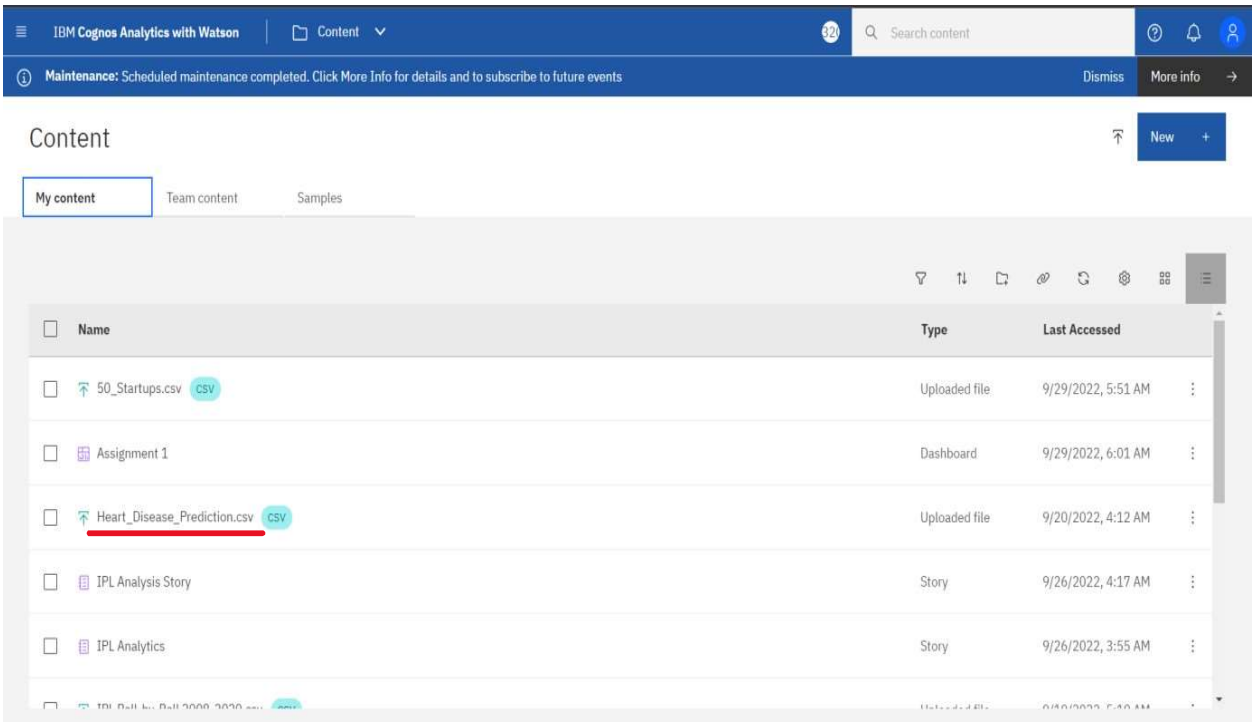
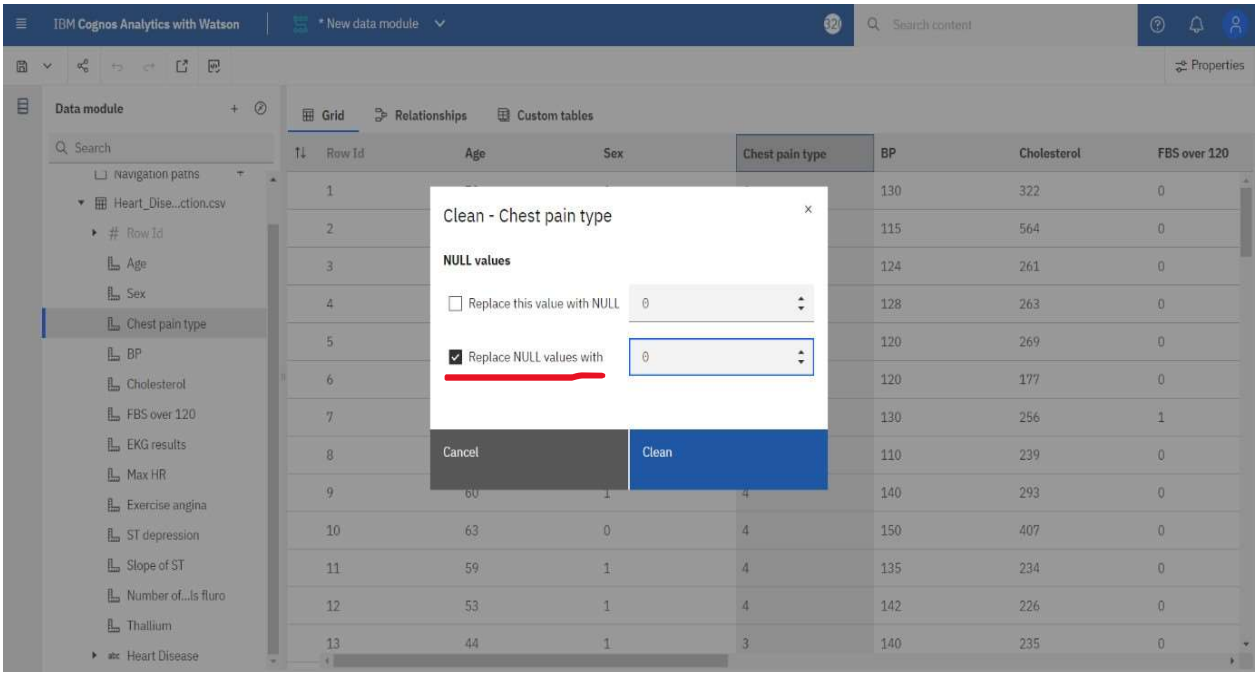
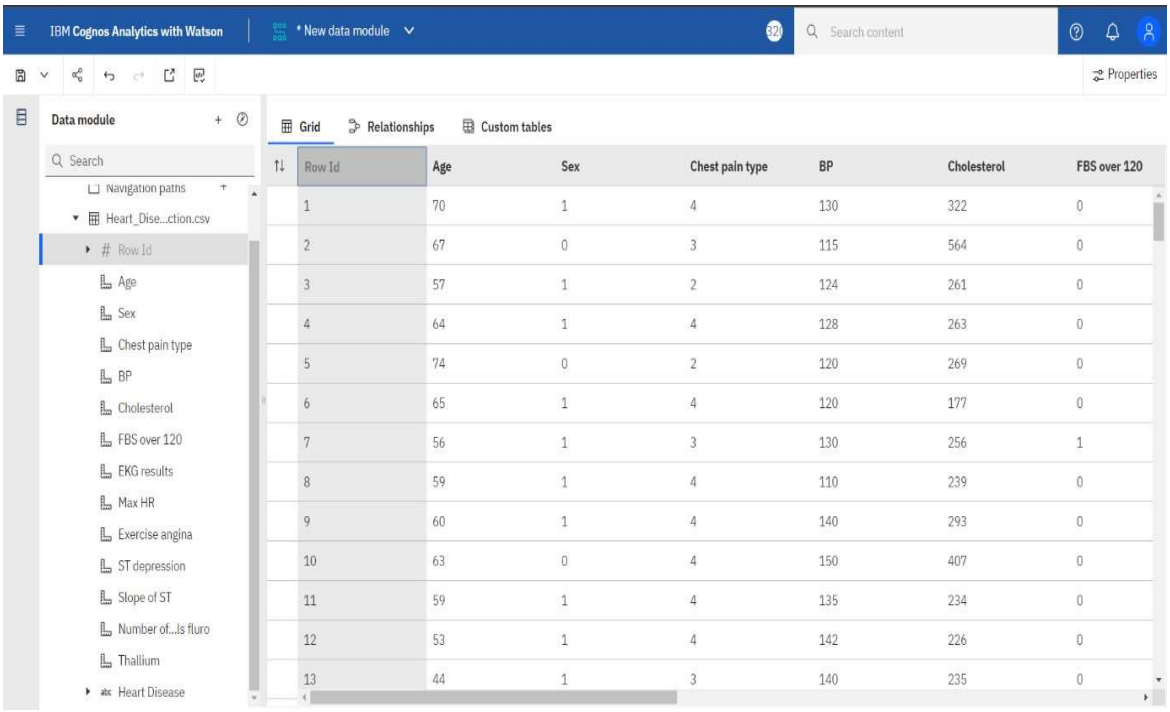
Date	24 November 2022
Team ID	PNT2022TMID17743
Project Name	Visualizing and Predicting Heart Diseases with an Interactive Dashboard

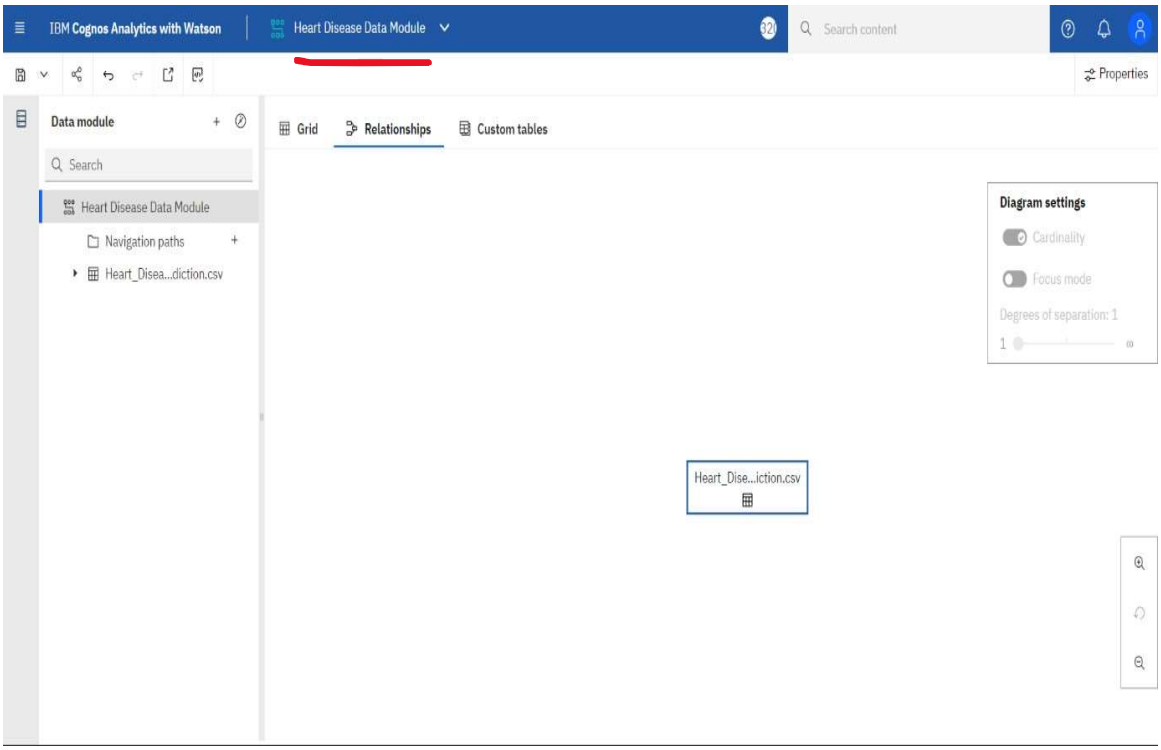
IBM Cognos Analytics:

Data Exploration and Analysis – Sprint 1:



