Lab 6. Building Dashboards

In this lab, we will cover the following recipes:

- Creating a dashboard
- Formatting a dashboard
- Setting filters
- Setting filters across various data sources
- Navigating through actions
- Adding highlight actions
- Setting layouts
- Building a self-service dashboard

Introduction

By now, you have learned how to create individual tables and charts from your data. In this lab, we will learn how to bring them all together in a dashboard. Dashboards are a powerful way to present visualizations that come from multiple worksheets, and even multiple data sources, in one view. We will learn how to create a dashboard, customize its visual style and layout, and implement advanced functionalities, such as actions and parameter filters. After completing the recipes in this lab, we will be well equipped to start creating our own dashboards.

We will be using two datasets that describe the results of a consumer survey, on internet use in Serbia, and we will view the satisfaction of users with various aspects of service from various internet providers.
The `Internet_satisfaction.csv` dataset contains only internet users, and holds information on the regions of Serbia. It also tells us where they live; their main internet provider; what type of Internet is used in the household; and their satisfaction with the overall service, connection speed, and connection stability. The satisfaction was rated on a 5-point scale, where 1 means "completely dissatisfied" and 5 means "completely satisfied." The other dataset, `Internet_usage.csv`, contains information on household Internet penetration by region of Serbia, and settlement type (urban or rural). Notice that the field that holds information on region has the same values, but different names, across the two datasets.

Creating a dashboard

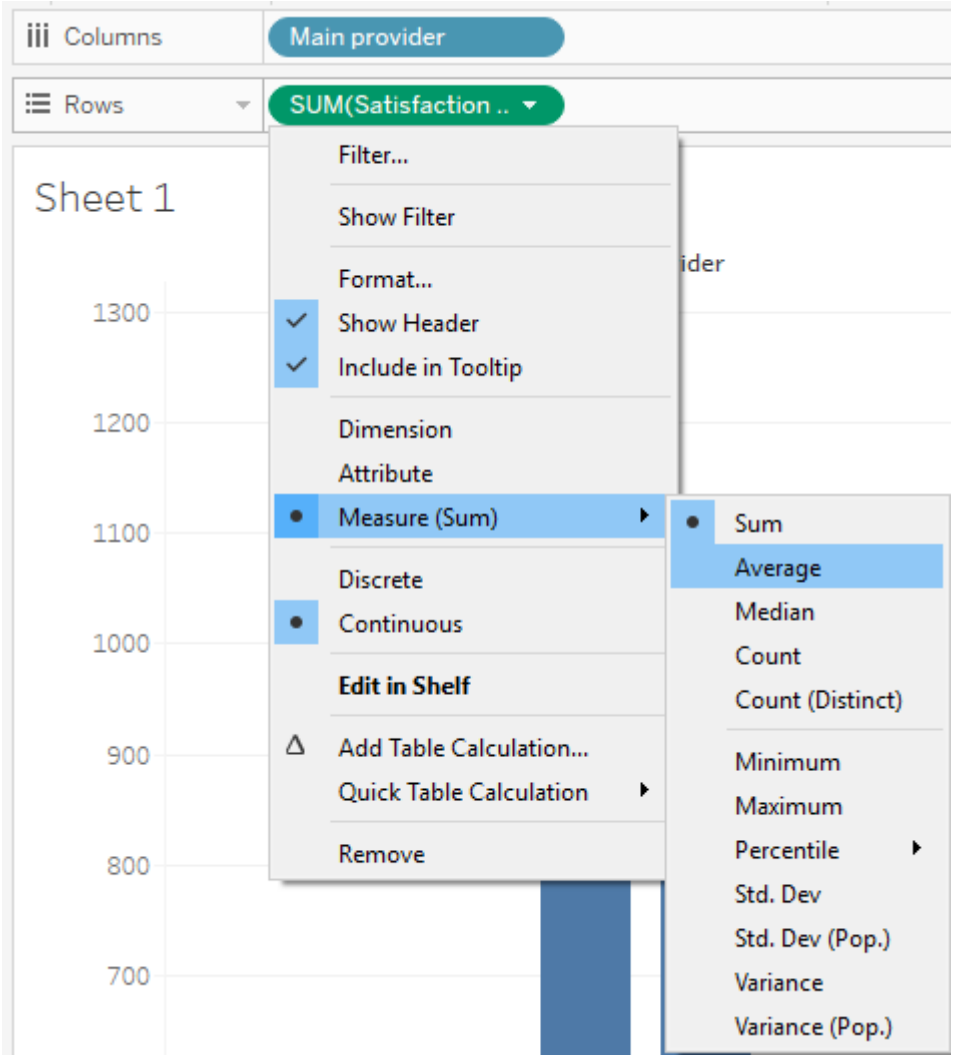
In this recipe, you will be guided through an explanation and overview of the basics of creating a dashboard. We will create a simple dashboard containing three worksheets, and we will build on it in the upcoming recipes.

Getting ready

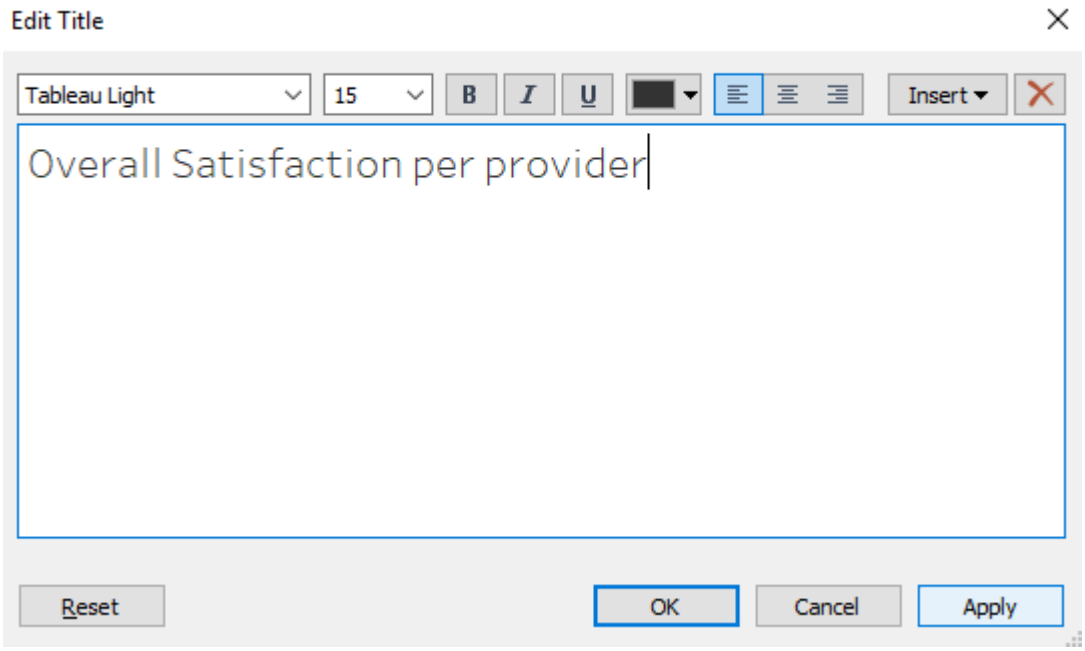
To create the dashboard, we will use the `Internet_satisfaction.csv` dataset. Make sure you have a local copy of the dataset saved and that you are connected to the dataset.

How to do it...

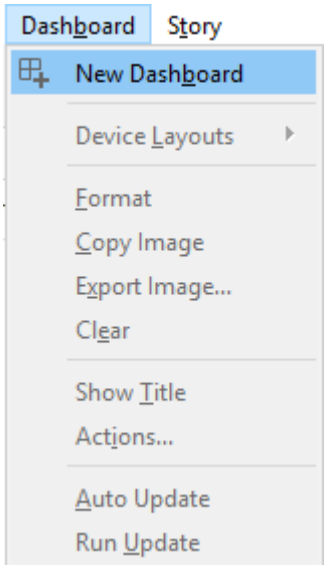
1. In a blank worksheet, drag and drop **`Main provider`** from **`Dimensions`** into the **`Columns`** shelf.
2. Then, drag and drop **`Satisfaction overall`** from **`Measures`** into the **`Rows`** shelf.
3. Hover over the **`SUM( Satisfaction overall)`** pill so that a small downward arrow appears on it and click on it.
4. Navigate to **`Measure`** (**`Sum`**), and in the drop-down menu, select **`Average`** :



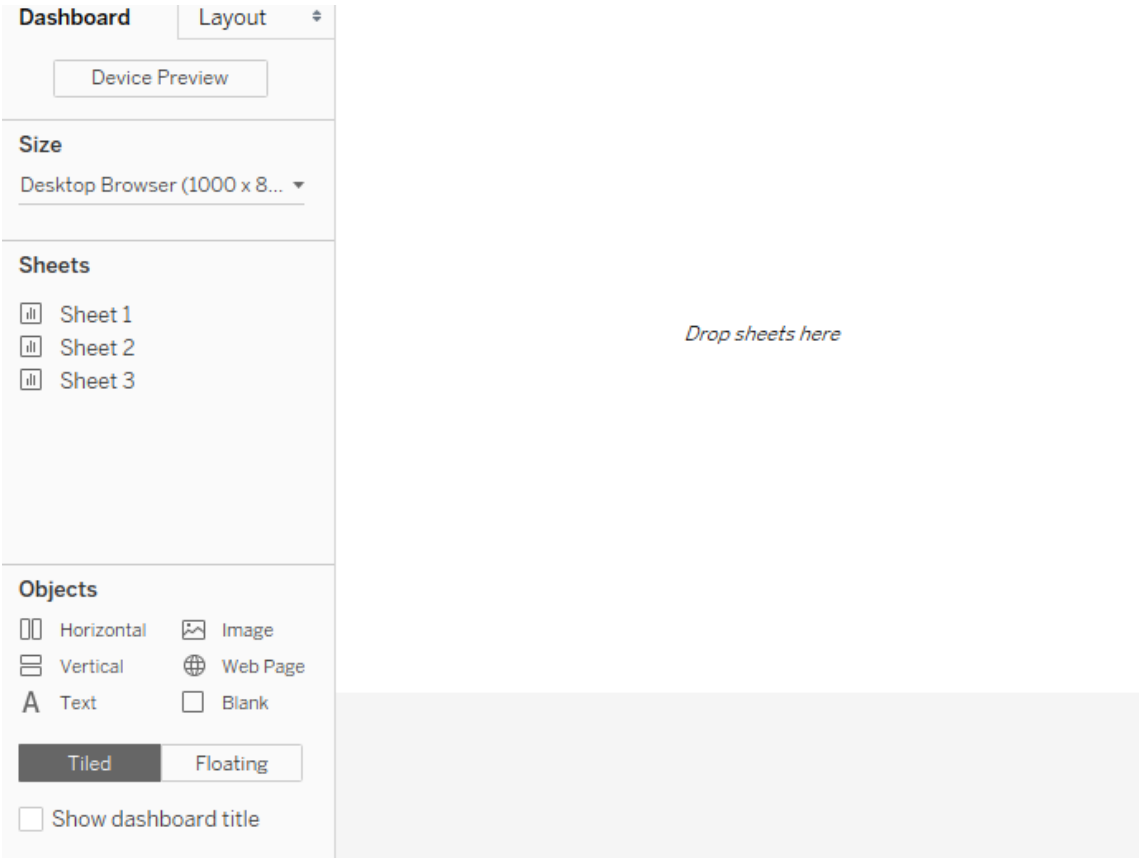
5. In the **`Marks`** card, change the mark type from **`Automatic`** to **`Circle`**.
6. Double-click on the title at the top of the workspace, and in the **`Edit Title`** window, change it from **`Sheet 1`** to `Overall Satisfaction per Provider` and click on **`Apply`**. You will see the title name is changed to **`Overall Satisfaction per Provider`**; then, click on the **`OK`** button:



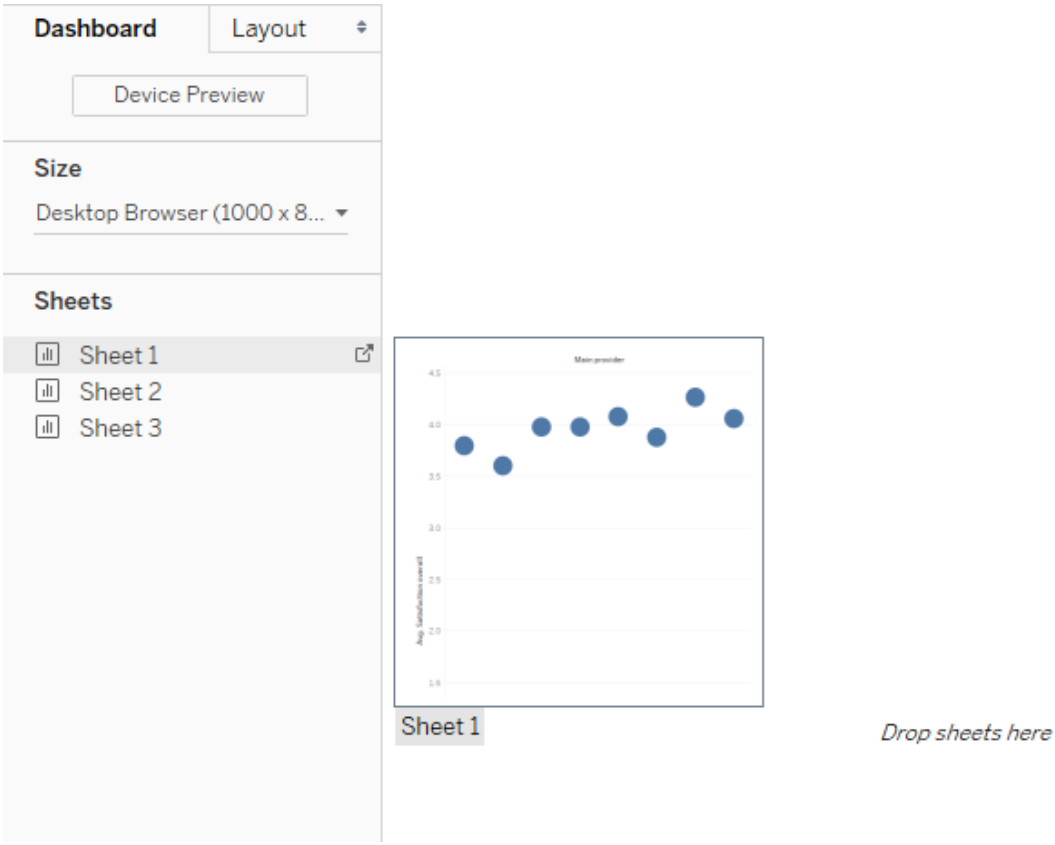
7. In the main menu toolbar, click on **`Worksheet`**, and then select **`New Worksheet`**.
8. Drag and drop **`HH internet type`** into the **`Columns`** shelf.
9. Drag and drop **`Satisfaction speed`** into the **`Rows`** shelf.
10. Hover over the **`SUM(Satisfaction speed)`** pill so that a small downward arrow appears on it and click on it.
11. Navigate to **`Measure`** (**`Sum`**), and in the drop-down menu, select **`Average`**.
12. Double-click on the worksheet title and change the title from **`Sheet 2`** to `Satisfaction with speed`. Click on **`Apply`** and then click on the **`OK`** button.
13. In the main menu toolbar, click on **`Worksheet`**, and then select **`New Worksheet`**.
14. Drag and drop **`HH internet type`** into the **`Columns`** shelf.
15. Drag and drop **`Satisfaction stability`** into the **`Rows`** shelf.
16. Hover over the ** `Satisfaction stability` **pill so that a small downward arrow appears on it and click on it.
17. Navigate to **`Measure`** (**`Sum`**), and in the drop-down menu, select **`Average`**.
18. Double-click on the worksheet title and change the title from **`Sheet 3`** to `Satisfaction with stability`.
19. From the main menu toolbar, select **`New Dashboard`** under **`Dashboard`**:



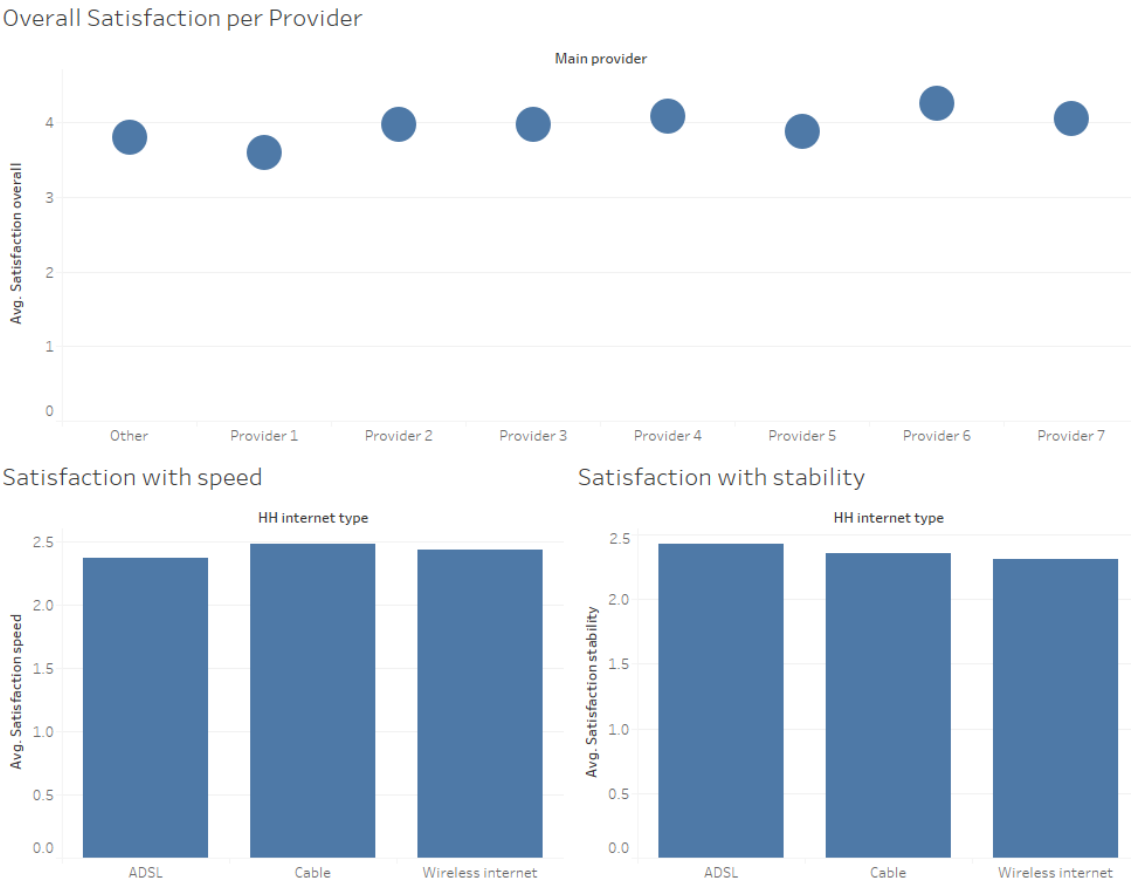
A blank dashboard will appear, looking like this:



20. Drag and drop **`Sheet 1`** from the **`Dashboard`** pane (on the left side of the screen) into the dashboard view:



21. Drag and drop **`Sheet 2`** from the **`Dashboard`** pane into the dashboard view, below **`Sheet 1`**.
22. Drag and drop **`Sheet 3`** from the **`Dashboard`** pane into the dashboard view, to the right of ** `Sheet 2.` **In the following screenshot, we can see the various elements that are present in the dashboard:



How it works...

In this recipe, we have created a basic dashboard. First, we have created a couple of worksheets. Then, we have placed them all in one dashboard.

Dashboards can hold multiple worksheets. Apart from worksheets, they can also contain images, links, text boxes, and web pages. Although dashboards can contain many elements, they are meant to present data in an easy-to-read manner, so you should always strive to maintain a clean look and not make your dashboard overcrowded.

There's more...

Dashboards can be linked with one another and filtered across. We will cover this in detail in the upcoming recipes.

Formatting a dashboard

Dashboards can be formatted and customized, beyond the formatting of the charts themselves. By using colors and fonts, you can create a visual identity you like and make the dashboard cleaner and easier to read.

Getting ready

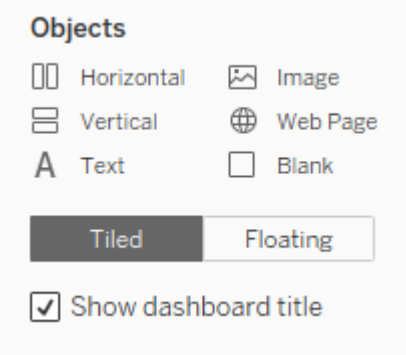
In this recipe, we will follow the [*Creating a dashboard*] recipe from this lab to create a basic dashboard. We will build on it.

How to do it...

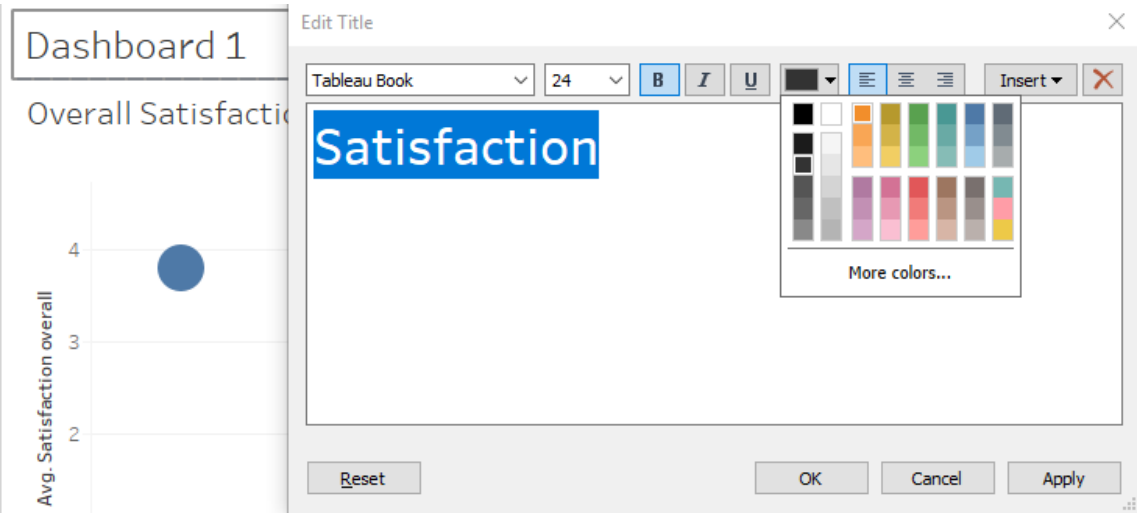
Let's now set and format the dashboard title, referring to the given steps.

Setting and formatting dashboard title

1. In the **`Objects`** pane, check the box in front of **`Show dashboard title`**:

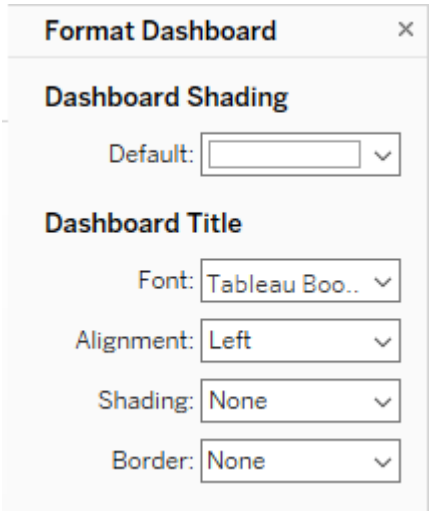


2. Double-click on the title and, in the **`Edit Title`** window, change it from **`Dashboard 1`** to `Satisfaction`.** **Select the title text and change the font size to **`24`**, change the color to orange, and apply bold font:



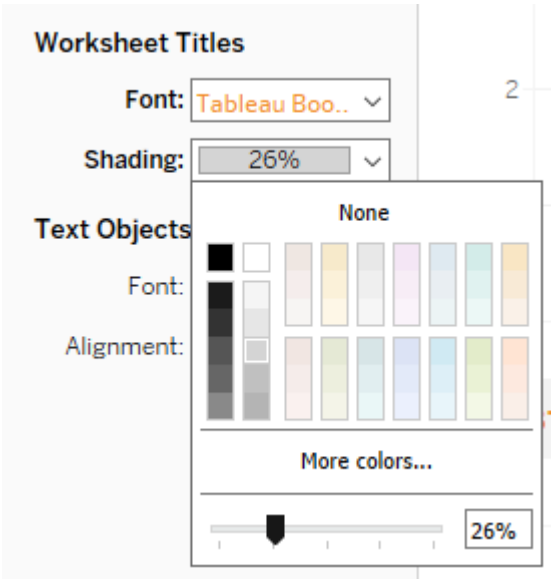
3. Alternatively, navigate to the main menu toolbar, click on **`Dashboard`**, and select **`Format.`**

4. The **`Format Dashboard`** pane will appear on the left-hand side. Under **`Dashboard Title`**, you can adjust the text, font, color, and size under** `Font` **; text alignment under** `Alignment` **; text background color under **`Shading`**; and border of the title under **`Border`**:



Formatting worksheet titles

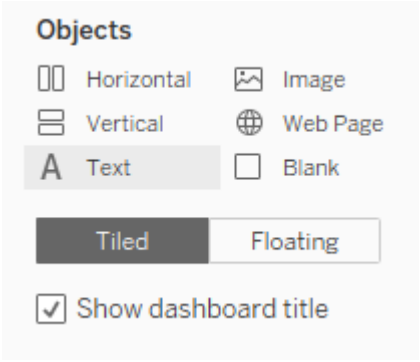
1. From the main menu toolbar, navigate to **`Dashboard`** and select **`Format`**.
2. Under **`Worksheet Titles`**, click on the **`Font`** drop-down arrow, change the text color to orange, and apply bold font.
3. Click on **`Shading`** to change the background color to light gray, and move the slider under the palette to the left to make the shade even lighter:



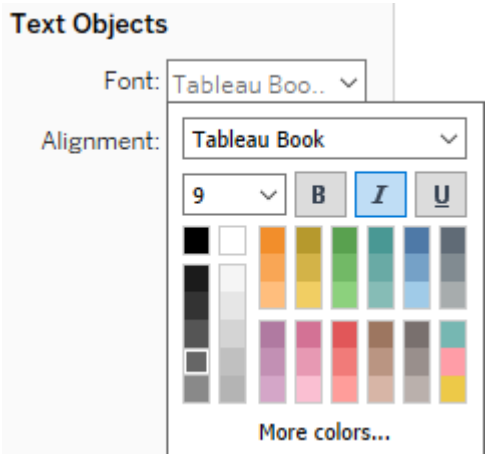
4. Alternatively, you can format the titles individually by double-clicking on them, selecting the title text in the ** `Edit Titl` **e window, and adjusting font size, color, alignment, and so on.

Formatting text objects

1. From the **`Objects`** pane, drag and drop **`Text`** into your dashboard view, below the **`Sheet 1`** chart. If you still have the **`Format`** pane open, you will need to close it in order for the **`Objects`** pane to appear:



2. In the **Edit Text** window, type `*Brand names have been removed`. Then, click **OK**.
3. Hover over the top border of the **Text** object until an arrow appears, hold it, and drag it down to decrease the **Text** object's height, while simultaneously increasing the **Sheet 1** area.
4. In the main menu toolbar, navigate to **Dashboard** | **Format**.
5. Under **Text Objects**, click on **Font** and apply italic font:



6. Alternatively, you can double-click on the text object and set the font size, shading, alignment, and more by selecting the text in the **Edit Text** window and choose the desired settings.

Formatting the dashboard background

1. In the main menu toolbar, navigate to **Dashboard** | **Format**.
2. Under **Dashboard Shading**, you can select the desired color of the background. This time, let's leave it white:

How it works...

Tableau offers a multitude of formatting options. We have formatted our dashboard title, individual sheet titles, and a background. It also offers an option for formatting the dashboard title, which we've left as white this time, in order to not take attention away from the dashboard content due to too many colors.

Although Tableau allows us to apply formatting to virtually every element in our dashboard, when formatting a dashboard, you should always keep in mind that less is more! For the best effect, keep the color palette simple, the background neutral, and the text colors and fonts simple and uniform.

There's more...

The majority of the work that will make your dashboard look great is done when creating and designing visualizations themselves. Make sure your visualizations are formatted well, and use the dashboard formatting options to bring it all together and add some final touches.

Setting filters

When creating a dashboard, it is possible to allow the end user to filter across multiple dashboard elements, so they all reflect the same selection. Filters can be applied directly from the dashboard, or through a worksheet---we will cover both ways. We will also cover filtering by worksheets in the dashboard, meaning we will use a visualization in the dashboard as a filter. Finally, we will briefly go through implementing action filters.

