2347122_p8

September 20, 2023

[ ]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt

data=pd.read_csv("insurance.csv",nrows=50)
# print(data)
male=data[data['sex']=='male']
female=data[data['sex']=='female']
print(data['sex'].unique())
date=(data['BMI'].unique())
(date.sort())
print(date)
# histogram
male['age'].plot(kind='hist',label="AGE",color='r',fontsize=10,density='true')
plt.title('scatter plot -histogram')
plt.xlabel('SepalWidthCm')
plt.show()
male.mean

# scatter plot

male.plot(x="age", y="BMI", kind="scatter", label='MALE',color='r')
plt.title('Scatter Plot - MALE')
plt.xlabel('AGE')
plt.ylabel('BDI')
plt.show()

# Line Plot
male["BMI"].plot(kind="line",label='male', color='black',linewidth='1.5', ls=':
 ↪')
plt.axis([0,50,17,41])
plt.title('Line Plot')
plt.xlabel('BMI')
plt.show()

# areaplot
male.plot.area(stacked=True)
```

```
plt.show()


# bargraph
type=list(data['sex'].unique())
count=list(data['sex'].value_counts())
Avg=list(data.groupby('sex')["age"].mean())
print(Avg)
plt.bar(type,Avg,color=['maroon','yellow','blue'],width=0.4)
# .barh------height=0.4
plt.title('Bar Plot')
plt.xlabel('BMI')
plt.ylabel('AverageBMI')
plt.show()


# pie chart
e=(0,0)
Avg=list(data.groupby('sex')["BMI"].mean())
plt.pie(Avg, explode=e,labels=['male','female'])
plt.title("Pie chart")
plt.legend(title="Iris Flowers:")
plt.show()

# Box Plot
male.plot.box()

#notch='True', vert=0
plt.title("Box Plot")
plt.legend(labels=['age','SMOKER','CHILDREN','BMI','REGION'], title="Iris␣
 ↪Flowers")

plt.show()

# pairplot
import seaborn as sns
sns.set(style="white")

sns.pairplot(data,hue="sex")
plt.show()

import matplotlib.pyplot as plt
import numpy as np

np.random.seed(19680801)
```

```
def gradient_image(ax, direction=0.3, cmap_range=(0, 1), **kwargs):
    """
    Draw a gradient image based on a colormap.

    Parameters
    ----------
    ax : Axes
        The axes to draw on.
    direction : float
        The direction of the gradient. This is a number in
        range 0 (=vertical) to 1 (=horizontal).
    cmap_range : float, float
        The fraction (cmin, cmax) of the colormap that should be
        used for the gradient, where the complete colormap is (0, 1).
    **kwargs
        Other parameters are passed on to `.Axes.imshow()`.
        In particular, *cmap*, *extent*, and *transform* may be useful.
    """
    phi = direction * np.pi / 2
    v = np.array([np.cos(phi), np.sin(phi)])
    X = np.array([[v @ [1, 0], v @ [1, 1]],
                  [v @ [0, 0], v @ [0, 1]]])
    a, b = cmap_range
    X = a + (b - a) / X.max() * X
    im = ax.imshow(X, interpolation='bicubic', clim=(0, 1),
                   aspect='auto', **kwargs)
    return im


def gradient_bar(ax, x, y, width=0.5, bottom=0):
    for left, top in zip(x, y):
        right = left + width
        gradient_image(ax, extent=(left, right, bottom, top),
                       cmap=plt.cm.Blues_r, cmap_range=(0, 0.8))
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt

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# print(data)
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plt.xlabel('BMI')
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Avg=list(data.groupby('sex')["BMI"].mean())
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    phi = direction * np.pi / 2
    v = np.array([np.cos(phi), np.sin(phi)])
    X = np.array([[v @ [1, 0], v @ [1, 1]],
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    a, b = cmap_range
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        right = left + width
        gradient_image(ax, extent=(left, right, bottom, top),
                       cmap=plt.cm.Blues_r, cmap_range=(0, 0.8))


fig, ax = plt.subplots()
ax.set(xlim=(0, 10), ylim=(0, 1))

# background image
gradient_image(ax, direction=1, extent=(0, 1, 0, 1), transform=ax.transAxes,
               cmap=plt.cm.RdYlGn, cmap_range=(0.2, 0.8), alpha=0.5)

N = 10
x = np.arange(N) + 0.15
y = np.random.rand(N)
gradient_bar(ax, x, y, width=0.7)
plt.show()



import matplotlib.pyplot as plt

data = {'male1': 10000, 'female': 5000, 'male2': 5000, 'female2': 2000}
names = list(data.keys())
values = list(data.values())

fig, axs = plt.subplots(1, 3, figsize=(9, 3), sharey=True)
axs[0].bar(names, values)
axs[1].scatter(names, values)
axs[2].plot(names, values)
fig.suptitle('Categorical Plotting')
plt.show()


fig, ax = plt.subplots()
ax.set(xlim=(0, 10), ylim=(0, 1))

# background image
gradient_image(ax, direction=1, extent=(0, 1, 0, 1), transform=ax.transAxes,
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                cmap=plt.cm.RdYlGn, cmap_range=(0.2, 0.8), alpha=0.5)

