+ 코드 + 텍스트

seaborn

- https://seaborn.pydata.org/api.html

```
import warnings
warnings.filterwarnings('ignore')
```

실습파일 구성

- PII.csv

- pandas Package

```
import pandas as pd
```

- .read_csv( )

```
url = 'https://raw.githubusercontent.com/rusita-ai/pyData/master/PII.csv'

DF = pd.read_csv(url)

DF.head()
```

	Name	Gender	Age	Grade	Picture	BloodType	Height	Weight
0	송태섭	남자	21	3	무	B	179.1	63.9
1	최유정	여자	23	1	유	A	177.1	54.9
2	이한나	여자	20	1	무	A	167.9	50.2
3	김소혜	여자	23	3	무	O	176.1	53.5
4	서태웅	남자	24	4	무	B	176.1	79.8

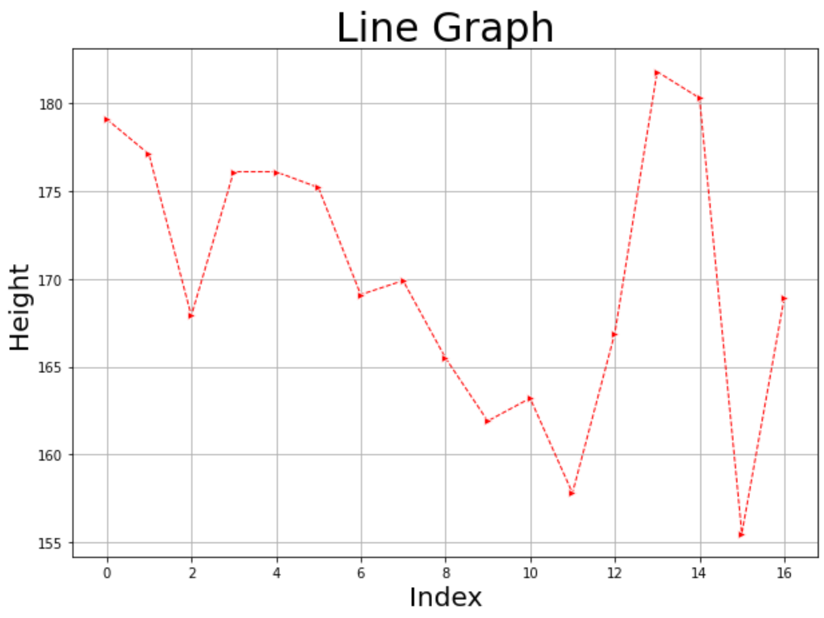
seaborn Package

```
import seaborn as sns
import matplotlib.pyplot as plt
```

I. 선 그래프

- https://seaborn.pydata.org/generated/seaborn.lineplot.html#seaborn.lineplot

```
plt.figure(figsize = (10, 7))
sns.lineplot(x = DF.index,
             y = DF.Height,
             linewidth = 1,
             color = 'r',
             marker = '>',
             linestyle = '--')
plt.title('Line Graph', size = 30)
plt.xlabel('Index', size = 20)
plt.ylabel('Height', size = 20)
plt.grid(True)
plt.show()
```

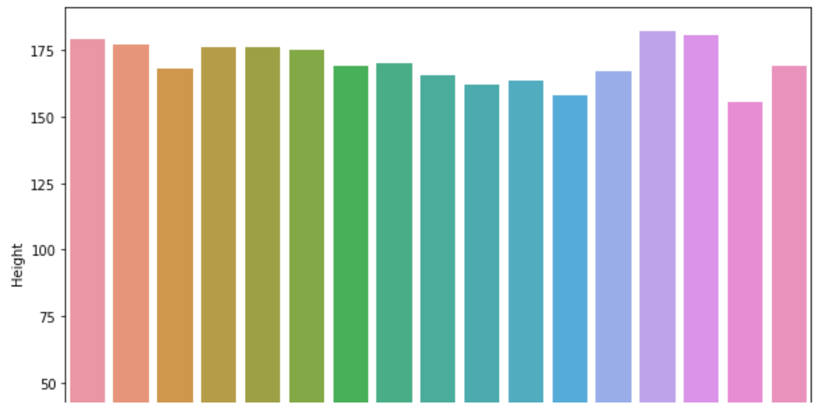


II. 막대 그래프

1) 연속형 - .barplot( )

