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# Visualization Dashboard for FreeCodeCamp 2017 Survey

## Introduction:

The Dashboard shows three visualizations named as:

1. World Distribution - Attended Bootcamps
2. Employment Distribution per Country
3. Overview of Resources, Events & Podcasts people follow

## 1. World Distribution - Attended Bootcamps:

This is a map based visualization, the circles represent total number of people who attended the boot camp for a particular country.( plotted by latitudes and longitudes). Also, If you hover onto any of the circles, you will see the Age Range and the count of people who attended the bootcamp.

Now, if you click on the country with the circle,( please don't click on the circle) you will be shown visualization 2(Employment Distribution per Country) on the right side of the dashboard.

The blue shade circles look pleasant with the background being grey.

## 2. Employment Distribution per Country

This visualization has 13 categories of the employment type which is shown as the legend when you click on the country in visualization 1.

The size of the bubble represent- the count of attended bootcamps.

The color represents the categories of employment of people who have attended the bootcamp.

This visualization changes dynamically according to the countries you click on.

Note: Please don't click on the countries with no circles on them.( Because there is no data for those countries in the dataset)

I wanted my dashboard to look pleasant as it was a survey related dataset, hence I chose subtle colors.

## 3. Overview of Resources, Events & Podcasts people follow

This visualization provides an overview of the various things people who have taken the survey follow.

Basically, it is the grouping of related categories into one. There are three categories here, namely:

1. Resources
2. Events

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### 3. Podcasts

These categories themselves contain sub categories.

Click on any of the categories above, which will zoom in and you will be able to see the subcategories within each category.

Now, you can unzoom by clicking on it, which brings you back to the categories section.

The size of the circle represent - the count in each category. Larger the size, implies more number of people following those resources, events or podcasts.

The color I chose is because this looks pleasant and relatable to the categories.

### **How to use this visualization Dashboard?**

- Dashboard divided into 3 parts- left, right and bottom
- On load, statically loads the left and bottom parts( world map overview and the circle packing)
- On hover on the circles to see the age range and number of people who attended the bootcamp
- On click on the countries with the circles(Note: don't click on the countries without circles)
- Loads the bubble chart on the right part dynamically wrt the country you clicked on.
- You can also see the legend to understand the color and employee type wrt them.
- On hover with show the employee type with the count of people who attended the bootcamp.
- The bottom circle packing chart has 3 categories, click on each one and you will zoom in and be able to see sub categories wrt the categories that you clicked on
- Again clicking on the sub categories will unzoom and bring it to normal

### **Insights from this visualization:**

- The bigger the circle in the world map, more the count of people who attended the bootcamp
- Bigger the circle size in the circle packing, more the number of people who follow those.

### **Why did I chose to do it this way?**

I chose this dataset because I really like the freecodecamp community and also saw that there are not many visualizations for this dataset. I could only find bar chart representation of it.

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The dataset was huge and with many "NA" values. I had to do a lot of pre processing of data.

Also, the data used for each visualization has to be represented in different ways.

1. First I thought giving an overview would be best, this helps in knowing what the data is about. Since the dataset is a survey of people all around the world, I thought it is best to show the world distribution as the 1st visualization.
2. This part was really tough, deciding upon how to connect this with the overview. As I was showing the count of people who attended bootcamp for each country, I thought that linking the employment type with respect to the count of attended boot camp within each country, would be a better way to show the detailed view.
3. For the next visualization, which is the circle packing chart, it is an overview of how many people are following those resources. I thought that this was the best way to represent because the dataset contained various categories and grouping them up into hierarchical representation would be a good way of representing.

### **Evaluation, Discussion and Future work:**

Few points my classmate pointed out,

1. Use of choropleth map would be better for the first overview, I also agree with this and wanted to represent it in that way but could not.
2. An error pointed out was the legend had few extra squares.
3. A suggestion made by another classmate was to add zoom in where there is more data in the map visualization automatically.
4. Also, they have mentioned that the dashboard was simple and pleasant to use because of the subtle and plain colors.

I really plan to implement the above said suggestions in the future.

### **Extra Credits:**

1. For the circle packing chart, the dataset was so complex, First I had to filter everything out, then I had to perform pivot table excel operations manually to clear lot of unnecessary data. Then, I had to convert it to json format.

Then, I wrote a script to convert into hierarchy data necessary for showing categories and subcategories.

2. I also had to do lot of manual preprocessing for clearing out data.

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3. For the world map overview, I also had to generate latitudes and longitudes to plot the circles on the map, which was not given in the dataset.

I feel, these took a lot of hard work to get the data correct to make the correct and relevant representation possible.