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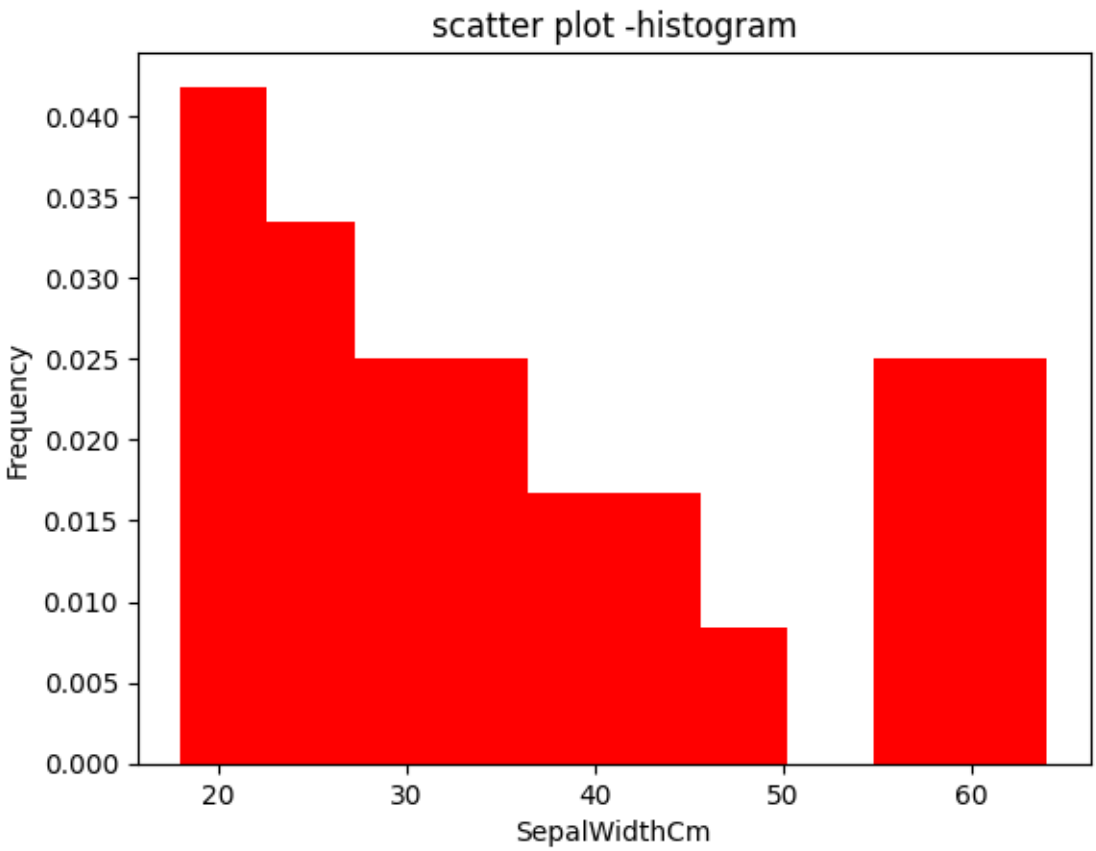
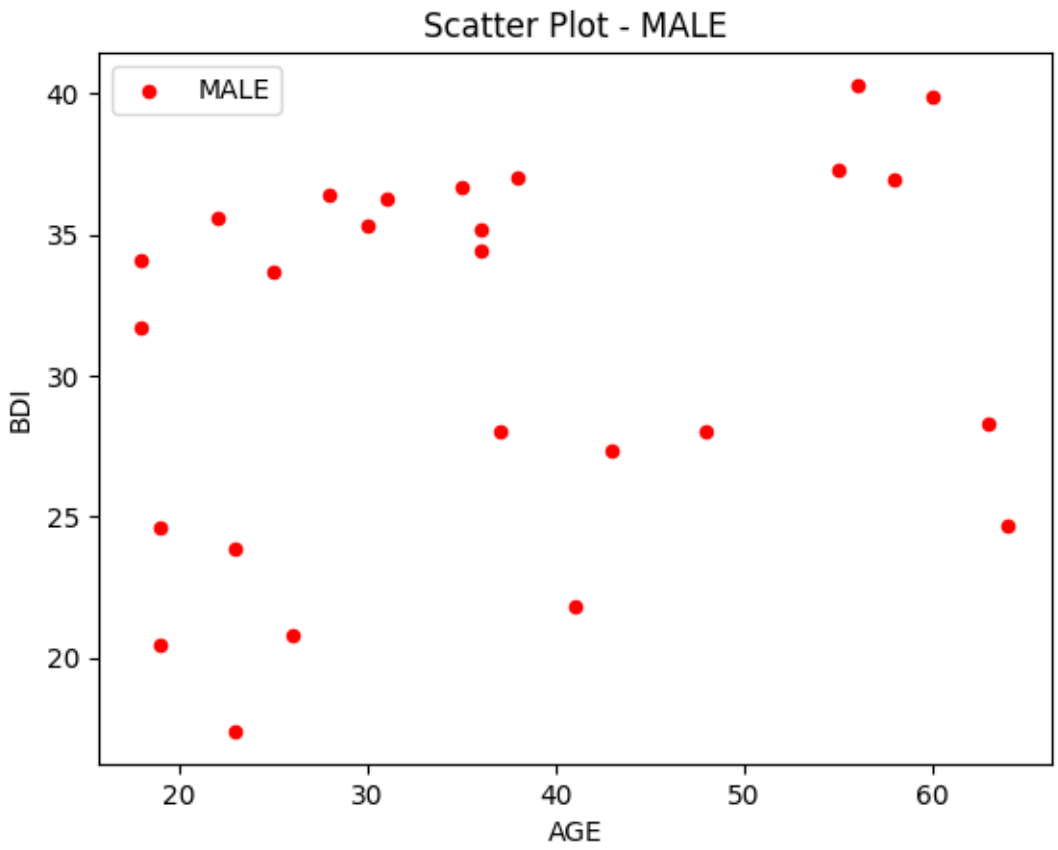
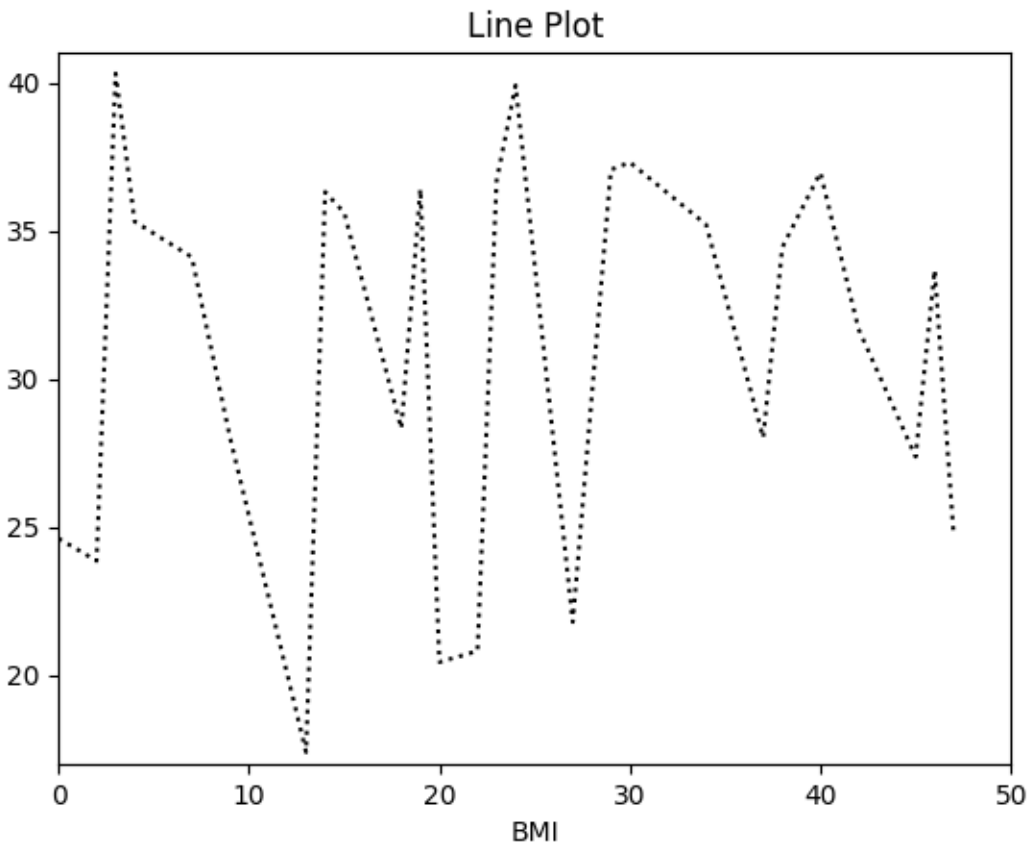
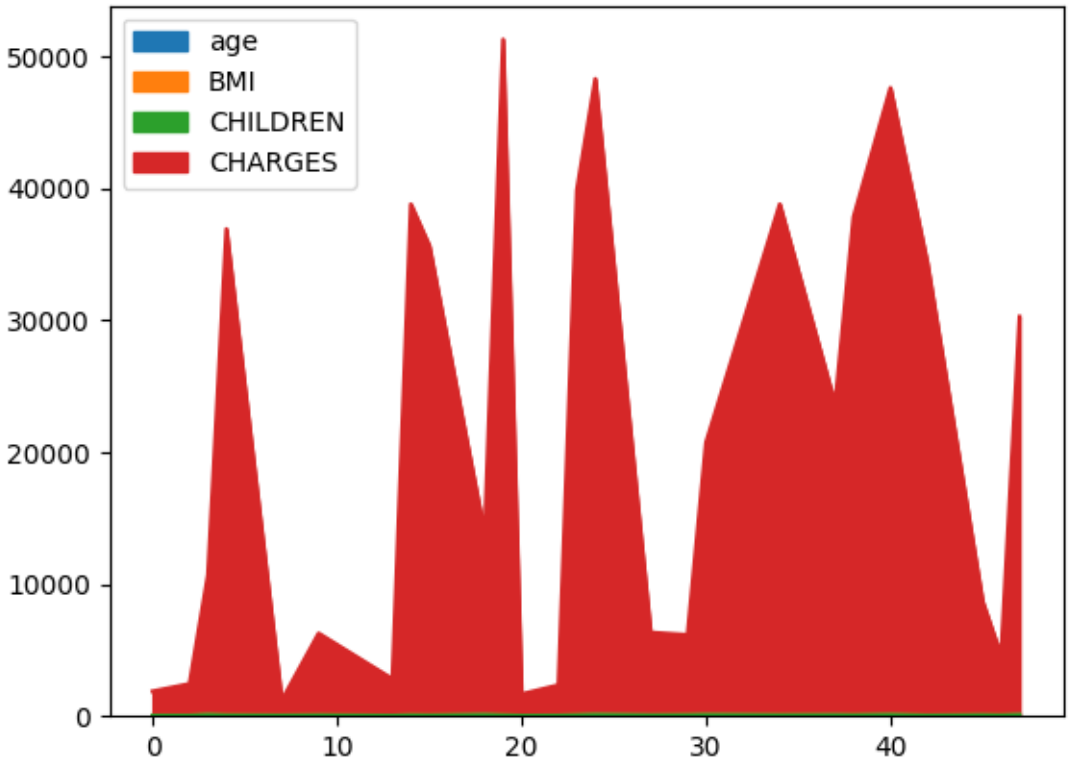
axs[0].bar(names, values)
axs[1].scatter(names, values)
axs[2].plot(names, values)
fig.suptitle('Categorical Plotting')
plt.show()
```

