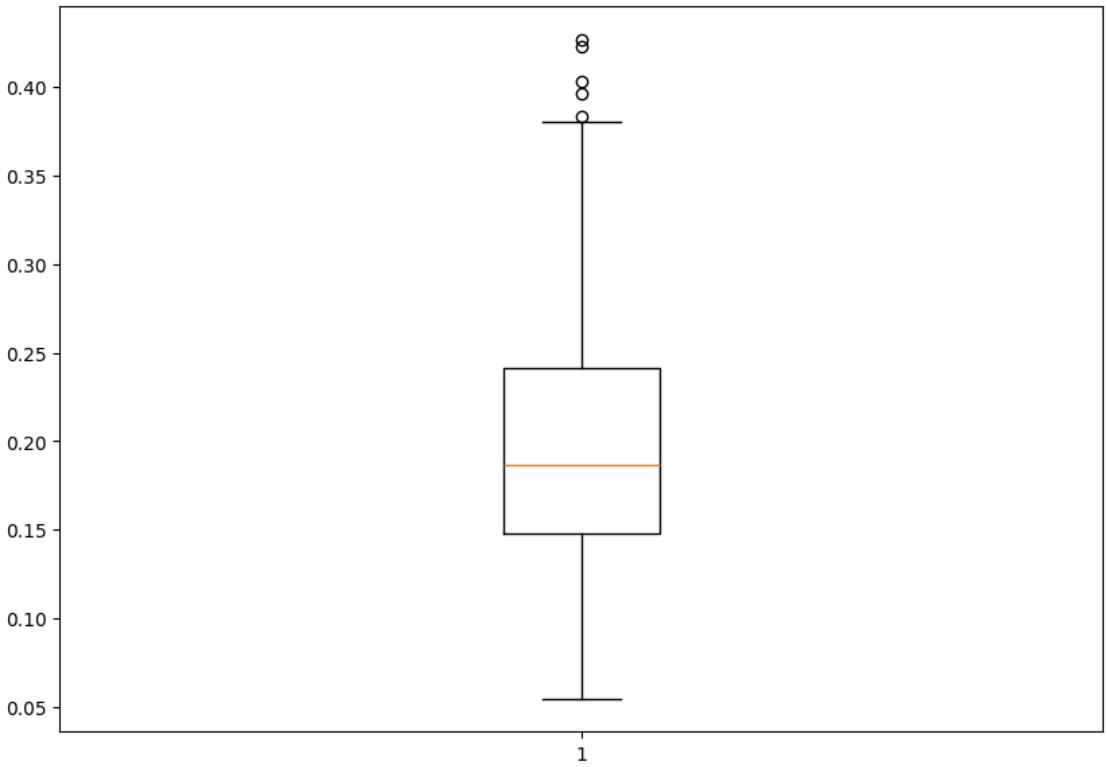
# Data Analysis

May 8, 2024

[1]:
```
import pandas as pd
pd.set_option('display.max_columns', None)
pd.set_option('display.max_rows', None)
pd.set_option('display.max_colwidth', None)
import numpy as np
from IPython.display import display
import scipy
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px
```

[2]:
```
df = pd.read_csv("../data/AR_cleaned_ISB_aging_new_merge_fi_wgcna.csv")
```

