



VISUALIZATION USING PYTHON



```
In [89]: import pandas as pd
bits = pd.read_csv(r'D:\reachout analytics\case studies(roba)\Case Studies 74\Bodyfat\Cholostrac_1512.csv')
print(bits.head())
```

	Body_FAT	Age	Weight	Height	Neck_Circ	Chest_Circ	Abdomen_circ
0	12.3	23	70.1	172.1	36.2	93.1	85.2
1	6.1	22	78.8	183.5	38.5	93.6	83.0
2	25.3	22	70.0	168.3	34.0	95.8	87.9
3	10.4	26	84.0	183.5	37.4	101.8	86.4
4	28.7	24	83.8	181.0	34.4	97.3	100.0

	Hip_Circ	Thin_Circ	Knee_Circ	Ankle_circ	Extended_Biceps_Circ
0	94.5	59.0	37.3	21.9	32.0
1	98.7	58.7	37.3	23.4	30.5
2	99.2	59.6	38.9	24.0	28.8
3	101.2	60.1	37.3	22.8	32.4
4	101.9	63.2	42.2	24.0	32.2

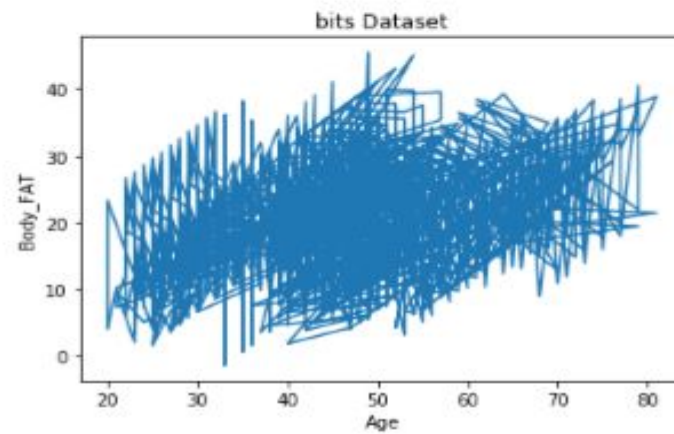
	Forearm_Circ	Wrist_Circ	VAR00001
0	27.4	17.1	1
1	28.9	18.2	2
2	25.2	16.6	3
3	29.4	18.2	4
4	27.7	17.7	5

```
In [90]: import matplotlib.pyplot as plt
```

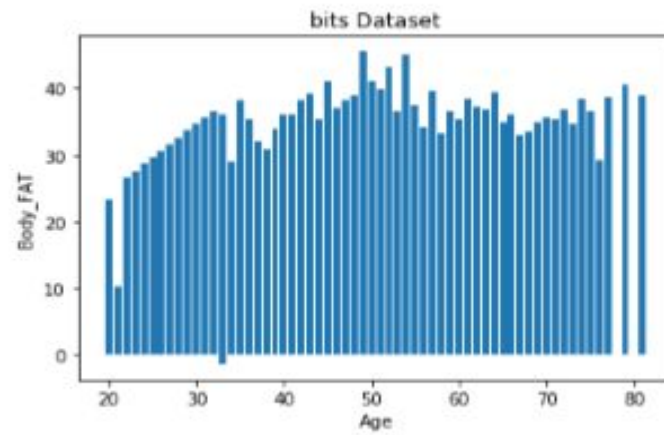
```
In [91]: plt.plot(bits['Age'], bits['Body_FAT'])
```

```
plt.title('bits Dataset')
plt.xlabel('Age')
plt.ylabel('Body_FAT')
```

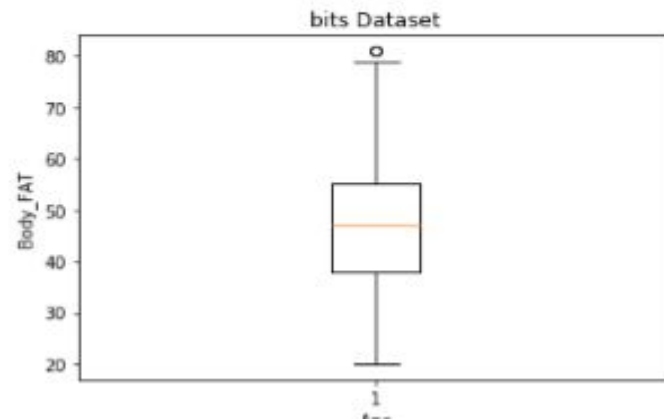
Out[91]: Text(0, 0.5, 'Body_FAT')



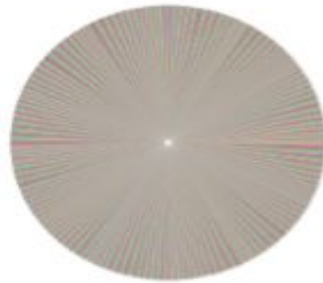
```
In [92]: plt.bar(bits['Age'], bits['Body_FAT'])
plt.title('bits Dataset')
plt.xlabel('Age')
plt.ylabel('Body_FAT')
plt.show()
```



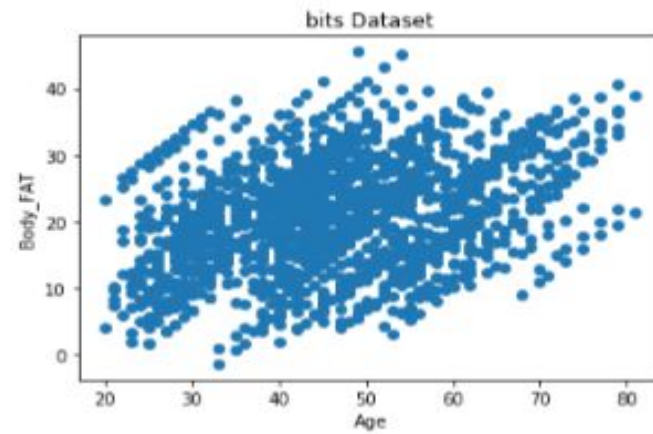
```
In [93]: plt.boxplot(bits['Age'])  
plt.title('bits Dataset')  
plt.xlabel('Age')  
plt.ylabel('Body_FAT')  
plt.show()
```



```
In [94]: plt.pie(bits['Age'])  
plt.show()
```

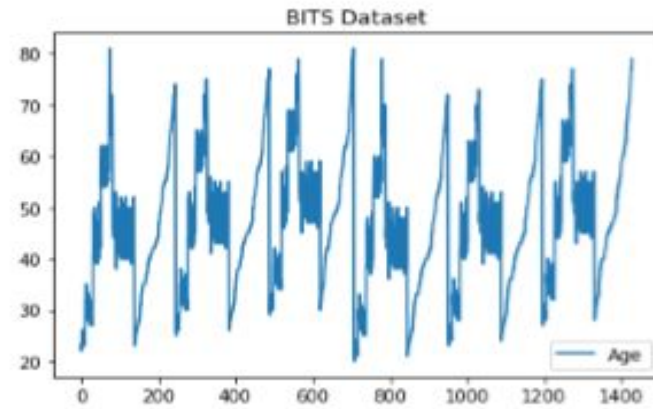


```
In [95]: plt.scatter(bits['Age'], bits['Body_FAT'])  
plt.title('bits Dataset')  
plt.xlabel('Age')  
plt.ylabel('Body_FAT')  
plt.show()
```

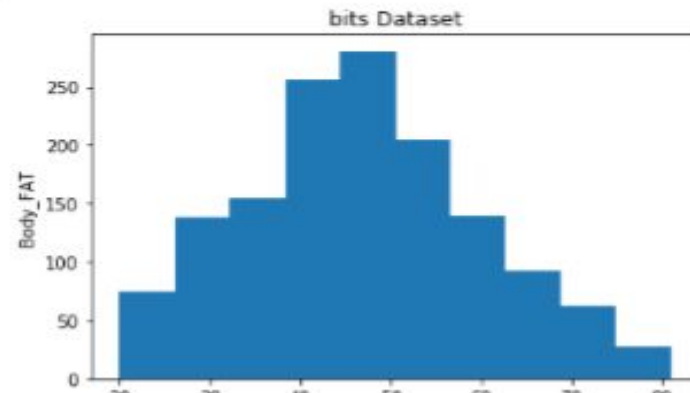


```
In [96]: x_data = range(0, bits.shape[0])  
fig, ax = plt.subplots()  
ax.plot(x_data, bits['Age'])  
ax.set_title('BITS Dataset')  
ax.legend()
```

```
Out[96]: <matplotlib.legend.Legend at 0x1bace9b7dd8>
```



