

# 12

## TABLEAU INTERACTIVITY: PART 2

### OVERVIEW

In this chapter, you will design and develop a couple of highly interactive dashboards while connecting to two new datasets. We will compare the differences between filter and set actions and review parameter, URL, and sheet actions. After reviewing each of these actions, you will put your new skills into practice completing an activity in which you create a dashboard for a coffee chain and add more context and helpful text for end users. By the end of this chapter, you will be well-versed in Tableau interactive actions, which give end users the ability to interact with reports/dashboards.

## INTRODUCTION

In the previous chapter, you extended your knowledge of Tableau from basics to more advanced topics like the Tableau order of operations and reviewed filters, parameters, groupings, and hierarchies. In this chapter, we'll look into more of the advanced interactivity that Tableau has to offer in a practical context. You will learn how to add filter, set, URL, and parameter actions to your dashboards, allowing end users to interact more directly with your dashboards. The goal of this chapter is to provide you with the skills to extend the interactivity of your dashboards using four different types of actions as well as dynamic text/labels, while also providing comprehensive explanations of all the options those actions have to offer. We will cover these concepts by exploring a couple of new datasets.

## ACTIONS

The previous chapter focused on adding interactivity to your views/reports by using filters, sets, groups, hierarchies, and parameters. In this chapter, we will go a step further, specifically discussing different types of actions. Actions add a lot of context and interactivity to your views/dashboards, allowing you to inter-connect worksheets in the Tableau dashboard or, in the case of worksheet actions, manipulate individual worksheets.

There are six types of actions in Tableau:

- **Filter actions:** This action is employed when you want to use a mark/data from one worksheet in the dashboard in another worksheet, showing related information in the dashboard. Tableau sends the data values from the source sheet to the target sheet when you apply filter actions.
- **URL actions:** You use this action to create hyperlinks to external websites, a file, or Tableau worksheets.
- **Set actions (change set values):** With set actions, you allow users to dynamically change the members of a set with data points/marks on the visualization.
- **Parameter actions (change parameter):** With parameter actions, you allow users to dynamically change the members of a parameter within the visualization.

- **Highlight actions:** These are used when you want your users to focus on specific data points/marks while graying out other data points in the visualization.
- **Go to sheet actions:** This is a navigation action that you would use to link Tableau worksheets, stories, or dashboards.

## FILTER ACTIONS

Filter actions let you make selections in one of the sheets in a dashboard that in turn acts on a filter on a target sheet of the same dashboard.

So, how is it any different from filters?

Filters restrict the number of data points in your worksheet based on conditions that the user selects in the filter options, while a filter action lets the user select the data points from one visualization to restrict the data points in another visualization of the same dashboard.

## WHEN TO USE A FILTER ACTION

Filter actions are best utilized with large amounts of data but precisely where data is exponentially increasing—for example, ticket incident management visualization. In most companies (especially Fortune 500 companies), there are incidents, tasks, enhancements, and defects that are recorded by the second by multiple teams facing infrastructure or software-related issues. If you were to create a dashboard that was effective at reporting these tickets, you would want your stakeholders to be able to analyze a dashboard and focus on *critical* failures first.

This is where filter actions come into play. With these, management can simply select the incident category in one visualization and see its effects in the second visualization, which could be representing the ticket trend in—say, the last two quarters.

The top-level management can similarly see the increasing/decreasing ticket trends of all the teams for a specific time period using a filter action.

## FILTER ACTION OPTIONS

When you add a filter action to your view, you are presented with the following window (*Figure 12.1*), offering multiple options to choose from. In the following sections, we will briefly talk about these options and later use them in an exercise to demonstrate how they work:

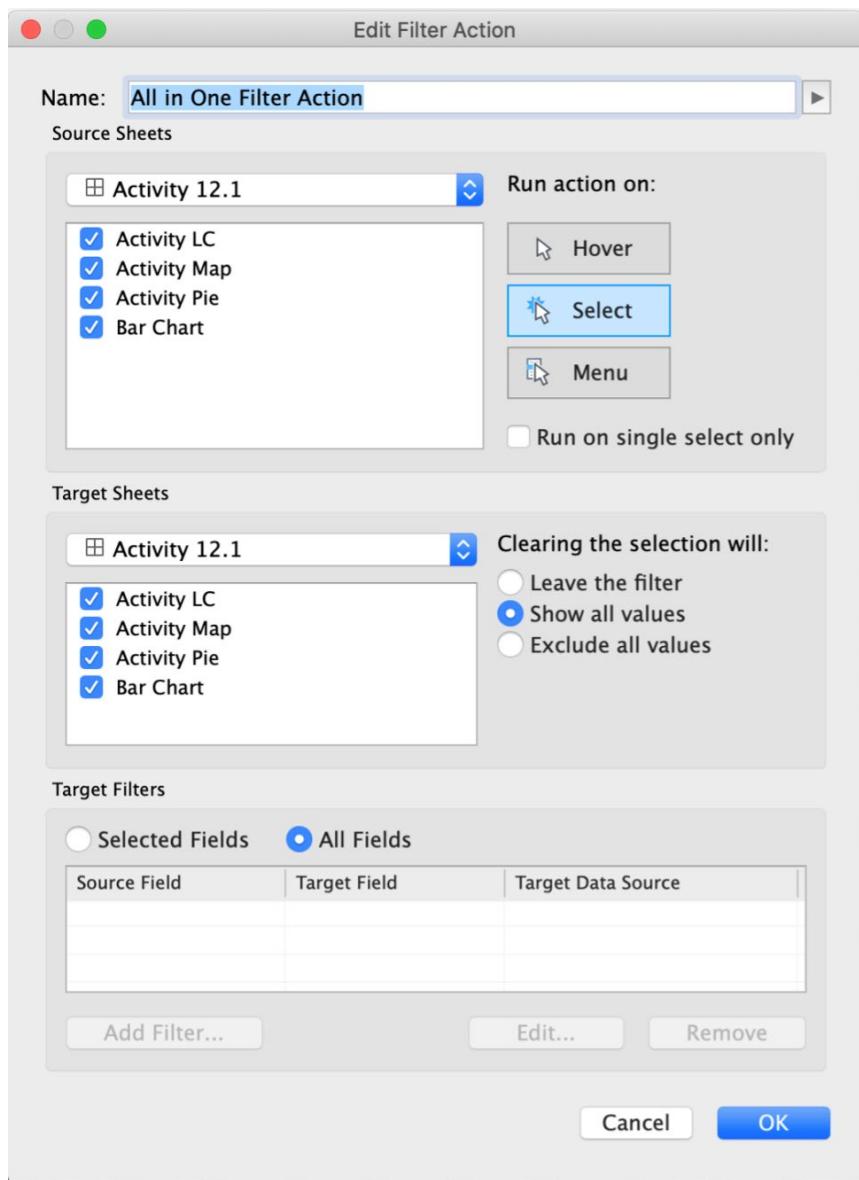


Figure 12.1: Filter action options

## THE SOURCE SHEET VERSUS TARGET SHEET OPTIONS

Source sheets, as the name suggests, are treated as a source for the actions that you make on those sheets. These actions are then reflected on target sheets, which are dependent sheets that will change/filter based on the actions that happened on the source sheet and how they were configured.

### TYPES OF RUN ACTIONS

There are three types of run actions available to you, as follows:

- **Hover:** This action will run when you rest or hover over a mark from your source sheet, and the resulting data will be filtered in the target sheet. This works better than a filter or highlight action as it gives the end user the ability to look at different data filters without clicking too much in the source sheet.
- **Select:** This action will run when you click the mark in the view, and if they want to de-select the action, the user will have to click on the same mark again. The user can also select multiple marks in the worksheet to run the action.
- **Menu:** This action is run when you select a mark in the worksheet. Note that a hyperlink action/test is subsequently added to the context menu/tooltip of the worksheet. When you click on the link in the context menu, that is when the action runs:



Figure 12.2: Menu filter options

## CLEARING THE SELECTION WILL

The following list specifies what happens when you clear or de-select the filter from your source sheets:

- **Leave the filter:** If this is selected, the action will continue to show the filtered results on your target sheet, even when the dimension/filter is de-selected.
- **Show all values:** This will clear the filter from the target sheet and revert to the original view if no other actions are selected.
- **Exclude all values:** If you select this, as soon as you de-select your filter action, the filter will exclude all values.

## THE FILTER ON ALL FIELDS VERSUS SELECTED FIELDS OPTIONS

You use this configuration to set the filter to work on all fields in the dashboard/workbook or selected fields:

- **All Fields:** All fields does exactly what it says: for any selection that you make on the source sheet, all the fields will be filtered in the target sheet. This is incredibly convenient, though it can be resource-intensive.
- **Selected Fields:** This is the optimized way of adding target filters. Say, for example, you are filtering on **State**, and you select **All Fields**. Tableau will then create a SQL query in which it will not only filter on state but update the **where** clause to include **Country** as **Country** is part of the hierarchy in the data source. This will increase the load on the SQL query, thereby making it longer to load. To counter that, you would use **Selected Fields** when mapping your source sheet data fields to target sheet data fields. Once you map your source against target fields, your live SQL will only contain *one* specific field in the background SQL that Tableau runs. In this example, we will use **State** as the selected field, as shown:

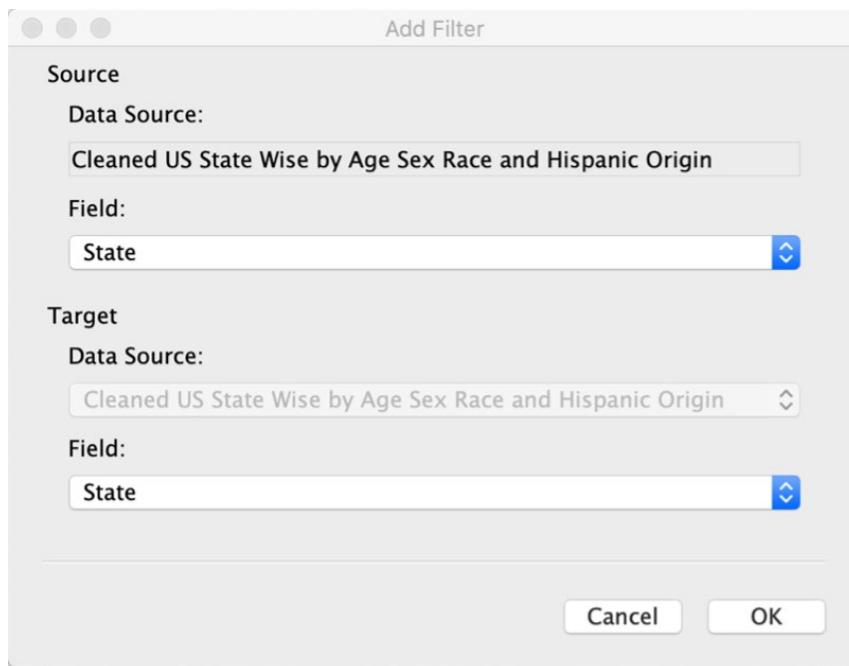


Figure 12.3: Selected Fields options

Complete the following exercise to see this in practice.

### EXERCISE 12.01: USING FILTER ACTIONS

You are working for a market research firm as their research analyst, and one of the first reports/dashboards that you are instructed to build is a view wherein the user can interact with the dashboard and filter the population by age group using the state as a clickable action. In this filter actions exercise, you will use a new dataset (the *US State Wise by Age Sex Race and Hispanic Origin* dataset) and use filter actions to interlink multiple worksheets in the same dashboard and showcase the power of filter actions, including all the **Run action on** options for chart-to-chart filters.

The data can be found at the following URL: <http://packt.link/df2pj>.

Perform the following steps to complete this exercise:

1. Open the *US State Wise by Age Sex Race and Hispanic Origin* file in the Tableau instance. You will create two worksheets for this exercise: **Population by State** and **Population by Age Groups**.

2. Create the **Population by State** view by dragging **Longitude** to the **Columns** shelf and **Latitude** to the **Rows** shelf:



Figure 12.4: Creating a map using Longitude and Latitude

3. Drag **State** to the **Detail** marks card, use **SUM(Census2010Pop)** on the **Color** marks card, and drag **State** to the **Label** marks card, as shown here:

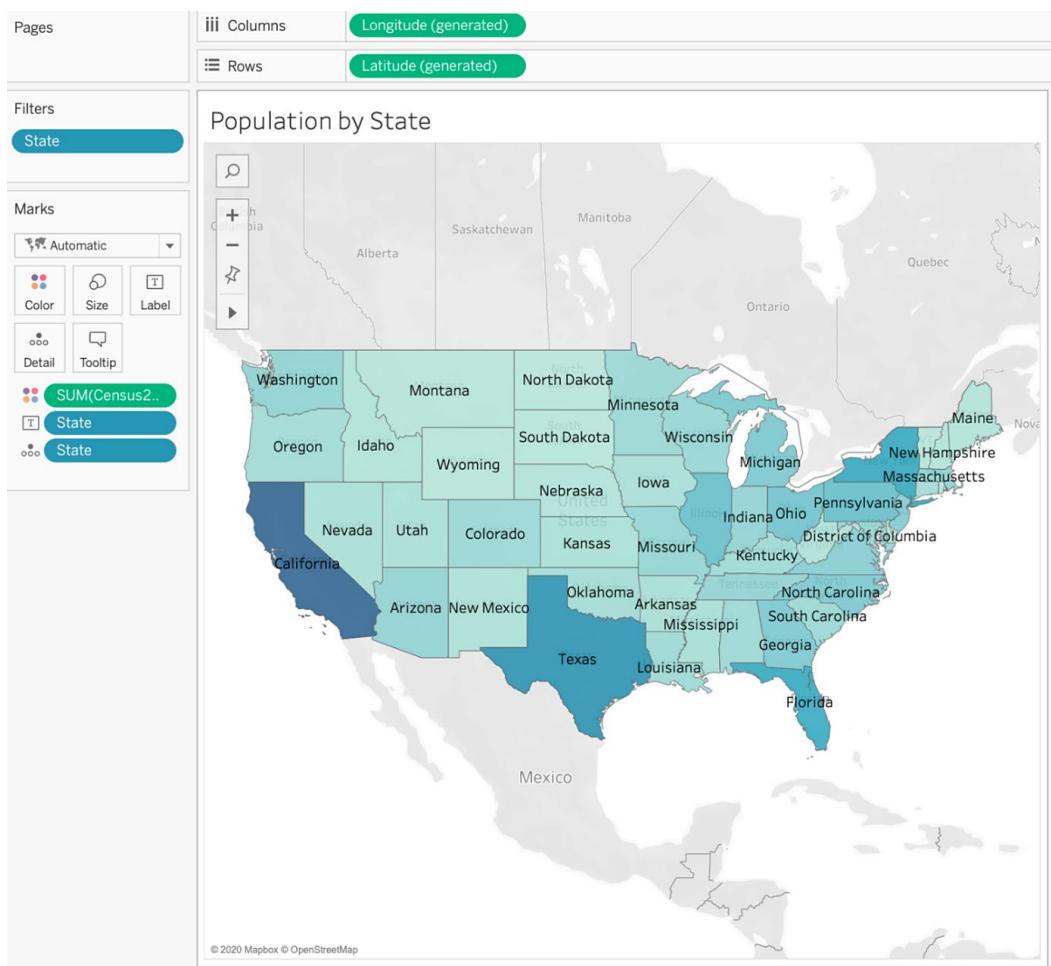


Figure 12.5: US map with the census population

You just created a **Population by State** view using **Latitude** and **Longitude**, which you will use with the **Population by Age Groups** worksheet to show how the source versus target sheet work in filter actions.

4. Create the **Population by Age Groups** view. First, create a new worksheet. Since you have a population ranging from 0 to 90 in age, it will be impossible for anyone to read the population by each age. For that reason, you will next create age group bins.  
5. To create the age group bins, right-click on the **AGE** measure and click on **Create | Bins...**, as shown here:

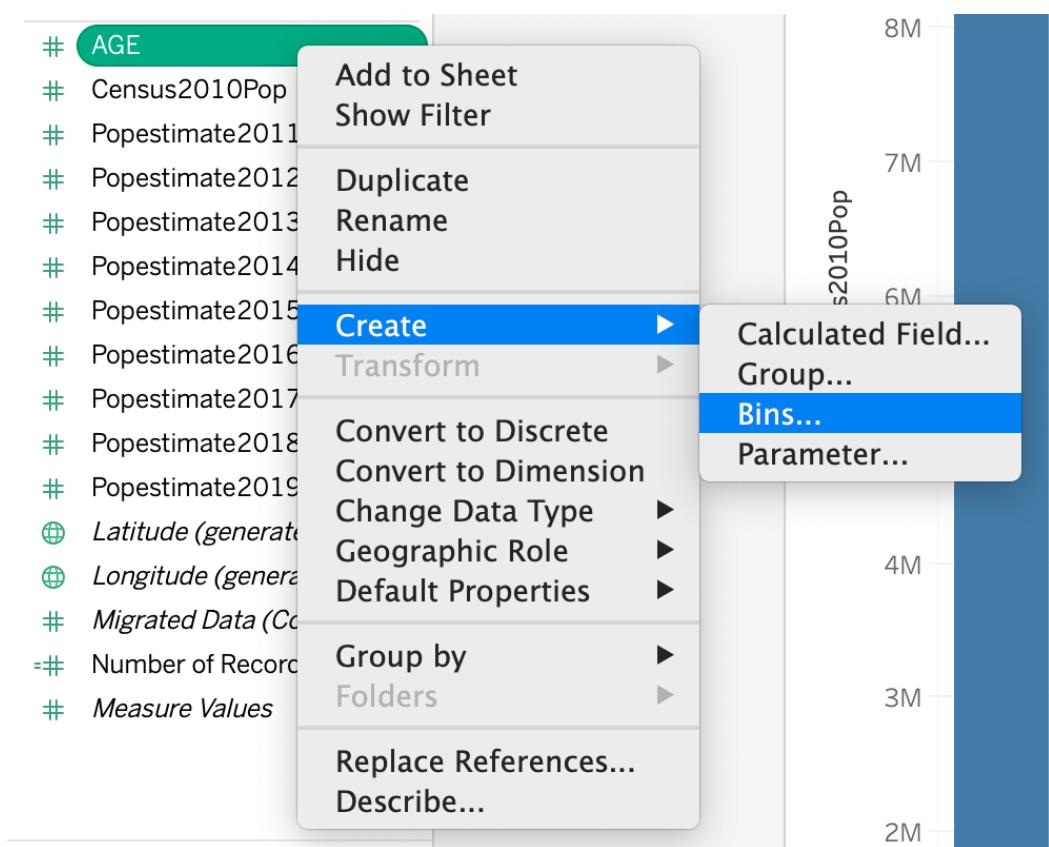


Figure 12.6: Creating bins

6. In the bin-creating window, set the size of the bins to **5**.

You can also use **10**, but for purposes of this exercise, use **5** as the suggested bin size. Note that **Size of bins** has a number pre-filled already. Tableau tries to suggest a default bin size depending on the dataset. But in this example, you are going to be using your own custom bin size:

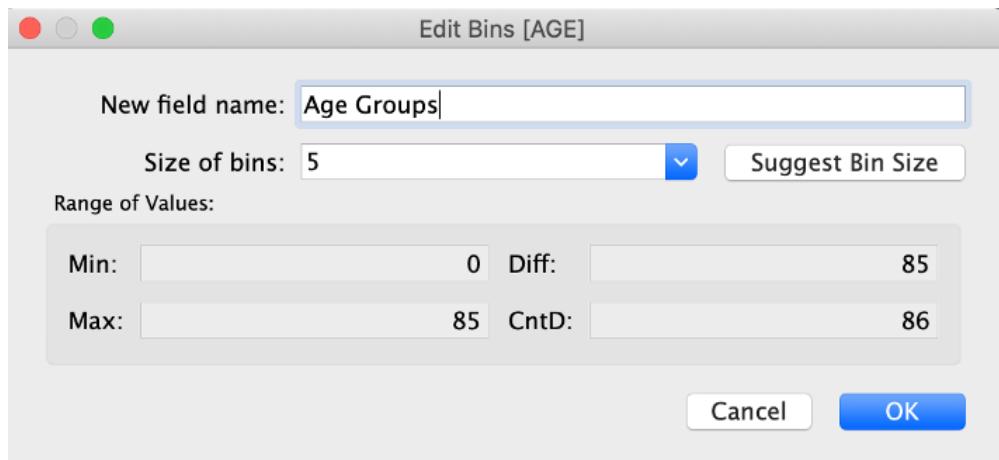


Figure 12.7: Adding age bins

7. Create the **Population by Age Groups** view by dragging **Age Groups** to **Columns** shelf and **Sum(Census2010Pop)** to the **Rows** shelf to create the histogram. Next, drag **Sum(Census2010Pop)** to the **Label** marks card to replicate the following view:

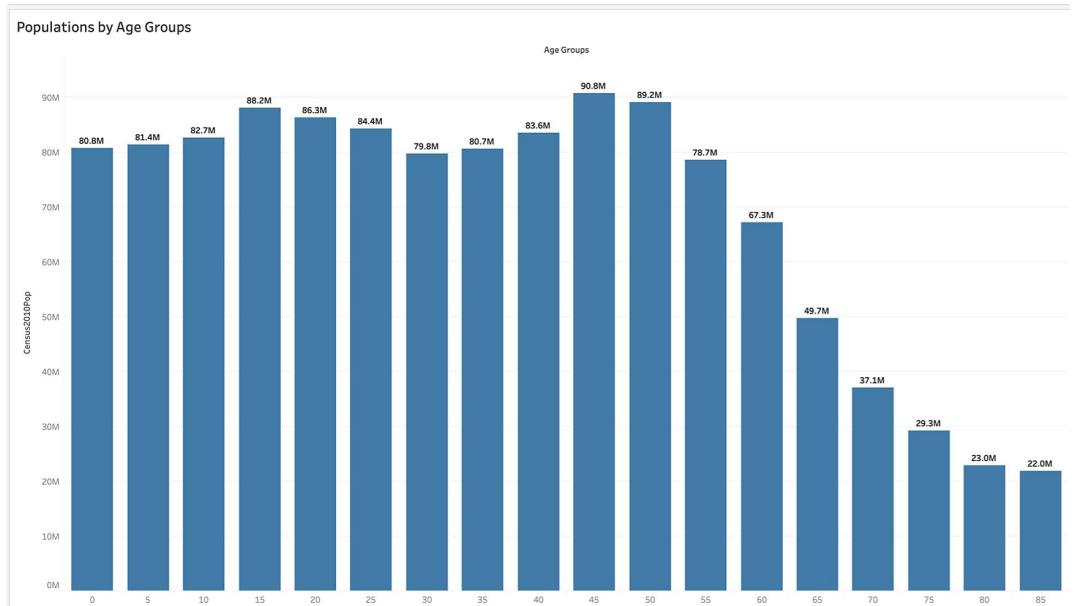


Figure 12.8: Age groups with population

### NOTE

In the preceding visualization, the number format of **Sum (Census2010Pop)** has also been changed to show it as millions. To change the number format, right-click **Sum (Census2010Pop)**, select **Format | Default | Numbers**, and make the changes shown in the following screenshot:

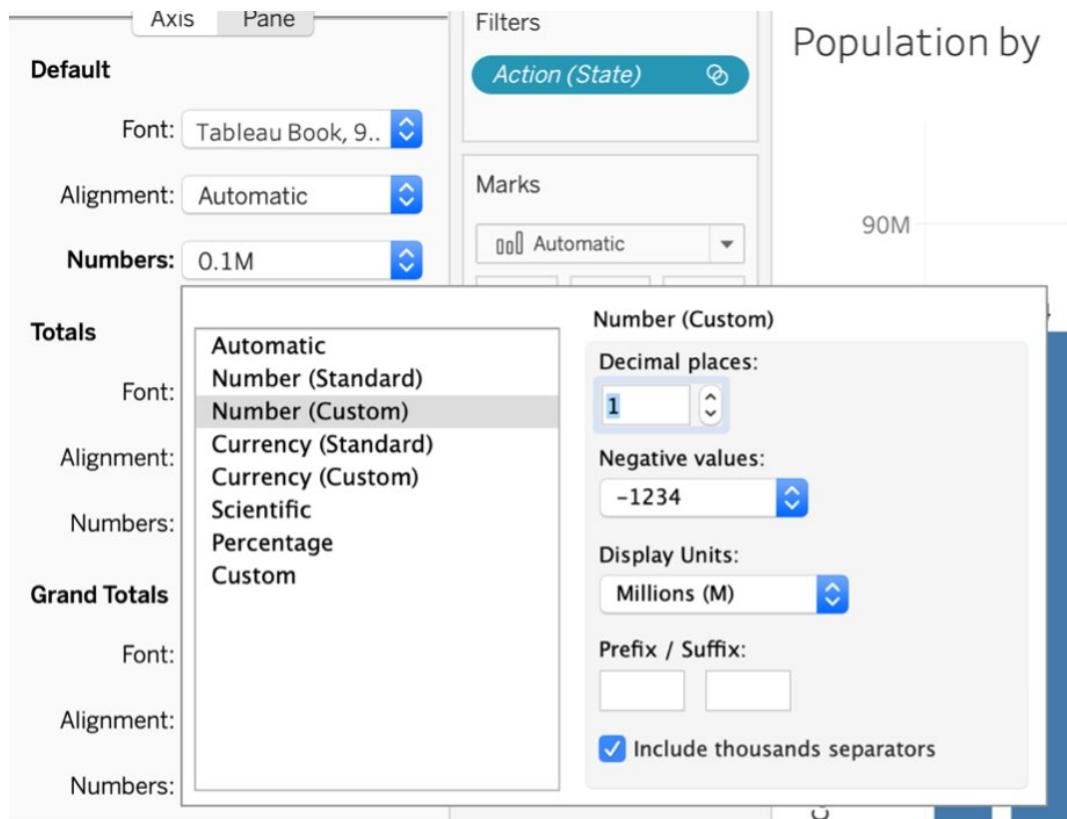


Figure 12.9: Updating the number preference with 1 decimal point

8. Create the new dashboard by dragging **Population by State** and **Population by Age Groups** onto the current one, as shown here:

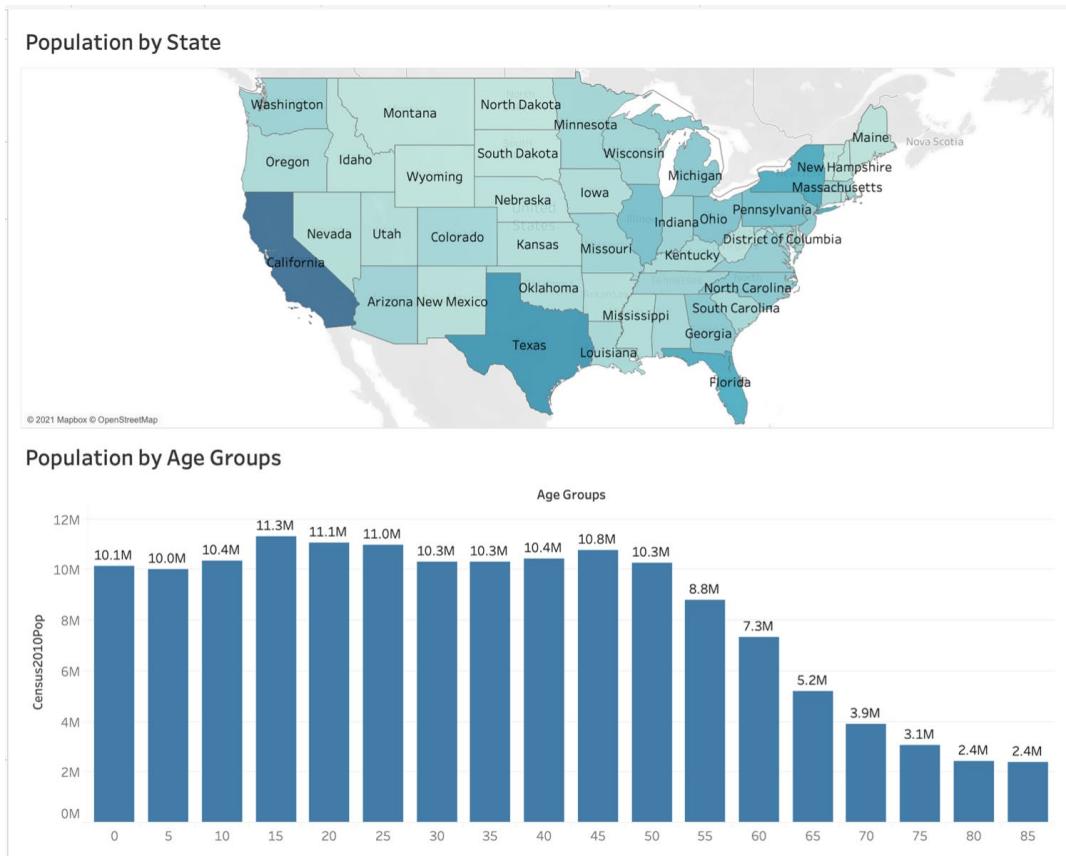


Figure 12.10: Population by state and age groups dashboard

9. Add a filter action using either of the following two methods.

**Method 1:** On the dashboard that you just created, from the drop-down menu of the two selected sheets, select **Use as Filter**:

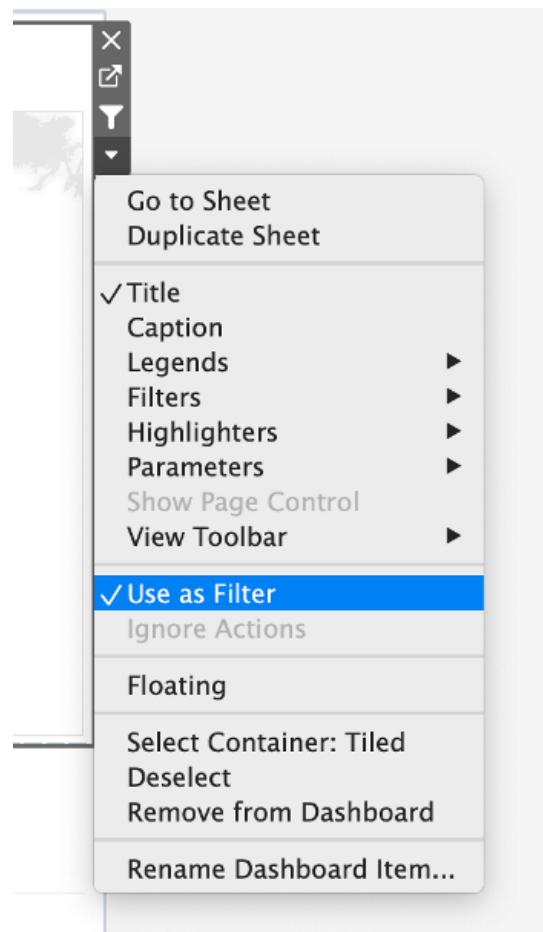


Figure 12.11: Using a sheet as a filter

**Method 2:** Though the previous method works well, if you need more control over your filter actions, it is recommended (since you can control or select source/target sheets) that you use this method. You can add actions from both worksheets or dashboards. You will be using the dashboard to add a filter action. On the dashboard, from the menu, select **Dashboard | Actions . . .**:

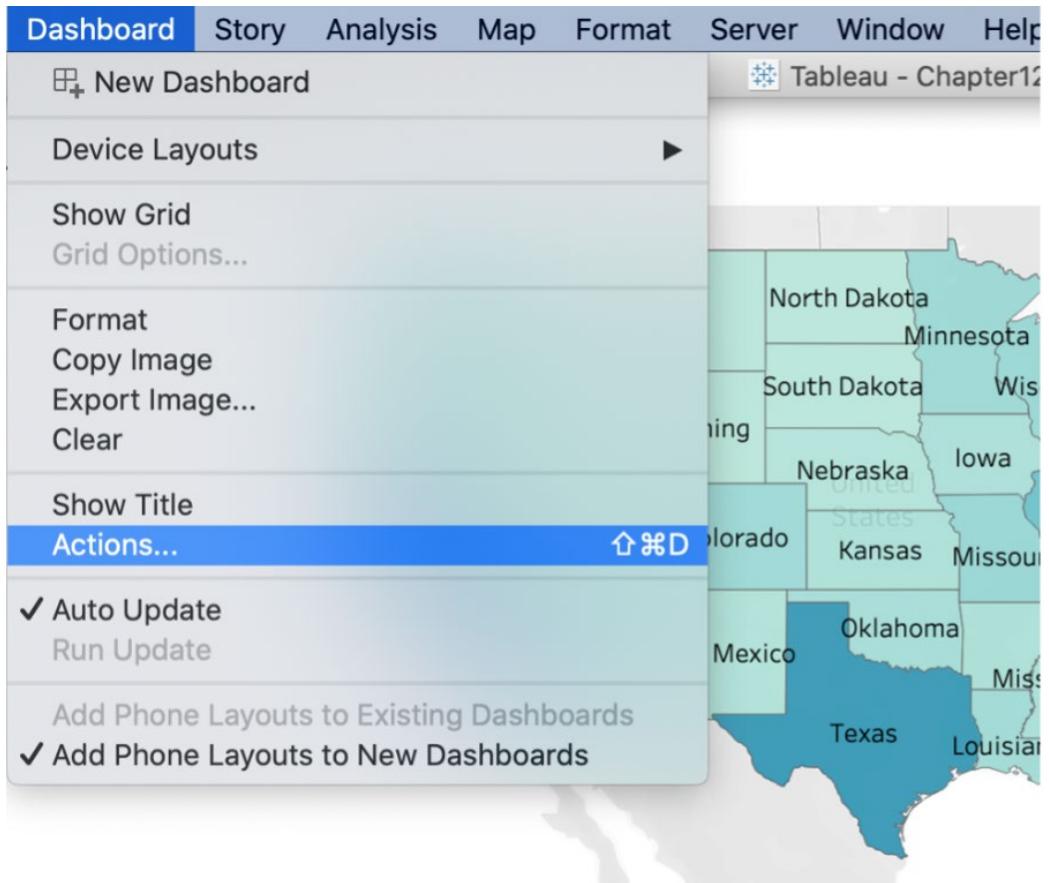


Figure 12.12: Adding actions from the dashboard

10. In the dialog box that opens, click on **Add Action** and select **Filter...**, as shown here:

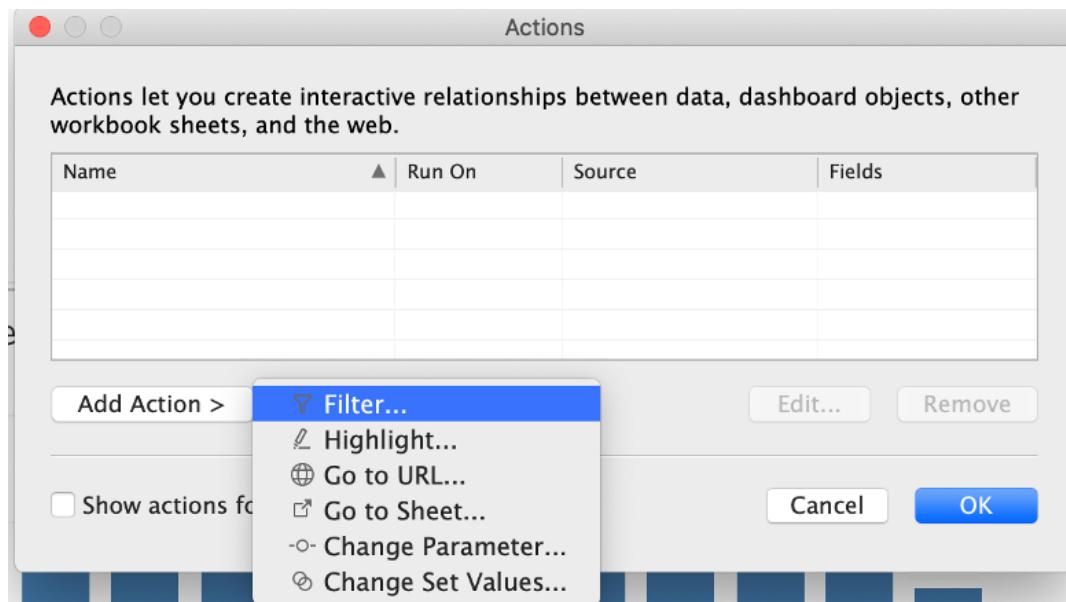


Figure 12.13: Filter action options

11. Name the action **State\_Filter**. Then, select the source sheet: either the worksheet, data source, or dashboard from which you want to use the action. Use your **Population by State** map view as the source sheet, as shown in *Figure 12.14, Source sheet selection*.
12. The next important step is to specify what the action runs on. Previous steps have explored three actions; in this case, you will run the action on **Select**:

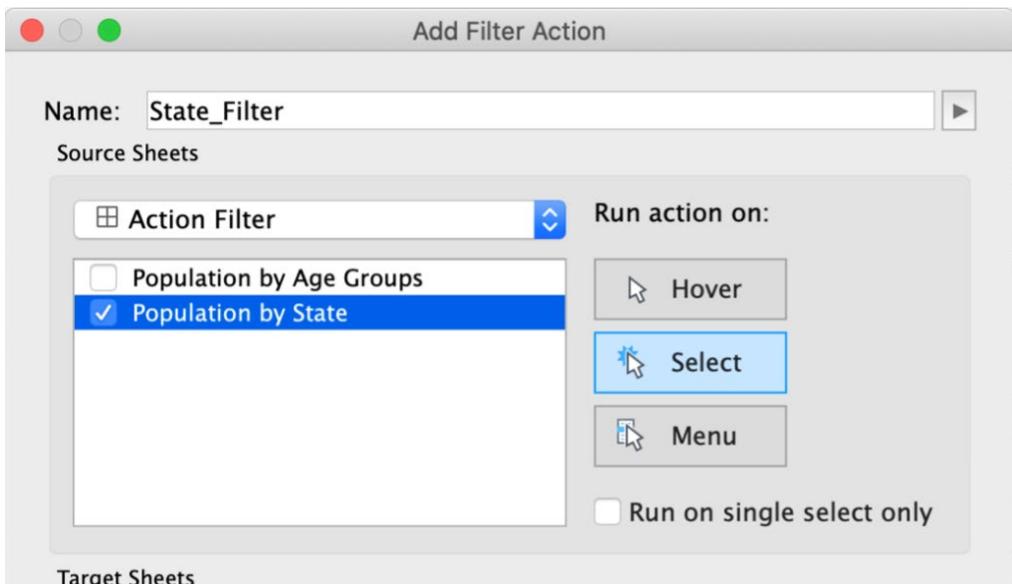


Figure 12.14: Source sheet selection

13. The next step is to select the target sheet. Select the sheet where the filter action will be used—the target of this action. Your target sheet is **Population by Age Groups**:

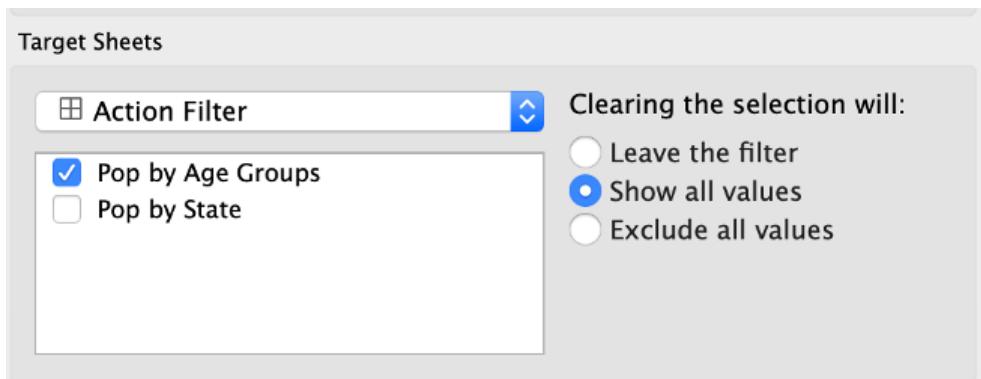


Figure 12.15: Target sheet selection

14. For the **Clearing the selection will** option, use **Show all values** as you want your dashboard to go back to the original/previous stage when you clear the selection.
15. Next, specify the data that you want to show on your **Population by Age Groups** target sheet.

You can either filter on **All Fields** (which essentially means any field that you select in your source sheet, **Population by State**, the target sheet, **Population by Age Groups**, will filter accordingly too) or select **Selected Fields** which will filter only on selected fields. Here, use the **Selected Fields** option and to filter on the **State** field only, as shown:



Figure 12.16: Selecting fields for the filter action

16. After setting **Target Filters** as **Selected Fields**, click **OK** in the **Edit...** filter action and **OK** again on the **Actions** dialog box to save the action:

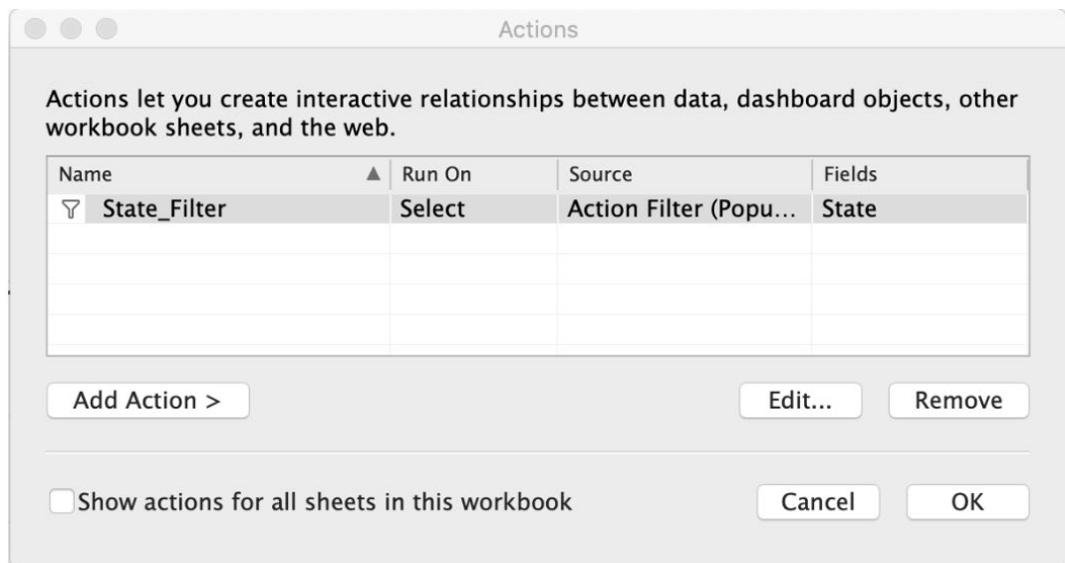


Figure 12.17: Filter action added in the Actions dialog box

17. To test the filter action, validate the view by selecting one of the states (for example, **Texas**) from your **Population by State** map view.

Note that as soon as you click on **Texas**, the histogram in the chart below will be updated with the new numbers:

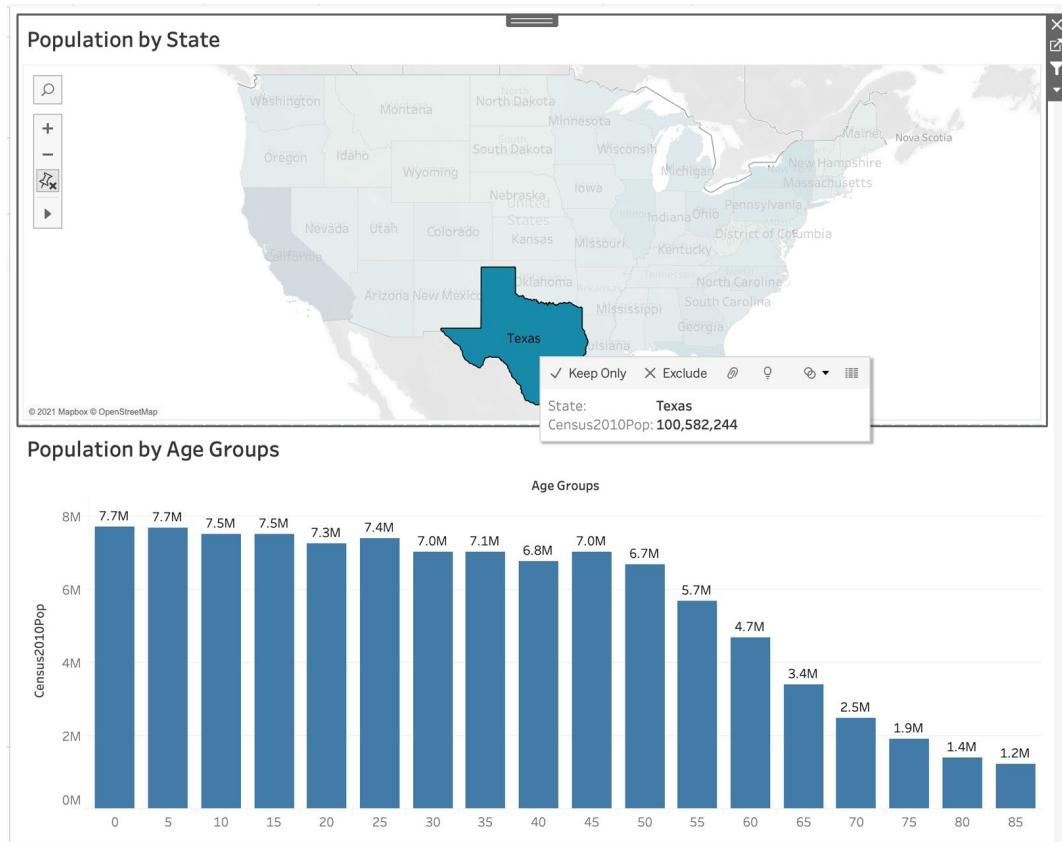


Figure 12.18: Demonstrating the filter action

18. To de-select the filter, click on the same mark (in this case, the state of **Texas**), and your charts/worksheets will return to their original view:

Population by State



Population by Age Groups

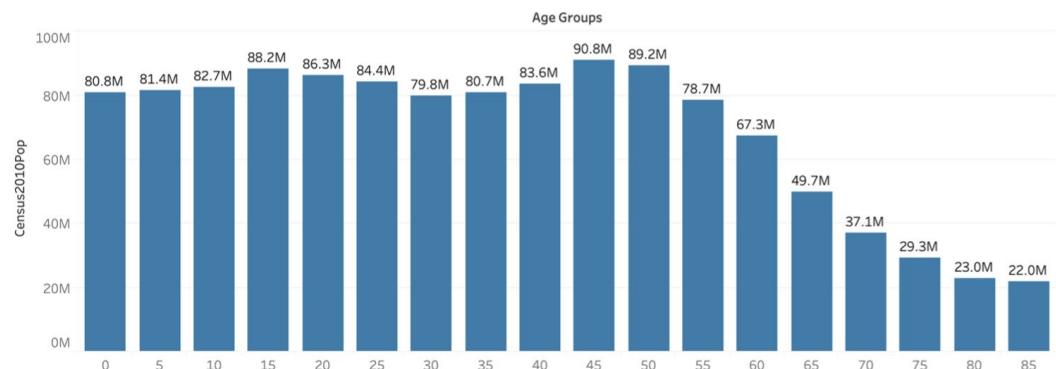


Figure 12.19: De-selecting a filter action

This exercise went into fine detail regarding actions options, including when best to use a certain type of action over others. The following sections will breeze through other dashboard sections, such as url actions.

## URL ACTIONS

A URL action, as its name suggests, points to a web object or website located outside of Tableau that can be linked and the content accessed within the Tableau environment.

Like embedding a hyperlink that opens the related web page based on the selection on the visualization on which the URL action is activated., you can also use URL actions to link a file path or Tableau worksheet/dashboard. In URL actions, you set up a dynamic variable-driven web page or file path that changes when we select a field in our worksheet. Consider the following example:

Pop by State

© 2021 Mapbox © OpenStreetMap

**amazon** Deliver to San Franc... 94110 Home & Kitchen California magnets Hello, Sign in Account Returns & Orders

All Best Sellers Prime Customer Service New Releases Find a Gift Today's Deals Books Gift Cards Valentine's Day Gift Sh

Amazon Home Shop by Room Discover Shop by Style Home Décor Furniture Kitchen & Dining Bed & Bath Garden & Outdoor Home Impr

1-24 of 472 results for "California magnets"

Sort by: Featured

**Eligible for Free Shipping**

Free Shipping by Amazon All customers get FREE Shipping on orders over \$25 shipped by Amazon

**Delivery Day**

Get It by Tomorrow

**Department**

< Any Department

**Home & Kitchen**

Kitchen & Dining

**Original 3-D Molded Vintage Souvenir Magnets**

Shop the Classic Magnets Store on Amazon>

**Complete State Magnet Sets**

**Jumbo State Map Magnets**

**Vintage "Love From" State Magnets**

Sponsored

Figure 12.20: Sample URL action

In the preceding screenshot, if you click on a state in your worksheet, with the help of URL actions, you can search Amazon for **[State]** Magnets where **[State]** is used as a dynamic variable. By adding **[State]** as a variable in your URL actions, you are thus able to ensure that when you click on a particular state in the worksheet, the URL in the URL action will be updated. As you can see in the example above, however, California is selected, and Amazon shows **California magnets** as a search query.

URL actions can be used in the following scenarios:

- URL actions work best when the data showcased in the Tableau dashboard is not enough to tell the entire story. So, you might need to elaborate on the existing selection to get all the preexisting information.
- The selection made might refer to a census or a value of a census, such as the population of a state. Embedding a URL action helps determine whether the values reflected in your visualization are correct.
- Embedding a URL or calling the web page in the Tableau dashboard helps you to draw related insights. For example, if the employment percentage represented for a particular state in your visualization is fairly low, and you embed the URL for the Wikipedia page of that state, you might get more information on the infrastructure, GDP, senior citizen population percentage, and some more meaningful metrics that might be helpful in discovering the root causes of such low employability.

You will review this practically in the following exercise.

## EXERCISE 12.02: USING URL ACTIONS

In this exercise, you will add a web page (Wikipedia) to your dashboard that will be dynamically loaded based on the state you selected in your previous dashboard. As mentioned above, a dynamic actions-based web page can be helpful for adding context to the stories you are trying to tell.

The steps are as follows:

1. Duplicate the **Action Filter** dashboard (created in *Exercise 12.01, Using Filter Actions*) and rename it **URL Action**.

2. Drag a web page object from the dashboard pane into your dashboard view, as shown in the following screenshot, and in the **Edit URL** window, paste <https://en.wikipedia.org/wiki/Texas>. When you set up a URL action, you will dynamically replace **Texas** with the state that the user selects from the **Population by State** worksheet:

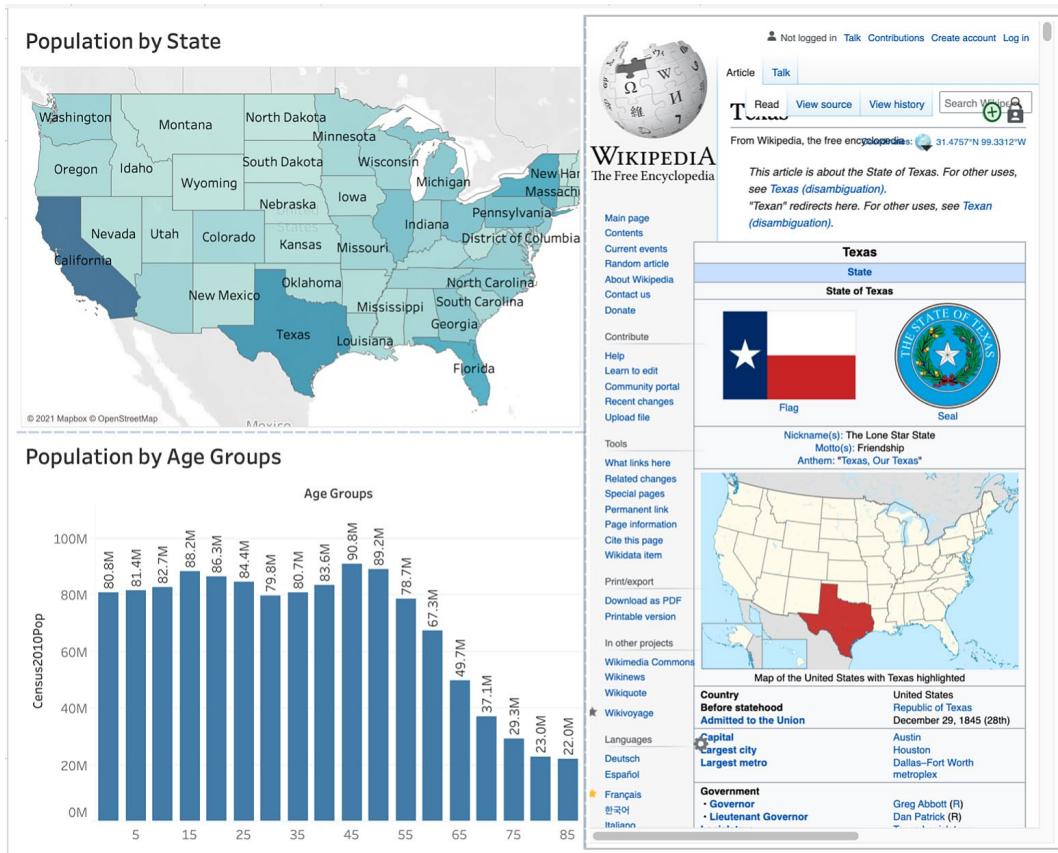


Figure 12.21: URL action in the population dashboard

3. Navigate to the dashboard menu | **Actions** | **Add Action** | **Go to URL...** to add a URL action:

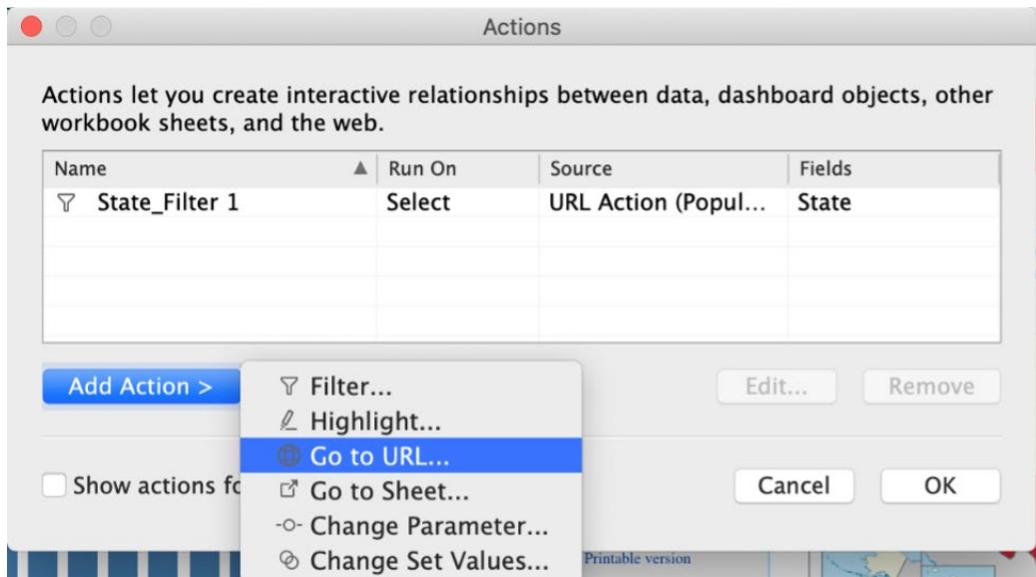


Figure 12.22: Adding a URL action to our dashboard

4. In the **Add URL Action** dialog box, select **Population by State** for **Source Sheets** and set **Run action on** as **Select**:

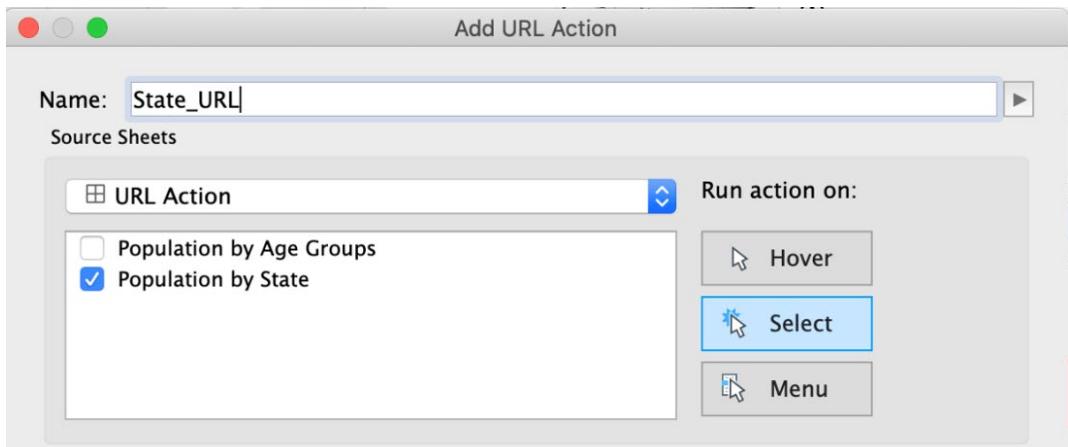


Figure 12.23: Selecting the source sheet for the URL action

5. In the **URL** section, dynamically feed the URL, using the Wikipedia URL that you utilized in your web page component on the dashboard: <https://en.wikipedia.org/wiki/Texas>.

