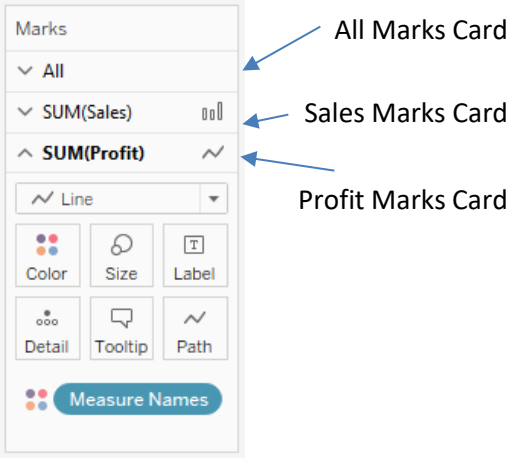
Working With Mulltiple Measures

All of the visualisations developed so far have been based upon a single dimension and a single measure, sometimes augmented by a colour-coding based upon a second field. Tableau allows for multiple dimensions and multiple measures to be used in the same graph through the use of the Measure Names (found at the bottom of the list of dimensions in the **Data** pane) and Measure Values (found at the bottom of the list of measures in the **Data** pane) containers.

Working with the Marks card

So far we have used the Marks card to apply colour-coding based upon values of a measure, but in practice it is far more versatile than this. When you create a dual axis or combined axis chart a separate card will be created for each measure – in this case the Sales Marks Card and the Profit Marks Card. Selecting one of these will allow you to make changes to that particular measure's display. In this case, for instance, we changed the display of SUM(Profit) from Automatic (usually bars) to Line to produce the line graph. A third marks card, the All Marks Card, allows you to make changes to both cards at the same time.



The Marks Card contains five main controls, plus a space (bottom right) that can be filled whenever there are extra parameters that may be set for a particular graph type.

Colour (applies to all graph styles)

Dimension: Colour-code proportions of a displayed element based upon the number of categories represented by that dimension.

Measure: Defines a colour scale based upon the lowest and highest values of the measure and colour-codes the displayed elements accordingly.

Size (applies to line thicknesses and shape sizes)

Dimension: The sizes of the shapes will represent the number of categories represented by that dimension.

Measure: Defines a size scale based upon the lowest and highest values of the measure and resizes the displayed elements accordingly.

Label:

Dimension: This will split the display elements into smaller elements, each with a label showing the dimension values.

Measure: Adds a label showing the value of an element next to or within the element.

Detail:

Dimension: Splits the display into smaller elements, each referring to one dimension value.

Measure: Adds the value of the element to the tooltip.

Tooltip:

Dimension: Adds the value of the element to the tooltip.

Measure: Adds the value of the element to the tooltip.

Combined or Shared Axis Charts

While dual axis charts have separate axes for each of the measures, combined (or 'shared') axis charts show more than one measure on the same axis. This is useful if you want to view multiple

measures on the same scale, which is useful if you want to examine the relationship between measures (Figure 1).

