Metals Natural Aggregates Value of Nonfuel Minerals Produced in 2024, by State

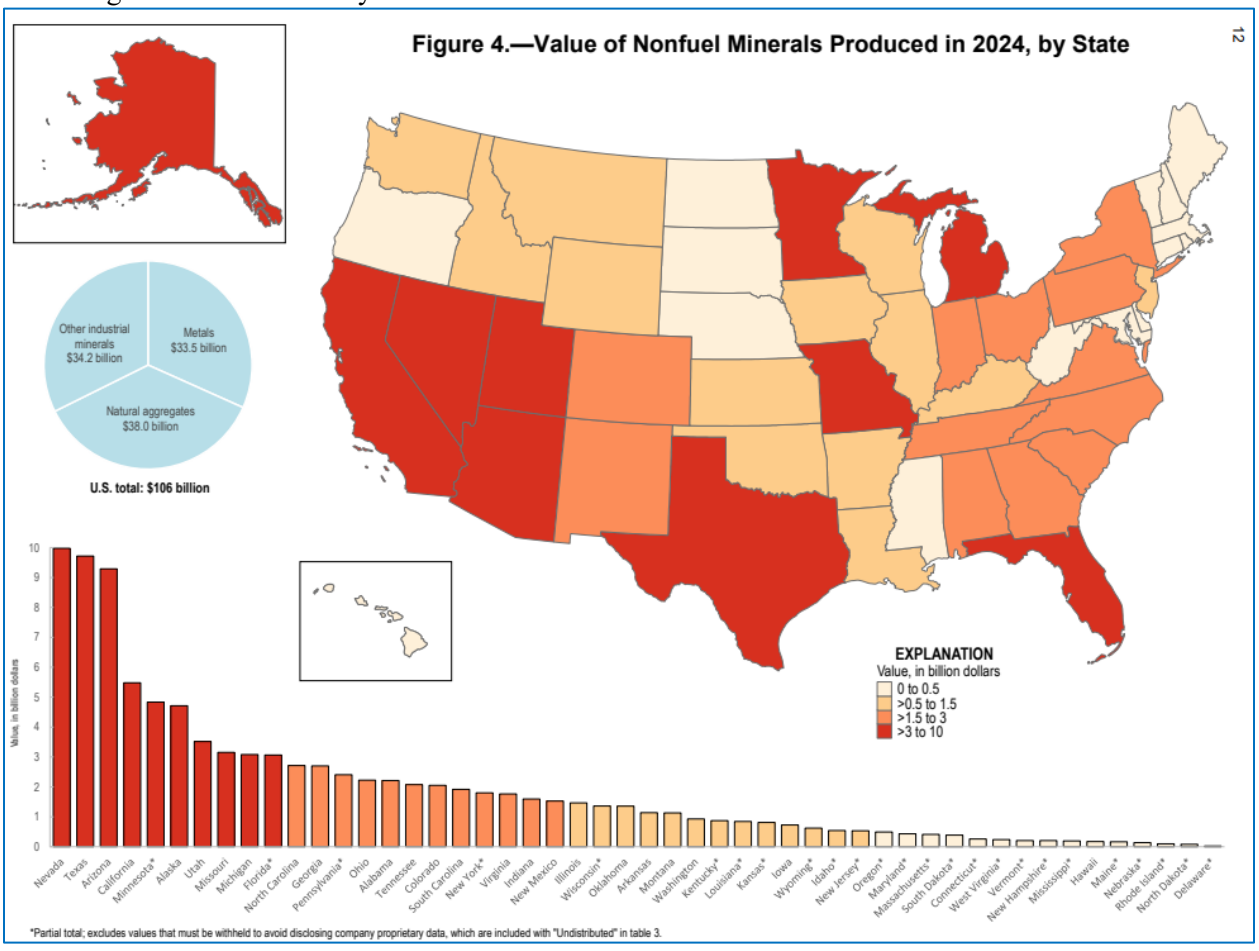
Data Visualization Analysis Teacher Guide

Background

The US Geological Survey collects nonfuel mineral data about the location and availability of nonfuel mineral resources found in the United States and throughout the world. Nonfuel minerals are extracted and used for purposes other than energy production. These minerals are typically industrials minerals or metals of economic importance.

Industrial minerals are defined as valuable nonmetallic, nonfuel geologic materials, generally rocks or minerals, used in a wide range of construction and industrial applications—for example, sand, gravel, and crushed rock used as aggregate for construction; limestone used for cement; phosphate for fertilizers and insecticides; and diatomite used for filtration, fillers, and abrasives. (source: USGS Bulletin 2209-A).

Metals of economic importance include gold, silver, aluminum, copper, etc. These metals have a wide range of uses. For example, aluminum can be found building materials and beverage cans; copper is used for wiring to transfer electricity.



Observe

1. What do you notice about this visualization? Record 3 observations. Consider axes, title, type of visualization (line graph, bar chart, map, bubble chart, or other), time, etc.
   - ***There is a map chart, pie chart, and bar graph***
   - ***Color ranges from pale yellow to red. The value in billions of dollars increasing as the color gets darker***
   - ***The map and bar graph give the same information in a different format***
   - ***The pie chart categorizes the three main types of nonfuel mineral resources***

Analyze

1. List the variables in the visualization.
   - ***State***
   - ***Value in billions of dollars for nonfuel minerals***

2. A relationship between variables exists when one influences the other. Do you notice a relationship between any of the variables in the visualization? If so, describe the relationship you observe.
   - ***The states with the highest nonfuel mineral value, ranging from $3 to $10 billion, includes California, Alaska, Missouri, Arizona, New Mexico, Utah, Texas, Florida, Michigan, and Minnesota.***

Interpret

1. What trends or patterns do you notice in the data? In 1 -2 sentences, summarize the main takeaway of this visualization.
   - ***Southwestern United States seems to have the highest nonfuel mineral value.***
   - ***The northwestern United States and northeastern United States seem to have the lowest nonfuel mineral value.***
2. If you had to explain this to an adult, what would you tell them in 2 – 3 sentences?
   - ***When minerals aren't used for fuel sources, they are used for sand, gravel, concrete, fertilizers. In addition, they can be used for everyday objects, such as the aluminum in beverage cans, or copper for electricity wiring. Together, they are worth over $106 billion in the United States. Some states have really high value and other states have really low value for these nonfuel mineral sources.***

Connect

1. How does this visualization connect to your world?
   - ***Answers will vary. Consider the following: Have students pay attention to the state within which they reside and consider the industries that depend upon those non-fuel mineral sources.***

2. How does this connect to what we are learning about in class right now?

   - ***Answers will vary. Consider the uneven distribution of natural resources and the water and energy required to successfully extract the nonfuel mineral sources of interest***