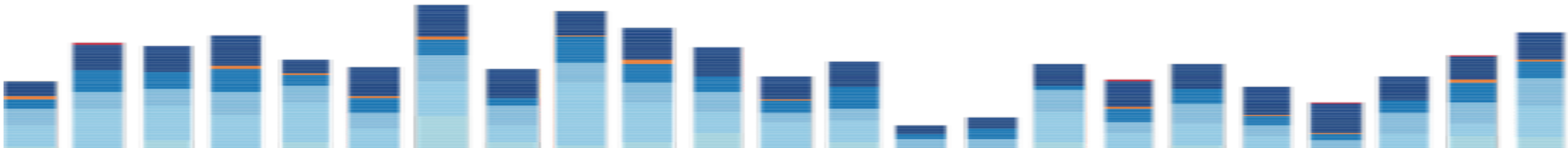


DSC 96

What Happened?

Mapping
Giorgio Quer



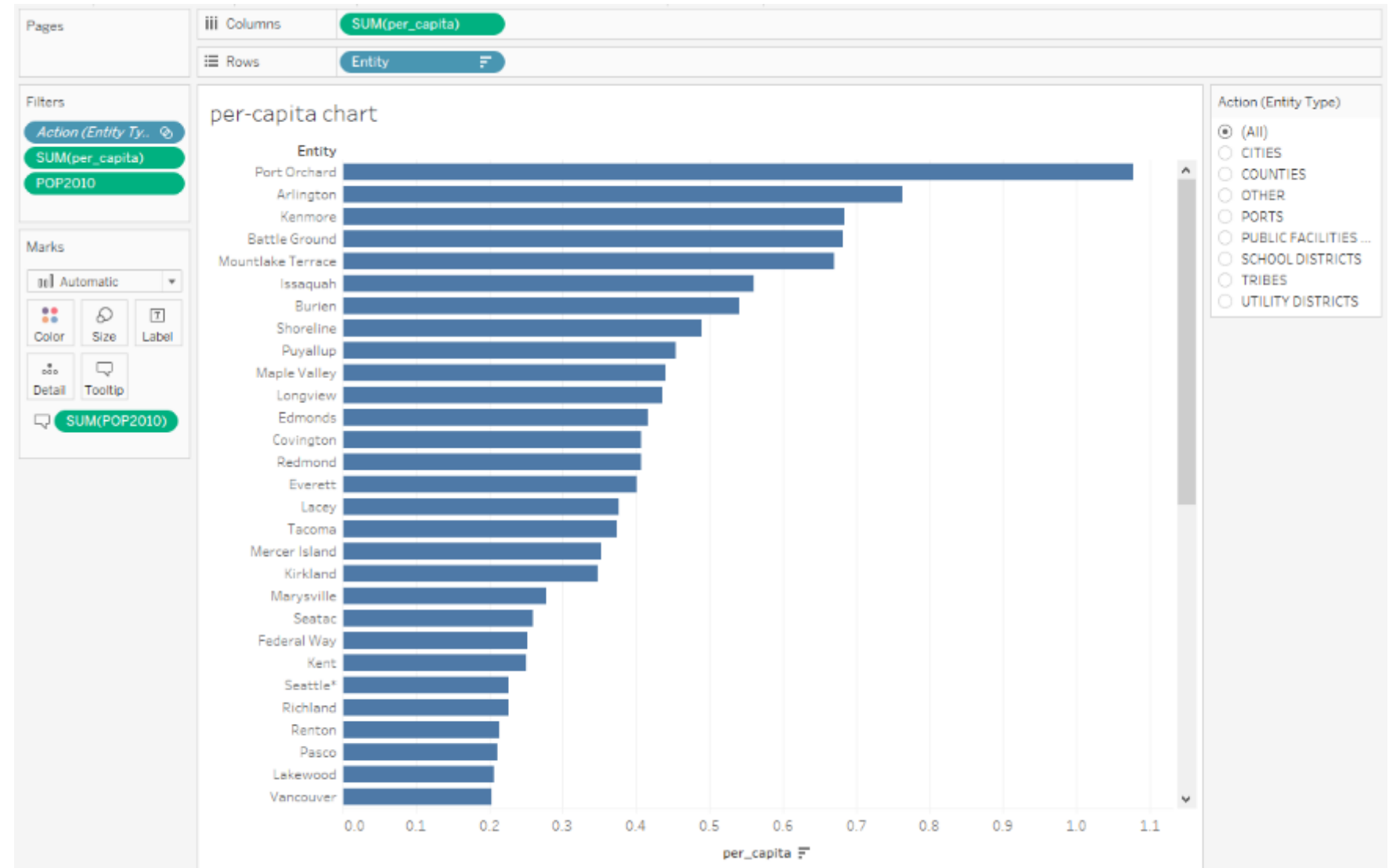
Starting with maps

Last time

- Build a bar chart
- Build a tree map
- how to use filters

This lecture:

- Represent data geographically



Starting with maps

Tableau automatically will try to note which fields can be mapped.

You can tell these fields because they have a little globe next to them.

If you look at the dimensions and measures area in your workbook, you also will see at the bottom that Tableau generated a latitude and longitude based on the data that you imported. Under dimensions, several fields now have small globes next to them. Those are fields that Tableau considered geographic.

The image shows a screenshot of the Tableau interface with the 'Dimensions' and 'Measures' shelves. In the 'Dimensions' shelf, the following fields are listed: 'census_WA' (expanded) with 'Cbsa', 'Cnecta', 'County', 'CSA', 'Geoid', 'Necta', and 'Place' (all with globe icons and highlighted with red boxes); 'POP2000'; 'Sumlev'; 'Type'; and 'lobbying' (expanded) with 'Entity' (highlighted with a red box), 'Entity Type', 'Fips', 'total (bin)', and 'Measure Names'. In the 'Measures' shelf, the following fields are listed: 'census_WA' (expanded) with 'POP2010' and 'State'; 'lobbying' (expanded) with 'Compensation', 'Expenses', 'per_capita', 'total', 'Latitude (generated)', 'Longitude (generated)' (both highlighted with red boxes), 'Number of Records', and 'Measure Values'.

Dimensions	Measures
▼ census_WA	▼ census_WA
🌐 Cbsa	# POP2010
Abc Cnecta	# State
🌐 County	▼ lobbying
Abc CSA	# Compensation
Abc Geoid	# Expenses
🌐 Necta	=# per_capita
🌐 Place	=# total
# POP2000	🌐 Latitude (generated)
Abc Sumlev	🌐 Longitude (generated)
Abc Type	=# Number of Records
▼ lobbying	# Measure Values
🌐 Entity	
Abc Entity Type	
Abc Fips	
.lli total (bin)	
Abc Measure Names	

Conversion to geographic field

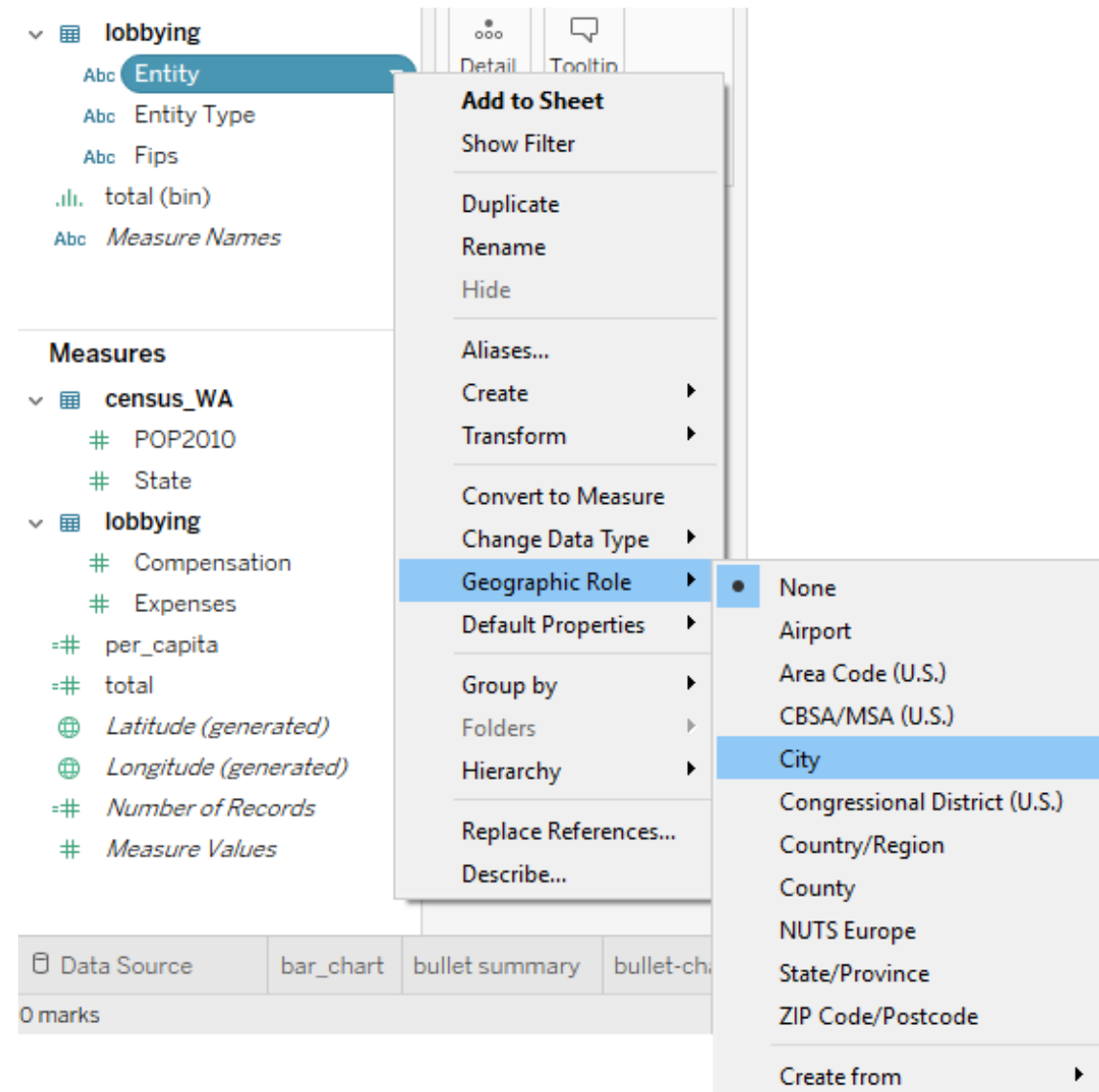
In the lobbying data (under dimensions)

- Entity field
 - ('City of Seattle', 'Port Orchard', ...)
 - we could convert the entity field to a geographic role
 - but we will inherit a **few problems** when we do that. Remember, it includes ports, tribes and associations and not all of those can be mapped.
 - how does Tableau deal with this problem?



Starting with maps

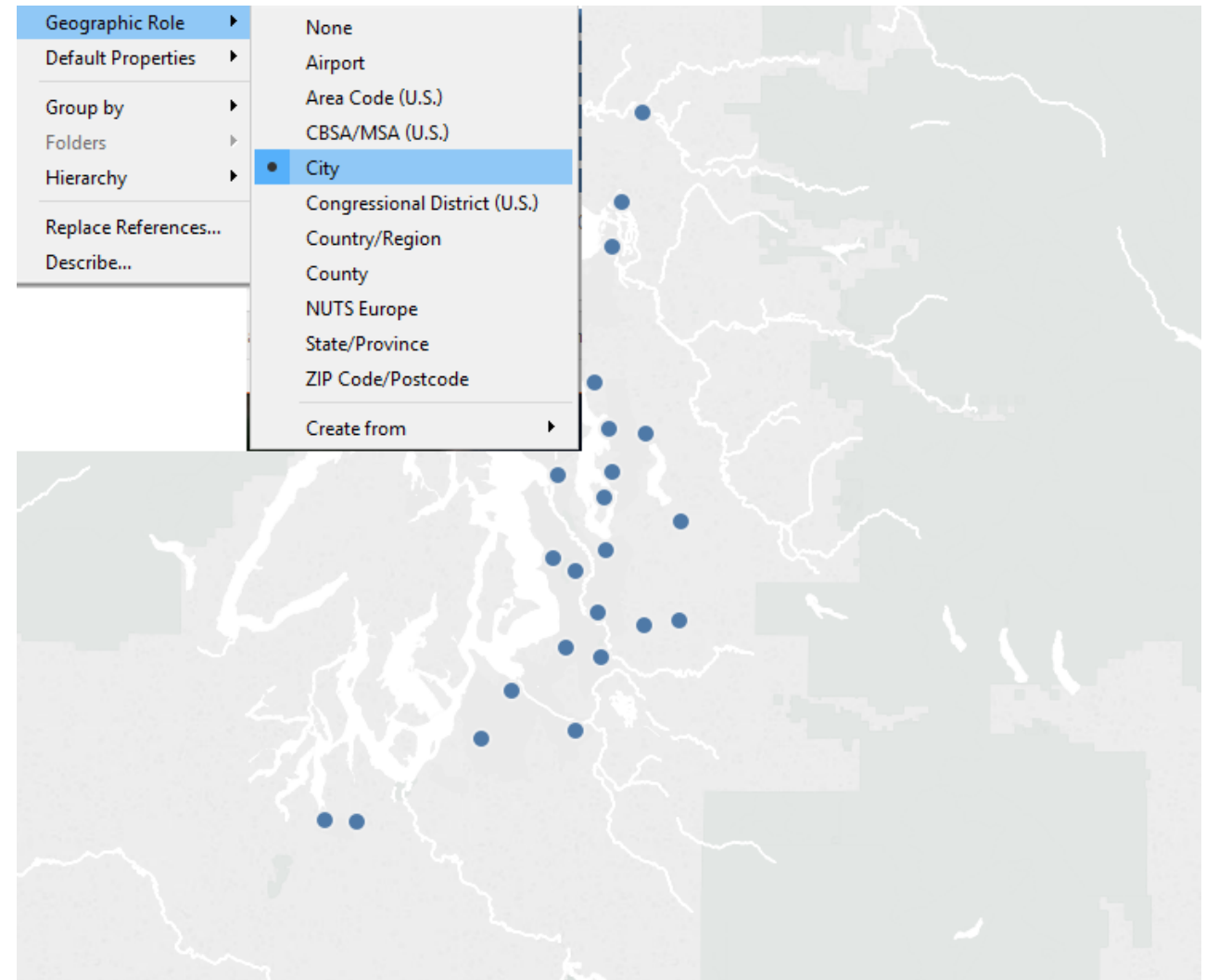
- Select the caret (down arrow) on the right of the pill for Entity.
- Go down to Geographic Role and then select City.