```
['male' 'female']
[17.385 20.425 20.8   21.78  22.42  22.88  23.085 23.845 24.53  24.6
 24.7   25.935 26.315 26.6   27.36  27.72  28.    28.025 28.31  28.6
 28.69  30.78  30.8   31.68  31.825 31.92  32.4   32.775 32.965 33.63
 33.66  34.1   34.43  34.77  35.2   35.3   35.6   35.625 36.005 36.3
 36.4   36.63  36.67  36.955 37.05  37.3   37.335 38.665 39.9   40.3  ]
```

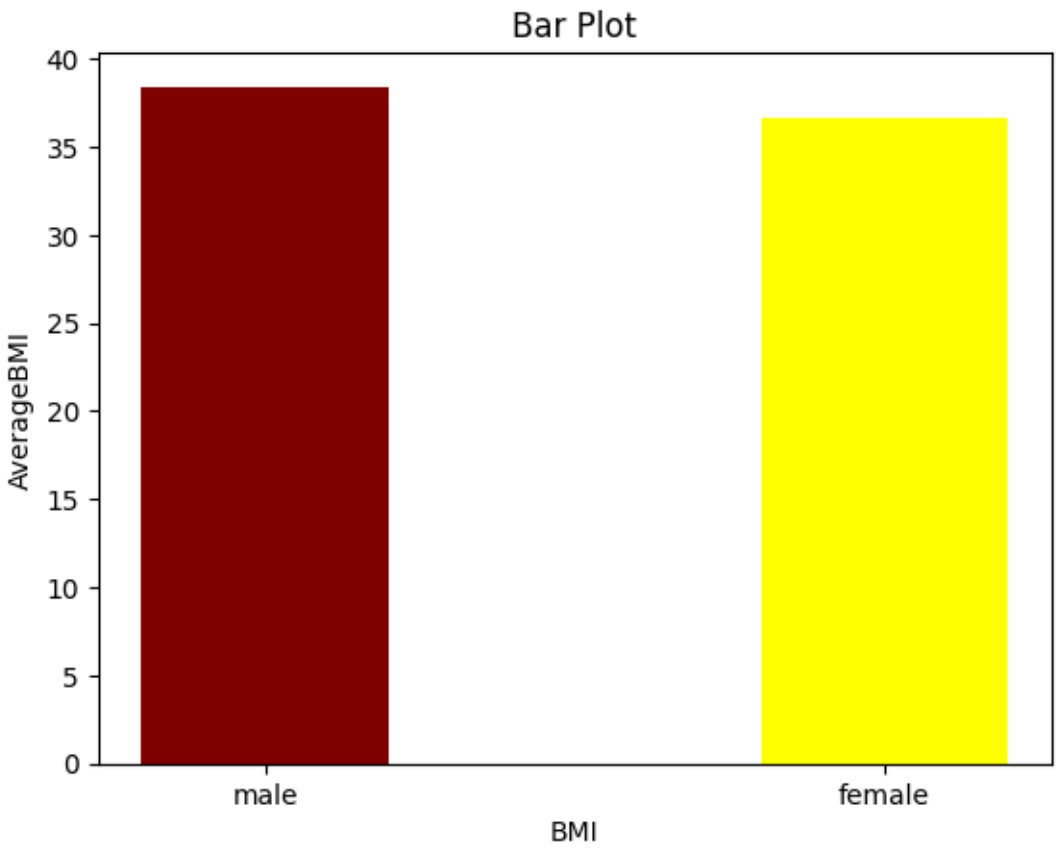

scatter plot -histogram
Frequency
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
20
30
40
50
60
SepalWidthCm

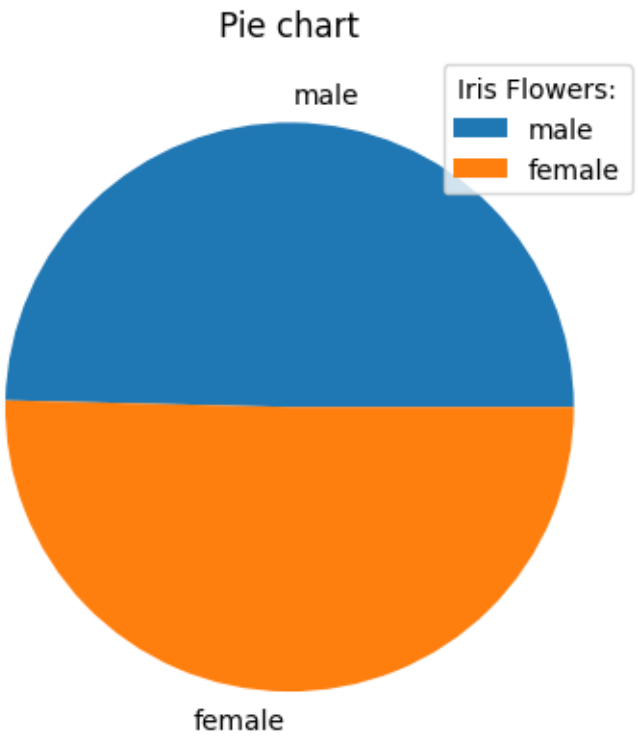

Scatter Plot - MALE
MALE
BDI
AGE
40
35
30
25
20
20
30
40
50
60

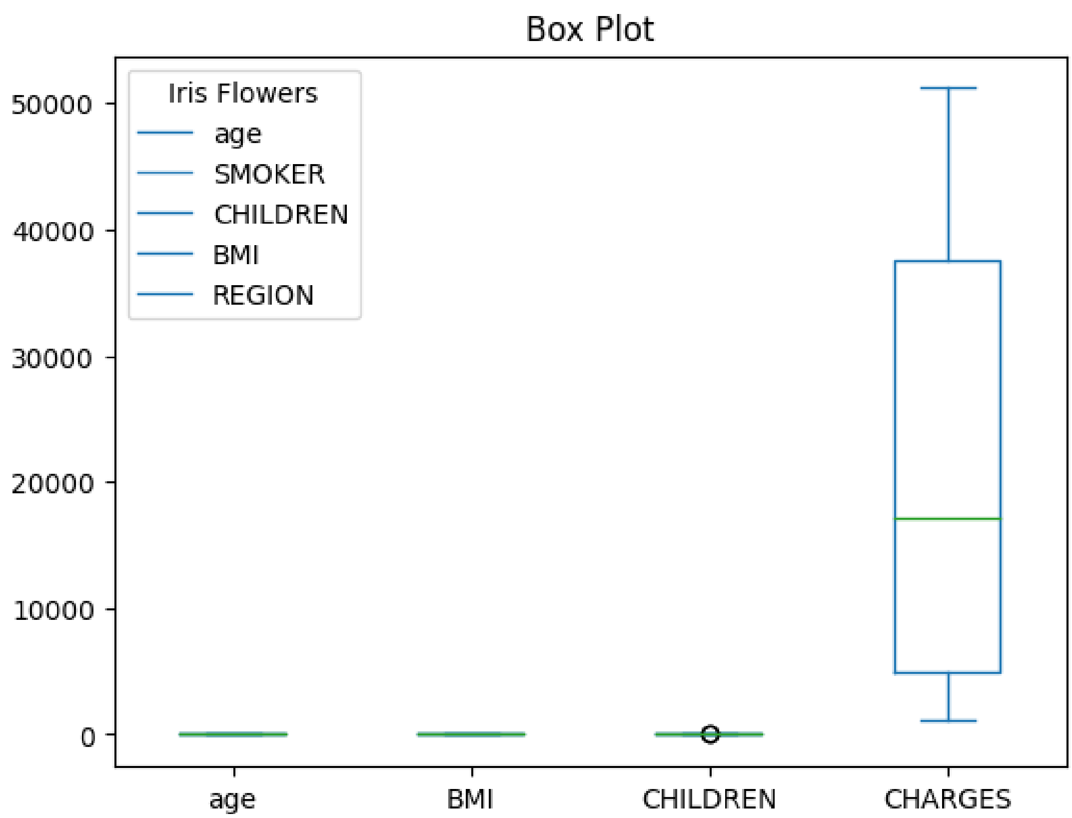

Line Plot
40
35
30
25
20
0
10
20
30
40
50
BMI




