

# VISUALIZING GLOBAL WARMING DATA ACROSS COUNTRIES FROM 1960 TO 2010

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## Introduction

We want to display how CO<sub>2</sub> emissions of different countries change over time. Our primary users would be scientists and researchers using the data to quickly gain a sense of overall trends and patterns, and to facilitate more specific analyses or questions a researcher might develop. This is with CO<sub>2</sub> emissions and related variables.

One of us (Alec) is working with this data with Adrian Raftery and Dargan Frierson (UW).

## Displaying CO2 Intensity using a World Map

### CO2 Emission

CO2 Intensity across Countries from 1960 to 2008

This is a map of CO2 intensity (in millions of tonnes of CO2 emissions per 10,000 USD (1990 dollars) economic output) by country by year from 1960 to 2008. CO2 intensity is a measure of carbon emissions that is more consistent across countries of varying levels of wealth than CO2 emissions per person.

Move the slider to select a year for viewing emissions. The light grey color represents missing data.

Demographic variables relevant to CO2 emissions, such as GDP and population size, are shown when hovering over a country.

CO2 Emission for Year:

1960

play

Select Chart

CO2 Intensity  
2.99 - 17.14  
1.91 - 2.99  
1.33 - 1.91  
0.97 - 1.33  
0.58 - 0.97  
0.38 - 0.58  
0 - 0.38

Brazil  
Year: 1960  
CO2 Intensity: 0.753 million tonnes per \$10,000  
GDP: \$2,334.86  
Population: 72,775,883

### Features:

- A dropdown menu (Select Chart) allowing users to switch amongst visualization for different variables and to switch from a map to a line charts
- Pop-up window displaying different information (i.e., country name, population)
- Animation allowing users to see how CO2 emissions change over time
- Slider allowing users to quickly select which year to display

