Tableau

Module 6

Working with Mapping

Agenda

Working with Mapping

- Coordinating Points
- Plotting Longitude and Latitude
- Editing Unrecognized Locations
- Custom Geocoding
- Polygon Maps
- WMS: Web Mapping Services
- Background Image

- Map Visualization
- Custom Territories
- Map Box
- How to create map projects in Tableau?
- How to create a dual-axis map?
- How to edit location?

Working with Mapping

Coordinate Points

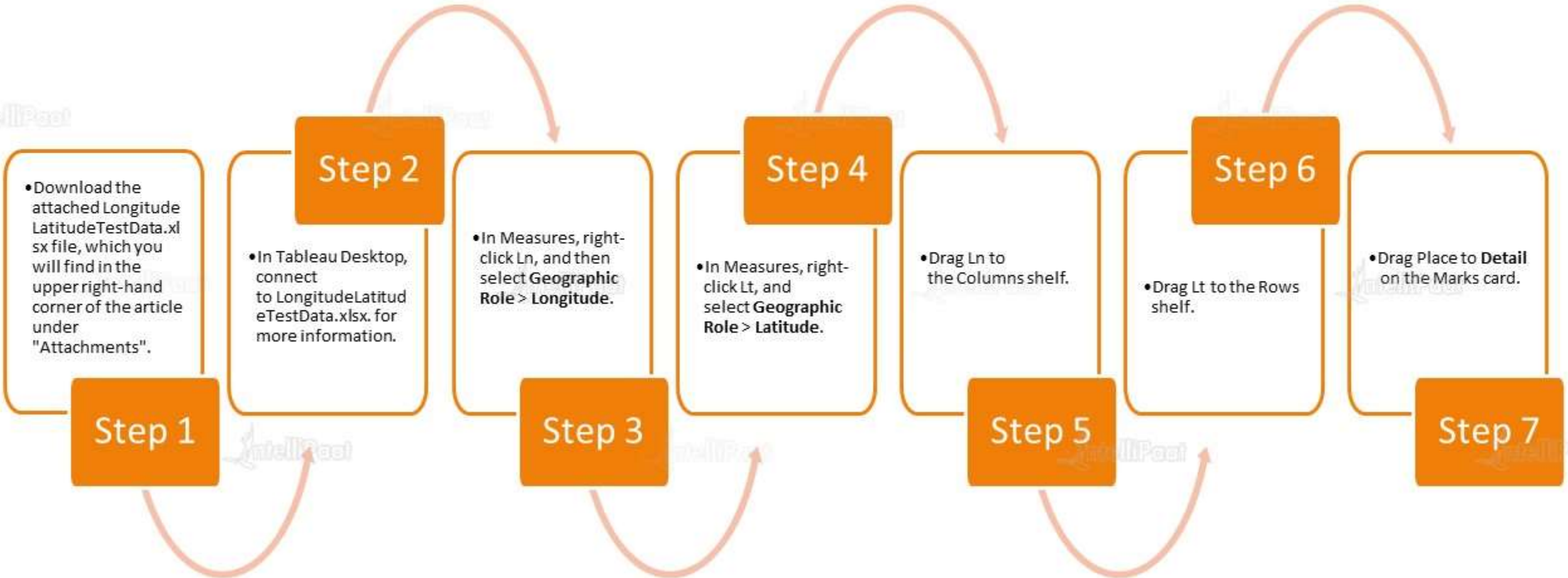
- In Tableau, coordinates need to be numbers in decimal format.
- Any point on a map can be represented with latitude and longitude coordinates.
- Positive latitudes indicate the northern hemisphere and positive longitudes indicate eastward from the Prime Meridian.
- In this way, every point on the globe has unique latitude and longitude coordinates.
- Incidentally, Tableau uses the same projection as Google Maps, which is Web Mercator.

Plotting Longitude & Latitude

- If your dataset has latitude and longitude fields, Tableau can automatically plot them on a map.
- On the other hand, if your data doesn't have latitude and longitude but you have geographic place names such as city, country or province, Tableau will determine their coordinates for you providing the latitude and longitude fields.

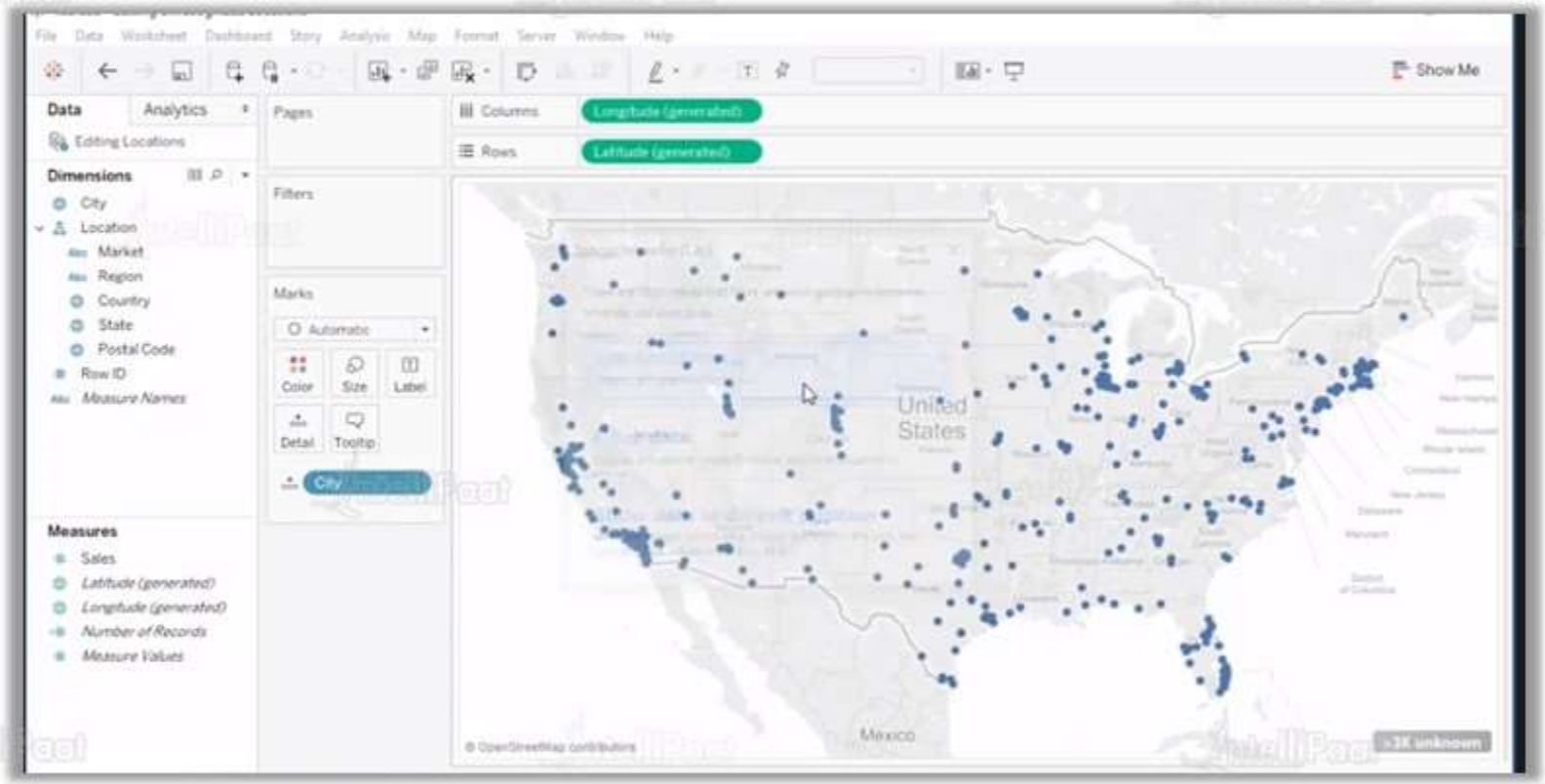
Plotting Longitude & Latitude

Below are the steps to create a map using the longitude and latitude fields:



Editing Unrecognized Locations

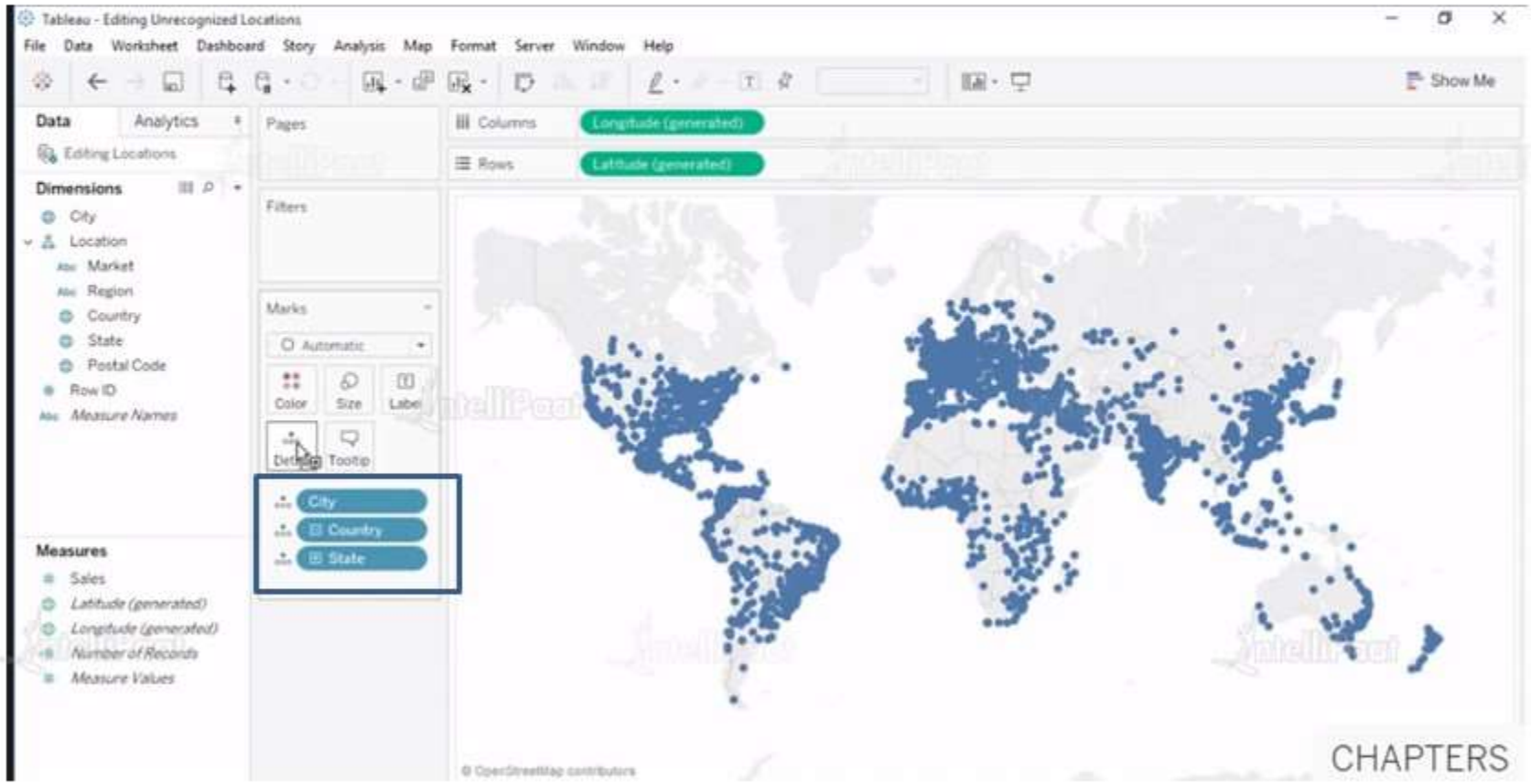
By default, when you click on city, Tableau will plot the geographic graph on the screen.