- https://seaborn.pydata.org/generated/seaborn.barplot.html#seaborn.barplot

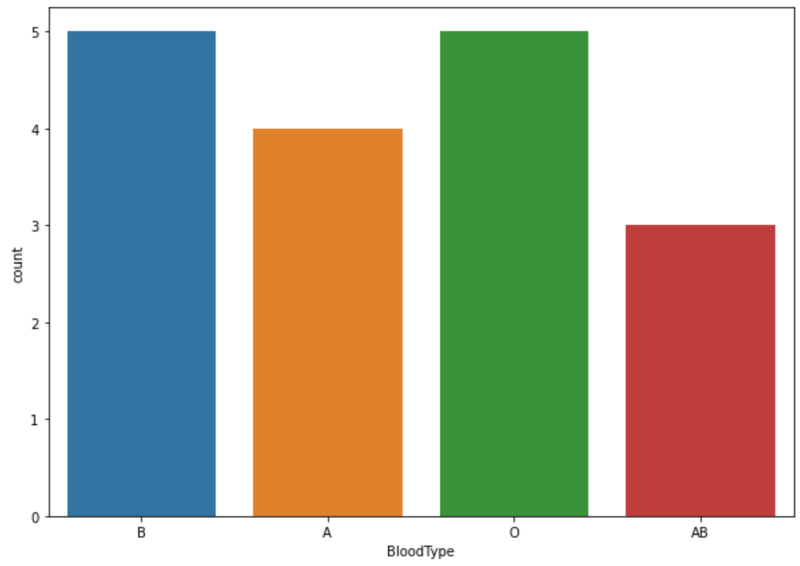
```
plt.figure(figsize = (10, 7))
sns.barplot(data = DF,
            x = DF.index,
            y = 'Height')
plt.show()
```



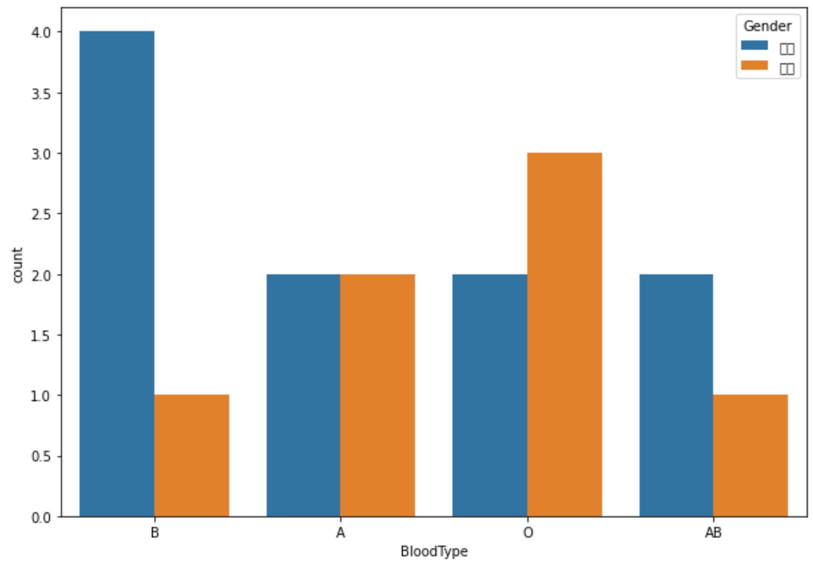
2) 명목형 - .countplot( )

- https://seaborn.pydata.org/generated/seaborn.countplot.html#seaborn.countplot

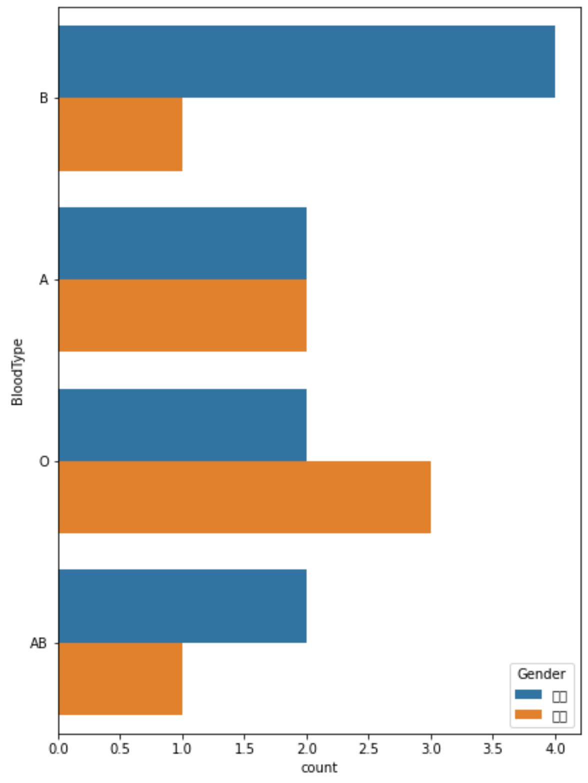
```
plt.figure(figsize = (10, 7))
sns.countplot(data = DF,
              x = 'BloodType')
plt.show()
```



```
plt.figure(figsize = (10, 7))
sns.countplot(data = DF,
              x = 'BloodType',
              hue = 'Gender')
plt.show()
```



