**Healthcare Data Analyst & BI Portfolio Project**

**Project Title: Heart Disease Risk Analysis & Monitoring Dashboard for a Regional Clinic**

**1. Project Overview:**

You were engaged as a Healthcare Data Analyst and Business-Intelligence Consultant for a regional clinic that offers preventive care and chronic-disease monitoring. Leadership asked for a two-phase engagement:

| Phase | Purpose | Primary Stakeholders |
| --- | --- | --- |
|  |  |  |
| 1 – Data-Analytics Report | Detect high-risk patterns and deliver actionable insights. | Dr Elaine Raji – Chief Medical Officer |
| 2 – BI Dashboard | Provide an interactive visual tool that tracks risk factors in real time and guides operational decisions. | Keith Portone – Operations Lead Minna Rah – Public-Health Programs Lead Emma Santiago – Executive Sponsor |

Tools used

* Excel – initial cleaning & exploration
* BigQuery (SQL) – scalable querying & aggregations
* Tableau – interactive dashboards, KPIs & action cards

**2 Dataset:**

Heart Failure Prediction Dataset – Fahim Mohamed (Kaggle)  
*918 records · 12 clinical attributes*

| Key Fields | Description |
| --- | --- |
| Age, Sex, ChestPainType, RestingBP, Cholesterol, FastingBS | Demographics & vitals |
| MaxHR, ExerciseAngina, Oldpeak, ST\_Slope | Stress-test measures |
| Heart Disease | 1 = disease present · 0 = no disease |

**3 Phase 1 – Data-Analyst Work:**

CMO Request:

“Identify who is at highest risk and the factors most associated with heart disease—please compare age, sex, cholesterol and other vitals.”

Key Steps & Deliverables

1. Excel cleaning – fixed types, handled blanks, recoded “M/F” → “Male/Female”, “Y/N” → “Yes/No”.
2. Age-band feature – <40, 40-60, >60.
3. BigQuery (SQL)
4. Exploratory visuals (Excel)

**4 Phase 2 – Business-Intelligence Work**

Stakeholder Requests

| **Stakeholder** | **Need** | **BI Features Implemented** |
| --- | --- | --- |
| Keith Portone (Operations) | Typical vitals for disease vs non-disease | *Double bar* comparing avg RestingBP, Cholesterol, MaxHR, Oldpeak |
| Minna Rah (Public Health) | Early-warning signals & demographics | *Bar* of average age by sex; *Filters* for Age-Band, Sex, Cholesterol; *Heat-map* prototype for further exploration |
| Emma Santiago (Executive) | High-level snapshot & recommended actions | *Action-card strip* + narrative call-outs |

Tableau Dashboard Components

| **Component** | **Description** |
| --- | --- |
| Action cards | - *Avg Age with Heart Disease*  - *Avg Cholesterol (Heart Disease)*  - *Avg Cholesterol (No Disease)* |
| Vitals Comparison | Clustered bar chart (disease vs no-disease) – requested by Keith |
| Risk by Sex & Age | Bar chart: average age of male vs female patients with disease – requested by Minna |
| Interactive Controls | Filters for Age-Band, Sex, Cholesterol range, Chest-Pain type |
| Tooltips & Annotations | Plain-language insights on hover; executive recommendations in caption |