Here, is the script I wrote to convert into hierarchy data.

```
var data = [  
  [  
    {  
      "CountryLive": "Australia",  
      "Employment": "law enforcement and fire and rescue",  
      "Count": 1  
    },  
    {  
      "CountryLive": "Australia",  
      "Employment": "software development and IT",  
      "Count": 1  
    },  
    {  
      "CountryLive": "Azerbaijan",  
      "Employment": "software development and IT",  
      "Count": 1  
    },  
    {  
      "CountryLive": "Belgium",  
      "Employment": "software development and IT",  
      "Count": 2  
    },  
    {  
      "CountryLive": "Brazil",  
      "Employment": "software development and IT",  
      "Count": 2  
    },  
    {  
      "CountryLive": "Canada",  
      "Employment": "arts, entertainment, sports, or media",  
      "Count": 1  
    },  
    {
```

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```
"CountryLive": "Canada",
"Employment": "finance",
"Count": 3
},
{
  "CountryLive": "Canada",
  "Employment": "office and administrative support",
  "Count": 1
},
{
  "CountryLive": "Canada",
  "Employment": "sales",
  "Count": 1
},
{
  "CountryLive": "Canada",
  "Employment": "software development and IT",
  "Count": 40
},
{
  "CountryLive": "Chile",
  "Employment": "software development and IT",
  "Count": 1
},
{
  "CountryLive": "China",
  "Employment": "software development and IT",
  "Count": 4
},
{
  "CountryLive": "Colombia",
  "Employment": "software development and IT",
  "Count": 2
},
{
  "CountryLive": "Cote D'Ivoire",
  "Employment": "software development and IT",
  "Count": 1
},
```

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```
{
  "CountryLive": "Czech Republic",
  "Employment": "software development and IT",
  "Count": 2
},
{
  "CountryLive": "Dominican Republic",
  "Employment": "office and administrative support",
  "Count": 1
},
{
  "CountryLive": "France",
  "Employment": "arts, entertainment, sports, or media",
  "Count": 2
},
{
  "CountryLive": "France",
  "Employment": "software development and IT",
  "Count": 1
},
{
  "CountryLive": "Germany",
  "Employment": "education",
  "Count": 1
},
{
  "CountryLive": "Germany",
  "Employment": "software development and IT",
  "Count": 1
},
{
  "CountryLive": "Greece",
  "Employment": "finance",
  "Count": 1
},
{
  "CountryLive": "Greece",
  "Employment": "software development and IT",
  "Count": 1
}
```

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```
},
{
  "CountryLive": "Hungary",
  "Employment": "sales",
  "Count": 1
},
{
  "CountryLive": "Hungary",
  "Employment": "software development and IT",
  "Count": 1
},
{
  "CountryLive": "India",
  "Employment": "software development and IT",
  "Count": 6
},
{
  "CountryLive": "Indonesia",
  "Employment": "education",
  "Count": 1
},
{
  "CountryLive": "Indonesia",
  "Employment": "software development and IT",
  "Count": 2
},
{
  "CountryLive": "Israel",
  "Employment": "software development and IT",
  "Count": 4
},
{
  "CountryLive": "Italy",
  "Employment": "software development and IT",
  "Count": 3
},
{
  "CountryLive": "Kazakhstan",
  "Employment": "software development and IT",
```

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```
"Count": 3
},
{
  "CountryLive": "Kenya",
  "Employment": "construction and extraction",
  "Count": 1
},
{
  "CountryLive": "Kenya",
  "Employment": "education",
  "Count": 2
},
{
  "CountryLive": "Kenya",
  "Employment": "software development and IT",
  "Count": 2
},
{
  "CountryLive": "Korea South",
  "Employment": "education",
  "Count": 1
},
{
  "CountryLive": "Lithuania",
  "Employment": "architecture or physical engineering",
  "Count": 1
},
{
  "CountryLive": "Lithuania",
  "Employment": "construction and extraction",
  "Count": 1
},
{
  "CountryLive": "Luxembourg",
  "Employment": "software development and IT",
  "Count": 1
},
{
  "CountryLive": "Macedonia",
```



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```
"Employment": "software development and IT",
"Count": 2
},
{
  "CountryLive": "Malaysia",
  "Employment": "architecture or physical engineering",
  "Count": 1
},
{
  "CountryLive": "Malaysia",
  "Employment": "software development and IT",
  "Count": 2
},
{
  "CountryLive": "Mexico",
  "Employment": "construction and extraction",
  "Count": 1
},
{
  "CountryLive": "Mexico",
  "Employment": "education",
  "Count": 1
},
{
  "CountryLive": "Mexico",
  "Employment": "office and administrative support",
  "Count": 1
},
{
  "CountryLive": "Mexico",
  "Employment": "software development and IT",
  "Count": 3
},
{
  "CountryLive": "Morocco",
  "Employment": "transportation",
  "Count": 1
},
{
```

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```
"CountryLive": "Mozambique",
"Employment": "software development and IT",
"Count": 1
},
{
"CountryLive": "Netherlands (Holland, Europe)",
"Employment": "education",
"Count": 1
},
{
"CountryLive": "Netherlands (Holland, Europe)",
"Employment": "farming, fishing, and forestry",
"Count": 1
},
{
"CountryLive": "Netherlands (Holland, Europe)",
"Employment": "software development and IT",
"Count": 5
},
{
"CountryLive": "New Zealand",
"Employment": "software development and IT",
"Count": 2
},
{
"CountryLive": "Nicaragua",
"Employment": "sales",
"Count": 1
},
{
"CountryLive": "Nigeria",
"Employment": "software development and IT",
"Count": 3
},
{
"CountryLive": "Norway",
"Employment": "software development and IT",
"Count": 1
},
}
```

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```
{
  "CountryLive": "Pakistan",
  "Employment": "software development and IT",
  "Count": 3
},
{
  "CountryLive": "Panama",
  "Employment": "software development and IT",
  "Count": 1
},
{
  "CountryLive": "Philippines",
  "Employment": "law enforcement and fire and rescue",
  "Count": 1
},
{
  "CountryLive": "Philippines",
  "Employment": "sales",
  "Count": 1
},
{
  "CountryLive": "Philippines",
  "Employment": "software development and IT",
  "Count": 3
},
{
  "CountryLive": "Poland",
  "Employment": "architecture or physical engineering",
  "Count": 1
},
{
  "CountryLive": "Poland",
  "Employment": "software development and IT",
  "Count": 2
},
{
  "CountryLive": "Portugal",
  "Employment": "education",
  "Count": 1
}
```

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```
},
{
  "CountryLive": "Portugal",
  "Employment": "office and administrative support",
  "Count": 1
},
{
  "CountryLive": "Republic of Serbia",
  "Employment": "software development and IT",
  "Count": 1
},
{
  "CountryLive": "Romania",
  "Employment": "sales",
  "Count": 1
},
{
  "CountryLive": "Romania",
  "Employment": "software development and IT",
  "Count": 2
},
{
  "CountryLive": "Romania",
  "Employment": "transportation",
  "Count": 1
},
{
  "CountryLive": "Russia",
  "Employment": "sales",
  "Count": 1
},
{
  "CountryLive": "Russia",
  "Employment": "software development and IT",
  "Count": 2
},
{
  "CountryLive": "Saudi Arabia",
  "Employment": "education",
```

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```
"Count": 1
},
{
  "CountryLive": "Ukraine",
  "Employment": "finance",
  "Count": 1
},
{
  "CountryLive": "Ukraine",
  "Employment": "health care",
  "Count": 1
},
{
  "CountryLive": "Ukraine",
  "Employment": "sales",
  "Count": 1
},
{
  "CountryLive": "Ukraine",
  "Employment": "software development and IT",
  "Count": 2
},
{
  "CountryLive": "Spain",
  "Employment": "arts, entertainment, sports, or media",
  "Count": 3
},
{
  "CountryLive": "Spain",
  "Employment": "education",
  "Count": 2
},
{
  "CountryLive": "Spain",
  "Employment": "software development and IT",
  "Count": 16
},
{
  "CountryLive": "South Africa",
```

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```
"Employment": "software development and IT",
"Count": 2
},
{
  "CountryLive": "United States of America",
  "Employment": "architecture or physical engineering",
  "Count": 2
},
{
  "CountryLive": "United States of America",
  "Employment": "arts, entertainment, sports, or media",
  "Count": 4
},
{
  "CountryLive": "United States of America",
  "Employment": "construction and extraction",
  "Count": 2
},
{
  "CountryLive": "United States of America",
  "Employment": "education",
  "Count": 17
},
{
  "CountryLive": "United States of America",
  "Employment": "farming, fishing, and forestry",
  "Count": 1
},
{
  "CountryLive": "United States of America",
  "Employment": "finance",
  "Count": 5
},
{
  "CountryLive": "United States of America",
  "Employment": "food and beverage",
  "Count": 9
},
{
```

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```
"CountryLive": "United States of America",
"Employment": "health care",
"Count": 14
},
{
"CountryLive": "United States of America",
"Employment": "legal",
"Count": 1
},
{
"CountryLive": "United States of America",
"Employment": "office and administrative support",
"Count": 11
},
{
"CountryLive": "United States of America",
"Employment": "sales",
"Count": 11
},
{
"CountryLive": "United States of America",
"Employment": "software development and IT",
"Count": 288
},
{
"CountryLive": "United States of America",
"Employment": "transportation",
"Count": 3
},
{
"CountryLive": "United Kingdom",
"Employment": "arts, entertainment, sports, or media",
"Count": 1
},
{
"CountryLive": "United Kingdom",
"Employment": "education",
"Count": 1
},
}
```

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```
{
  "CountryLive": "United Kingdom",
  "Employment": "sales",
  "Count": 1
},
{
  "CountryLive": "United Kingdom",
  "Employment": "software development and IT",
  "Count": 13
},
{
  "CountryLive": "Venezuela",
  "Employment": "software development and IT",
  "Count": 1
},
{
  "CountryLive": "Vietnam",
  "Employment": "software development and IT",
  "Count": 2
}
]
]
```

```
var newData = {"name":"root", "children":{}}
```

```
data.forEach(function(d){
  if(typeof newData.children[d.dep] !== 'undefined') {
    newData.children[d.dep].children.push(d)
  } else {
    newData.children[d.dep] = {"name": d.dep, "children": [d]}
  }
})
newData.children = Object.keys(newData.children).map(function (key) { return
newData.children[key]; });
```

```
$("body").text(JSON.stringify(newData))
```