If you were to replace Texas with any other state (for example, California), <https://en.wikipedia.org/wiki/California>, Wikipedia would open up the California state web page. Wikipedia has a URL pattern that you can dynamically feed your **State** dimension into. To dynamically feed your **State** dimension, replace **Texas** with **<State>** or click on the right arrow in the **URL** text field and select **State** as the dimension, as shown here:

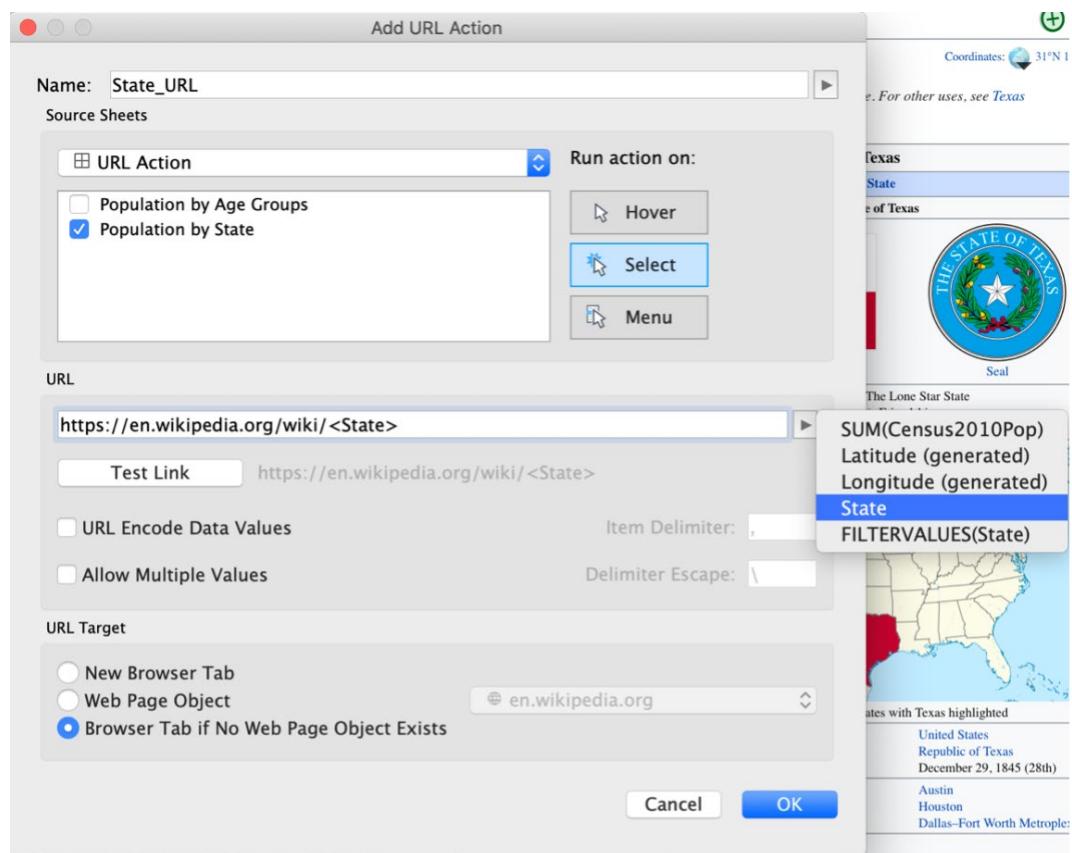


Figure 12.24: Adding a dynamic URL value to the URL action

6. Once you add <State> dynamically to the URL, click on **Test Link**, and it should open up a Wikipedia web page in your default web browser.
7. Considering you have already added a web page object to your dashboard, select **Web Page Object** and, from the dropdown, select your Wikipedia web page. The rest of the **URL Target** options are self-explanatory. Click **OK** to save the action:



Figure 12.25: URL Target options

8. Now, validate the URL action. Previously, you had Texas as the state that was preloaded. Now though, click on other states to test the action, starting with **California**:

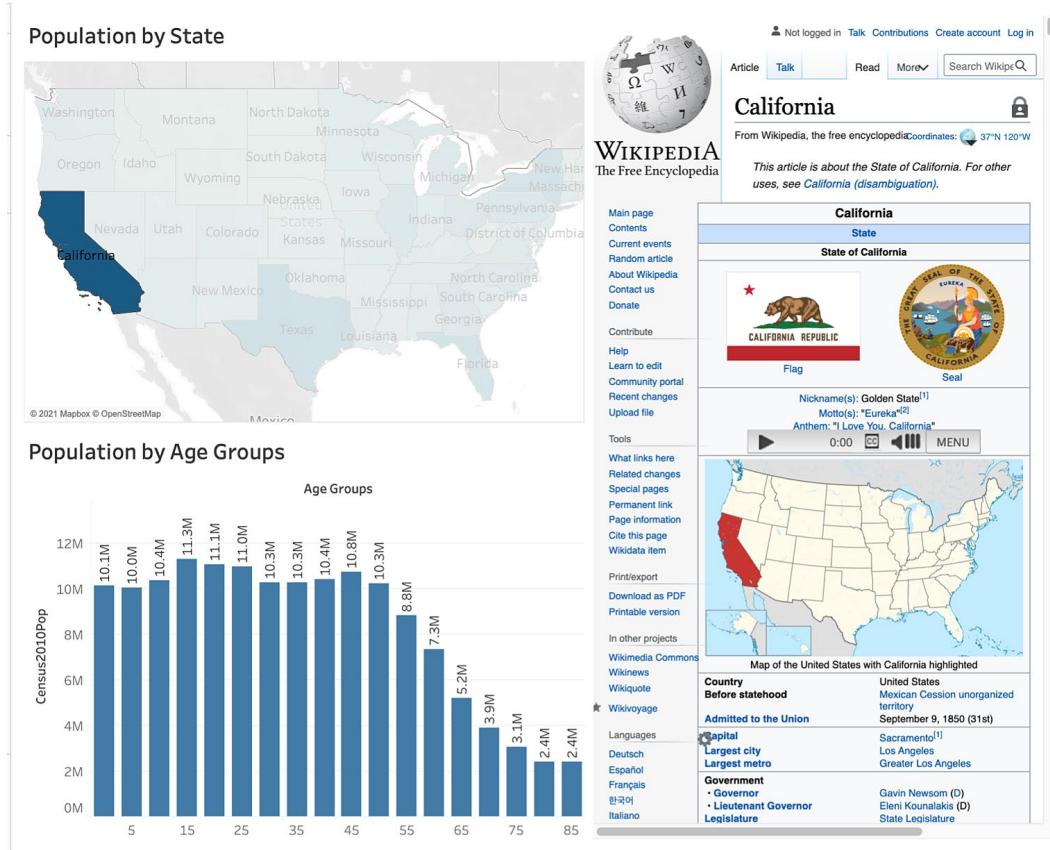


Figure 12.26: Validating URL actions 1

## 9. Now, click **Florida**:

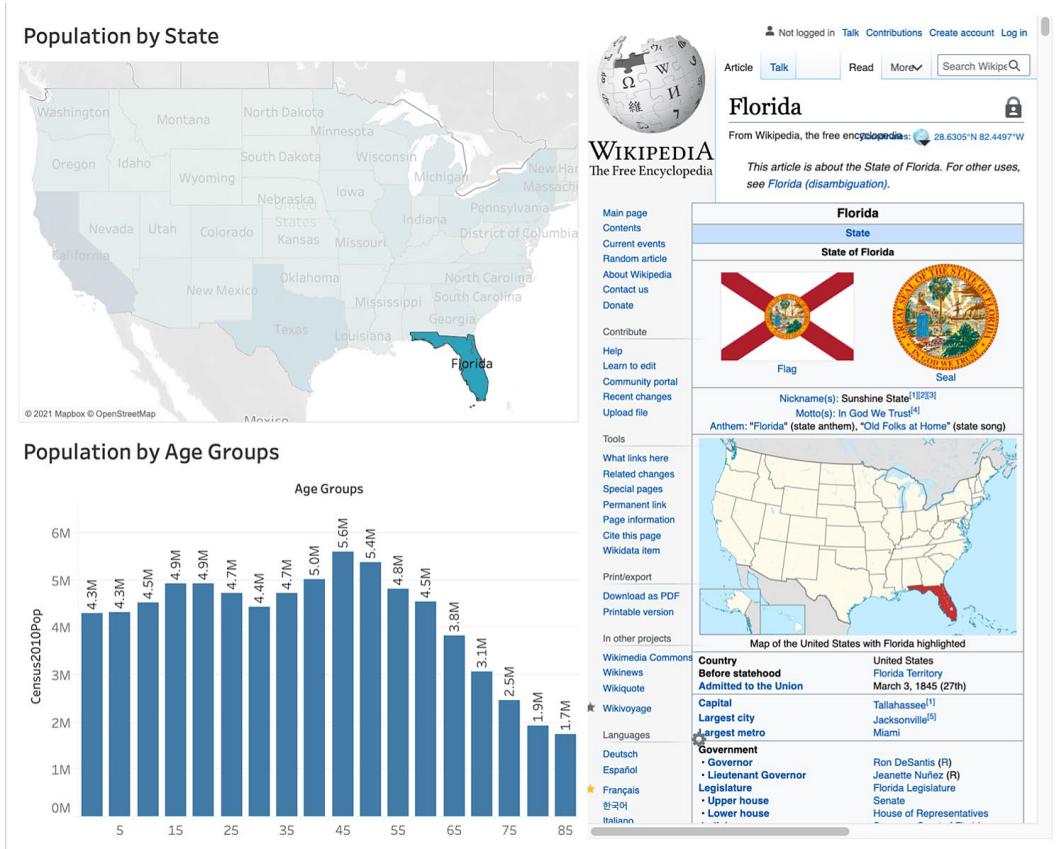


Figure 12.27: Validating URL actions 2

This wraps up this section on URL actions. As you saw in this exercise, dynamically loading a webpage can be useful in adding context to the story that you are sharing with your audience. With this action, you can even get creative and load internal company links whenever required.

## SET ACTIONS

As you learned in the previous chapter, you use sets to place members of dimensions/measures into two groups: the dimension is either out of the set or in the set. Set actions, though, you would normally use when you want to use a source sheet to make changes in the target sheet. So, essentially, set actions are actions with which you allow your users to dynamically update the members of the set from the source sheet or when interacting with charts.

In the following exercise, you will see how selecting/de-selecting members of the dimension from the view/chart dynamically updates the set that you created. The difference between filter and set actions is that, when you filter, you only keep the data that you have selected, whereas set actions group the data into in and out groups. Filter actions are essentially a type of set action; that is, anything that a filter action can do, a set action can do too, but the reverse is not true.

As you see in the following diagram, a filter can be a set (in that it behaves as a sub-set), but a set cannot be a filter.

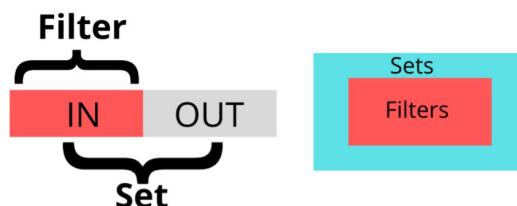


Figure 12.28: Sets versus filters

You will practice using these actions in the following exercise.

### EXERCISE 12.03: USING SET ACTIONS

As the research analyst in the marketing research firm, you are asked to create a view of the population data wherein the dashboard updates the sets based on the user selection in the source sheet. You will still be using the US State Wise Population dataset for this exercise.

The steps are as follows:

1. Open **US State Wise Population** in Tableau if it is not yet open.

2. Duplicate the **Population by State** worksheet and name it **Population by State Set**. The reason you do this is to maintain a cleaner copy of the original map view.
3. Create a set by right-clicking on **Region** in the data pane and then selecting **Create Set**. Name the set **Coast Set** and manually select **Northeast** and **West** as the members of the set, as shown here:

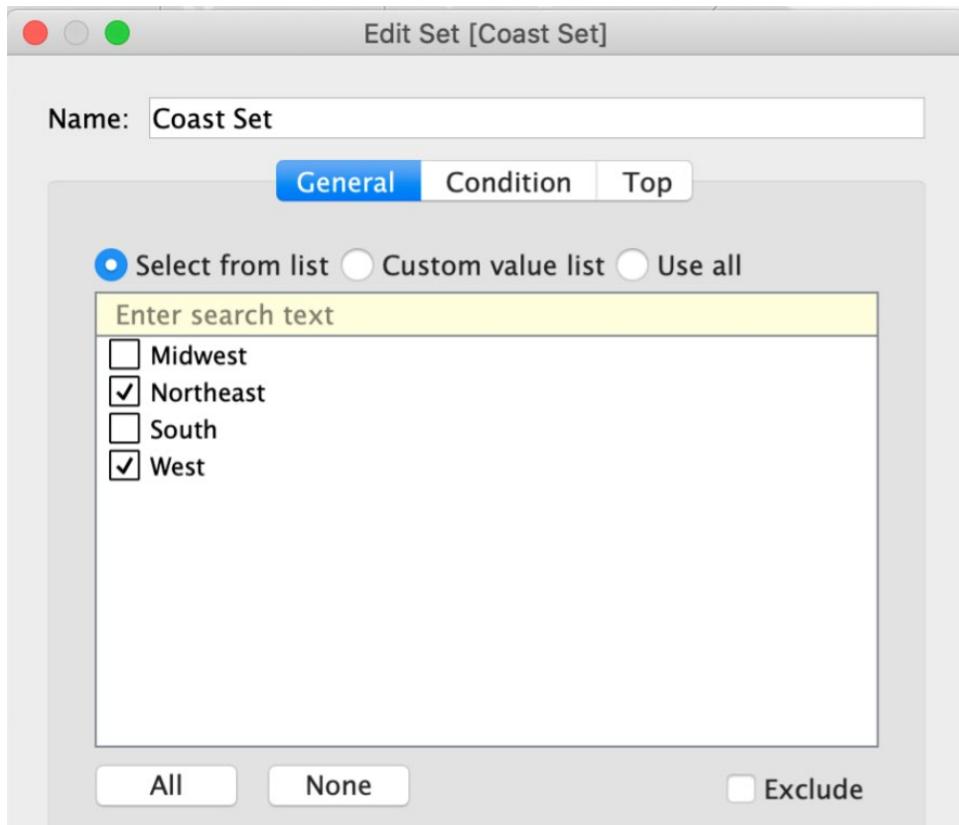


Figure 12.29: Creating a set

4. Create a **Population by Region** view. Open a new worksheet, drag **Region** on **Rows**, and double-click on **SUM(Census2010Pop)**. If a bar chart wasn't automatically created, convert the table into a bar chart using the **Show Me** panel and apply a descending sort order:

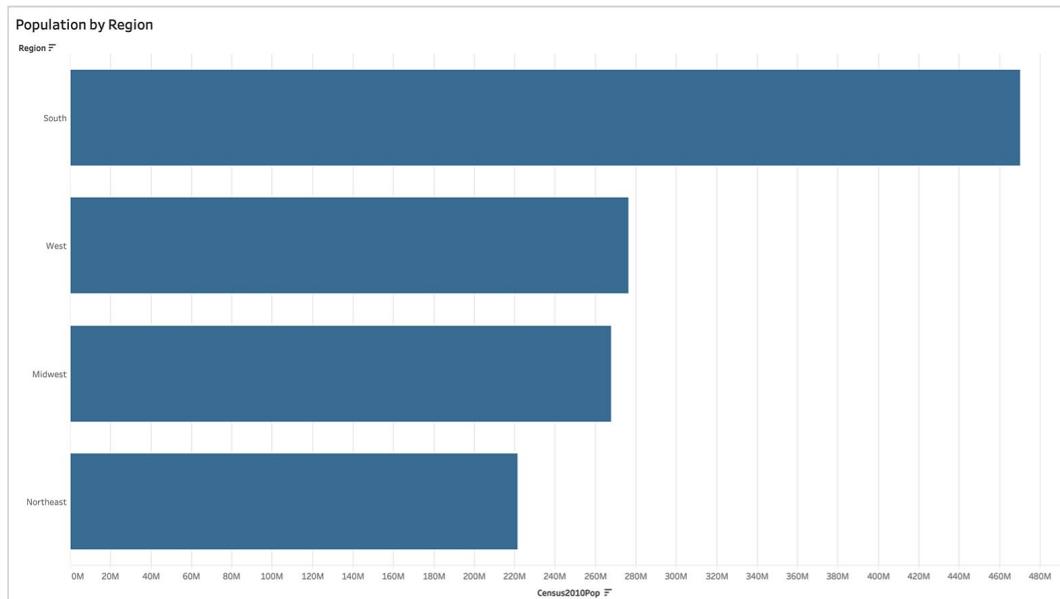


Figure 12.30: Population by Region

5. Create a set in/out view.

You will create this extra worksheet to demo the working of the set actions. This is an extra step you are taking here so that you can better understand set actions in as much detail as possible. Drag the **Region** dimension onto the **Rows** shelf and the **IN/OUT (Coast Set)** onto the **Rows** shelf, as shown:

Region	In / Out of Coast Set	Abc
Midwest	Out	Abc
Northeast	In	Abc
South	Out	Abc
West	In	Abc

Figure 12.31: Setting the in and out view

6. Create an **IN/OUT Set** calculated field. Create a **CASE** statement to add more text to **IN/OUT Set** for easier readability. Add the formula shown in the following screenshot:



Figure 12.32: In/out calculated field

Create a dashboard by dragging all three worksheets you created in the view onto the dashboard, as shown. Take special note of the two **IN THE SET** regions of **Northeast** and **West**:

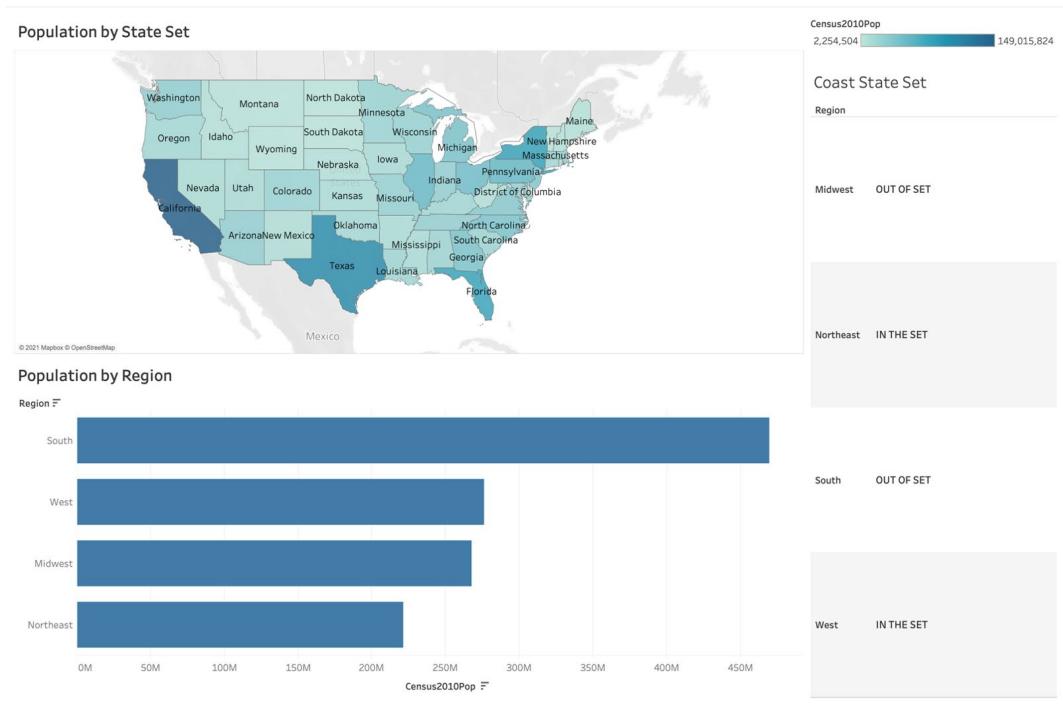


Figure 12.33: Set actions dashboard

You will add both filter and set actions in this exercise.

Filter actions will filter the **Population by State Set** map view when we select a region from the **Coast State Set** cross table, whereas set actions will be used to update the members of the **Coast Set** set dynamically. Remember, we defined our sets as **Northeast** and **West**.

7. **Create filter actions:** Your source sheet will be the **Coast State** cross table and the target sheet will be **Population by State Set**, with the action running on **Select**, as shown:

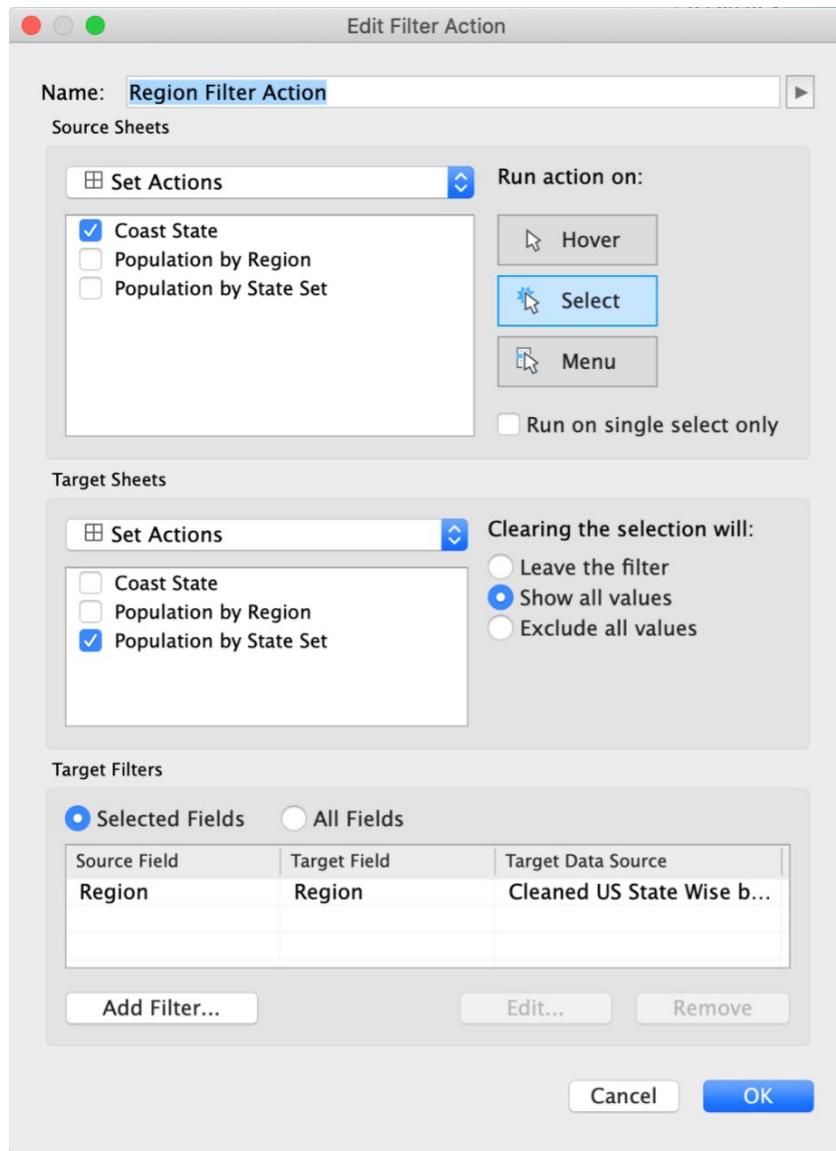


Figure 12.34: Filter action options

8. **Create set actions** by navigating to the dashboard menu | **Actions . . .**, and in the dialog window, click **Add Action** | **Change Set Values...**, as shown here:

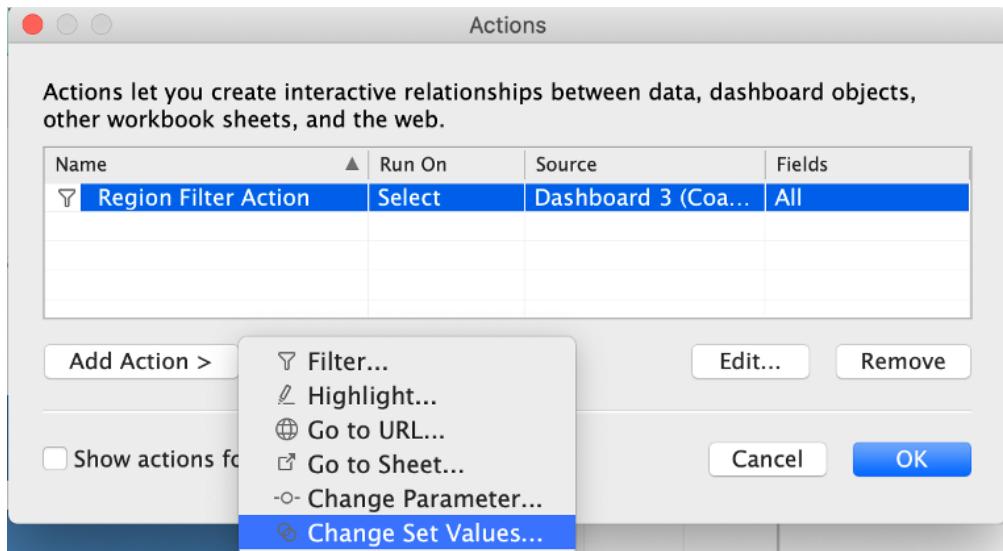


Figure 12.35: Creating set actions via Change Set Values...

9. In the **Add Set Action** dialog box, select **Coast State** as your source sheet, with the action running on **Select** and the target set as **Coast Set**. In **Clearing the selection will**, you have three options, as shown in the following screenshot:

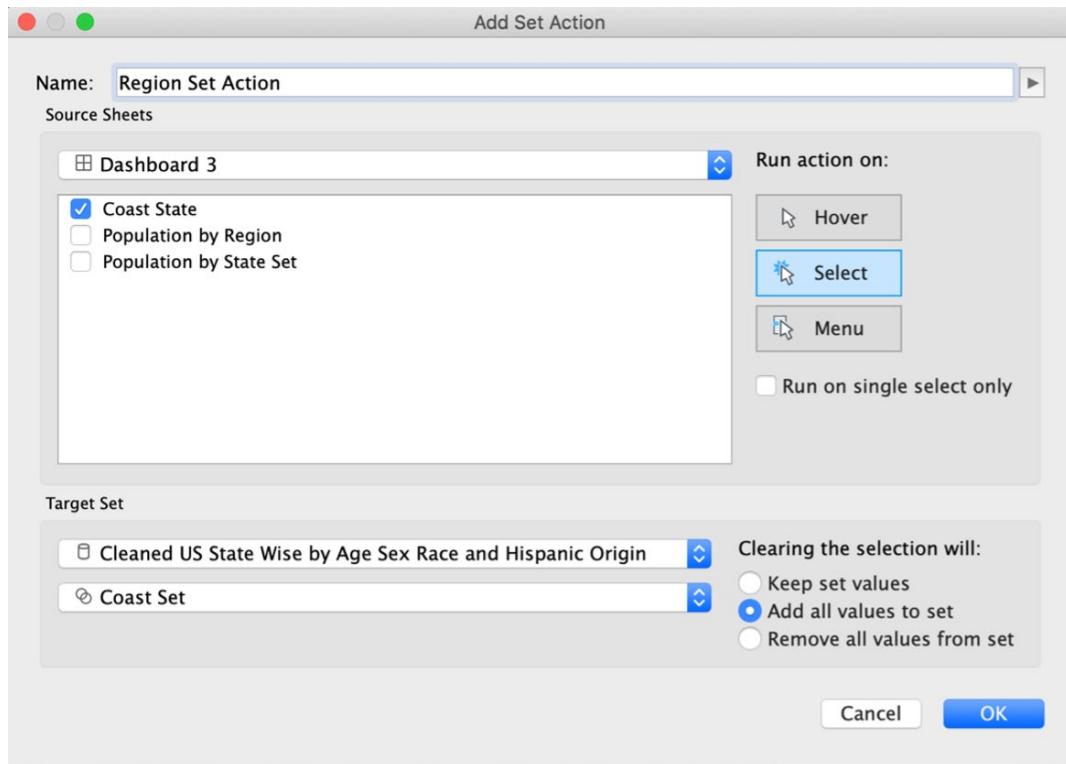


Figure 12.36: Adding set actions

Before you save the set action, it is important to discuss these three options under the **Clearing the selection will** option.

**Keep set values:** When you select a region from your source sheet (in this case, the **Coast State** cross tab), the region will be added to the set, and the previous in-set selections of **Northeast** and **West** will be cleared. When you de-select the region, the set won't be automatically updated with no in-set values; instead, since you have set the selection as **Keep set values**, the previously selected region will still be in-set, as shown in the following figure.

Take a look at the following screenshots. The left one is for when the region is selected. **Only Midwest** is displaying **IN THE SET**. On the right, you can see that even when you de-select the region, while no other region is actively selected, **Midwest** is still showing **IN THE SET**:

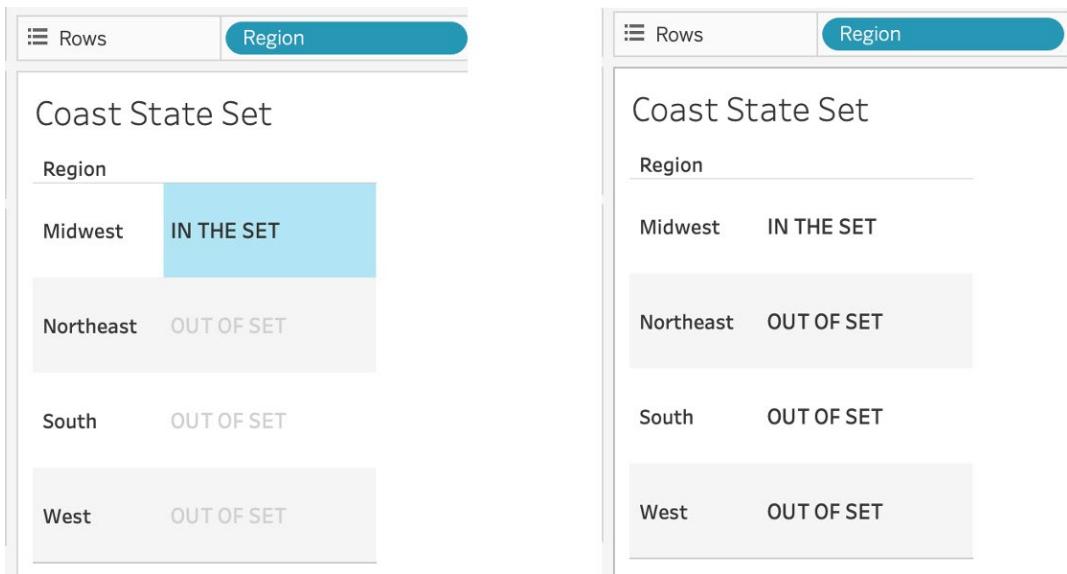


Figure 12.37: Keep set values example

**Add all values to set:** Selecting a region will add that region to the set and remove other regions from the set, whereas de-selecting the region will include all the regions from the whole dimension in the set, as shown in the following figure.

The left half of the following figure represents that a region is selected; the right half of the figure represents no region selected:

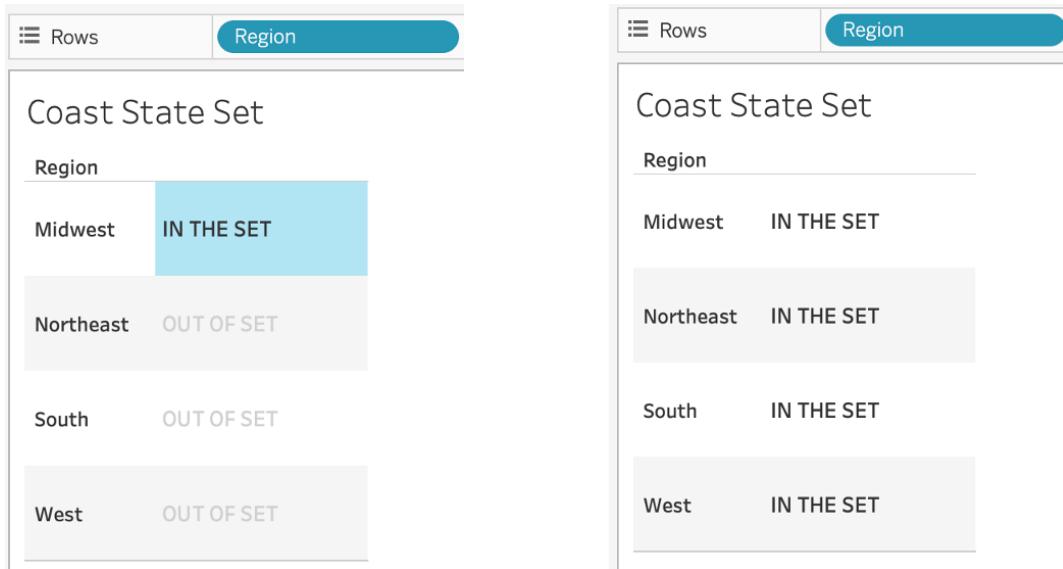


Figure 12.38: Add all values to a set

**Remove all values from set:** This option works completely opposite to the **Add all values to set** option. When you select a region, the region displays **IN THE SET**. When you clear the set, all the regions, including previously selected regions, show **OUT OF SET**.