Starting with maps

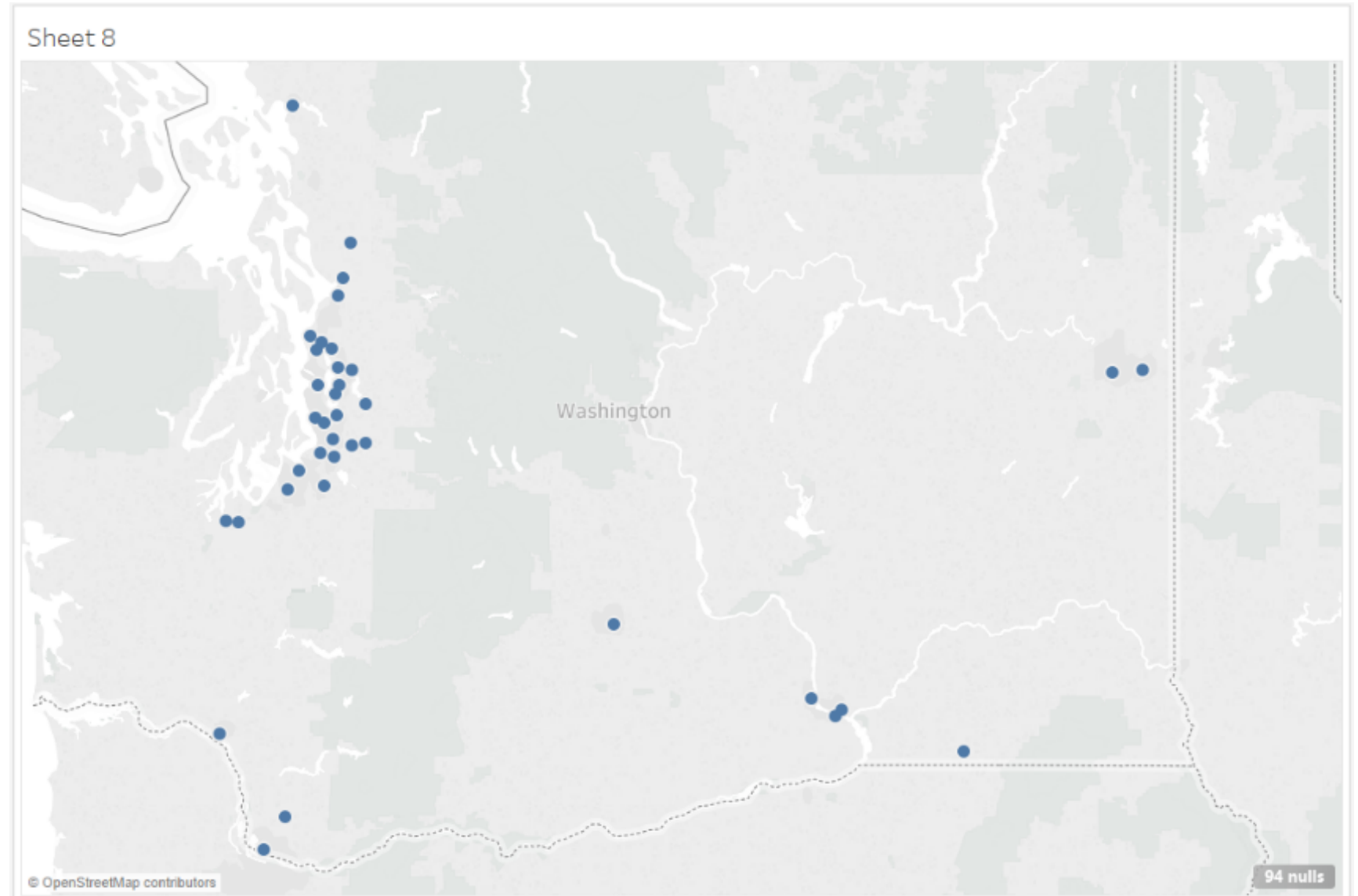
Now, you'll see that there is a little globe next to that field.

- Try double-clicking on **Entity** and let's see if we can build a map.



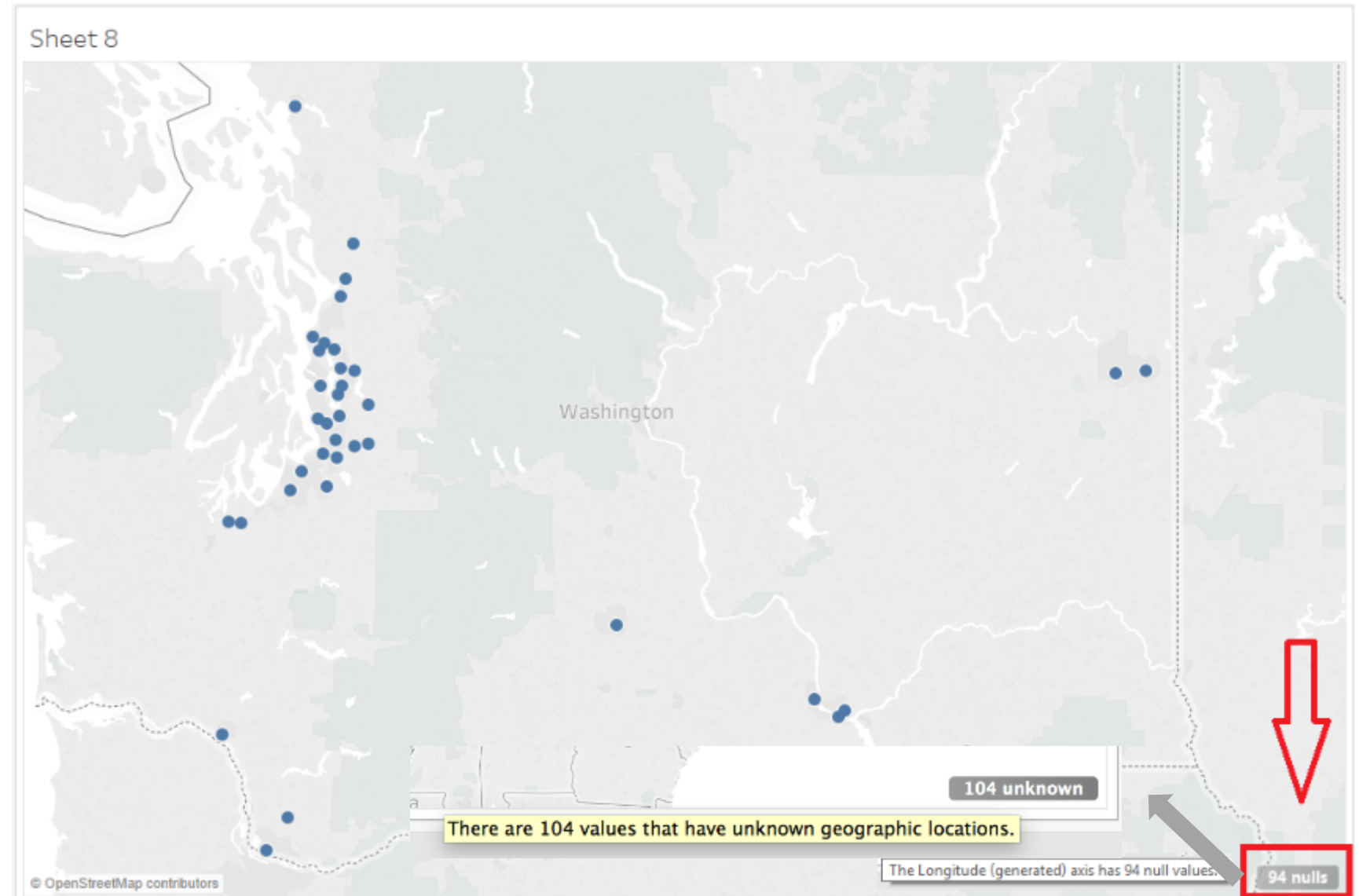
Starting with maps

Anyone notice anything about this map that we should look at more closely?



Starting with maps

Anyone notice anything about this map that we should look at more closely?



