The three visualizations I chose were the parallel coordinate diagram, a bubble chart, and a donut chart. I originally was going to use a chord diagram, but the data I chose was not suitable for representing it in a chord diagram format. All visualizations are all linked to the data and interactive, where the charts update in real time as the user is changing the parameters. The data I chose was the heart health data, with 16 different categories that they had a numerical 'score' for each. For all three visualizations, patients diagnosed with heart disease are designated with the color red, and healthy patients with blue.

For the bubble chart, I represented each patient as an individual point, or circle, each with the same area. The color of the dots represent if the patients have the diagnosis of heart disease or not, with a red dot indicating they have the diagnosis and blue signifying that the patient does not have the diagnosis for heart disease. The bubbles (patients) are clustered according to parameter selected by the user using a dropdown menu. The default parameter has the patient bubbles filtered by sex. The user can then filter the data by clicking on the cluster title. For example, clicking on 'female' in the bubble chart will filter out all the data points that are female and will update the other two visualizations according to this filter. This chart uses the D3 force function for force simulation.

The donut chart always displays the ratio of diagnosed and undiagnosed patients, with a counter displaying the number of patients diagnosed and undiagnosed, as well as how many patients have been filtered out. Filtering the data from bubble chart will update the donut chart and will display the updated ratio upon selecting a filter.

The third visualization allows the user to analyze the data at multiple granularities by dragging the grey bar of the x-axis to the left (from the right end) or the right (from the left end) to view a subset of the data using the D3 brush function in D3. This allows the user to view the data as an overview or as a subset by manipulating any of the 5 x-axes of the data corresponding to the parallel coordinate chart. Changing the domain of the x-axis in any parameter of this visualization also acts as a filter for the other two visualizations. This is done by defining an update function for each chart, and then calling a global update function that calls each individual update function. As mentioned earlier blue lines are healthy patients whereas red lines represent diagnosed patients.

Finally, the tooltip is used in the bubble chart and the parallel diagram to display all of the data for that individual patient. The mouse over event on both graphs also changes the color of bubble of line being highlighted over to gold and makes every other data point grey. A mouse over event on a bubble will also highlight the corresponding patient on the parallel diagram and vice versa, making it easy to identify the same patient on a different visualization. I also implemented a reset button that resets all filters by unselecting all currently applied filters.