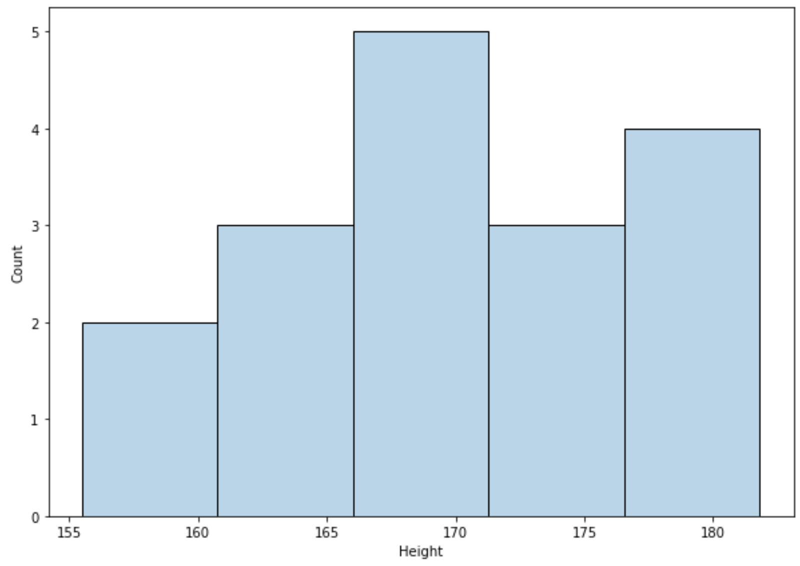
```
plt.figure(figsize = (7, 10))
sns.countplot(data = DF,
              y = 'BloodType',
              hue = 'Gender')
plt.show()
```



III. 히스토그램

- https://seaborn.pydata.org/generated/seaborn.histplot.html#seaborn.histplot

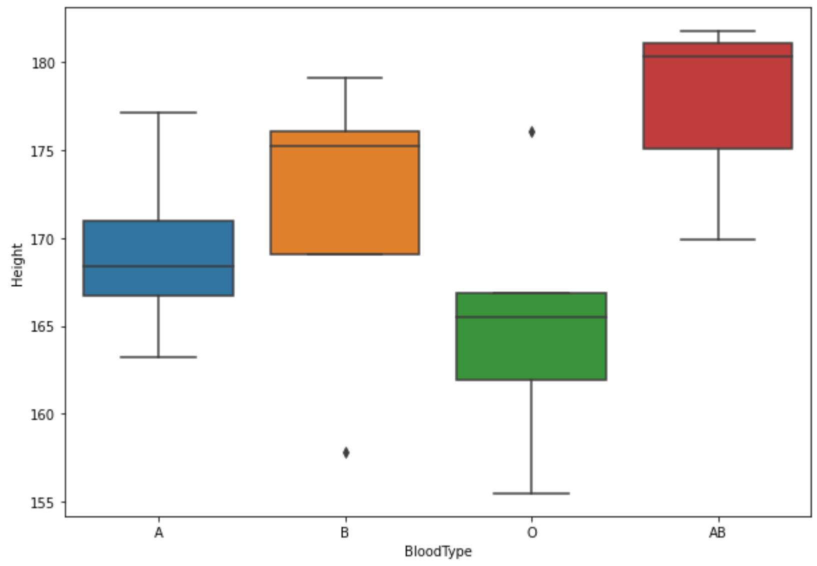
```
plt.figure(figsize = (10, 7))
sns.histplot(data = DF,
             x = 'Height',
             bins = 5,
             alpha = 0.3)
plt.show()
```