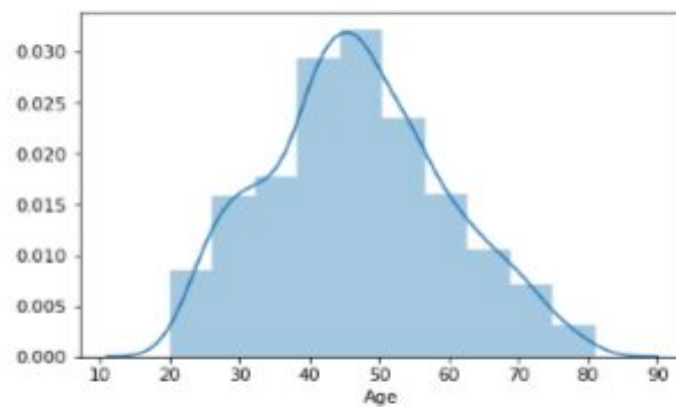
```
In [97]: plt.hist(bits['Age'])  
plt.title('bits Dataset')  
plt.xlabel('Age')  
plt.ylabel('Body_FAT')  
plt.show()
```



```
In [98]: import seaborn as sns
```

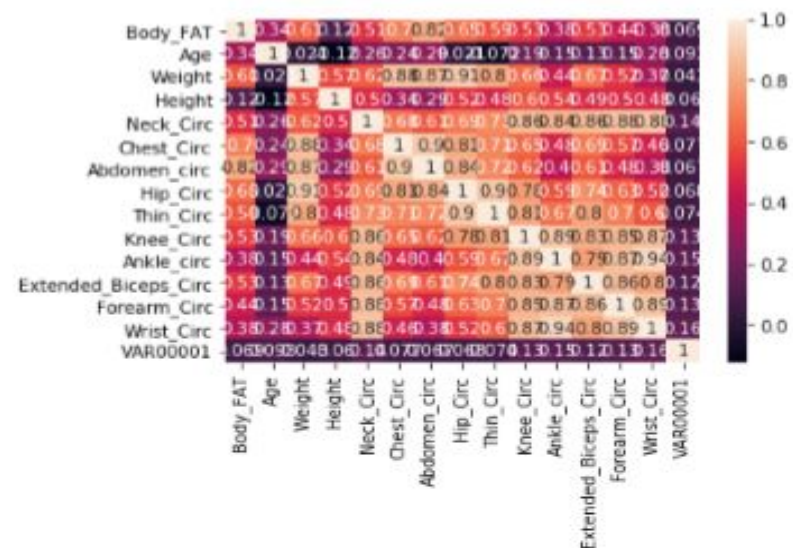
```
In [99]: sns.distplot(bits['Age'], bins = 10, kde = True)
```

```
Out[99]: <matplotlib.axes._subplots.AxesSubplot at 0x1baceaa9b38>
```