Getting ready

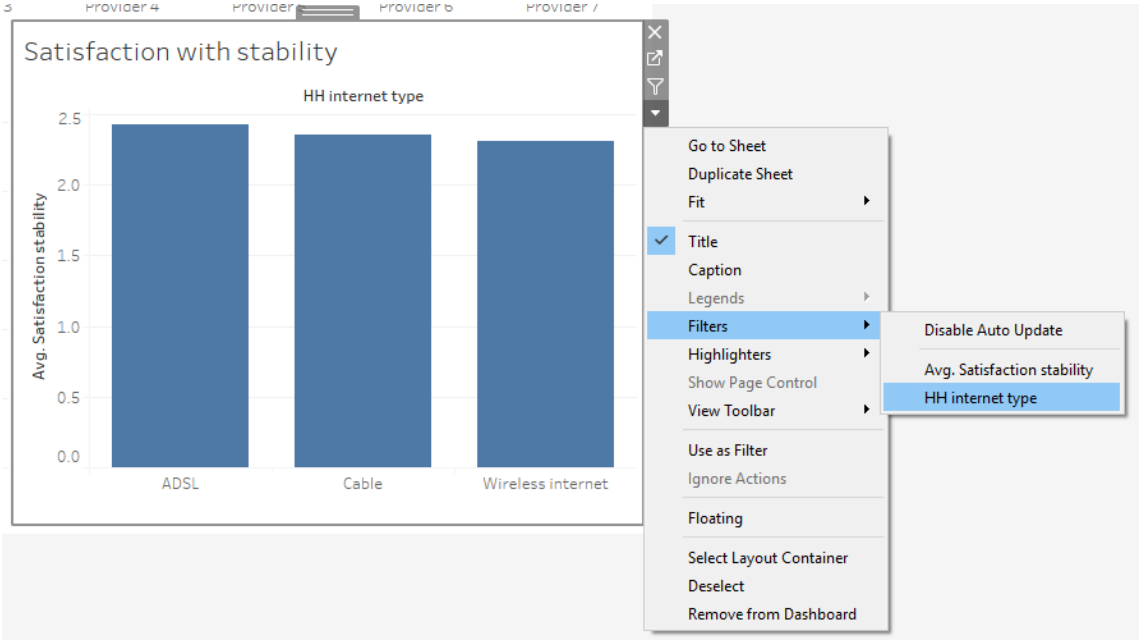
Follow the [*Creating a dashboard*] recipe from this lab to create a basic dashboard. We will build on it.

How to do it...

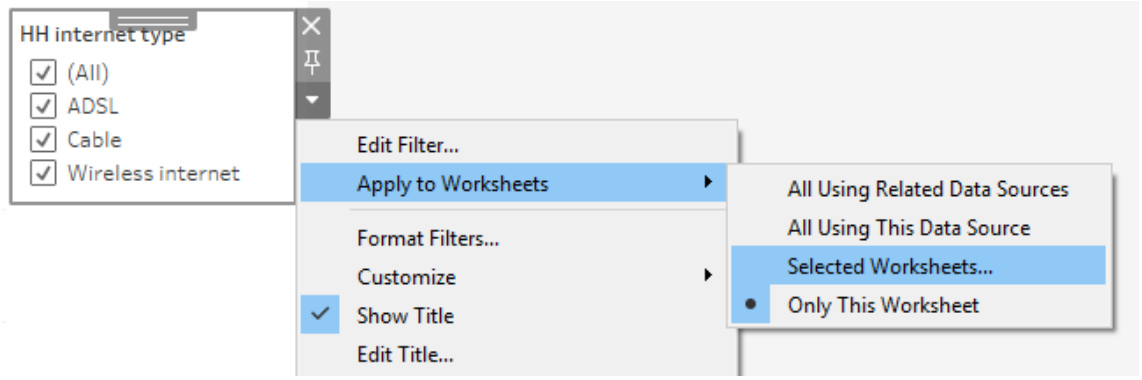
We will begin with [*Setting filters*] through the dashboard itself.

Setting filters through the dashboard

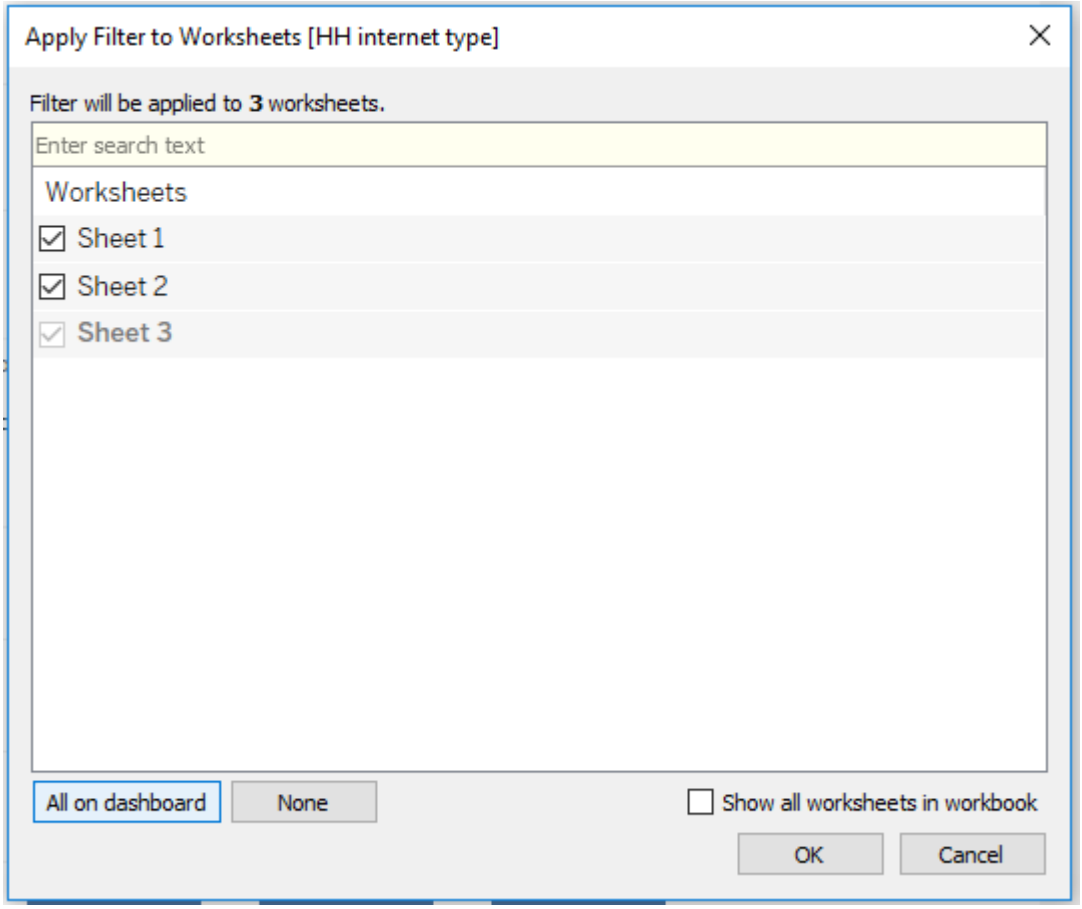
1. Click on the `Sheet 3` bar chart in the dashboard.
2. Click on the white arrow (More Options) that appears next to the chart area and navigate to `Filters` | `HH``internet type` :



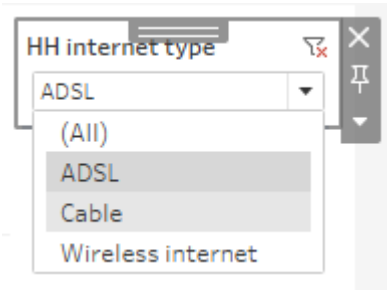
3. After the filter by `HH internet type` has appeared in the top-right corner of the dashboard, click on it, and then click on the white arrow (More Options) that appears alongside the filter area.
4. Navigate to `Apply to Worksheets` , and from it, select `Selected Worksheets`... :



5. Click on the `All on dashboard` button and then click on `OK` :



6. Click on the filter by `HH internet type`, and then click on the white arrow (More Options) that appears along the filter area.
7. From the drop-down menu, select `Single Value` (dropdown).
8. Try it by selecting different Internet types:

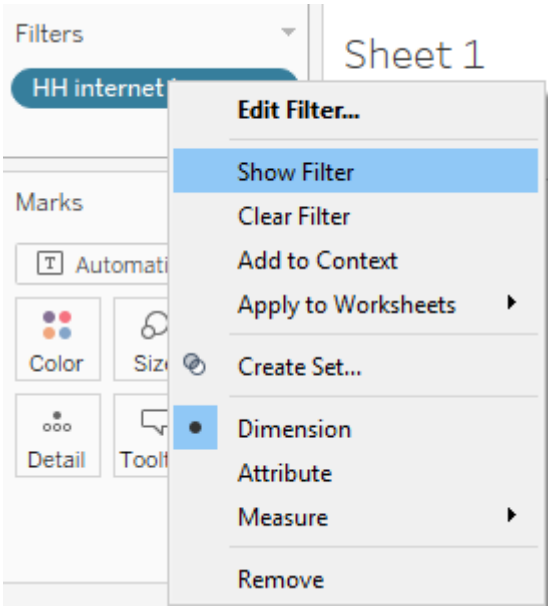


Setting filters through the worksheet

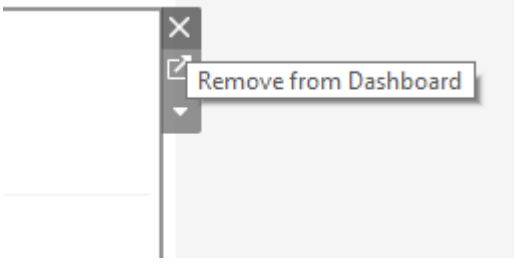
Now, let's try another way of setting up filters. Before starting this recipe, undo the work you did in following the [*Setting filters through the dashboard*] recipe, so we start from scratch. We will now set the same filter, but through the worksheet. We will start from the dashboard without any filters applied:

1. Navigate to `Sheet 1` by clicking on the `Sheet 1` tab at the bottom of the workspace.

2. Drag and drop **`HH internet type`** from **`Dimensions`** into the **`Filters`** shelf.
3. In the **`Filter`** [** `HH internet type` **] window, select **`All`** and then click **`OK`** .
4. Hover over the **`HH internet type`** pill in the **`Filters`** shelf so that a white arrow appears on the right.
5. Click on the arrow and from the drop-down menu, select **`Show filter`** :



6. Hover over the **`HH internet type`** card that has appeared and click on the small arrow in the top-right corner.
7. Select **`Single Value (dropdown)`** .
8. Once again, hover over the **`HH internet type`** pill in the **`Filters`** shelf so that a white arrow appears on the right, and click on it.
9. Select **`Apply to Worksheets`** , and from it, select **`Selected Worksheets`**... .
10. Click **`All`** , and then click **`OK`** .
11. Navigate back to the dashboard by clicking on the **`Dashboard 1`** card in the bottom of the workbook.
12. If the filter you just added to **`Sheet 1`** is not visible in the dashboard, click on the **`Sheet 1`** chart and then click on the white-on-gray **`X`** that appears along the outer border of the filter area:



Note

The alternative method would be to click on the sheet in the dashboard, and navigate to **`Filter`** | **`HH internet type`** from the drop-down menu.

13. After the chart has disappeared from the dashboard, drag and drop `Sheet 1` from the `Dashboard` pane into the dashboard view again, in the same spot, and the filter will appear in the dashboard.

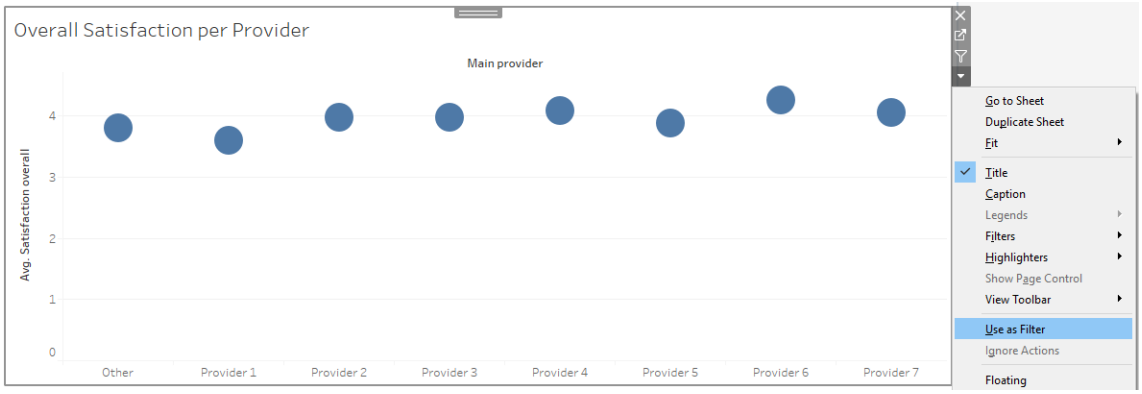
Note

Adding filters through a worksheet works best before your worksheet has been added to the dashboard. If the filter card is visible before the worksheet is added to the dashboard, it will automatically appear in the dashboard as well when you add your worksheet to it.

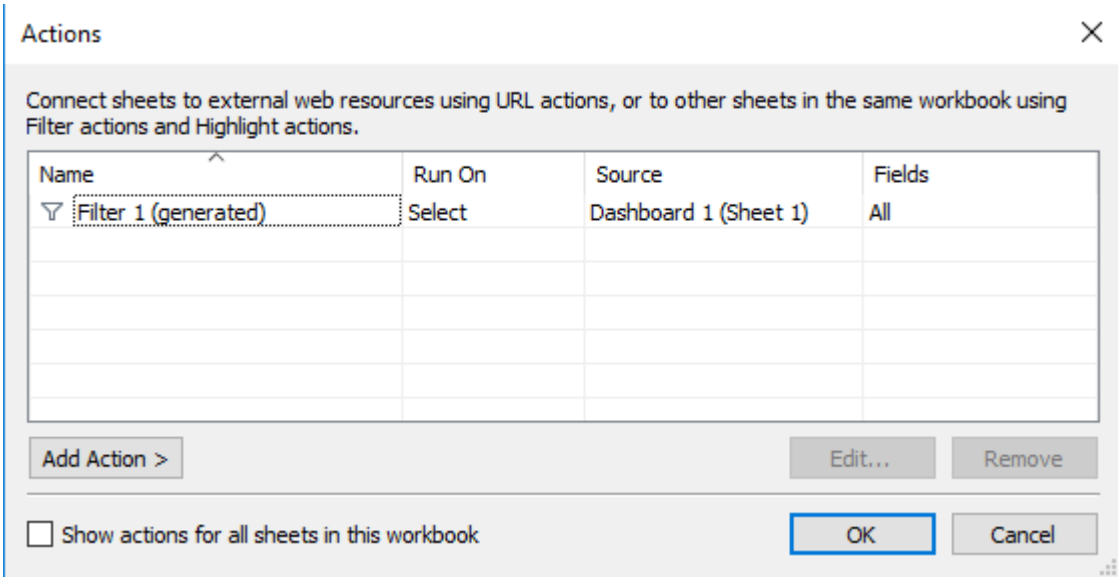
Filtering by worksheets in the dashboard -- action filters

We will now set a filter using one dashboard element to filter out other dashboard elements. We will also introduce action filters. We will start with the dashboard and avoid applying any filters:

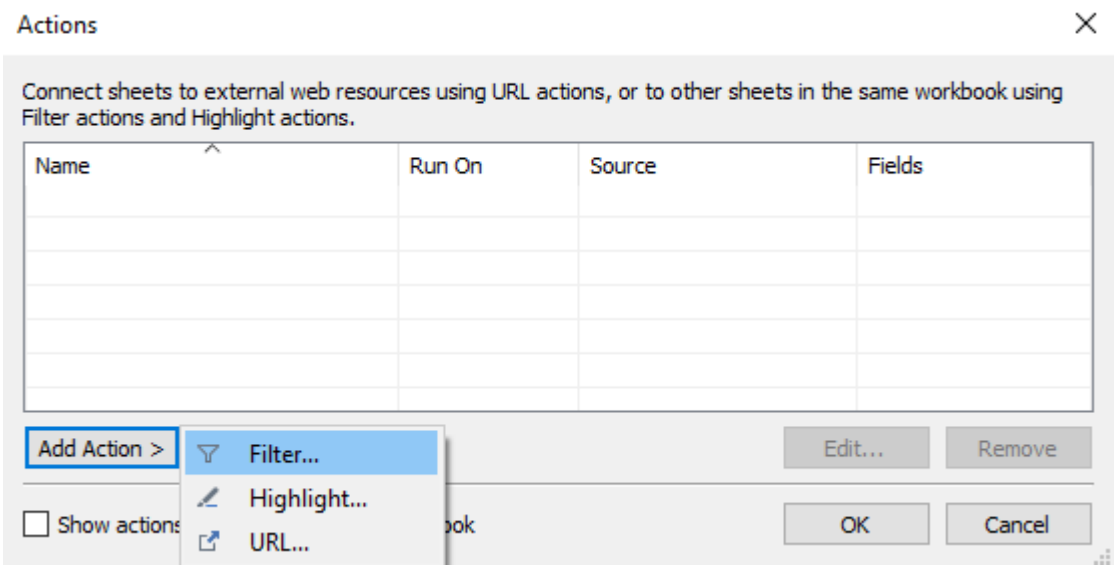
1. Click on the `Sheet 1` chart in the dashboard.
2. Click on the white arrow (More Options) that appears alongside the chart area.
3. From the drop-down menu, select `Use``as Filter`:



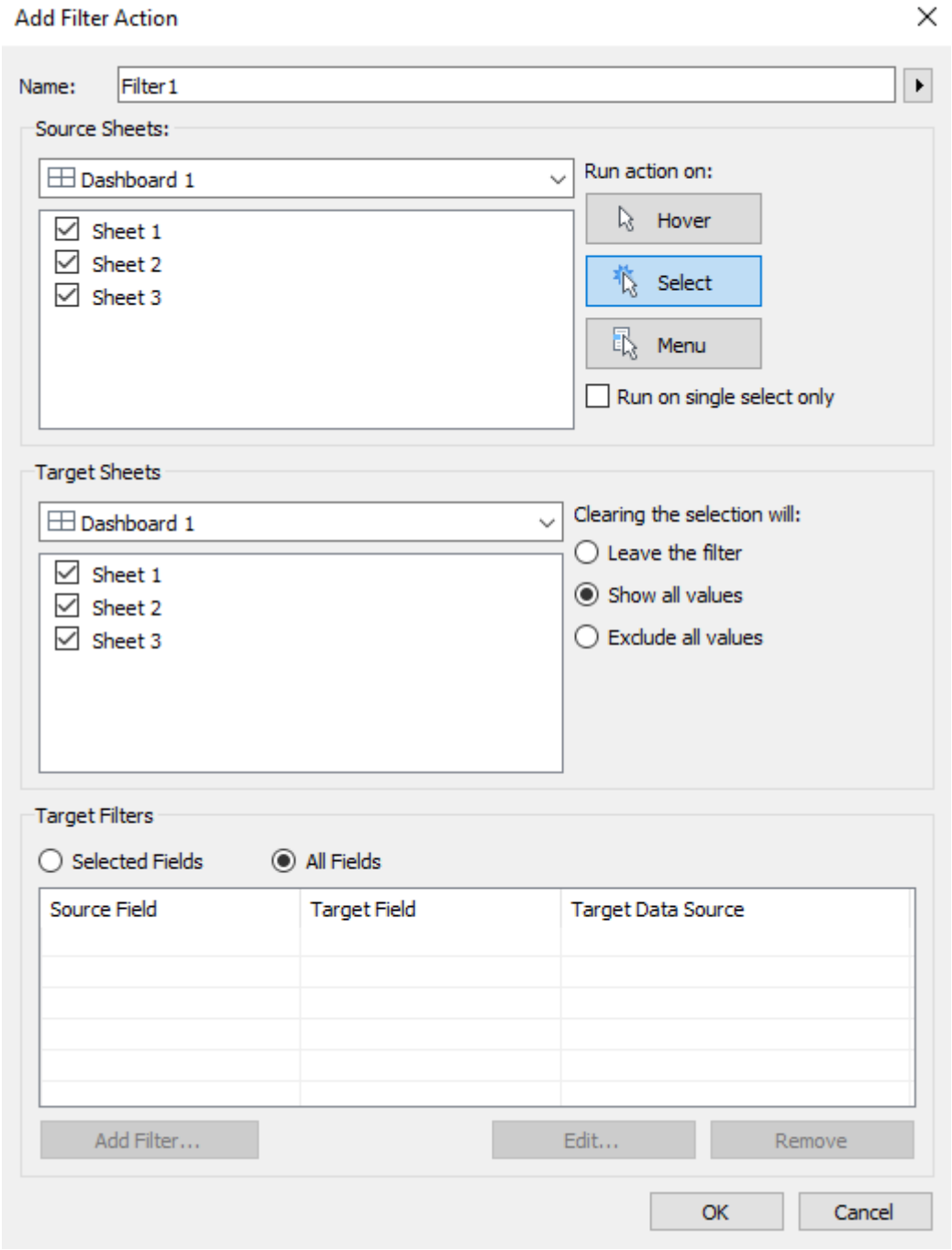
4. Try it by clicking on any column header or any circle in the `Sheet 1` chart.
5. You have now created an action filter, which you can see if you navigate to `Dashboard` in the main menu toolbar and click on `Actions...`:



6. Alternatively, you can create an action filter from scratch. Navigate to **Dashboard** in the main menu toolbar and click on **Actions...** .
7. In the **Actions** window, click on the **Add Action** > button and select **Filter...** :



8. In the **Add Filter Action** window, under **Source Sheets** , leave all three sheets checked.
9. Under **Run action on** , click on **Select** .
10. Under **Target** Sheets, leave all three sheets checked.
11. Under **Clearing``the selection will** , select the **Show all values** option:



12. Click on `OK.`
13. In the `Actions` window, click on `OK`.
14. All three sheets in the dashboard are acting as filters. Try it out by clicking on any bar/circle, or a column header, in any of the charts.

How it works...

Actions work by passing commands between worksheets. So, when you assign a filter action to one sheet, and perform the action that triggers it, it affects the other sheet(s) by filtering them. Filtering is a great way to make your

dashboard more interactive, engaging, and easier to read. Do not hesitate to include multiple filters in your dashboard, as it can help your end users narrow down to the data they need.

Setting filters across various data sources

So far, we have discovered how to apply a filter to multiple dashboard elements when they are all coming from the same data source. However, Tableau also allows us to filter across elements that come from different data sources.

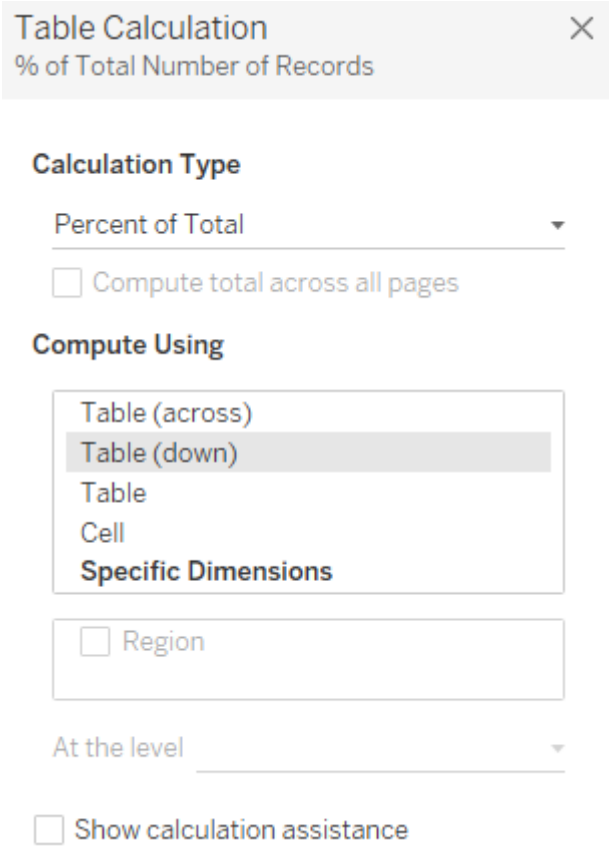
Getting ready

In this recipe, we will create a dashboard from scratch, so we can go through every step of connecting to the data sources. We will use both the `Internet_usage.csv` and `Internet_satisfaction.csv` datasets, so before we begin, you need to make sure you have them both saved on your device.

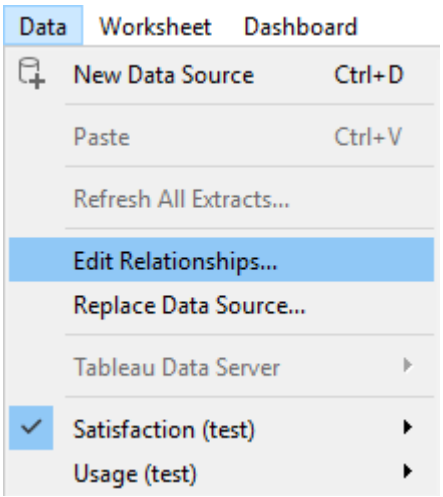
How to do it...

1. Connect to the `Internet_satisfaction.csv` dataset.
2. From the main menu toolbar, click on **`Data`** and select **`New Data Source`**.
3. Navigate to your local copy of the `Internet_usage.csv` dataset and add it as a data source.
4. Click on the **`Sheet 1`** tab.
5. In the **`Data`** pane, two data sources will now appear. Make sure `Internet_usage` is selected.
6. Drag and drop **`Area`** from **`Dimensions`** into the **`Columns`** shelf.
7. Drag and drop **`Internet penetration`** from **`Measures`** into the **`Rows`** shelf.
8. Hover over the **`Internet penetration`** pill so that a small white arrow appears, and click on it.
9. Navigate to **`Measure`** (**`Sum`**), and select **`Average`** from the drop-down menu.
10. Right-click on the **`Sheet 1`** tab in the bottom of the workbook, select **`Rename sheet`**, and rename the sheet to **`Internet penetration`**.
11. Create another new sheet by clicking on the New Worksheet tab from the bottom of the workbook.
12. Make sure the `Internet_satisfaction` data source is selected in the **`Data`** pane.
13. Drag and drop **`Region`** from **`Dimensions`** into the **`Columns`** shelf.
14. Drag and drop **`HH internet type`** from **`Dimensions`** onto **`Color`** in the **`Marks card`**.
15. Drag and drop **`Number of Records`** from **`Measures`** into the **`Rows`** shelf.
16. Hover over the **`Number of Records`** pill so that a white arrow appears:

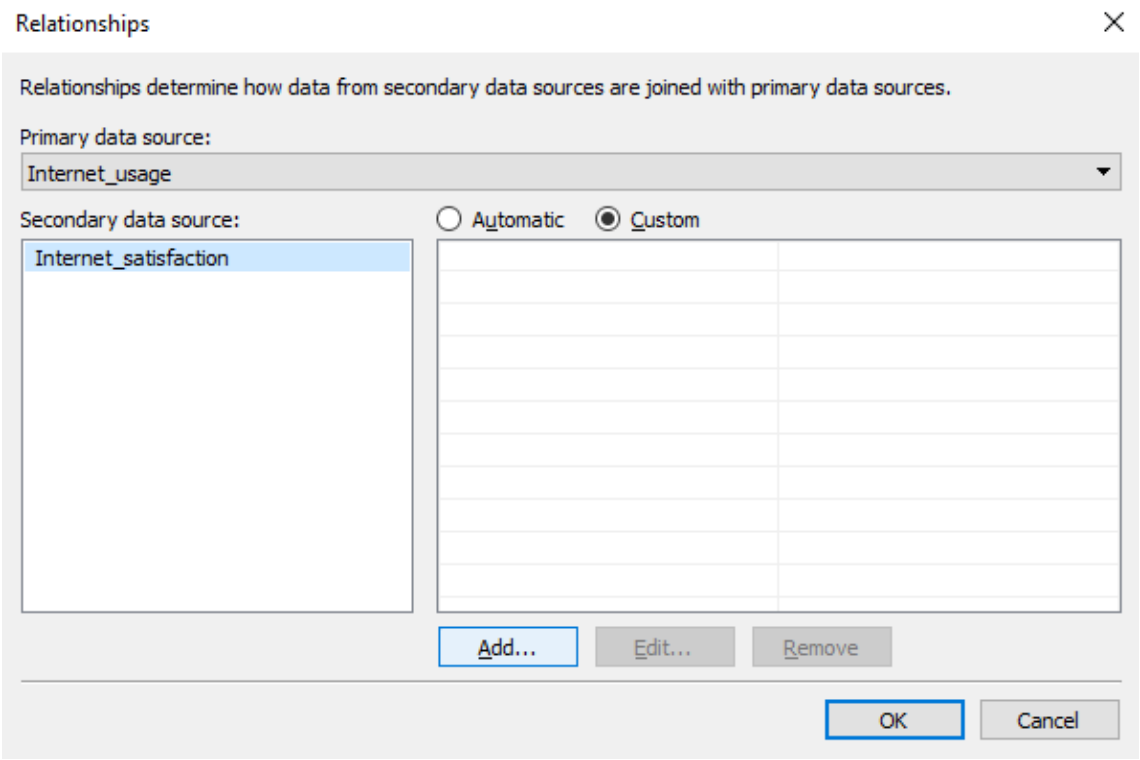
17. Click on it and navigate to **`Quick Table Calculation`** | **`Percent of Total.`**
18. Click on the white arrow again and select **`Edit Table Calculation...`**.
19. In the **`Table Calculation`** window, choose **`Table`** (down), deselect the **`Show calculation assistance`** box, and close the window:



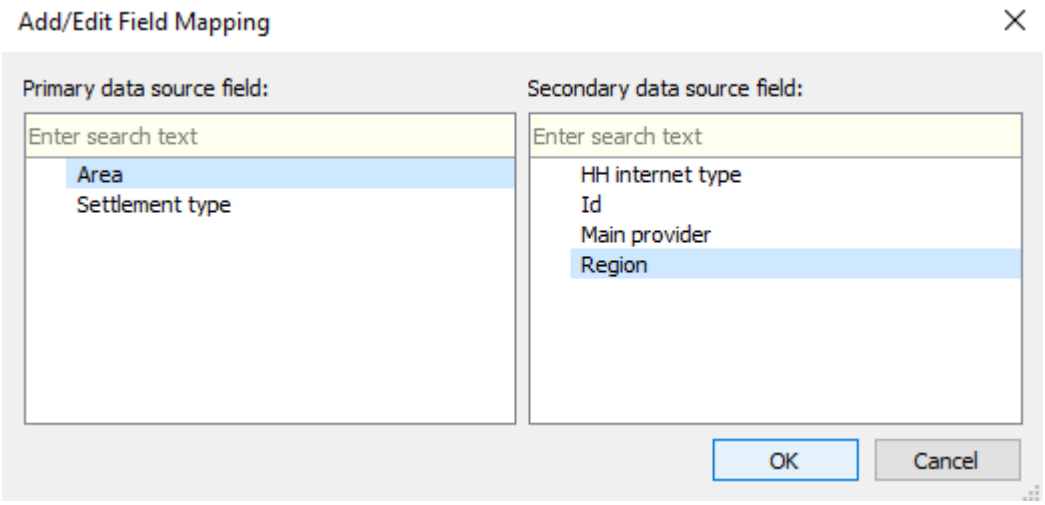
20. Rename the sheet to `HH internet type`.
21. From the main menu toolbar, navigate to `Data | ``Edit Relationships...`, as shown in the following screenshot:



22. In the `Relationships` window, select `Custom` and click on `Add...`:

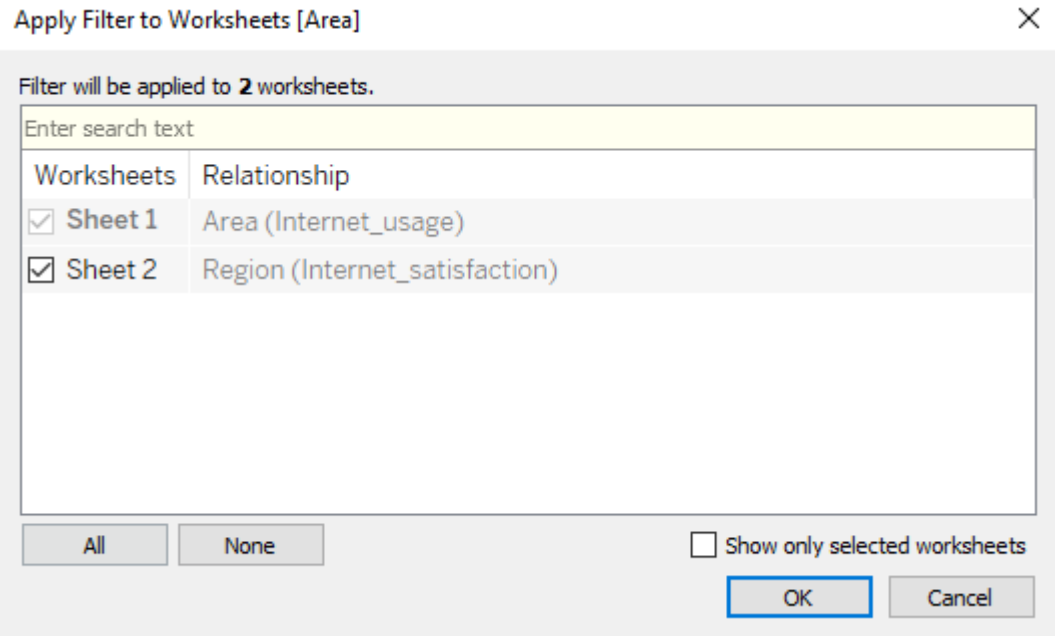


23. In the **`Add/Edit Field Mapping`** window, highlight **`Area`** and **`Region`** by clicking on them, and click on **`OK`**:



24. Click **`OK`** in the **`Relationships`** window.
25. Let's create the filter. In the **`Internet penetration`** sheet, drag and drop **`Area`** from **`Dimensions`** into the **`Filters`** shelf.
26. When the **`Filter`** [** `Area` **] window opens, click on **`OK`**.
27. Hover over the **`Area`** pill in the **`Filters`** shelf and click on the white arrow that appears.
28. Select **`Show Filter`**.
29. Hover over the **`Area`** pill in the **`Filters`** shelf and click on the white arrow that appears.

30. Navigate to `Apply to Worksheets` | `Selected Worksheets...`.
31. In the `Apply Filter to Worksheets` [`Area`] **window that opens, select the box in front of the second sheet,** `HH internet type,` and click on `OK`. We notice that a small symbol appears next to `Area` in the `Filters` shelf. If you hover over it, it will inform you that the filter applies to selected worksheets with a related data source:



32. Create a new dashboard by clicking on the New Dashboard tab in the bottom of the worksheet.
33. Drag and drop the `Internet penetration` sheet from the `Dashboard` pane into the workspace.
34. Drag and drop the `HH internet type` sheet from the `Dashboard` pane into the workspace, under the `Internet penetration` sheet.
35. The `Area` filter will appear in the dashboard as well.
36. Try it by selecting and deselecting different areas.

How it works...

This recipe relies on data blending. By editing the relationship between the `Region` and `Area` dimensions in the two data sources, we make a link between the two, and tell Tableau to treat them as the same dimension. This allows us to filter across the sheets using this dimension, just as if it was coming from one data source.

There's more...

Multiple dimensions can be linked and filtered in Tableau. Also, more than two data sources can be used in a single dashboard and, if all conditions for data blending are satisfied, they can all be used to filter across the worksheet from other dashboards.

Adding highlight actions

So far, we have experienced using filter actions. Now, we will use another kind of action: highlight actions. Highlight actions let us highlight the same category in other visualizations in the dashboard on a click or hover. They can be

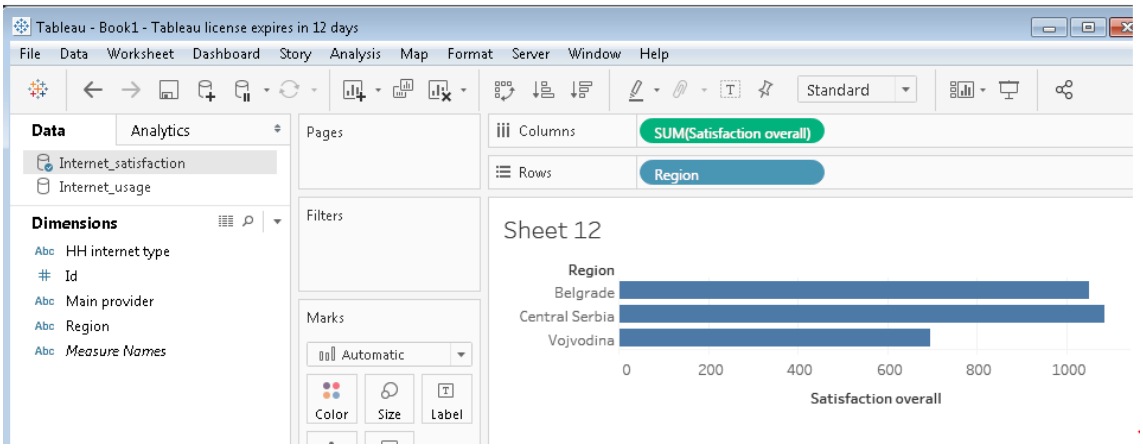
very useful in boosting the readability of the dashboard.

Getting ready

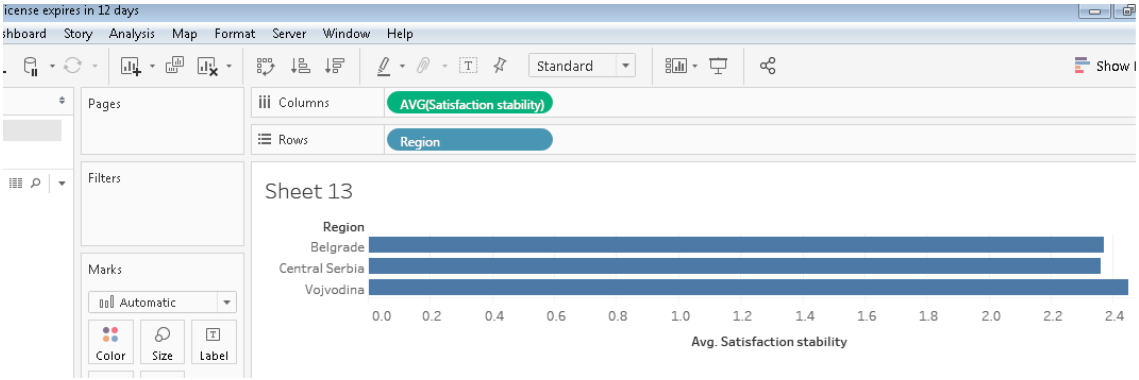
For this recipe, we will make a dashboard from scratch using the `Internet_satisfaction.csv` dataset, so before we begin, make sure you download it to your device and connect to it.

How to do it...

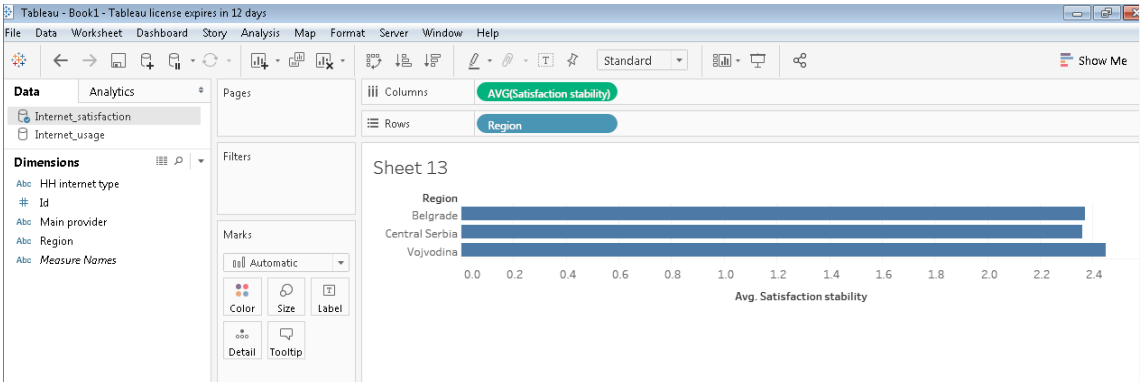
1. Create a new worksheet by clicking on the New Worksheet tab in the bottom of the workbook.
2. Drag and drop **`Region`** from **`Dimensions`** into the **`Rows`** shelf.
3. Drag and drop **`Satisfaction`** overall from **`Measures`** into the **`Columns`** shelf.
4. Hover over the **`Satisfaction overall`** pill so that a small downward arrow appears on it and click on it.
5. Navigate to **`Measure`** (**`Sum`**), and in the drop-down menu, select **`Average`** :



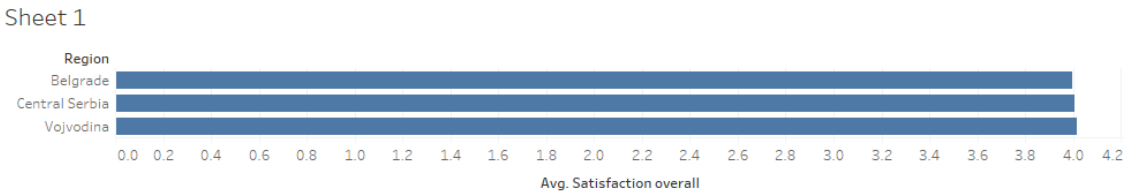
6. Create a new worksheet by clicking on the New Worksheet tab in the bottom of the workbook.
7. Drag and drop **`Region`** from **`Dimensions`** into the **`Rows`** shelf.
8. Drag and drop **`Satisfaction speed`** from **`Measures`** into the **`Columns`** shelf.
9. Hover over the **`Satisfaction speed`** pill so that a small downward arrow appears on it and click on it.
10. Navigate to **`Measure`** (**`Sum`**), and in the drop-down menu, select **`Average`** :

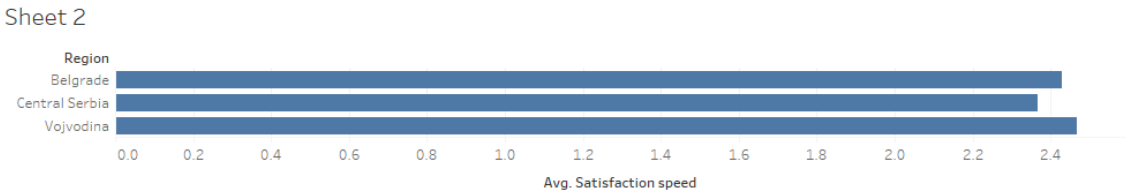


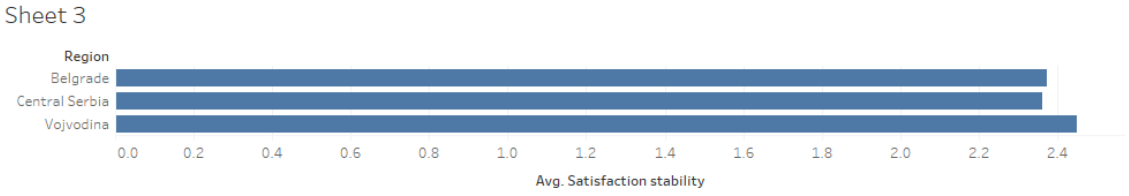
11. Create a new worksheet by clicking on the New Worksheet tab in the bottom of the workbook.
12. Drag and drop **`Region`** from **`Dimensions`** into the **`Rows`** shelf.
13. Drag and drop **`Satisfaction stability`** from **`Measures`** into the **`Columns`** shelf.
14. Hover over the **`Satisfaction stability`** pill so that a small downward arrow appears on it and click on it.
15. Navigate to **`Measure`** (**`Sum`**), and in the drop-down menu, select **`Average`** :



16. Create a new dashboard by clicking on the New Dashboard option in the bottom of the workbook.
17. Drag and drop **`Sheet 1`** from the **`Dashboard`** pane to the dashboard view.
18. Drag and drop **`Sheet 2`** under **`Sheet 1`** , and **`Sheet 3`** under **`Sheet 2`** :

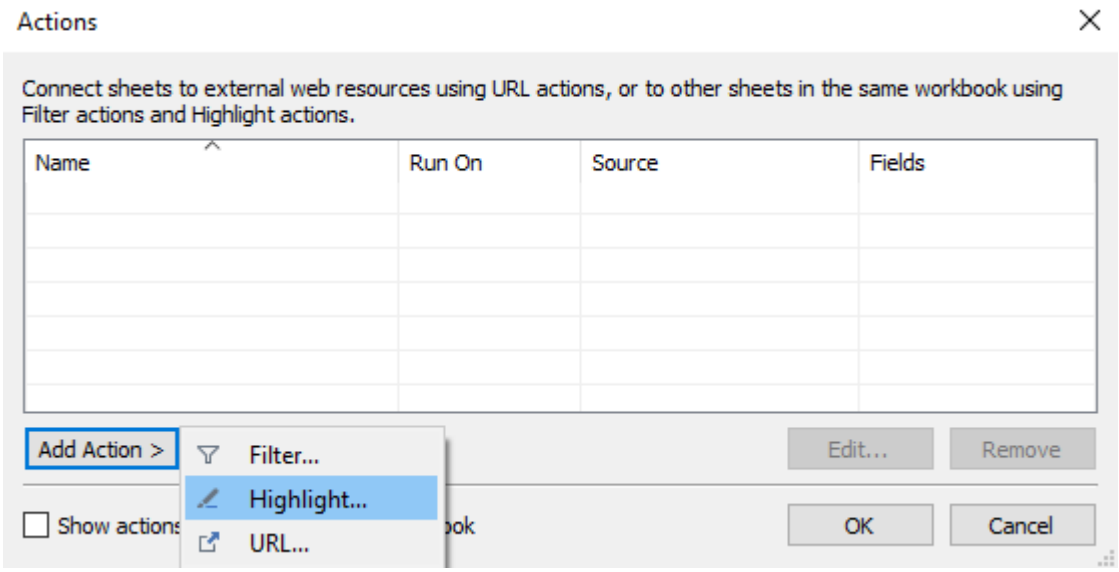






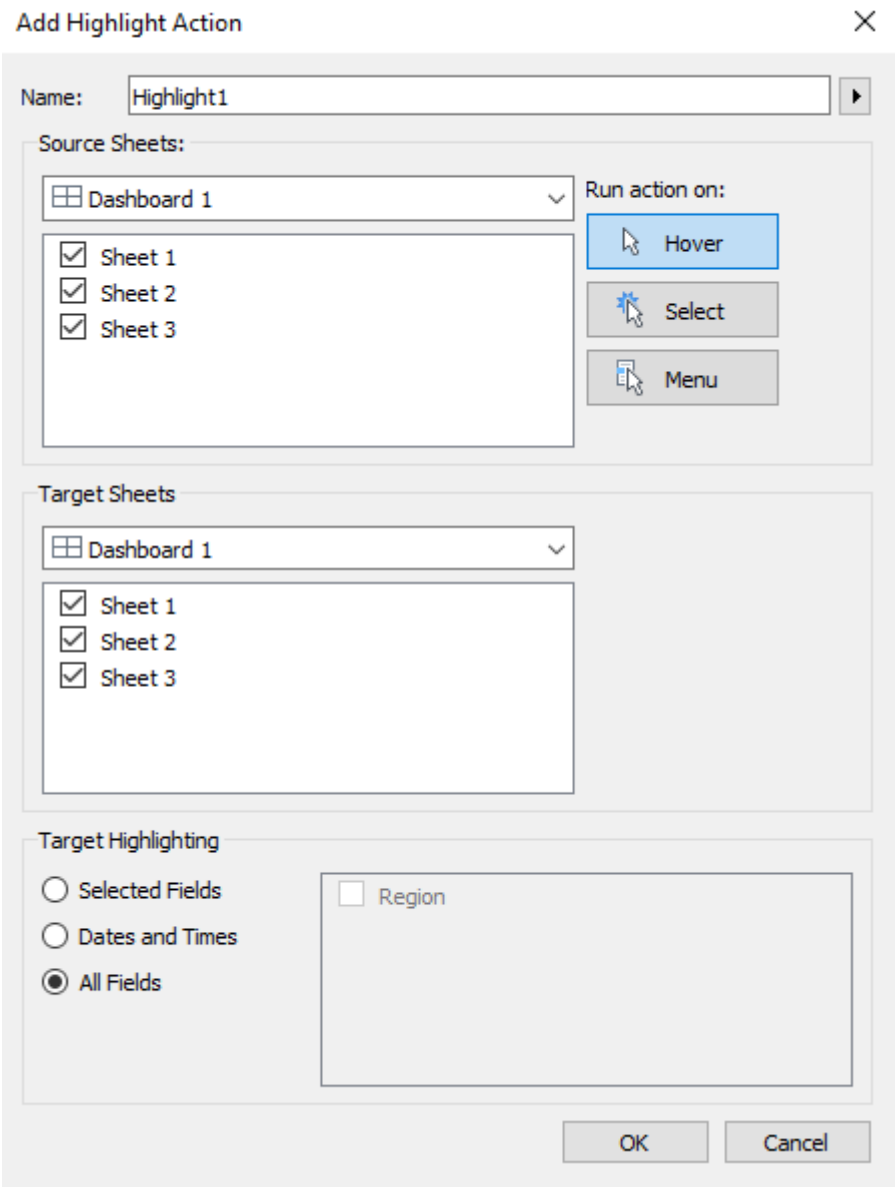
19. From the main menu toolbar, navigate to **`Dashboard`** | **`Actions...`** .

20. In the `Actions` window, click on the `Add Action >` option and select `Highlight...`:



21. Under the `Source Sheets` and `Target sheets` options, leave all sheets selected. Keep in mind that `Dashboard 1` needs to be selected under both `Source Sheets` and `Target Sheets`.

22. Under the `Run action on` option, select `Hover`:



23. Click on `OK`.
24. Click ** `O` **K in the `Actions` window.
25. Test it by hovering over any of the bars or column headers in any of the charts.

How it works...

Actions send information across different worksheets, allowing a selection or hover that you can perform on one worksheet in the dashboard to trigger the action across other sheets. In this case, hovering over a chart from one sheet highlights the corresponding data points in other sheets.

There's more...

We chose to run the highlight action on hover. However, Tableau offers other options as well, such as activating actions on selection, or through a menu. Depending on the kind of action you are implementing and what kind of effect you would like to achieve, other ways to run your action might be more appropriate.

Setting layouts

Tableau lets users control the overall dashboard size. It offers the following three size options:

- `Fixed` : This option helps in keeping the size of the dashboard fixed, regardless of the window used to display it.
- `Range` : Where the dashboard scales between two sizes that you specify.
- `Automatic` : Where the dashboard automatically resizes to fit the window. Additionally, Tableau offers different dashboard layouts, adjusted for different types of devices. This allows you to make only one dashboard, but still control the way it appears to your end users when they view it on a range of different devices.

Getting ready

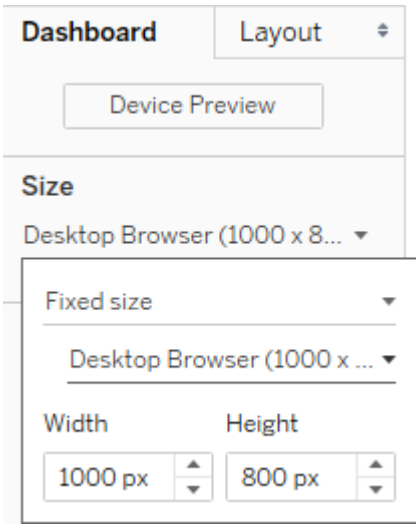
Follow the [*Creating a dashboard*] recipe to create the dashboard that you will be working with in this recipe.

How to do it...

We will begin by setting the screen size.

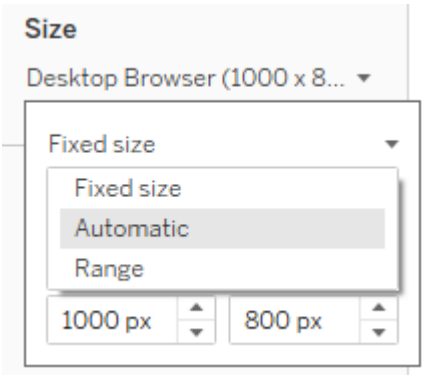
Setting a fixed size

1. Navigate to the `Dashboard` pane on the left-hand side, and click on the drop-down menu under `Size` . `Fixed size` is selected by default.
2. From the drop-down menu, select the preferred screen resolution. You can also manually adjust `Width` and `Height` by typing the figures in the appropriate boxes, or increase/decrease them by clicking the up/down arrows adjacent to the boxes:



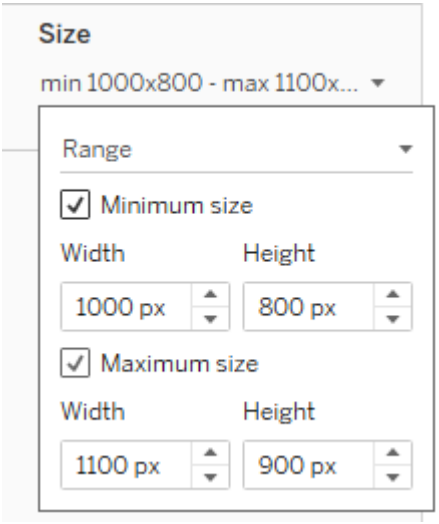
Setting the automatic size

1. In the `Dashboard` pane on the left-hand side, under `Size` , click on the drop-down menu.
2. In the first drop-down menu that appears, switch from `Fixed size` to `Automatic` :



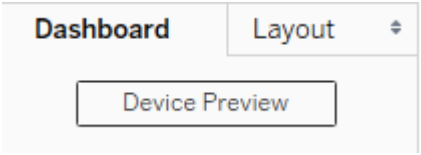
Setting the range size

1. In the ** `Dashboard` **pane on the left-hand side, under **`Size`**, click on the drop-down menu.
2. In the first drop-down menu that appears, switch from **`Fixed size`** to **`Range`**.
3. Set the minimum screen size either by typing in the desired **`Width`** and **`Height`** in the appropriate boxes, or using the up and down arrows adjacent to the boxes.
4. Set the maximum screen size using the same procedure.
5. You can also disable the minimum or maximum screen size by deselecting the box next to it:



Adding a device layout

1. In the ** `Dashboard` **pane on the left-hand side, click on **`Device Preview`**:



2. A **`Device Preview`** ribbon with options will appear at the top of the dashboard view:

3. Shuffle through **`Device type`** using the left and right arrows to choose a device type.
4. Alternatively, click on the **`Device type`** box to open a drop-down menu and choose a device type.
5. When a device type is selected, the **`Model`** box appears to the right of the **`Device type`** box, as shown in the preceding screenshot.
6. You can use the **`Model`** box to choose a specific model of the device. If you are not sure what device model your end users will be viewing the dashboard on, or whether that device model is offered, leave the default option, **`Generic Desktop Monitor/Tablet/Phone`**, selected.

7. Use the

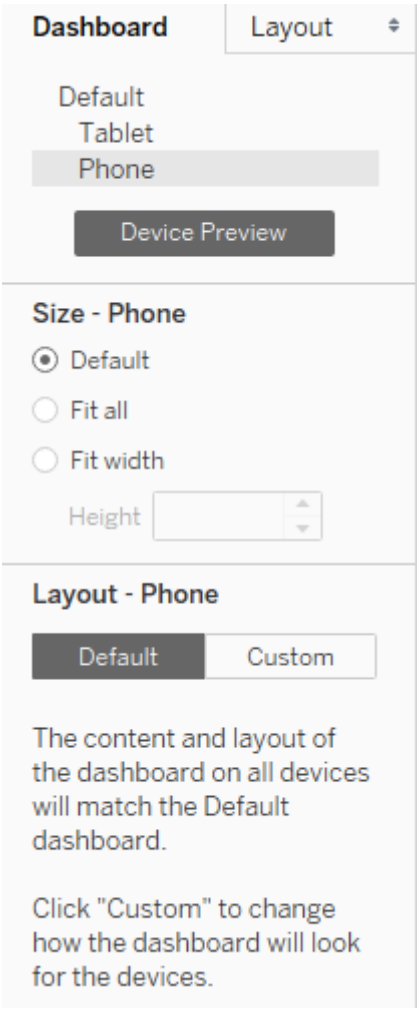
```
button to the right of the **`Model`** box to switch between
```

`Portrait` and **`Landscape`** modes.

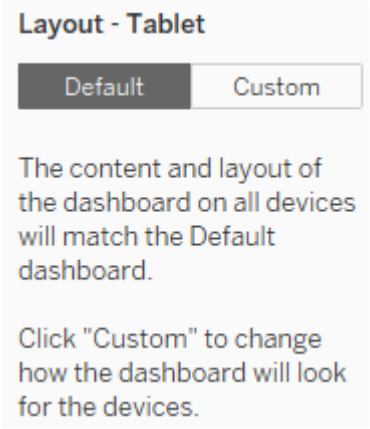
8. If the **`Device type`** box selected is **`Phone`**, you can check the **`Tableau Mobile`** checkbox. It allows you to see what the dashboard will look like in the **`Tableau Mobile app`**. To see what it will look like in the browser, deselect the box.
9. Click on the **`Add ``Desktop`** / **`Tablet`** / **`Phone Layout`** checkbox to add a layout for a particular device.

Customizing the device layout

1. Once you click the **`Add ``Desktop`** / **`Tablet`** / **`Phone Layout`** button, the new layout you added will appear in the **`Dashboard`** pane, alongside the default layout:



2. Click on different layouts that you have added to the **`Dashboard`** pane to preview them.
3. When you click on a device, such as the ** `Tablet` **layout, you can set the size of the dashboard on the **`Tablet`** screen in the **`Dashboard`** pane, under **`Size`** -- **`Tablet`**. Check the radio button in front of **`Fit all`** to fit the entire dashboard onto a tablet screen, or check **`Fit width`** to fit the dashboard by width, while setting the height manually in the **`Height`** box.
4. Under **`Layout – Tablet`**, you can leave the default option selected, and you can also check **`Custom`**. If you check **`Custom`**, a menu that allows you to manipulate dashboard elements will appear:



How it works...

When customizing the device layout, you can choose to have the same layout on all devices, or choose a custom layout for different devices. If you choose the latter, you can pick and choose which sheets to display on a specific device type and how to arrange them, without your default layout or layouts for other device types being affected by it.

There's more...

Each worksheet in the dashboard can have its position tiled or floating. The tiled layout snaps elements into positions, so that they fit next to each other, while floating allows you to move elements around freely, even overlapping them. Strive to use the tiled layout when possible, and save floating for filters, legends, images, and other small elements that can overlap with worksheets to save space.

Note

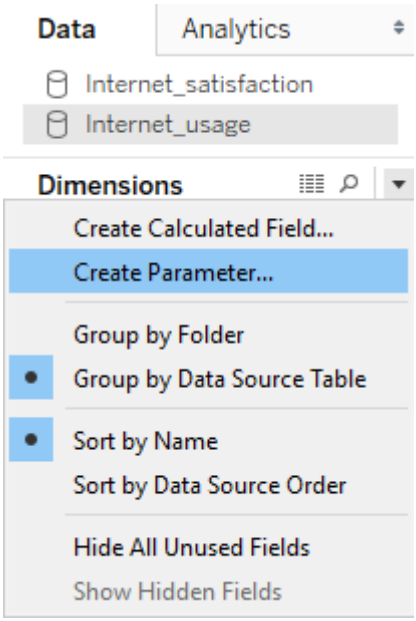
If you have floating elements in your dashboard, you should use the fixed display size! Otherwise, the tiled elements will resize with the screen size, while the floating elements will keep their position, leading to a messy look.

Building a self-service dashboard

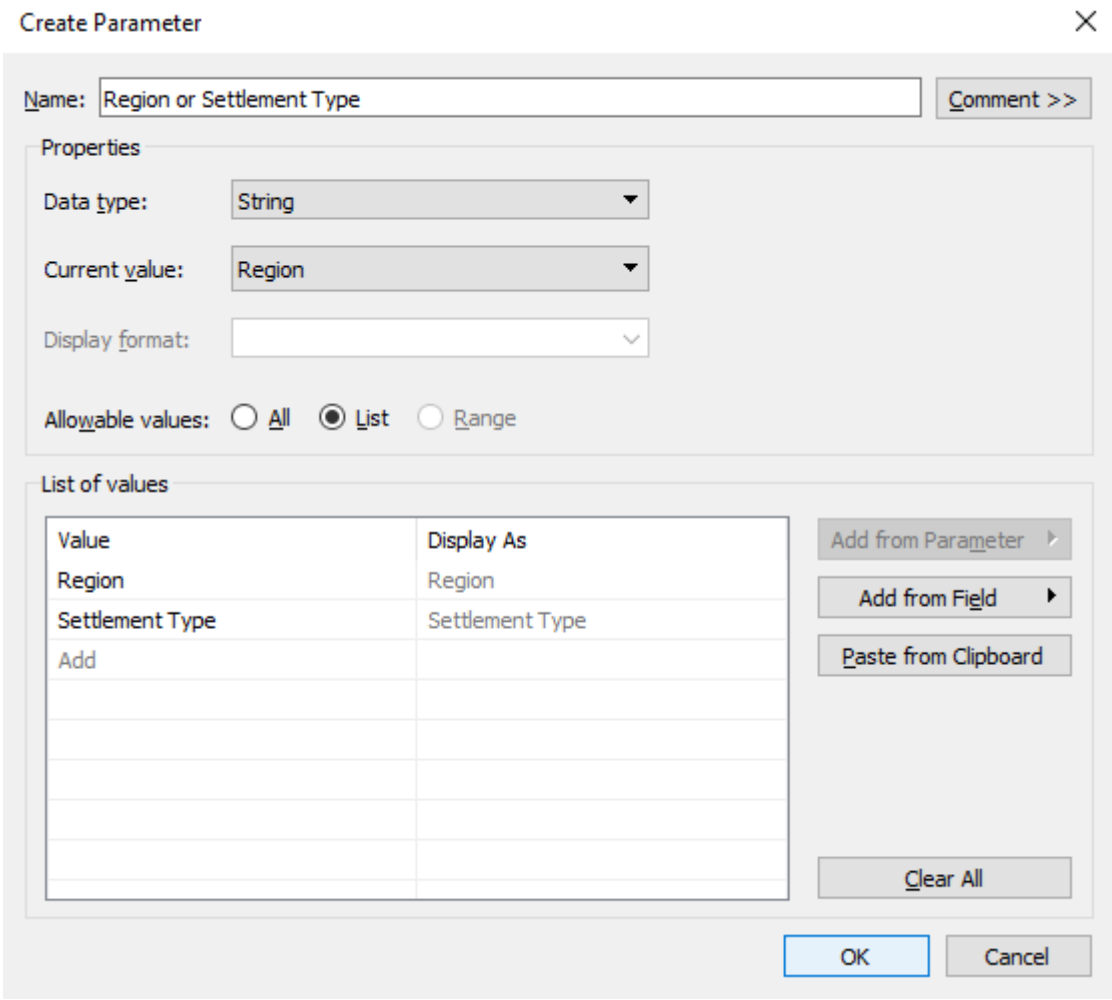
Setting up a self-service dashboard is a great way to allow your end users to explore their data at their own pace. In this recipe, we will bring together the things that we've learned throughout this lab, and some more, to create a dashboard with rich functionality. We will implement parameters and action filters to demonstrate an interactive experience, and also embed a web page and an active link into our dashboard.

Switching between dimensions with parameters

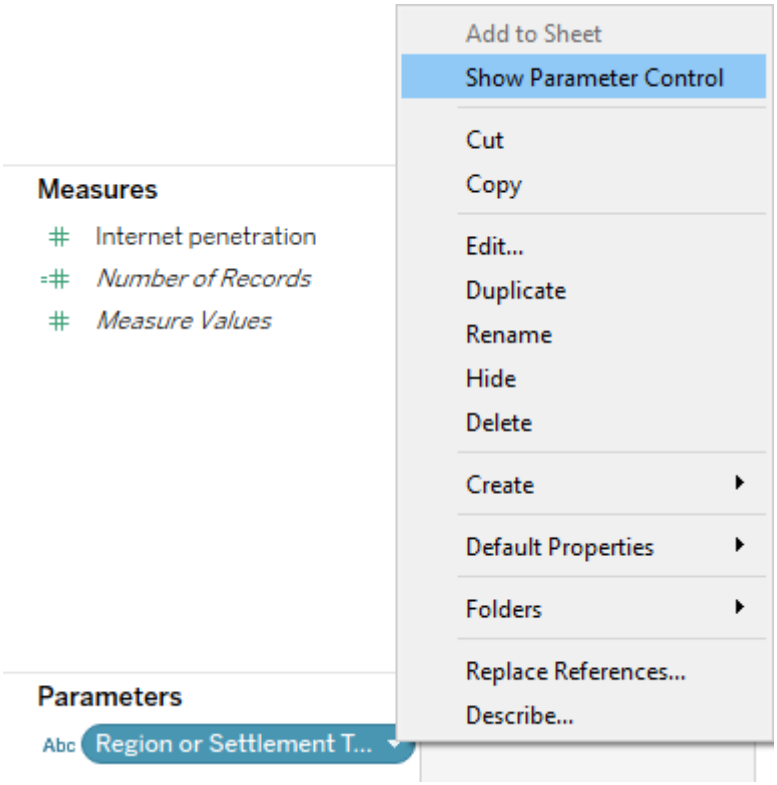
1. Connect to the data sources.
2. Click on the **`Sheet 1`** tab in the bottom of the workbook.
3. In the **`Data`** pane, make sure the `Internet_usage` data source is active.
4. Click on the black downward-pointing arrow to the right of **`Dimensions`** and select **`Create Parameter...`**:



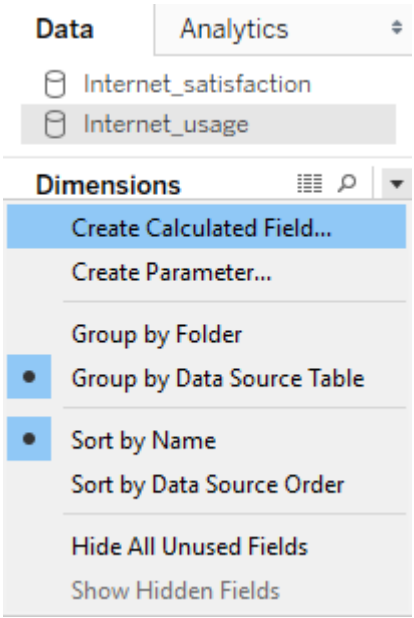
5. In the **`Create Parameter`** window, change the name of the parameter from **`Parameter 1`** to `Region or Settlement Type`.
6. In the **`Data type`** drop-down menu, choose **`String`**.
7. Under **`Allowable values`**, change the selection from the default of **`All`** to **`List`**.
8. In the **`List of values`** pane that appears, click on the **`Click to add new value`** placeholder and type `Region`.
9. In the row under add another value, `Settlement Type`, as shown in the following screenshot:



10. Click on **`OK`**.
11. A new section, **`Parameters`**, will appear under **`Measures`**, showing the parameter you just made (**`Region or Settlement Type`**). Hover over the **`Region or Settlement Type`** pill until a white arrow appears, click on it, and choose **`Show Parameter Control`**:



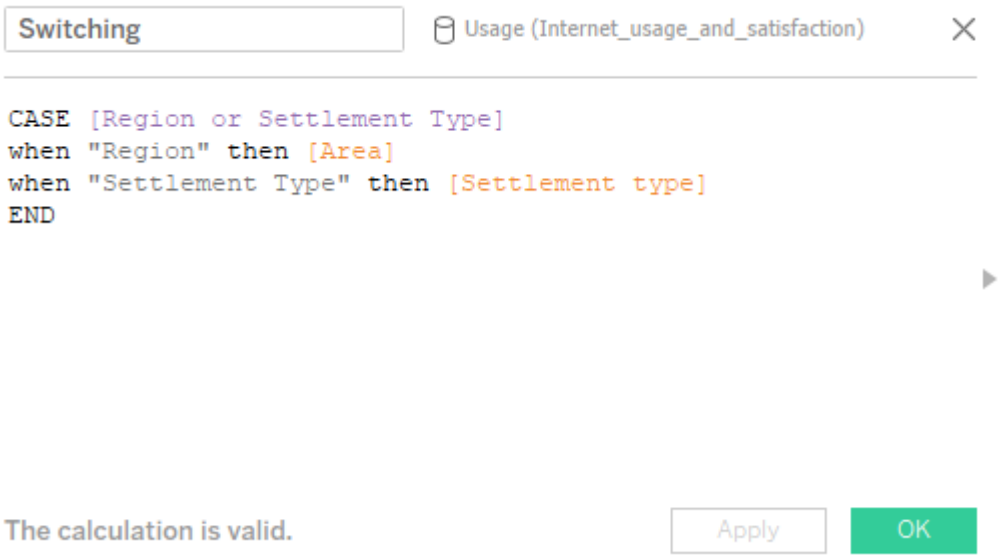
12. Let's create a calculated field that we will use in our visualization to switch between dimensions. Click on the black downward-pointing arrow to the right of **`Dimensions`** and select **`Create Calculated Field...`**:



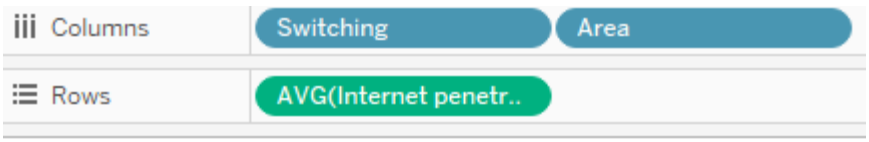
13. When the calculated field window opens, change the name from **`Calculation1`** to `Switching`, click on **`Apply`**, and type the following expression:

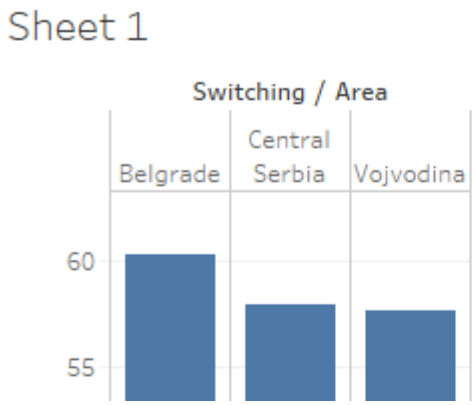
```
CASE [Region or Settlement Type]
when "Region" then [Area]
when "Settlement Type" then [Settlement type]
END
```

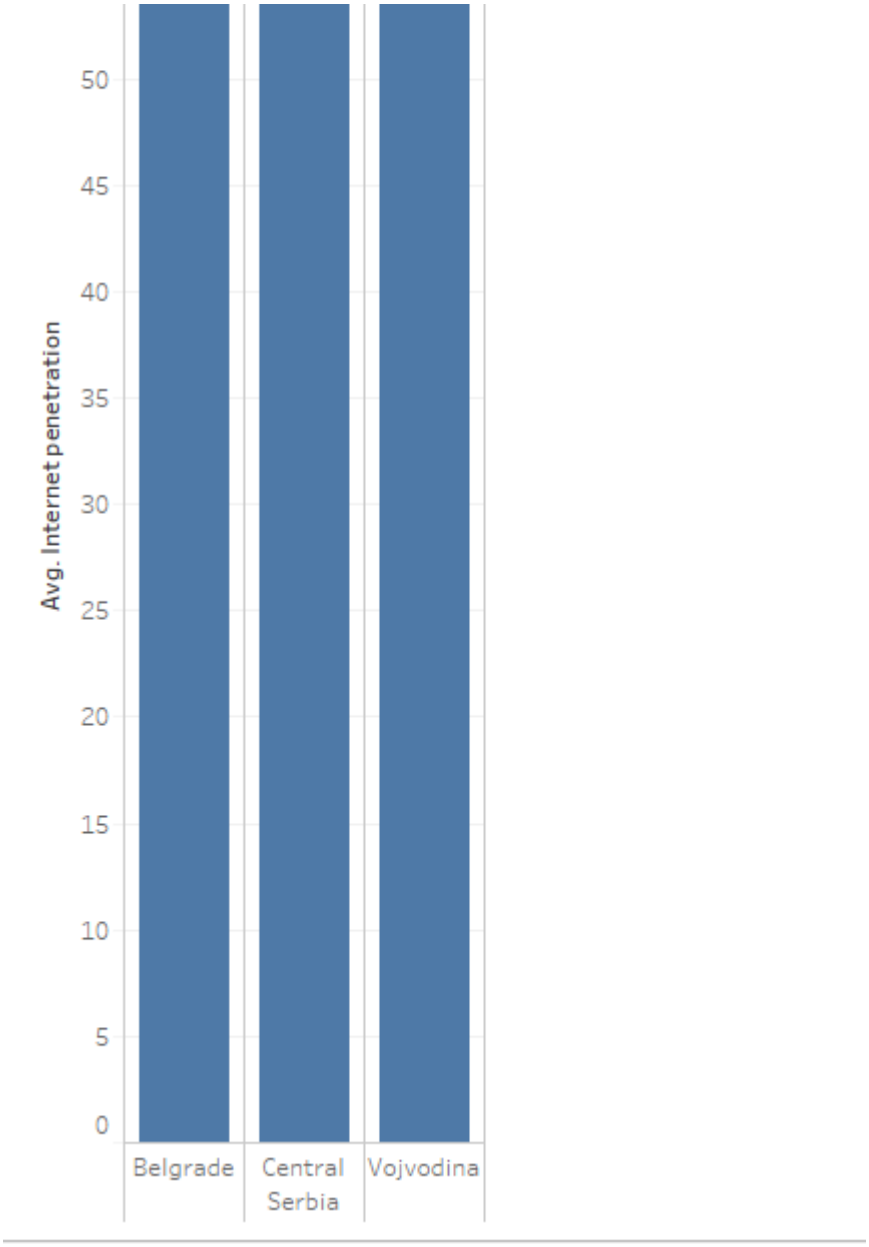
Let's see how it looks:



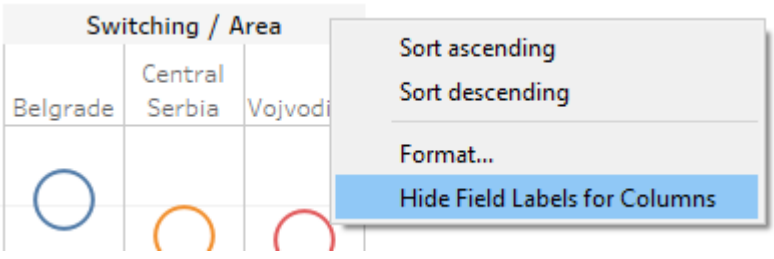
14. Click on **`Apply`** and click on **`OK`**.
15. Let's create the visualization. Drag and drop the new dimension you created, **`Switching`**, into the **`Columns`** shelf.
16. Drag and drop **`Area`** from **`Dimensions`** to the **`Columns`** shelf as well, to the right of the **`Switching`** pill.
17. Drag and drop **`Internet penetration`** from **`Measures`** into the **`Rows`** shelf.
18. Hover over the **`Internet penetration`** pill so that a small downward arrow appears and click on it.
19. Navigate to **`Measure`** (**`Sum`**), and in the drop-down menu, select **`Average`**:



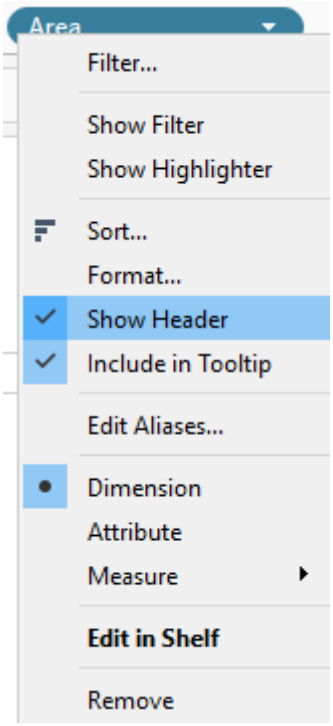




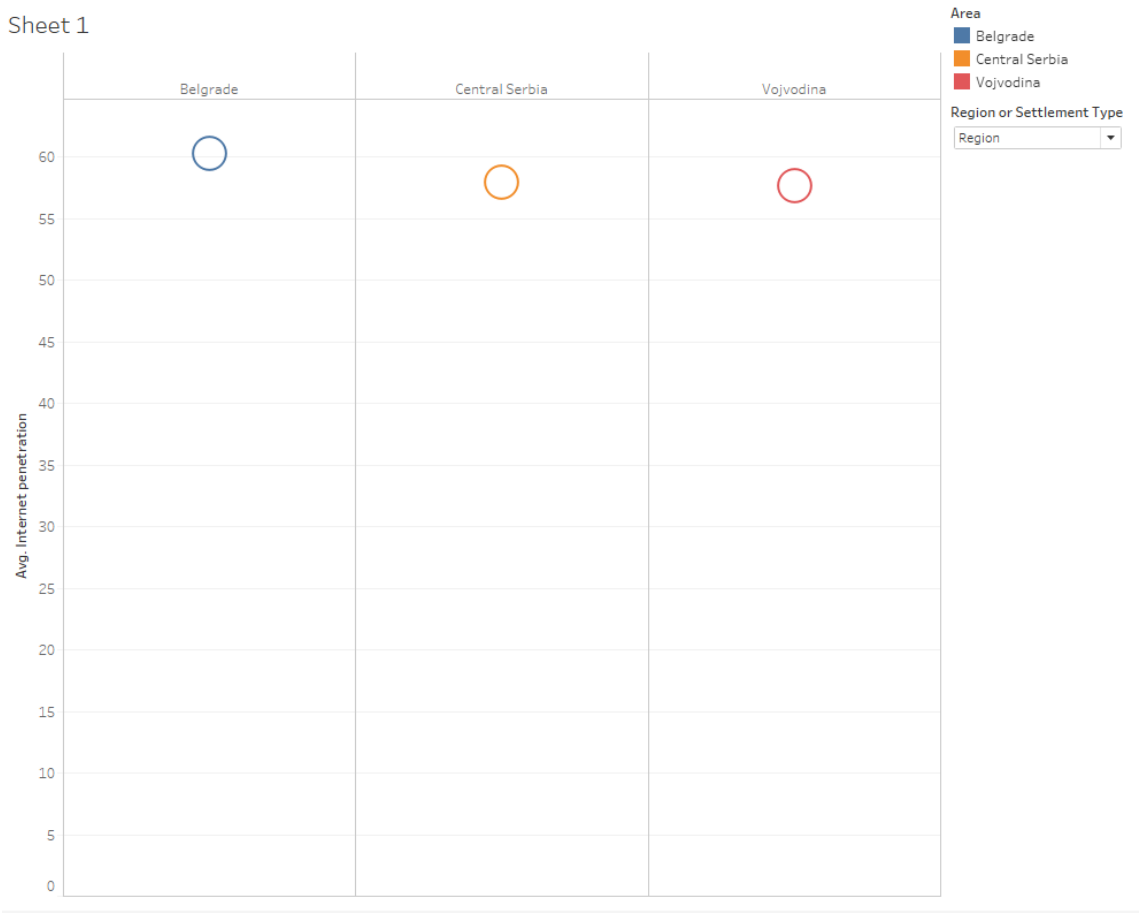
20. Drag and drop **`Area`** from **`Dimensions`** to **`Color`** in the **`Marks`** card.
21. Change the mark type in the drop-down menu in the **`Marks`** card from **`Automatic`** to **`Shape`**.
22. Right-click on the column field label in the chart, **`Switching`** / **`Area`**, and select **`Hide Field Labels for Columns`**:



23. Hover over the **`Area`** pill in the **`Columns`** shelf until a white arrow appears; click on it and deselect **`Show Header`**:

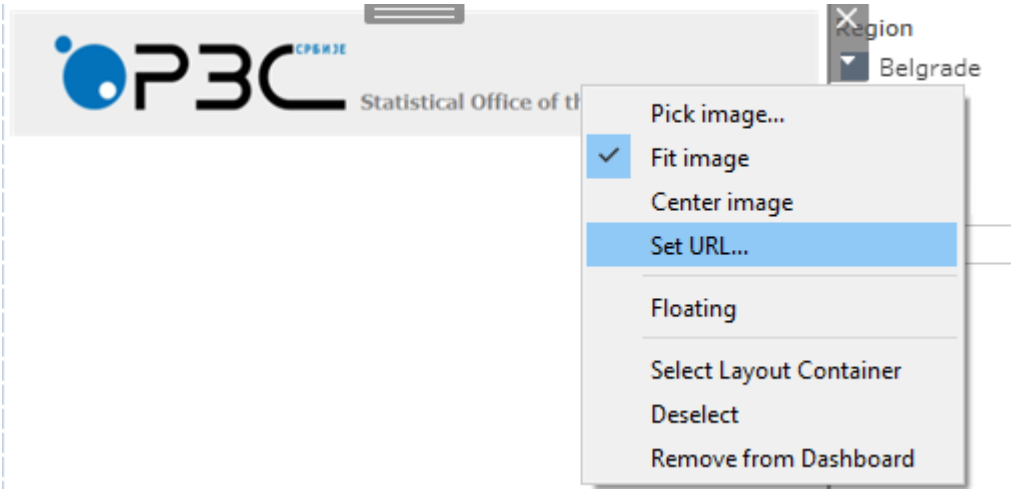


24. Double-click on **`Tooltip`** in the **`Marks`** card, and, in the **`Edit Tooltip`** window, remove **`Switching`**: <** `Switching` **>. When you are done, click **`OK`**.
25. Try it by switching from **`Region or Settlement Type`** and back in the parameter-control drop-down menu.
26. Click on the New Dashboard option in the bottom of the worksheet to create a new dashboard.
27. Drag and drop **`Sheet 1`**, which you just made, into the dashboard view:

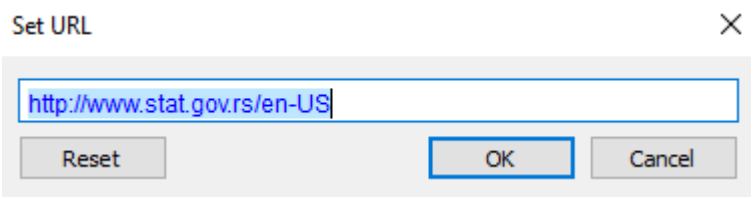


Adding a hyperlink to an image object

1. In the dashboard, from the **`Objects`** pane, drag and drop ** `Image` **into the dashboard view, to the right of the **`Sheet 1`** visualization.
2. Navigate to the `Lab 6` image you saved on your device, select it, and click on **`Open`**.
3. Right-click on the **`Image`** object in the dashboard, and click on **`Fit image`**.
4. Right-click on the image again, and select **`Set URL`**... :



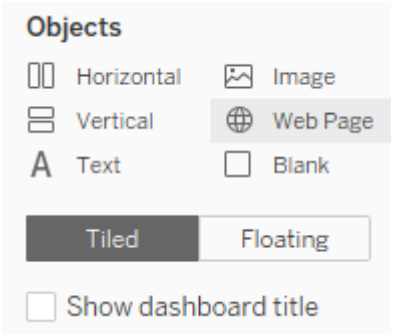
5. In the **`Set URL`** window, paste the http://www.stat.gov.rs/en-US link and click on **`OK`**:



6. Test it by clicking on the image element. It will launch your browser and take you to the home page of the **`Statistical Office of the Republic of Serbia`**.

Adding a web page to the dashboard

1. From the **`Objects`** card, drag and drop **`Web Page`** under the **`Sheet 1`** chart in the dashboard view:



2. In the **`Edit URL`** window, paste the following Wikipedia link on internet use: https://en.wikipedia.org/wiki/Global_Internet_usage.

Adding an action filter

Let's finish the dashboard by adding another worksheet to it. We will then apply the action filter to both the worksheets in the dashboard:

1. Create a new worksheet by clicking on the New Worksheet tab in the bottom of the workbook.
2. Make sure **`Internet_satisfaction`** is selected as the data source.
3. Drag and drop ** `Satisfaction stability` **from** `Measures` **into the** `Columns` **shelf.
4. Hover over the ** `Satisfaction stability` **pill so that a small arrow appears on it and click on it.
5. Navigate to **`Measure`** (**`Sum`**), and in the drop-down menu, select** `Average` **.
6. Drag and drop ** `Region` **from** `Dimensions` **into the** `Rows` **shelf.
7. Drag and drop ** `Satisfaction speed` **from** `Measures` **into the** `Rows` **shelf, to the right of the** `Region` **pill.
8. Hover over the ** `Satisfaction speed` **pill so that a small arrow appears on it and click on it.
9. Navigate to **`Measure`** (**`Sum`**),and in the drop-down menu, select** `Average` **.
10. In the ** `Marks` **card, change the mark type to** `Circle` **using the drop-down menu.

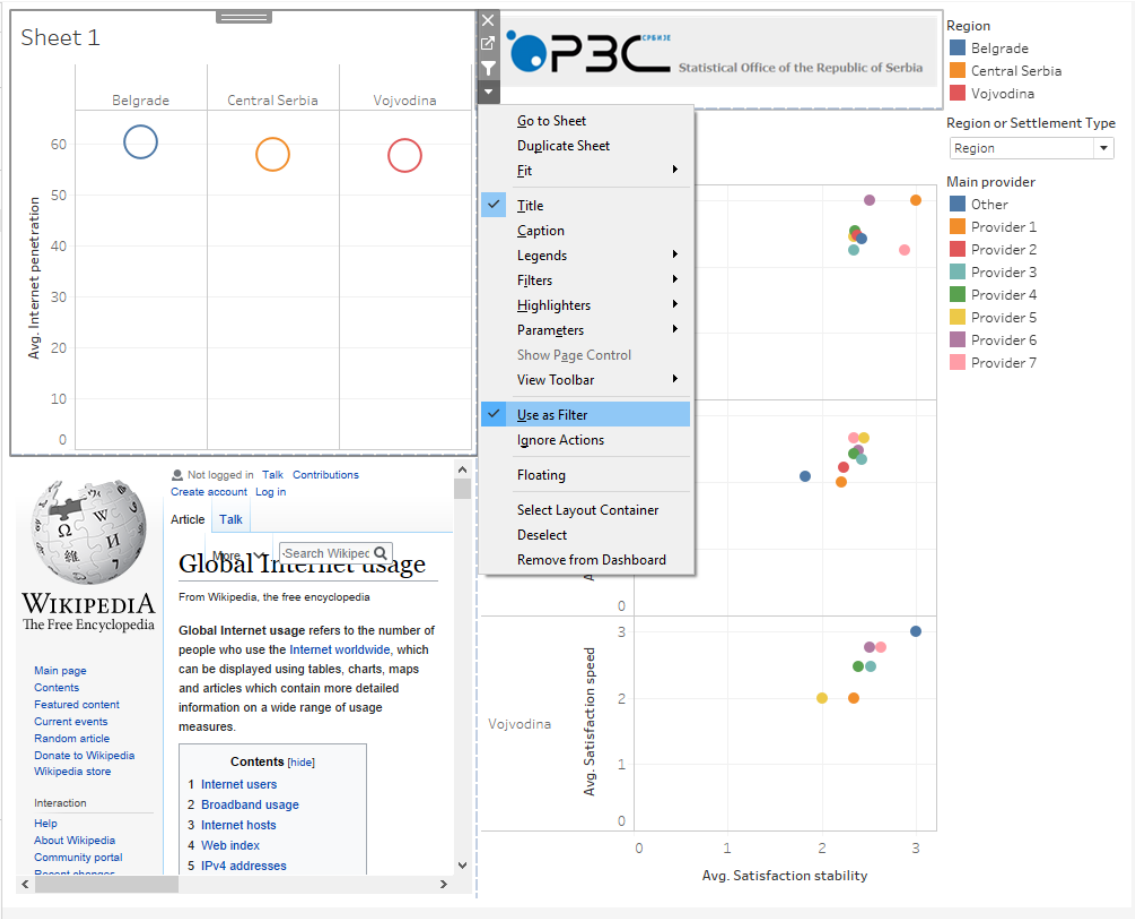
11. Drag and drop **`Main provider`** from** `Dimensions` **to** `Color` **in the** `Marks` **card.

12. Click on **`Dashboard`**, and drag and drop** `Sheet 2` **into the dashboard view, under the** `Image` **object.

13. Increase the height of the ** `Sheet 2` **chart while decreasing the** `Image` **object by hovering over the** `Sheet 2` **chart top border, holding it with your mouse, and moving it up.

14. In the dashboard view, click on the ** `Sheet 1` **chart and then click on the white pointing arrow (More Options) that appears alongside the chart area.

15. Select **`Use as Filter`**:



16. Try it out by choosing different parameter values from the **`Region or Settlement type`** drop-down menu and selecting and deselecting different regions in the **`Sheet 1`** visualization.

How it works...

In this recipe, we created a parameter to allow our users to choose an input value; in this case, it is which dimension to use. Then, we created a calculated field that utilizes parameter to switch between dimensions, and we used that calculated field in the visualization. When the user changes the parameter value, it also changes the value of the calculated field, and our visualization changes accordingly.

There's more...

Parameters can also be used to switch measures in your view, using the same principle we employed with dimensions in this recipe. It is also possible to switch between visualizations, such as a bar chart and a scatter plot, by creating them on separate sheets and then using a parameter to switch between the sheets.

From the 2018.2 version, Tableau also offers a new functionality: dashboard extensions. Extensions enable integration with other applications and new functionalities via special areas on the dashboard. You can find out more about dashboard extensions at https://www.tableau.com/about/blog/2018/6/announcing-dashboard-extensions-20182-beta-89581.