Heart Failure Indications

Proud Jiao
Xiaocong Xuan
Yijie Lu
Xiaoyan Wei
Lukas Lam
Felix Zhou
UCLA Statistics

Relationships between Heart Failures and Medical Signs

We investigate variables including:

- Age
- Gender (M / F)
- Cholesterol Levels (mm/dl)
- Fasting Blood Sugar Level (mg/dl)
- Resting Blood Pressure
- Max Heart Rate

Methods

We first examined the correlation between variables and heart failures. We then looked at individual distribution grouped by heart failure. In the process of examining the distribution, we fixed missing data and readjusted distributions. On top of that, we ran an analysis of variance to determine which variables contribute the most in affecting the occurrence of heart failure.

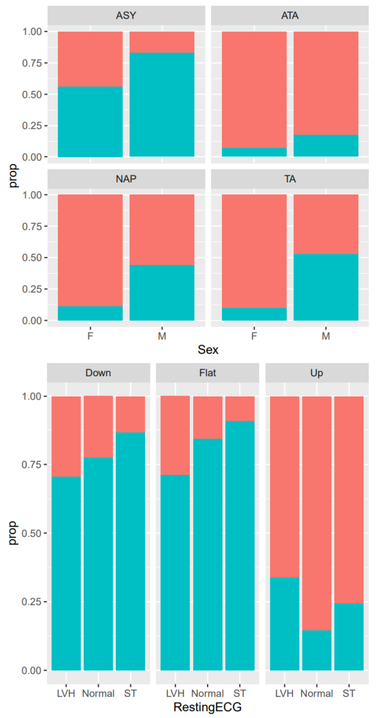
Conclusion

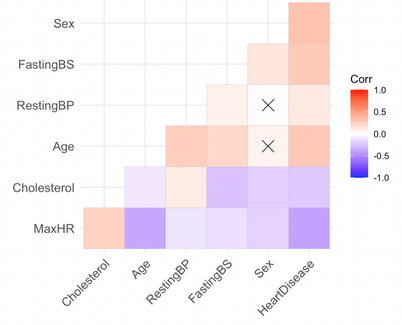
From the anova table, we conclude that age, sex, cholesterol levels, fasting blood sugar level, resting blood pressure, maximum heart rate are all significant indications to determine the occurrence of heart failure.

Sex: Males are 250% more likely to get heart disease.
Age: 60+ are 66% more likely to get heart disease.
Fasting BS: Above 120 mg/dl are 65% more likely to get heart disease.
Resting BP: Above 145 bpm are 27% more likely to get heart disease.
Cholesterol: Above 280 mg/dl are 30% more likely to get heart disease.
Max Heart Rate: Below 150 bpm are 132% more likely to get heart disease.

Predictor	Df	Sum Sq	Mean Sq	F value	Pr(>F)	Significant?
Age	1	18.05	18.048	79.16	<2e-16	yes
Sex	1	21.17	21.168	94.25	<2e-16	yes
Cholesterol	1	2.01	2.0078	8.114	0.00451	yes
MaxHR	1	36.38	36.38	174.9	<2e-16	yes
RestingBP	1	2.63	2.6263	10.73	0.0011	yes
FastingBS	1	16.21	16.21	70.48	<2e-16	yes

Graphs





Reference

Heart Failure Prediction Dataset, Kaggle, Fedesoriano, https://www.kaggle.com/datasets/fedesoriano/heart-failure-prediction

UCLA Department of Statistics