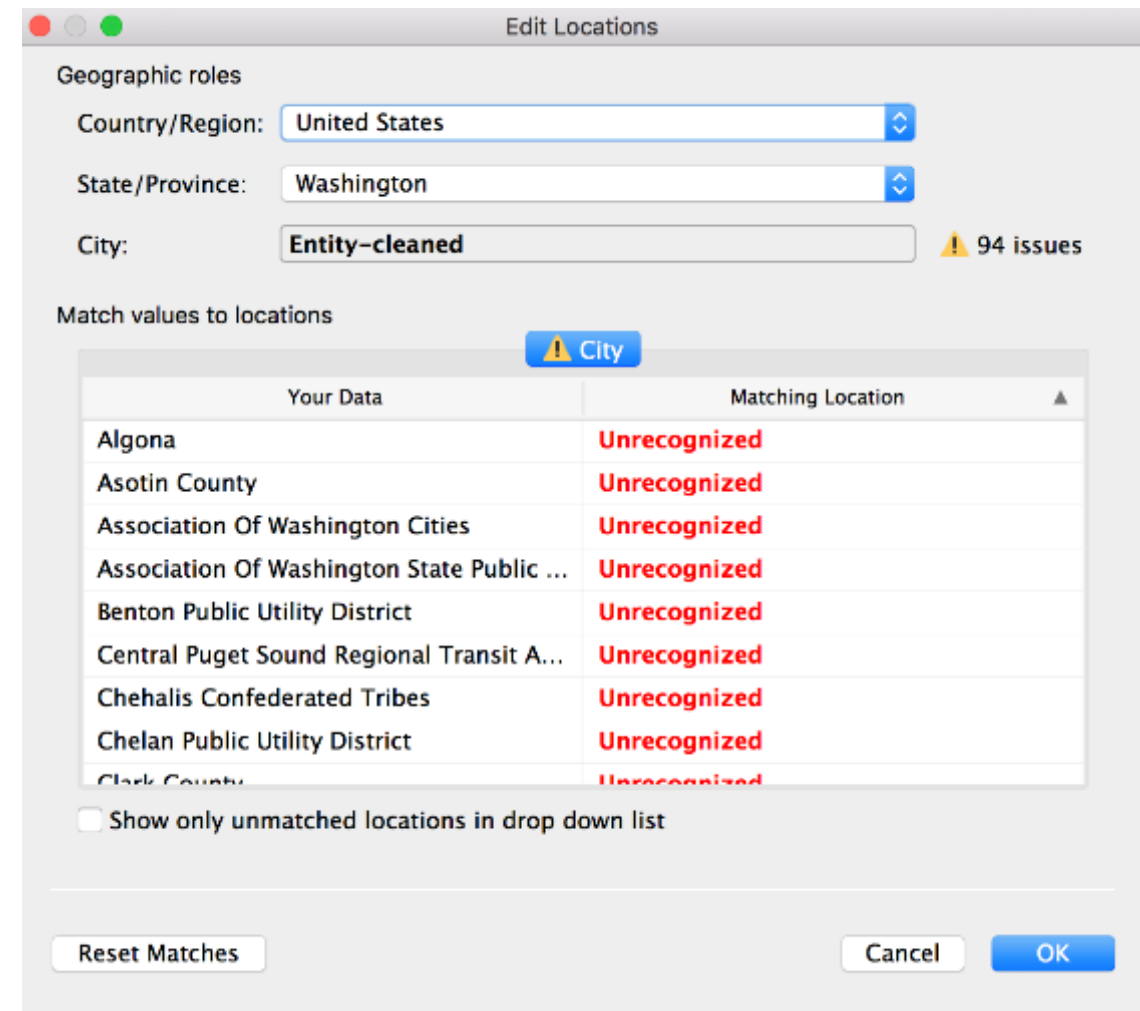
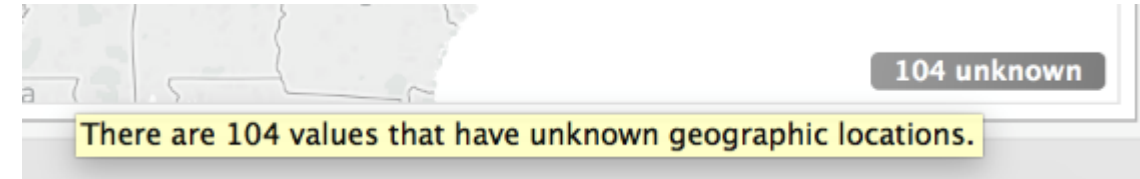
Starting with maps

- Click on that grey box that says **104 unknown**. A dialogue box will open.
- Select the **edit locations** option.

What do you notice about the unrecognized locations?

The ones that are **unrecognized** are

- either the fields that are not cities,
- or smaller towns – not included in Tableau's designated cities?



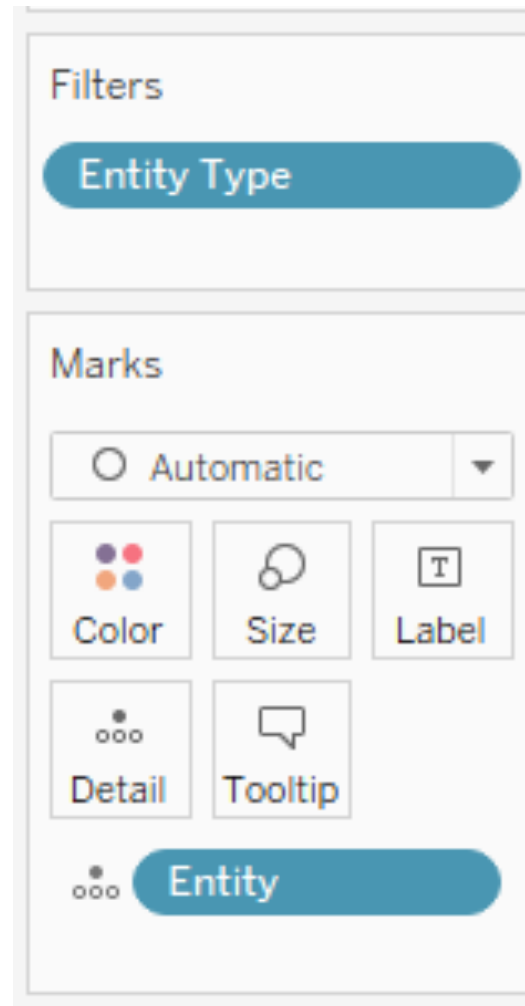
Maps and filtering

We have a few choices now:

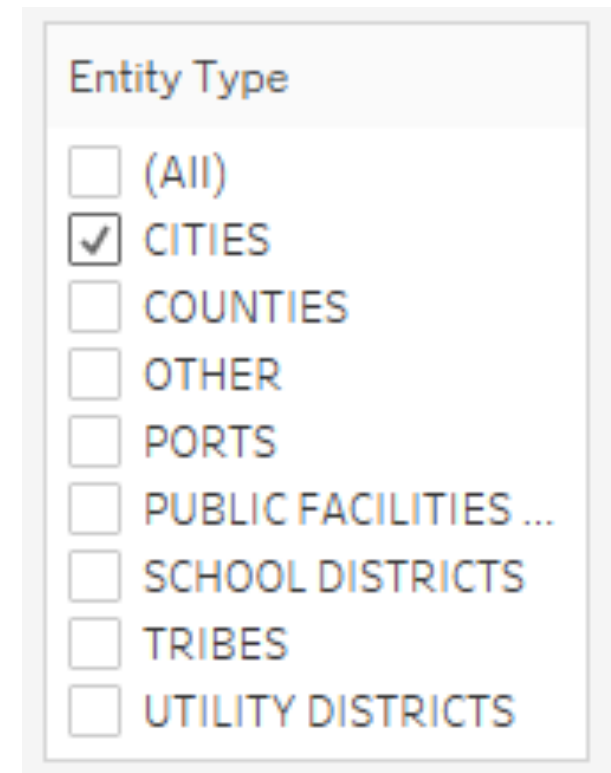
- exclude all of the rows that Tableau doesn't recognize (risk of deleting important data)
- We can filter to understand a bit more of what Tableau is showing

1. Drag **entity_type** onto filters.
2. Then select **Show Filter** and choose **Cities**.

1.



