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EDA - Lab8.ipynb

Lab1.py | Lab2.py | Lab3.py | Lab4.py | Lab5.py | Lab6.py | lab7.ipynb | Lab8.py U | Lab8.ipynb U | Lab9.ipynb U | Lab7.py U | Lab9.py U | tips.csv U

python > Lab Experiments > Lab 8 > Lab8.ipynb > # Correlation

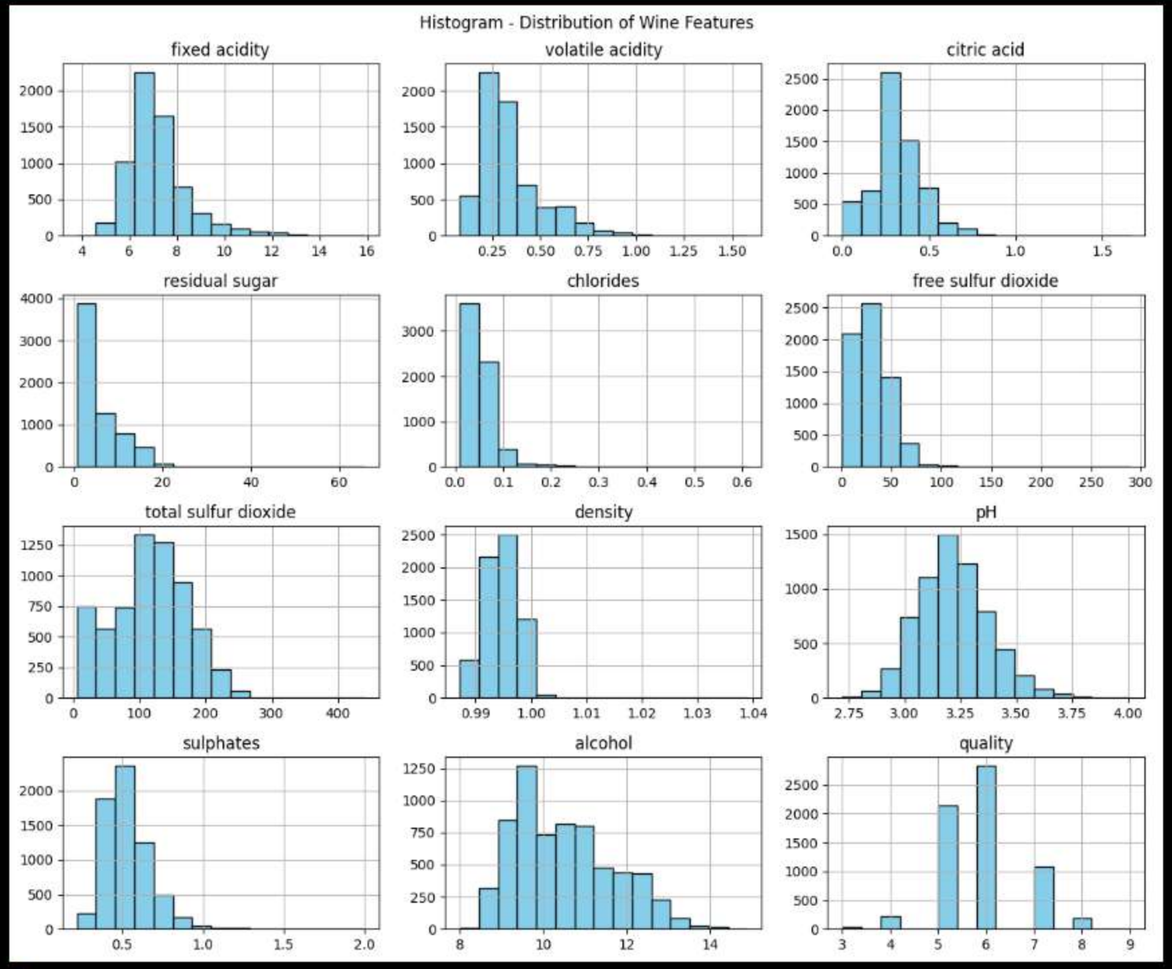
+ Code + Markdown | Run All | Restart | Clear All Outputs | Jupyter Variables | Outline ...