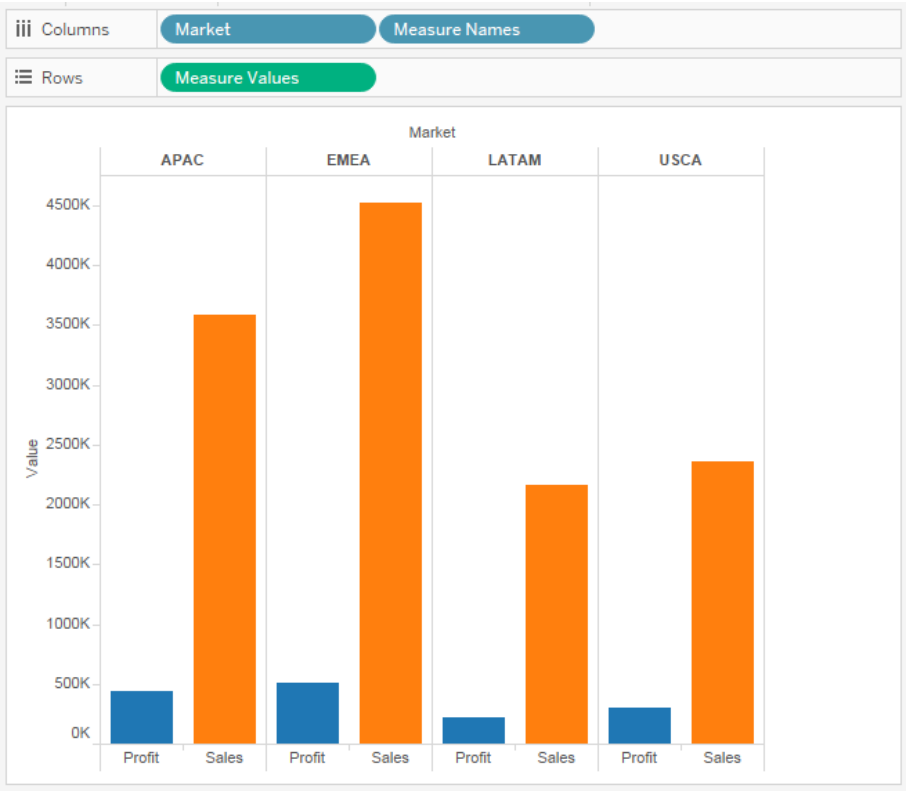
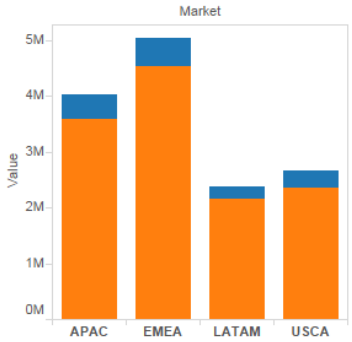


FIGURE 1: A COMBINED-AXIS CHART

Create a Combined Axis Chart

1. Drag a dimension to **Rows**.
2. Drag a second measure to the vertical axis, dropping it when you see the light green double-bar icon.
3. Drag a dimension to **Columns**.
4. To colour-code the columns drag another copy of **Measure Names** to **Color** on the **Marks** card.

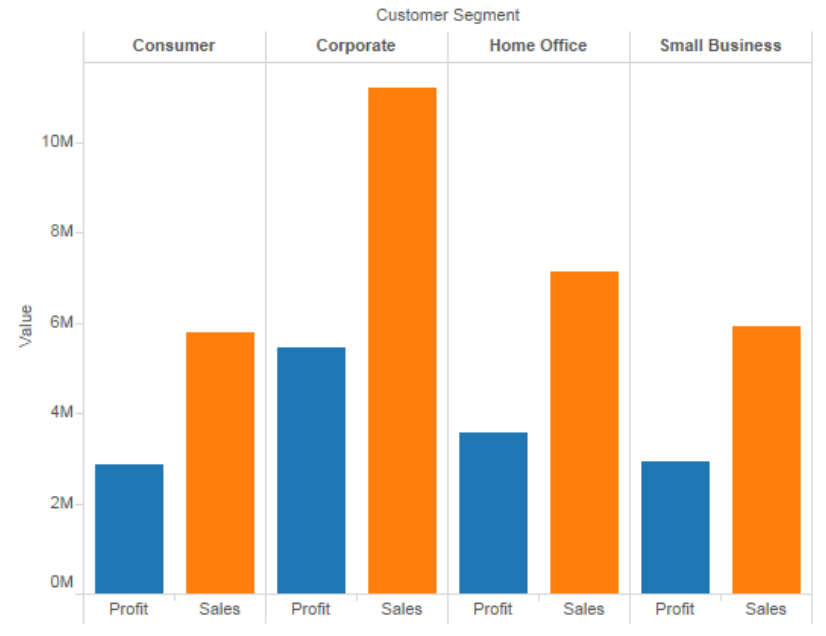
Create a Combined Axis Chart with Stacked Marks



