

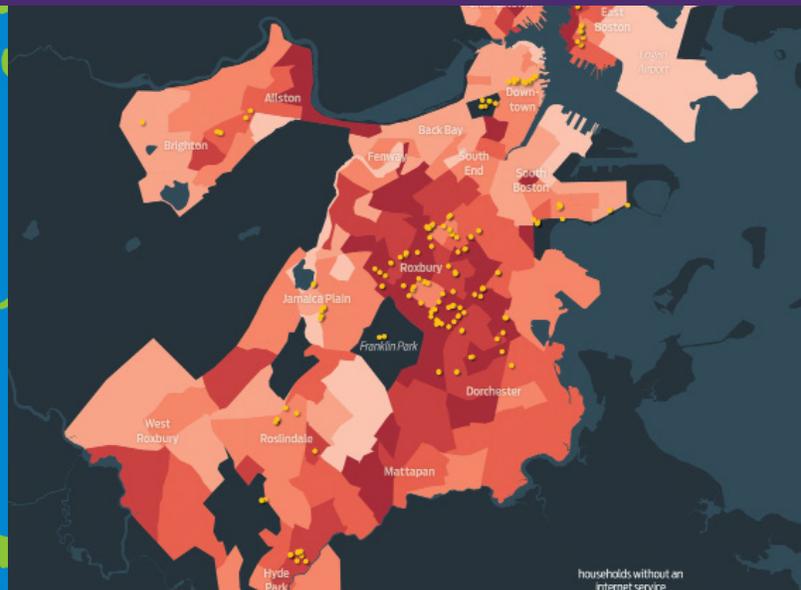
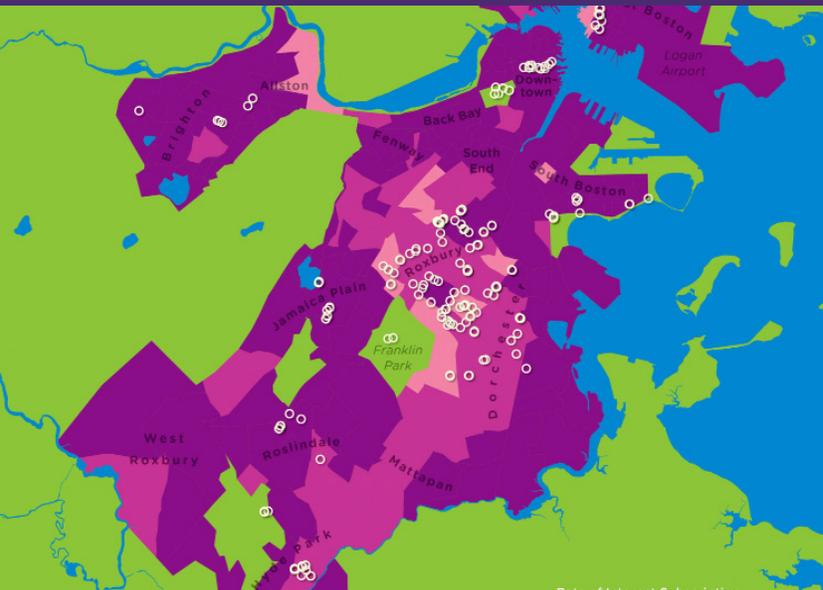


# Same Data, Different Stories

## SUMMARY

This lesson is an introduction to how the choices made by mapmakers can create very different interpretations of data. Students look at two maps showing wi-fi hotspots and internet subscription rates in Boston and discuss their observations. Both maps in this exercise were made from exactly the same two data sets, but the cartographer told very different stories about internet access in the city in each one.

How can both maps be accurate and still contradict each other? Being a good map reader means being able to unpack what maps are really showing by asking critical questions and considering the stories being told.



## ESSENTIAL QUESTIONS

How do maps show statistical information?

How can we determine the accuracy or truthfulness of a data-based map?

If two maps can both be true and yet tell conflicting stories, how can we learn to read and use maps honestly?