venv (Python 3.12.10)

```
# Histogram
df_wine[numeric_cols].hist(figsize=(12, 10), bins=15, color='skyblue', edgecolor='black')
plt.suptitle('Histogram - Distribution of Wine Features')
plt.tight_layout()
plt.show()
```

Ctrl+K for Command, Ctrl+L for Cascade

[6] ✓ 1.8s Python



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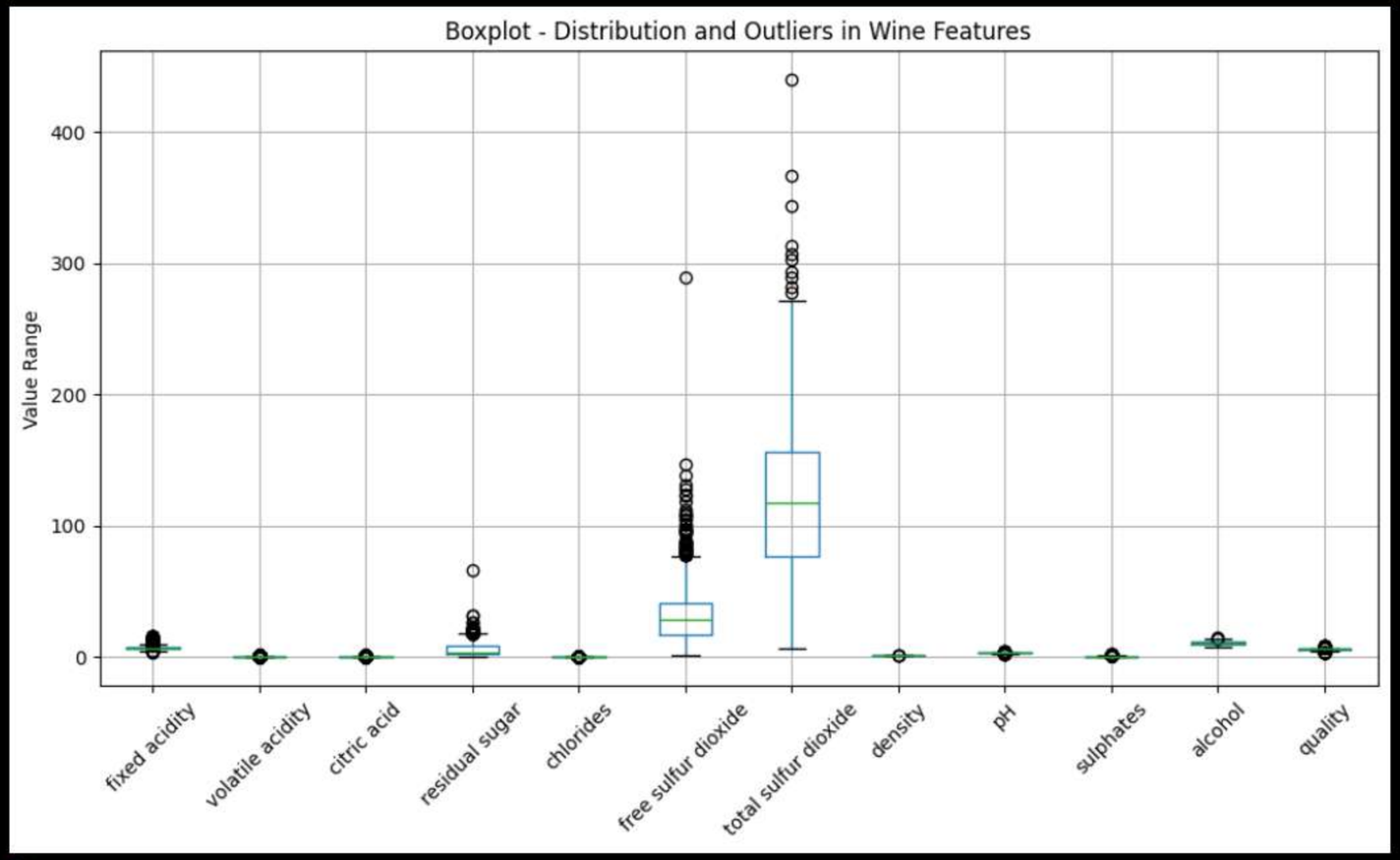
python > Lab Experiments > Lab 8 > Lab8.ipynb > # Boxplot