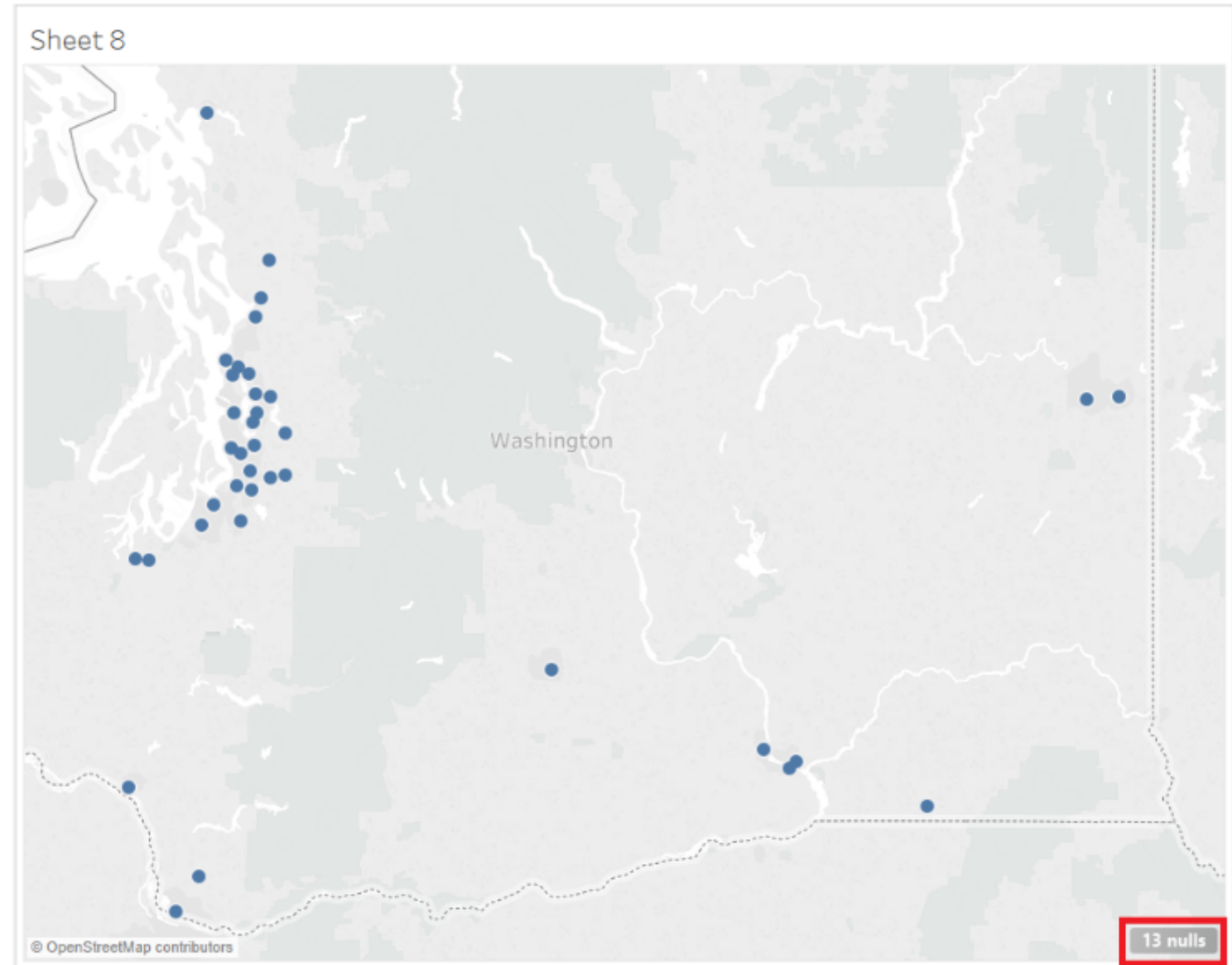
2.



Maps and filtering

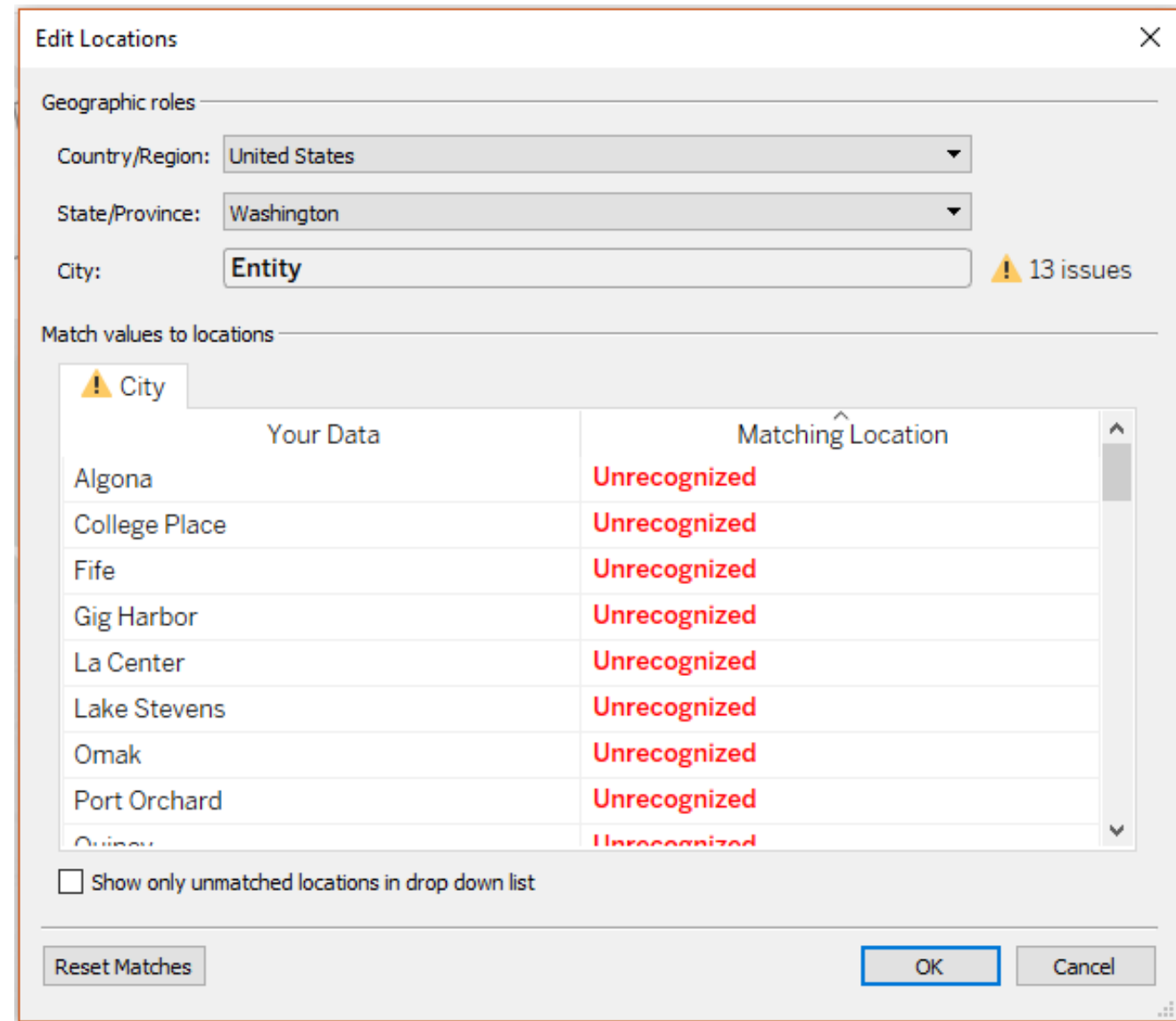
After filtering

- there are 13 unrecognized records
- Most of the null values are gone
- How to deal with these 13?



