```
In [1]:  ▶  import numpy as np
            import pandas as pd
            import matplotlib.pyplot as plt
            import seaborn as sns
            import warnings
            warnings.filterwarnings('ignore')

            from matplotlib.pyplot import MultipleLocator
            from sklearn.preprocessing import LabelEncoder
```

```
In [2]:  ▶  df = pd.read_csv('data2015_2016.csv')
```

```
In [3]:  ▶  data2015_2016 = df.loc[~((df['Diastolic_Blood_Pressure'] == 0) |
                                      (df['Systolic_Blood_Pressure'] == 0) |
                                      (df['Body_Mass_Index'] == 0))]
```

```
In [4]:  ▶  data2015_2016 = data2015_2016.dropna()
```

```
In [5]:  ▶  data2015_2016.isnull().sum()
```

Out[5]:
```
SEQN                        0
Age                         0
Body_Mass_Index             0
Gender                      0
Physical_Activity           0
Total_Caffeine              0
Food_Security               0
Count_Meds                  0
Section_I                   0
Section_H                   0
Diabetes                    0
Race_and_Ethnicity          0
Total_Sodium_Intake         0
Diastolic_Blood_Pressure    0
Systolic_Blood_Pressure     0
dtype: int64
```

```
In [6]:  ▶  data2015_2016['Systolic'] = pd.cut(x = data2015_2016['Systolic_Blood_Pressure'],
                            bins=[0,140,250],
                            labels=['Normal', 'Hypertension'])
```

```
In [7]:  ▶  data2015_2016['Diastolic'] = pd.cut(x = data2015_2016['Diastolic_Blood_Pressure'],
                            bins=[1,90,200],
                            labels=['Normal', 'Hypertension'])
```

▼ Correlation & Heatmap

```
In [8]:  ▶  plt.figure(figsize = (20,12))
            corrplot = sns.heatmap(df.corr(),
                                   annot=False,
                                   fmt=".1f",
                                   linewidth=.5,
                                   cmap = "coolwarm")
            plt.show()
```
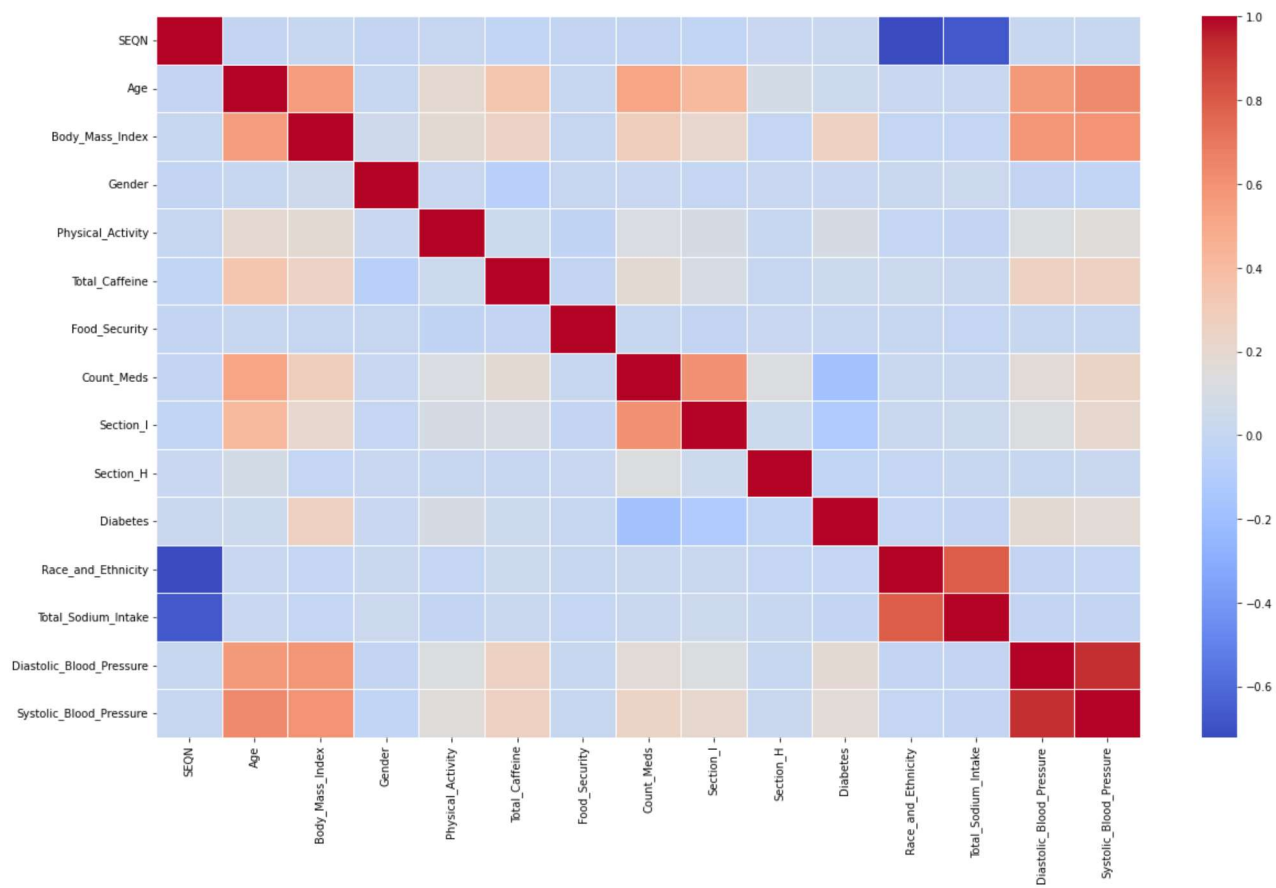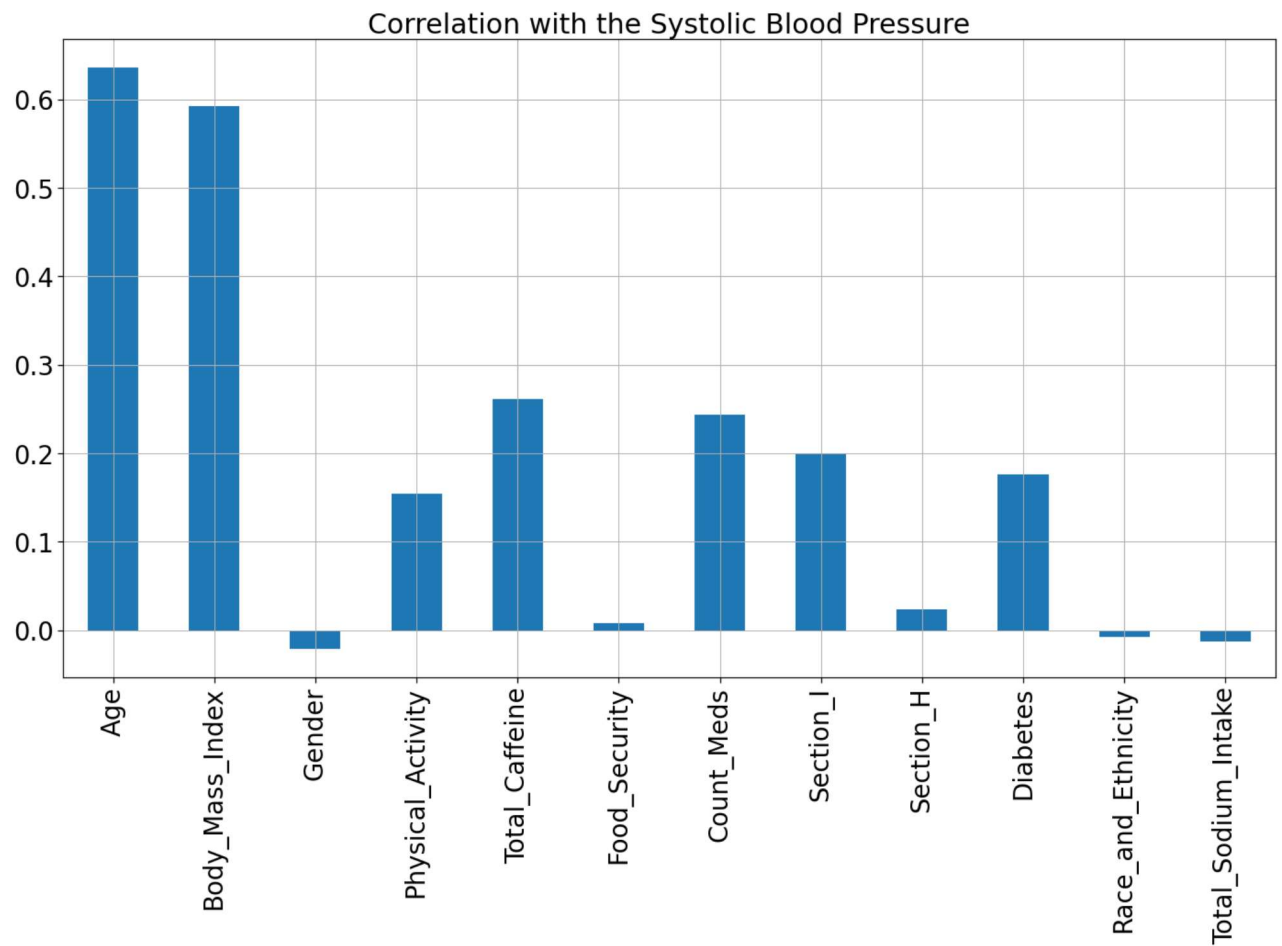
```python
sns.set_context('notebook',font_scale = 2.5)
df.drop(["Diastolic_Blood_Pressure","Systolic_Blood_Pressure","SEQN"],
        axis=1).corrwith(df.Systolic_Blood_Pressure).plot(kind='bar',
                                        grid=True,
                                        figsize=(20, 15),
                                        title="Correlation with the Systolic Blood Pressure")
plt.tight_layout()
```


Correlation with the Systolic Blood Pressure

Normal & Hypertension Distribution

```
plt.figure(figsize=(10,5))
sns.countplot(x='Systolic',data = data2015_2016,palette="BuPu")
plt.xticks(fontsize=17)
plt.yticks(fontsize=17)
plt.xlabel("Systolic Blood Pressure Group",size = 20)
plt.ylabel("Counts", size = 20)
plt.title('Normal & Hypertension Distribution',size = 25)
plt.show()
```
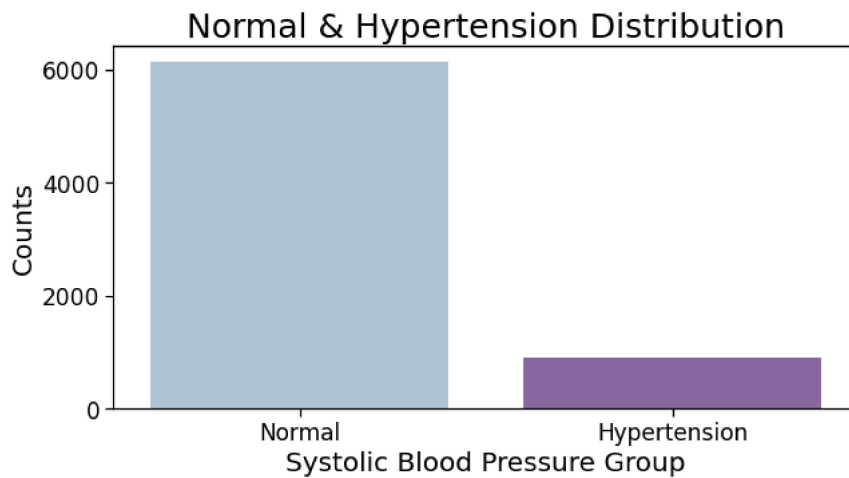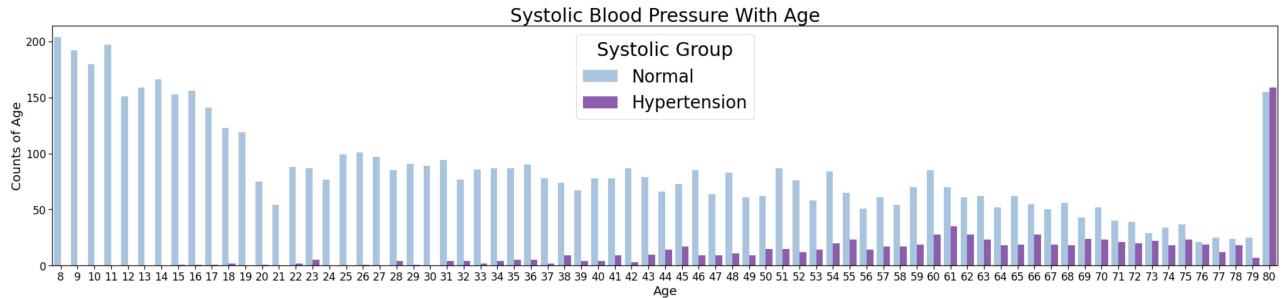
```
plt.figure(figsize=(10,5))
sns.countplot(x='Diastolic',data = data2015_2016,palette="BuPu")
plt.xticks(fontsize=17)
plt.yticks(fontsize=17)
plt.xlabel("Diastolic Blood Pressure Group",size = 20)
plt.ylabel("Counts", size = 20)
plt.title('Normal & Hypertension Distribution',size = 25)
plt.show()
```
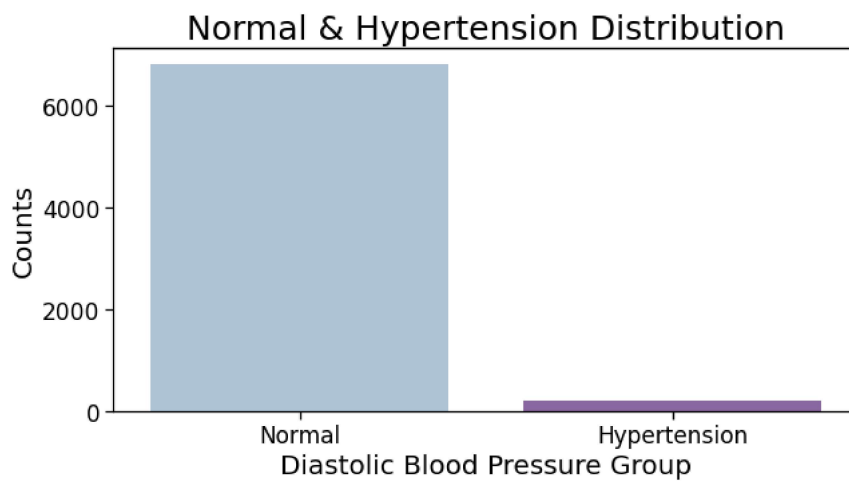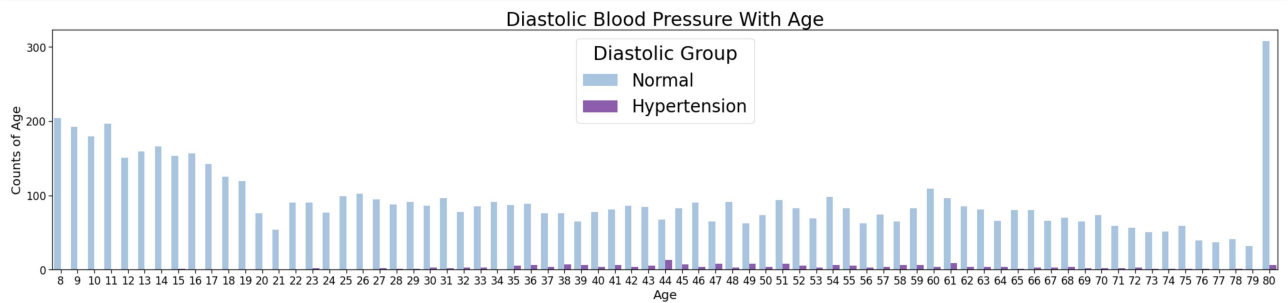

Blood Pressure With Age

In [12]: ►
```python
plt.figure(figsize=(35,7))
sns.countplot(x = 'Age', data = data2015_2016,
                hue ='Systolic',
                palette='BuPu',
                saturation=1.5)
plt.legend(loc='upper center', title='Systolic Group')
plt.xticks(fontsize=17)
plt.yticks(fontsize=17)
plt.xlabel('Age', size = 20)
plt.ylabel('Counts of Age', size = 20)
plt.title('Systolic Blood Pressure With Age',size = 30)
plt.show()
```