If you see multiple cities, it is because of the cities with the same name in different countries.

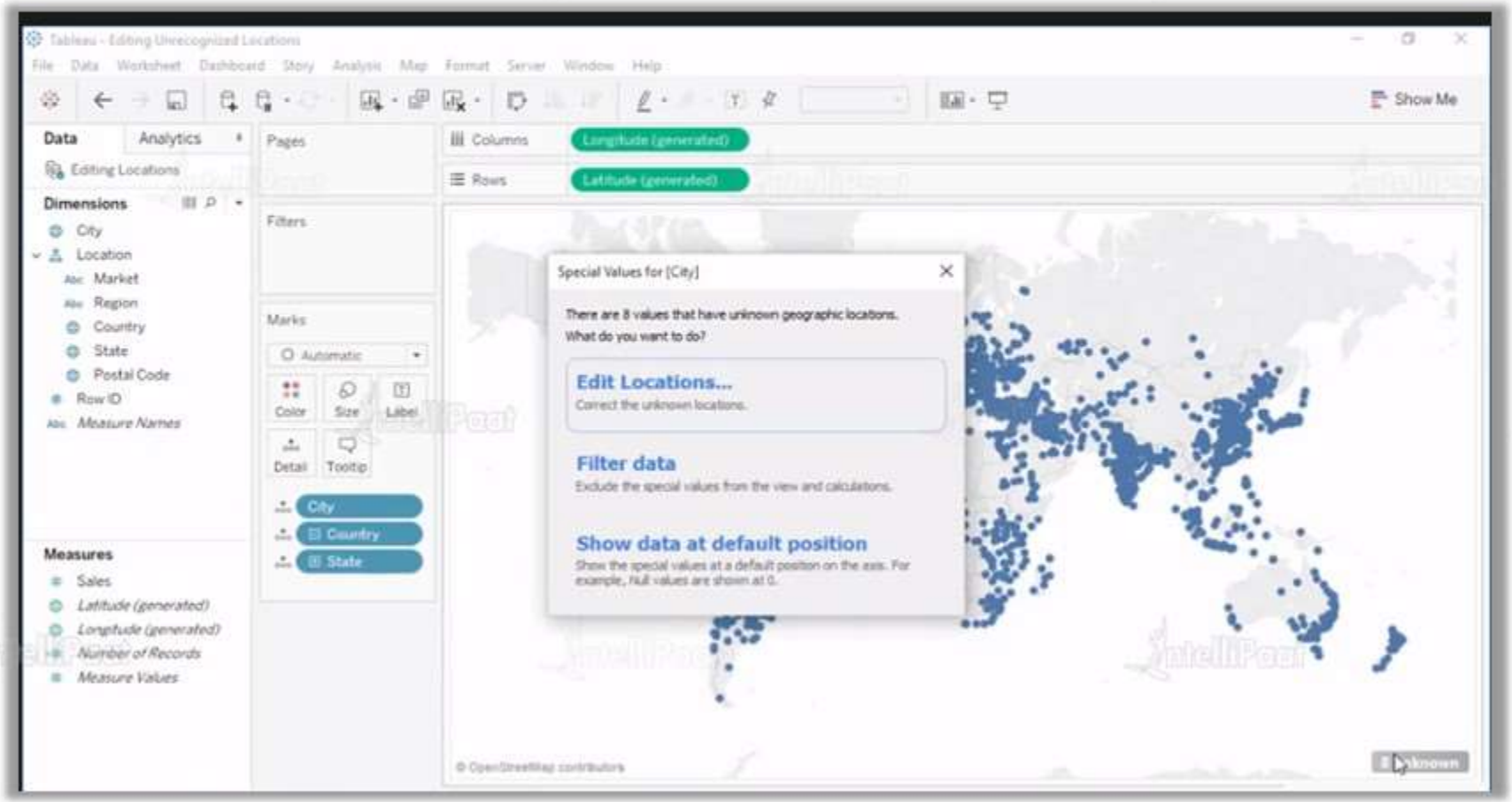
Editing Unrecognized Locations

This can be resolved by using detail.



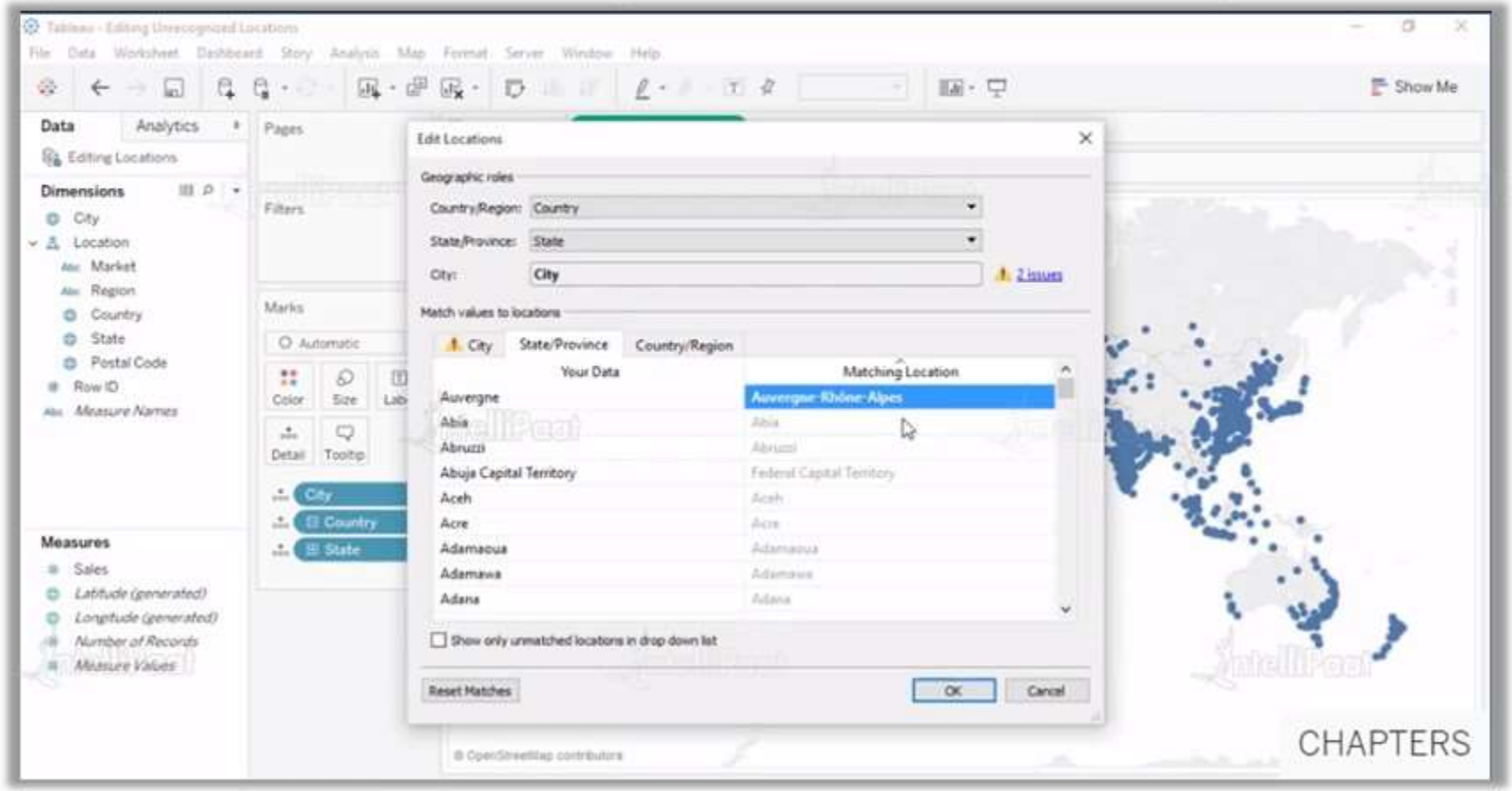
Editing Unrecognized Locations

Right-click on the screen and choose edit location



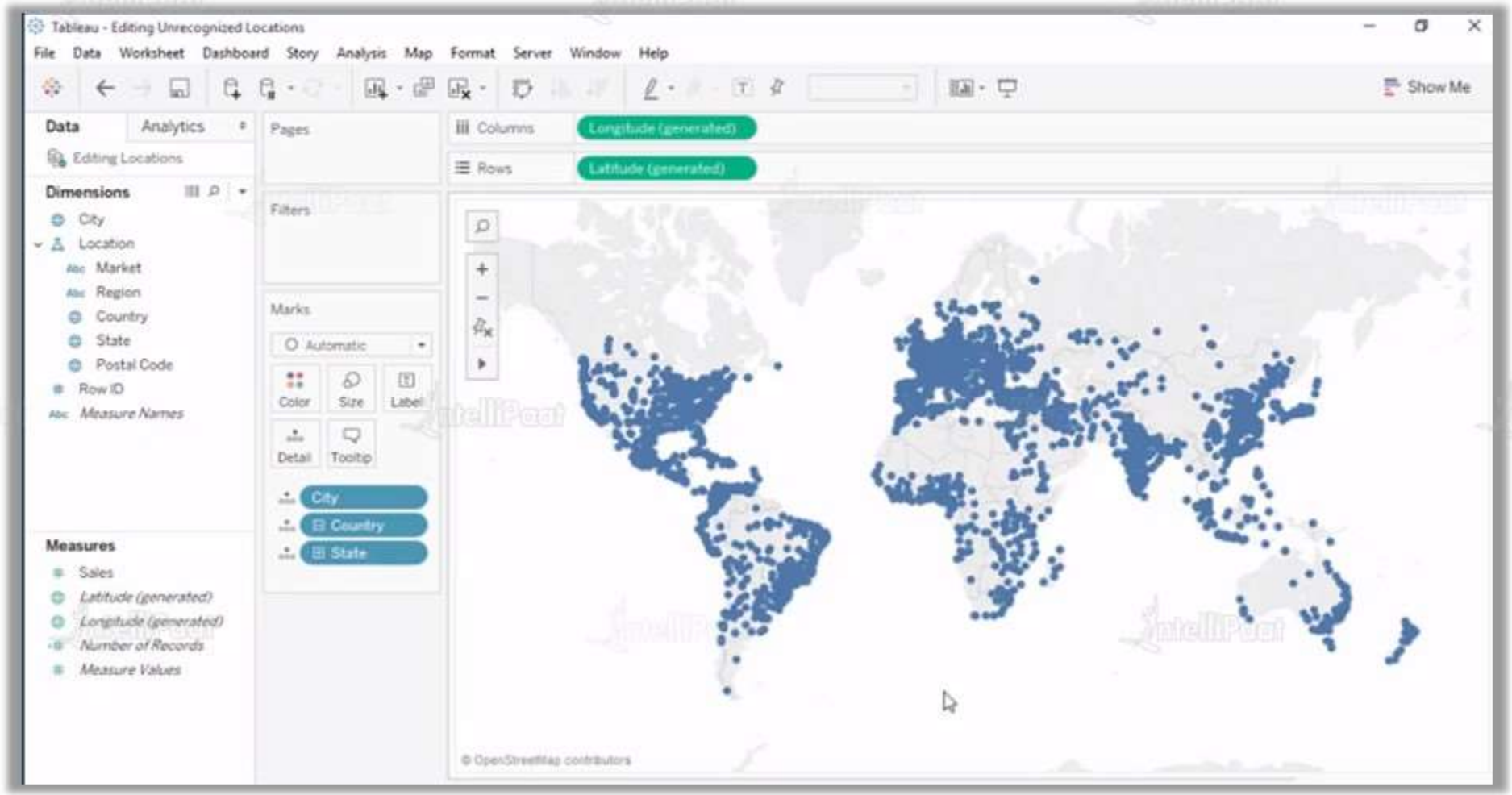
Editing Unrecognized Locations

Click on the unrecognized location and start typing the location name and choose the correct place name.