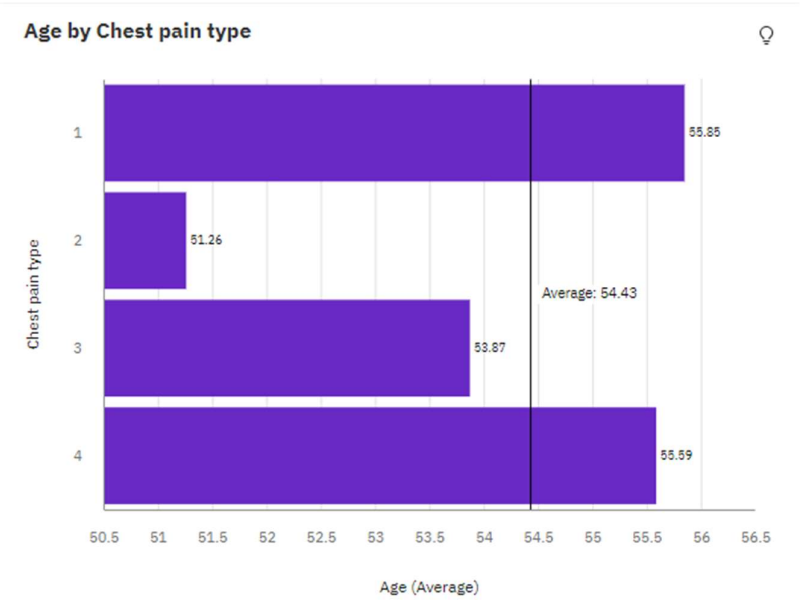



IBM Cognos Analytics with Watson
* New data module
Search content
Properties
Data module
Search
Navigation paths
Heart_Dise...ction.csv
Row Id
Age
Sex
Chest pain type
BP
Cholesterol
FBS over 120
EKG results
Max HR
Exercise angina
ST depression
Slope of ST
Number of...ls fluro
Thallium
Heart Disease
Grid
Relationships
Custom tables
Row Id | Age | Sex | Chest pain type | BP | Cholesterol | FBS over 120
1 | 70 | 1 | 4 | 130 | 322 | 0
2 | 67 | 0 | 3 | 115 | 564 | 0
3 | 57 | 1 | 2 | 124 | 261 | 0
4 | 64 | 1 | 4 | 128 | 263 | 0
5 | 74 | 0 | 2 | 120 | 269 | 0
6 | 65 | 1 | 4 | 120 | 177 | 0
7 | 56 | 1 | 3 | 130 | 256 | 1
8 | 59 | 1 | 4 | 110 | 239 | 0
9 | 60 | 1 | 4 | 140 | 293 | 0
10 | 63 | 0 | 4 | 150 | 407 | 0
11 | 59 | 1 | 4 | 135 | 234 | 0
12 | 53 | 1 | 4 | 142 | 226 | 0
13 | 44 | 1 | 3 | 140 | 235 | 0


IBM Cognos Analytics with Watson
Heart Disease Data Module
Search content
Properties
Data module
Search
Heart Disease Data Module
Navigation paths
Heart_Disea...diction.csv
Grid
Relationships
Custom tables
Diagram settings
Cardinality
Focus mode
Degrees of separation: 1
1
Heart_Dise...iction.csv

Data Visualization – Sprint 2:

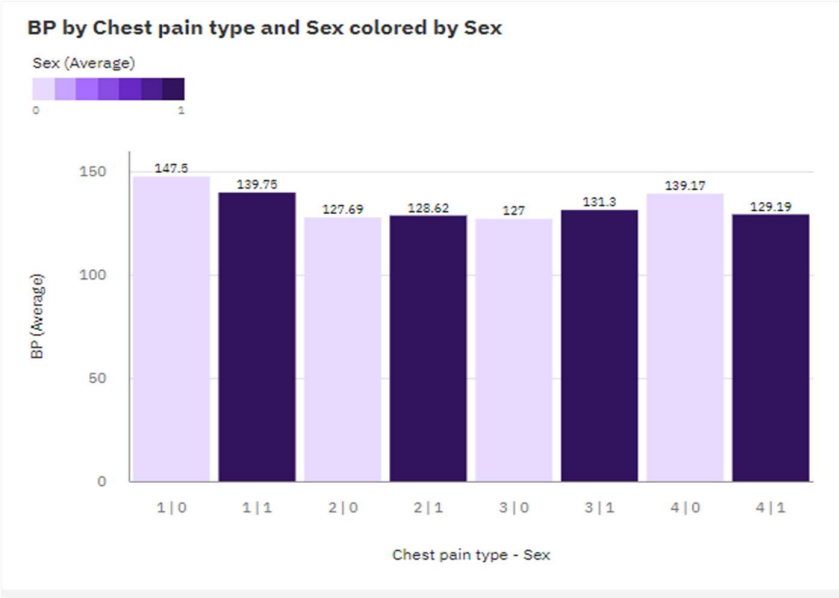
1) Age by Chest pain type



Insights:

a) The most common value of Chest pain type is 4, occurring 129 times, which is 47.8 % of the total.
b) Over all chest pain types, the average of Age is 54.43.
c) The average values of Age range from 51.26, occurring when Chest pain type is 2, to 55.85, when Chest pain type is 1.

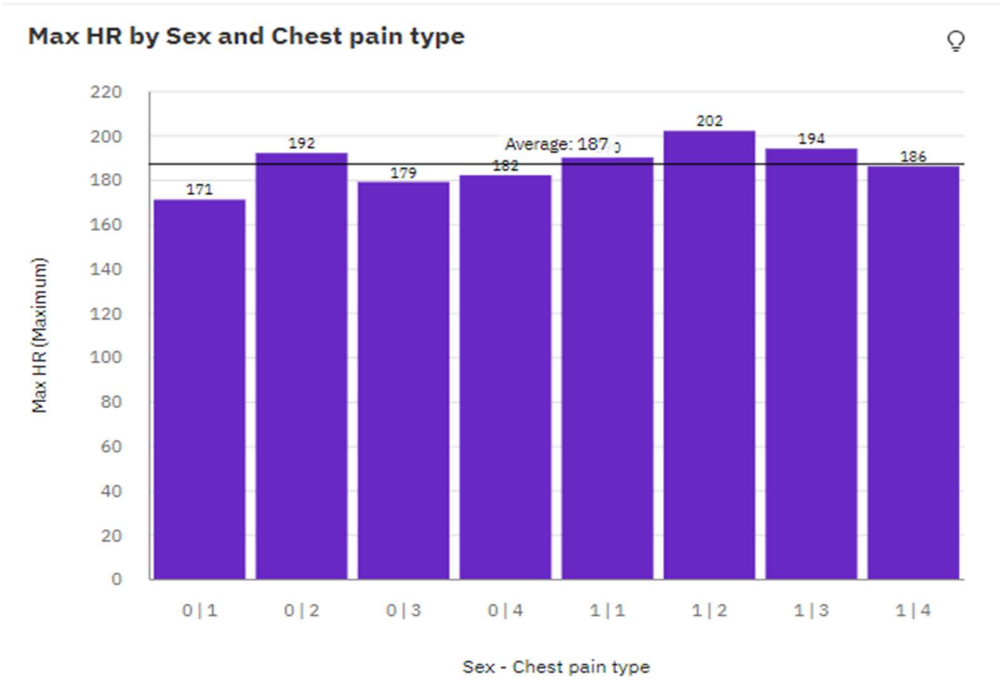
2) BP by Chest pain type and Sex colored by Sex



Insights:

a) The total number of results for Sex is 270.
b) Over all chest pain type - sexes, the average of BP is 0.6778.
c) The average values of BP range from 0, occurring when Chest pain type - Sex is 1|0, to 1, when Chest pain type - Sex is 1|0.
d) The most common value of Chest pain type - Sex is 2|1, occurring 129 times, which is 47.8 % of the total.

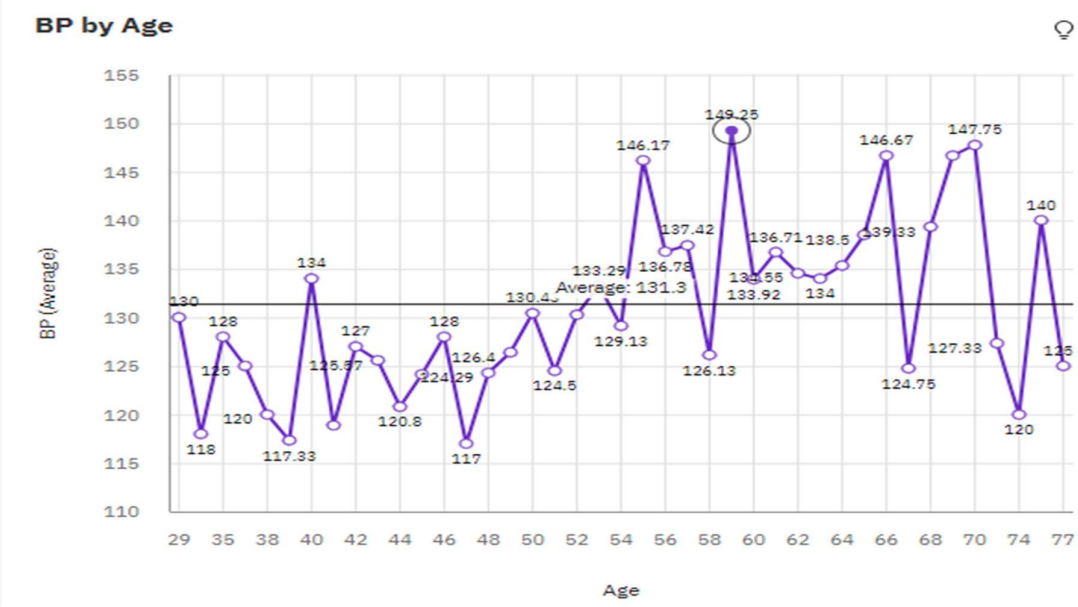
3) Max HR by Sex and Chest pain type



Insights:

a) The total number of results for Max HR, across all sex - chest pain types, is 270.
b) The most common value of Sex - Chest pain type is 0|2, occurring 183 times, which is 67.8 % of the total.
c) The largest value of Max HR is 3, occurring when Sex - Chest pain type is 0|1.

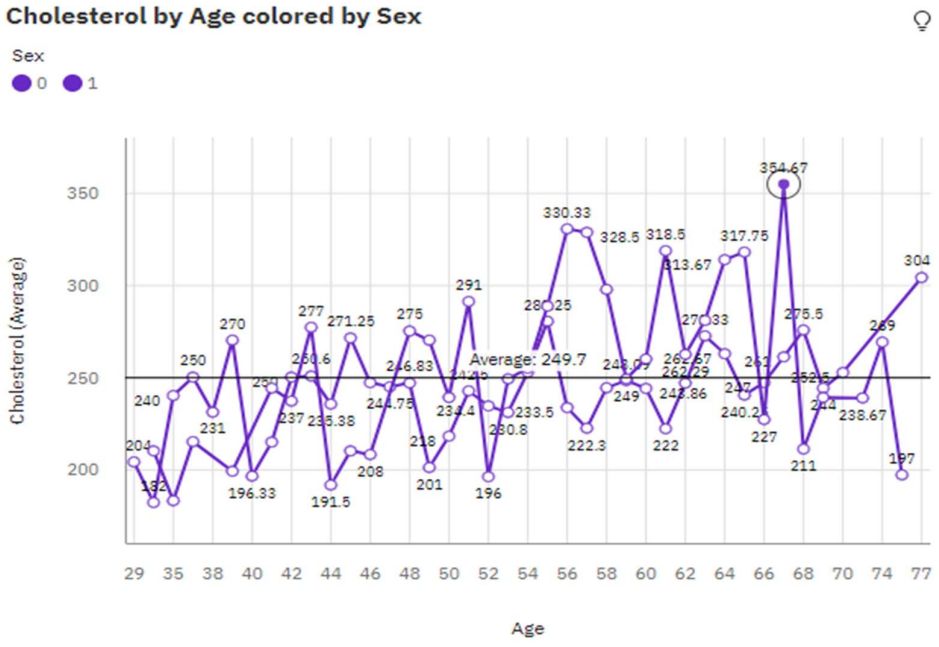
4) BP by Age



Insights:

a) Over all ages, the average of BP is 131.3.
b) The average values of BP range from 117, occurring when Age is 47, to 149.2, when Age is 59.
c) BP is unusually high when Age is 59.
d) The most common values of Age are 54 (5.9 %) and 58 (5.6 %), together occurring 31 times, which is 11.5 % of the total.

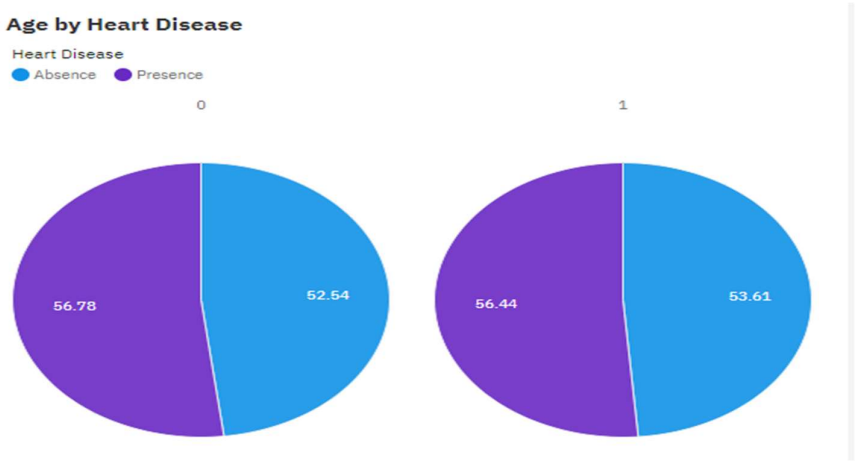
5) Cholesterol by Age colored by Sex



Insights:

a) The most common values of Age are 54 (5.9 %) and 58 (5.6 %), together occurring 31 times, which is 11.5 % of the total.
b) The most common value of Sex is 1, occurring 183 times, which is 67.8 % of the total.
c) Over all ages and sexes, the average of Cholesterol is 249.7.
d) The average values of Cholesterol range from 182 to 354.7.
e) Cholesterol is unusually high when the combination of Age and Sex is 67 and 0.

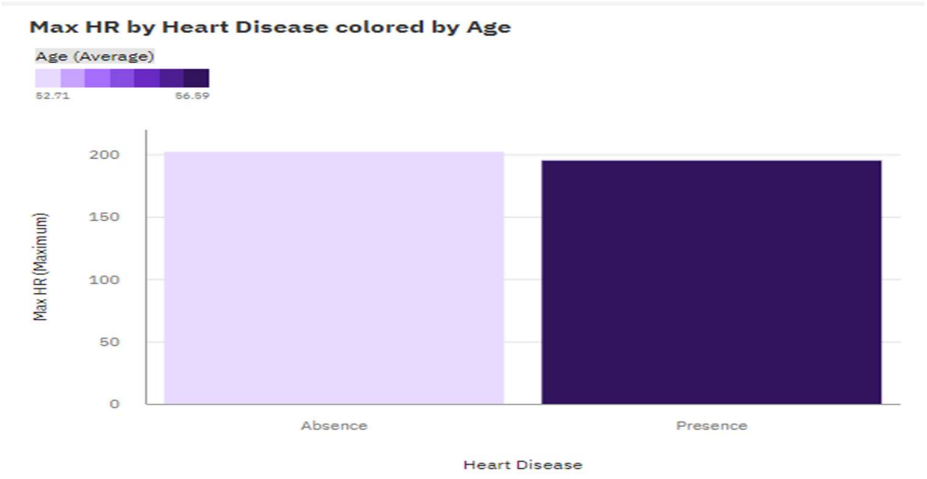
6) Age by Heart Disease



Insights:

a) The most common value of Heart Disease is Absence, occurring 150 times, which is 55.6 % of the total.
b) The most common value of Exercise angina is 0, occurring 181 times, which is 67 % of the total.
c) Over all values of Heart Disease and Exercise angina, the average of Age is 54.43.
d) The average values of Age range from 52.54 to 56.78.

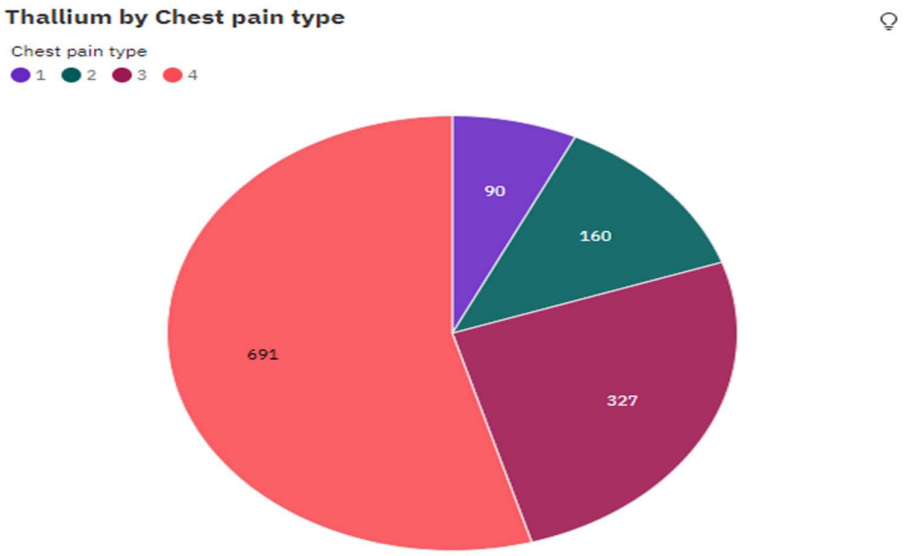
7) Max HR by Heart Disease colored by Age



Insights:

a) The total number of results for Max HR is 270.
b) The total number of results for Age is 270.
c) The most common value of Heart Disease is Absence, occurring 150 times, which is 55.6 % of the total.
d) The largest value of Max HR is 202, occurring when Heart Disease is Absence.

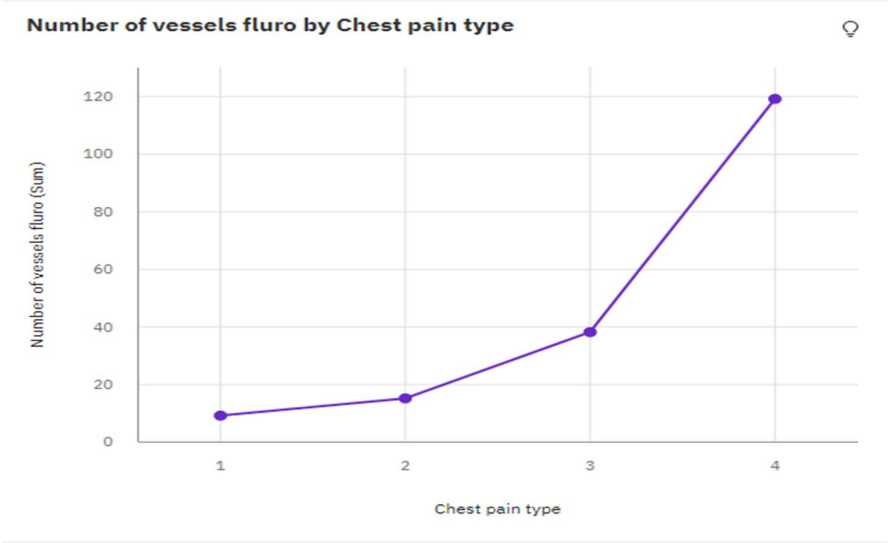
8) Thallium by Chest pain type



Insights:

a) Over all chest pain types, the sum of Thallium is almost 1500.
b) Thallium ranges from 90, when Chest pain type is 1, to 691, when Chest pain type is 4.
c) Thallium is unusually high when Chest pain type is 4.

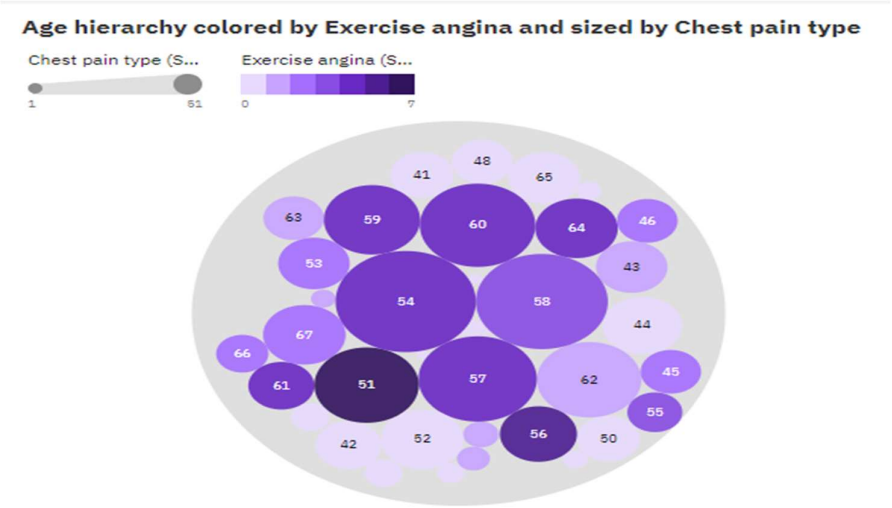
9) Number of vessels fluro by Chest pain type



Insights:

a) Over all chest pain types, the sum of Number of vessels fluro is 181.
b) Number of vessels fluro ranges from 9, when Chest pain type is 1, to 119, when Chest pain type is 4.
c) Number of vessels fluro is unusually high when Chest pain type is 4.

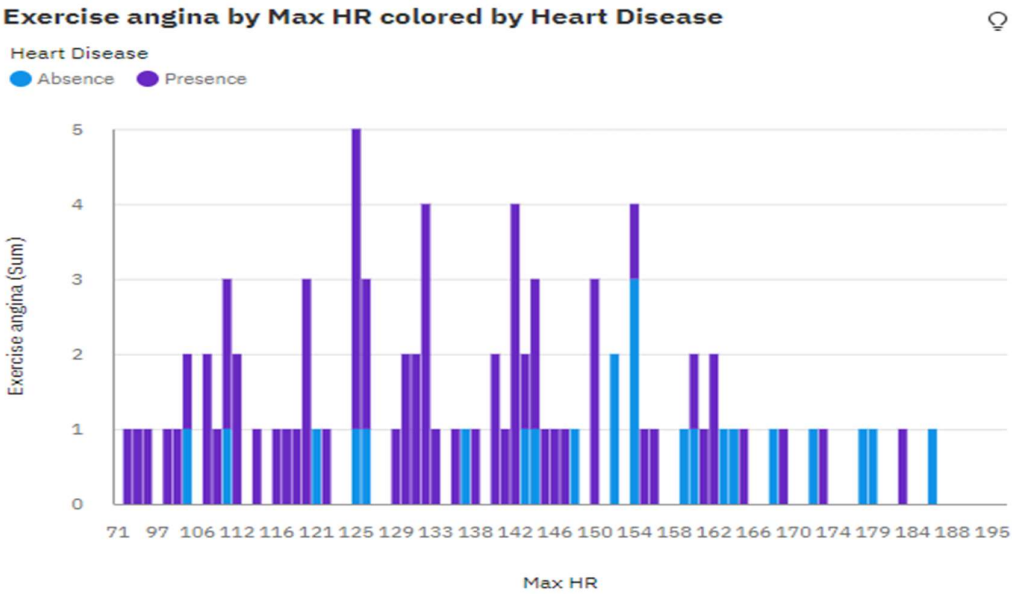
10) Age hierarchy colored by Exercise angina and sized by Chest pain type



Insights:

a) Over all ages, the sum of Chest pain type is 857.
b) For Chest pain type, the most significant values of Age are 54 and 58, whose respective Chest pain type values add up to 99, or 11.6 % of the total.
c) Chest pain type ranges from 1, when Age is 38, to 51, when Age is 54.

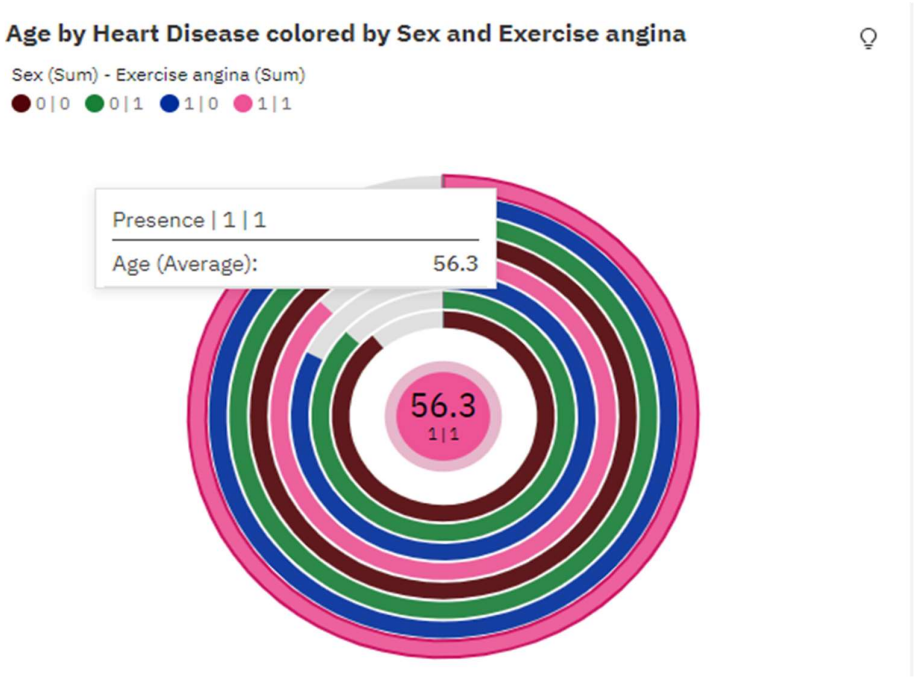
11) Exercise angina by Max HR colored by Heart Disease



Insights:

a) Exercise angina by Max HR colored by Heart Disease.
b) Over all max hrs and heart diseases, the sum of Exercise angina is 89.
c) For Exercise angina, the most significant value of Max HR is 125, whose respective Exercise angina values add up to 5, or 5.6 % of the total.
d) For Exercise angina, the most significant value of Heart Disease is Presence, whose respective Exercise angina values add up to 66, or 74.2 % of the total.
e) The summed values of Exercise angina range from 0 to 4.
f) Exercise angina is unusually high when the combinations of Max HR and Heart
g) Disease are 125 and Presence, 132 and Presence and 142 and Presence.
h) Exercise angina is unusually high when Max HR is 125.

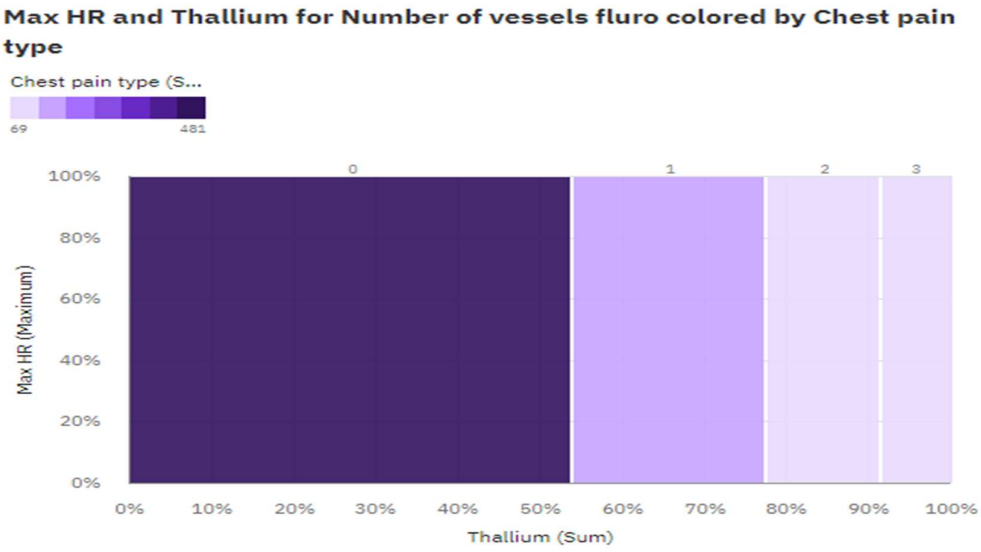
12) Age by Heart Disease colored by Sex and Exercise angina



Insights:

a) Over all values of Heart Disease and Sex - Exercise angina, the average of Age is 54.43.
b) The average values of Age range from 50.63 to 61.5.
c) Age is unusually low when the combination of Heart Disease and Sex - Exercise angina is Absence and 1|0.
d) The most common value of Sex - Exercise angina is 0|1, occurring 183 times, which is 67.8 % of the total.
e) The most common value of Heart Disease is Absence, occurring 150 times, which is 55.6 % of the total.

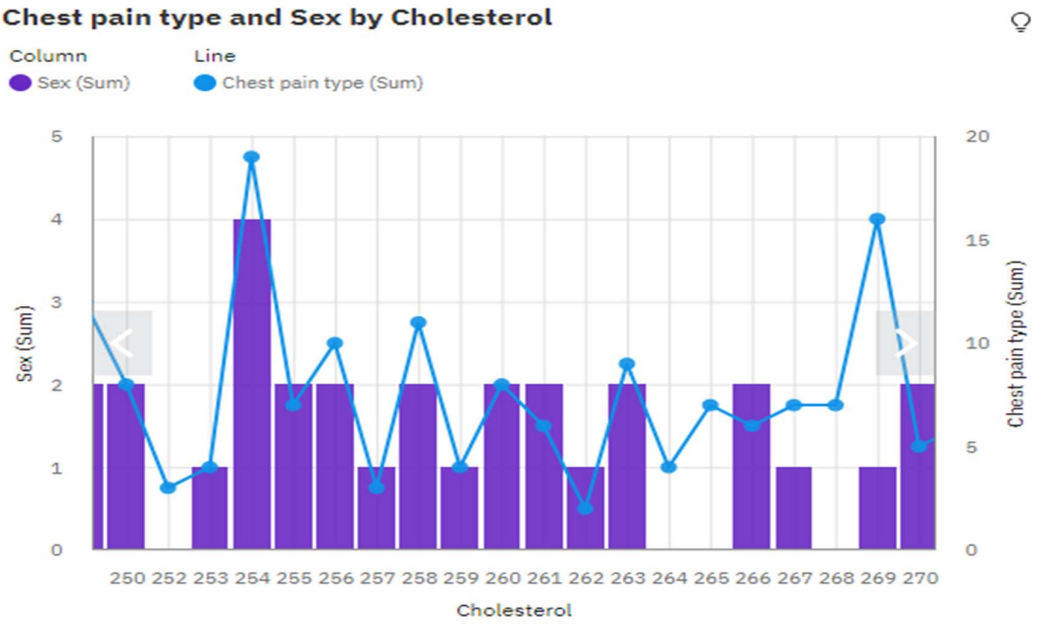
13) Max HR and Thallium for Number of vessels fluro colored by Chest pain type



Insights:

a) The total number of results for Max HR is 270.
b) The most common value of Number of vessels fluro is 0, occurring 160 times, which is 59.3 % of the total.
c) The largest value of Max HR is 202, occurring when Number of vessels fluro is 0.

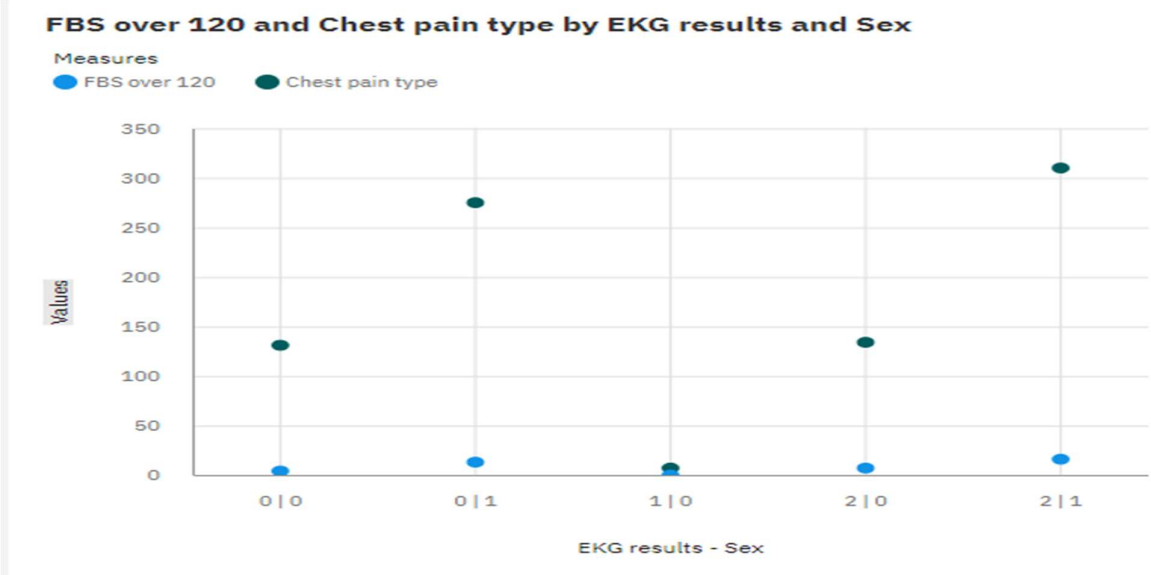
14) Chest pain type and Sex by Cholesterol



Insights:

a) Over all values of Cholesterol, the sum of Sex is 183.
b) For Sex, the most significant values of Cholesterol are 233, 234, 254, 282, and 212, whose respective Sex values add up to 20, or 10.9 % of the total.
c) Sex ranges from 0, when Cholesterol is 141, to 4, when Cholesterol is 212.
d) Over all values of Cholesterol, the sum of Chest pain type is 857.
e) Chest pain type ranges from 1, when Cholesterol is 182, to 19, when Cholesterol is 254.

15) FBS over 120 and Chest pain type by EKG results and Sex

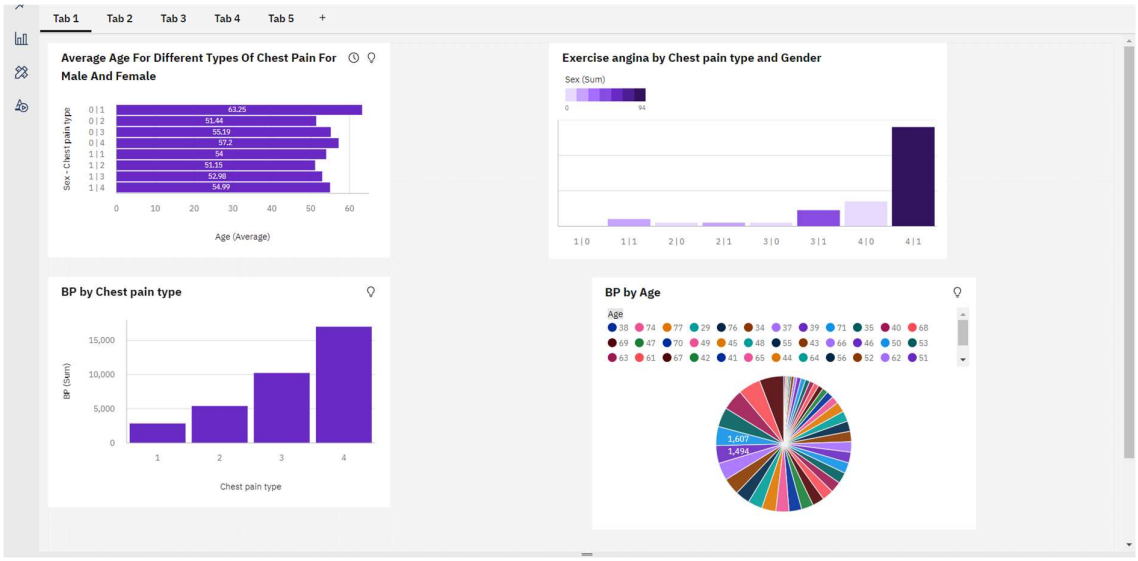


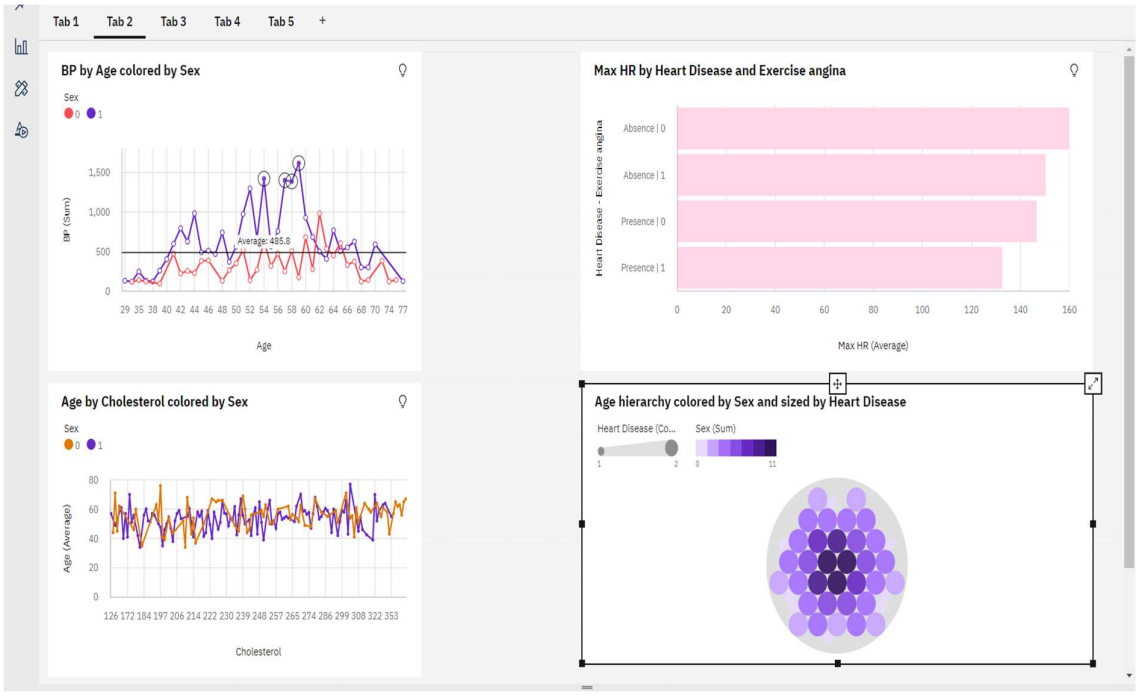
Insights:

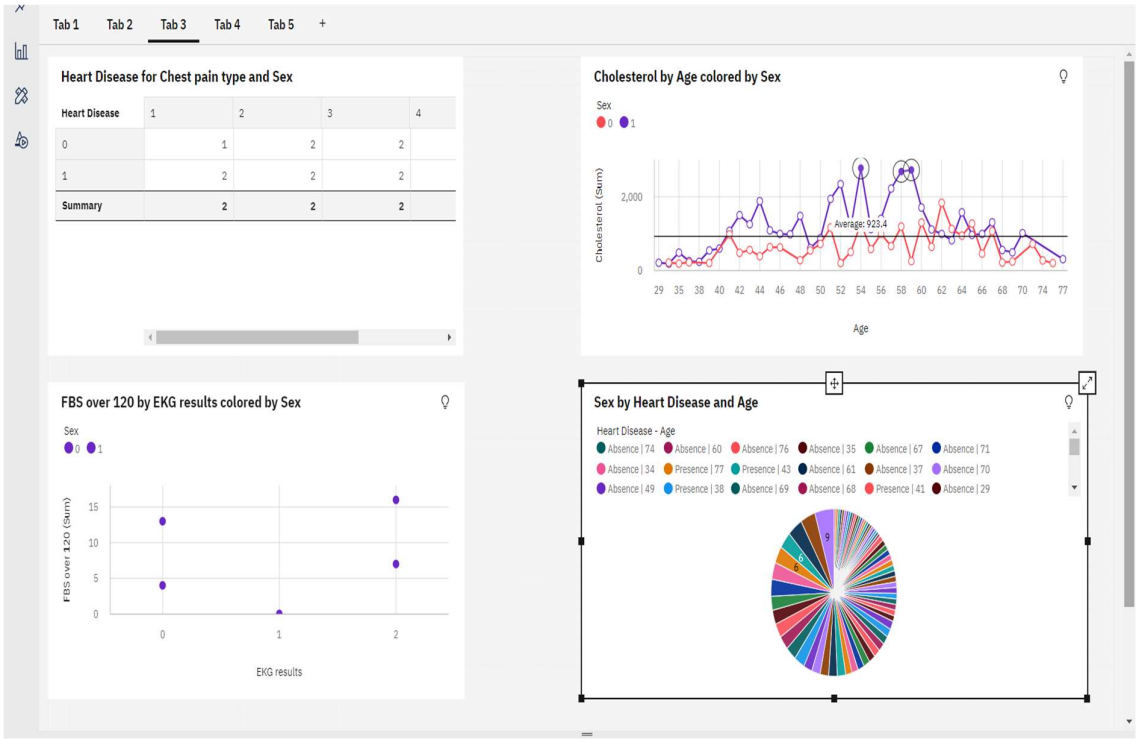
a) FBS over 120 ranges from 0, when EKG results - Sex is 0|0, to 1, when EKG results - Sex is 0|0.
b) Chest pain type ranges from 0, when EKG results - Sex is 0|1, to 16, when EKG results - Sex is 1|0.
c) FBS over 120 is unusually high when EKG results - Sex is 2|0.
d) The total number of results for Chest pain type, across all ekg results - sexes, is 270.
e) Over all ekg results - sexes, the average of Chest pain type is 0.1481.

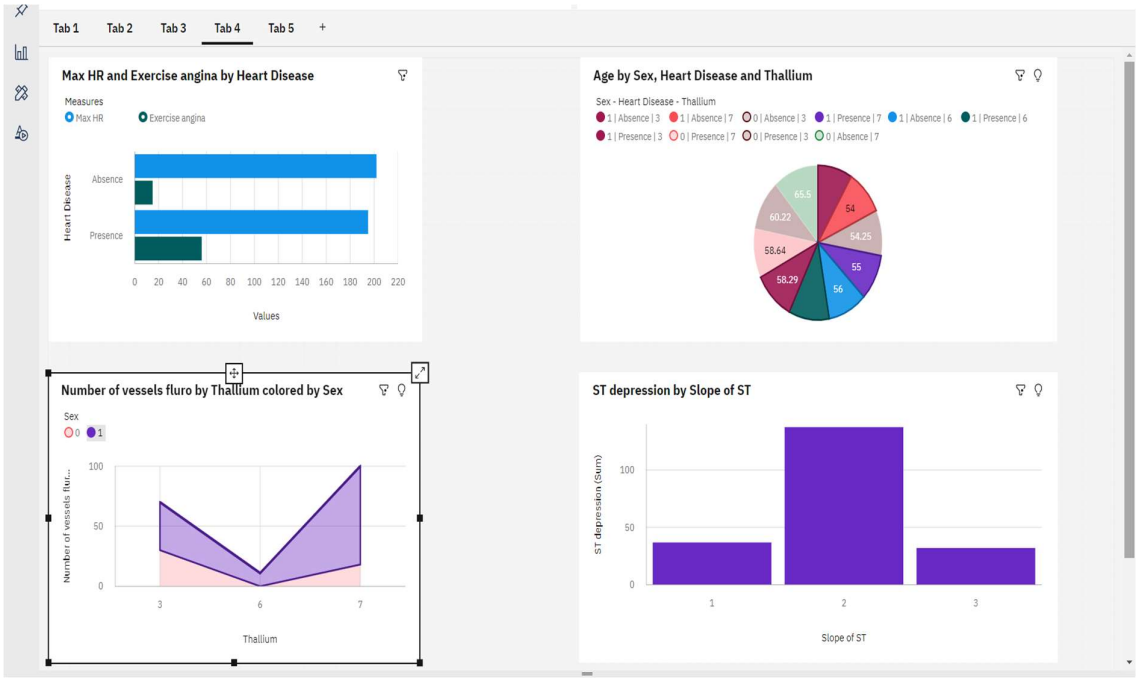
Sprint 3,4:

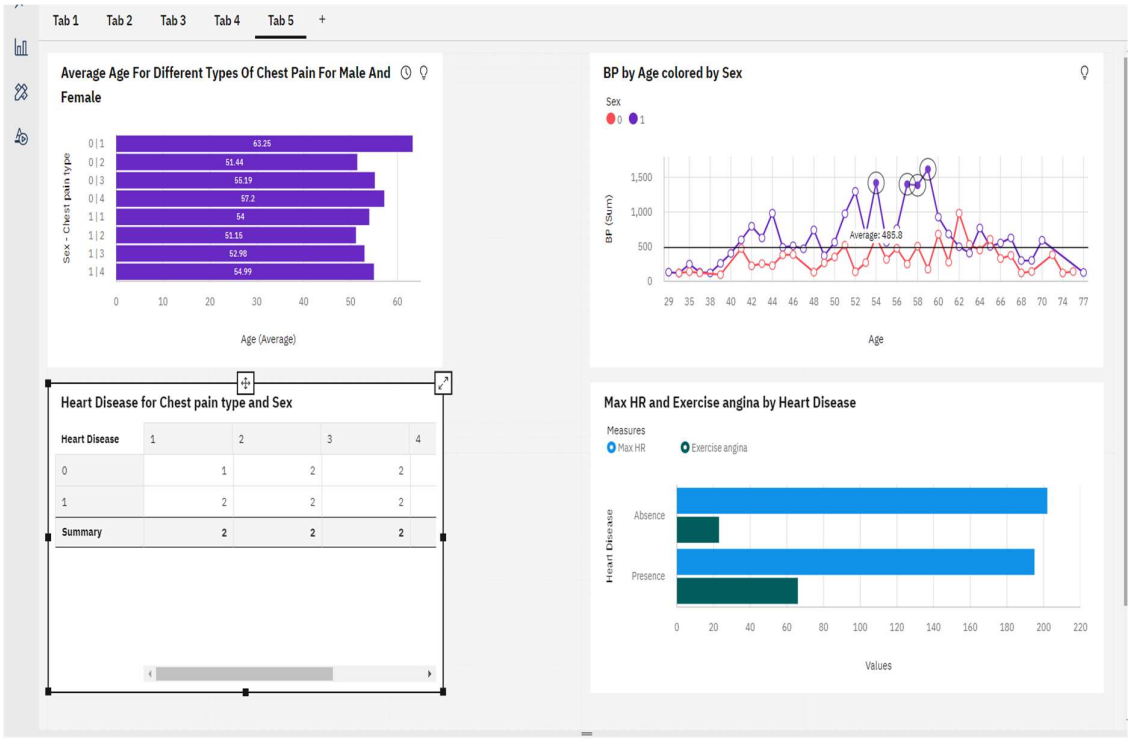
Dashboard Creation:



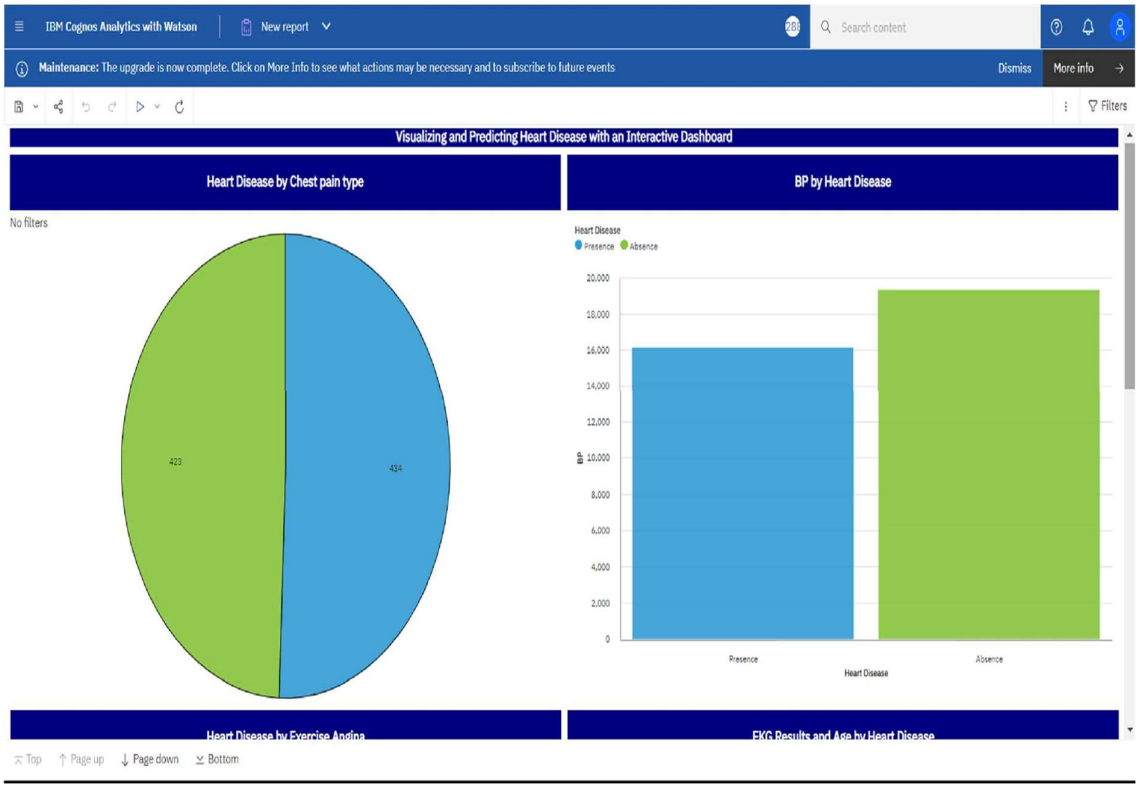


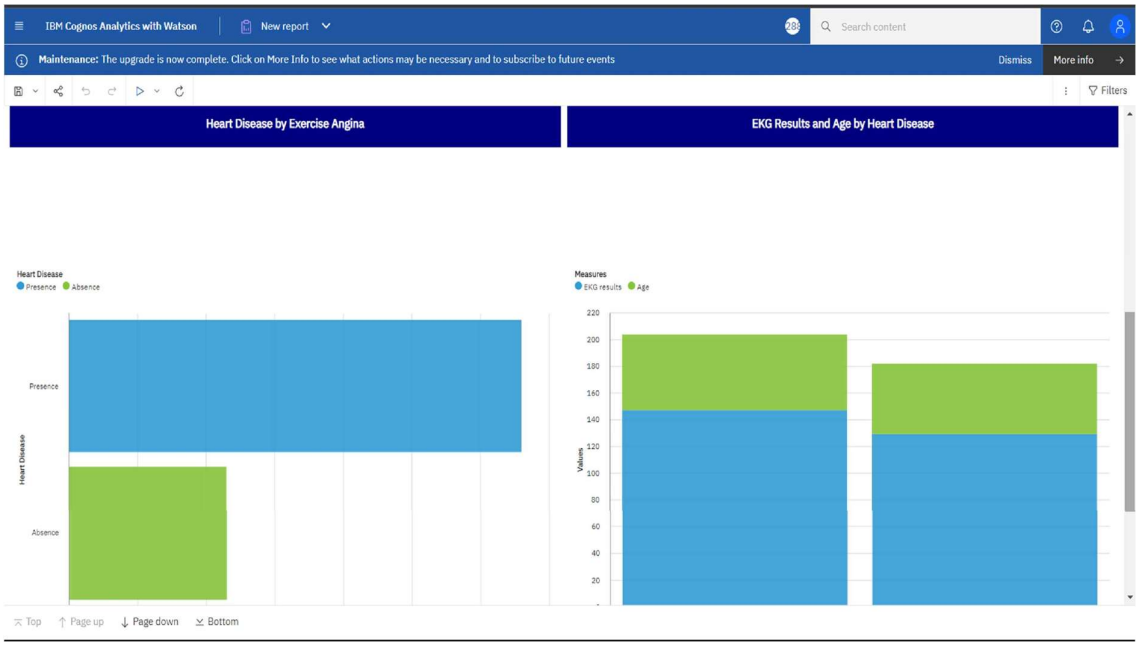

Tab 1
Tab 2
Tab 3
Tab 4
Tab 5
Heart Disease for Chest pain type and Sex
Heart Disease 1 2 3 4
0 1 2 2
1 2 2 2
Summary 2 2 2
Cholesterol by Age colored by Sex
Sex
0 1
Cholesterol (Sum)
2,000
0
Average: 923.4
29 35 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 74 77
Age
FBS over 120 by EKG results colored by Sex
Sex
0 1
FBS over 120 (Sum)
15
10
5
0
0 1 2
EKG results
Sex by Heart Disease and Age
Heart Disease - Age
Absence | 74 Absence | 60 Absence | 76 Absence | 35 Absence | 67 Absence | 71
Absence | 34 Presence | 77 Presence | 43 Absence | 61 Absence | 37 Absence | 70
Absence | 49 Presence | 38 Absence | 69 Absence | 68 Presence | 41 Absence | 29

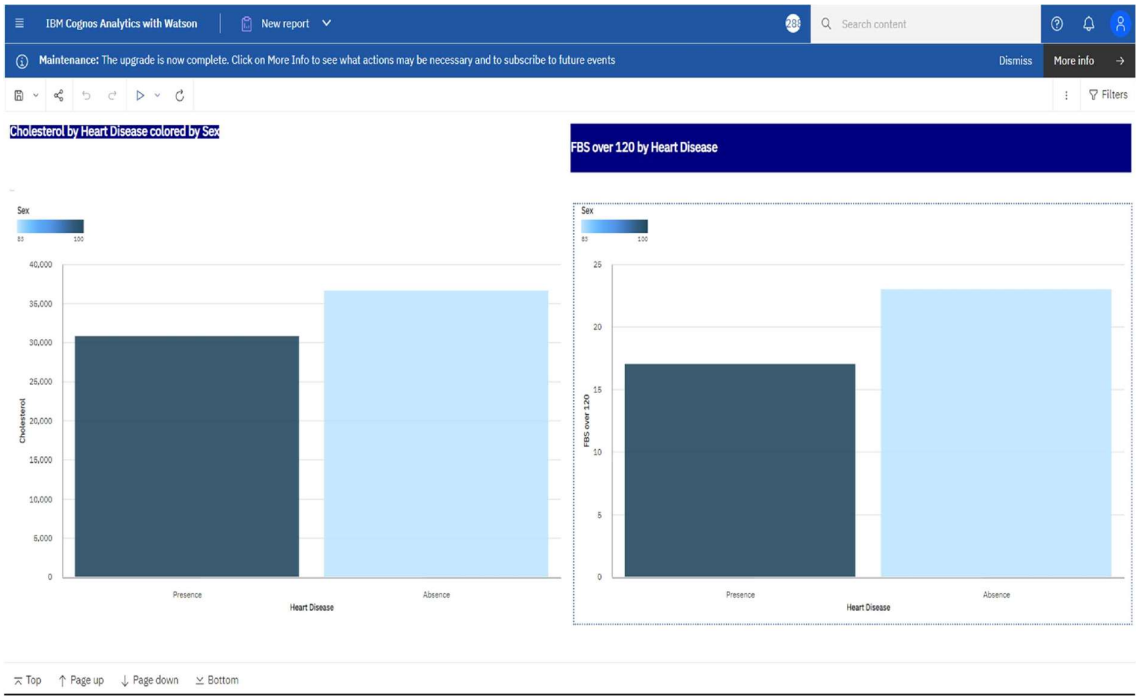

Tab 1
Tab 2
Tab 3
Tab 4
Tab 5
Max HR and Exercise angina by Heart Disease
Measures
Max HR
Exercise angina
Heart Disease
Absence
Presence
0 20 40 60 80 100 120 140 160 180 200 220
Values
Age by Sex, Heart Disease and Thallium
Sex - Heart Disease - Thallium
1 | Absence | 3 1 | Absence | 7 0 | Absence | 3 1 | Presence | 7 1 | Absence | 6 1 | Presence | 6
1 | Presence | 3 0 | Presence | 7 0 | Presence | 3 0 | Absence | 7
65.5
54
60.22
54.25
58.64
55
58.29
56
Number of vessels fluro by Thallium colored by Sex
Sex
0 1
Number of vessels flu...
100
50
0
3 6 7
Thallium
ST depression by Slope of ST
ST depression (Sum)
100
50
0
1 2 3
Slope of ST

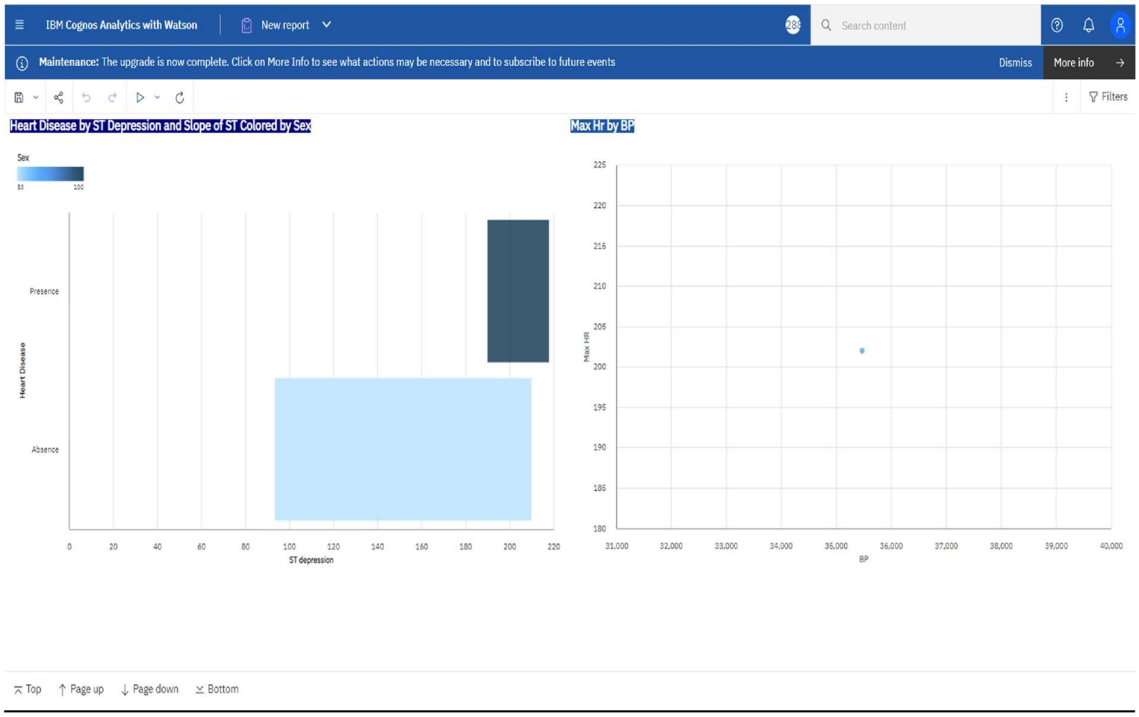


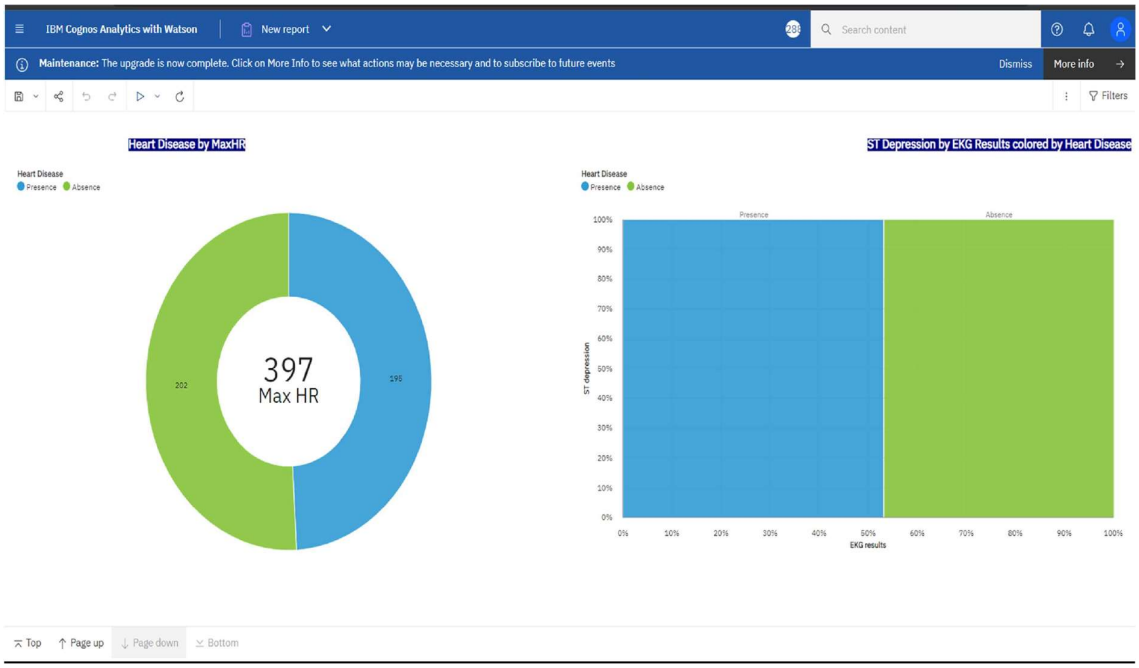
Report Creation:



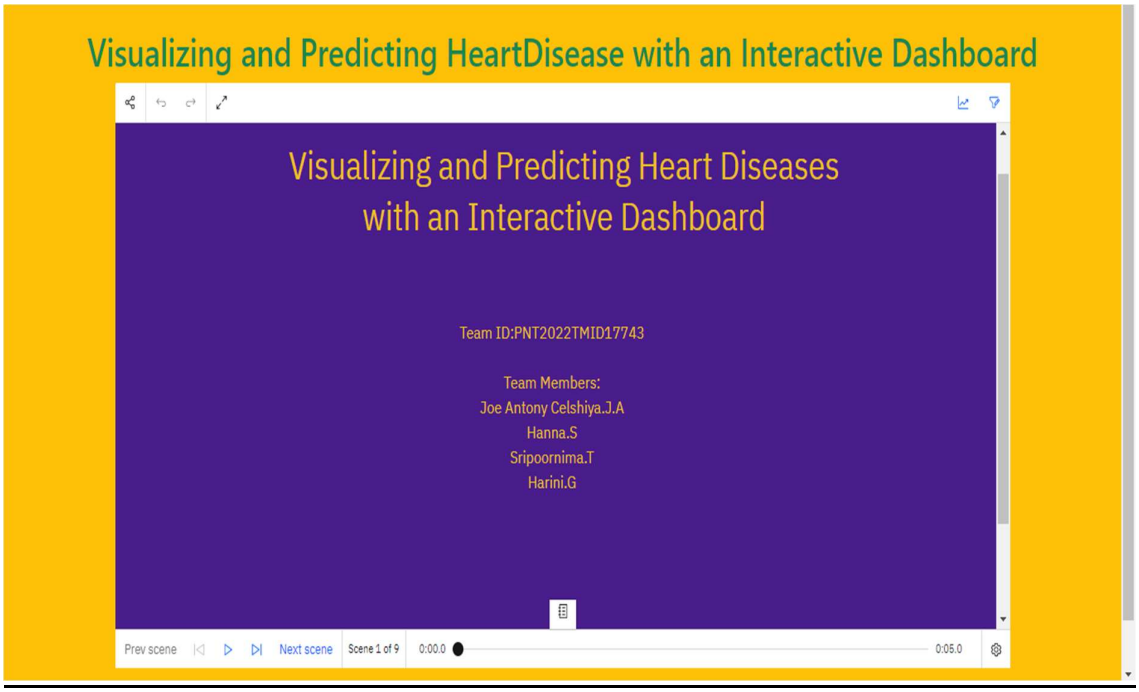

IBM Cognos Analytics with Watson
New report
Search content
Maintenance: The upgrade is now complete. Click on More Info to see what actions may be necessary and to subscribe to future events
Dismiss
More info
Filters
Heart Disease by Exercise Angina
EKG Results and Age by Heart Disease
Heart Disease
Presence
Absence
Heart Disease
Measures
EKG results
Age
Values
Top
Page up
Page down
Bottom

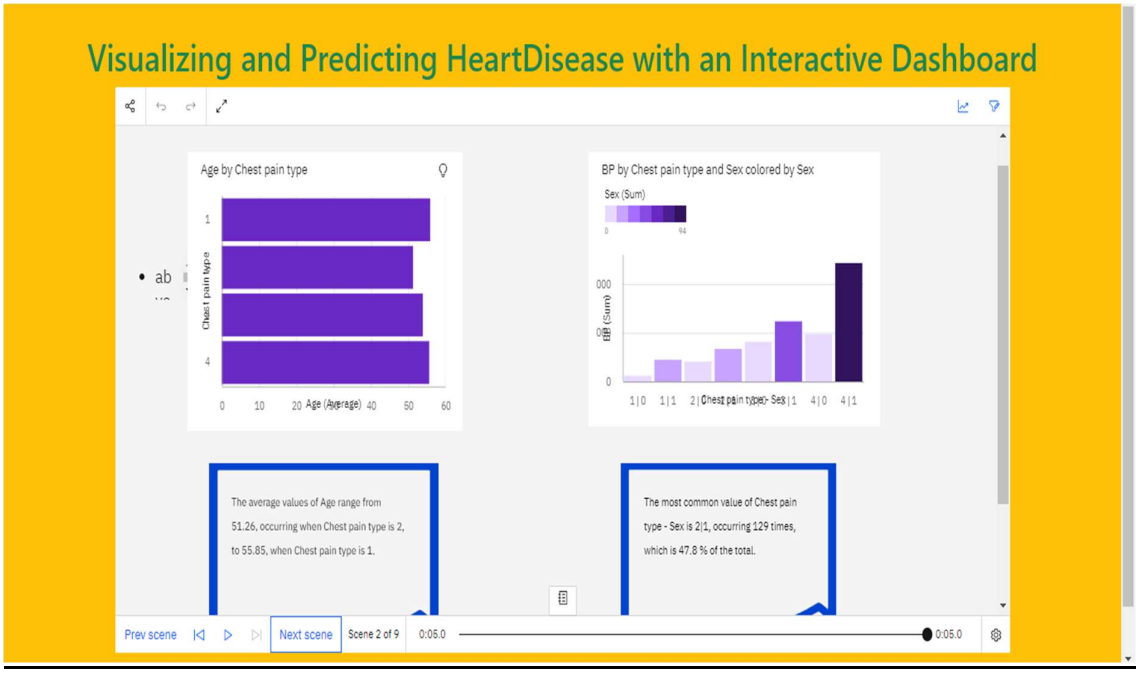

IBM Cognos Analytics with Watson
New report
Search content
Maintenance: The upgrade is now complete. Click on More Info to see what actions may be necessary and to subscribe to future events
Dismiss
More info
Filters
Cholesterol by Heart Disease colored by Sex
FBS over 120 by Heart Disease
Sex
Cholesterol
FBS over 120
Presence
Absence
Heart Disease
Top
Page up
Page down
Bottom

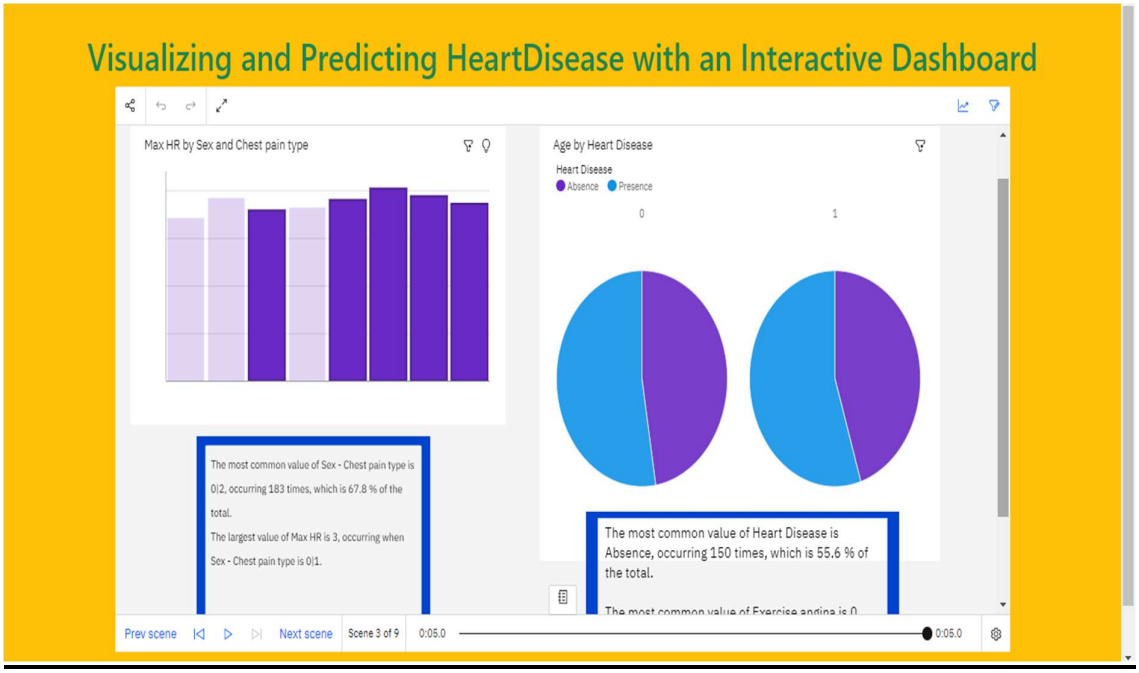

IBM Cognos Analytics with Watson
New report
Search content
Maintenance: The upgrade is now complete. Click on More Info to see what actions may be necessary and to subscribe to future events
Dismiss
More info
Filters
Heart Disease by ST Depression and Slope of ST Colored by Sex
Sex
Presence
Absence
Heart Disease
ST depression
Max Hr by BP
Max HR
BP
Top
Page up
Page down
Bottom

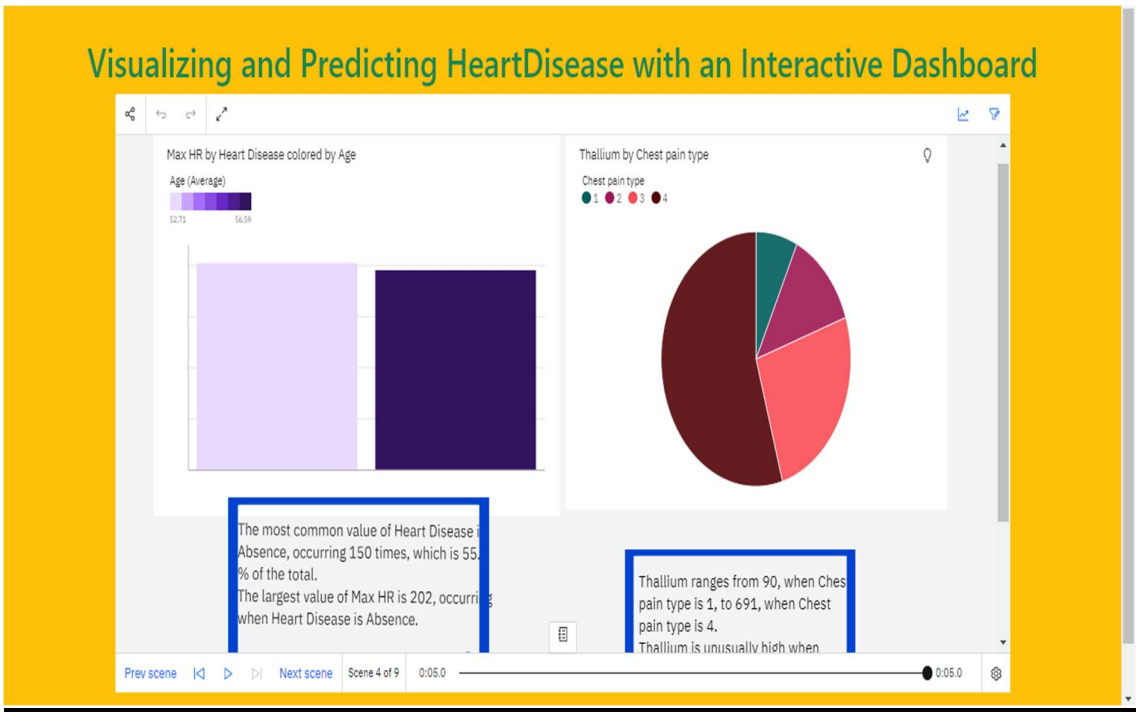

IBM Cognos Analytics with Watson
New report
Search content
Maintenance: The upgrade is now complete. Click on More Info to see what actions may be necessary and to subscribe to future events
Dismiss
More info
Filters
Heart Disease by MaxHR
Heart Disease
Presence
Absence
397
Max HR
202
195
ST Depression by EKG Results colored by Heart Disease
ST depression
EKG results
Top
Page up
Page down
Bottom

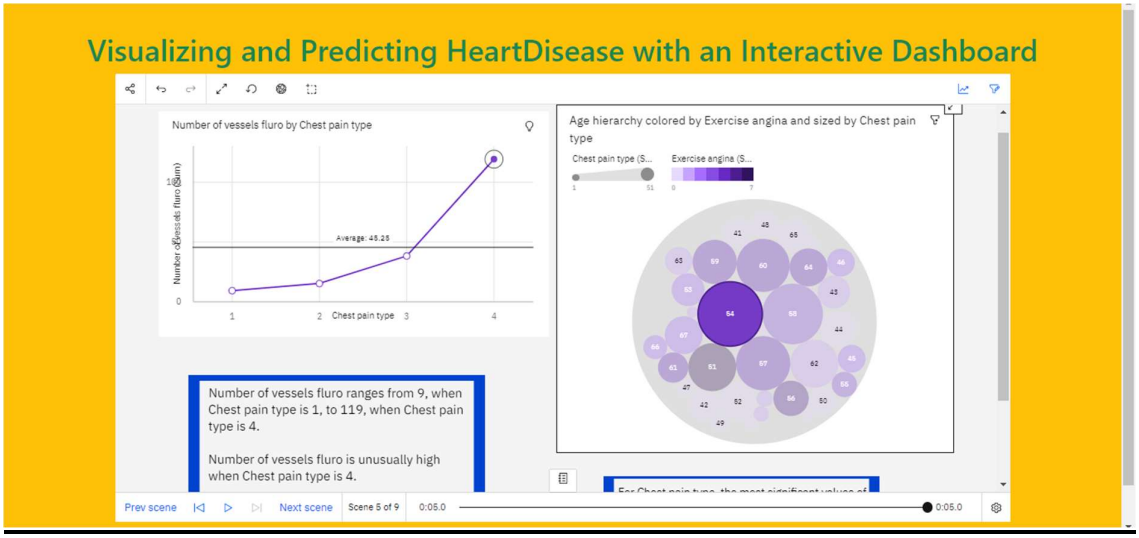
Story Creation:

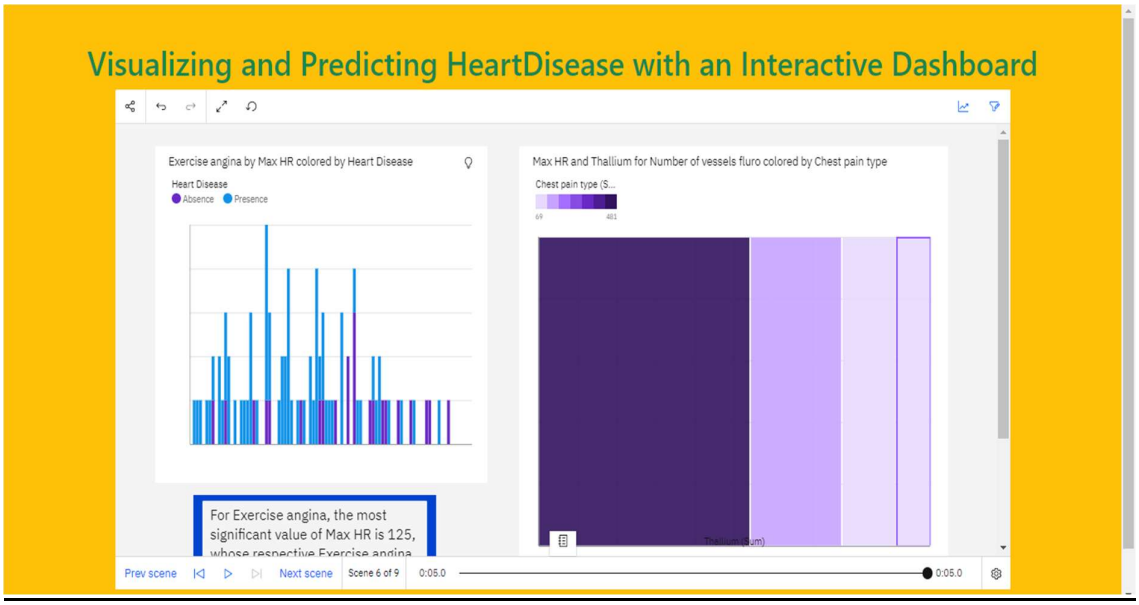


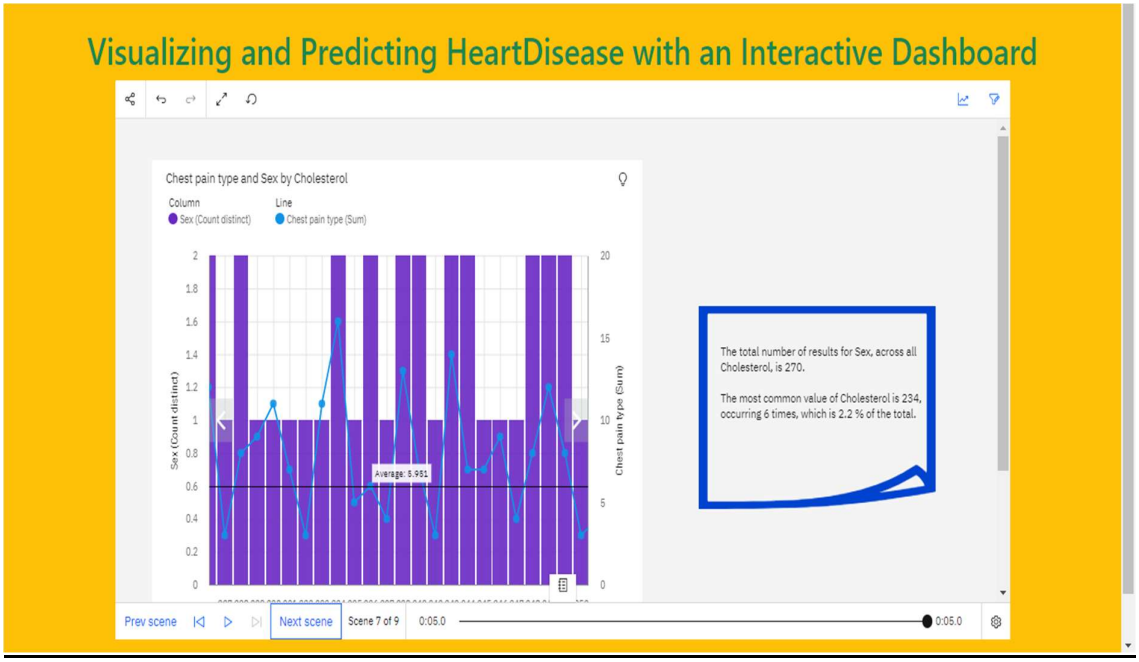


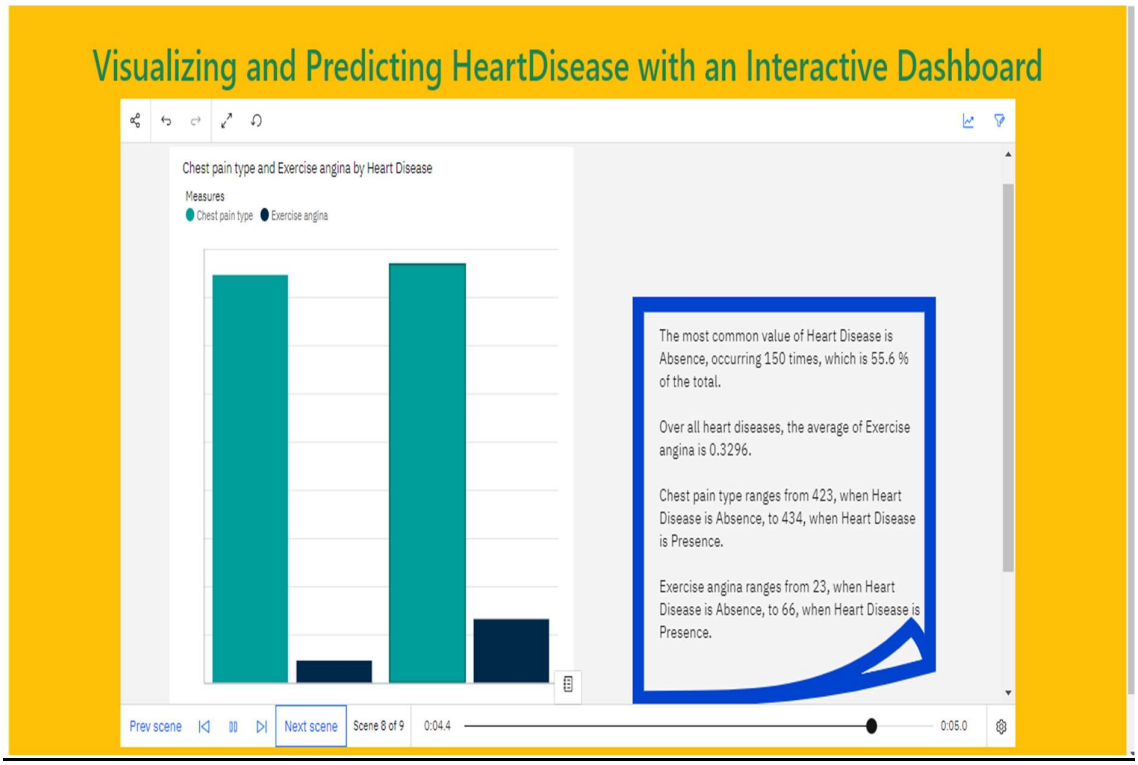

Visualizing and Predicting HeartDisease with an Interactive Dashboard
Max HR by Sex and Chest pain type
Age by Heart Disease
Heart Disease
Absence
Presence
0
1
The most common value of Sex - Chest pain type is 0|2, occurring 183 times, which is 67.8 % of the total.
The largest value of Max HR is 3, occurring when Sex - Chest pain type is 0|1.
The most common value of Heart Disease is Absence, occurring 150 times, which is 55.6 % of the total.
Prev scene
Next scene
Scene 3 of 9
0:05.0
0:05.0

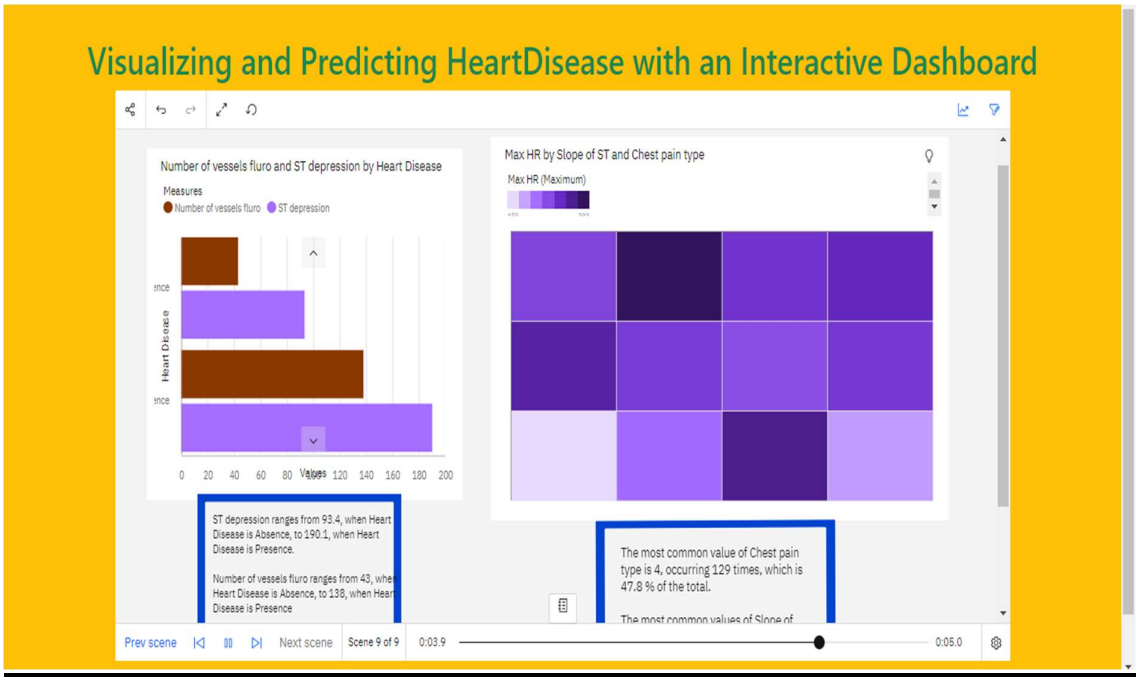

Visualizing and Predicting HeartDisease with an Interactive Dashboard
Max HR by Heart Disease colored by Age
Age (Average)
52.71
56.59
Thallium by Chest pain type
Chest pain type
1
2
3
4
The most common value of Heart Disease i
Absence, occurring 150 times, which is 55.
% of the total.
The largest value of Max HR is 202, occurri
when Heart Disease is Absence.
Thallium ranges from 90, when Ches
pain type is 1, to 691, when Chest
pain type is 4.
Thallium is unusually high when
Prev scene
Next scene
Scene 4 of 9
0:05.0
0:05.0


Visualizing and Predicting HeartDisease with an Interactive Dashboard
Number of vessels fluro by Chest pain type
Number of vessels fluro (Sum)
Average: 45.26
Chest pain type
Age hierarchy colored by Exercise angina and sized by Chest pain type
Chest pain type (S...
Exercise angina (S...
Number of vessels fluro ranges from 9, when Chest pain type is 1, to 119, when Chest pain type is 4.
Number of vessels fluro is unusually high when Chest pain type is 4.
Prev scene
Next scene
Scene 5 of 9
0:05.0
0:05.0


Visualizing and Predicting HeartDisease with an Interactive Dashboard
Exercise angina by Max HR colored by Heart Disease
Heart Disease
Absence
Presence
Max HR and Thallium for Number of vessels fluro colored by Chest pain type
Chest pain type (S...
For Exercise angina, the most significant value of Max HR is 125,
Prev scene
Next scene
Scene 6 of 9
0:05.0
0:05.0


Visualizing and Predicting HeartDisease with an Interactive Dashboard
Chest pain type and Sex by Cholesterol
Column
Sex (Count distinct)
Line
Chest pain type (Sum)
Sex (Count distinct)
Chest pain type (Sum)
Average: 5.981
The total number of results for Sex, across all Cholesterol, is 270.
The most common value of Cholesterol is 234, occurring 6 times, which is 2.2 % of the total.
Prev scene
Next scene
Scene 7 of 9
0:05.0
0:05.0


Visualizing and Predicting HeartDisease with an Interactive Dashboard
Chest pain type and Exercise angina by Heart Disease
Measures
Chest pain type
Exercise angina
The most common value of Heart Disease is Absence, occurring 150 times, which is 55.6 % of the total.
Over all heart diseases, the average of Exercise angina is 0.3296.
Chest pain type ranges from 423, when Heart Disease is Absence, to 434, when Heart Disease is Presence.
Exercise angina ranges from 23, when Heart Disease is Absence, to 66, when Heart Disease is Presence.
Prev scene
Next scene
Scene 8 of 9
0:04.4
0:05.0


Visualizing and Predicting HeartDisease with an Interactive Dashboard
Number of vessels fluro and ST depression by Heart Disease
Measures
Number of vessels fluro
ST depression
Heart Disease
0 20 40 60 80 100 120 140 160 180 200
Values
Max HR by Slope of ST and Chest pain type
Max HR (Maximum)
ST depression ranges from 93.4, when Heart Disease is Absence, to 190.1, when Heart Disease is Presence.
Number of vessels fluro ranges from 43, whe
Heart Disease is Absence, to 138, when Hear
Disease is Presence
The most common value of Chest pain type is 4, occurring 129 times, which is 47.8 % of the total.
Prev scene
Next scene
Scene 9 of 9
0:03.9
0:05.0