The left half of the following figure represents that a region is actively selected; the right half of the figure represents that a region is de-selected:

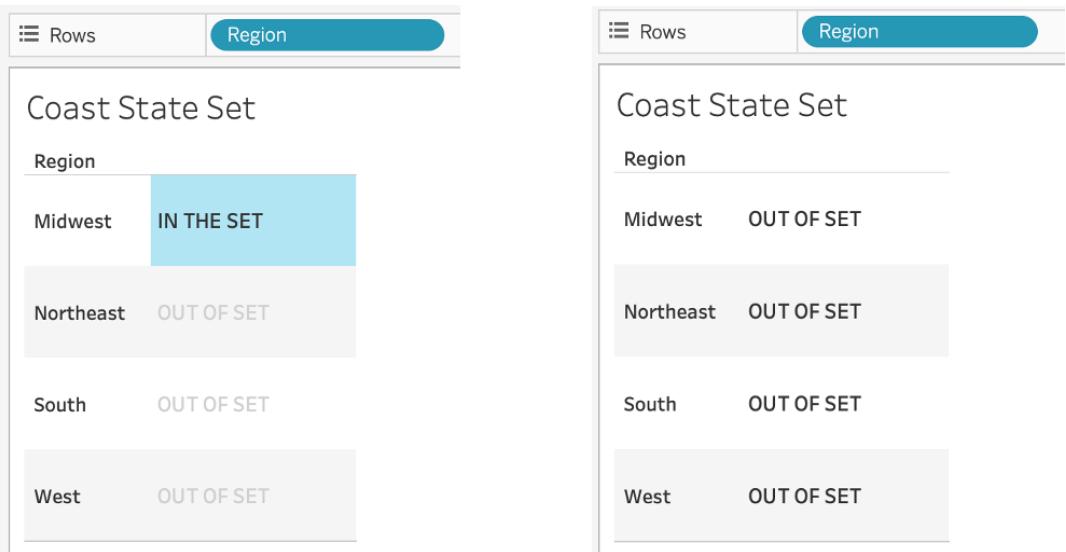


Figure 12.39: Remove all values from a set

Now, the question you might have is how are set actions beneficial to us? When you add a filter action, if you click on a region from the **Coast State** worksheet, the selected region is added as a filter in the **Population by State Set** worksheet and only states in that region are seen (without any flexibility to use the filtered set in some calculated or parametric fields). In contrast, a set action gives you the flexibility to use the filtered set in calculated fields.

Now consider what happens when you use set actions. The flow of a set action is as follows: Click on any of the regions on the **Coast State** worksheet. The value gets added to the set, and you can now use it anywhere. You can use the same dynamic set as a filter, on the **Rows/Columns** shelf, calculated fields, or even on a marks card. In the next step, you will use a set action on the **Color** marks card, which updates the color of the regions based on the in/out state dynamically based on the region that is selected in the **Coast State** sheet.

10. Drag the **IN/OUT(Coast Set)** set onto the **Color** marks card on the **Population by Region** worksheet, as shown:

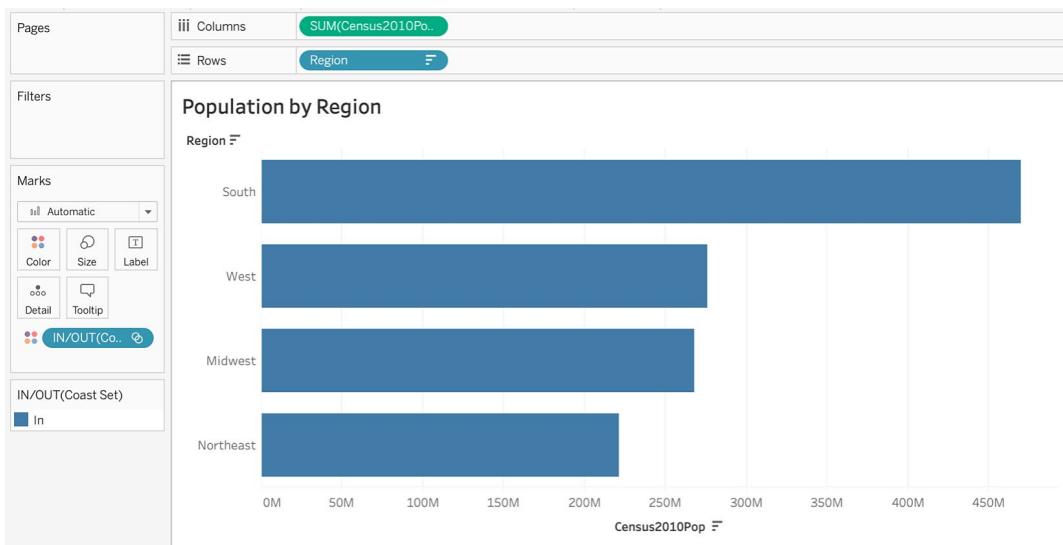


Figure 12.40: Adding the Color marks card for the set

11. Now, start selecting one or more regions from the **Coast State** worksheet on your dashboard. Observe that, as soon as you select the regions, the color for the bars of **Population by Region** are dynamically updated with blue while all other regions are dimmed. That's the power of set actions.

Since the created filter action in *step 9* (*Figure 12.35* and *Figure 12.36*) was based on your region selection in the **Coast State** worksheet, **Population by State** should get updated too. The final output should filter the region in the **Population by State Set** map and the region selected in the **Coast State** worksheet should reflect as the selected color in the **Population by Region** bar chart:

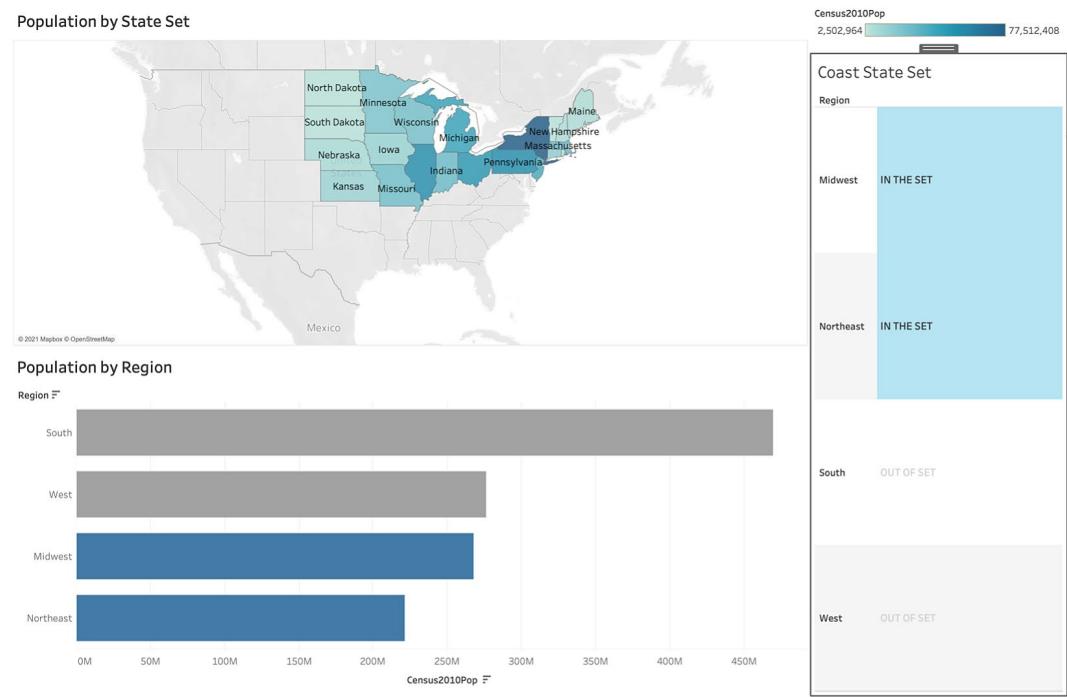


Figure 12.41: Set actions in an action

In this exercise, you witnessed the usefulness of set actions and some of the major options that are available to developers and end users. You also used filter actions again to showcase the power of actions on interactivity, as you will again with the next action type: parameter actions.

## PARAMETER ACTIONS

Parameters are nothing more than constant values that can be used in calculations, reference lines, table calculations, and so on. You have previously used parameters to swap metrics in your views so that end users can choose the metrics. When you add parameters, you are essentially transferring the rights to these metrics selections to your end users.

Parameter actions can be used in the following scenarios:

## WHEN TO USE A PARAMETER ACTION

- When the data is huge for a filter and has a lot of indicators, going into a given filter each time and looking at the values may be inconvenient. Parameter actions can be assigned to provide selection convenience to the end user.
- Parameter actions can be used to create dynamic drilldowns (zooming into data) based on the selection made by the end user.

For example, in the **Sample – Superstore** data, you have a category of products that is further subdivided on the sub-category level. You can use parameter actions to facilitate the selected category to drill down to its sub-categories, without doing the same action on non-selected categories.

The following exercise demonstrates **Sample – Superstore** data trends switching between four different metrics such as sales, profit, quantity, and discount across order dates in a single view highlighted as per the selected metrics using a parameter action.

### EXERCISE 12.04: USING PARAMETER ACTIONS

In this exercise, you will use parameter actions to allow users to select the metric chart that they want, once again using the **Sample – Superstore** dataset for demonstration.

Perform the following steps to complete the exercise:

1. Open the **Sample – Superstore** dataset in the Tableau instance.

2. Drag **Measure Names** to the **Columns** shelf and double-click individually on the following measures to add them to the **Measure Values** shelf: **Sales**, **Quantity**, **Discount**, and **Profit**. Then, format the view to increase the font size and make the view **Entire View**, as shown here:

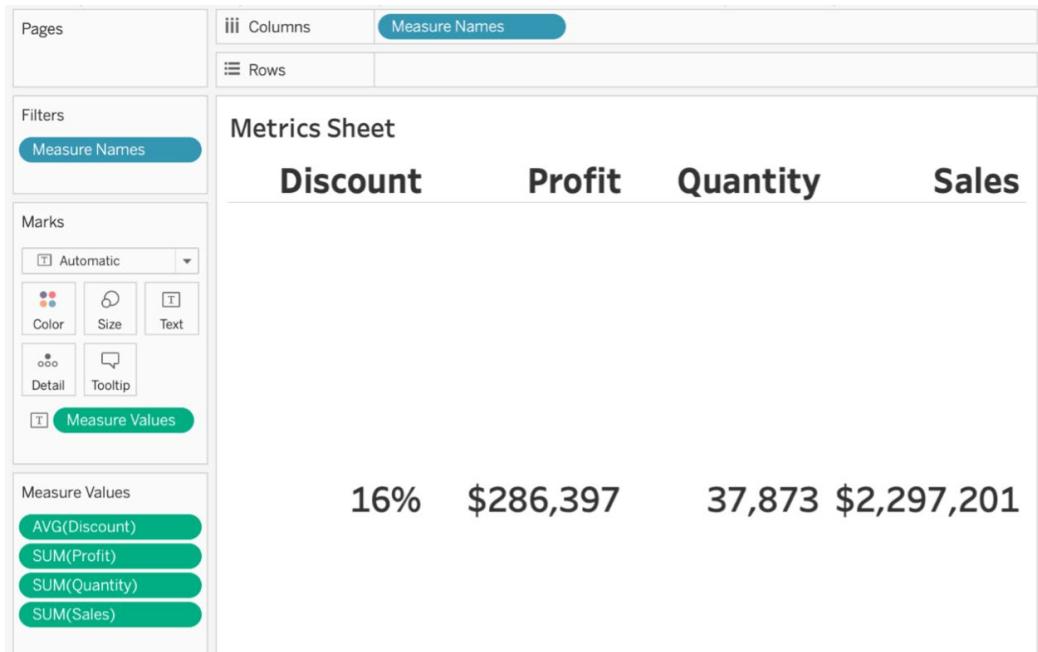


Figure 12.42: Metrics sheet with multiple measures

3. Create a parameter to use for metric selection. Navigate to the **Dimensions** data pane, click the right arrow, and then click on **Create Parameter**. Name the parameter **Metric Selection** and set the data type as **String**, and add **Sales, Profit, Discount**, as well as **Quantity** to the list of values for the parameter, as shown in the following screenshot. Once the parameter is saved, right-click on the **Metric** parameter:

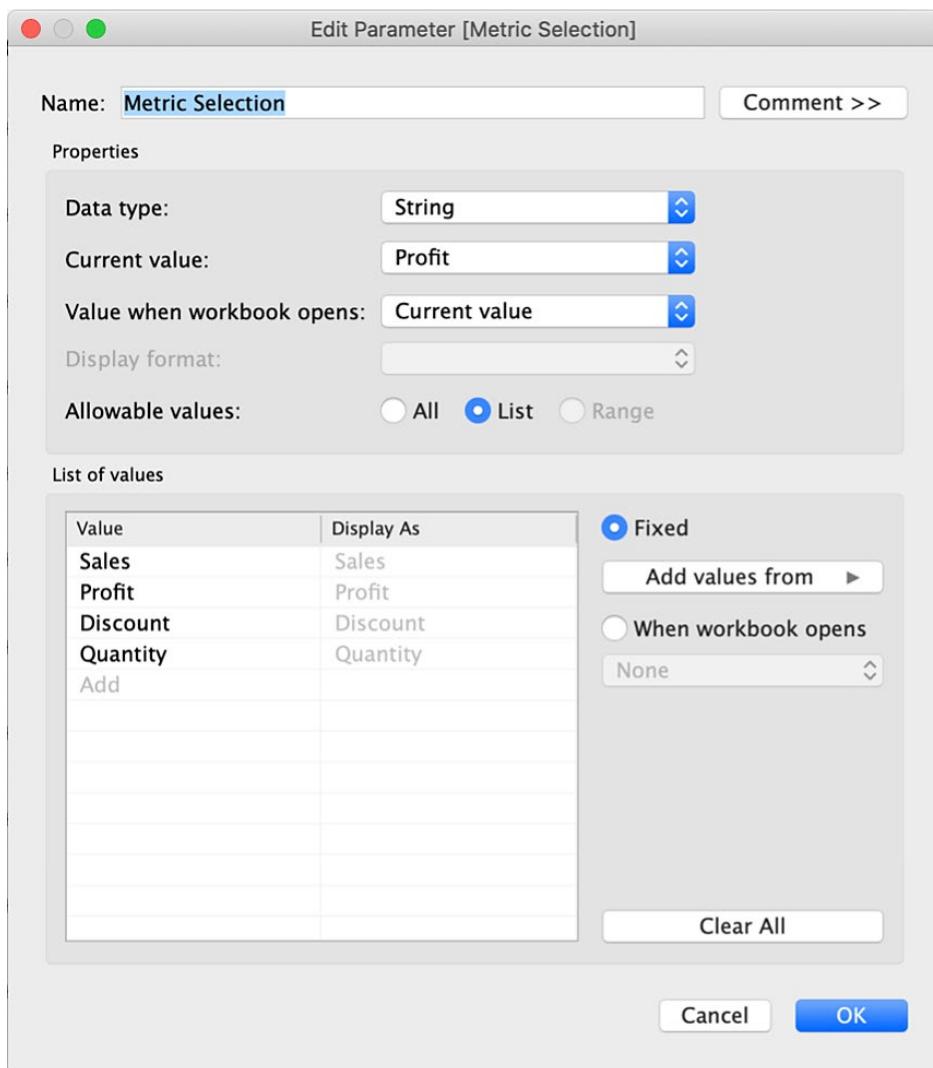


Figure 12.43: Editing a parameter

4. To use your **Metric Selection** parameter, you have to create a calculated field. Create a calculated field that will aggregate your measures based on the metric selected. Enter the formula for the calculated field as shown next:

```
CASE [Metric Selection]
WHEN 'Sales' THEN SUM([Sales])
WHEN 'Profit' THEN SUM([Profit])
WHEN 'Quantity' THEN SUM([Quantity])
WHEN 'Discount' THEN AVG([Discount])
END
```

This is as shown in the next figure:

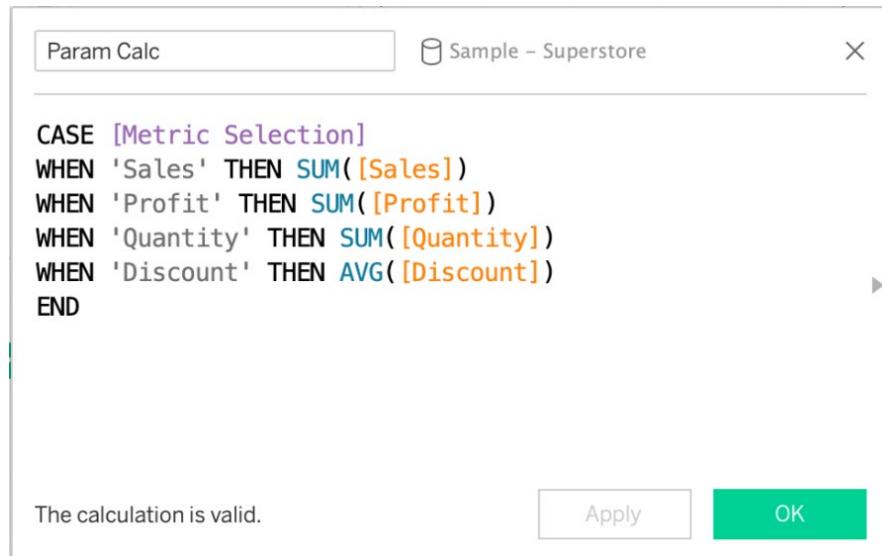


Figure 12.44: Metric Selection calculated field

5. Create a line chart by dragging **MONTH (Order Date)** to the **Columns** shelf and **AGG (Param Calc)** to the **Rows** shelf:

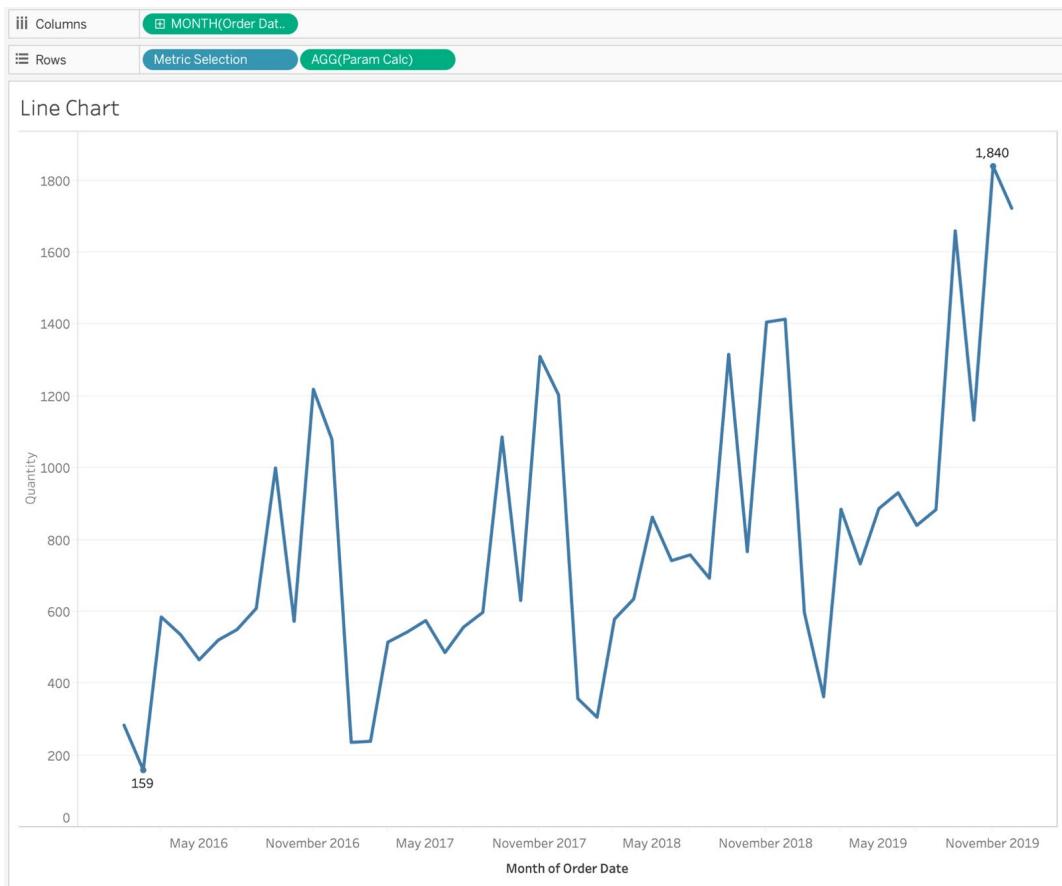


Figure 12.45: Line chart for Metric Selection

6. Create a simple dashboard by dragging **Metrics Sheet** to the top and **Line Chart** to the bottom, as shown:

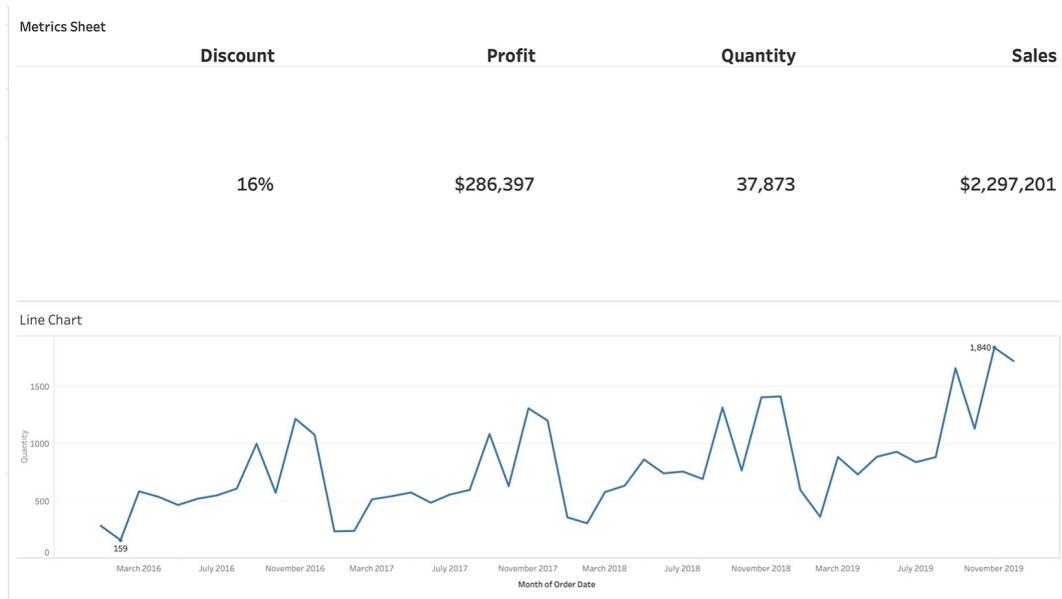


Figure 12.46: Dashboard with multiple measures and a line chart

7. Use parameter actions to ensure that when a user clicks on one of the metrics in the metrics sheet, your **Line Chart** sheet updates the metrics accordingly. To create parameter actions, navigate to the dashboard menu and click on **Actions | Add Action | Change Parameter...:**

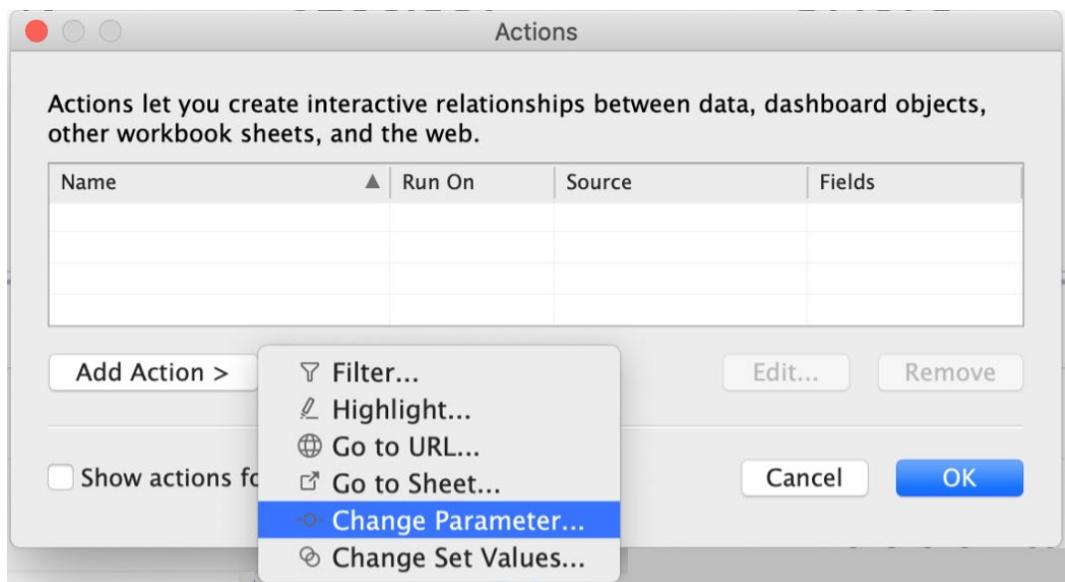


Figure 12.47: Adding parameter actions

8. In the parameter actions window, name the action **Metric Param Actions**. You want users to select a metric from the **Metric** worksheet, so check the **Metric** sheet and the **Target Parameter**. Then, select the parameter that you created for this exercise, which is **Metric Selection**, for the **Target Parameter** field. Keep **Field** as **Measure Names (Sample - Superstore)** and **Aggregation** as **None**, as shown:

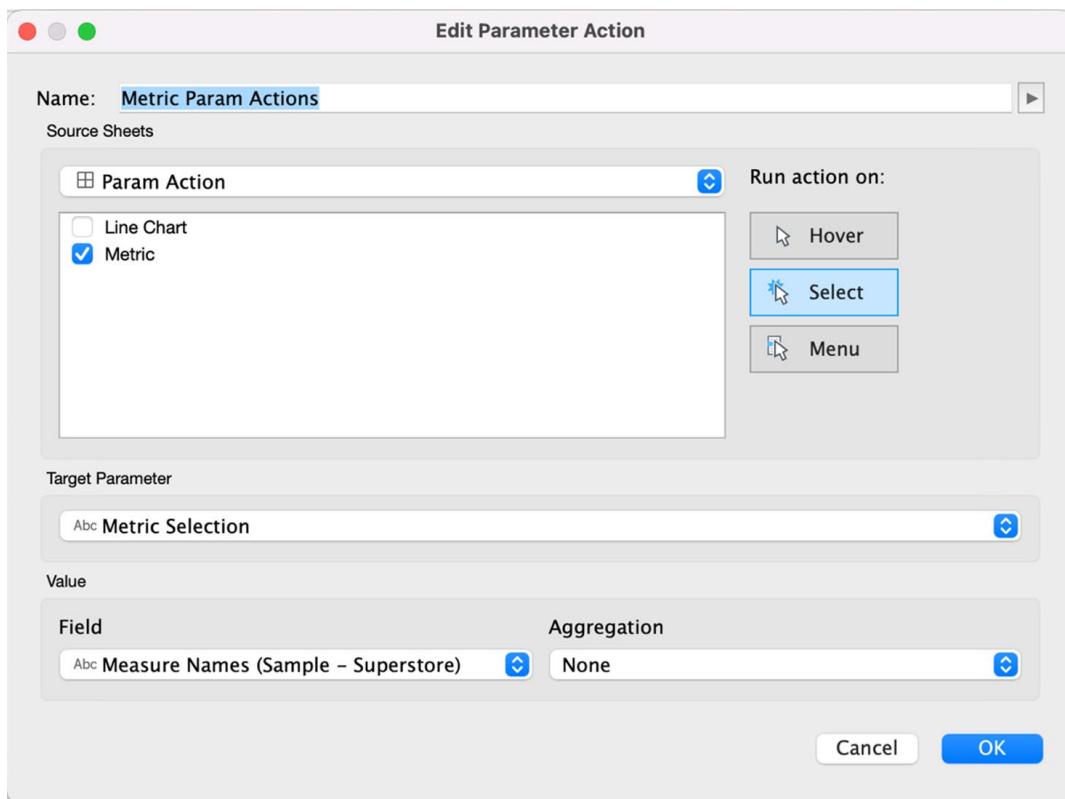


Figure 12.48: Parameter filter actions

9. Spot-check by selecting any of the metrics from the **Metrics** sheet in your dashboard. You will see that the line chart is updated as you select them. The following screenshots display a couple of outputs. First, click on the **Profit** metric:



Figure 12.49: Parameter action demonstration 1

Now, click on the **Quantity** metric:

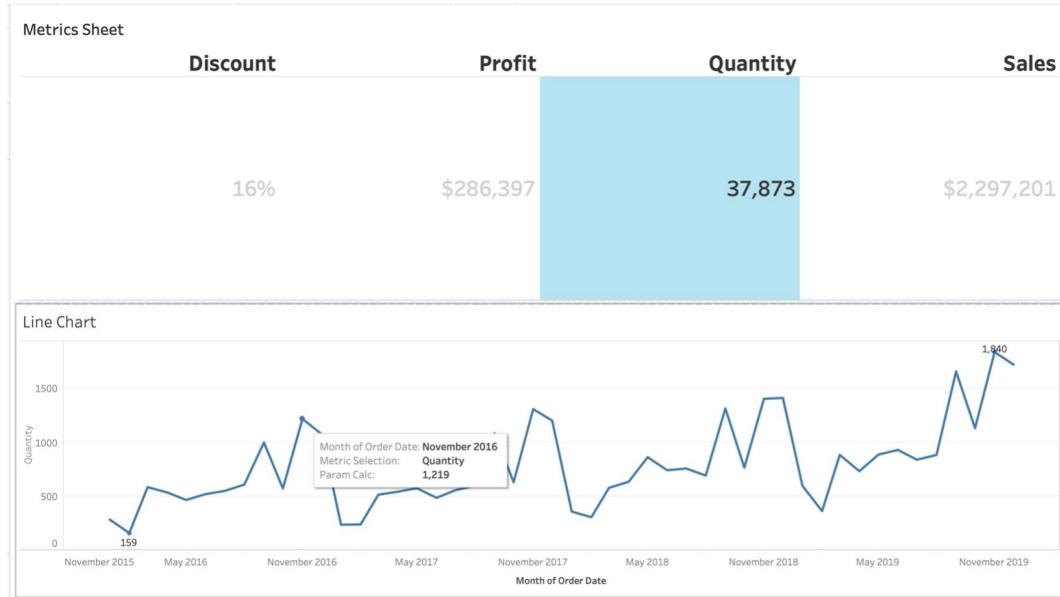


Figure 12.50: Parameter action demonstration 2

In this exercise, you reviewed parameter actions and walked through one of the innovative ways of using them. Again, you can be even more creative with these; the sky is the limit here.

## HIGHLIGHT ACTION

Though similar to the highlight feature in Tableau, the highlight action serves a much greater purpose in a dashboard. The highlight action allows the user to only focus on the data points in the target sheet that are related to selected data points in the source sheet. However, the trick here is to not collapse the entire view from the target sheet but to show the region where the matching data exists in the foreground and keep the rest of the unmatched data points in the background of the target sheet—for example, **Sales** by **[Sub-Category]** and **[State]**, where the **Appliances** sub-category is highlighted and, in the foreground, while other sub-categories are in the background:

iii Columns      Sub-Category

Rows      State

### Highlight Actions

		Sub-Category	
State		Accessories	Appliance
California	\$37,255	\$24,176	\$5,496
New York	\$19,598	\$13,276	\$2,984
Texas	\$11,329	\$2,408	\$2,370
Washington	\$15,119	\$1,969	\$1,064
Pennsylvan..	\$7,299	\$4,663	\$1,152
Florida	\$5,862	\$3,558	\$711
Illinois	\$5,536	\$975	\$930
Ohio	\$8,223	\$4,808	\$840
Michigan	\$4,933	\$4,324	\$1,005
Virginia	\$2,936	\$4,306	\$876
North Carol..	\$3,507	\$4,138	\$603
Indiana	\$2,279	\$4,160	\$389
Georgia	\$3,658	\$3,432	\$527
Kentucky	\$2,976	\$1,336	\$351
New Jersey	\$1,024	\$4,204	\$743
Arizona	\$3,396	\$774	\$1,389
Wisconsin	\$4,795	\$2,711	\$160
Colorado	\$2,288	\$1,367	\$211
Tennessee	\$411	\$1,915	\$436
Minnesota	\$1,520	\$2,844	\$103
Massachus..	\$897	\$3,348	\$226
Delaware	\$562	\$140	\$535
Maryland	\$1,124	\$1,589	\$434
Rhode Island	\$2,210	\$2	\$49
Missouri	\$1,022	\$3,670	\$240
Oklahoma	\$1,817	\$1,491	\$59
Alabama	\$2,323	\$208	\$301
Oregon	\$1,160	\$536	\$462
Nevada	\$230	\$96	\$214
Connecticut	\$658	\$1,479	\$192
Arkansas	\$1,788		\$78
Utah	\$195	\$1,090	\$100
Mississippi	\$2,010	\$616	\$607
Louisiana	\$1,668	\$17	\$130
Vermont	\$305	\$543	\$8
South Carol..	\$139		\$35
Nebraska	\$240	\$501	\$19
New Hamps..	\$2,812	\$33	\$266

Figure 12.51: Highlight action example

## WHEN TO USE A HIGHLIGHT ACTION

You should use a highlight action in the following scenarios:

- Highlight actions work best when the data in focus needs to be compared with the rest of the data points in the target view.

For example, while tracking an online purchase made across states, using a highlight action, it's easier to spot the states where an online purchase made is not opted for at all since those states will be visible enough in the background to spot. It's important to note here that the same would not be possible had a filter action been applied because filter actions collapse the entire unmatched view.

- Highlight actions help us to identify the percentages as well.

Suppose you want to compare Covid-19 treating hospitals with overall hospitals in a red zone town of a state. You can filter the town in the source sheet, and the target sheet would highlight the Covid-19 hospitals only in that town. In this way, you can infer whether the density of hospitals in that area treating Covid-19 is too little or perfectly enough with respect to non-Covid-19 treating hospitals. This can help formulate necessary plans to turn other hospitals into quarantine centers if nothing else.

- Highlight actions are most suitable for geographical visualizations since its advantages can best be leveraged in such a setup.
- Highlight actions also work well where there are large data points in a single target sheet, and there is difficulty in differentiating which data belongs to which selection.

## EXERCISE 12.05: USING HIGHLIGHT ACTIONS

The sub-category manager of your superstore wants you, as the business analyst, to create a view to highlight **State** and **Sub-Category** when he hovers over any of the rows/columns. This will allow him to highlight the data to a specific category and easier digest the cross tab. In this exercise, you will again use the **Sample – Superstore** dataset and create a view of **Sales by State** across **Sub-Category** and use **Highlight Actions** to focus on data that is important for the users.

Perform the following steps to complete this exercise:

1. Open the **Sample – Superstore** dataset in the Tableau instance if it's not already opened.
2. Drag **Sub-Category** to the **Columns** shelf and **State** to the **Rows** shelf and double-click on **Sales** to create the view. Rename the sheet to **Highlight Action** sheet too:

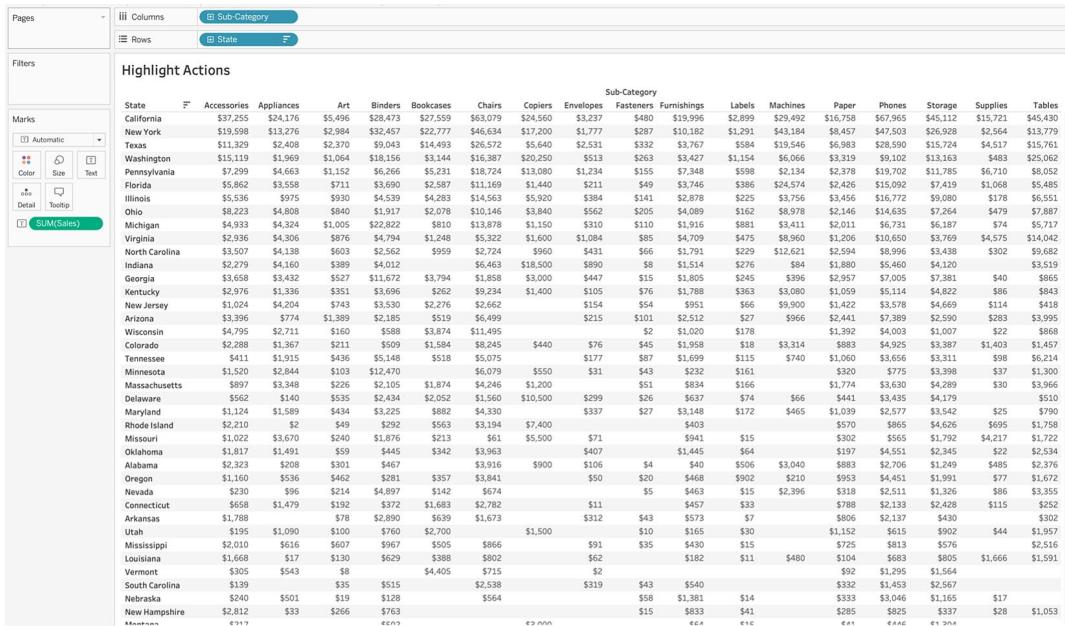


Figure 12.52: Cross table of State by Sub-Category

3. Navigate to the worksheet menu and click on **Actions** | **Add Action** | **Highlight...**:

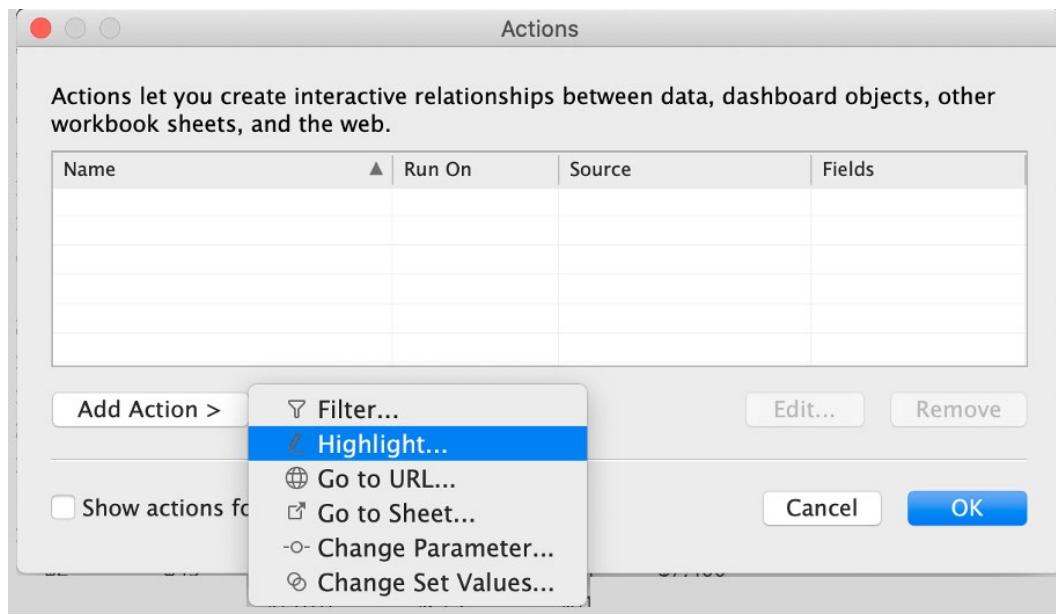


Figure 12.53: Adding a highlight action

4. In the **Add Highlight Action** dialog, since you are working with the same worksheet, your source and target worksheet are the same, and the action runs on **Hover**. In the **Target Highlighting** section, use **Selected Fields** and select both **State** and **Sub-Category**, as shown here:

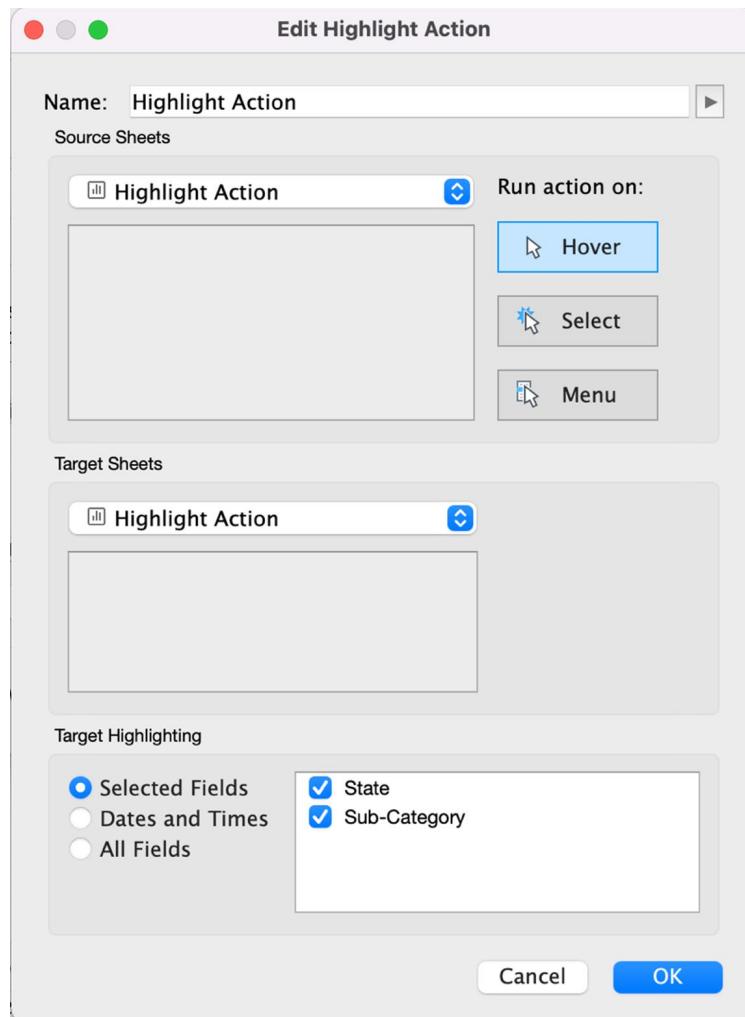


Figure 12.54: Highlight action options

5. Spot-check to see the result. Since the action runs on **Hover**, if we hover over one of the category labels, the whole column will be highlighted, as shown:

The screenshot shows a Tableau dashboard with the following interface elements:

- Top Left:** "Columns" button.
- Top Right:** "Sub-Category" button.
- Bottom Left:** "Rows" button.
- Bottom Right:** "State" button.

The main content area is titled "Highlight Actions" and displays a table with the following data:

	Sub-Category	Accessories	Appliance	Art
California		\$37,255	\$24,176	\$5,496
New York		\$19,598	\$13,276	\$2,984
Texas		\$11,329	\$2,408	\$2,370
Washington		\$15,119	\$1,969	\$1,064
Pennsylvan...		\$7,299	\$4,663	\$1,152
Florida		\$5,862	\$3,558	\$711
Illinois		\$5,536	\$975	\$930
Ohio		\$8,223	\$4,808	\$840
Michigan		\$4,933	\$4,324	\$1,005
Virginia		\$2,936	\$4,306	\$876
North Carol..		\$3,507	\$4,138	\$603
Indiana		\$2,279	\$4,160	\$389
Georgia		\$3,658	\$3,432	\$527
Kentucky		\$2,976	\$1,336	\$351
New Jersey		\$1,024	\$4,204	\$743
Arizona		\$3,396	\$774	\$1,389
Wisconsin		\$4,795	\$2,711	\$160
Colorado		\$2,288	\$1,367	\$211
Tennessee		\$411	\$1,915	\$436
Minnesota		\$1,520	\$2,844	\$103
Massachus..		\$897	\$3,348	\$226
Delaware		\$562	\$140	\$535
Maryland		\$1,124	\$1,589	\$434
Rhode Island		\$2,210	\$2	\$49
Missouri		\$1,022	\$3,670	\$240
Oklahoma		\$1,817	\$1,491	\$59
Alabama		\$2,323	\$208	\$301
Oregon		\$1,160	\$536	\$462
Nevada		\$230	\$96	\$214
Connecticut		\$658	\$1,479	\$192
Arkansas		\$1,788		\$78
Utah		\$195	\$1,090	\$100
Mississippi		\$2,010	\$616	\$607
Louisiana		\$1,668	\$17	\$130
Vermont		\$305	\$543	\$8
South Carol..		\$139		\$35
Nebraska		\$240	\$501	\$19
New Hamns..		\$2,812	\$33	\$266

Figure 12.55: Column highlight action

6. Hover over each row to highlight important data points. Everything else will be grayed out, as seen here:

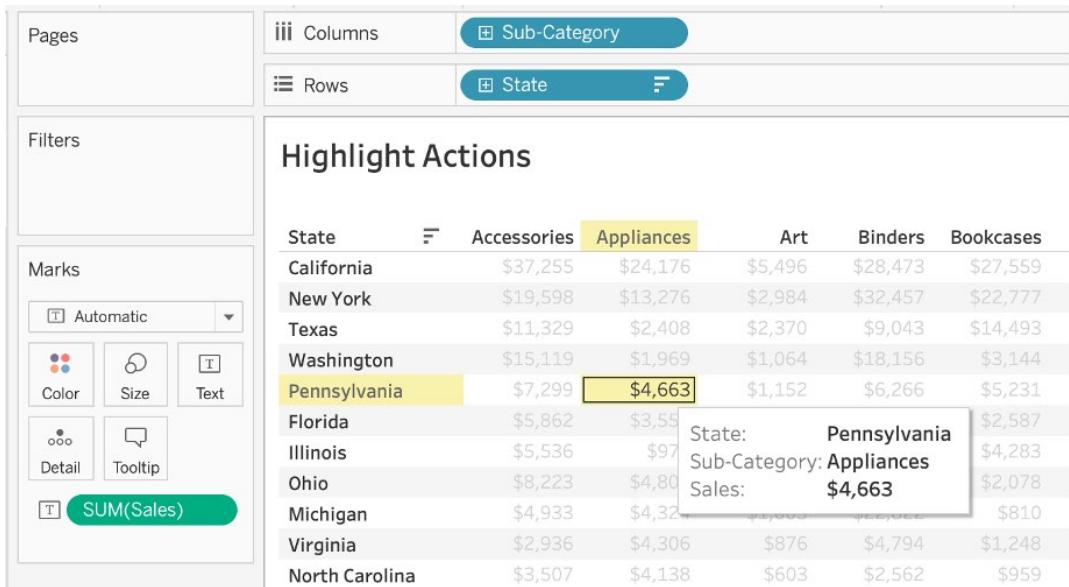


Figure 12.56: Row highlight action

Highlight actions can be useful when you have a lot of data points in the view, which can otherwise confuse your end users. In this exercise, you created a simple highlight action to highlight a data point by **Sub-Category** and **State**.

## GO TO SHEET ACTIONS

Sheet actions help simplify navigation across your worksheets/dashboards or views. That's about it. As can be seen from the following screenshot, when you add sheet navigation, you have to first select your source sheet. Then, when you click on that sheet, Tableau will navigate you to the target sheet, which you select from the dropdown in the **Target Sheet** section:

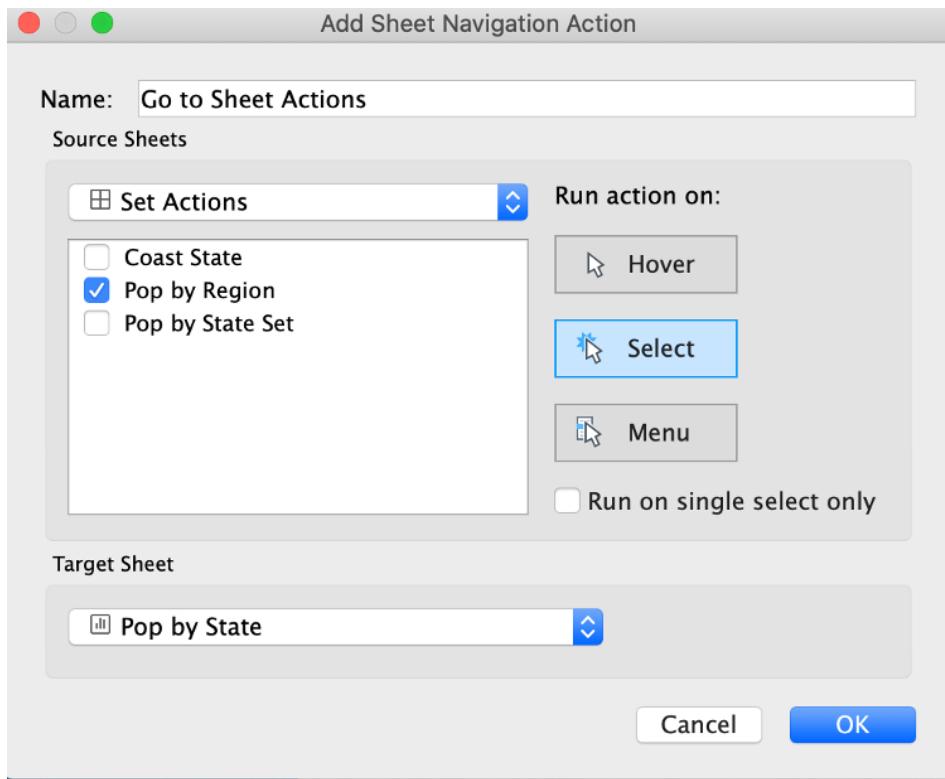


Figure 12.57: Go to sheet options

## ACTIVITY 12.01: USING ACTIONS

As the franchise analyst for a coffee chain, you are tasked with creating a universal dashboard with a small market versus major market pie chart, which allows the end user to interact with the dashboard and select/filter based on the type of beverage sales and to show that on a dynamic map. In this activity, you will be creating multiple charts, including pie charts, line charts, and bar charts, as well as a map view of sales and profits while using filter actions to improve the interactivity between those charts. For efficiency, you will be using only one filter action to filter across all four sheets and across all target fields.

The dataset can be accessed from the following link: <http://packt.link/df2pj>.

The steps for completion are as follows:

1. Load the **Coffee\_Chain\_Sample** dataset in the Tableau instance.
2. Create a pie chart showing **Sales by Market Size**. Then, add **Market Size** as a label and show **Sales as Percentage of Total** on the label.

**NOTE:**

Although pie charts are usually not the best way to present data (as explained in the previous chapters), for the purpose of this activity, you will be using a pie chart to demonstrate actions in the best possible way.

3. Create a bar chart showing **Sales by Product Type** and use **SUM(Sales)** as the label on the bars.
4. Create a line chart showing sales trends across continuous months. Again, set **SUM(Sales)** as the label but show the label only on min/max values.
5. Create a map view using **SUM(Profit)** as **Color** for the different states and use **SUM(Profit)** as labels on the map.
6. Add all four views to the dashboard.

7. Add a couple of text objects:

Title/text 1: **12.1 Interactivity Dashboard**

Text 2: **click on marks/data points in any of the charts to filter the data**

By adding the contextual text, you allow users to interact with the dashboard without getting confused by the inner workings.

8. Create a filter action by navigating to the dashboard menu and clicking **Actions** | **Add Actions** | **Filter Actions**:

- **Name:** All in One Filter Action.
- **Source Sheets:** Use all worksheets as your source sheet as you want all sheets to act as a filter.
- **Run action on:** Use **Select** as the method on which the action runs as **Hover** might add unnecessary complexity to the dashboard.
- **Target Sheets:** Again, as mentioned in **Source Sheets**, you want every interaction on any of the worksheets to filter on all other sheets, so select all the sheets for **Target Sheets**.
- **Clearing the selection will:** Select **Show all values** as you want users to be able to revert to the original dashboard stage when they clear their selection.
- **Target Filters:** Since you are not targeting a specific dimension/field in this dashboard, ensure **All Fields** remains selected.
- Test the dashboard by individually clicking on each of the charts and observing how the data is filtered across all the dashboards.

The final expected output is as follows:

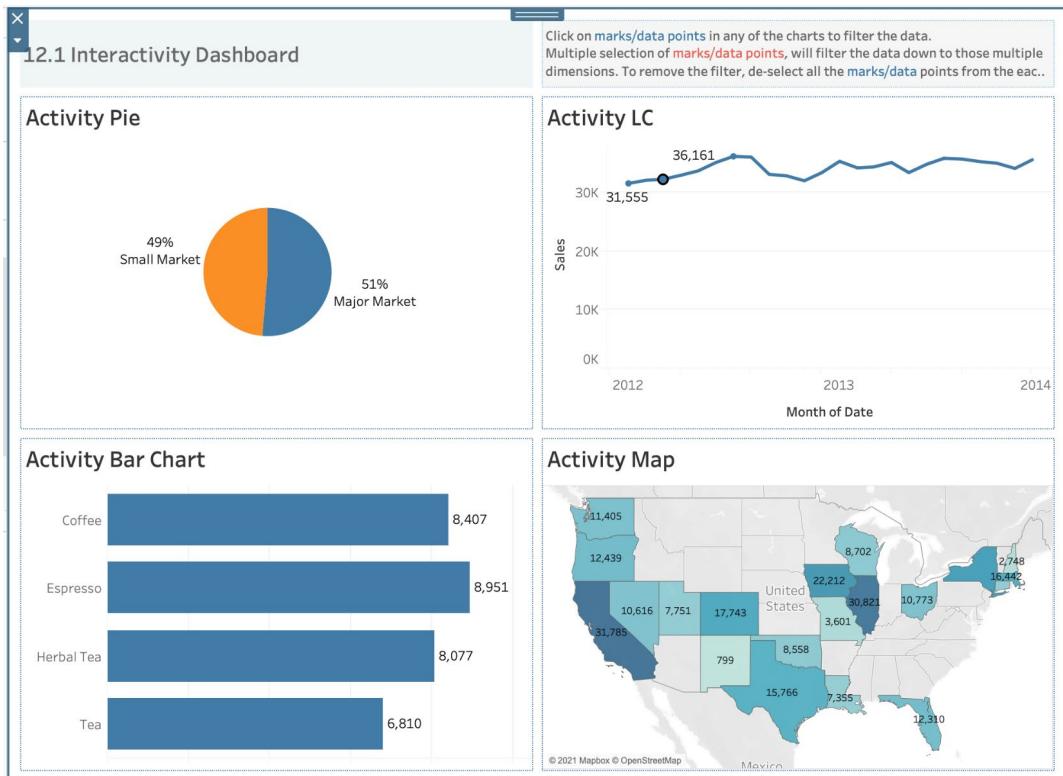


Figure 12.58: Activity final output

#### NOTE

The solution to this activity can be found here: <https://packt.link/CTCxk>

## SUMMARY

This chapter covered adding advanced interactivity to your views. Where you previously reviewed sets, groups, parameters, and the like in *Chapter 11, Tableau Interactivity, Part One*, this chapter took things a step further and showed you how to add actions to your reports/dashboards.

You started the chapter with an introduction to actions—what they are, how they can be useful on dashboards, and the six different types of them that Tableau has to offer. These options were defined and demonstrated in great detail, explaining how the action runs on **Hover**, **Select**, and **Menu**, and the major differences of all three options when users clear the selection on your sheets.

Later sections added another interactivity level to your filter dashboard by incorporating a dynamic web page URL object, which loaded the **[State]** Wikipedia page depending on the state that was selected by the end user using a URL action. Set and parameter action use cases were also discussed, including how they are different from filter actions and when you can utilize set and parameter change actions. You also reviewed how a highlight action can be used and why using highlight actions when you have a lot of text or clutter on your dashboards helps end users to focus on data points that they are interested in while dimming all others.

You concluded the chapter with a final activity, walking through a new dataset and considering the efficiency (or rather, inefficiency) of multiple filter actions when you want all your worksheets to be inter-connected and filtered when the user selects any of the marks/data points on the dashboard.

In the next chapter, you will learn how to distribute all the functional and beautiful dashboards that you have created throughout this book and share them across multiple channels.