Editing Unrecognized Locations

Now, you can see all edited locations on the screen.



Custom Geocoding

- If your data contains locations (without latitude and longitude coordinates) that Tableau cannot recognize, you can add them to the database and enter your own custom geocoding or simply blend in the geographic data.
- Custom geocoding is a more flexible way to plot your data on a map.
- Custom geocoding is available for all workbooks on a computer once the custom geocoding data is imported.

Custom Geocoding

Below are some of the conditions that are followed during custom geocoding:

It must be in .csv format.

Your geocode name will be the header in your A1 cell.

Both your latitude and longitude columns must be spelled correctly and must be case sensitive.

All .csv files within that directory will be imported at once, so make sure you only have .csv files meant for custom geocoding in your directory.

Polygon Maps

Locations can be plotted on a map in two ways:

As a point or mark to represent the entire area	As a polygon covering the area

It’s also possible to provide your own polygon data to create custom polygon maps.

Polygon Maps

Below are the steps to create polygon maps on Tableau:

Step 1: Find an image of what you want to draw in Tableau. Here, let's use Kauffman Stadium in Kansas City and Citi Field in New York.

Step 2: Set up your map in Tableau and record the coordinates for your shapes.

Step 3: Similar to mapping a sequential path, each combination of coordinates should be given a "point order". This is a field in your underlying data that tells Tableau what order the "dots" are connected.

Polygon Maps

At this point, my underlying data for one section of Kauffman Stadium looks like this:

	A	B	C	D	E
1	Stadium	Zone	Point Order	X	Y
2	Blank	None		1000	1000
3	Kauffman Stadium	State Farm Neighborhood	1	268	720
4	Kauffman Stadium	State Farm Neighborhood	2	273	731
5	Kauffman Stadium	State Farm Neighborhood	3	317	776
6	Kauffman Stadium	State Farm Neighborhood	4	324	767
7	Kauffman Stadium	State Farm Neighborhood	5	289	731
8	Kauffman Stadium	State Farm Neighborhood	6	277	715

Step 4:

Once you have the X and Y coordinates for each point of each shape you want to plot, we are ready to build the polygon map in Tableau. To start, put your X measure on the Columns shelf and Y measure on the Rows shelf; both with an aggregation of AVG.

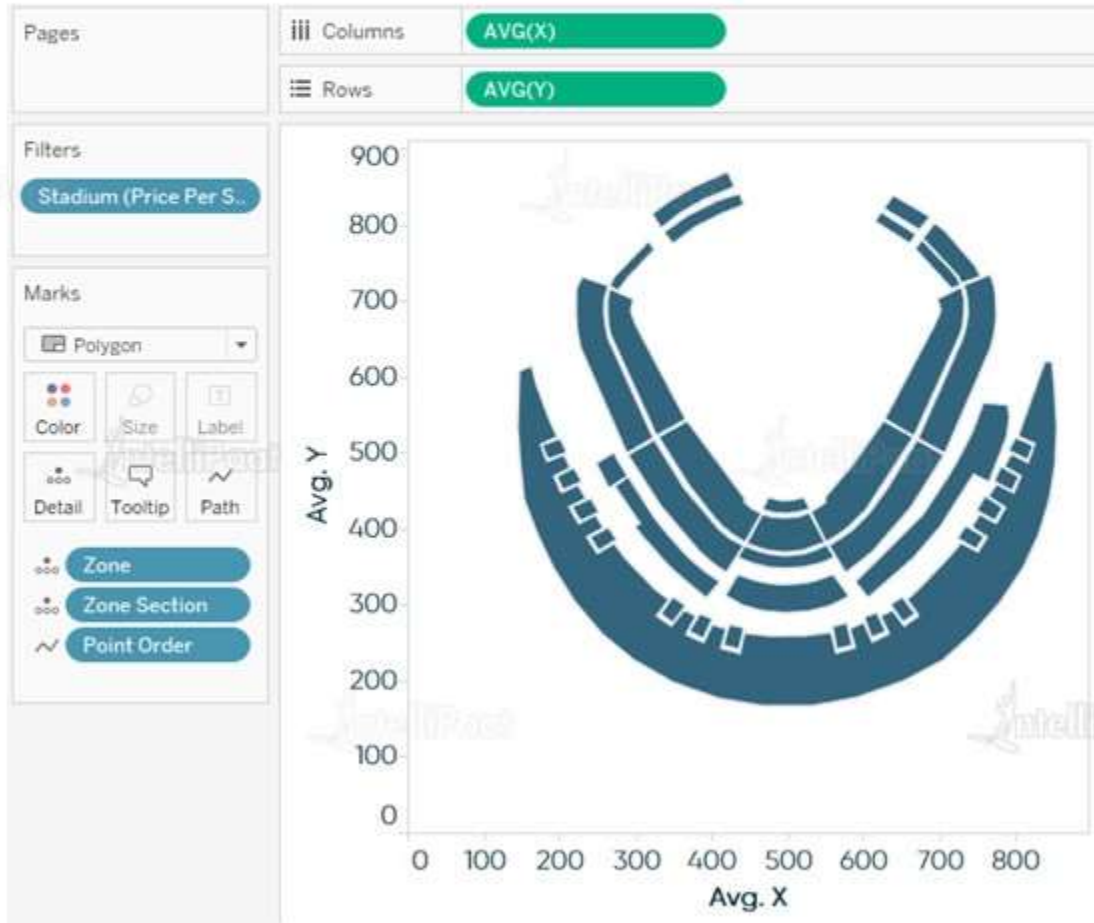
Polygon Maps

Step 5: Change the mark type from Automatic to Polygon, and place your Point Order dimension on the Path Marks Card.

Step 6: Place the section dimension (and/or the dimension with the most granular level of detail) on the Detail Marks Card. If your granularity isn't reflected on both sides of your polygon, you can just place the most granular dimension on the Detail Marks Card.

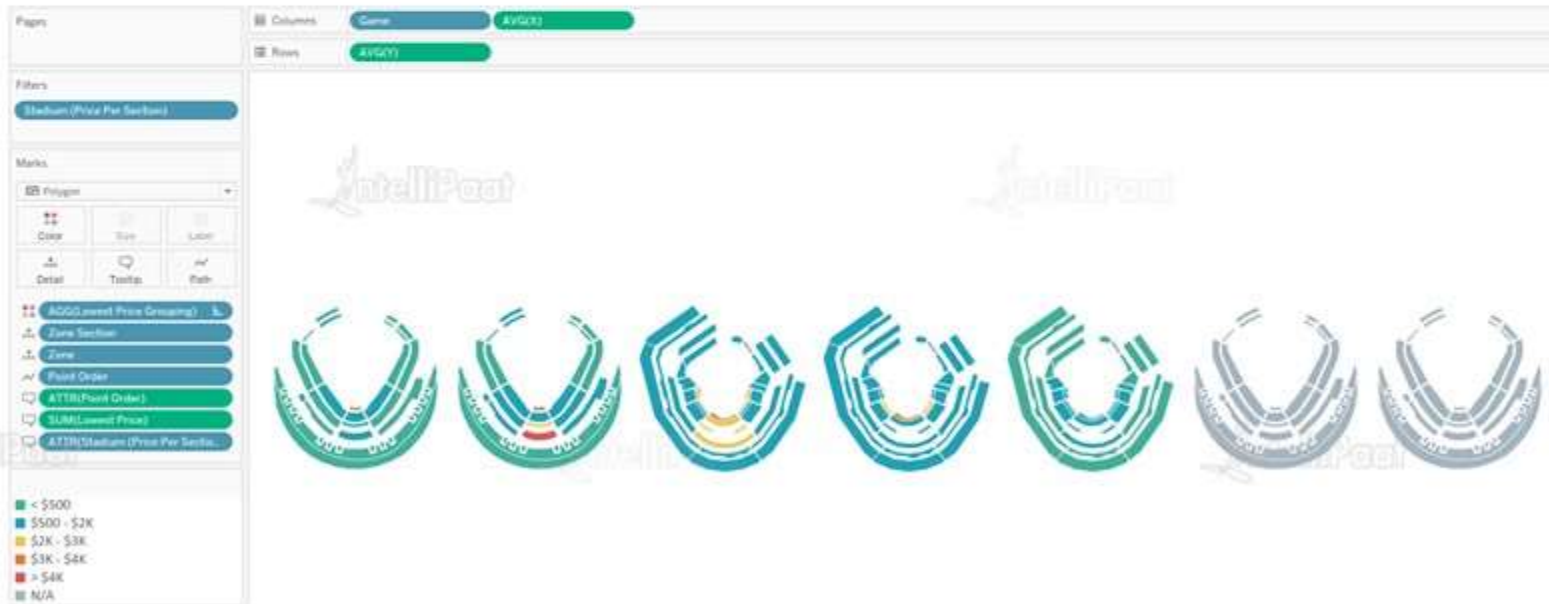
Polygon Maps

At this point, the map looks like this:



Polygon Maps

Step 7: This can now be made into small multiple views by “slicing” the map coordinate measures by a dimension. In this case, we will put Game on the Columns shelf to create a column for each game with a stadium in each cell.



Background Images

- Background images are images that you display underneath your data in order to add more context to the marks in the view.
- A common use of background images is adding custom map images that correspond to a coordinate system in your data.
- For example, you might have data that corresponds to several floors in a building. You can use background images to overlay that data on the actual floor plan of the building to give more context.
- Tableau also allows you to load dynamic maps from the online and offline provider; background images allow you to use your own custom images whether they are special maps or any other image that corresponds to your data.

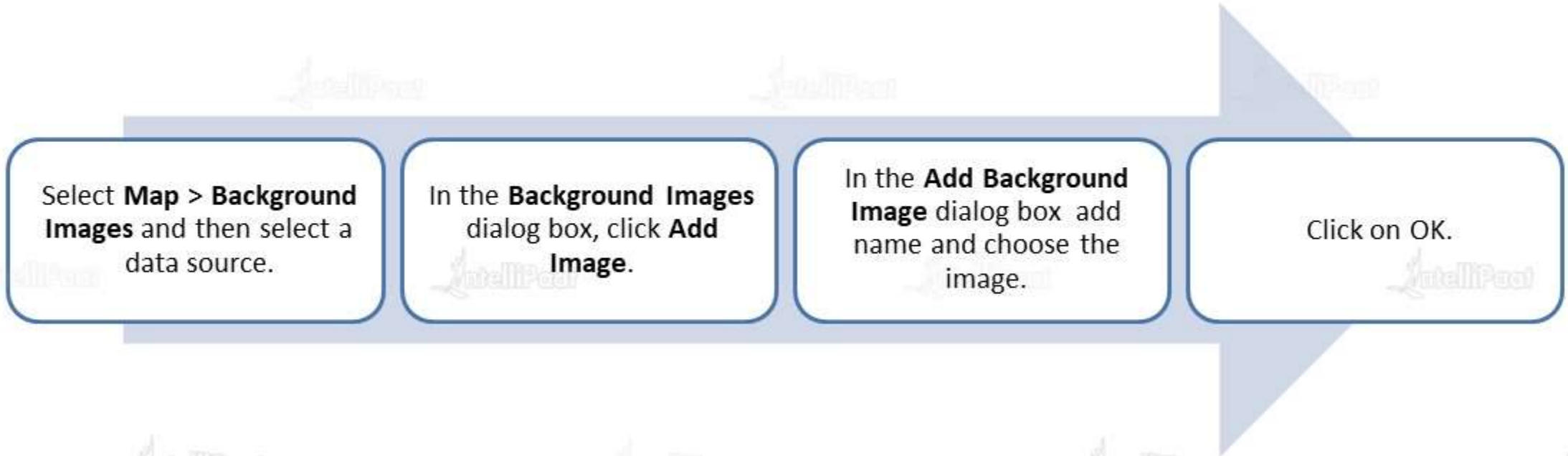
Background Images: Adding Image

When you add a background image to the view, you have to specify a coordinate system by mapping both X and Y axes to the values of fields in your database.