```
[38.416666666666664, 36.61538461538461]
```


Bar Plot
40
35
30
25
20
15
10
5
0
AverageBMI
male
female
BMI


Pie chart
male
female
Iris Flowers:
male
female

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packages\seaborn\_oldcore.py:1498: FutureWarning: is_categorical_dtype is
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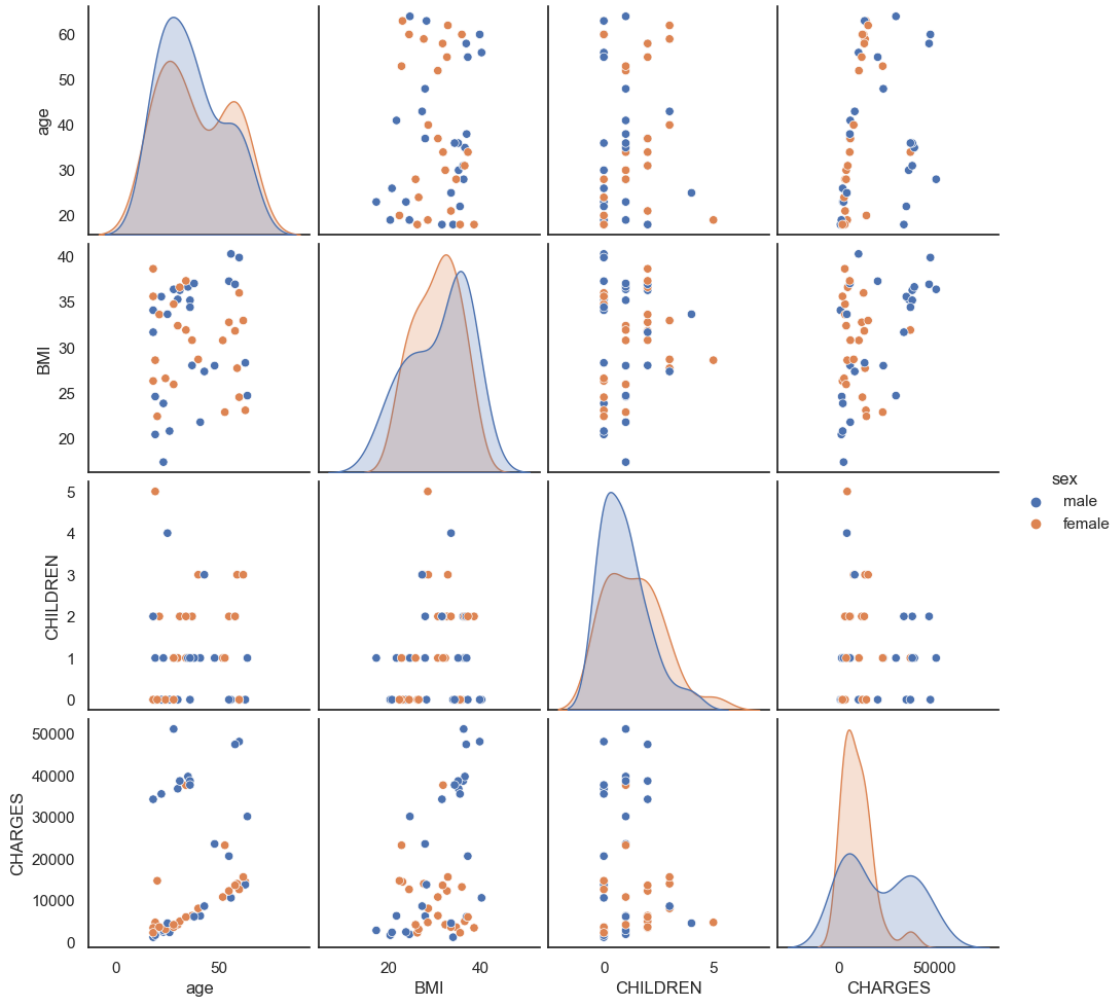
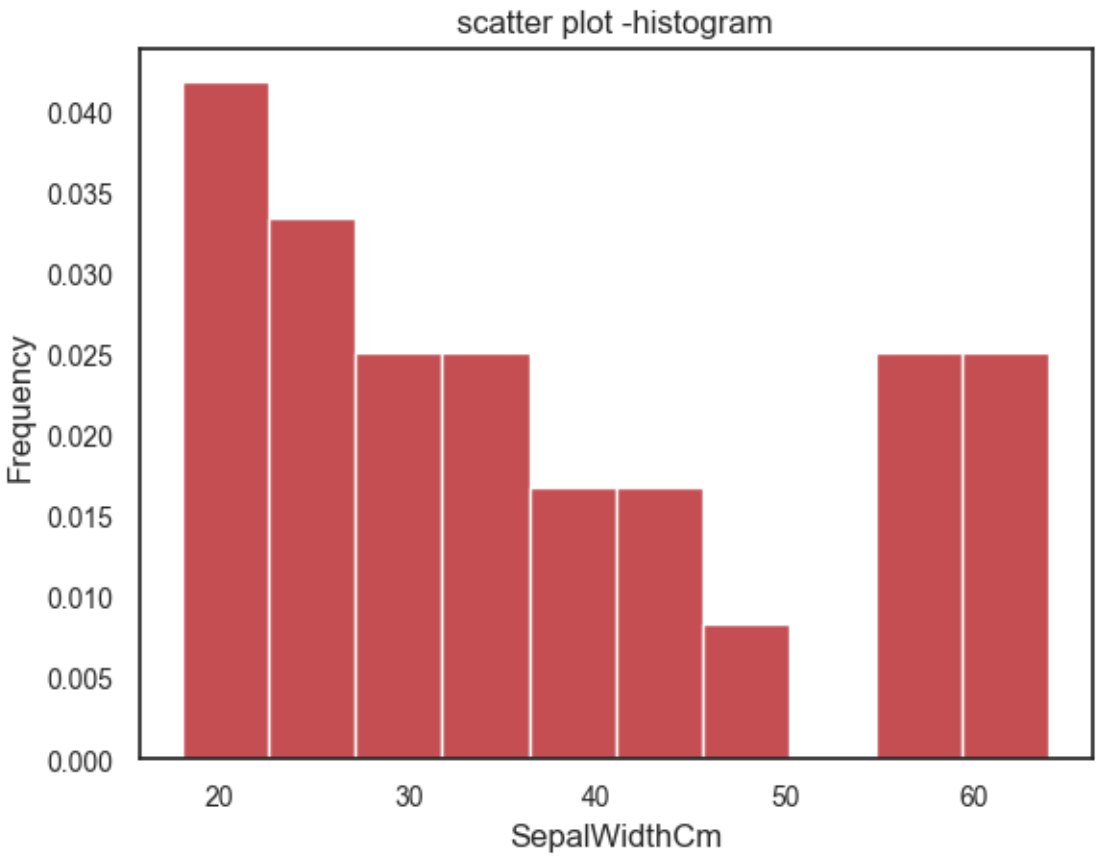
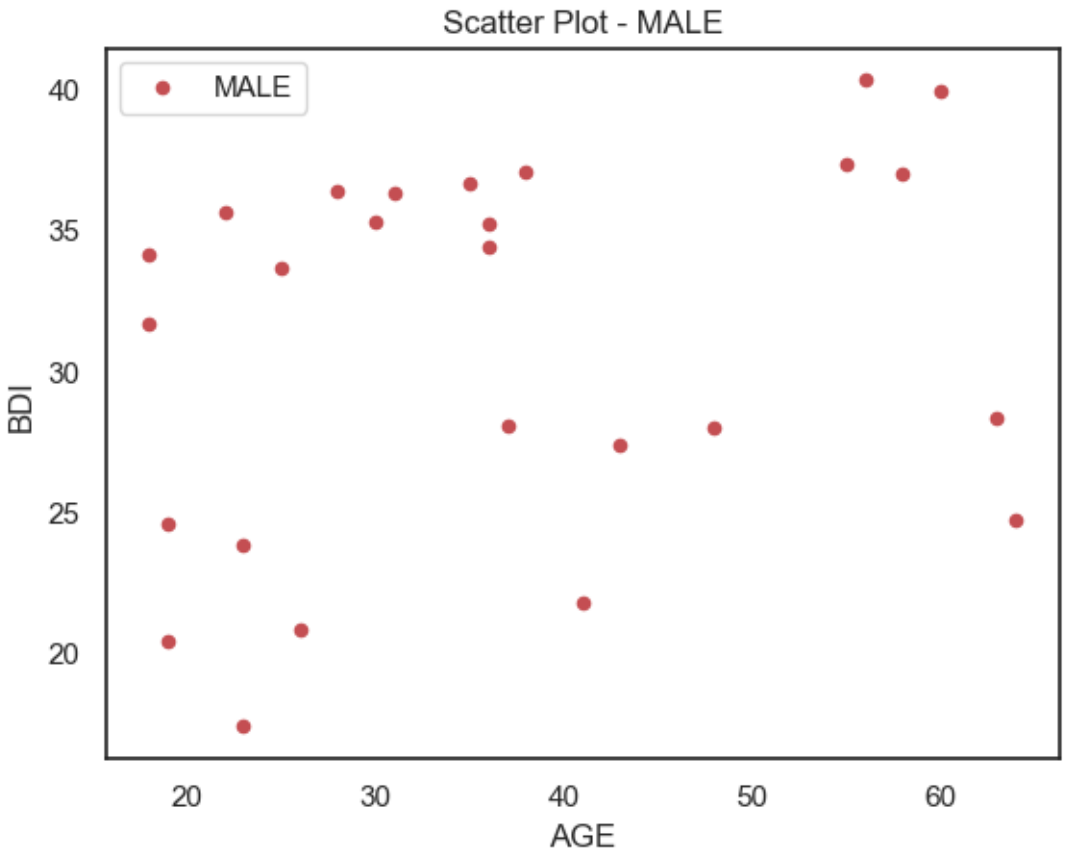
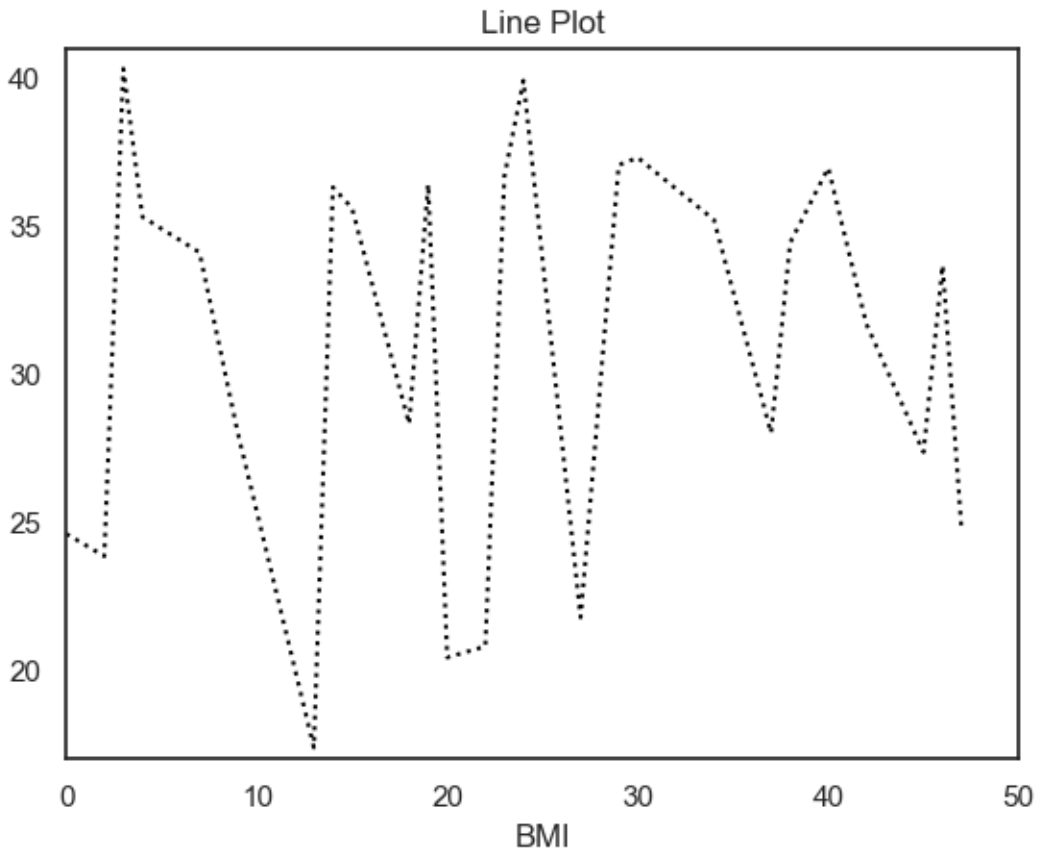
c:\Users\Melvin\AppData\Local\Programs\Python\Python311\Lib\site-
packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to
tight
  self._figure.tight_layout(*args, **kwargs)
```

