**Proposal:**

In layman's words, heart failure can be described as a situation in which the heart is unable to continue to withstand the burden it was designed for. When our heart isn't performing correctly, which means that it isn't pumping a sufficient amount of blood to various regions of the body, the homeostasis that is linked with the cardiovascular system is disrupted. This can have serious consequences. When homeostasis is disrupted, the heart stops pumping blood to less essential parts of the body, and the blood vessels thin in order to maintain pressure and compensate for the heart's inability to do so. This, in turn, leads to a variety of conditions that can be referred to as the possible symptoms of heart failure.

Within the context of this project, we are conducting research on the data set and making use of classification analysis to investigate the connections between different enzymes and components found in blood, a variety of health problems, and other factors that can lead to heart failure and, in the end, death. In addition, given the life-threatening nature of heart disease, the application of machine learning and statistical analysis in order to forecast heart diseases might cut down on deaths caused by heart disease, improve the likelihood of early detection, and cut down on the amount of money spent on heart disease treatment.

**Problem addressed:**

Studying the various parameters associated with heart failure would actually help us in keeping those enzymes and conditions under control so that homeostasis is maintained. Through this, we might reduce the incidences of heart failure and thereby reducing the costs associated with cardiac care.

**Size of the market and monetary benefits:**

• The amount of money that is spent on cardiovascular disease each year is projected to be close to 21 billion dollars.

• For the years 2016 and 2017, the direct and indirect costs connected with cardiovascular disease amounted to a total of $363.4 billion. This includes the direct expenditures, which totaled $216 billion, as well as the indirect costs, which were $147.4 billion owing to deaths and decreased output.

• In the United States, the treatment of cardiovascular disease accounts for about one in every six dollars spent on healthcare.

**Risk associated:**

Though we have accuracy and precision above 80%, the results from this model are not conclusive in nature thereby this model can only be used to support clinical research.

**Model used:**

We have used 2 models, logistic regression and KNN classifier, and have chosen the best model, i.e., the one which has a better f1 score and accuracy.

**Other risks and benefits:**

* Cost associated with health care might rise due to incorrect prediction.
* Predicting the heart issues can not only reduce healthcare funding but also result in increased life expectancy