If you are adding a map, X and Y axes should be longitude and latitude expressed as a decimal. However, you can map the axes to any relevant fields based on your own coordinate system.

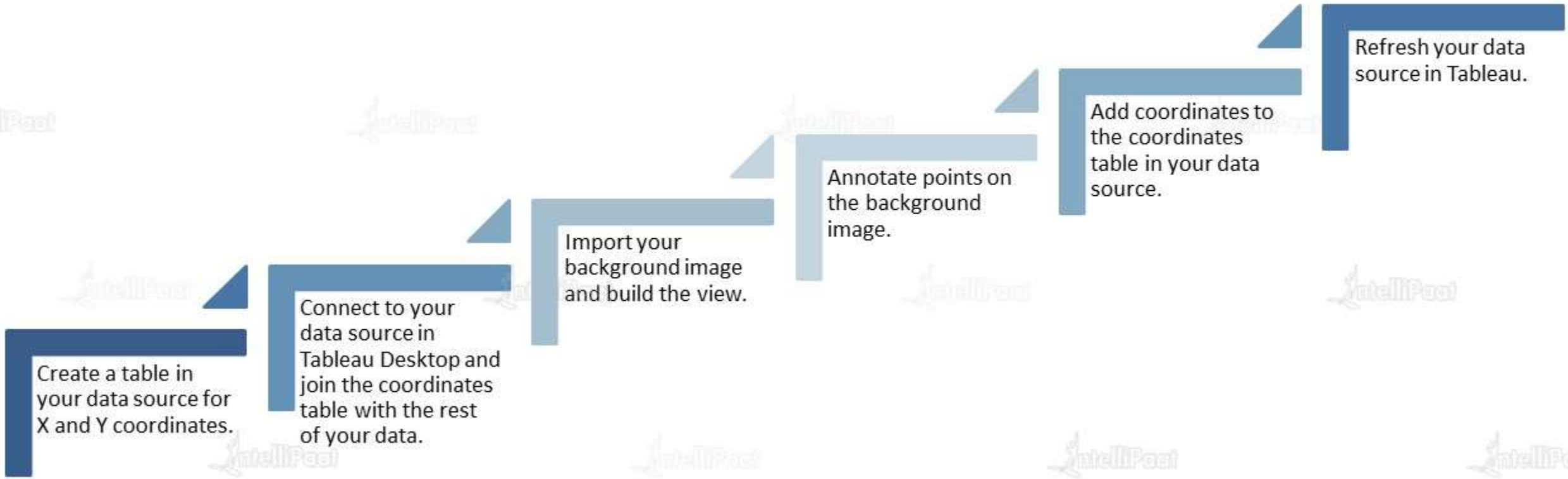
Background Images: Adding Image

Below are the steps to add a background image:



Background Images: Plotting Points on the Image

Below are the steps to plot points on a background image:



How to create a dual-axis map?

There are three ways to create a dual-axis map in Tableau:

By using Tableau Latitude (generated) and Longitude (generated) fields	By using custom latitude and longitude fields	By using a combination of Tableau Latitude (generated) and Longitude (generated) fields and custom latitude and longitude fields

Here, we will discuss one of the methods of using latitude and longitude fields.

How to create a dual-axis map?

Step 1: Open Tableau Desktop.

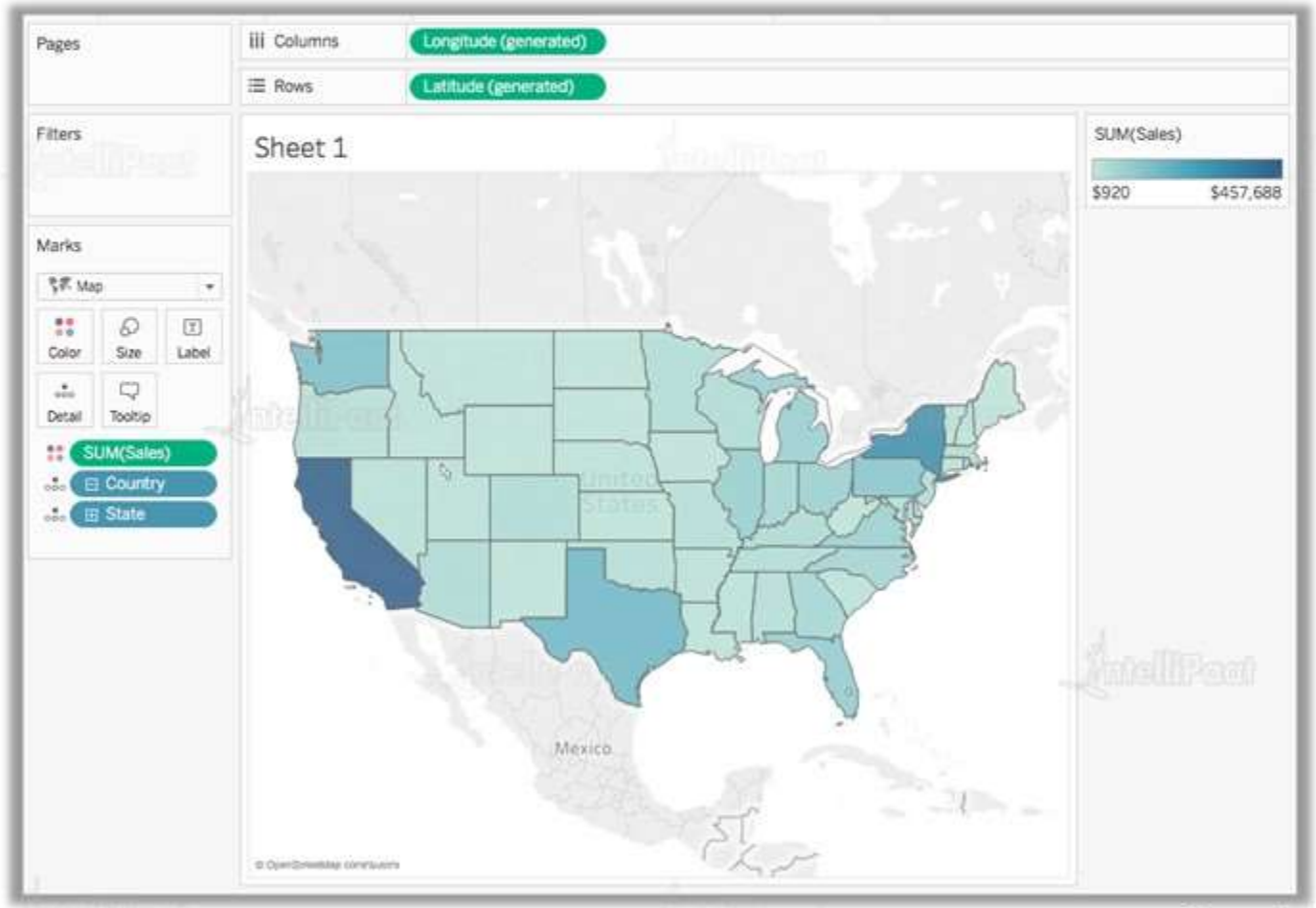
Step 2: In the Connect pane, under Saved Data Sources, connect to the Sample - Superstore data source.

Step 3: In the Data pane, under Dimensions, double-click on State.

Step 4: On the Marks card, click on the Mark Type drop-down and select Map.

How to create a dual-axis map?

Step 5: From the Data pane, under Measures, drag Sales to Color on the Marks card.



How to create a dual-axis map?

Step 6:

On the **Columns** shelf, control-drag (command-drag on a Mac) the **Longitude (generated)** field to copy it and place it to the right of the first Longitude field.

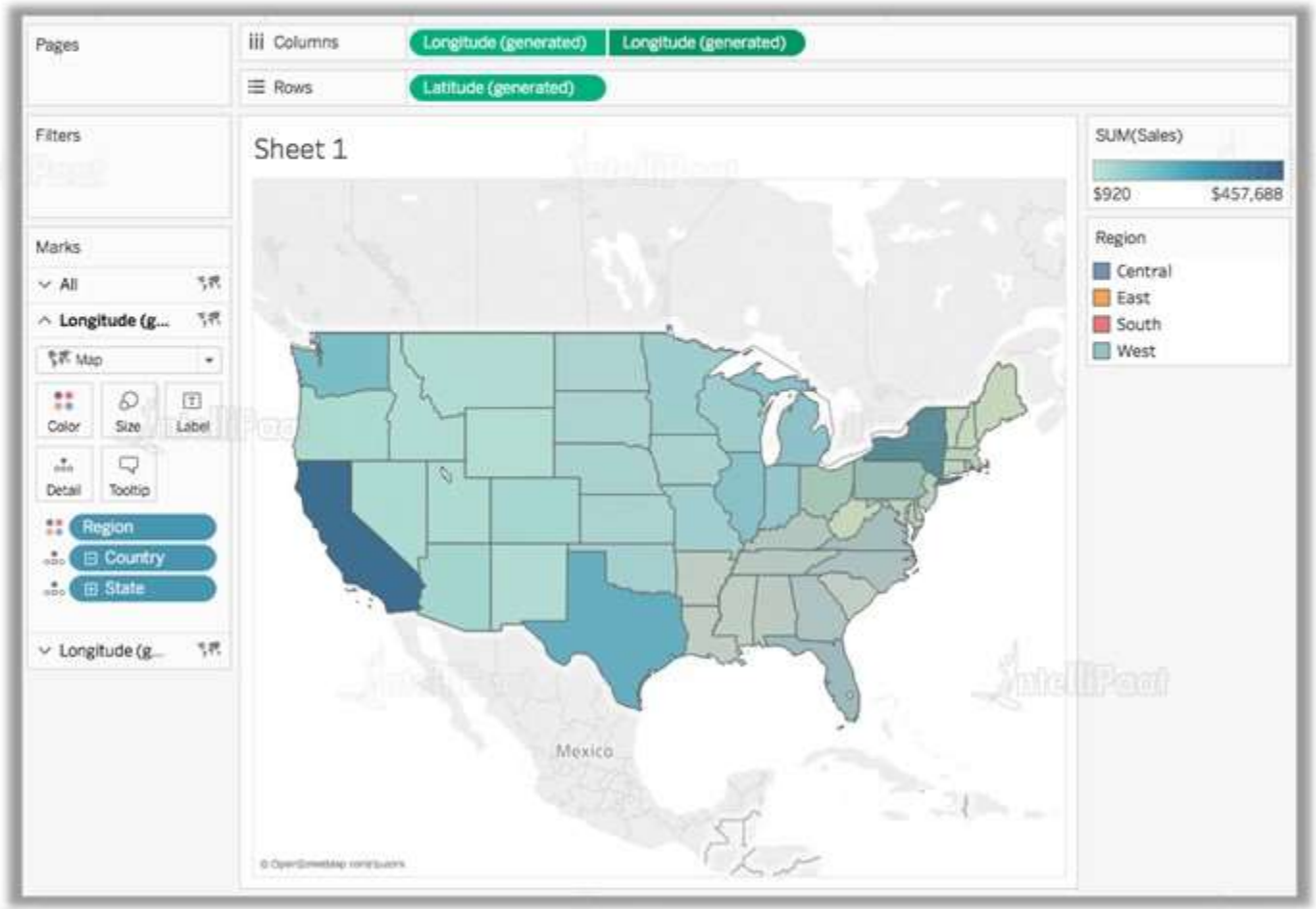
How to create a dual-axis map?