Starting with maps

- Let's click on the 13 unknown
- let's use filtering again to check on whether these are small towns
- Use the filter for >9,999 that we have seen in the previous lecture
- 11 cities were too small (ok)
- 2 big cities are still there, not recognized
 - How do we deal with them?



The screenshot shows the 'Edit Locations' dialog box. It has a title bar with a close button. Below the title bar, there are three dropdown menus for 'Geographic roles': 'Country/Region' (United States), 'State/Province' (Washington), and 'City' (Entity). To the right of the 'City' dropdown is a warning icon and the text '13 issues'. Below these dropdowns is a section titled 'Match values to locations'. It contains a tab labeled 'City' with a warning icon. Below the tab is a table with two columns: 'Your Data' and 'Matching Location'. The table lists several locations: Algona, College Place, Fife, Gig Harbor, La Center, Lake Stevens, Omak, Port Orchard, and Quincy. All of these locations are marked as 'Unrecognized' in the 'Matching Location' column. At the bottom of the dialog, there is a checkbox labeled 'Show only unmatched locations in drop down list', which is currently unchecked. Below the checkbox are three buttons: 'Reset Matches', 'OK', and 'Cancel'.

Your Data	Matching Location
Algona	Unrecognized
College Place	Unrecognized
Fife	Unrecognized
Gig Harbor	Unrecognized
La Center	Unrecognized
Lake Stevens	Unrecognized
Omak	Unrecognized
Port Orchard	Unrecognized
Quincy	Unrecognized

Maps and filtering

- Click on the caret to the right of the field under **Matching Location**.

You'll see that there is an option for entering the latitude and longitude. Let's do that.

- Do a **Google search** for the **latitude** and **longitude** and plug those numbers in.

The screenshot shows a software interface for data entry. At the top, there is a 'City:' label followed by a text box containing the word 'Entity'. To the right of this text box is a yellow warning icon and the text '2 issues'. Below this, a section titled 'Match values to locations' contains a table. The table has two columns: 'Your Data' and 'Location'. The 'Your Data' column lists several cities: Lake Stevens, Port Orchard, Arlington, Auburn, Battle Ground, and Bellevue. The 'Location' column is currently empty. A modal dialog box titled 'Enter Latitude and Longitude' is open in the center of the screen. It has two input fields: 'Latitude:' with the value '48.015098' and 'Longitude:' with the value '-122.0637425'. The dialog box has 'OK' and 'Cancel' buttons at the bottom. A red circle is drawn around the 'Longitude' input field and its label.

Your Data	Location
Lake Stevens	
Port Orchard	
Arlington	
Auburn	
Battle Ground	
Bellevue	

Maps and filtering

- Click on the caret to the right of the field under **Matching Location**.

You'll see that there is an option for entering the latitude and longitude. Let's do that.

- Do a **Google search** for the **latitude** and **longitude** and plug those numbers in.

The screenshot shows a web application interface. At the top, there is a 'City:' label followed by a dropdown menu currently showing 'Entity'. To the right of the dropdown is a yellow warning icon and the text '2 issues'. Below this is a section titled 'Match values to locations'. Under this section, there is a table with two columns: 'Your Data' and 'Location'. The 'Your Data' column has a dropdown menu showing 'City' with a warning icon. Below this dropdown, the table lists several cities: Lake Stevens, Port Orchard, Arlington, Auburn, Battle Ground, and Bellevue. The 'Location' column is currently empty. A modal dialog box titled 'Enter Latitude and Longitude' is open in the foreground. It has two input fields: 'Latitude:' with the value '48.015098' and 'Longitude:' with the value '-122.0637425'. At the bottom of the modal are 'OK' and 'Cancel' buttons.

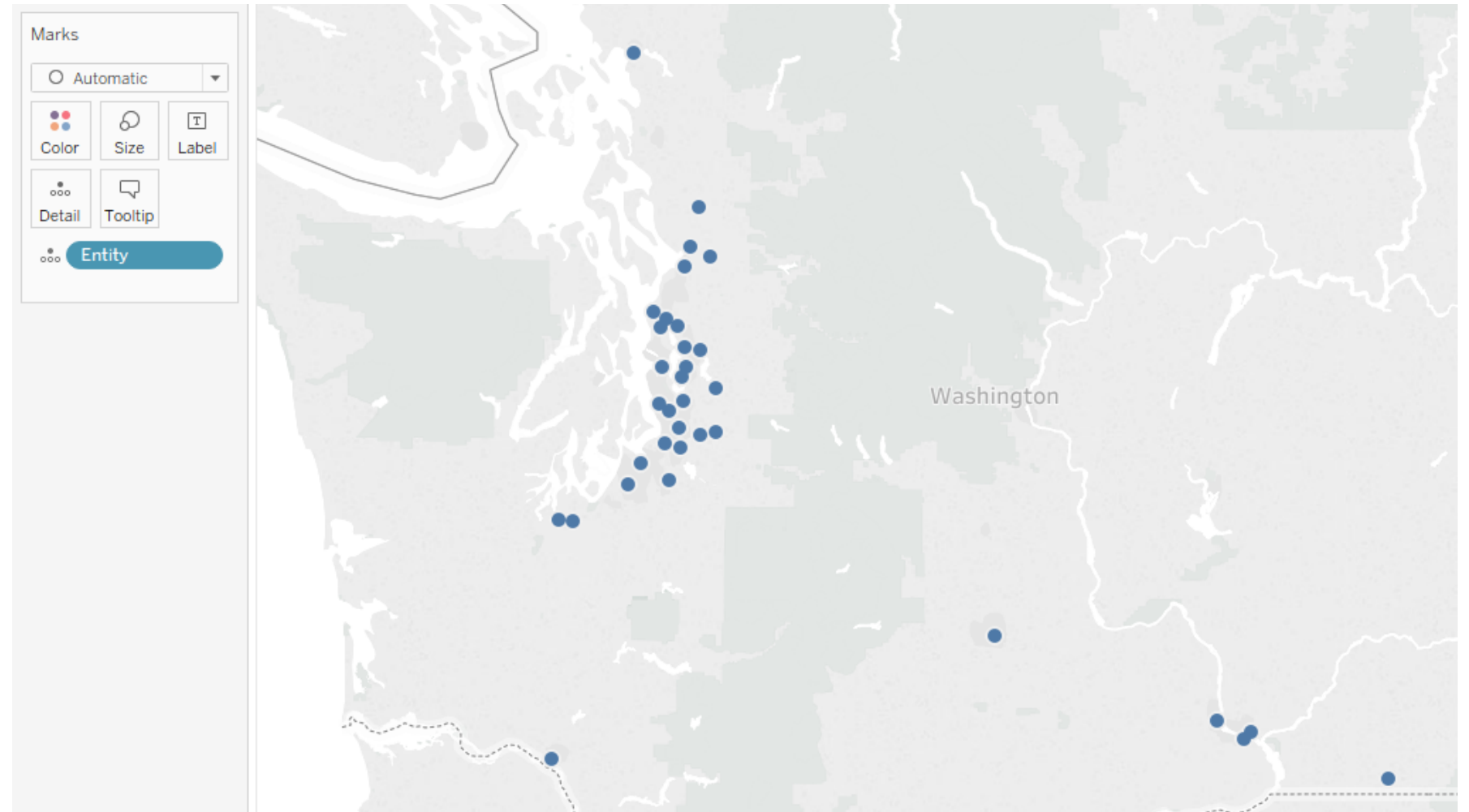
- latitude and longitude can be expressed in **degrees** or in **decimal** form
- we are in the **Western** Hemisphere
 - **longitude** will be a **negative** decimal number

Exploring with maps

Just looking at dots on a map is not particularly useful.

Add information on

- total cities paid for lobbying
- the per capita rate
- How to do it?

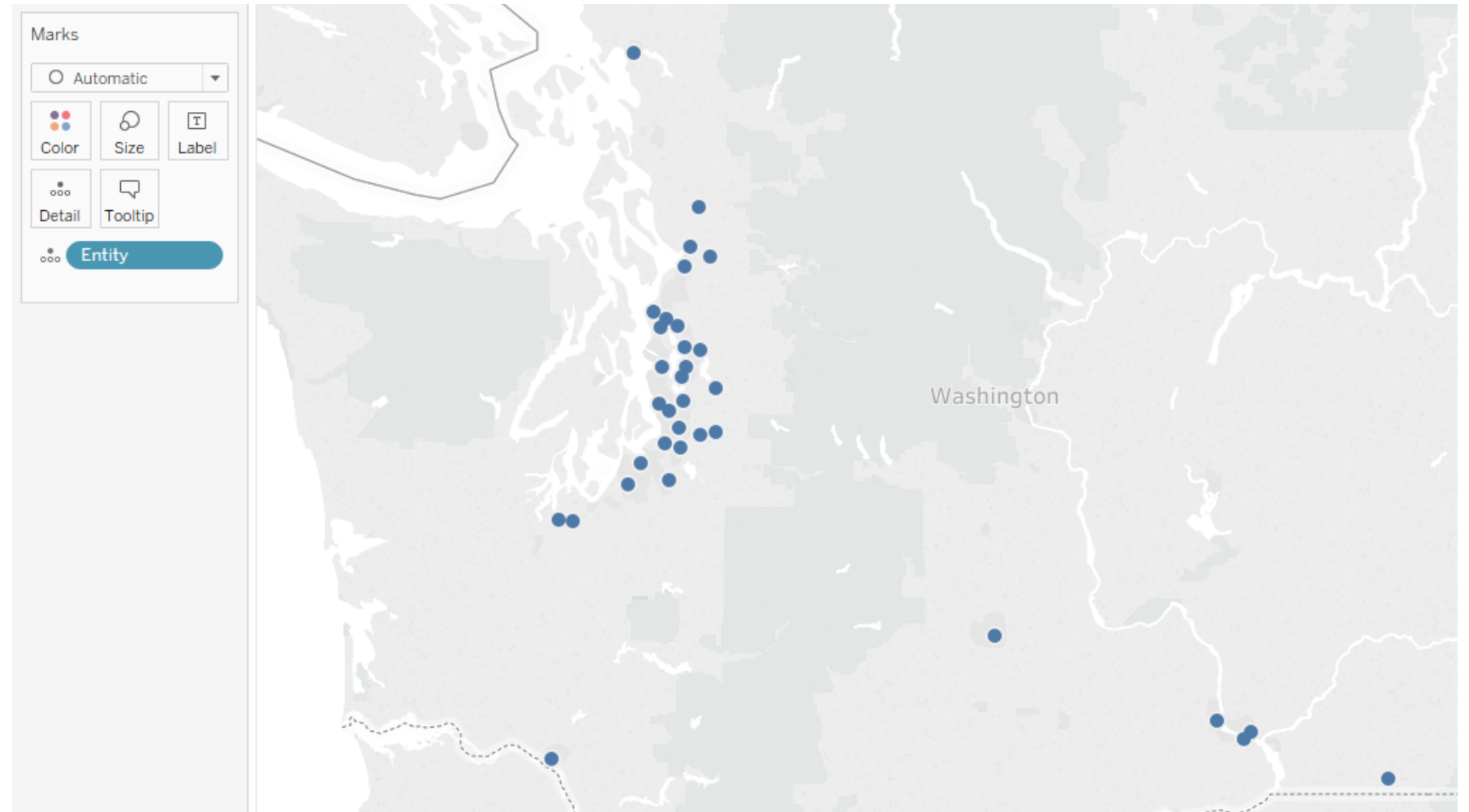


Exploring with maps

Just looking at dots on a map is not particularly useful.

Add information on

- total cities paid for lobbying
- the per capita rate
- How to do it?
 - **Filters!**

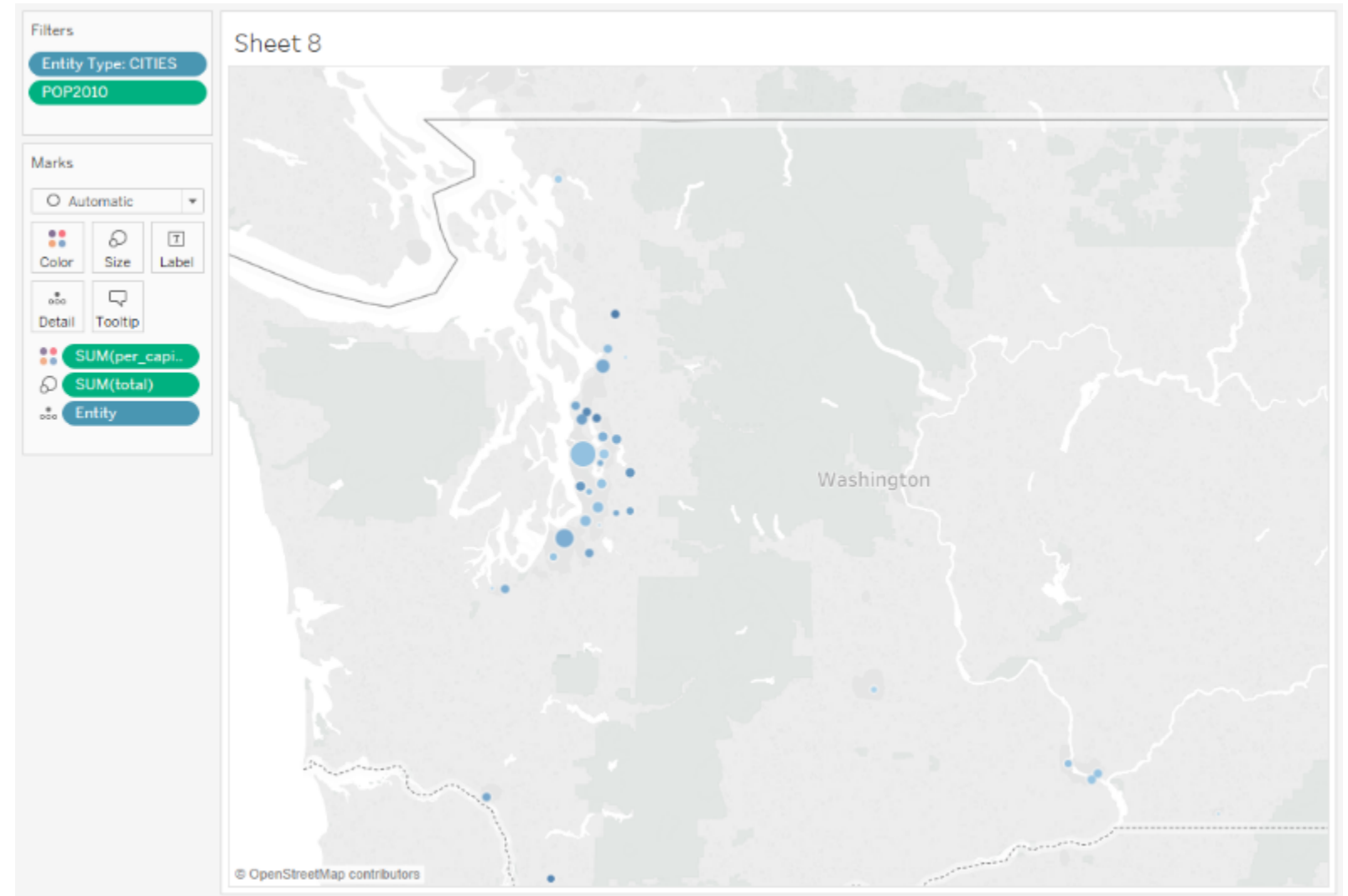


Exploring with maps

Maps in Tableau are another type of chart

You can change the size and color of what you are exploring

- Drag the **per capita** onto **color**
- Next, drag **total** onto **size**



Exploring with maps

We can **adjust our palette** here.