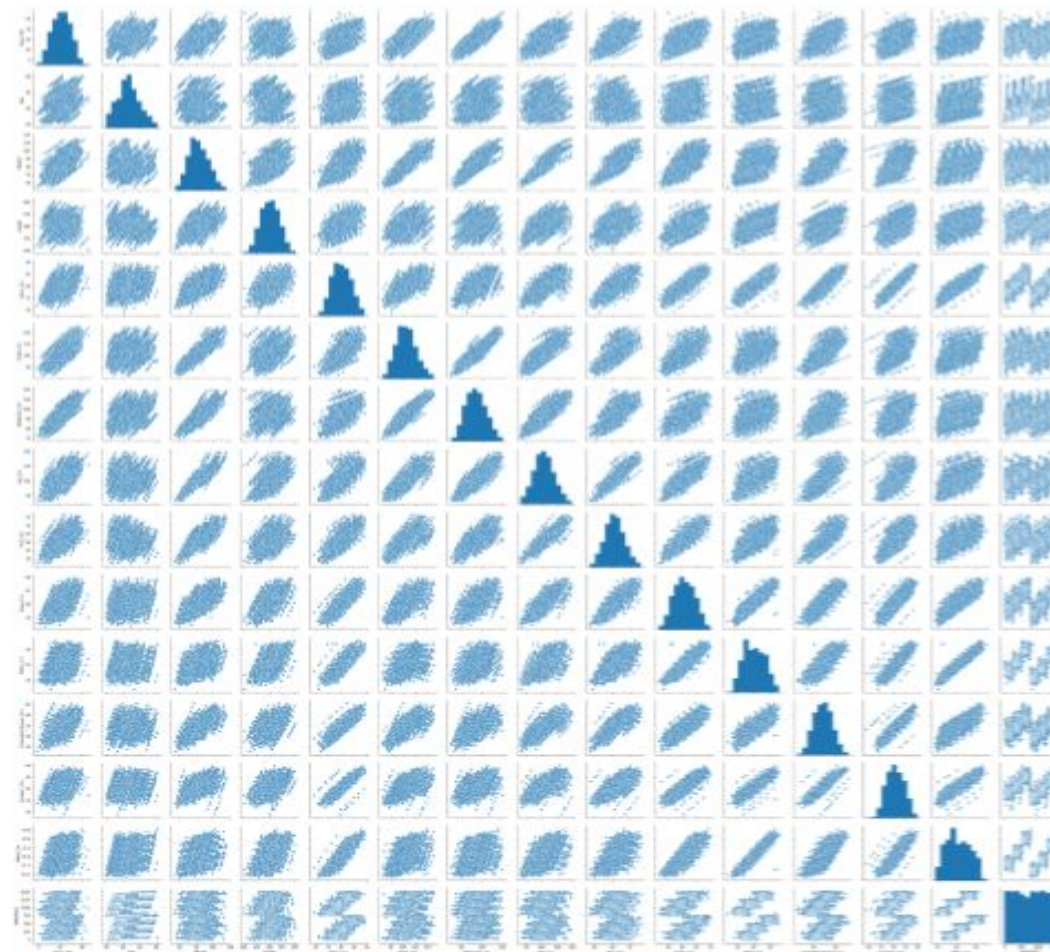
```
In [100]: sns.heatmap(bits.corr(), annot = True)
```

```
Out[100]: <matplotlib.axes._subplots.AxesSubplot at 0x1bace9f0d30>
```

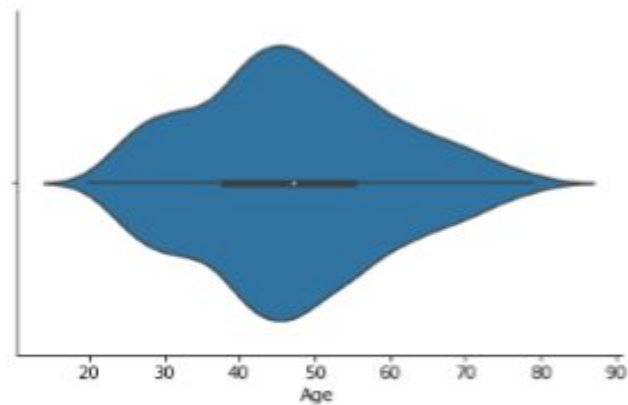



```
In [101]: sns.pairplot(bits)
```

```
Out[101]: <seaborn.axisgrid.PairGrid at 0x1bace960550>
```



```
In [102]: sns.violinplot(bits['Age'])  
sns.despine()
```

