Assignment: 7-3-3 Create a Narrative Visualization
Name: John Frank Moran
Project URL: jfmoran2.github.io
Date: August 2, 2019

Data Source: World Bank World CO2 emissions. https://data.worldbank.org
Note: Original data was cleaned and pivoted on local machine and the resulting data file was uploaded to *jfmoran2.github.io* local directory.

Resources: Code was written entirely in D3, Javascript, HTML, CSS, with only a few utilities (buttons, etc.) used from Bootstrap. No other external libraries were utilized.

Project Title: *C02 Emissions China v. USA (1960-2011)*

Messaging: This narrative visualization looks at the CO2 emissions from China and the United States from 1960 to 2011. The primary message from the visualization is that the United States was the world's leading emitter of CO2 emissions from 1960 to 1995. In 1995, China overtook the United States as the world's leading emitter. Since China has approximately four times the population of the United States, this might not be surprising, but the alarming aspect shown in the visualization is that even at a per capita level, China is rapidly gaining on the United States at an fast rate. Additionally, as the United States is beginning a downward trend in per capita emissions, China is on a steep per capita upward trajectory.

Narrative Structure: This visualization uses an interactive slideshow with drill down information available in each scene using hover over tooltips and ability for more author led information to be accessed via buttons on each scene/page.

Visual Structure and Scenes: There are three primary scenes in this visualization:

(1) CO2 Total Emissions in Kilotons (kt) China v. USA (1960-2011)
(2) CO2 Per Capita Emissions in Metric tons (t) China v. USA (1960-2011)
(3) Ratio China/USA CO2 Per Capita Emissions (1960-2011)

The first scene is animated with the data lines being presented over three seconds to illustrate how the data changed over fifty years, with China eventually overtaking the United States in 2005.

The second scene shows the contrast between the United States staying relatively flat in per capita emissions and eventually starting a downward trend in 2007, while China started a rapid increase in 2002.

The third scene shows the ratio of the two data lines presented in the second scene which adds a startling user experience as they see the almost vertical slope of the ratio line of Chinese CO2 emissions compared to USA emissions in the later years of the graph.

Each graph on each scene retains the axes in place between scenes at the same positions, even though the axes units change. Each graph also retains the same color scheme so the user is not disoriented between graphs. Additionally, the navigation between scenes remains the same, as do the mechanisms for drilling down to see more information.

Annotations and Parameters: The user can navigate between scenes using the scene buttons and on each page there is a dynamic "More Information" button that responds with more author led information relating to that scene. Additionally, the user can hover over the data lines and dynamic tooltips that show the exact (x,y) values for each graph.

Triggers: To change between scenes, the user presses the buttons to navigate between scenes one, two and three. Additionally, the user can trigger more information on any scene by pressing the "More Information" button, which brings up a pop-up window with author led information. Furthermore, there are mouse triggered events for hovering over graphs in any page that show tooltips with the Y value data from the X value of the hover position.