Systolic Blood Pressure With Age

In [13]: ►
```python
plt.figure(figsize=(35,7))
sns.countplot(x = 'Age', data = data2015_2016,
                hue ='Diastolic',
                palette='BuPu',
                saturation=1.5)
plt.legend(loc='upper center', title='Diastolic Group')
plt.xticks(fontsize=17)
plt.yticks(fontsize=17)
plt.xlabel('Age', size = 20)
plt.ylabel('Counts of Age', size = 20)
plt.title('Diastolic Blood Pressure With Age',size = 30)
plt.show()
```
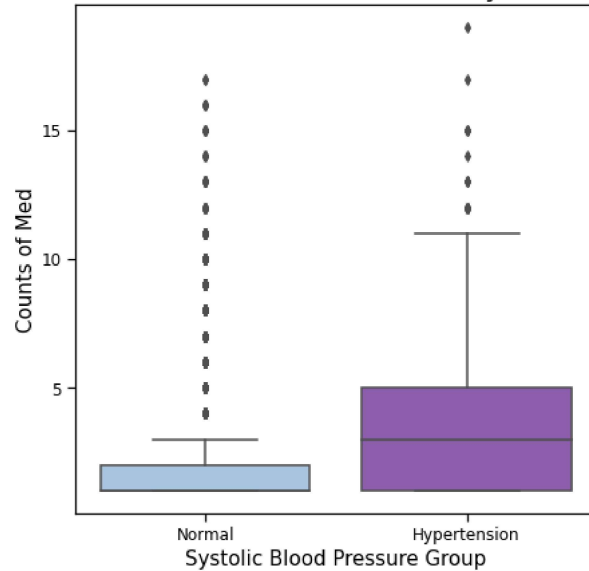
Diastolic Blood Pressure With Age

▼ **Blood Pressure with Count of Medicine**

```python
plt.figure(figsize=(7,7))
sns.boxplot(x='Systolic', y = 'Count_Meds',
            data = data2015_2016,
            palette='BuPu',
            saturation=1.5,)
plt.xticks(fontsize=12)
plt.yticks(fontsize=12)
plt.xlabel('Systolic Blood Pressure Group', size = 15)
plt.ylabel('Counts of Med', size = 15)
plt.title('The Distribution of Count of Medicine with Systolic Blood Pressure',size = 20)
plt.show()
```

The Distribution of Count of Medicine with Systolic Blood Pressure

```python
plt.figure(figsize=(7,7))
sns.boxplot(x='Diastolic', y = 'Count_Meds',
            data = data2015_2016,
            palette='BuPu',
            saturation=1.5,)
plt.xticks(fontsize=12)
plt.yticks(fontsize=12)
plt.xlabel('Diastolic Blood Pressure Group', size = 15)
plt.ylabel('Counts of Med', size = 15)
plt.title('The Distribution of Count of Medicine with Diastolic Blood Pressure',size = 20)
plt.show()
```

The Distribution of Count of Medicine with Diastolic Blood Pressure
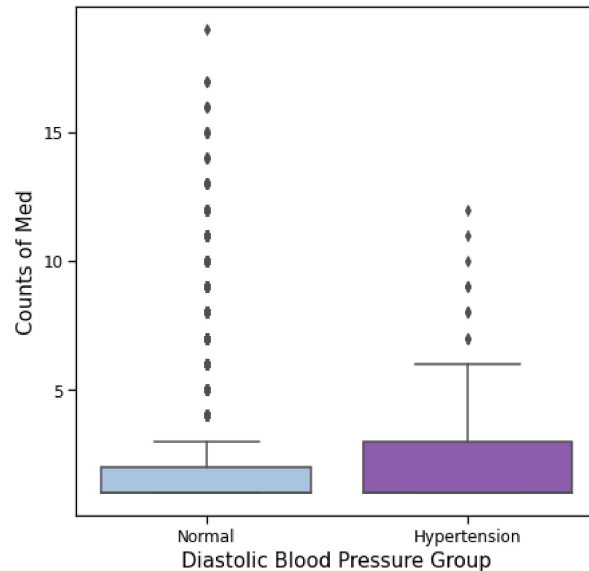
Blood Pressure across Age and Gender

```
In [16]:  ▶  data2015_2016['gender'] = pd.cut(x=data2015_2016['Gender'],
                              bins=[-1,1,3],
                              labels=['Male', 'Female'])
```

```
In [17]:  ▶  with sns.axes_style("whitegrid"):
              sns.set_context('notebook', font_scale = 2)
              sns.lmplot(x='Age', y='Systolic_Blood_Pressure',
                         data = data2015_2016,
                         col="gender",
                         height=10,
                         line_kws={'color': 'red'})
              plt.show()
```



```
In [18]:  ▶  with sns.axes_style("whitegrid"):
              sns.set_context('notebook', font_scale = 2)
              sns.lmplot(x='Age', y='Diastolic_Blood_Pressure',
                         data = data2015_2016,
                         col="gender",
                         height=10,
                         line_kws={'color': 'red'})
              plt.show()
```