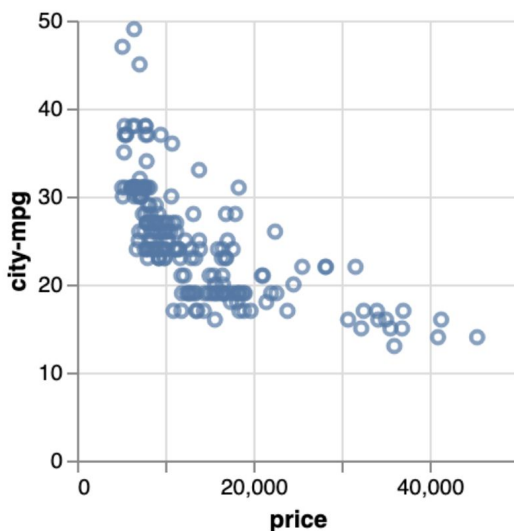


Link for code (data parsing and local hosting): <https://github.com/EramM805/Visualization>

1) Quantitative vs. Quantitative

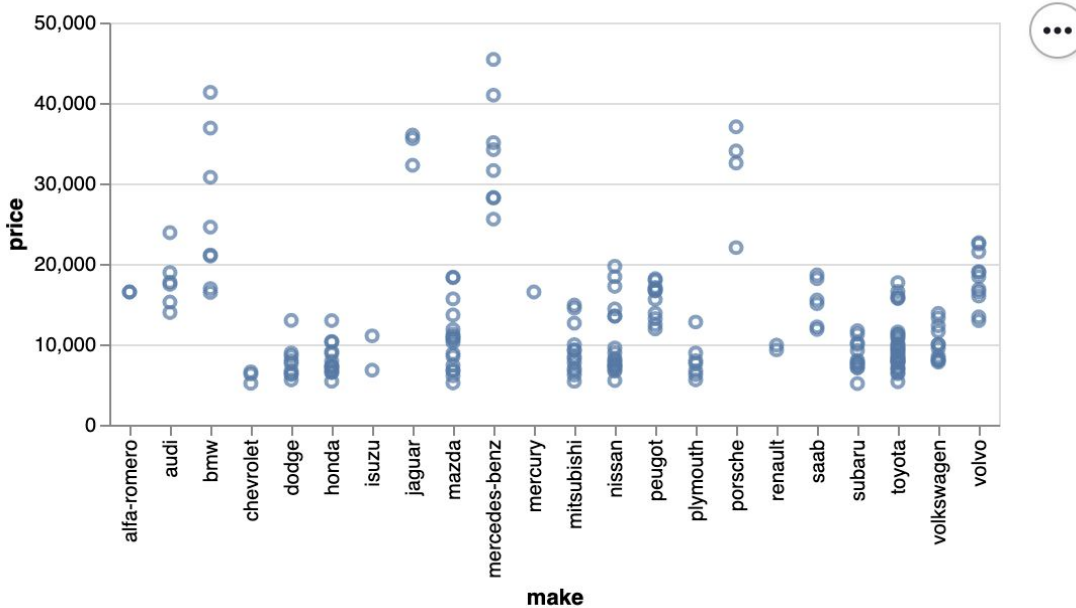
```
{  
  "$schema": "https://vega.github.io/schema/vega-lite/v5.json",  
  "description": "A simple bar chart with embedded data.",  
  "data": {"url":  
"https://raw.githubusercontent.com/EramM805/Visualization/main/data/data.json"},  
  "mark": "point",  
  "encoding": {  
    "y": {"field": "city-mpg", "type": "quantitative"},  
    "x": {"field": "price", "type": "quantitative"}  
  }  
}
```



The graph above displays the relationship between two quantitative variables, the city mpg and price of car. There seems to be a negative relationship between those two, that is, the less the city mpg the higher the price. We can also see clusters between 20-40 city mpg which I assume means that in the data-set most of the We can see that there is a cluster of ticks as indicated in the black box below and there are some outliers. Most automobiles seem to have four cylinders with a price range between 5,000 to 20,000.

