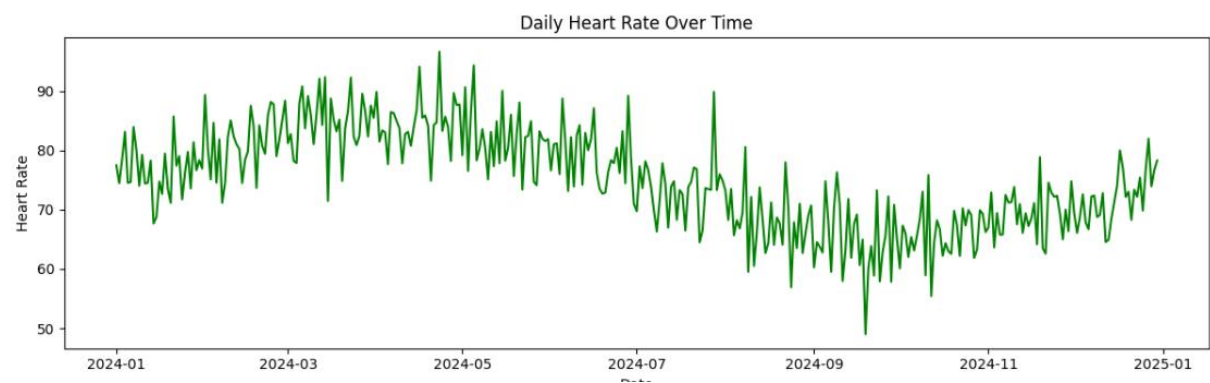
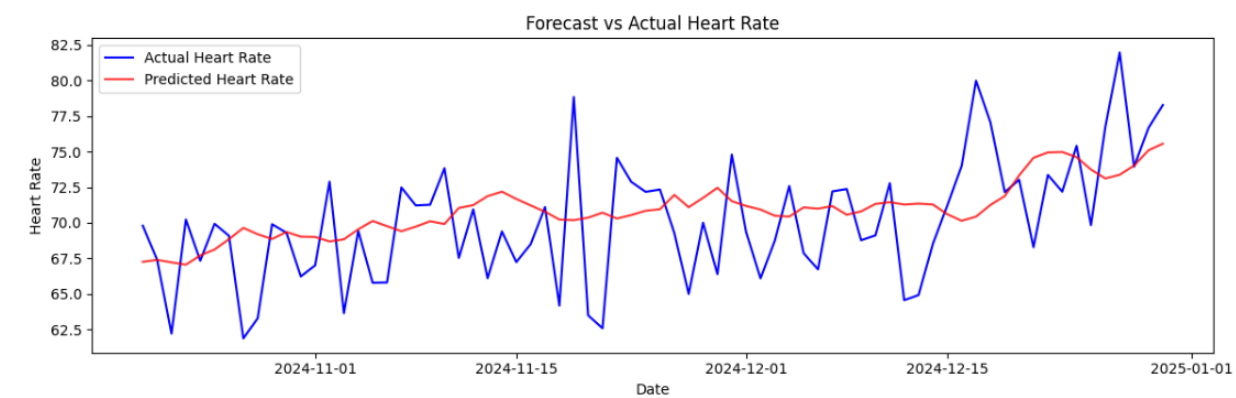


•

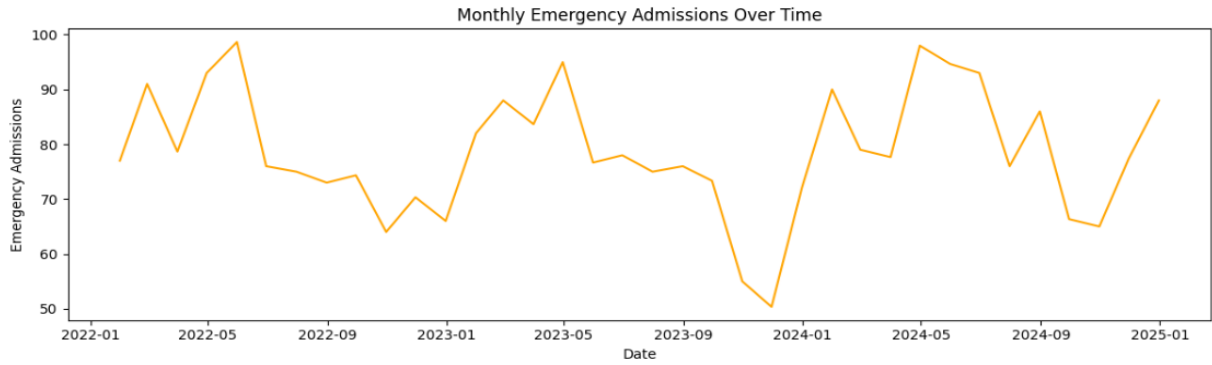


```
Warning: Do not pass an 'input_shape'/'input_dim' argument to a layer. When using Sequential models, prefer using an 'Input(shape)' object as the first layer in the model
super().__init__(**kwargs)
Epoch 1/10
9/9 - 3s - 339ms/step - loss: 0.2005
Epoch 2/10
9/9 - 0s - 9ms/step - loss: 0.0279
Epoch 3/10
9/9 - 0s - 16ms/step - loss: 0.0205
Epoch 4/10
9/9 - 0s - 15ms/step - loss: 0.0190
Epoch 5/10
9/9 - 0s - 10ms/step - loss: 0.0145
Epoch 6/10
9/9 - 0s - 11ms/step - loss: 0.0141
Epoch 7/10
9/9 - 0s - 9ms/step - loss: 0.0138
Epoch 8/10
9/9 - 0s - 9ms/step - loss: 0.0133
Epoch 9/10
9/9 - 0s - 9ms/step - loss: 0.0133
Epoch 10/10
9/9 - 0s - 15ms/step - loss: 0.0129
3/3 0s 90ms/step
```

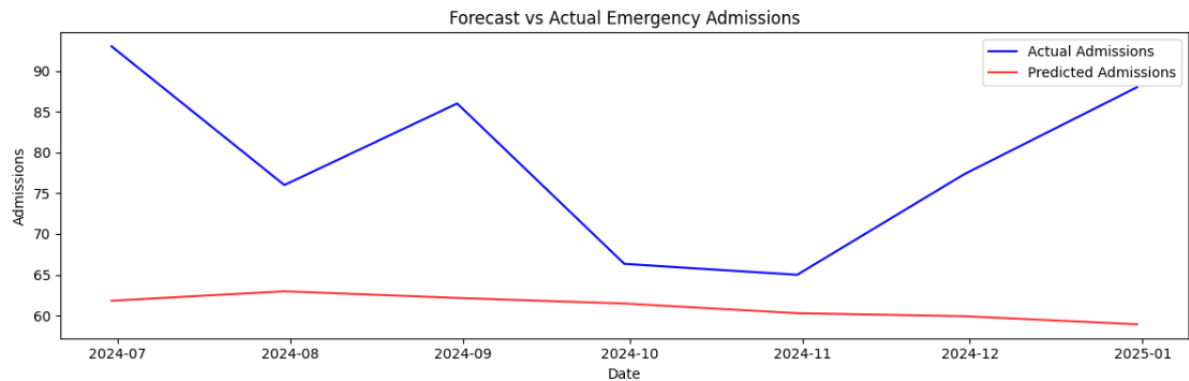


Test Mean Squared Error: 16.195

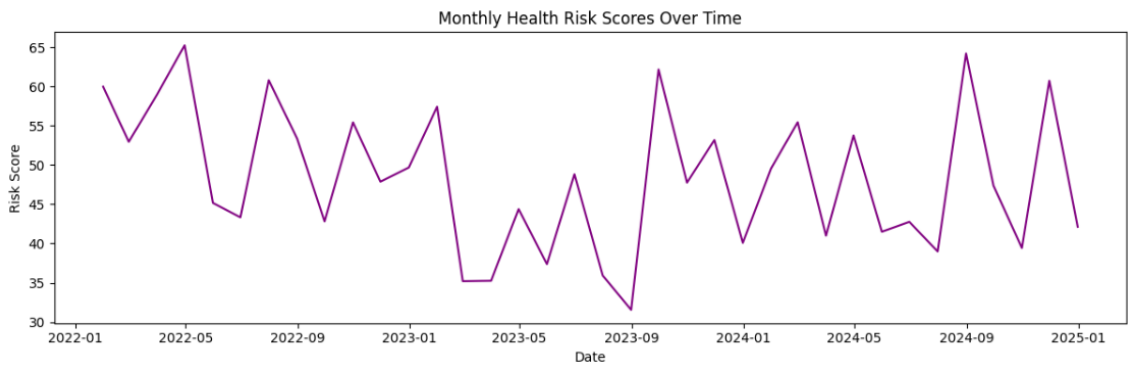
```
<ipython-input-3-37a0a0bf2ec9>:3: FutureWarning: 'M' is deprecated and will be removed in a future version, please use 'ME' instead.  
dates_monthly = pd.date_range('2022-01-01', periods=months, freq='M')
```



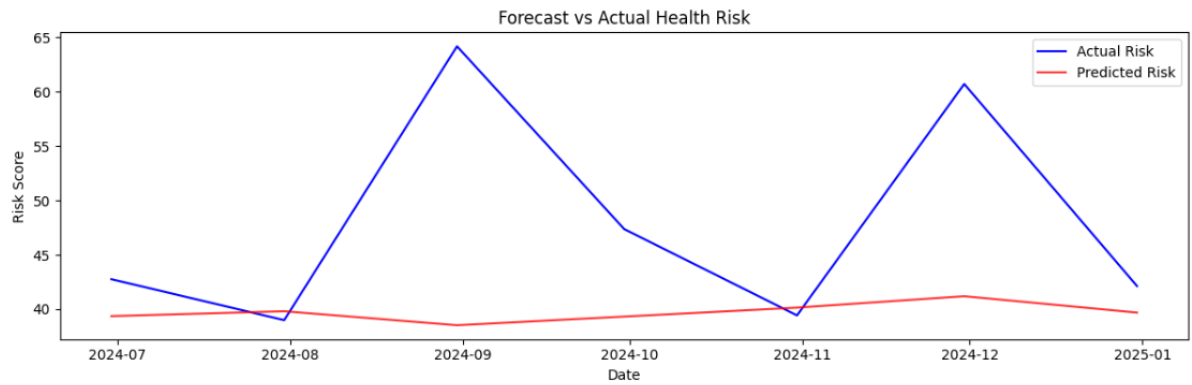
```
Epoch 1/10  
/usr/local/lib/python3.11/dist-packages/keras/src/layers/rnn/rnn.py:200: UserWarning: Do not pass an 'input_shape'/'input_dim' argument to a layer. When using Sequential models, prefer using an 'Input(shape)' object as the first layer in the model  
super().__init__(**kwargs)  
2/2 - 2s - 1s/step - loss: 0.4245  
Epoch 2/10  
2/2 - 0s - 37ms/step - loss: 0.3980  
Epoch 3/10  
2/2 - 0s - 31ms/step - loss: 0.3730  
Epoch 4/10  
2/2 - 0s - 73ms/step - loss: 0.3472  
Epoch 5/10  
2/2 - 0s - 59ms/step - loss: 0.3255  
Epoch 6/10  
2/2 - 0s - 21ms/step - loss: 0.3027  
Epoch 7/10  
2/2 - 0s - 30ms/step - loss: 0.2802  
Epoch 8/10  
2/2 - 0s - 21ms/step - loss: 0.2579  
Epoch 9/10  
2/2 - 0s - 30ms/step - loss: 0.2364  
Epoch 10/10  
2/2 - 0s - 30ms/step - loss: 0.2150  
1/1 - 0s - 163ms/step
```



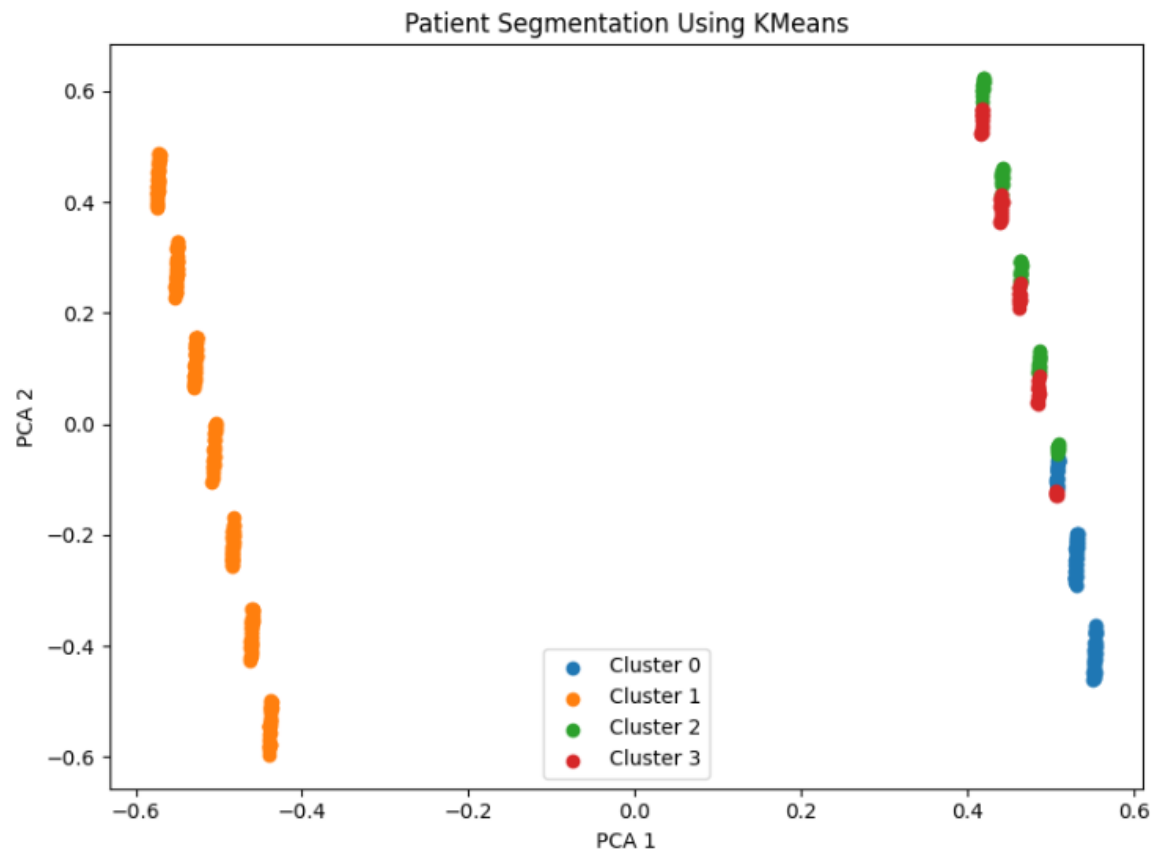
Test MSE (Admissions Forecasting): 414.803



```
Epoch 1/10
/usr/local/lib/python3.11/dist-packages/keras/src/layers/rnn/rnn.py:200: UserWarning: Do not pass an `input_shape`/'input_dim' argument to a layer. When using Sequential models, prefer using an `Input(shape)` object as the first layer in the model
  super().__init__(**kwargs)
2/2 - 2s - 836ms/step - loss: 0.2919
Epoch 2/10
2/2 - 0s - 22ms/step - loss: 0.2716
Epoch 3/10
2/2 - 0s - 35ms/step - loss: 0.2529
Epoch 4/10
2/2 - 0s - 22ms/step - loss: 0.2347
Epoch 5/10
2/2 - 0s - 30ms/step - loss: 0.2164
Epoch 6/10
2/2 - 0s - 30ms/step - loss: 0.1977
Epoch 7/10
2/2 - 0s - 24ms/step - loss: 0.1798
Epoch 8/10
2/2 - 0s - 29ms/step - loss: 0.1637
Epoch 9/10
2/2 - 0s - 23ms/step - loss: 0.1452
Epoch 10/10
2/2 - 0s - 22ms/step - loss: 0.1289
1/1 - 0s - 161ms/step
```



Test MSE (Risk Score Forecasting): 160.652



```
Average Health Risk Value per Cluster:  
Cluster  
0    4.325263  
1    3.352886  
2    3.300541  
3    3.083485  
Name: HealthRiskValue, dtype: float64
```