Step 7: On the Marks card, select the top Longitude (generated) tab.

Step 8: From the **Data** pane, under Dimensions, drag **Region** to **Color** on the Marks card.

How to create a dual-axis map?

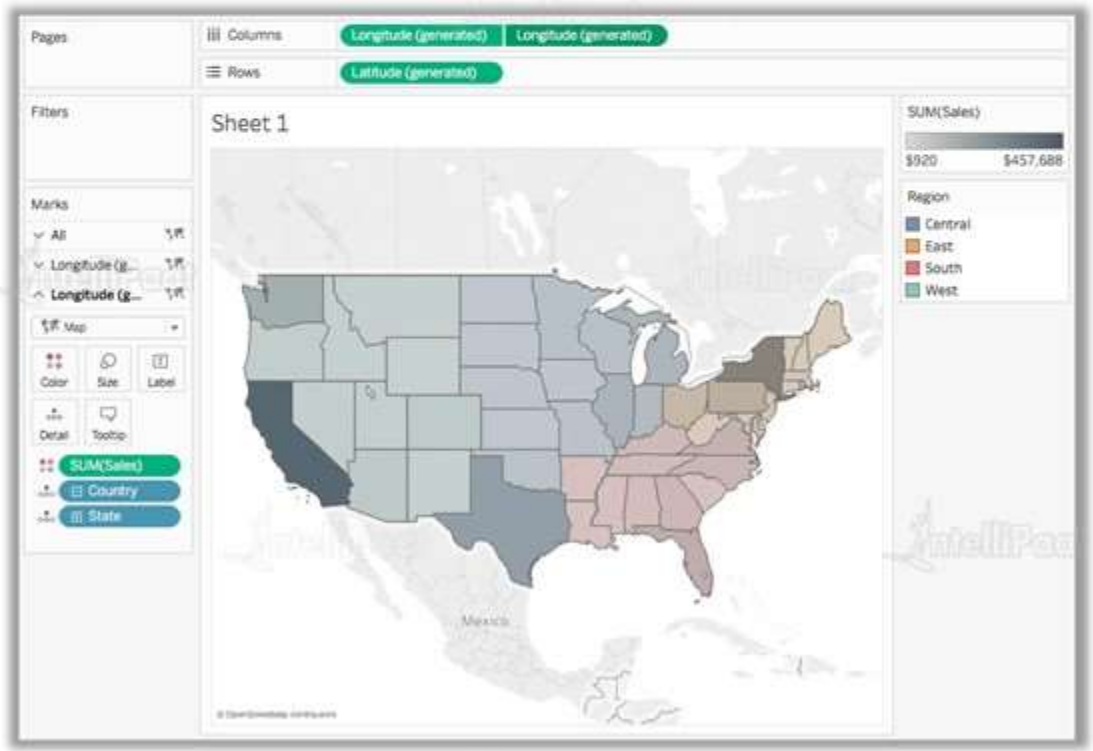
Step 9: On the Columns shelf, right-click on the Longitude (generated) field on the right and select Dual Axis.



How to create a dual-axis map?

Step 10: On the Marks card, ensure that the bottom Longitude (generated) tab is selected, and then click on **Color** > **Edit Colors**.

Step 11: In the Edit Colors dialog box, click on the Palette drop-down, select **Gray**, and then click on **OK**.



How to create a dual-axis map?

Step 12: On the Marks card, click on **Color** again.

Step 13: In the Color pop-up dialog box, under Opacity, move the slider to approximately 75%.

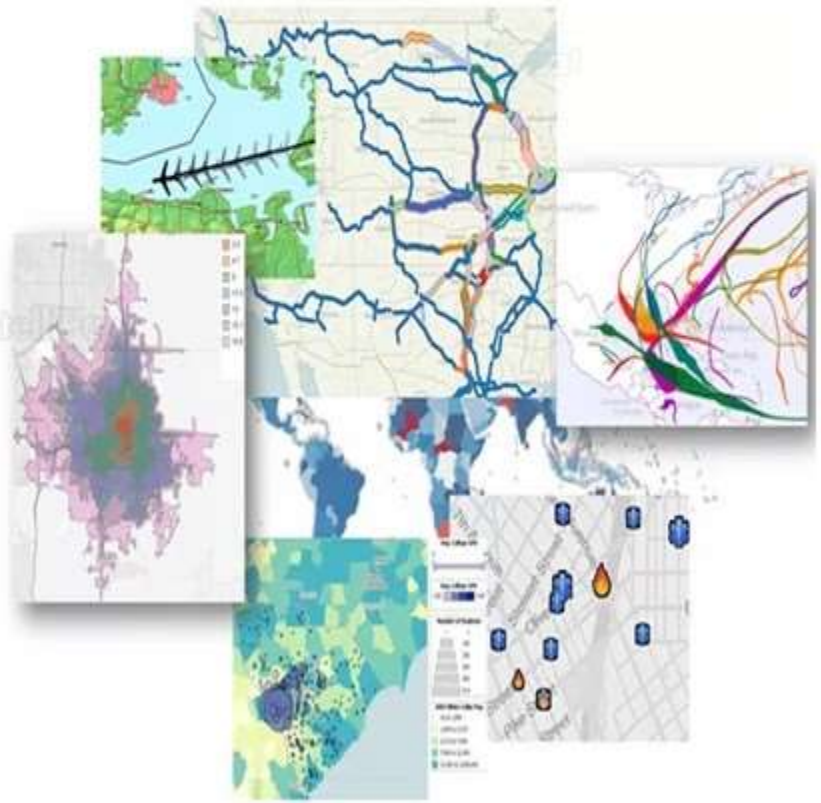
Dual-axis map is ready now.

Map Visualizations

- If you want to analyze your data geographically, you can plot your data on a map in Tableau.
- There are many reasons to put your data on a map. Perhaps, you have some location data in your data source, or may be you think a map could really make your data pop. Both of those are good-enough reasons to create a map visualization, but it's important to keep in mind that maps, like any other type of visualization, serve a particular purpose: they answer spatial questions.
- Maps that answer spatial questions well have both appropriate data representation and attractive data representation. In other words: the data is not misleading, and the map is appealing.

Map Visualizations

- If your map is beautiful, but the data is misleading, or not very insightful, you run the risk of people misinterpreting your data. That's why it's important to create maps that represent your data accurately, as well as attractively.



Map

- One of the great features of Tableau software is the ease in utilizing maps for your visualizations. There are two chart types to choose from when creating a view with geographic data: symbol maps and filled maps.

Custom Territories

- Tableau 10 enables deeper understanding of your data with custom territories.
- There are two ways you can create custom territories:

Using groups

Assigning a territory field as a geographic role

Custom Territories

Using groups

- We have to select marks on a map to create groups.
- Rename the groups to represent the names of the territories, and remove the lower-level geography from the visualization.
- The custom territories will render on either a point map or a filled map.
- We can use the Edit Groups dialog to easily move features between groups.
- We can also turn “Other” on or off, depending on what we want to see in the visualization.

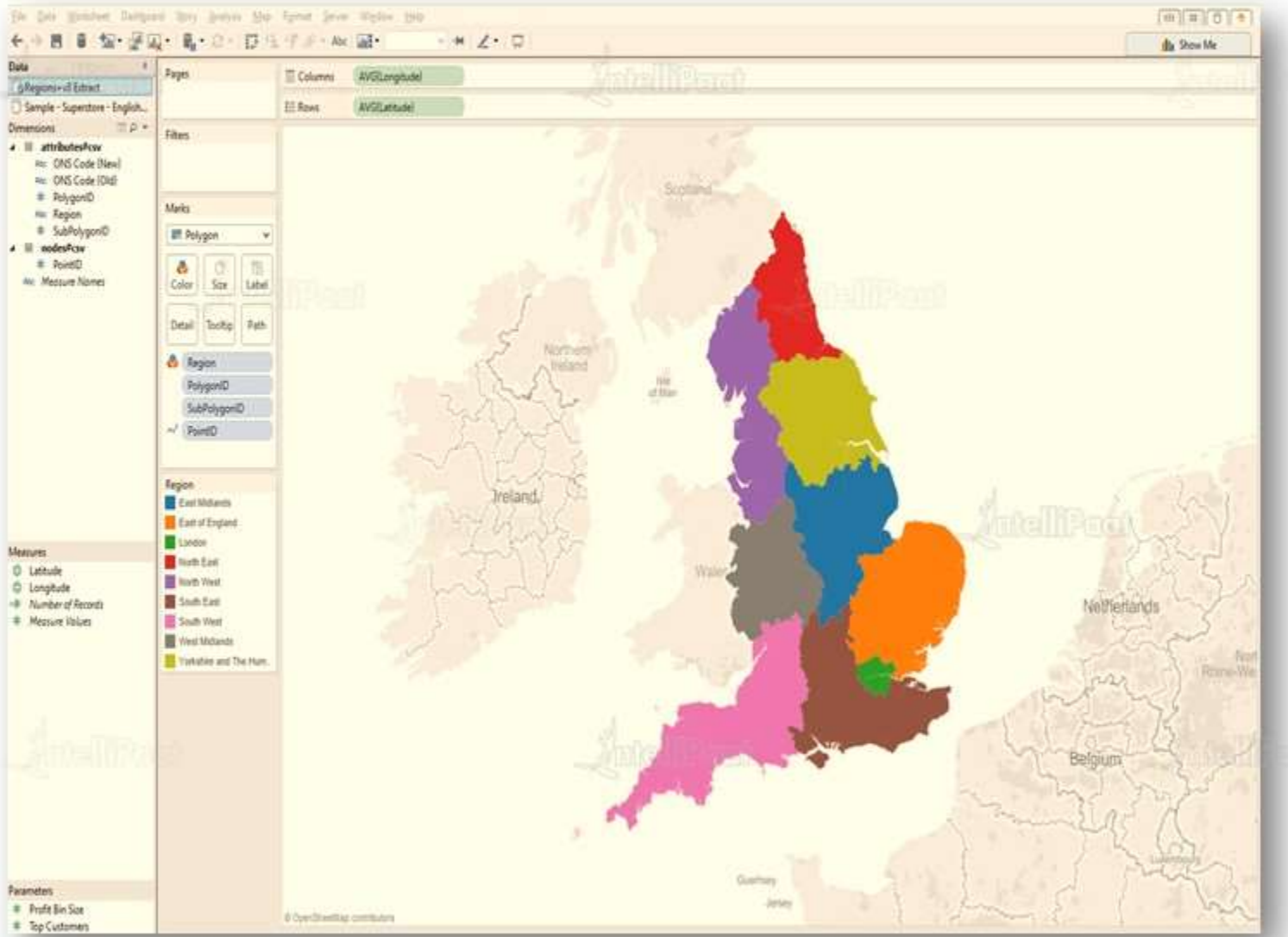
Custom Territories

Assigning a territory field as a geographic role

- When assigning a field to be a geographic role, we simply need to choose another lower-level geographic field to aggregate on.
- For example, we have a field called Sales Region in a table that includes postal codes. We can change the property of the Sales Region field to have a geographic role based on another geographic field. Once you do that, simply add the Territory field to a blank sheet and the magic happens. Your custom territories will draw on the map.

