Tableau Maps

Tableau has two kinds of maps:

1. Symbol maps: use symbols (like colored dots) to convey information
2. Filled maps: geographic regions are filled with colors

Geographic fields are indicated by a globe icon (instead of the # icon for measures, the "ABC" icon for text/string data, and the calendar for date fields).

Tableau recognizes many fields that hold geographic data. It usually recognizes the data as geographic from the field names. If it recognizes a field as holding geographic data, then it can look up the latitude and longitude for a given value. And, obviously, if there are latitude and longitude fields in the data, then Tableau has everything it needs to map the record.

Tableau does NOT recognize data if the latitude and longitude are in degrees-minutes-seconds format. Such fields would have to be converted into decimal format before Tableau could use it.

Tableau recognizes the following geographic fields:

1. Worldwide Country/Region (including FIPS and ISO 2 and 3-character abbreviations)
2. Worldwide State/province (including abbreviations)
3. Worldwide City
4. Zip/postal code
5. U.S. Area codes
6. U.S. CBSA/MSA (Core Based Statistical Area/Metropolitan Statistical Area)
7. U.S. Congressional district
8. U.S. County
9. Latitude and Longitude

It is possible to have duplicate names for some fields (e.g. city, congressional district, U.S. county). In such cases, the data must be in a hierarchy (e.g. city within state within country).

Tableau knows about the following hierarchies:

* Country 🡪 State/Province
* Country 🡪 Area code
* Country 🡪 Postal Code
* Country 🡪 CBSA (Core Based Statistical Area)
* Country 🡪 State/Province 🡪 City
* Country 🡪 State 🡪 County (for U.S.)

Tableau generates latitude and longitude as X and Y coordinates. This process is called *geocoding*. In Tableau, all geocoded fields will have a globe icon  associated with them.

Tableau displays a background map (downloaded from the Internet) behind the X and Y locations.

## Example 1

Open Tableau and connect to the *Sample – Superstore* file.

Drag the *Orders* sheet to the work area.

Go to worksheet #1.

Notice that *Latitude* and *Longitude* are listed as generated measures.

Double-click on *Country*. Tableau does 4 things:

1. Moves longitude to the *Columns* shelf.
2. Moves latitude to the *Rows* shelf.
3. Moves *Country* to the *Detail* area of the *Marks* card.
4. Displays a map behind the data and a dot in the middle of the continental United States.

Map

Description automatically generated

It appears from the map that there is only one country in this data: the U.S. We can verify this by dragging the *Country* field to the *Filter* card. If we apply a filter, we see that U.S. is the only option.

Graphical user interface, text, application, email

Description automatically generated

Note that in the *Show Me* list, there are two map options and Tableau has chosen *Symbol Map*. The other option is *Map*.

Graphical user interface, application

Description automatically generated

Tableau downloads maps from the Internet.

To turn the background off: On the menu, click on *Map | Background Maps | None*. Note that the default is *Light*. There's probably no good reason to turn the background off, so turn it back on.

Graphical user interface, application

Description automatically generated

Drag the *State* field to the map. A blue dot will appear for each state, and the dot for country (USA) disappears.

A picture containing map

Description automatically generated

Drag the *City* field to the map. A blue dot will appear for each city, and the dot for states disappears.

Scatter chart

Description automatically generated

Remove *State* from the *Marks* card. Note that the number of cities (dots) decreases!

A picture containing map

Description automatically generated

### Panning and Zooming

To pan in a Tableau map, hold the shift key down while dragging the mouse.

### Resolving ambiguous locations (U.S. cities), option 1: Using *Edit Locations…*

From the menu, click on *Map* | *Edit locations…*.

Graphical user interface, text, application, chat or text message

Description automatically generated

The *Edit Locations* dialog box will appear.

Graphical user interface, application

Description automatically generated

Notice that there are 353 "issues" with the data. At the bottom of the dialog box, click on the *City* tab, and scroll through the data. There are many "ambiguous" entries. These are city names that are duplicated in the United States. Even though there is a state field in the data, apparently Tableau is not using the state field to identify the city. One solution to this is: At the top of the dialog box, click on the down-arrow in the *State/Province* field. In the *From field* box, click on *State* (it should be there by default).

