PANDAS BASICS

PANEL DATA

Prepared by:
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L13-pandas-basics.ipynb

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+ Code + Markdown | Run All | Restart | Clear All Outputs | View data | Jupyter Variables | Outline ... | Python 3.13.0

+ Code + Markdown

pandas Basics

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```python
#%pip install pandas --upgrade
#%pip install matplotlib --upgrade
```

Python

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

Python

DataFrame

```python
# Creating dictionary
data = {
    "Name":['Henry','Owen','Ada'],
    "Age":[22,35,58],
    "Sex":['M','M','F']
}
```

Python

```python
# Creating DataFrame from dictionary
df = pd.DataFrame(data)
df
```

Open 'df' in Data Wrangler

Python

Series

```python
df['Name']
```

Python

```python
df['Age']
```

Python

```python
df['Sex']
```

Python

Descriptive Statistics

```python
# Voltage response data
voltage = np.array([
    [1,2,3,4,5,6,7,8],
    [12,5,9.1,3.3,24,18.5,15.2,np.nan],
    [2.8,4.5,6,9,11.7,14.8,17.3,20]
])
voltage = voltage.T
```

Python

```python
# Creating DataFrame from numpy array
df = pd.DataFrame(voltage,columns=['Measurement_No','Instrument_A','Instrument_B'])
df
```

Open 'df' in Data Wrangler

Python

```python
# Descriptive Statistics
df.describe()
```

Python

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Bar Chart

```python
# Mean of instrument A
a_mean = df['Instrument_A'].mean()
a_mean
```

```python
# Mean of instrument B
b_mean = df['Instrument_B'].mean()
b_mean
```

```python
# Bar Chart
plt.figure()
plt.bar(['A','B'],[a_mean,b_mean])
plt.title('Average Voltage by Instrument')
plt.ylabel('Voltage (V)')
plt.show()
```

csv to DataFrame

```python
# Creating DataFrame from csv file
df = pd.read_csv(r"raw\resistance-data.csv",
                 delimiter=",")
# Display infromation
df.info()
```

```python
# Display top 5 rows
df.head()
```

Open 'df' in Data Wrangler

```python
# Display last 5 rows
df.tail()
```

Open 'df' in Data Wrangler

```python
# Descriptive statistics
df.describe()
```

```python
#·Filtering·DataFrame·where·machine·is·Jaguar
jag = df[df['Machine'] == 'Jaguar']
jag
```

Open 'jag' in Data Wrangler

```python
# Mean of Jaguar machine
jag['Resistance'].mean()
```

```python
# Filtering DataFrame where machine is Panther
pan = df[df['Machine']=='Panther']
pan
```

Open 'pan' in Data Wrangler

```python
# Mean of Panther machine
pan['Resistance'].mean()
```

Bar Chart

```python
# Creating new DataFrame for the mean
df_w = df.groupby('Machine').mean().reset_index()
df_w
```

Open 'df_w' in Data Wrangler

```python
# Bar Chart
plt.figure()
plt.bar(df_w['Machine'],df_w['Resistance'])
plt.title('Average Resistance by Machine')
plt.ylabel('Resistance (ohms)')
plt.show()

```