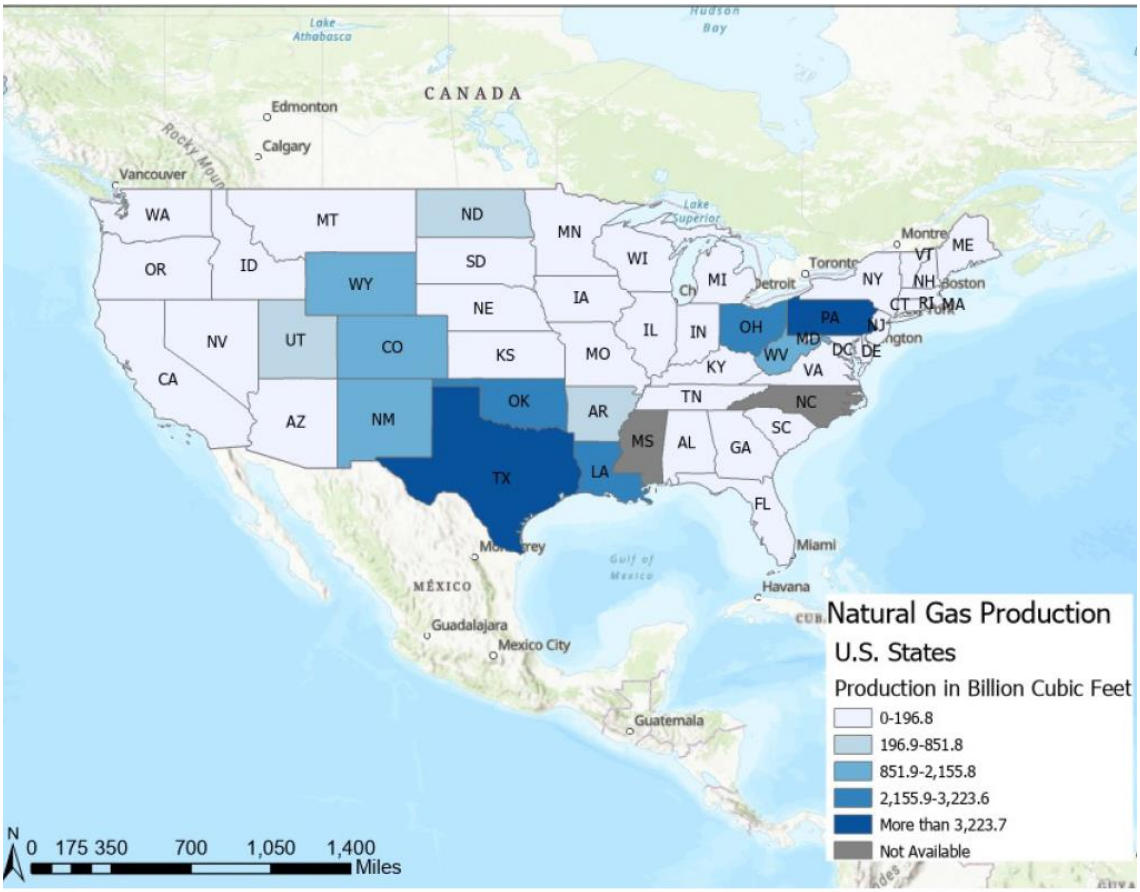
# Visualizing Amounts

**Figure 1. Natural Gas Production by State, 2019**




***Source:*** *Author's elaboration with data from the Energy Information Administration*

The relevant points of this data visualization are:

- The main purpose of Figure 1 is to visualize amounts comparing the natural gas production by State in 2019.
- As indicated in this figure, natural gas production varied in magnitude across the producers' States.
- Texas and Pennsylvania were the largest natural gas producers; producing more than 3 trillion cubic feet.
- Ohio, Oklahoma, and Louisiana produced between 2.1 trillion and 3.2 trillion cubic feet of natural gas.
- Wyoming, Colorado, New Mexico, and West Virginia produced between 851 billion and 2.1 trillion cubic feet of natural gas.
- Utah and North Dakota produced between 196 and 851 billion cubic feet of natural gas.
- The rest of the state produced 196 billion cubic feet or lower.

I used natural gas production data by state in 2019 from the Energy Information Administration (EIA) at the website (https://www.eia.gov/dnav/ng/hist/n9050tx2M.htm).

I displayed the amounts of natural gas production using a Geographical Information System approach.

I presented in Table 1 the six Tufte's principles recommended for a data visualization along with a description of each principle. Additionally, I indicated which of these principles I used when creating Figure 1 and explained their applications.

**Table1. Tufte's Principles applied in Figure 1**

| Tufte's Principles | Figure1 | Detailed description | Application |
|---|---|---|---|
| Show comparisons | ✓ | Making comparisons is helpful in identifying magnitude visually | This map is comparing the natural gas production by state in 2019 |
| Show causality | **NA** | The data visualization could have as major goal to show causality. How a variable cause another visually could provide a first insight in identifying causation | NA |
| Use multivariate data | ✓ | Use multiple variables to accomplish the goal of the data visualization | This data visualization uses state as categorical variable and natural gas production in cubic feet as continuous variable |
| Completetly integrate text, images, and numbers | ✓ | Integrate relevant notes, remarks, and images to better inform your audience about the information you want to communicate | This map integrates labels, a North arrow, geographic scale, and the natrual gas production in 5 groups according to their magnitude. |
| Establish credibility | ✓ | One form to establish credibility is to include the data source and also start from the origin or allow the reader to identify the scale you are using | The source is included at the end of the map and it is mentioned at the description of the data visualization |
| Focus content | ✓ | Use space efficiently and avoid *chartjunk* by including relevant data to communicate your idea and stress on your main goal of your data visualization. | Alaska is included in an additional area below the rest of the continental map as suggested in Wilke (2013) |