Graphical user interface, application

Description automatically generated

Go back and click on the *City* tab at the bottom of the dialog box (it was probably automatically changed to the *State/Province* tab). All of the "ambiguous" entries have been resolved. This is because Tableau now knows which state each city belongs to.

Graphical user interface, application

Description automatically generated

Click on OK. Many more (353) cities will appear.

A picture containing map

Description automatically generated

### Resolving ambiguous locations (U.S. cities), option 2: Create a location hierarchy.

Start with a blank worksheet by moving to sheet 2. Right-click on one of the location fields. It doesn't matter which one (country, state, city, postal code). Click on *Hierarchy | Create Hierarchy*.

Graphical user interface, application

Description automatically generated

Name the hierarchy *Location*. Then click on OK.

A picture containing graphical user interface

Description automatically generated

For the remaining three fields, click on the arrow on the right side, and click on *Hierarchy | Add to Hierarchy | Location*.

Graphical user interface, text, application

Description automatically generated

When all four fields appear below *Location,* arrange them in the following order. You can just drag the fields up or down to their appropriate locations.

Text

Description automatically generated with low confidence

Now drag *City* to the *Marks* card of your map.

Graphical user interface, application

Description automatically generated

Tableau will bring *Country* and *State* to the *Marks* area as well.

Chart, scatter chart

Description automatically generated

## Example 2: Build a symbol map

Move to a new worksheet (Sheet 3).

Drag the *State* field to the visualization's work area. Tableau will again look up a latitude and longitude coordinate for each state and put a blue dot in that location. Longitude is placed in the *Columns* shelf, and latitude is placed in the *Rows* shelf.

We want to find out the *Sales* and *Profit* for each state.

### Sales

Drag *Sales* to the *Size* icon in the *Marks* card. This will sum the sales for each state and change the size of each dot to a size that is proportionate to the sum of the sales.

Map

Description automatically generated

Note: If some of your values are negative, a dot map is not a good idea.

### Profit

Drag *Profit* to *Color* on the *Marks* card. The size of each dot now represents the sales, and the color represents the profit.

Map

Description automatically generated

Click the *Color* icon on the *Marks* card. In the *Effects* group, click on the down-arrow next to *Border*, and click on black to give each circle a black border.

Graphical user interface

Description automatically generated

Click on the down-arrow next to *Halo*, and choose *None*.

Graphical user interface

Description automatically generated

On the right side, click on the down arrow for the *SUM(Profit)* legend and click on *Edit Colors…*.

Graphical user interface, text, application

Description automatically generated

Change the color palette to *Red-Green Diverging* and click on *OK.*

Graphical user interface, application

Description automatically generated

Note that this gives a very dark green and a very dark red. Let's change the colors. Click on the down-arrow next to *SUM(profit)* again and click on *Edit Colors…* again. When the color palette comes up, click on the green square on the right side.

Graphical user interface, application

Description automatically generated

The *Select Color* window will appear. Find a bright/lighter shade of green and click on *OK*.

Graphical user interface

Description automatically generated

Change the left color to bright red. In the *Edit Colors (Profit)* window, click on the red square on the left side of the color palette.

Graphical user interface, application

Description automatically generated

The *Select Color* window will appear. Find a bright/lighter shade of red and click on *OK*.

Graphical user interface

Description automatically generated

When you return to the *Edit Colors [Profit]* dialog box, turn on the *Stepped Color* check box and leave the number of *Steps* at 5. Turn on *Use Full Color Range*. Click on *OK*.

Graphical user interface, application

Description automatically generated

Your map should look like this:

Map

Description automatically generated

### Profit for Cities

Drag the *City* field to the *Marks* card.

Graphical user interface, text, application

Description automatically generated

Now we get total *Sales* and total *Profit* by *City*.

Map

Description automatically generated

### Filter on Profit

In the field list, click on the down-arrow next to *Profit*. Click on *Show Filter*.