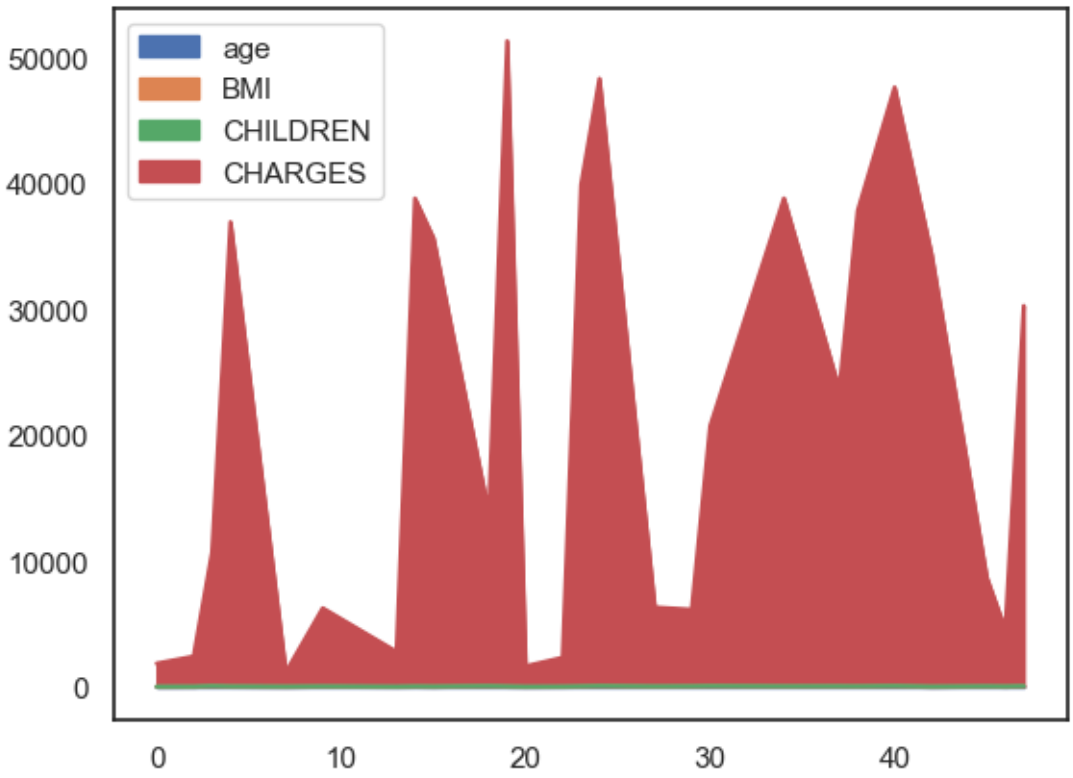



```
['male' 'female']
[17.385 20.425 20.8   21.78  22.42  22.88  23.085 23.845 24.53  24.6
 24.7   25.935 26.315 26.6   27.36  27.72  28.    28.025 28.31  28.6
 28.69  30.78  30.8   31.68  31.825 31.92  32.4   32.775 32.965 33.63
 33.66  34.1   34.43  34.77  35.2   35.3   35.6   35.625 36.005 36.3
 36.4   36.63  36.67  36.955 37.05  37.3   37.335 38.665 39.9   40.3  ]
```