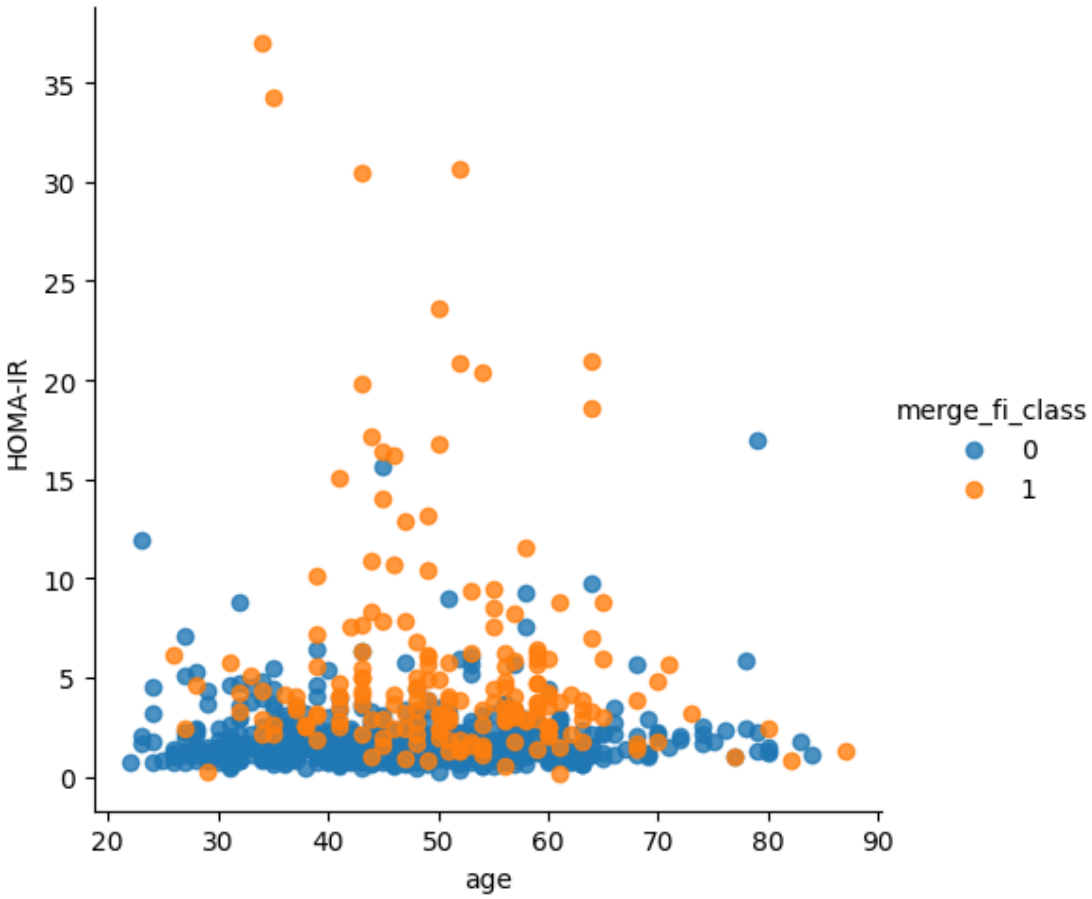
[3]:
```
data = df['merge_fi']
fig = plt.figure(figsize =(10, 7))

# Creating plot
plt.boxplot(data)

# show plot
plt.show()
```



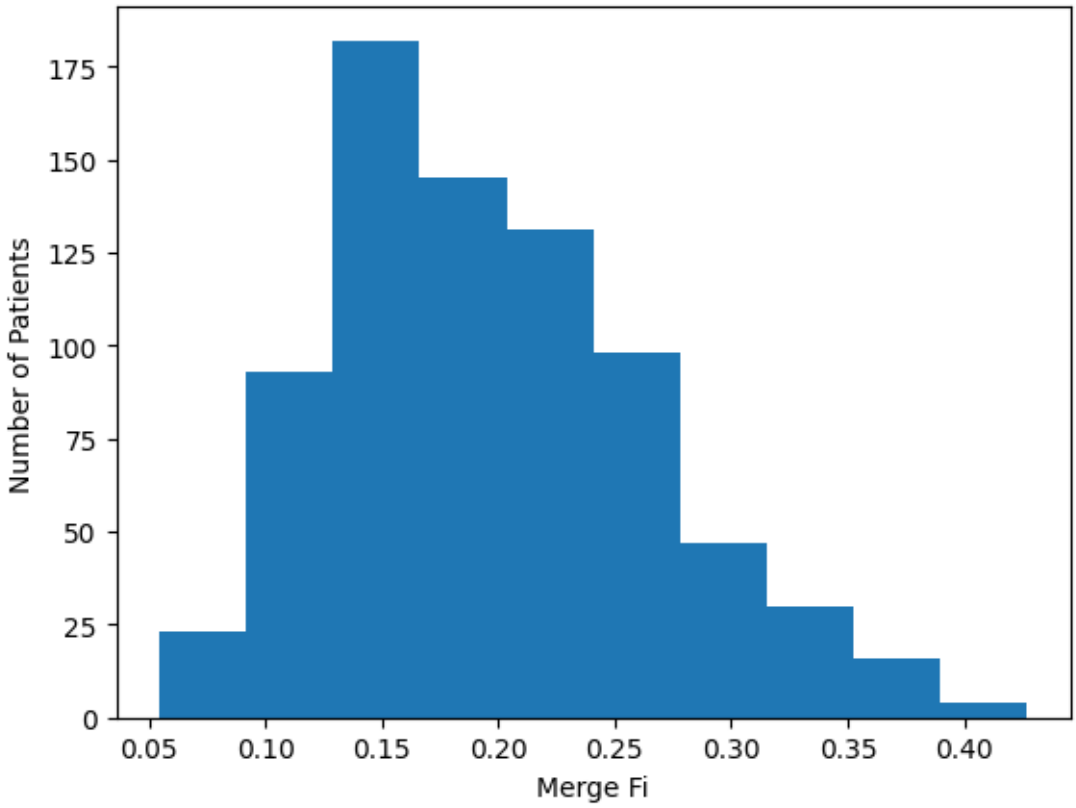

[4]:
```
cutoff = df['merge_fi'].quantile(0.75)
print('Cutoff:', cutoff)

df['merge_fi_class'] = (df['merge_fi'] > cutoff).astype(int)

merge_cats = df['merge_fi_class'].value_counts()
print(merge_cats)
```

```
Cutoff: 0.241414141
merge_fi_class
0    577
1    192
Name: count, dtype: int64
```