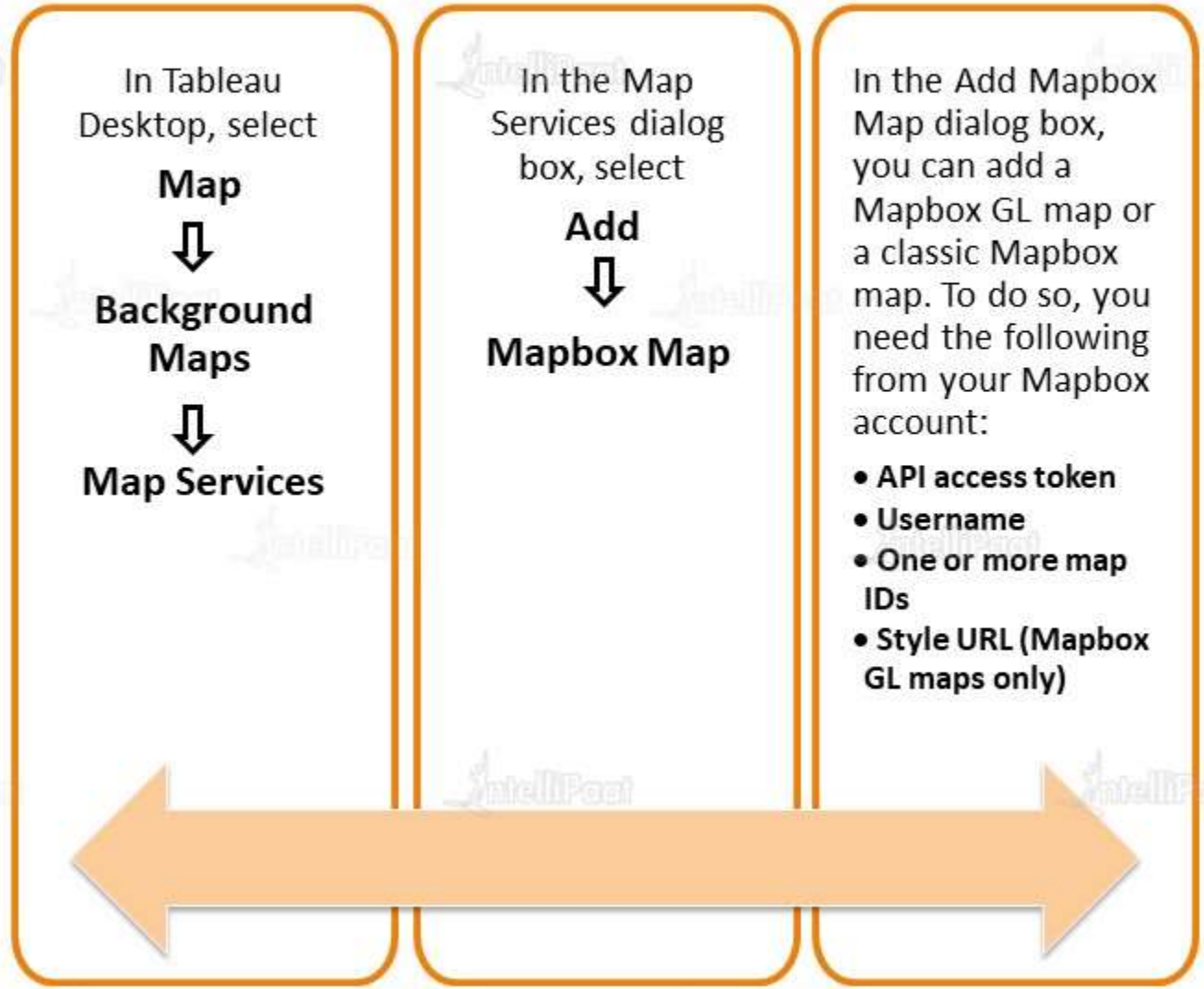
Mapbox

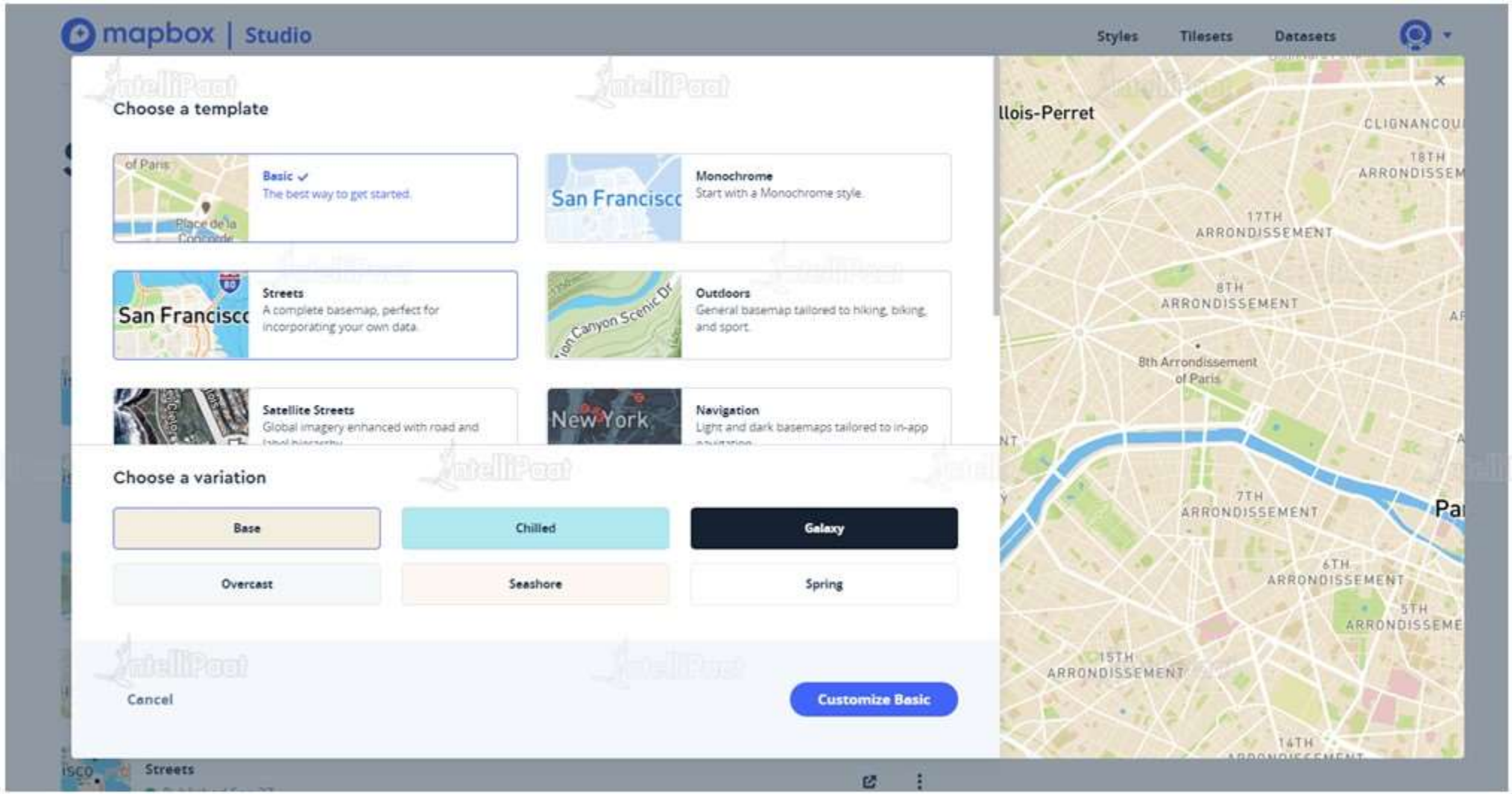
- Mapbox maps can be added to your workbooks or used to create map views in Tableau Desktop.
- When you publish a view that uses Mapbox maps in Tableau Server, Tableau Online or Tableau Public, your audience can view your data and your Mapbox map without having a Mapbox account.



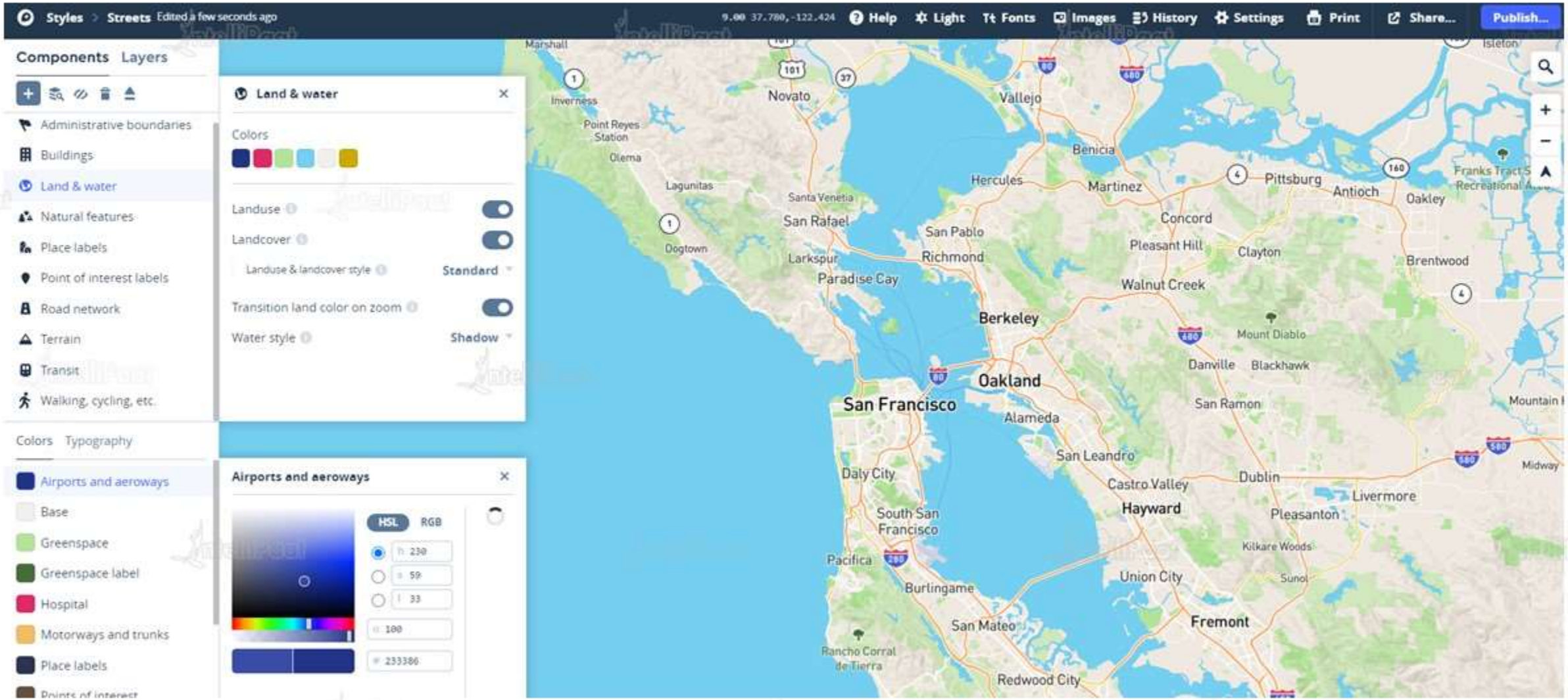
Adding a Mapbox Map to Your Workbook

- In Tableau Desktop, you can add a Mapbox map to your workbook and use it as a background map.
- After you add a Mapbox map to your workbook, the map is saved with the workbook and will be available to anyone with whom you share the workbook. You can also save a Mapbox map as a Tableau Map Source (.tms) file that you can share with others, so they can quickly connect to it and use it in their own workbooks.

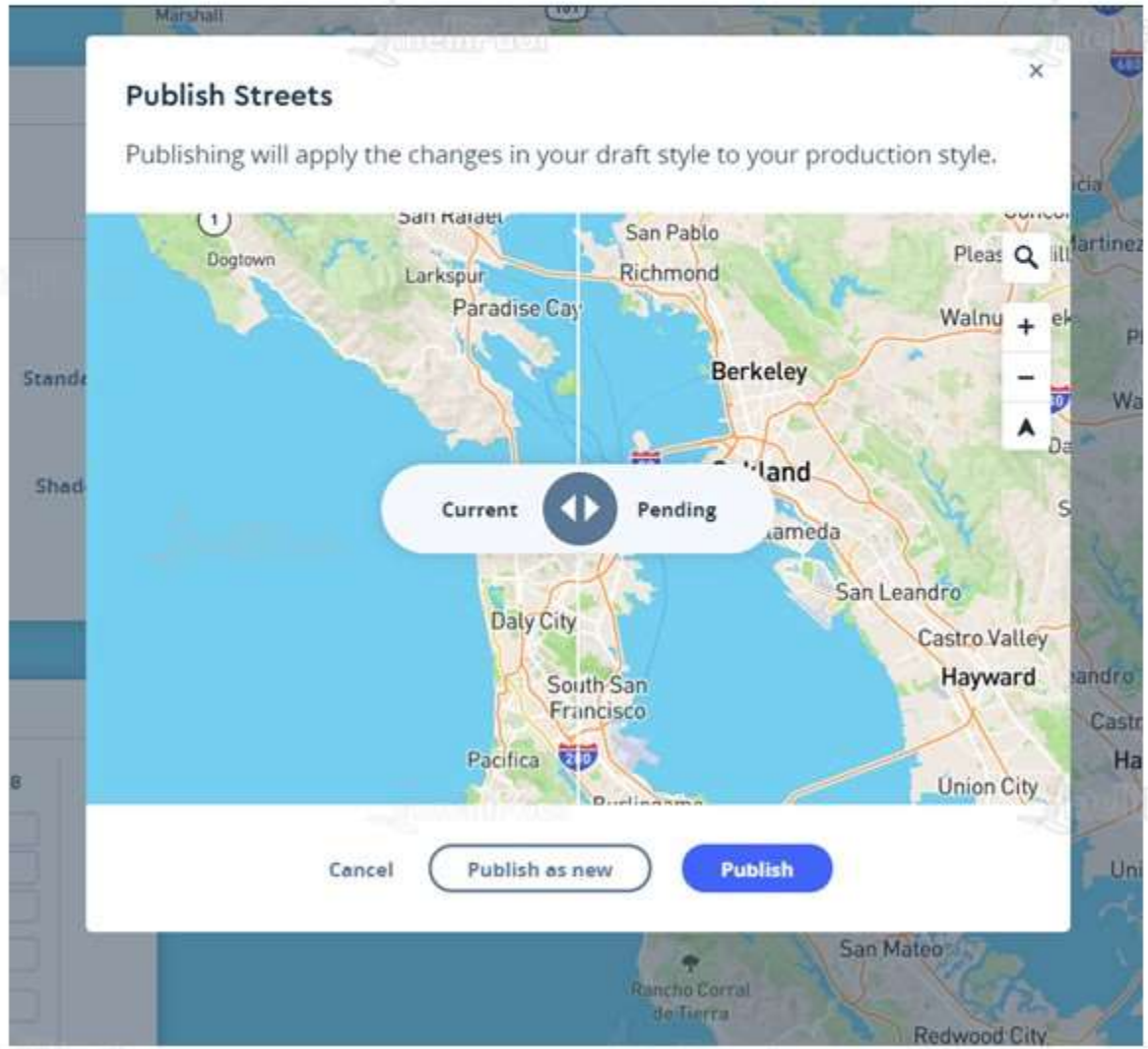




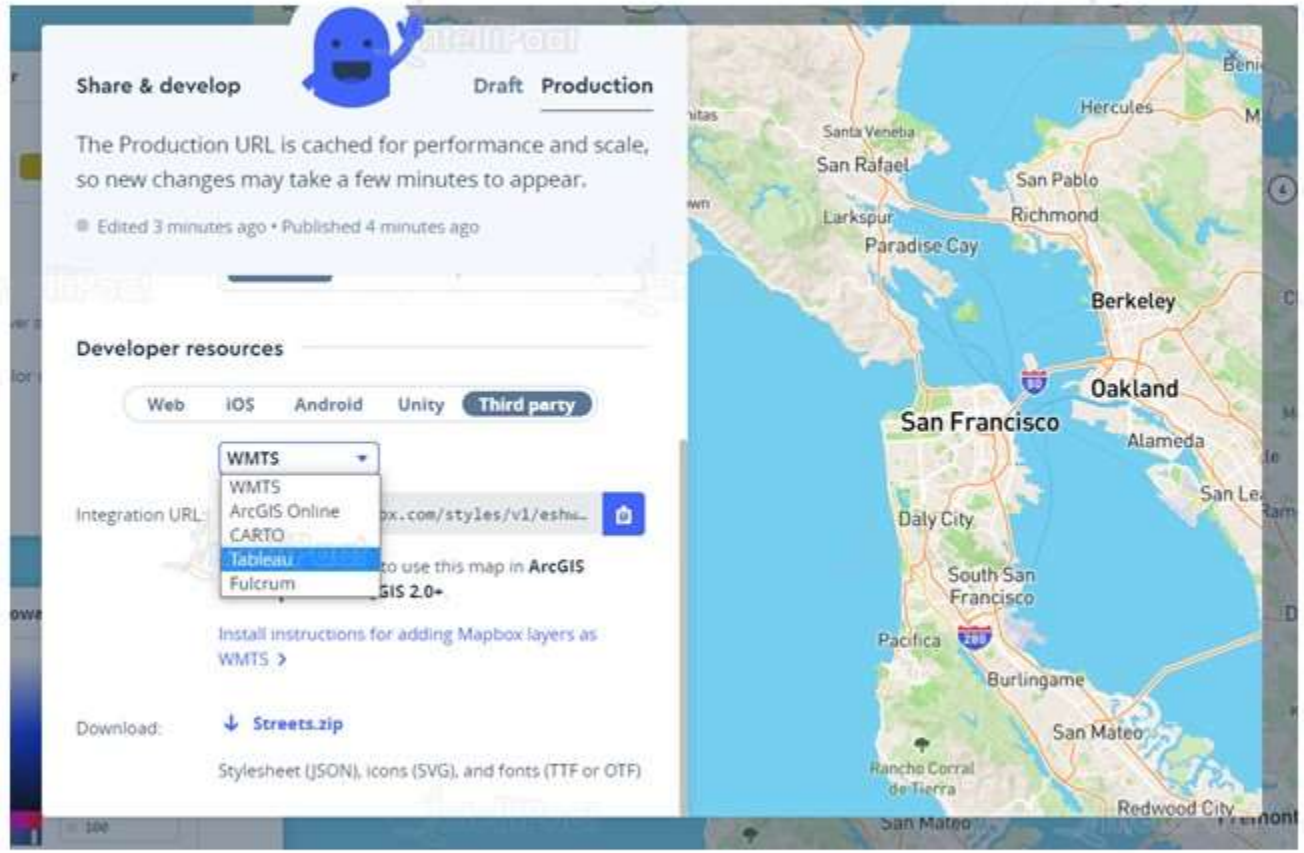
Customize your map in Mapbox



Publish(save) your map in Mapbox

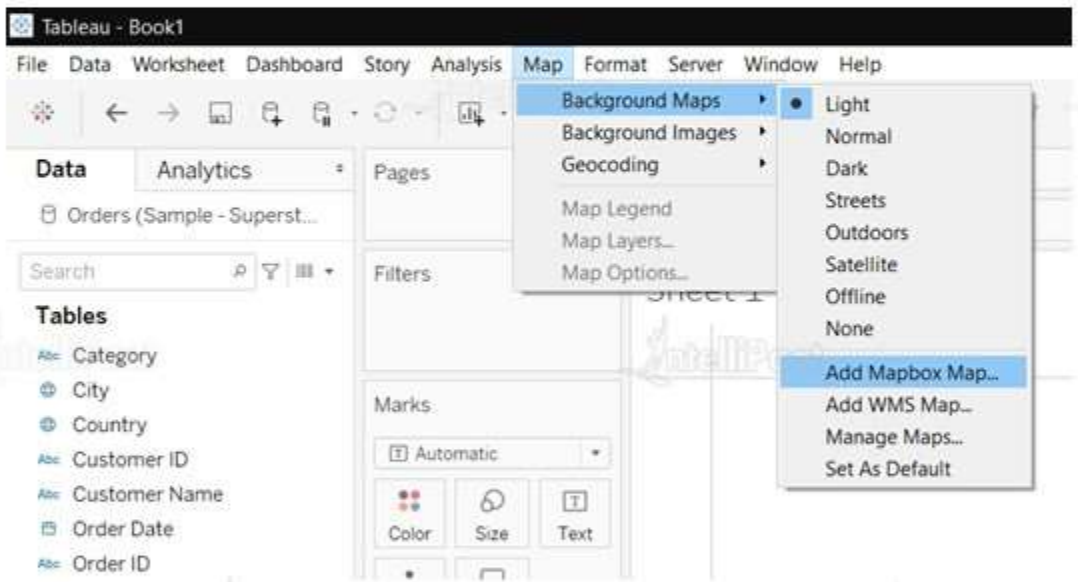


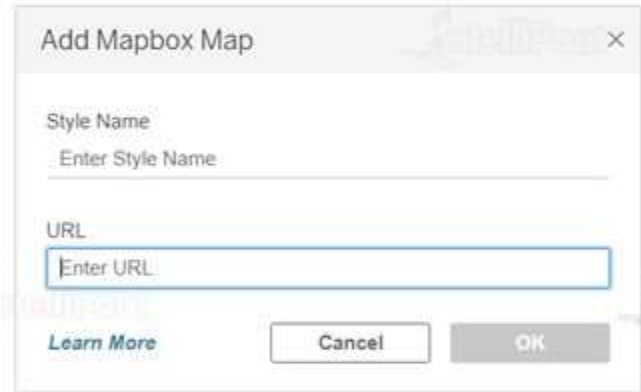
Share your map in Mapbox with Tableau



Copy the Integration URL

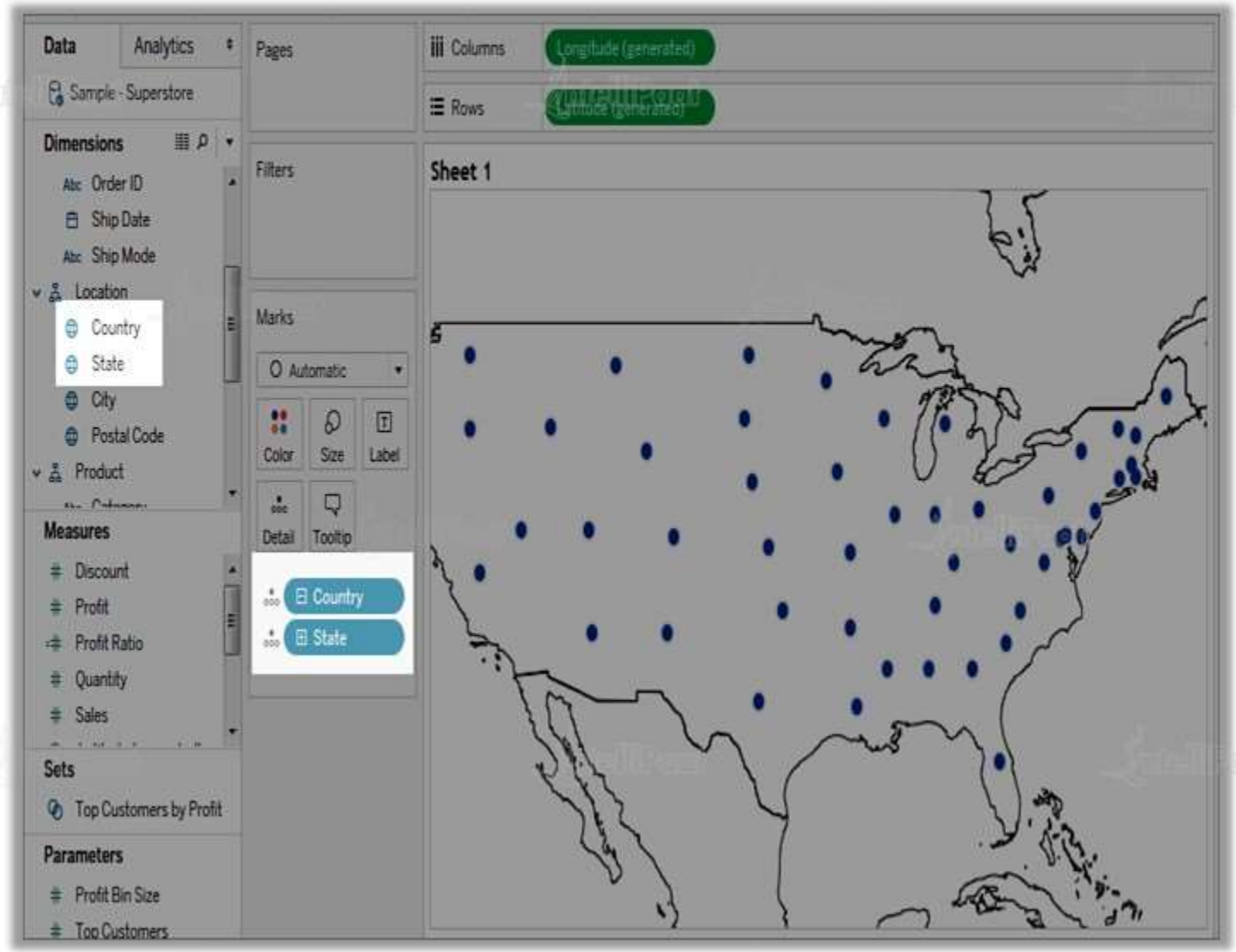
Mapbox Example





WMS

- In Tableau Desktop, you can connect to map servers with the Web Map Service (WMS) protocol. WMS is a standard protocol for requesting and receiving geographically referenced imagery.
- You can connect to any WMS server that supports the WMS 1.0.0, 1.1.0 or 1.1.1 standards.



Connecting to a WMS Server

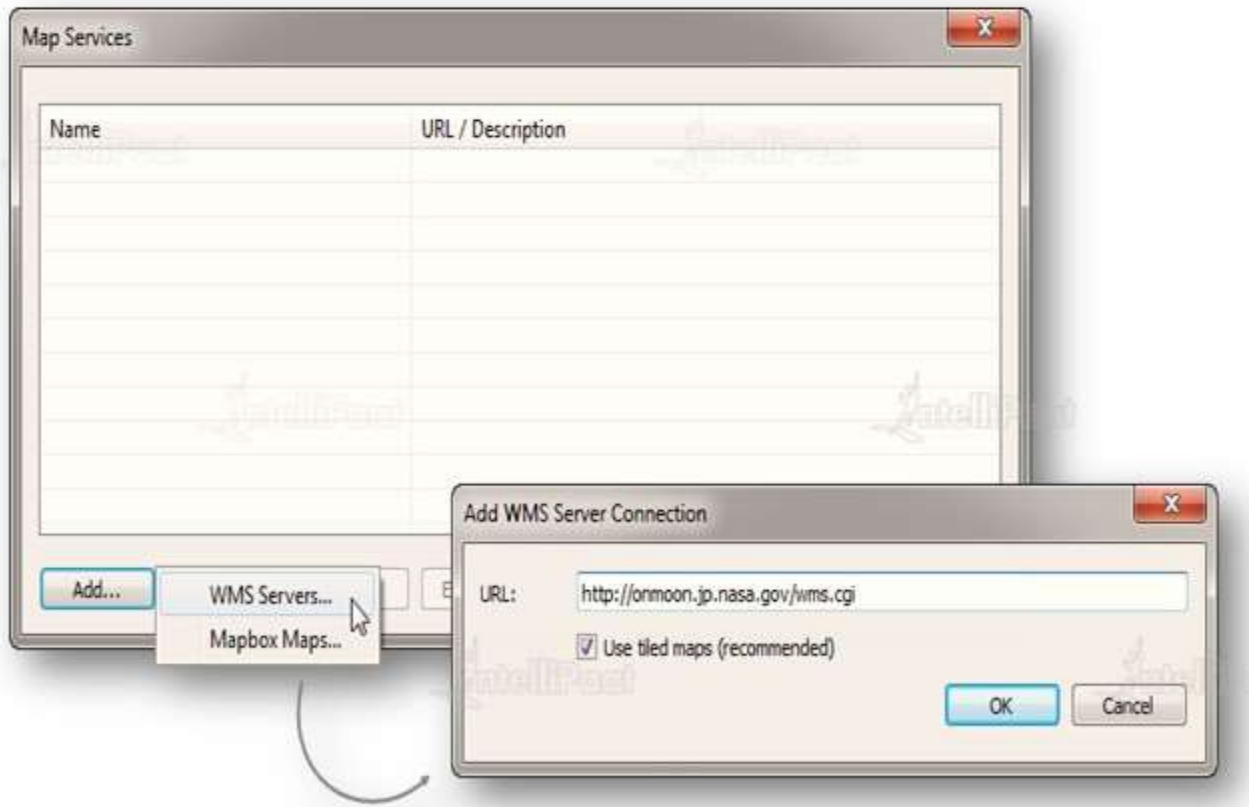
- In Tableau Desktop,

  select **Map** > **Background Maps** > **Map Services**.

- In the Map Services dialog box,

  click **Add** > **WMS Servers**.

- In the Add WMS Servers dialog box, type the URL for the server you want to connect to in Tableau and then click **OK**.