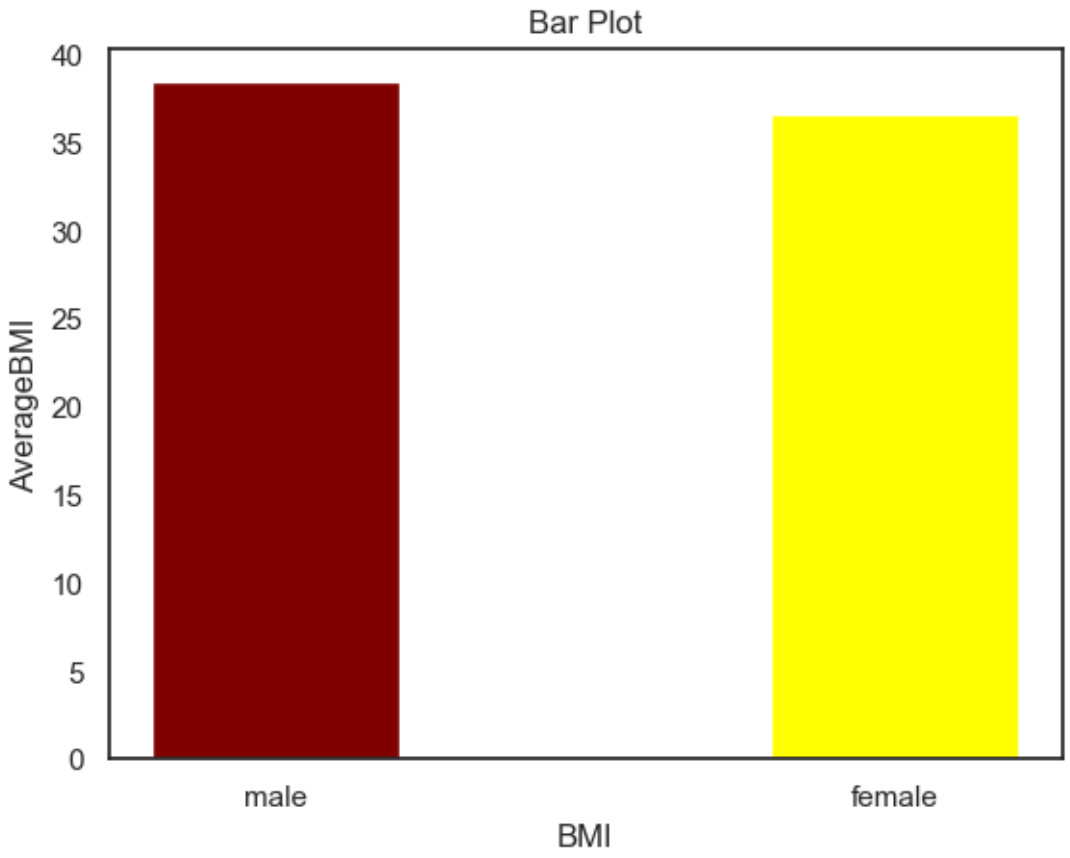

scatter plot -histogram
Frequency
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
20
30
40
50
60
SepalWidthCm

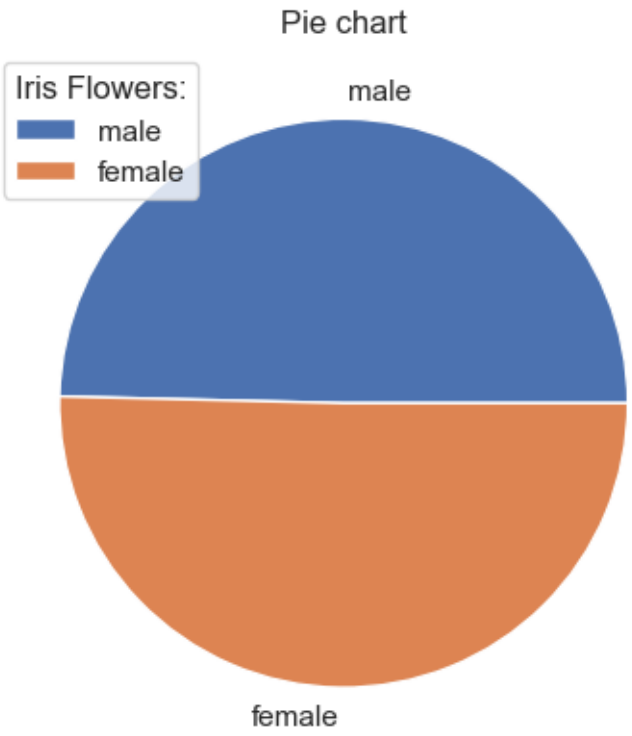

Scatter Plot - MALE
MALE
BDI
AGE
40
35
30
25
20
20
30
40
50
60

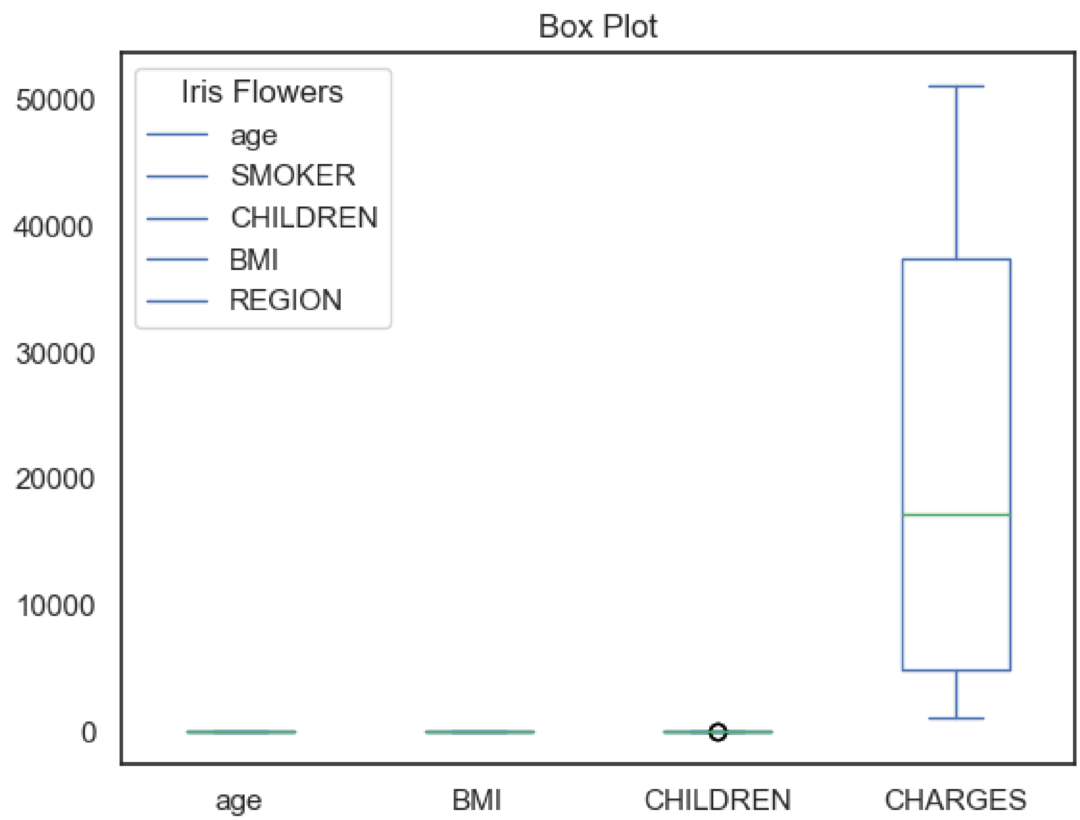

Line Plot
40
35
30
25
20
0
10
20
30
40
50
BMI




```
[38.416666666666664, 36.61538461538461]
```


Bar Plot
40
35
30
25
20
15
10
5
0
AverageBMI
male
female
BMI


Pie chart
Iris Flowers:
male
female
male
female

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packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to
tight
  self._figure.tight_layout(*args, **kwargs)
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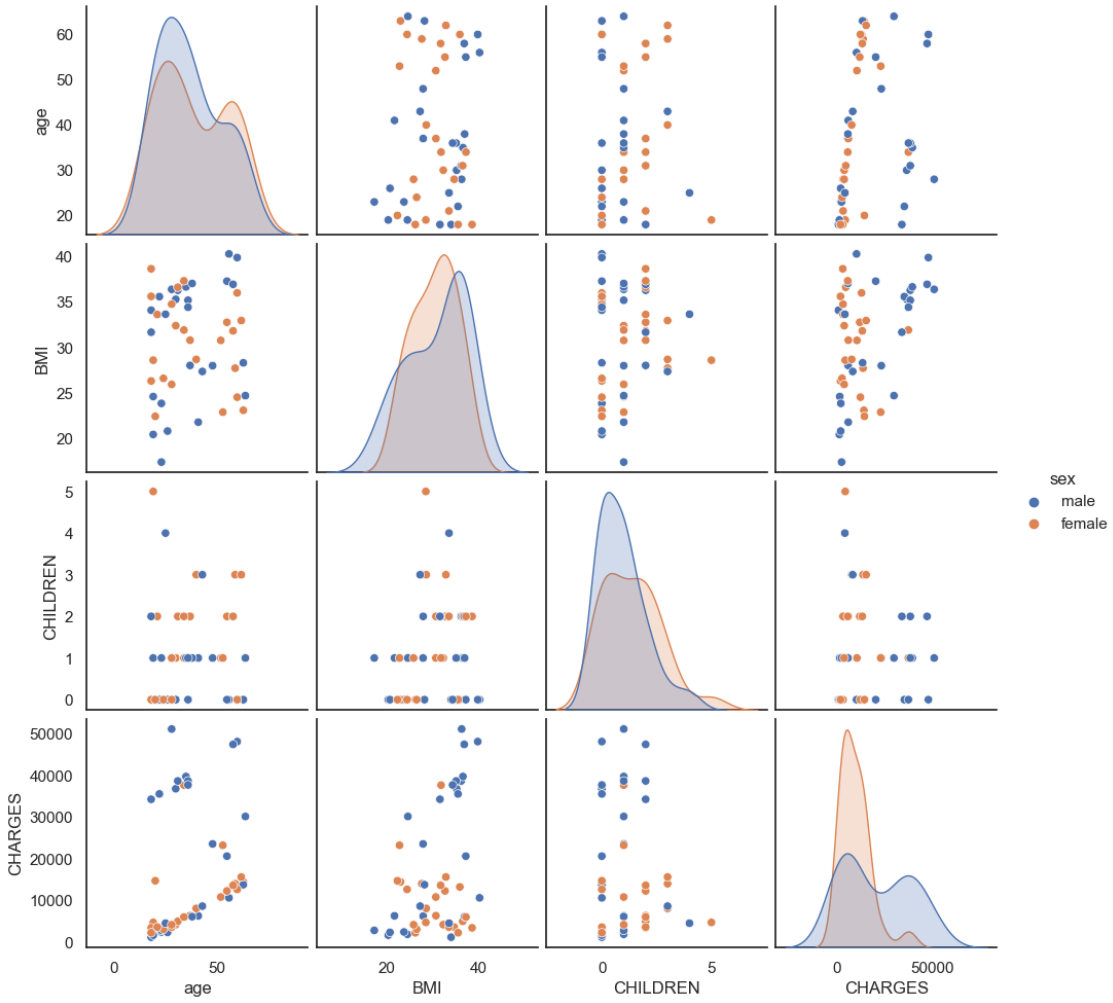

