

**Class:** INFO 3300

**Project:** 2

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## 1. DATA DESCRIPTION

### Goal:

Our goal is to show the trend in greenhouse gas emission per state from 1992 to 2012 and relate this to the political affiliation, hence the administration of both the country and the state at the given period. This is derived from the assumption that one political group tends to be generally more conservative in how they approach greenhouse gas emissions. This led us to our two main data sets:

- I. **Greenhouse gas emission:** this data is saved as:
  - A. WorldResourcesInstituteCAIT.csv
  - B. YearlyPollution.csv
- II. **State political affiliation:** We get this data from the results of the different presidential elections from 1990 to 2012. This data is saved as
  - A. 1992Election.csv
  - B. 1996Election.csv
  - C. 2000Election.csv
  - D. 2004Election.csv
  - E. 2008Election.csv
  - F. 2012Election.csv

In order to better show a trend in Greenhouse gas emissions, we decided to include other data for relevant factors that affect greenhouse gas emission:

- I. **Gross Domestic Product (GSP) and Gross State Product (GSP):** We decided upon this data because some activities that affect state GSP growth such as industrial production may directly affect greenhouse gas emission. We were also curious to see if a better GSP may result in a state better managing greenhouse gas emission. This data is available as StateGDP.csv
- II. **National and State Population:** Logically, more people per unit area implies more greenhouse gas emission per unit area. Nevertheless, we thought it

necessary to incorporate national and state population to see how this relates to greenhouse emission. This data is available as statepopulations.csv

We did **not combine** the datasets into one datasets but rather left each dataset as is. We thought it best to leave it this way for easier access, but in d3, we did parse through multiple datasets and combined different datasets into different graphs.

### Data Sources:

We got our data from different sources:

- I. <http://cait.wri.org/> for the `WorldResourcesInstituteCAIT.csv`, `StateGDP.csv`, `YearlyPollution.csv`
- II. <https://www.census.gov/> for the `statepopulations.csv`

### Filter/Reformat:

Our datasets were in general pretty consistent to construct. We did some manual construction in some datasets with state names to normalize them with their corresponding state codes. In addition, for greenhouse gas emissions, we rounded them so the numbers would look better when we displayed them. In general, we did not filter any data out as we wanted to show possible outliers in the data, as those would be “surprising”.

### Additional Data:

We used `us-states.json` for our US States geo-choropleth. (This was the one given out in class.)

### Citation:

We have cited all resources acquired from external sources. For some cases, especially code, we have inline (within code) citation.

### Abbreviations:

**GSP:** Gross domestic product

**GHG:** greenhouse gas

## 2. DATA MAPPING TO VISUAL ELEMENTS

We tried to keep our visualization as simple as possible to minimize distraction and maximize functionality. Nevertheless below is a description of different visualizations that we used:

### I. COLOR

For the most part, we tried to keep the color to a minimum of solid red and blue. These colors are representative of the two main political groups in the United States. These colors work well with our goal for the project since we intend to visualize the trend that political affiliation, hence administration has on the rate of greenhouse gas emission. In the sidebar, we use different colors for sections with different data. Overall, we tried to use colors that are functionally viable and aesthetically pleasing.

### II. Linechart

We used the YearlyPollution.csv to create a lineplot of the greenhouse gas emissions over time. Here we used a linear scale for the y-axis to scale the greenhouse gas emissions accordingly over the years. Using this scale, the linechart will fill up a large majority of our pre-defined SVG element as we scaled our axis accordingly to the max and min of the dataset.

### III. Map/Choropleth

We used us-states.json to create a choropleth for each presidential period eg 2000-2004. This choropleth shows the political affiliation for each state during the specified period. We believe that this visualization is better to understand as it helps users relate each state with the relevant data.

### IV. Sidebar:

We use the sidebar to display data unique to each state. When the user hovers mouse over a state on the choropleth, the sidebar displays data unique to that state. We tried to keep the sidebar simple despite the temptation to add more data or more visualization.

#### A. GSP and GHG

We display these side by side since we thought there might be an interesting correlation that can be observed from the two. They both have a rank from lowest to highest and it is easy to see where each individual state ranks.

## B. Population

We thought it would be nice to show each state's population in comparison to the average state population for the rest of the US. We use a circle whose radius is a function of the state's population. The circle for the average state population has a fixed radius.

## V. Background:

We decided to add a background image because we thought that it would improve our visualizations. As you may have noticed, the background image reflects the issue we are trying to address.

## 3. THE STORY

"Politics is a dirty game", said the British. At this point, we neither agree nor disagree with this statement. However, we are convinced that there are many underlying factors when it comes to political affiliation and administration. For instance, "Led globally by China, the United States is the second-largest greenhouse gas emitter in the world, as it accounts for almost 15 percent of all emissions." (Fragoso), but we have barely heard much talk about greenhouse gas emission in the currently ongoing presidential election campaigns. Undeniably therefore, there are many important issues that do not make political headlines but are affected by the political leaders in office. Greenhouse emission is one such major issue, hence the focus of this project.

Global warming and greenhouse gas emissions have been on the rise. Our project is determined to show how much of a contributor to global warming the US in general is and each individual state has been since 1990, a period during which carbon emission rates have been on a record high. We match this data to the willingness of people to address this issue - the conservativeness of a political group (the leaders especially) can directly reflect the people's willingness and actual proactiveness to address this issue.

We further investigate how this greenhouse gas emission boils down to each individual state and is influenced by other factors such gross state product and state population to attempt to illustrate if these emissions are outside of the control of political leaders.

## Surprising Fact:

- I. It is interesting to note how, from our linechart, carbon emissions really skyrocketed during the 1992 to 2000 period when Clinton was in office.

- II. It is also interesting to note that during the Obama administration, 2008-2012, greenhouse gas emissions reduced progressively, which is surprising because the rest of the world was experiencing a rise in carbon emissions during this period (Fragoso).

moreCitation:

1. Fragoso, Alejandro Davila. "U.S. Greenhouse Gas Emissions Climbed For the Second Straight Year." ThinkProgress RSS. N.p., 19 Apr. 2016. Web. 28 Apr. 2016.  
<<http://thinkprogress.org/climate/2016/04/19/3770317/greenhouse-emissions-higher/>>.
2. The White House. "President Obama's Plan to Fight Climate Change." The White House. The White House, n.d. Web. 28 Apr. 2016.  
<<https://www.whitehouse.gov/climate-change>>.