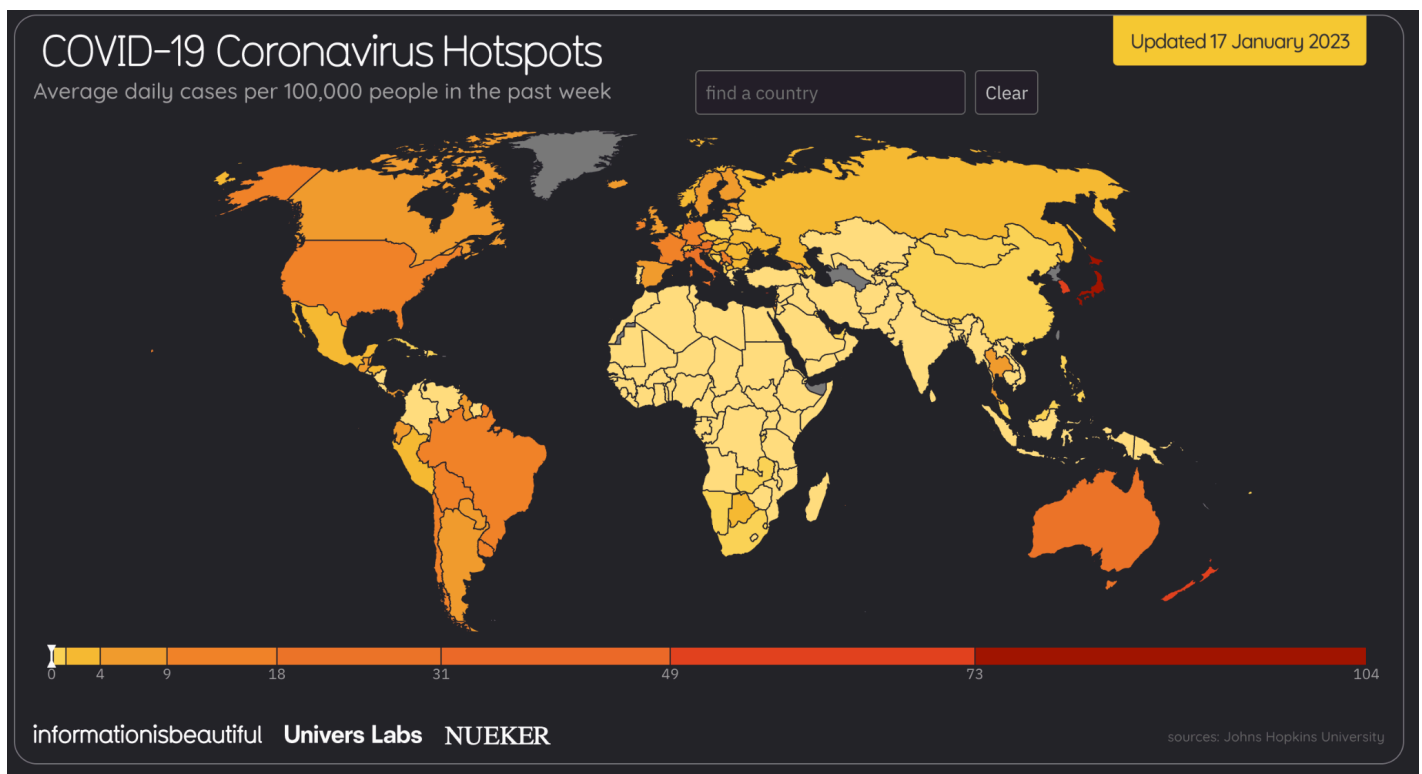# Data Visualization Choices Change Understanding of Data

There are many decisions to be made about the way that data is visualized. A person, sometimes a whole team of people, make very purposeful choices when creating visualizations of data. Sometimes when a choice is made to show something, other important information must be left behind. If a data visualization were to show *everything* from a dataset, it would be overwhelming and nearly impossible for a reader to understand. This activity is meant to get you thinking about how different decisions about how data are visualized change the way that we understand data. There is no one or right way to visualize a dataset. On page 4, check out some of the possible ways you can represent data with different design tools.

Compare the three data visualizations by answering the questions below each figure.

Figure 1: COVID-19 Coronavirus Hotspots: Average daily cases per 100,000 people in the past week.

COVID-19 Coronavirus Hotspots
Average daily cases per 100,000 people in the past week

find a country   Clear

Updated 17 January 2023

0   4   9   18   31   49   73   104

informationisbeautiful   **Univers Labs**   NUEKER

sources: Johns Hopkins University

Source: Information is Beautiful.