+ Code + Markdown | Run All | Restart | Clear All Outputs | Jupyter Variables | Outline ...

venv (Python 3.12.10)

```python
# Boxplot
plt.figure(figsize=(12, 6))
df_wine[numeric_cols].boxplot()
plt.title('Boxplot - Distribution and Outliers in Wine Features')
plt.xticks(rotation=45)
plt.ylabel('Value Range')
plt.show()
```

[7] ✓ 0.2s Python



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Lab1.py | Lab2.py | Lab3.py | Lab4.py | Lab5.py | Lab6.py | lab7.ipynb | Lab8.py U | Lab8.ipynb U | Lab9.ipynb U | Lab7.py U | Lab9.py U | tips.csv U

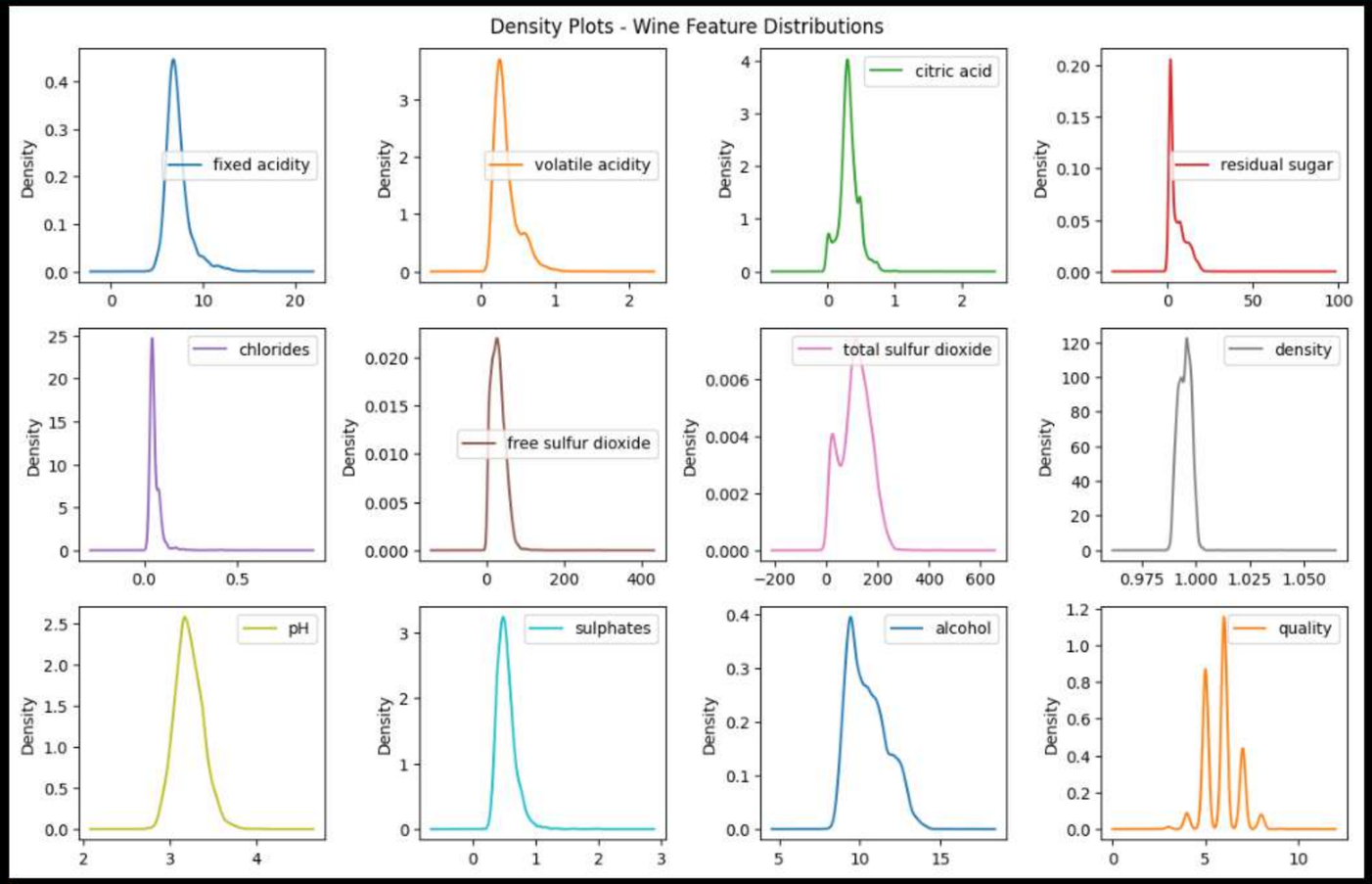
python > Lab Experiments > Lab 8 > Lab8.ipynb > # Boxplot

