D3 visualizations

The Problem: To visualize the dataset with appropriate graphs and representations.

The Solution: Learn and use D3 library to generate visualizations.

My Role: UI designer. UI developer.

Technology:

* HTML/CSS
* Jquery
* D3

Tools:

* Jetbrains Webstorm 2016.3.2
* XAMPP
* Github Desktop Application

Project 1

Dataset: The dataset was compiled by the US Energy Information Administration. This dataset includes data on the energy produced and consumed by most world countries between 1980 and 2012. The amount of energy is also broken down by different energy types (petroleum, renewables, natural gas, coal, electricity). Additionally, the dataset includes other environmental indicators and social indicators, including CO2 emissions and population sizes.

* **Total primary energy** (in quadrillion BTU): production | consumption
* **Total electricity** (billion Kilowatt-hours): generation | consumption
* **Renewable electricity** (billion Kilowatt-hours): generation | consumption
* **Renewable biofuels** (thousand barrels per day): production | consumption
* **Petroleum** (thousand barrels per day): production | consumption
* **Coal** (million short tons): production | consumption
* **Energy-related CO2 emissions** (metric tons per capita): emissions

Design Decisions:

* Use Drop Downs to select Country/Region and Dataset to display
* Use Bar Graph and Line Chart to show the numeric data related to the selected Country/Region and Type
* Allow Users to select multiple Countries/Regions for Comparison. Display using grouped bars for Bar Graph and multiple lines for Line Chart
* Providing Hover functionality to display exact numeric value of the selection.
* Use Scatter plot to compare Energy types between all or selected Countries/Regions.
* Provide hover function to better understand individual values of the selected country
* Pie Chart to view the Major Regions separately without comparing them to the countries.
* Functionality to hover to preview and click to select one of the Major Regions to show countries belonging to that Region in the scatter plot.
* Functionality to view the change in energy trends over the years using a horizontal Range selected.
* Play functionality to auto change the years to watch the change in trends.
* A Heat map to show a holistic idea of the Dataset of a energy type and all the countries. Gives a better view of geographical trends if any.
* Horizontal Range to change the year under observation.

Insights:

Project 2

Dataset: The 2015 American Community Survey (ACS). The ACS dataset is annually compiled by the US Census, and designed to provide broad demographic and socio-economic characteristics of the US population. The Dataset contains a comprehensive set of variables (approximately 66,000 variables) covering all US areas with at least 65K residents. We are going to concern ourselves with a subset of those 66K+ variables representing basic demographics (age, sex, and race), income, housing, and other indicators.

* Total population within the locality
* Age distribution broken down by sex
* Median age by sex
* Race
* Living arrangement for adults (18 years and over)
* Place of birth by nativity
* Median household income
* Per capita income
* Income to poverty-level ratio
* Poverty level by place of birth
* Educational attainment by place of birth
* Travel time to work
* Means of transportation to work

Design Decisions:

* A side menu to allow users to select any of the Datasets. Allowing users to go deeper into a dataset by selecting any top level menu item..
* A Choropeth of US to allow users to view the selected dataset in entirety and as a depiction of color density rather than numeric values.
* Functionality to switch between State view and County view of the Choropeth. Allowing users to compare states and or Counties.
* Hover functionality to view the normalized numeric value of the State or Country.
* Click Functionality on States to open a dialog depicting the next level Dataset using Grouped Bar Graphs and Pie Charts.
* Pie Charts at the bottom of the Choropeth to help users understand a mid-level dataset to top level and next level, which is manually calculated, and used to provide better idea of composition of the next level. Hover functionality to view numeric value and Click functionality to make selections as an alternative to the Side menu
* Carefully selected Color scheme to consider Color Blindness and ease of Distinction
* Scatter Plot to help user compare States or Counties from two different Datasets.
* Functionality to zoom the scatter plot to allow users observe two plots which have numeric similarities.
* Click functionality on Choropeth and Scatter plot elements to Spot and Highlight the State and its plot.

Insights: