

```
In [7]: import pandas as pd
import numpy as np
from lifelines import CoxPHFitter
import matplotlib.pyplot as plt

# Load the data from the Excel file
data = pd.read_excel('data1.xlsx')

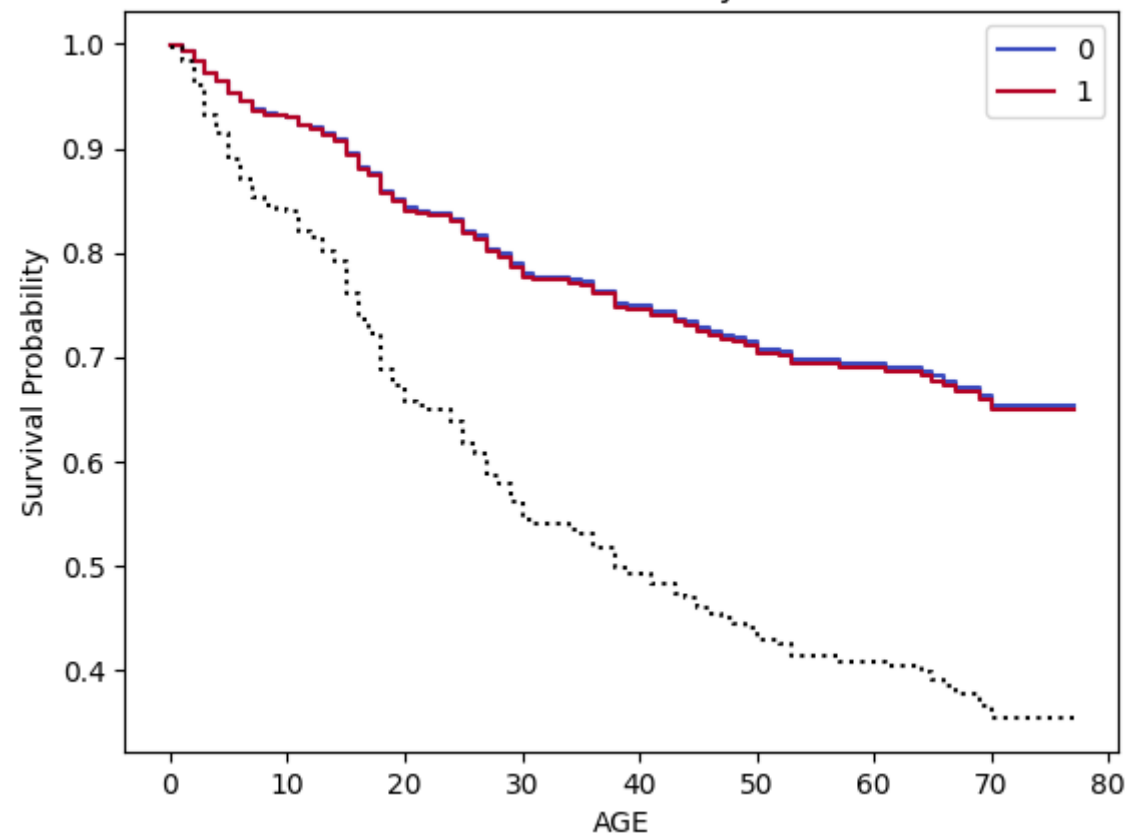
# Create a new instance of the CoxPHFitter class
cph = CoxPHFitter()

# Fit the Cox Proportional Hazard model to the data
cph.fit(data, duration_col='Months', event_col='DEATH')
```