+ Code + Markdown | Run All | Restart | Clear All Outputs | Jupyter Variables | Outline ...

venv (Python 3.12.10)

```python
# Density Plots
df_wine[numeric_cols].plot(kind='density', subplots=True, layout=(4, 4), figsize=(12, 10), sharex=False)
plt.suptitle('Density Plots - Wine Feature Distributions')
plt.tight_layout()
plt.show()
```

[8] ✓ 5.0s Python



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Lab1.py | Lab2.py | Lab3.py | Lab4.py | Lab5.py | Lab6.py | lab7.ipynb | Lab8.py U | Lab8.ipynb U | Lab9.ipynb U | Lab7.py U | Lab9.py U | tips.csv U

python > Lab Experiments > Lab 8 > Lab8.ipynb > # Boxplot

+ Code + Markdown | Run All | Restart | Clear All Outputs | Jupyter Variables | Outline ... venv (Python 3.12.10)

```python
# Variability
variability = df_wine[numeric_cols].std().sort_values(ascending=False)
print('Feature Variability (Standard Deviation):')
print(variability)

high_var = variability.head(3)
print('Features with highest variability:')
for feature in high_var.index:
    print(f'- {feature}: Std = {high_var[feature]:.2f}')
```

[9] ✓ 0.0s Python

```
Feature Variability (Standard Deviation):
total sulfur dioxide    56.521855
free sulfur dioxide     17.749400
residual sugar           4.757804
fixed acidity            1.296434
alcohol                  1.192712
quality                  0.873255
volatile acidity         0.164636
pH                       0.160787
sulphates                0.148806
citric acid              0.145318
chlorides                0.035034
density                  0.002999
dtype: float64
Features with highest variability:
- total sulfur dioxide: Std = 56.52
- free sulfur dioxide: Std = 17.75
- residual sugar: Std = 4.76
```

```python
# Load Tips dataset directly from your system path
df_tips = pd.read_csv(r'tips.csv')  # Update path if needed
```