## Line Charts

### CO2 Emission across Countries from 1960 to 2008

Y Variable: Intensity (Carbon / GDP) Y on log scale? ☐

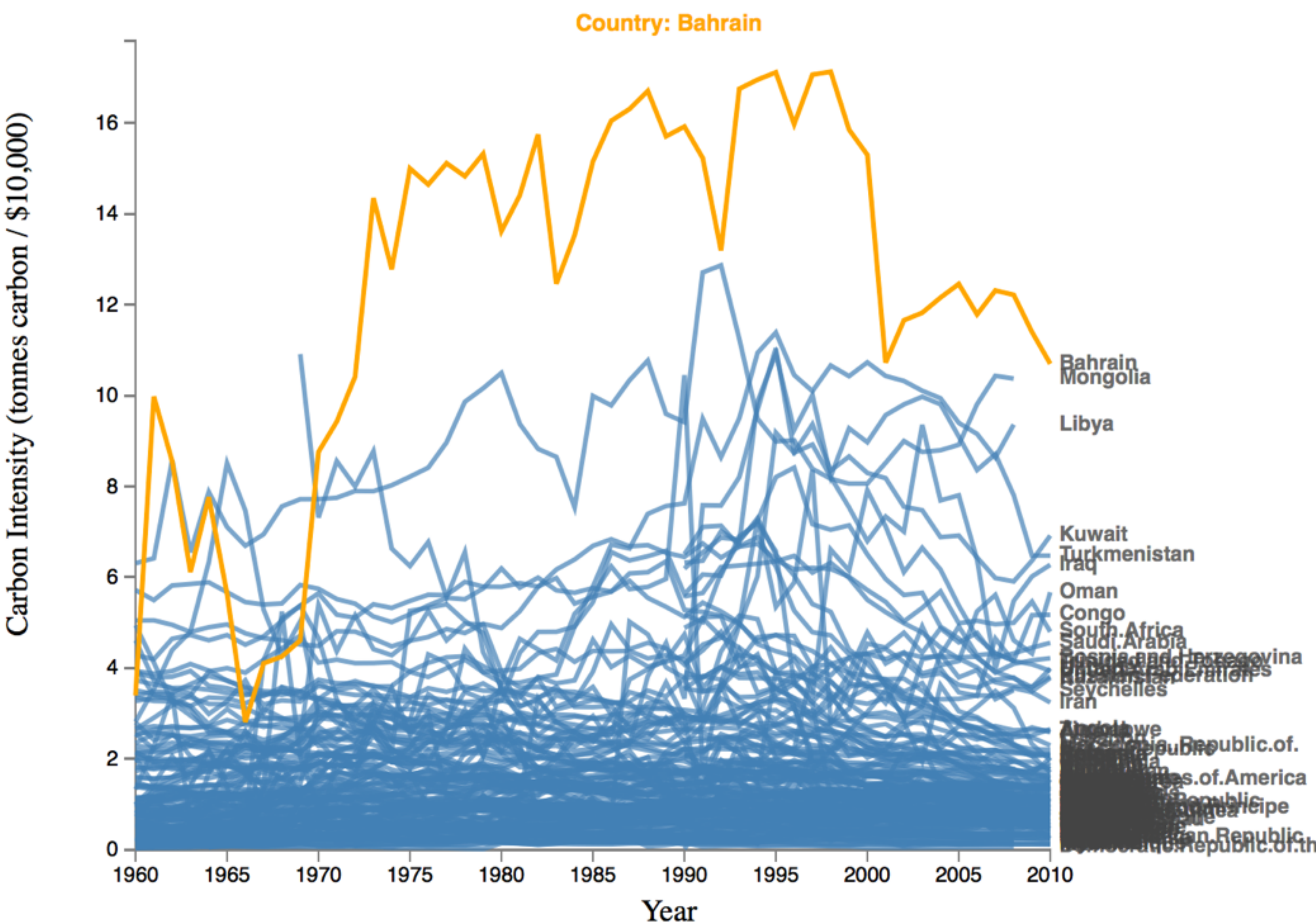
X Variable: Year X on log scale? ☐

Swap axes

Reset

Subset to selected countries

Region: Entire World



Y Variable: Intensity (Carbon / GDP) Y on log scale? ☐

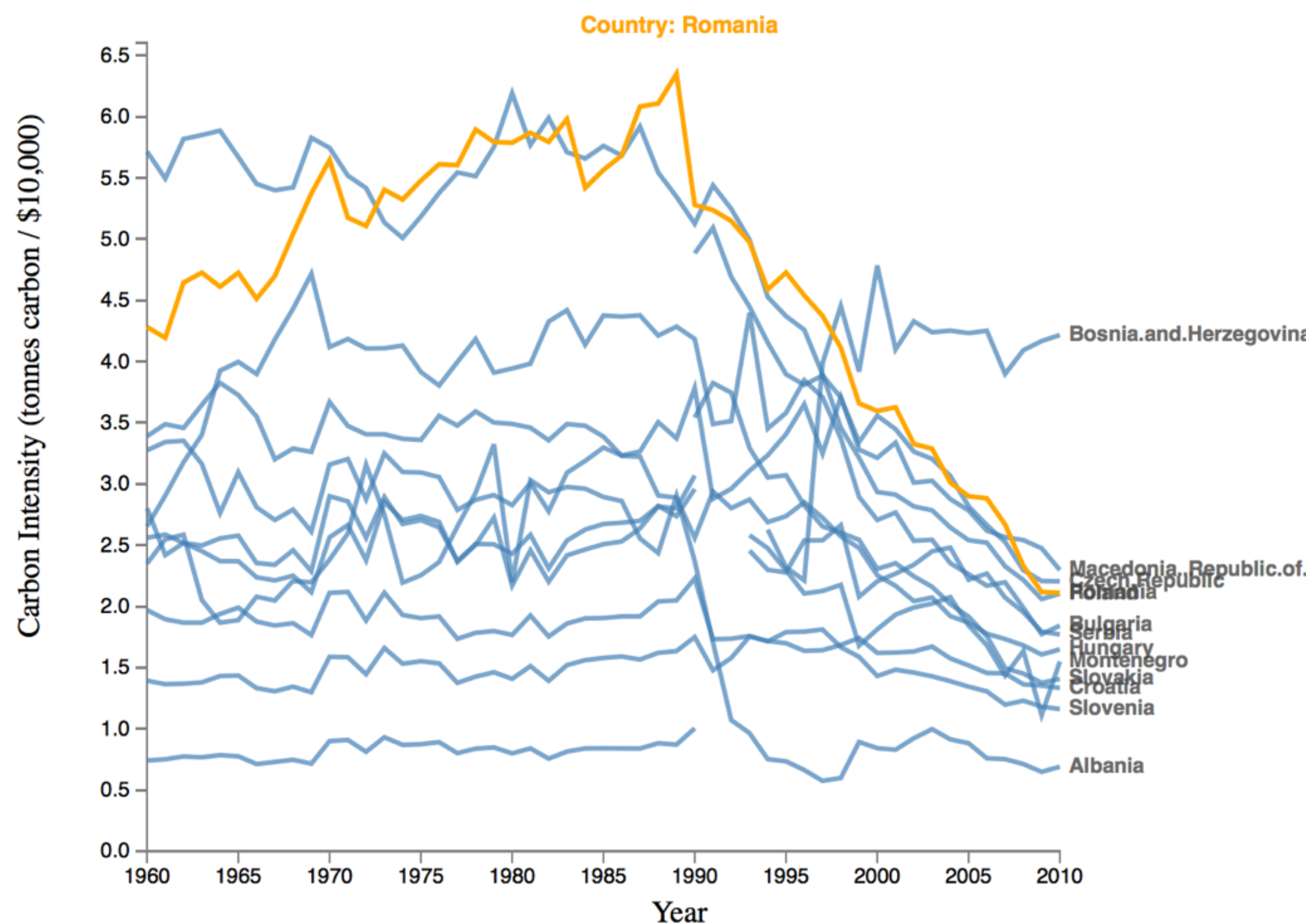
X Variable: Year X on log scale? ☐

Swap axes

Reset

Subset to selected countries

Region: Eastern Europe



## Line Chart Description

- View different variables over time and against other variables
- Show lines representing trends per country
- Select by region and country (dropdown and brushing)

## Data

We have CO<sub>2</sub> emissions, GDP per capita, Population, and compound measures of various countries from 1960 to 2010.

## Possible Extensions

### Maps:

- Simple line chart displaying CO2 trends in pop-up window
- Maps for different variables

### Line Chart:

- Color by region
- Summarize by region
- Multiple linked charts for side-by-side comparison

## References

**Carbon Data:** Boden, TA, Marland, G and Andres, RJ 2013. Global, Regional, and National Fossil-Fuel CO2 Emissions, Carbon Dioxide Information Analysis Center, Oak Ridge.

**GDP Data:** The Maddison-Project, <http://www.ggdcc.net/maddison/maddison-project/home.htm>, 2013 version.

**Population Data:** United Nations, Department of Economic and Social Affairs, Population Division (2013).

[World Population Prospects: The 2012 Revision, Volume I: Comprehensive Tables](#). ST/ESA/SER.A/336.

**Maps:** <http://datamaps.github.io/>  
<http://axismaps.com/project.php#jobs>

### Code:

<https://github.com/CSE512-15S/fp-azimmer8-hoiyi>