IV. 상자 그래프

- https://seaborn.pydata.org/generated/seaborn.boxplot.html#seaborn.boxplot

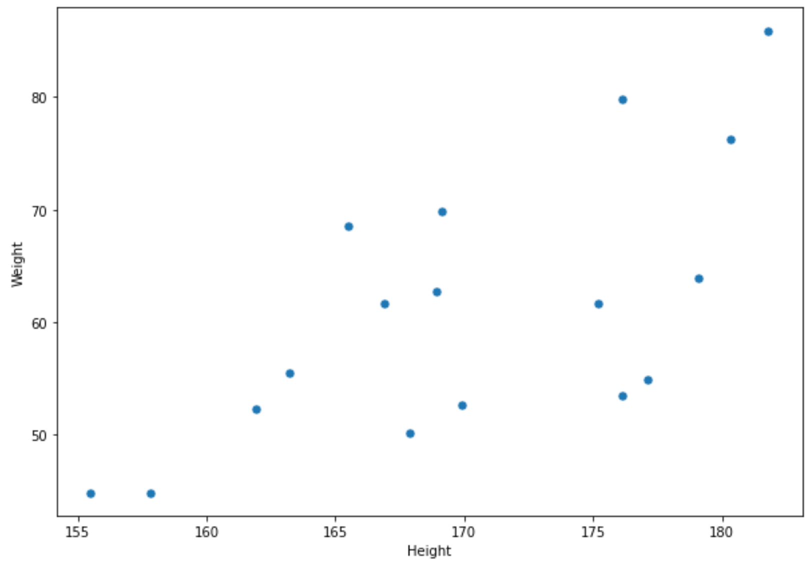
```
plt.figure(figsize = (10, 7))
sns.boxplot(data = DF,
            x = 'BloodType',
            y = 'Height',
            order = ['A', 'B', 'O', 'AB'])
plt.show()
```



V. 산점도

- https://seaborn.pydata.org/generated/seaborn.scatterplot.html#seaborn.scatterplot

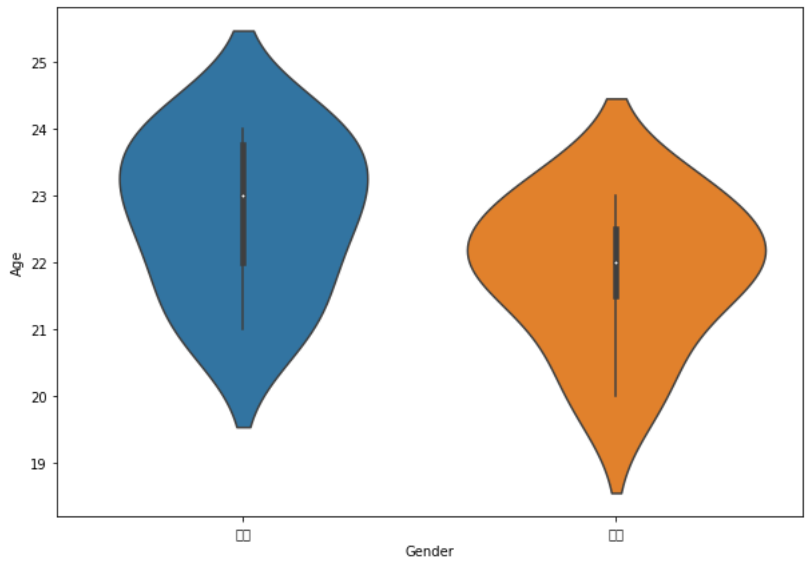
```
plt.figure(figsize = (10, 7))
sns.scatterplot(data = DF,
                x = 'Height',
                y = 'Weight',
                s = 50)
plt.show()
```



VI. 바이올린 그래프

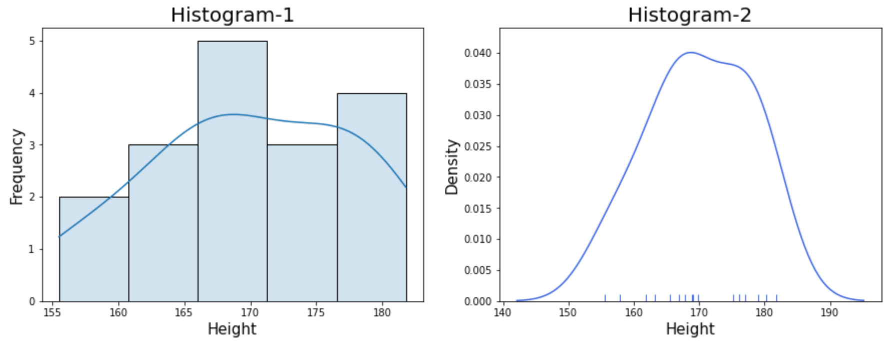
- https://seaborn.pydata.org/generated/seaborn.violinplot.html

```
plt.figure(figsize = (10, 7))
sns.violinplot(data = DF,
               x = 'Gender',
               y = 'Age')
plt.show()
```