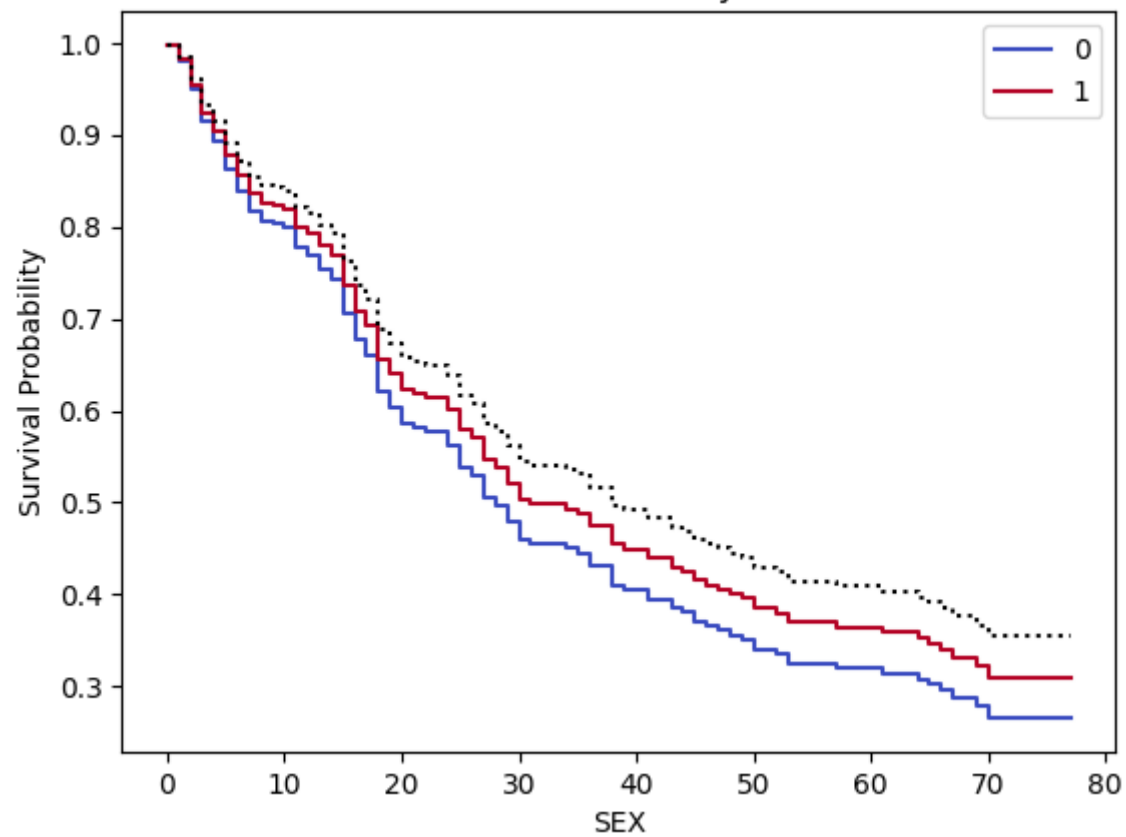
Out[7]: <lifelines.CoxPHFitter: fitted with 343 total observations, 167 right-censored observations>

```
In [2]: covariates_to_plot = ['AGE', 'SEX', 'CompositeStage', 'LNInvolment', 'Comorbidity', 'FamilyHistoryOfCancer']
for covariate in covariates_to_plot:
    cph.plot_partial_effects_on_outcome(covariates=covariate, values=[0, 1], cmap='coolwarm')
    plt.xlabel(covariate)
    plt.ylabel('Survival Probability')
    plt.title('Survival Curves by ' + covariate)
    plt.legend(['0', '1'])
    plt.show()
```

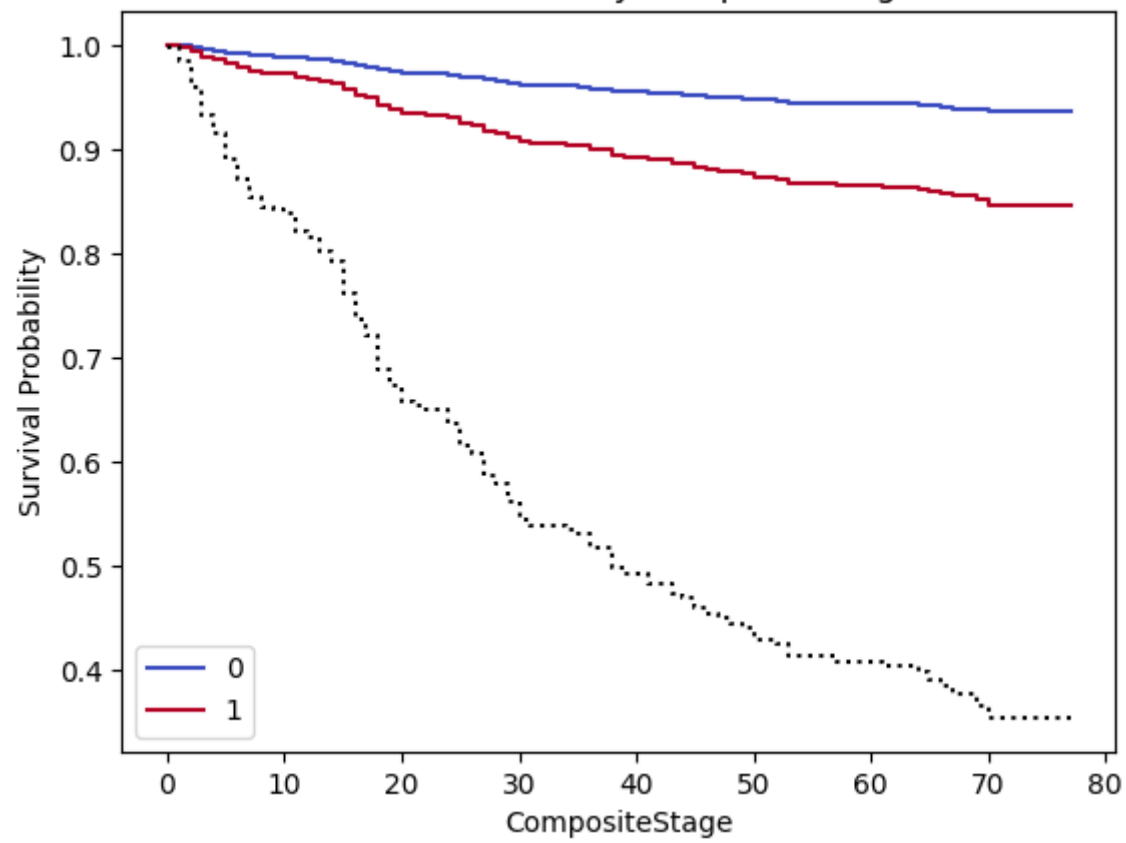
Survival Curves by AGE



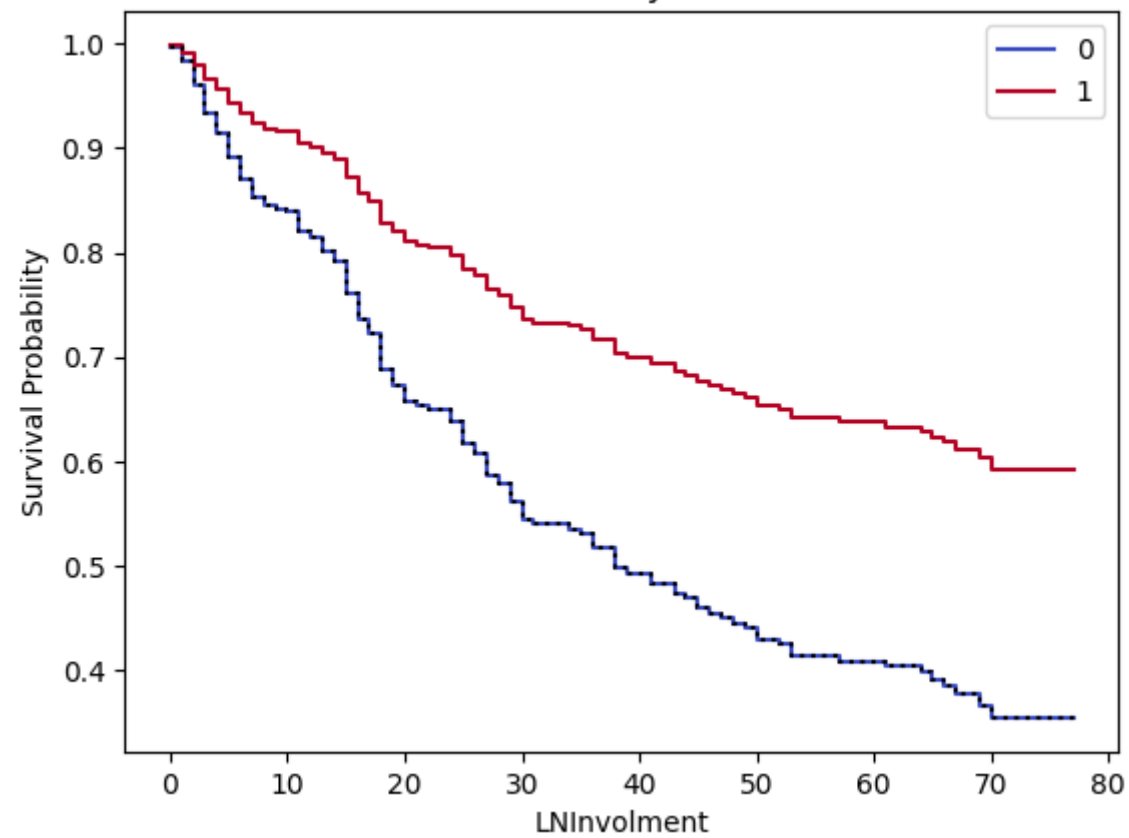
Survival Curves by SEX



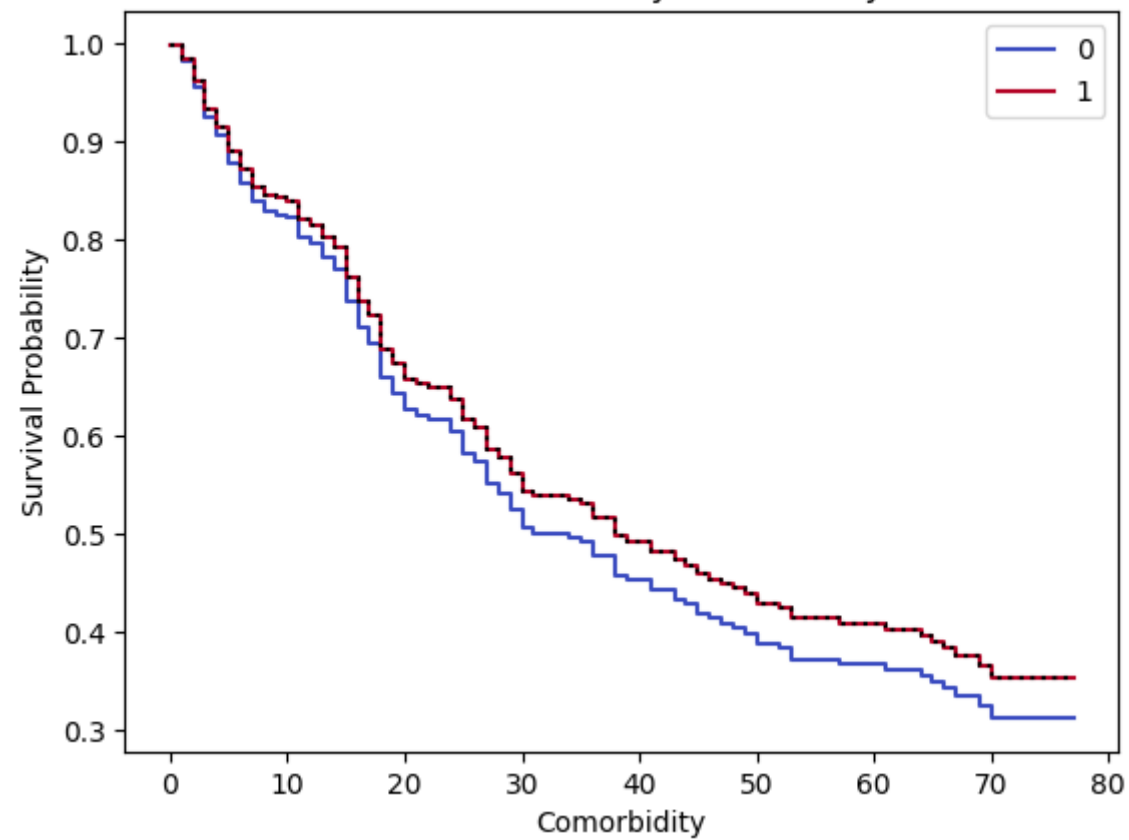
Survival Curves by CompositeStage

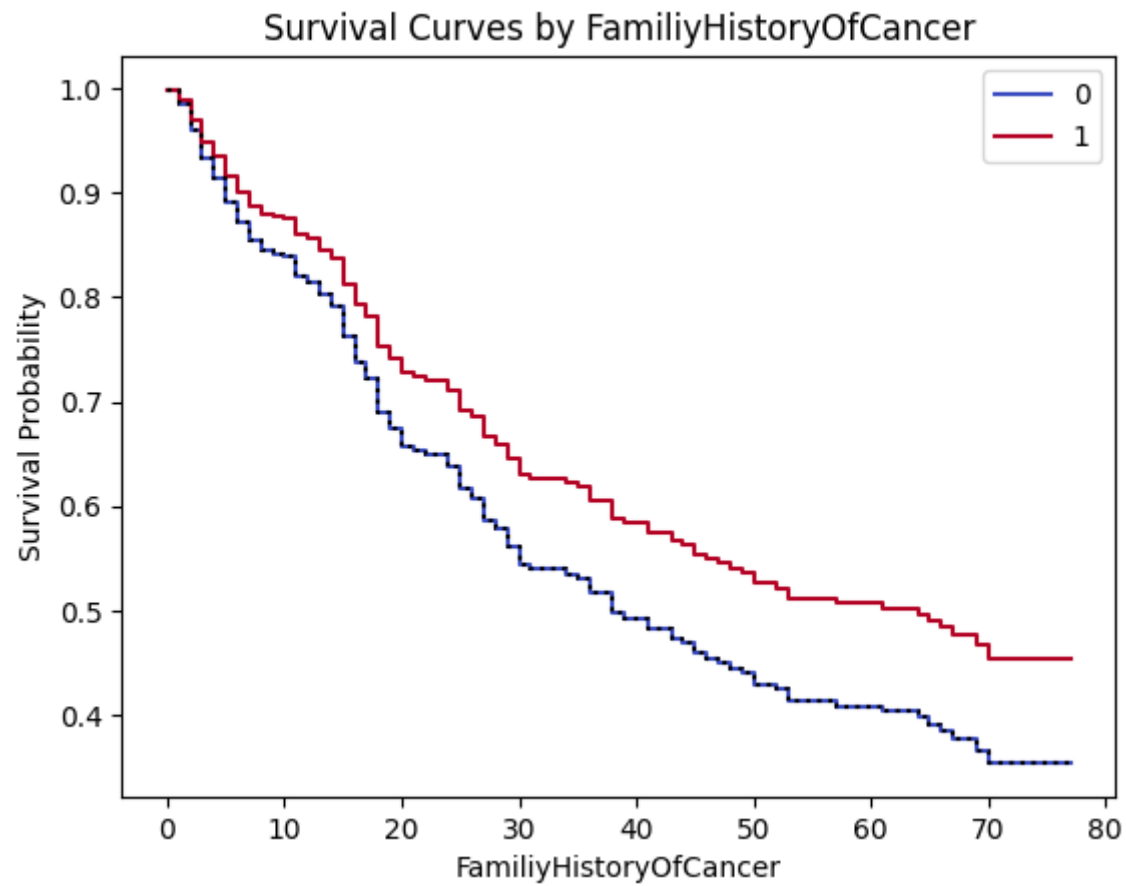


Survival Curves by LNInvolment

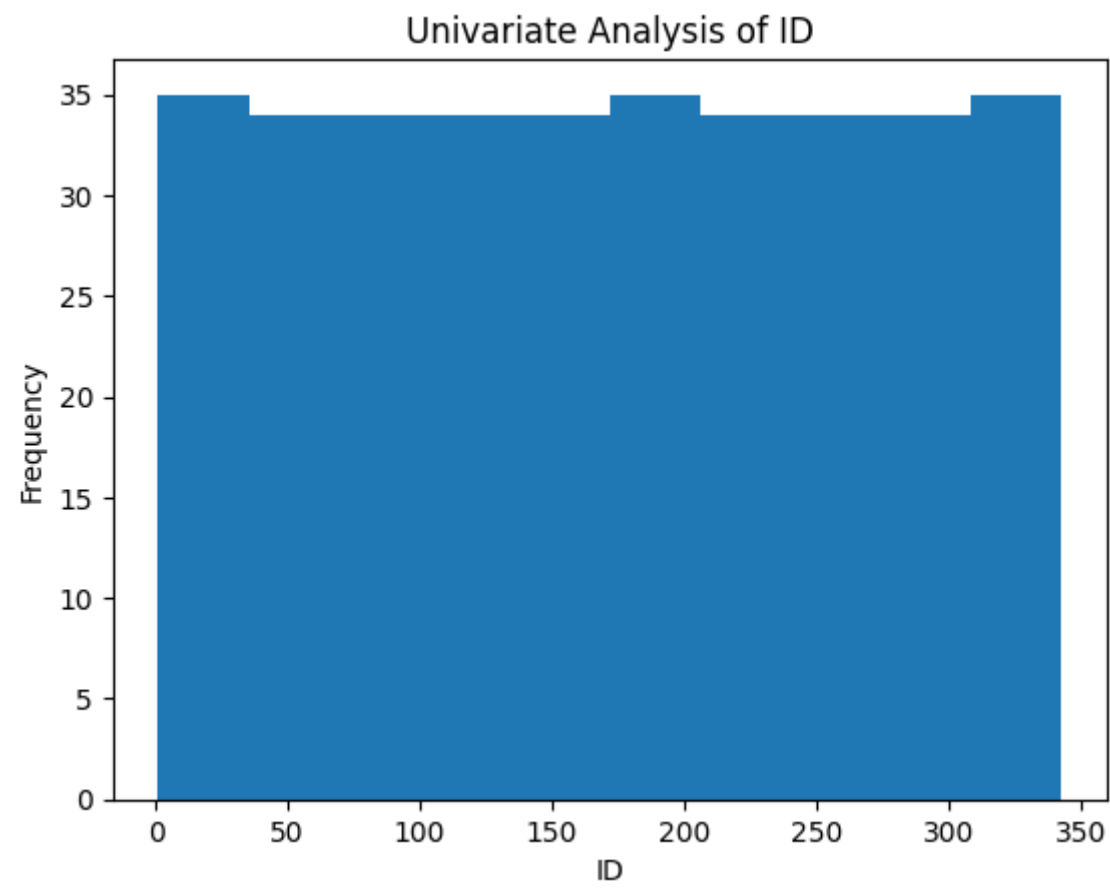


Survival Curves by Comorbidity



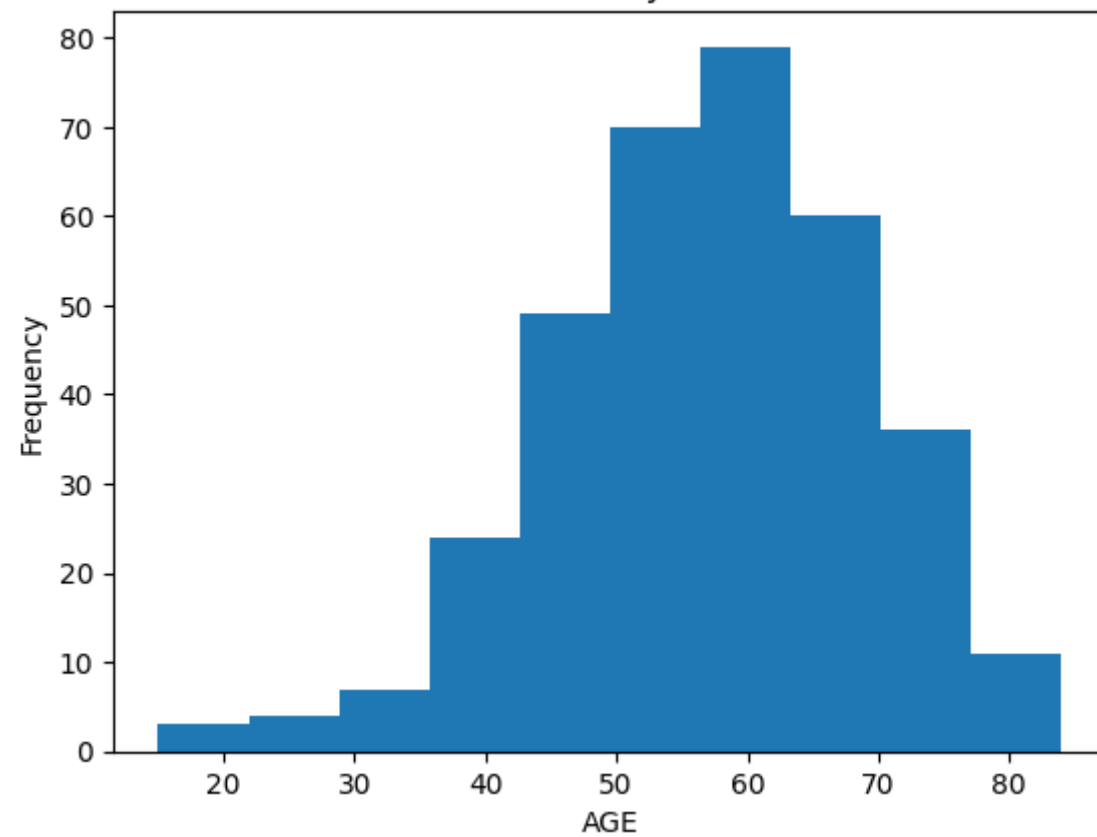


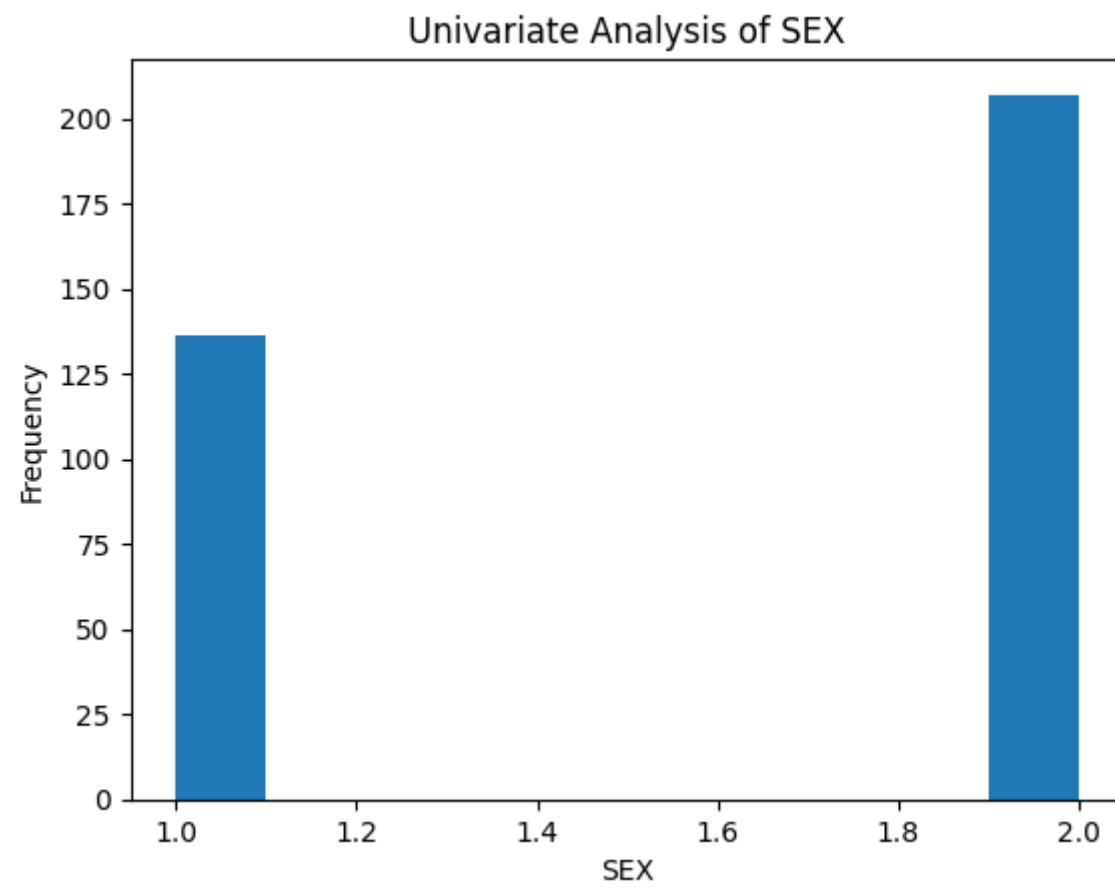
```
In [3]: for column in data.columns:
        if column not in ['Months', 'DEATH']:
            # Plot the variable
            plt.figure()
            plt.hist(data[column])
            plt.xlabel(column)
            plt.ylabel('Frequency')
            plt.title(f'Univariate Analysis of {column}')
            plt.show()
```



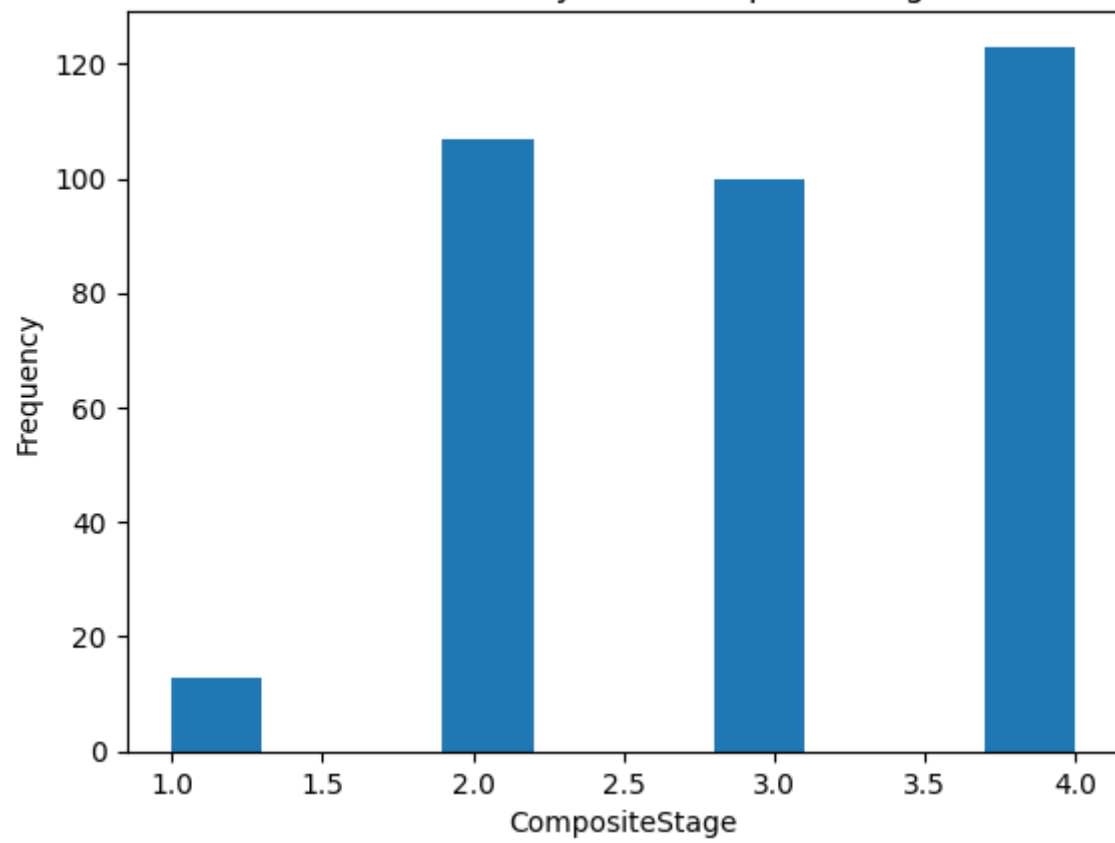


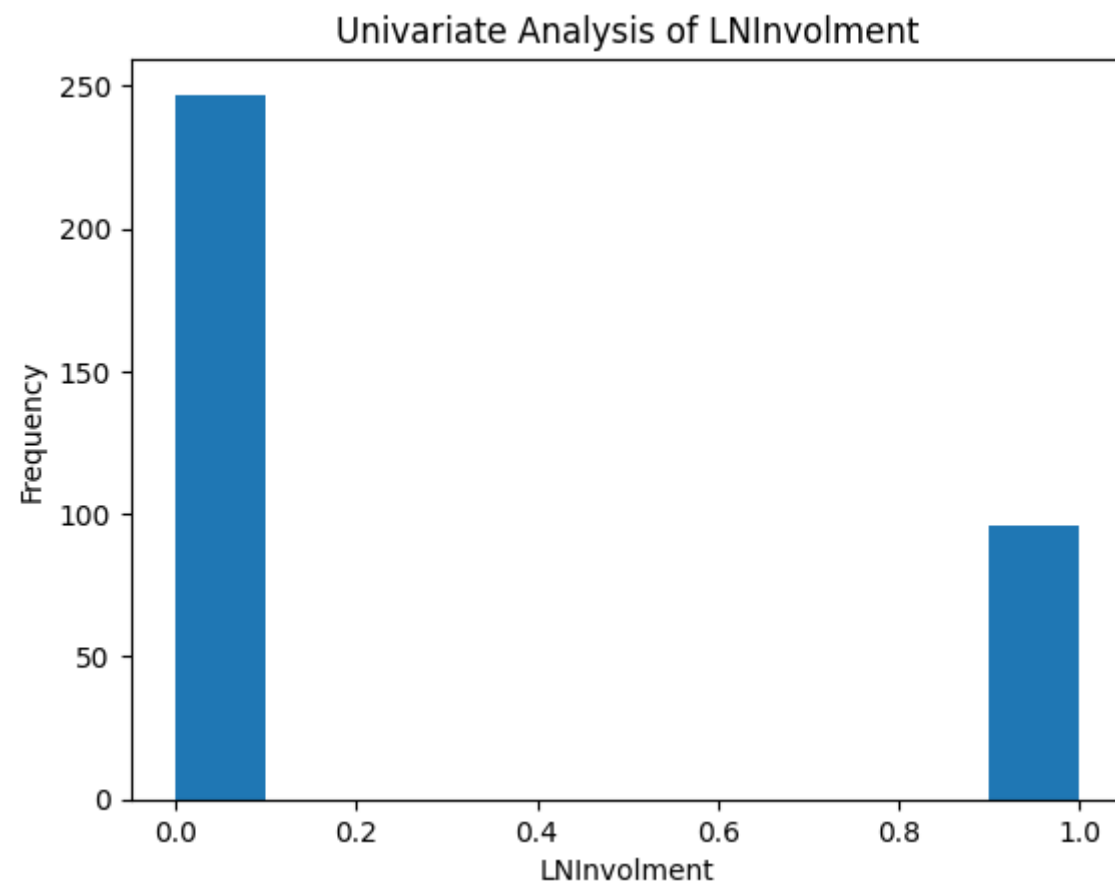
Univariate Analysis of AGE



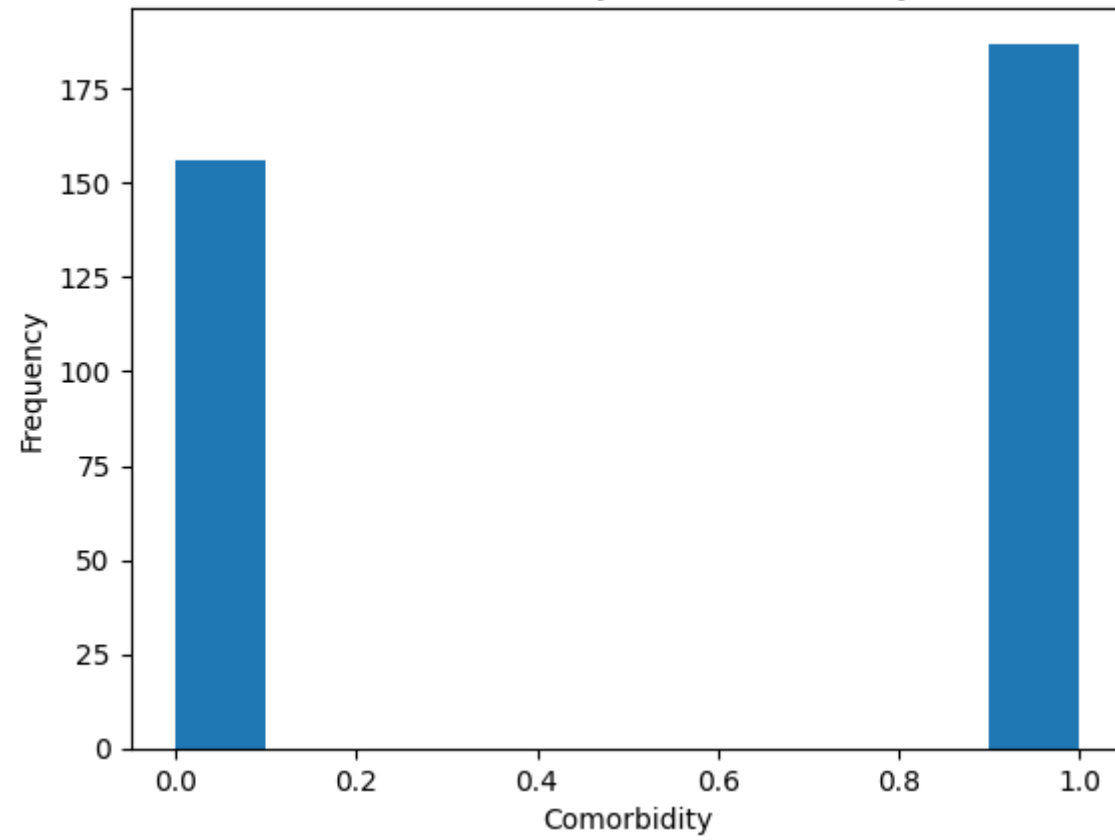


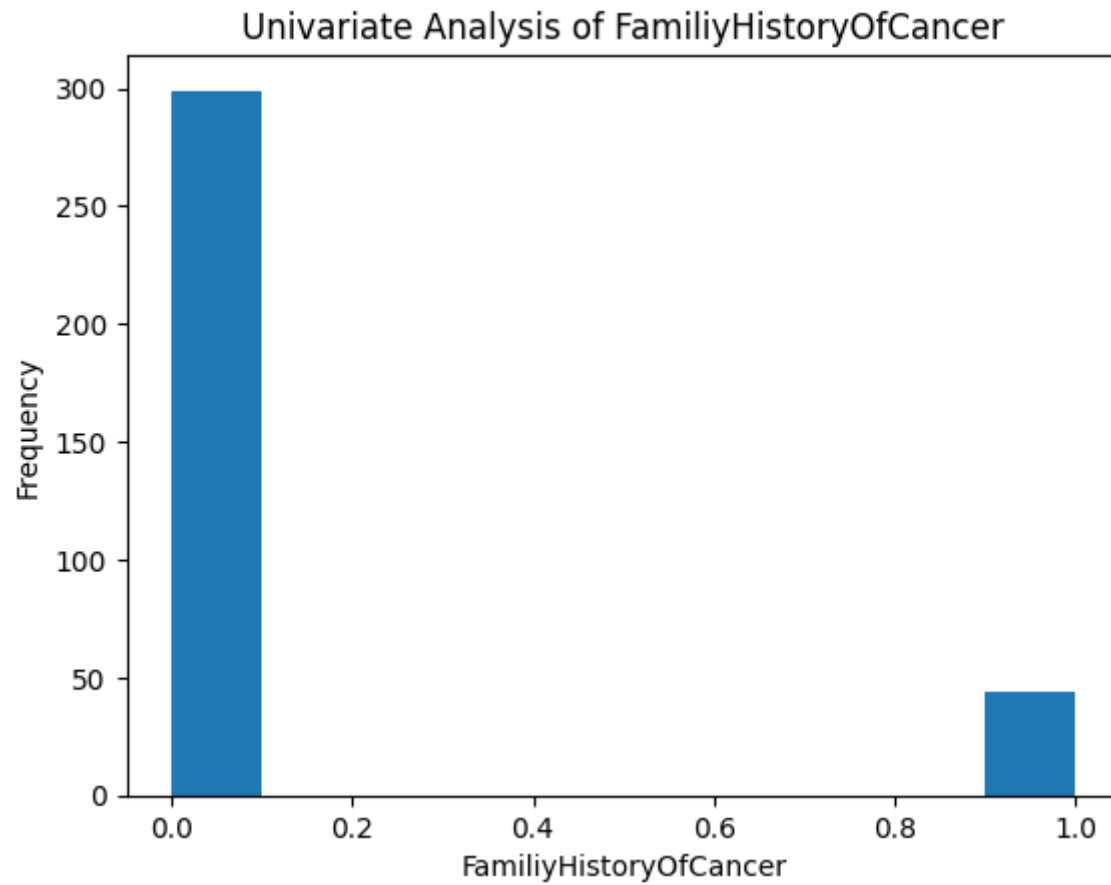
Univariate Analysis of CompositeStage





Univariate Analysis of Comorbidity





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In [5]: n = len(data)
llf = cph.log_likelihood_
k = cph.params_.shape[0]
aic = -2 * llf + 2 * k
bic = -2 * llf + k * np.log(n)
print("AIC of the above given data:", aic)
print("BIC of the above given data:", bic)
```

AIC of the above given data: 1769.942369337933  
BIC of the above given data: 1796.8064824680946

```
In [ ]:
```