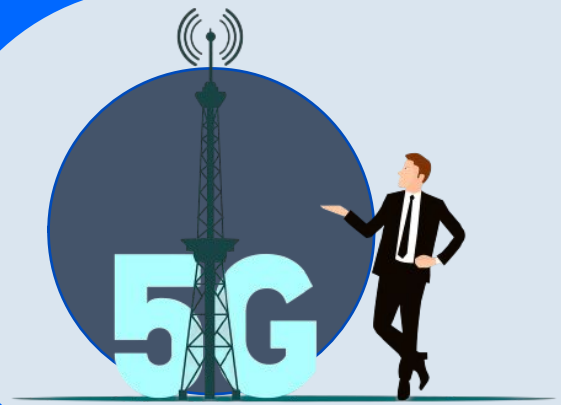
DATA SCIENCE

Heart Disease Diagnostic Analysis



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Introduction

- The COVID-19 pandemic has highlighted the critical importance of health, impacting people worldwide regardless of their social status. As we face these unprecedented challenges, analyzing health and medical data becomes crucial for future preparedness.
- This report aims to delve into the heart disease diagnostic database, extracting, transforming, and loading (ETL) data to gain insights that can inform future healthcare strategies. Leveraging tools like Python for exploratory data analysis (EDA) and visualization, we aim to uncover key metrics, trends, and relationships within the dataset.

Details of Data

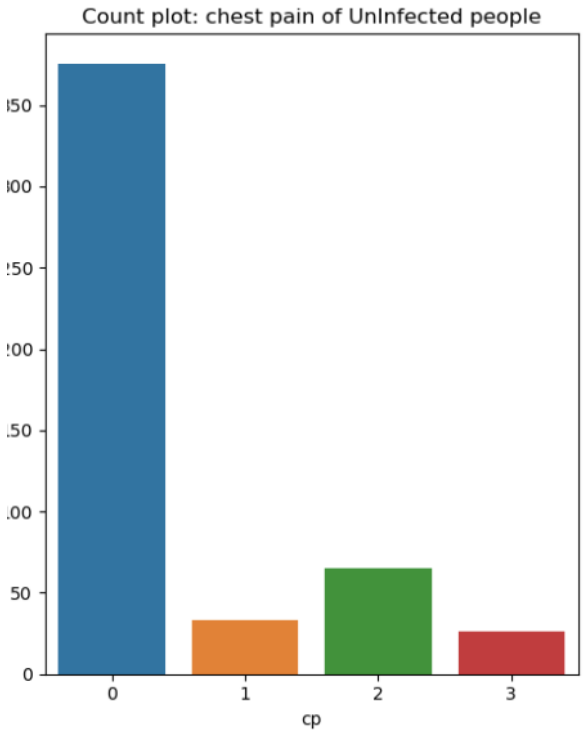
- age
- sex
- chest pain type (4 values)
- resting blood pressure
- serum cholestoral in mg/dl
- fasting blood sugar > 120 mg/dl
- resting electrocardiographic results (values 0,1,2)
- maximum heart rate achieved
- exercise induced angina
- oldpeak = ST depression induced by exercise relative to rest
- the slope of the peak exercise ST segment
- number of major vessels (0-3) colored by flourosopy
- thal: 0 = normal; 1 = fixed defect; 2 = reversable defect

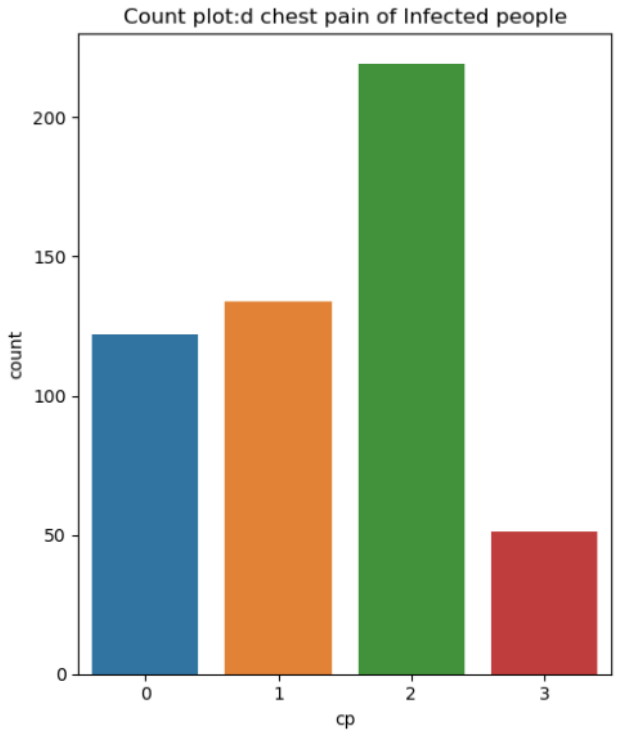
Insights into Heart Disease Risk Factors

1. **High chest pain** correlates strongly with heart disease risk, urging vigilant symptom assessment during screenings.
2. **Elevated heart rates** indicate heightened heart disease susceptibility, emphasizing the importance of heart rate monitoring in risk assessment.
3. **Exercise-induced angina signals** increased likelihood of coronary artery disease, necessitating prompt symptom recognition.
4. **Low oldpeak values** predict higher heart disease probability, serving as a valuable predictive metric.
5. Individuals **aged 40-50** face elevated heart disease risk, warranting targeted preventive measures.
6. **Females exhibit higher heart disease susceptibility (>70%)**, highlighting the need for gender-specific interventions.
7. Thallium stress test findings, **both reversible and irreversible, indicate potential cardiac issues,** requiring further evaluation.
8. **Presence of two major vessels colored by fluoroscopy** suggests increased heart disease risk, while absence indicates safety.
9. A **slope of peak exercise ST segment value of 2 signals higher heart disease susceptibility**, underscoring the importance of electrocardiographic parameters.

Main Insights

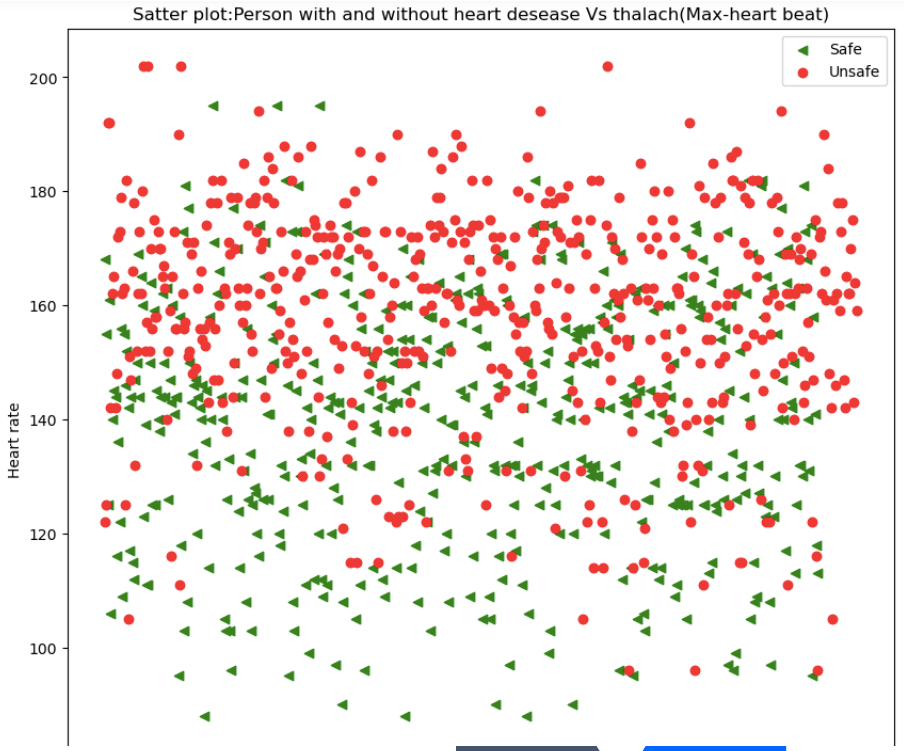
- Individuals reporting high levels of chest pain demonstrate a significantly elevated risk of heart disease. This insight underscores the importance of **chest pain assessment as a potential indicator for heart disease during data analysis** in healthcare contexts.





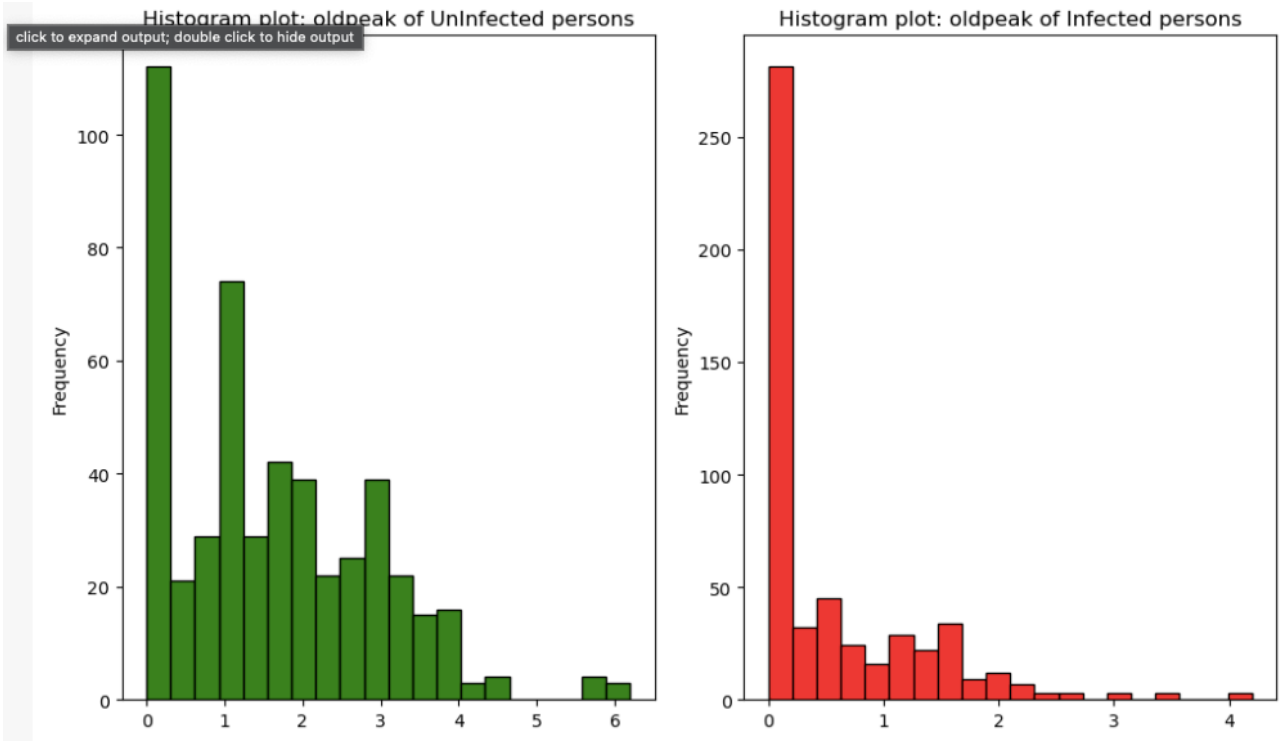
Main Insights

- Observations of **high heart rates** in individuals may indicate an **increased likelihood of being affected by heart disease.** This correlation between elevated heart rate and heart disease highlights the potential value of heart rate monitoring as a predictive metric during data analysis in healthcare settings.



Main Insights

A very low value of "**oldpeak" (ST depression induced by exercise relative to rest) is associated with a higher probability of being diagnosed with heart disease.** This finding suggests that a low oldpeak value could serve as a predictor of heart disease risk



Thank you