Graphical user interface, text, application

Description automatically generated

This will put a *Profit* pill in the *Filter* area of the Marks group. It will also add a filter slider to the right side, above the legends.



You can drag the two slider markers left and right to restrict the range of profits.

You can also click on the down-arrow next to the slider and enter specific values. Change the upper value to 0. This will show us all states that had a loss. It also adjusts the sizes of the circles to account for the fact that we have a smaller range of values.

# Choropleth Maps

A *Choropleth* map is a map in which geographic regions are filled in with different colors. Choropleth maps are *not* available for cities or airports, so remove *City* from the *Marks* card. We will now get a circle for each state.

Map

Description automatically generated

From the drop-down box at the top of the *Marks* card, click on the down-arrow and click on *Map*. This will change the map to a choropleth map.

Map

Description automatically generated

#### Add labels

Drag *Sales* from the *Measures* group to the *Label* button on the *Marks* card..

Graphical user interface, text

Description automatically generated with medium confidence

Each state will have a label with its sum of sales

Map

Description automatically generated

If the numbers need to be formatted, click on the down-arrow of the *Sales* field, click *Default Properties*, then click on *Number Format*.

Graphical user interface, text, application

Description automatically generated

In the *Default Number Format* dialog box that appears, click on *Currency (Custom)*. Change *Decimal Places* to 0. Change *Display Units* to *Thousands (K)*. Click on *OK*.

Graphical user interface, application

Description automatically generated

# Creating Territories

Create a new worksheet (Sheet 4) and drag the *States* field to the work area. You should get a map of the United States. *Longitude* and *Latitude* will appear on the Columns and Rows shelves. States will appear in the *Marks* area.

With the mouse, select the west coast states from Washington in the top left to New Mexico on the bottom right. Note that when selecting states that don't fit inside of your rectangle, you must control-click on the dot. Don't include Texas.

Right-click and choose *Group*. Note that when you right-click, you must be on one of the blue dots.

Chart

Description automatically generated with medium confidence

Next, select the Midwest states from North Dakota down to Oklahoma and Arkansas, to Michigan, Indiana, and Ohio on the east. Right-click and choose *Group*.

Next, select the southern states from Texas in the southwest to Florida in the southeast and up to Kentucky and Virginia in the north. Right-click and choose *Group*.

Next, select the remaining states. Right-click and choose *Group*.

Right-click on each item in the legend and change the names to *West, Midwest, South,* and *Northeast*.

Change the type of visualization to *Map*.

Graphical user interface, text, application

Description automatically generated

Your map should now look like this:

Map

Description automatically generated

From the *Marks* area, remove *State* (but keep *State(group)*). This will remove the state borders, and also cause any data to be computed for each group rather than for each state.

Graphical user interface, text, application

Description automatically generated

Your map should look like this:

Map

Description automatically generated

Now drag *Sales* and *Profit* to the *Label* button in the *Marks* area. This will display the Sales total and the Profit total for each region.

Map

Description automatically generated

Drag *States(group)* from the Tables group on the left to the *Label* button in the *Marks* area. This will label each region:

Map

Description automatically generated

### Regrouping

Note If "Other" appears in your legend, it means that you missed something (probably Washington, D.C.). In the fields list on the left, right-click on *States(group)* and click on *Edit group…*.

Click on the arrow next to *Other* and *Washington, D.C.* will appear. Drag it to *Northeast*. The *Other* group will disappear.

Let's make another change: Add Oklahoma, Arkansas, and West Virginia to the *South* territory. In the fields list on the left, right-click on *States(group)* and click on *Edit group…*. The following dialog box will appear. Click on the down-arrow next to *Midwest* and click on *Arkansas* and ctrl-click on *Oklahoma* to select them both. Then, in the *Add to* drop-down, click on *South*. Click on *Apply*.

Graphical user interface, text, application

Description automatically generated

Click on *OK* when done. Go to the *Northeast* group and select *West Virginia*. In the *Add to* drop-down, click on *South* to add West Virginia to the *South* group.

Your map should now look like this.

Map

Description automatically generated