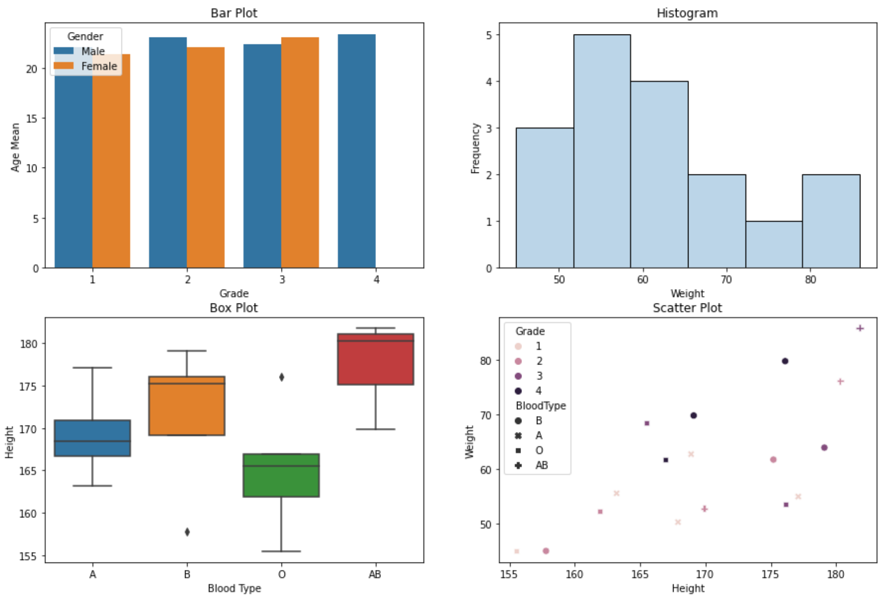
VII. Histograms

```
fig, ax = plt.subplots(nrows = 1, ncols = 2, figsize = (15, 5))

sns.histplot(data = DF, x = 'Height',
             bins = 5, alpha = 0.2,
             kde = True, ax = ax[0])
sns.distplot(x = DF['Height'],
             bins = 5, kde = True, color = 'royalblue',
             hist = False, rug = True, ax = ax[1])

ax[0].set_title('Histogram-1', size = 20)
ax[1].set_title('Histogram-2', size = 20)

ax[0].set_xlabel('Height', size = 15)
ax[1].set_xlabel('Height', size = 15)

ax[0].set_ylabel('Frequency', size = 15)
ax[1].set_ylabel('Density', size = 15)

plt.show()
```



2) Multiple Plots

```
fig, ax = plt.subplots(nrows = 2, ncols = 2, figsize = (15, 10))

sns.barplot(data = DF, x = 'Grade', y = 'Age',
            hue = 'Gender', ci = None, ax = ax[0, 0])

sns.histplot(data = DF, x = 'Weight',
             bins = 6, alpha = 0.3, ax = ax[0, 1])

sns.boxplot(data = DF, x = 'BloodType', y = 'Height',
            order = ['A', 'B', 'O', 'AB'], ax = ax[1, 0])

sns.scatterplot(data = DF, x = 'Height', y = 'Weight',
                hue = 'Grade', style = 'BloodType', s = 50, ax = ax[1, 1])

# 'best', 'upper right', 'upper left', 'lower left', 'lower right'
# 'right', 'center left', 'center right', 'lower center', 'upper center', 'center'
ax[0, 0].legend(labels = ['Male','Female'], loc = 'upper left', title = 'Gender')

ax[0, 0].set_title('Bar Plot')
ax[0, 1].set_title('Histogram')
ax[1, 0].set_title('Box Plot')
ax[1, 1].set_title('Scatter Plot')

ax[0, 0].set_xlabel('Grade')
ax[0, 1].set_xlabel('Weight')
ax[1, 0].set_xlabel('Blood Type')
ax[1, 1].set_xlabel('Height')

ax[0, 0].set_ylabel('Age Mean')
ax[0, 1].set_ylabel('Frequency')
ax[1, 0].set_ylabel('Height')
ax[1, 1].set_ylabel('Weight')

plt.show()
```


Bar Plot
Gender
Male
Female
Age Mean
0
5
10
15
20
1
2
3
4
Grade
Histogram
Frequency
0
1
2
3
4
5
50
60
70
80
Weight
Box Plot
Height
155
160
165
170
175
180
A
B
O
AB
Blood Type
Scatter Plot
Grade
1
2
3
4
BloodType
B
A
O
AB
Weight
50
60
70
80
155
160
165
170
175
180
Height

#

#

#

The End

#

#

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