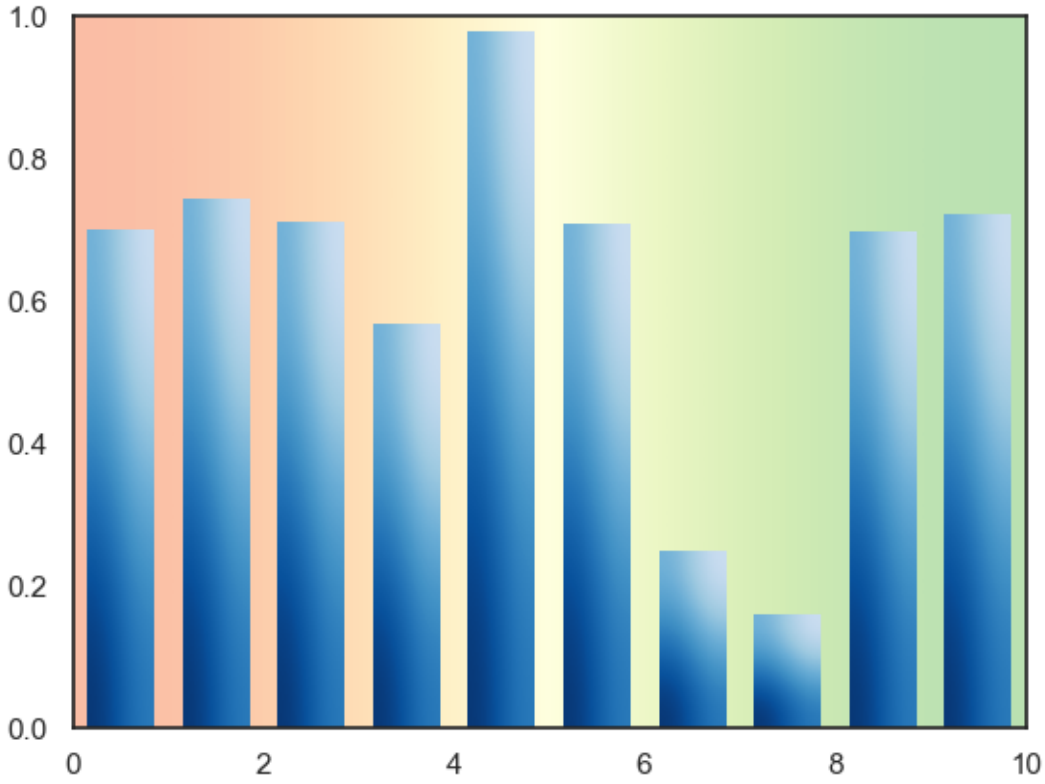
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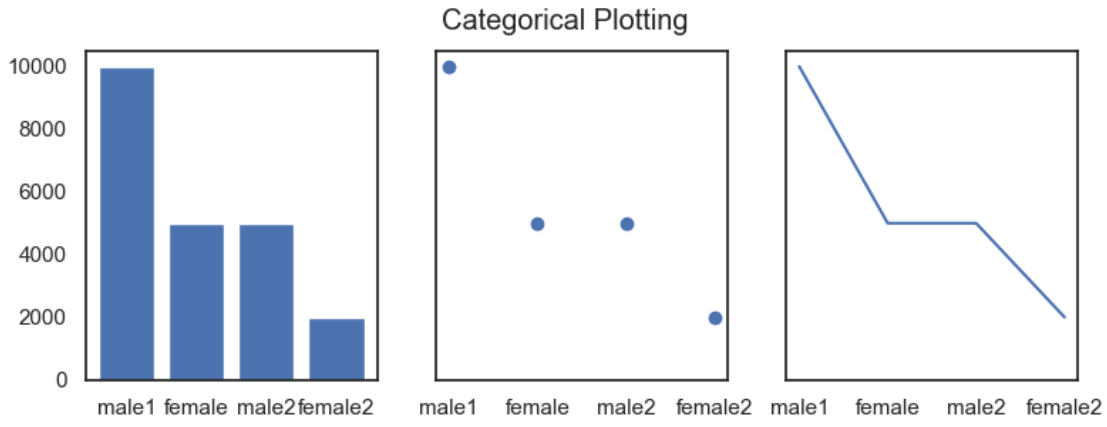
Categorical Plotting
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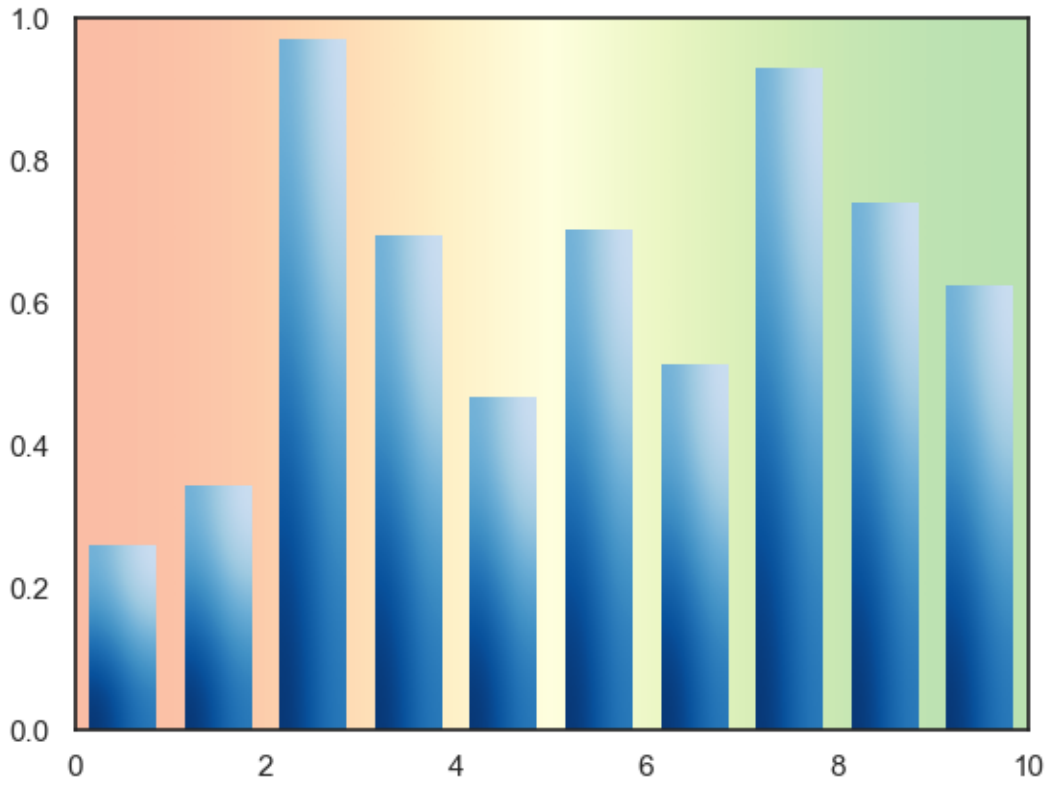
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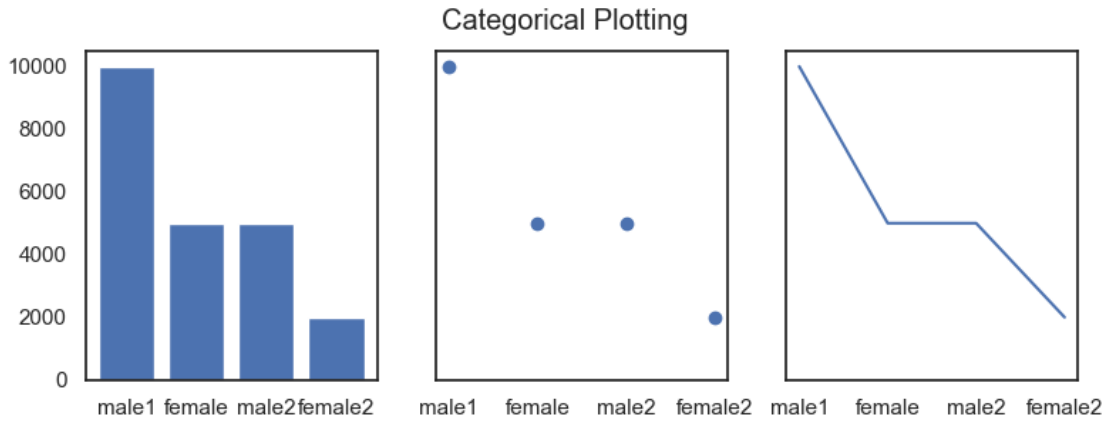
Categorical Plotting
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