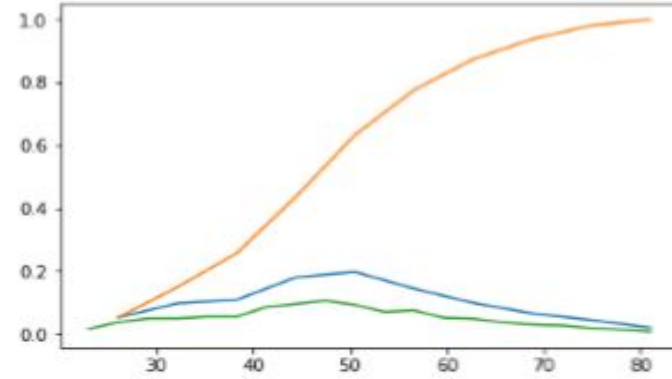


```
In [103]: import numpy as np
counts, bin_edges = np.histogram(bits['Age'], bins=10,
                                density = True)
pdf = counts/(sum(counts))
print(pdf);
print(bin_edges);
cdf = np.cumsum(pdf)
plt.plot(bin_edges[1:],pdf);
plt.plot(bin_edges[1:], cdf)

counts, bin_edges = np.histogram(bits['Age'], bins=20,
                                density = True)
pdf = counts/(sum(counts))
plt.plot(bin_edges[1:],pdf);

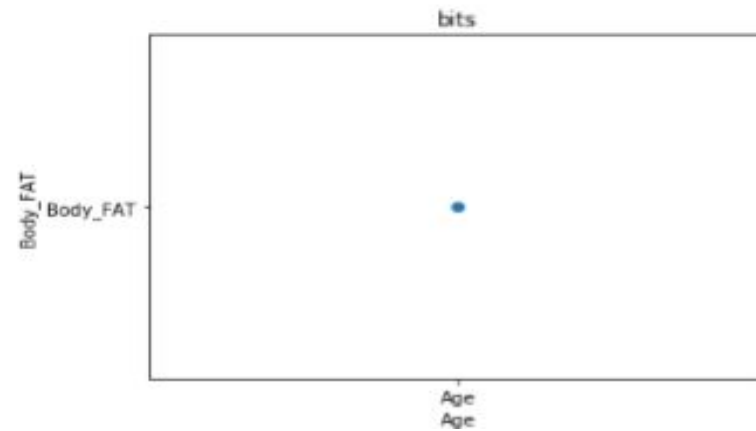
plt.show();

[0.05178446 0.09657103 0.10776767 0.17914626 0.19664101 0.14345696
 0.09797061 0.06438069 0.04338698 0.01889433]
[20.  26.1 32.2 38.3 44.4 50.5 56.6 62.7 68.8 74.9 81. ]
```

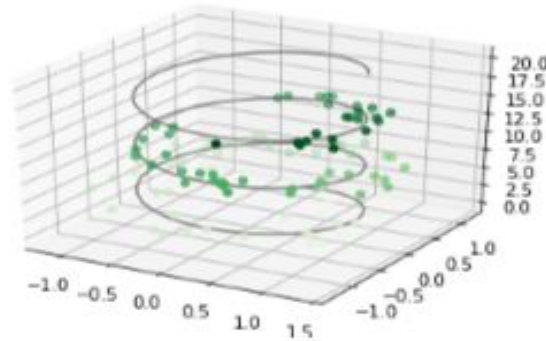


```
In [104]: plt.scatter('Age', 'Body_FAT')  
plt.title('bits')  
plt.xlabel('Age')  
plt.ylabel('Body_FAT')
```

```
Out[104]: Text(0, 0.5, 'Body_FAT')
```



```
In [119]: ax = plt.axes(projection='3d')
zline = np.linspace(0, 20, 100)
xline = np.sin(zline)
yline = np.cos(zline)
ax.plot3D(xline, yline, zline, 'gray')
zdata = 15 * np.random.random(100)
xdata = np.sin(zdata) + 0.2 * np.random.randn(100)
ydata = np.cos(zdata) + 0.2 * np.random.randn(100)
ax.scatter3D(xdata, ydata, zdata, c=zdata, cmap='Greens');
```



```
In [115]: np.random.seed(30)
N = 200
x = np.random.normal(70, 30, N)
y = x + np.random.normal(15, 20, N)
colors = np.random.rand(N)
area = (20 * np.random.rand(N))**2
```

```
In [116]: df = pd.DataFrame({
    'X': x,
    'Y': y,
    'Colors': colors,
    "bubble_size": area})
```

```
In [117]: plt.scatter('X', 'Y', s='bubble_size', c='Colors', alpha=0.5, data=df)
plt.xlabel("X", size=16)
plt.ylabel("y", size=16)
plt.title("Bubble Plot with Colors: Matplotlib", size=18)
```

Out[117]: Text(0.5, 1.0, 'Bubble Plot with Colors: Matplotlib')