2) Quantitative vs. Categorical

```
{ "$schema": "https://vega.github.io/schema/vega-lite/v5.json",  
  "description": "A simple bar chart with embedded data.",  
  "data": {  
    "url": "data/data.json"  
  },  
  "mark": "point",  
  "encoding": {  
    "x": {"field": "make", "type": "ordinal"},  
    "y": {"field": "price", "type": "quantitative"}  
  }  
}
```



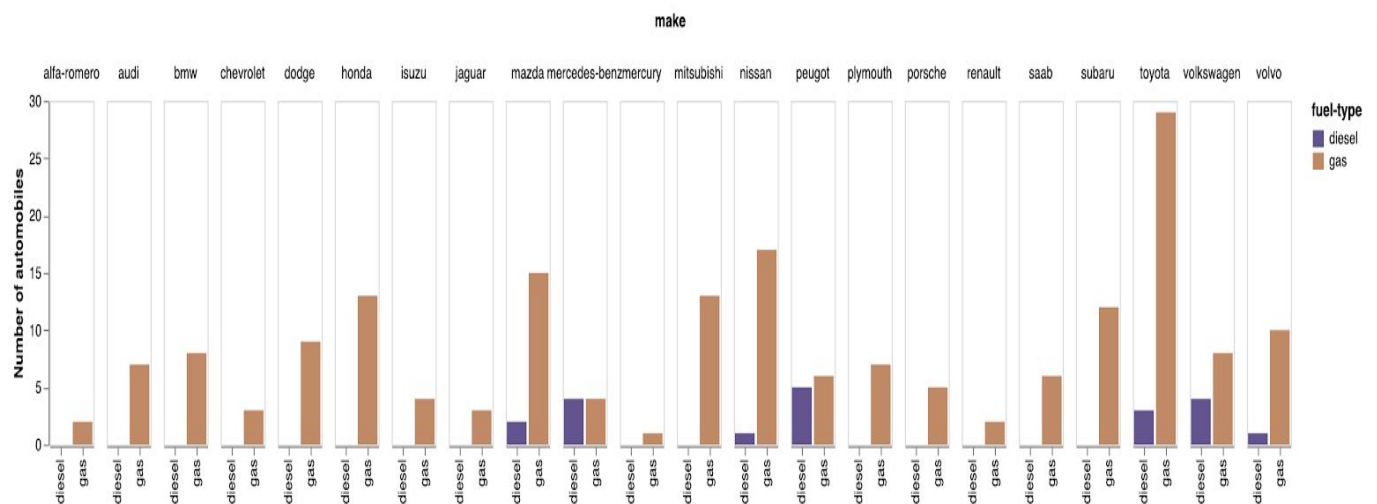
The graph above maps the relationship between the brand or manufacturer of a car to its price. We can see that brands like subaru, peugeot, volkswagen, toyota, honda, chevrolet, and dodge have clusters indicating that in the data we are representing we have clusters and that these brands have cars with a close price range. We can also see that luxury brands such as bmw, and mercedes-benz gave a higher price range than other manufacturers in this data.

3) Categorical vs. Categorical

```

{
  "$schema": "https://vega.github.io/schema/vega-lite/v5.json",
  "description": "A simple bar chart with embedded data.",
  "data": {
    "url": "data/data.json"
  },
  "mark": "bar",
  "encoding": {
    "column": {
      "field": "make", "type": "ordinal", "spacing": 10
    },
    "y": {
      "aggregate": "count",
      "field": "fuel-type",
      "title": "Number of automobiles",
      "axis": {"grid": false}
    },
    "x": {
      "field": "fuel-type",
      "axis": {"title": ""}
    },
    "color": {
      "field": "fuel-type",
      "scale": {"range": ["#675193", "#ca8861"]}
    }
  }
}

```



Eram Manasia

Assignment3

The graph above maps the relationship between the brand or manufacturer of a car to the number of automobiles that have diesel and gas. We can clearly see that gas is a popular choice with manufacturers in this data and some manufacturers don't even have diesel cars represented in this data. We can also see that in this dataset, Toyota seems to have the most number of automobiles that use gas. Mercedes-benz has the same number of gas and diesel cars.