How to edit locations?

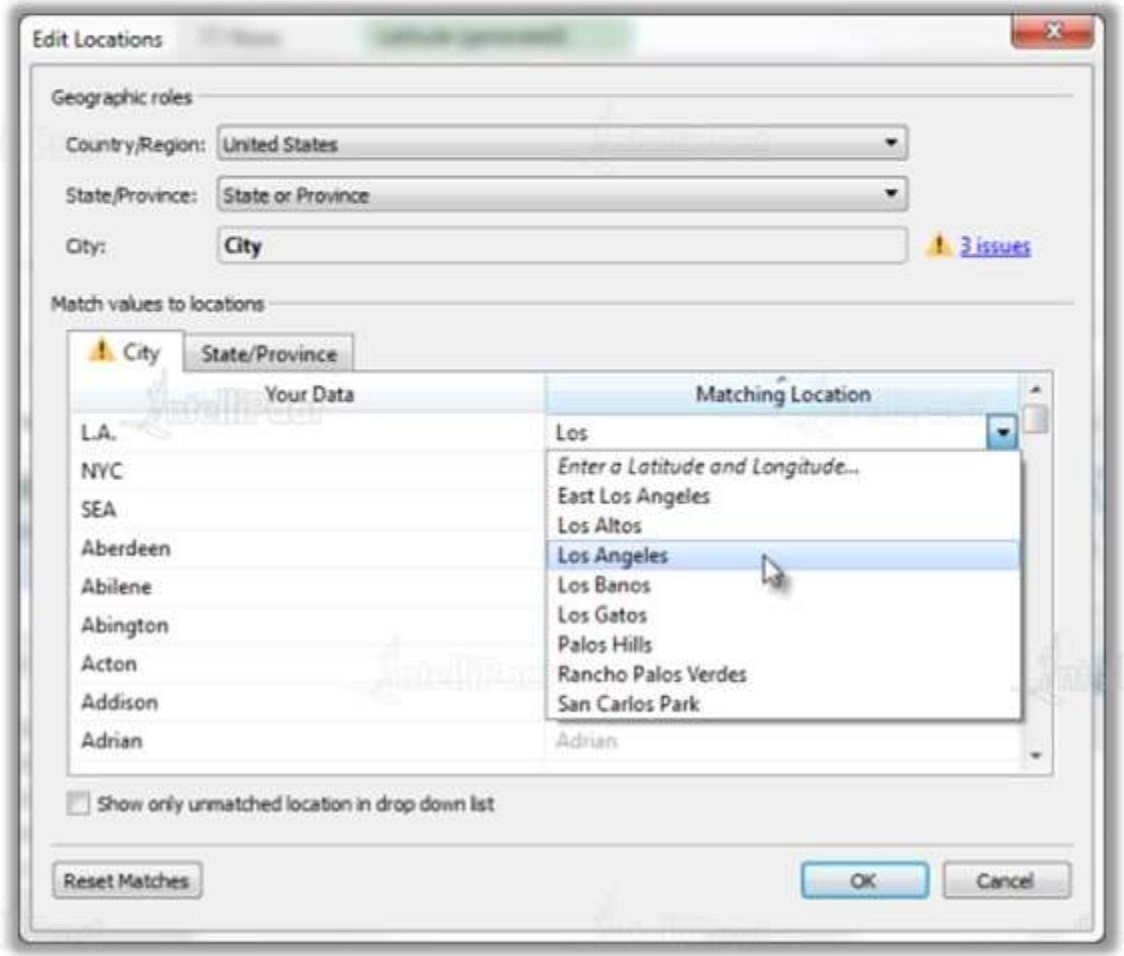
- When Tableau does not recognize the locations, those values are marked as **unknown** in the lower right corner of the view.
- This often happens because your data values may be spelled incorrectly or you might have used an abbreviation that Tableau does not recognize. When this happens, you can edit the unknown location names to map to the known locations.

How to edit locations?

- In the bottom right corner of the view, click on the special values indicator. This opens the Special Values dialog box.
- In the Special Values dialog box, select Edit Locations.

How to edit locations?

- In the Edit Locations dialog box, click on one of the **Unrecognized** cells to match a known location. You will find a search box where you can add the list of locations or choose the available locations.



Thank You