## OBJECTIVES

Students are able to define **geospatial data**

Students identify different ways **geospatial data** can be visualized on a map and how these differences can affect our understanding

Students understand that data maps can tell different stories depending on the choices of the mapmaker

# MATERIALS

## LESSON PLAN MATERIALS

### Presentation

### [Google Slides](#)

### Individual maps

[Disconnected : Boston's free wi-fi leaves many in the dark](#)

[Plenty of free wi-fi is keeping Boston connected!](#)

### Definitions of bold italicized terms

***legend*** - A map key, also called a legend, is the part of a map that explains what the symbols, colors or codes on a map mean. It helps us make sense of the map. On older maps the key or legend may be called the explanation or reference.

***geospatial data*** - To make maps that show information, we need information about *where* things are, not just what things there are or how many there are. Geospatial data is information linked to location.

***census tract*** - Census tracts are relatively small divisions of land that are used by the Census Bureau to manage information about the people who live in the United States. Census tracts generally have a population size between 1,200 and 8,000 people, with an optimum size of 4,000 people, but there are a lot of exceptions. Supposedly the purpose of census tracts is to make comparing one area to another possible in terms of number of people, but you can see in this definition that there is a lot of variation.

***GIS (geographic information systems)*** - GIS mapping is any kind of mapmaking that takes information and turns it into a map using a computer program or application. The information (data) is often collected into a spreadsheet, and then the computer application creates a map-based visualization (a picture) out of it so we can see the information linked to places.



1) Project **Slide 1** showing the two wi-fi maps side by side. Ask students to spend a minute just looking silently at the two maps.

Ask students:

## **What are these maps about (what is the subject?)**

Some responses might be:

*The maps are about wi-fi in Boston*

*The maps are about who does and does not have access to wi-fi in Boston*

## **What do you notice about these two maps?**

Go around the room and ask each student to contribute one thing they notice about either of the maps or what they notice looking at one map compared to the other.

Some responses might be:

*The maps use different colors*

*The maps have different titles: one says connected, one says disconnected*

*The map on the left shows internet subscriptions, the one on the right shows households without internet service*



# LESSON, continued

Keep asking students what else they notice, directing them to the **legends** on both maps. Some things to point out to students if they do not bring them up:

*The “connected” map only shows three categories (called “breaks”) in the **legend**, while the “disconnected” map shows six.*

*The maps both show wi-fi hotspots but they are labeled differently (the “connected” map lists the number with an exclamation point)*

Ask students to look at the data sources listed in the lower left-hand corner of both maps—what do they notice?

2) If students have not deduced for themselves yet, draw their attention to the fact that both of these maps were created using exactly the same two sets of data. (Show **Slide 2**).

**This mapmaker (Daniel Huffman) took two layers of *geospatial data*, one showing city of Boston wi-fi hotspots and another showing the percentage of households in Boston who have internet subscriptions and created these two maps.**

***Geospatial data* means the data is connected to geographic locations. In this case, *census tracts* in the city of Boston and point locations. The mapmaker used *GIS (geographic information systems)* to layer and visualize the data on a map.**

**(Show **Slide 3**) Data is collected, then turned into a spreadsheet and then mapped using a computer. At each step in this process, there are lots of ways that the human behind the map can influence what you perceive as the “truth”. Some maps are very overt in their message like these two. In reading others, you will have to be a more careful observer.**



# LESSON, continued

Return again to the observations students made at the beginning:

**What were some of the techniques the mapmaker used to make you feel differently about the information shown in each map?**

Some responses might be:

*Colors*

*Exclamation points*

*Different fonts*

*Different ways they created breaks in the data in the legend*

3) Why does this matter?

Ask students to consider some ways that seeing data shown differently might matter.

**Imagine if you had to make decisions about where to put more wi-fi hotspots in Boston. What additional information would you want to see on a map? What additional data might help you make a good decision? Or would you try to show this same data in a different way?**

**For example, we might see in the “disconnected” map that more than 25% of people in one area of Boston don’t have internet subscriptions. However, we don’t know how many people live there! If there are only 800 people who live in that area, a new wifi hotspot won’t help as many people as an area that might have a lower percentage without wifi but has 3,000 people living there.**

**These two maps are somewhat extreme examples but you will see lots and lots of maps, especially online, showing *geospatial information* that may be subtly or overtly manipulating your ideas about an issue or election and hoping you will react strongly. Your job is to ask the hard questions. Where did the data come from? How is it being visualized? What is it trying to prove? And, always, what other information or points of view are necessary to really understand the issue?**