[5] ✓ 0.0s Python

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Lab1.py | Lab2.py | Lab3.py | Lab4.py | Lab5.py | Lab6.py | lab7.ipynb | Lab8.py U | Lab8.ipynb U | Lab9.ipynb U | Lab7.py U | Lab9.py U | tips.csv U

python > Lab Experiments > Lab 8 > Lab8.ipynb > # Boxplot

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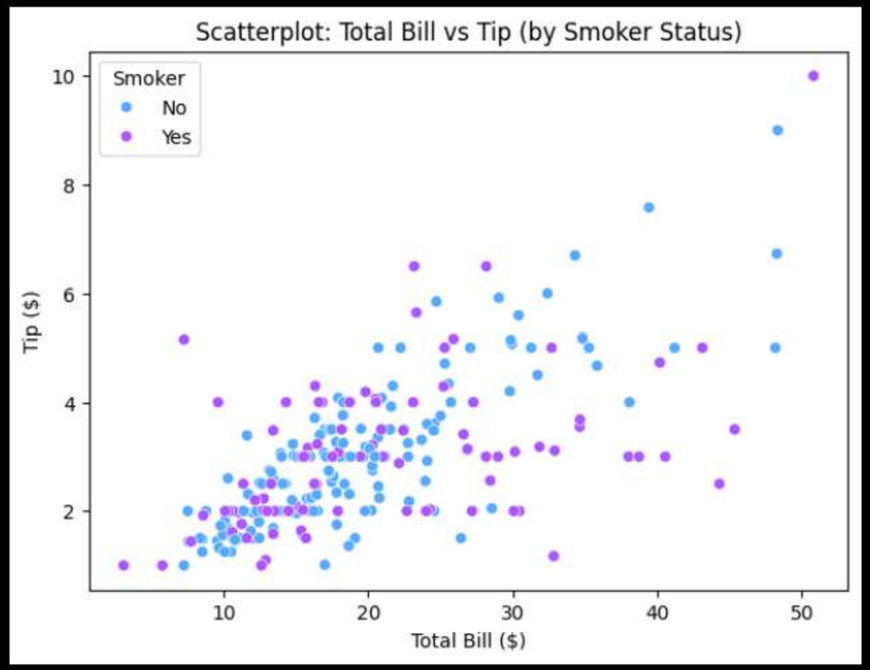
venv (Python 3.12.10)

```python
# Scatter Plot: total_bill vs tip (by smoker)
plt.figure(figsize=(7, 5))
sns.scatterplot(data=df_tips, x='total_bill', y='tip', hue='smoker', palette='cool')
plt.title('Scatterplot: Total Bill vs Tip (by Smoker Status)')
plt.xlabel('Total Bill ($)')
plt.ylabel('Tip ($)')
plt.legend(title='Smoker')
plt.show()
```

[10] ✓ 0.2s Python




```python
# Boxplot: Tip by Gender
plt.figure(figsize=(6, 5))
sns.boxplot(data=df_tips, x='sex', y='tip', palette='Set2')
```

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Lab1.py | Lab2.py | Lab3.py | Lab4.py | Lab5.py | Lab6.py | lab7.ipynb | Lab8.py U | Lab8.ipynb U | Lab9.ipynb U | Lab7.py U | Lab9.py U | tips.csv U

python > Lab Experiments > Lab 8 > Lab8.ipynb > # Boxplot

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venv (Python 3.12.10)

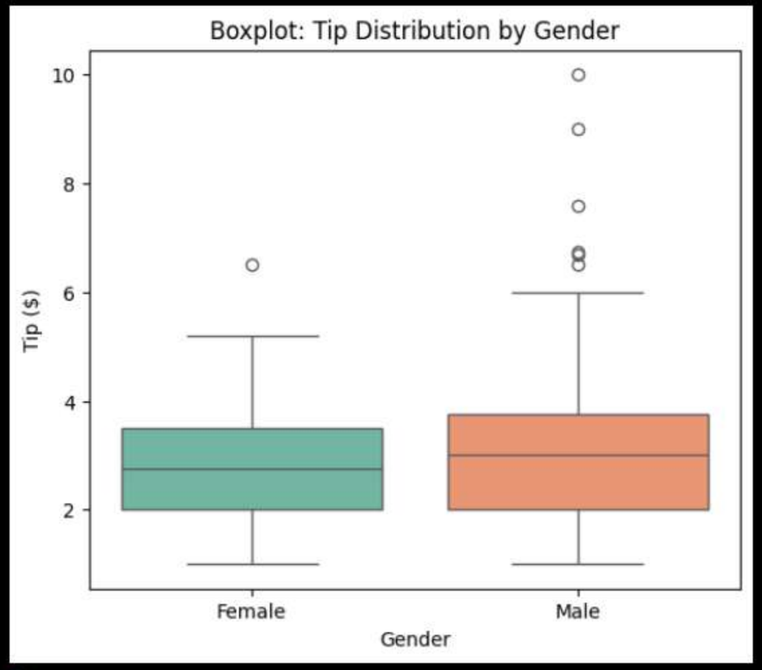
```python
# Boxplot: Tip by Gender
plt.figure(figsize=(6, 5))
sns.boxplot(data=df_tips, x='sex', y='tip', palette='Set2')
plt.title('Boxplot: Tip Distribution by Gender')
plt.xlabel('Gender')
plt.ylabel('Tip ($)')
plt.show()
```

[11] ✓ 0.2s Python

```
C:\Users\sakth\AppData\Local\Temp\ipykernel_8436\1707883276.py:3: 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.

  sns.boxplot(data=df_tips, x='sex', y='tip', palette='Set2')
```



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Lab1.py | Lab2.py | Lab3.py | Lab4.py | Lab5.py | Lab6.py | lab7.ipynb | Lab8.py U | Lab8.ipynb U | Lab9.ipynb U | Lab7.py U | Lab9.py U | tips.csv U

python > Lab Experiments > Lab 8 > Lab8.ipynb > # Boxplot

+ Code + Markdown | Run All | Restart | Clear All Outputs | Jupyter Variables | Outline ...

venv (Python 3.12.10)

```python
# Barplot: Average Total Bill by Day
plt.figure(figsize=(6, 5))
sns.barplot(data=df_tips, x='day', y='total_bill', ci=None, palette='viridis')
plt.title('Barplot: Average Total Bill by Day')
plt.xlabel('Day')
plt.ylabel('Average Total Bill ($)')
plt.show()
```

[12] ✓ 0.1s Python

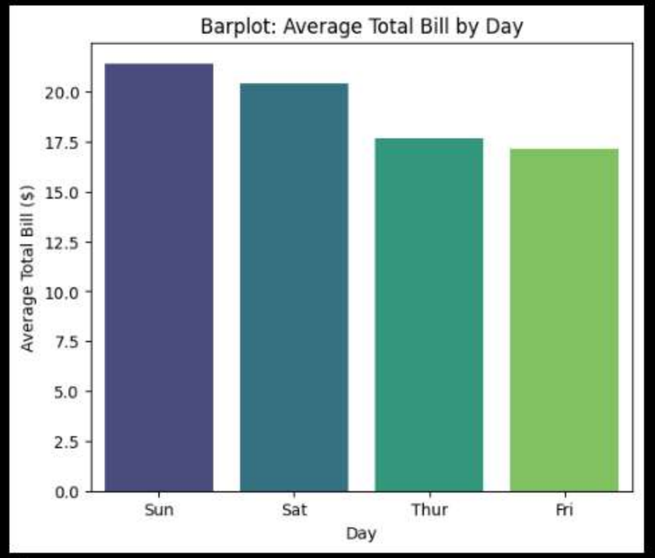
```
C:\Users\sakth\AppData\Local\Temp\ipykernel_8436\3816371505.py:3: FutureWarning:

The `ci` parameter is deprecated. Use `errorbar=None` for the same effect.

  sns.barplot(data=df_tips, x='day', y='total_bill', ci=None, palette='viridis')
C:\Users\sakth\AppData\Local\Temp\ipykernel_8436\3816371505.py:3: 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.

  sns.barplot(data=df_tips, x='day', y='total_bill', ci=None, palette='viridis')
```



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