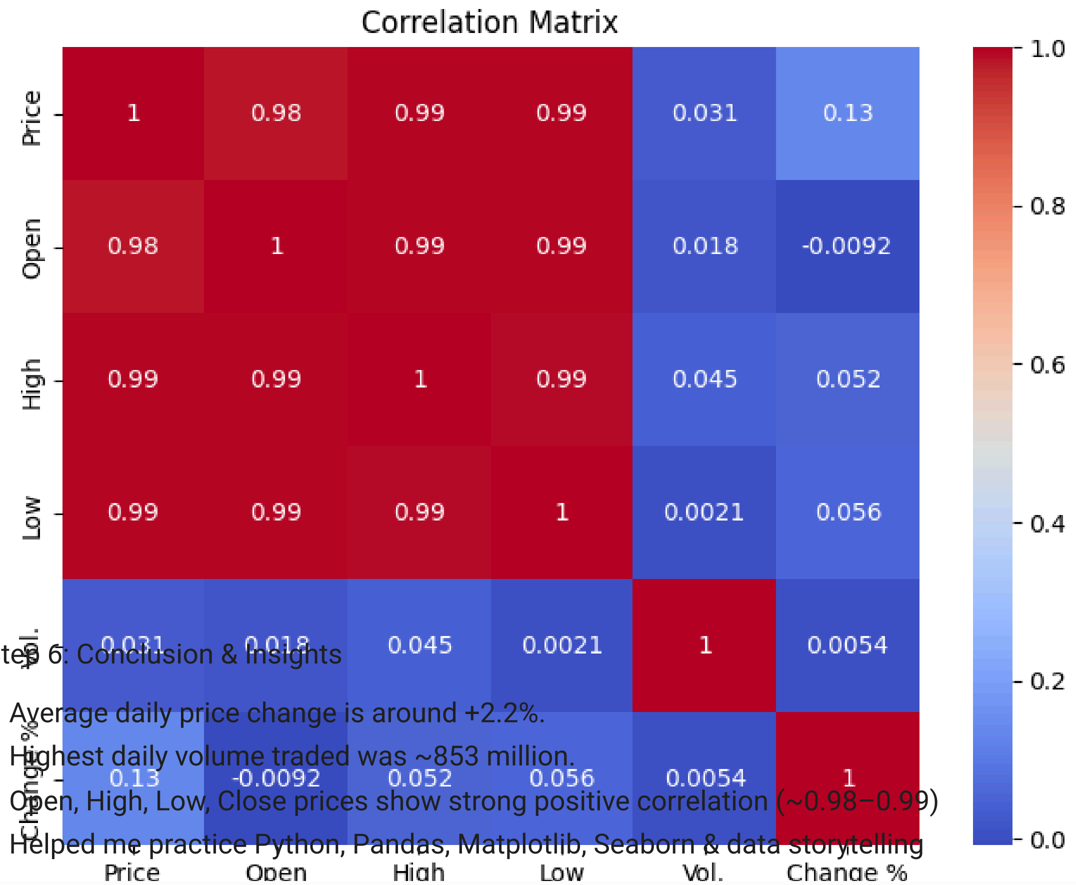
```
import matplotlib.pyplot as plt

# Convert 'Date' to datetime
df['Date'] = pd.to_datetime(df['Date'])

# Sort by date (oldest first)
df = df.sort_values('Date')

# Plot
plt.figure(figsize=(10,5))
plt.plot(df['Date'], df['Price'], color='blue')
plt.title('Nifty 50 Closing Price Over Time')
plt.xlabel('Date')
plt.ylabel('Price')
plt.grid(True)
plt.show()
```



```
plt.figure(figsize=(8,5))
plt.hist(df['Change %'], bins=30, color='green', edgecolor='black')
plt.title('Distribution of Daily % Change')
plt.xlabel('Daily Change (%)')
plt.ylabel('Frequency')
plt.grid(True)
plt.show()
```



```
import seaborn as sns

# Select numeric columns
numeric_cols = ['Price', 'Open', 'High', 'Low', 'Vol.', 'Change %']

# Compute correlation matrix
corr = df[numeric_cols].corr()

# Plot heatmap
plt.figure(figsize=(8,6))
sns.heatmap(corr, annot=True, cmap='coolwarm')
plt.title('Correlation Matrix')
plt.show()
```



✅ Step 6: Conclusion & Insights

- Average daily price change is around +2.2%.
- Highest daily volume traded was ~853 million.
- Open, High, Low, Close prices show strong positive correlation (~0.98–0.99)
- Helped me practice Python, Pandas, Matplotlib, Seaborn & data storytelling

Start coding or generate with AI.