- Click on **color** and then select **edit colors**.

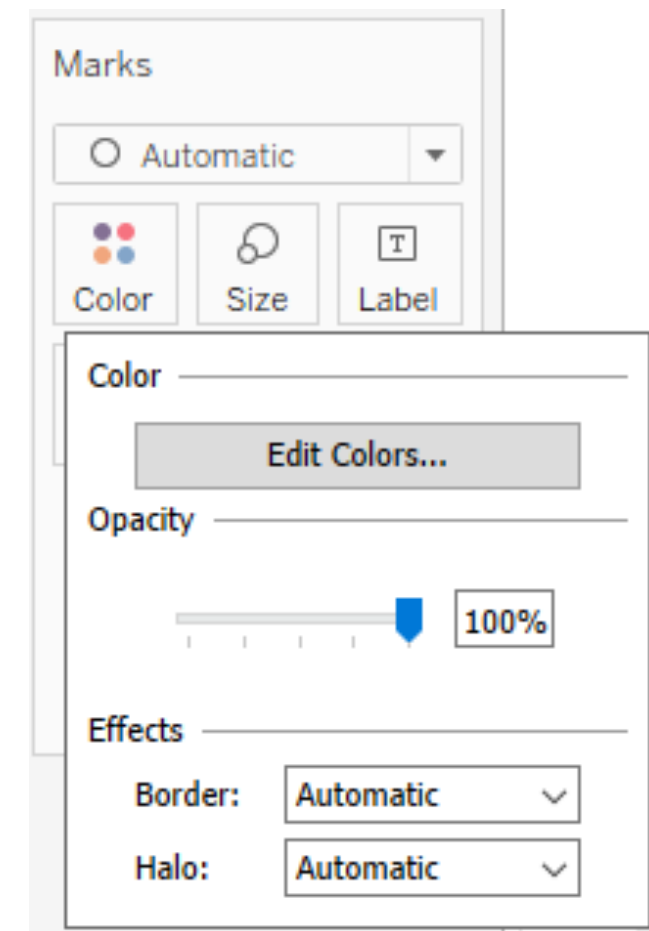
More details:

Let's first select stepped colors, which groups the total paid by each city government into bins.

That makes it easier to see different parts of the range. We can also select the number of bins.

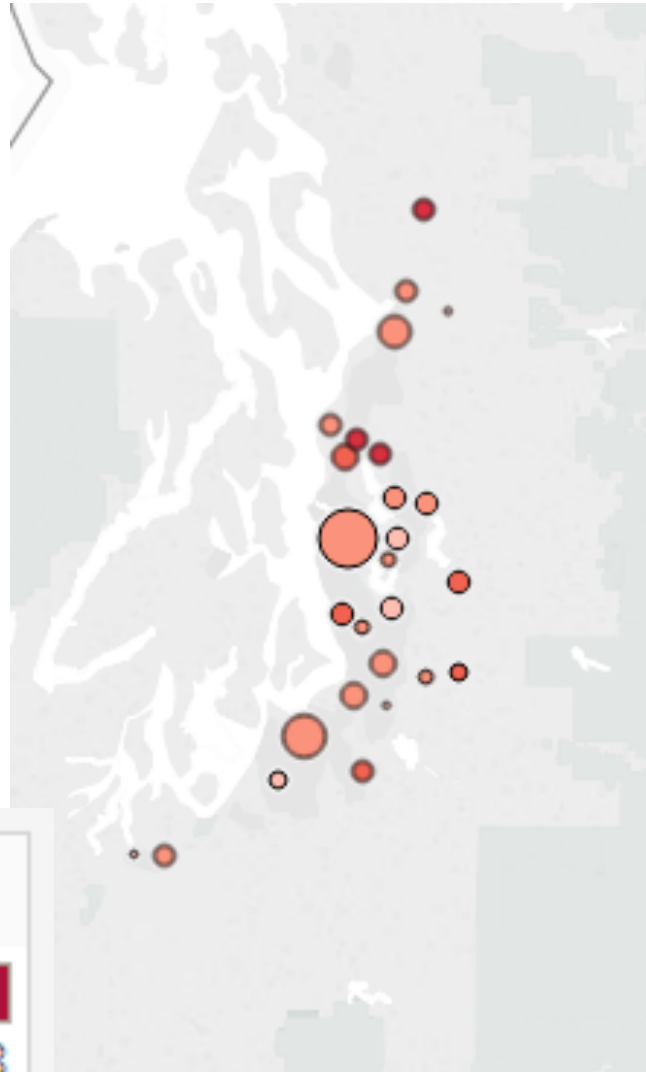
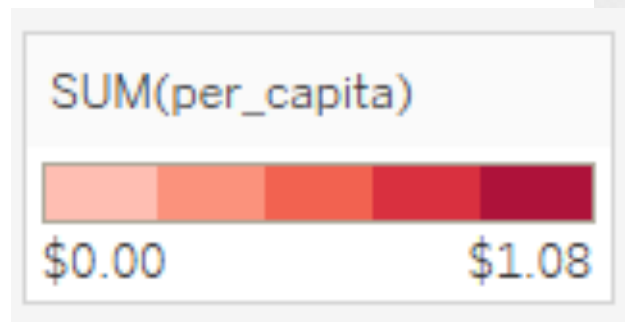
Our goal is to make it easier to see the various ranges and not let Seattle overwhelm the other cities. Play around with the bins and the range.

Try using the advanced settings to set the starting range at 0, which reduces the number of circles in the grey range. Now, try making that a negative number and see what happens.



Exploring with maps

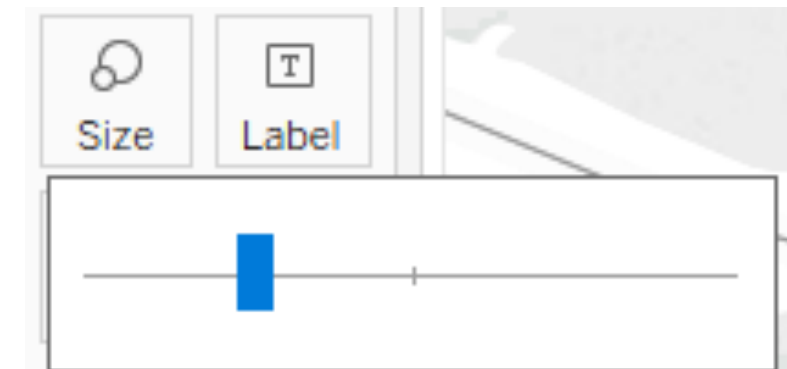
Here is an example, where the range was changed to begin at $-.3$ and the color ramp is shades of red. The circles also have been given boundaries, which help to make them easier to see. Try doing all of those things as well.



Let's edit the size ranges

- Click on the **size icon** and you can then adjust the size of the bubbles.

Again, our goal is clarity.



In-Class Exercise

Map both

- vehicle stop data
 - collision data
- by joining each with pd_beats_datasd.geojson

Issue:

- We can not import geographic data in Tableau online
- workaround: I created the data and it is now available online:
 - Create new workbook
 - Connect to Data: “On this site”
 - pd_beats_datasd = vehicle stops
 - pd_collisions_datasd.csv = collision data
 - Where is the map?
 - Measures -> double click on Geometry
 - Beat = “The **geographical** area which a given police officer patrols is known as a **beat**”
 - Add it to Marks -> Detail
 - Put your Measure as Marks -> Color!

Explore the results.

At the end of the class we will share what we learned!!