[5]:
```
sns.lmplot(x='age',
           y='HOMA-IR',
           hue='merge_fi_class',
           data=df,
           fit_reg=False)
plt.show()
```

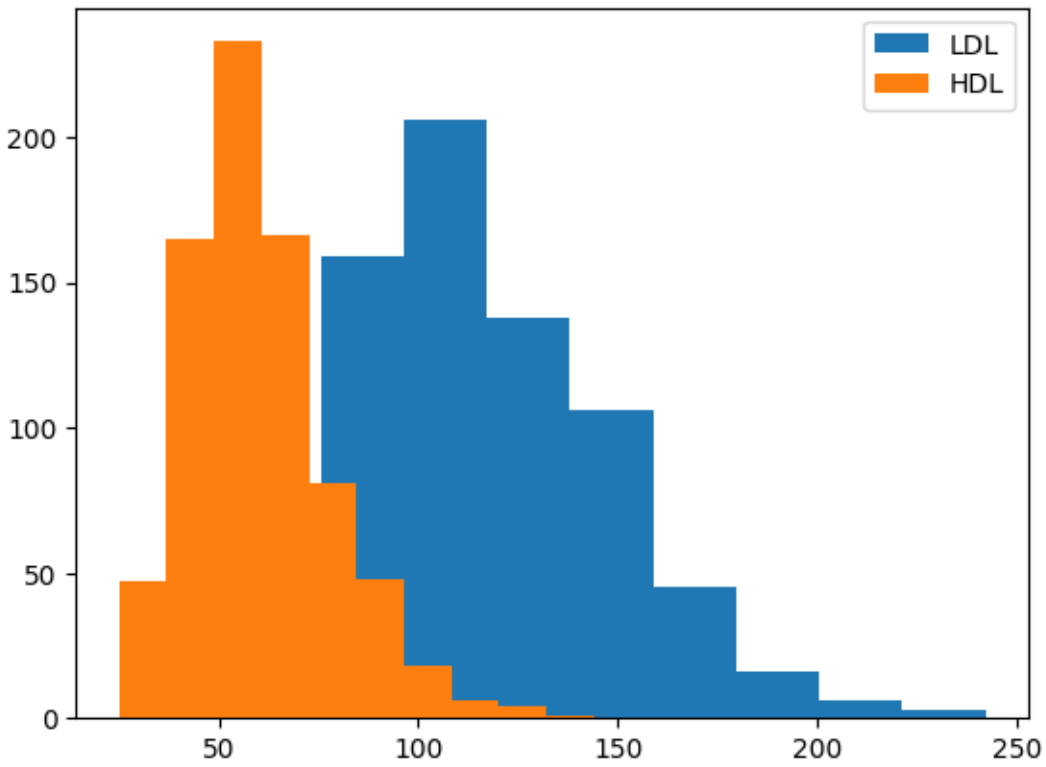



[6]:
```
plt.hist(df['merge_fi'])
plt.xlabel('Merge Fi')
plt.ylabel('Number of Patients')
# plt.title('')
plt.grid(False)
plt.show()
```




[7]:
```
plt.hist(df["LDL-CHOL CALCULATION"].dropna().tolist(), label="LDL")
plt.hist(df["HDL CHOL DIRECT"].dropna().tolist(), label="HDL")
plt.legend()
```

[7]: <matplotlib.legend.Legend at 0x7f4f0a227310>




[8]:
```
filtered_df = df[['age', 'HOMA-IR', 'INSULIN', 'ALKALINE PHOSPHATASE',␣
↪'merge_fi_class']]
variables = ['age', 'HOMA-IR', 'INSULIN', 'ALKALINE PHOSPHATASE']

color_discrete_map = {0: 'blue', 1: 'red'}

fig = px.scatter_matrix(
    filtered_df,
    dimensions=variables,
    color='merge_fi_class',
    symbol='merge_fi_class',
    color_discrete_map=color_discrete_map,
    labels={'merge_fi_class': 'Class'},
    # title='Scatter matrix of features by merge_fi_class'
)
fig.update_layout(coloraxis_showscale=False)
fig.update_traces(diagonal_visible=False, marker=None)

fig.update_layout(
    autosize=False,
    width=1000,
    height=800,
```

```
    legend_title_text="Frailty Categories"
)

fig.show()
```


[ ]: