Heart Failure Clinical Records Data Analysis:

# Proposal

In today's fast-paced world, understanding the factors contributing to heart health is more crucial than ever. Our dataset, a rich compilation of health and lifestyle information from diverse individuals, provides a unique opportunity to delve into this critical issue. By examining variables such as age, anemia, creatinine phosphokinase levels, diabetes, ejection fraction, high blood pressure, platelets, serum creatinine, serum sodium, sex, smoking, and time, we aim to uncover meaningful insights into the risk factors associated with heart failure. We hypothesize that there are significant correlations between specific health indicators and heart failure outcomes. We propose that higher serum creatinine levels, lower ejection fractions, and differences in smoking habits between sexes are key factors. Through rigorous analysis using Python, we will test these hypotheses, uncovering key patterns and relationships. Our findings will contribute to the scientific understanding of heart failure risks and inform public health strategies, potentially saving lives by highlighting actionable lifestyle changes.

# Hypothesis

**Hypothesis 1:**

Correlation between serum creatinine levels and the likelihood of experiencing a death event.

* **Question**: Can serum creatinine levels predict the likelihood of experiencing a death event?

**Hypothesis 2:**

Correlation between ejection fraction (a measure of heart function) and the likelihood of experiencing a death event.

* **Question**: Can ejection fractions predict the likelihood of experiencing a death event?

**Hypothesis 3:**

Correlation between sex and smoking habits, with differences in smoking prevalence and behavior potentially impacting heart failure outcomes.

* **Question**: Are smoking habits significantly different between sexes, and do these differences impact heart failure outcomes?

Research questions

1. **Serum Creatinine Levels and Death Event**:
   * What is the nature of the relationship between serum creatinine levels and the likelihood of experiencing a death event?
   * Can higher serum creatinine levels predict the likelihood of experiencing a death event?
2. **Ejection Fraction and Death Event**:
   * How does the ejection fraction relate to the likelihood of experiencing a death event?
   * Can lower ejection fractions predict the likelihood of experiencing a death event?
3. **Sex and Smoking Habits**:
   * How do smoking habits vary between sexes, and are there significant differences that impact heart failure outcomes?
   * Are smoking habits significantly different between sexes, and do these differences impact heart failure outcomes?