1. What is the title of the graph in figure 1?

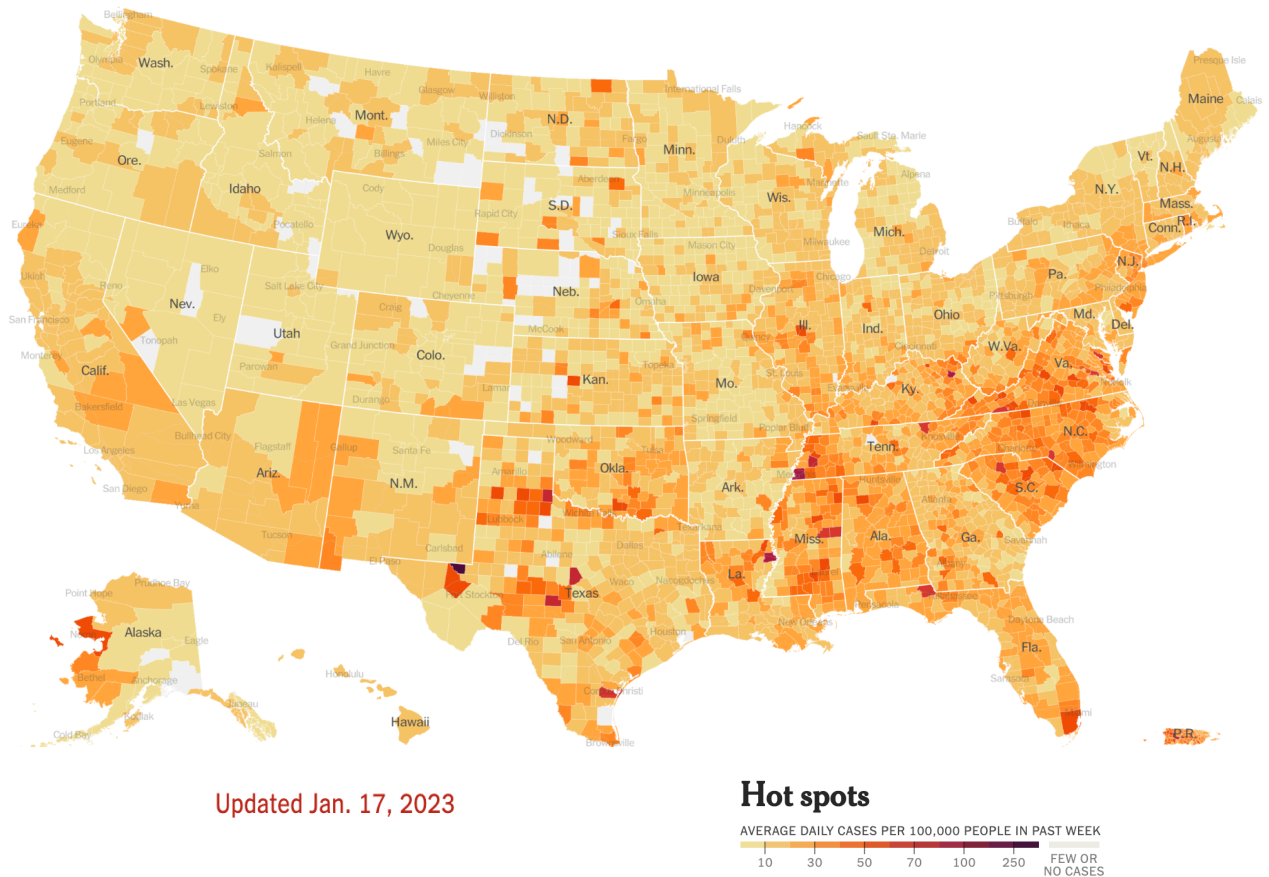2. What do you think a "hotspot" means?

3. What country has the darkest colors? What does that mean? or, what part(s) of the world has the darkest colors? What does that mean?

4. What country has the lightest colors? What does that mean? or, what part(s) of the world has the lightest colors? What does that mean?

5. What design choices were made? Which design tools were used to represent the data? (Take a look at the "Design Tools for Representing Data" at the end of this document.)

6. How does Figure 1 help your understanding of COVID-19 cases?

Figure 2: The hot spots map shows the share of population with a new reported case over the last week. Source: New York Times.

Updated Jan. 17, 2023

Hot spots

AVERAGE DAILY CASES PER 100,000 PEOPLE IN PAST WEEK

10   30   50   70   100   250   FEW OR NO CASES

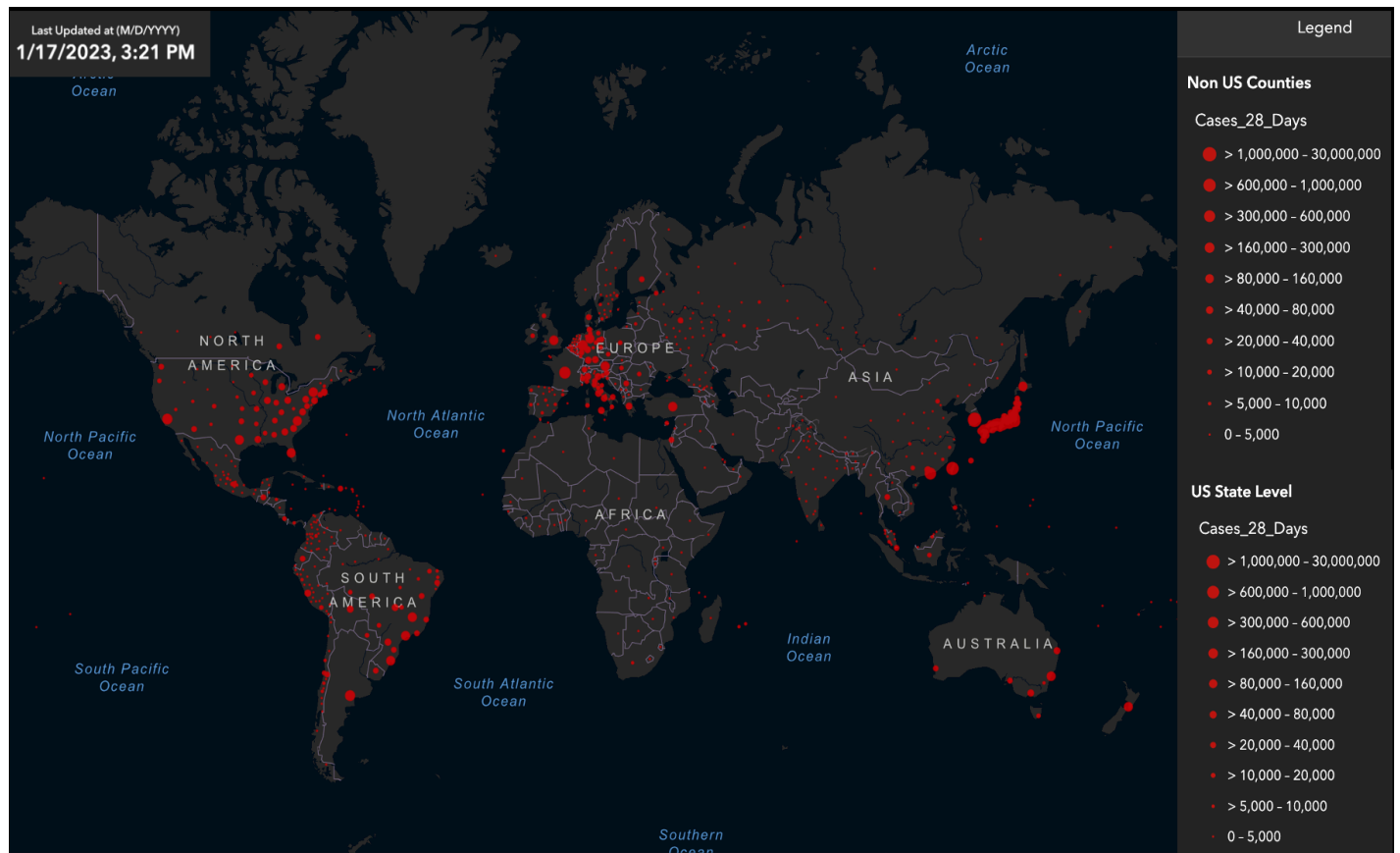7. What is this graph showing? (source, data, date, etc) How is it different from Figure 1?

8. What states or areas have the darkest colors? What does that mean?

9. What states or areas have the lightest colors? What does that mean?

10. What design choices were made? Which design tools were used to represent the data? (Take a look at the "Design Tools for Representing Data" at the end of this document.)

11. How does Figure 2 help your understanding of COVID-19 cases?

Figure 3: 28-Day COVID-19 Cases. Source: Center for Systems Science and Engineering (CSSE) at John Hopkins University (JHU).

12. What is this graph showing? (source, data, date, etc) How is it different from Figure 1?

13. Where in the world are there more COVID-19 cases? How do you know?

14. What design choices were made? Which design tools were used to represent the data? (Take a look at the "Design Tools for Representing Data" at the end of this document.)

15. How does Figure 3 change your understanding of COVID-19 cases?

16. When and for what purpose would you use Figure 1?

Figure 2?

Figure 3?

17. Between Figures 1-3, which is your favorite? Why?

18. Can you describe other ways that design choices in a data visualization might change your understanding of the information?

Design Tools for Representing Data

Below are some key design elements you can use as a guide in creating your own visuals to represent data. You can combine colors, patterns and symbols to portray your data in a meaningful way.

VALUE — Light — Dark

COLOR — Warm — Cool

SIZE/SCALE — Less — More

SHAPE

DENSITY — Fewer — Many

PATTERN — Calm — Busy

INTENSITY — Weak — Strong

DIRECTION/FLOW