1. Drag a dimension to **Columns**.
2. Drag a measure to **Rows**.
3. Drag a second measure to the vertical axis, dropping it when you see the light green double-bar icon. **Measure Names** will appear on the **Columns** shelf. **Measure Values** will appear on the **Rows** shelf.
4. To colour-code the columns drag another copy of **Measure Names** to **Color** on the **Marks** card.
5. Remove **Measure Names** from the shelf.

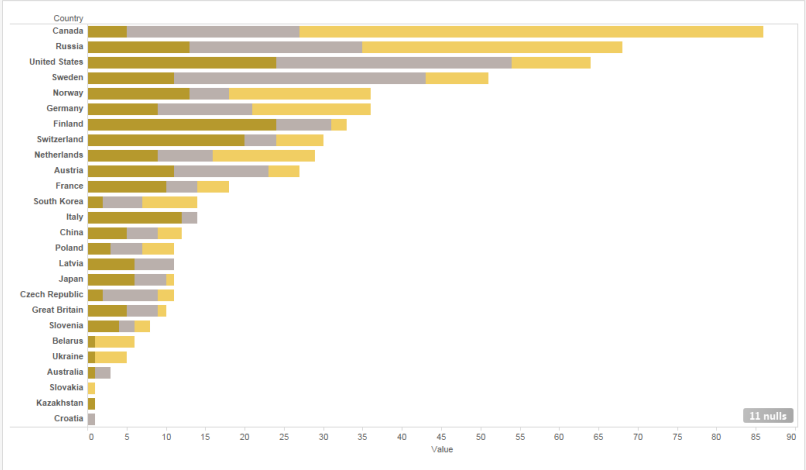
Tasks

1. Open the packaged workbook **Workshop 6 – Combined Axis Chart Starter.twbx**
2. Create a view on Sheet 1 that shows a bar chart of Profit and Sales for Customer Segment.



3. Open the packaged workbook **Workshop 6 – Stacked Marks Starter.twbx**
4. Create a view on Sheet 1 that shows
   a. A single stacked bar per country
   b. Colour-coded by medal type
   c. Uses appropriate colours for the medals
   d. Formatted as below, sorted from highest to lowest.

Hint: Create the stacked marks chart then sort using the main toolbar sort, recolour by clicking on the colour mark in the data marks pane, and re-order the medal colours using the drop-down on the key to the colours.



Creating Dual Axis Charts

Dual axis charts are useful for showing how two different measures compare to each other. These use two separate measurement axes and a single dimension axis and should be used to show:

- Two measures with different units, e.g. one currency and one time
- Two measures with the same measurement units but different scales, e.g. sales v. profits
- Two measures with different mark types.

Building a Dual Axis Chart

1. Drag a measure onto **rows** or **Columns**.
2. Drag another measure onto the view to the opposite axis – right if the first measure was on **Rows**, top if it was on **Columns**. Drop the field when you see the black dashed line.
3. If you have two measures that have the same measurement units and you want the scales to be the same, right-click on the axis of the second measure and select **Synchronize Axis**; N.B. you can only synchronise the second axis to the first.

Customising Marks on a Dual Axis Chart

Sometimes it is useful to show multiple mark types on a single graph so that it is easier to compare the two. This type of encoding is known as a combo chart.

Combo Charts – Showing More Than One Measure

Combo charts allow you to show multiple measures with different mark types within the same view. The chart below shows the sum of sales (the orange bars, left axis) and the sum of profits (blue line, right axis) for each month. This is an example of a *dual axis view*; notice that Measure Names has appeared in the Marks pane, and that SUM(Sales) and SUM(Profit) in the Rows shelf have acquired a shared straight edge (Figure 2).

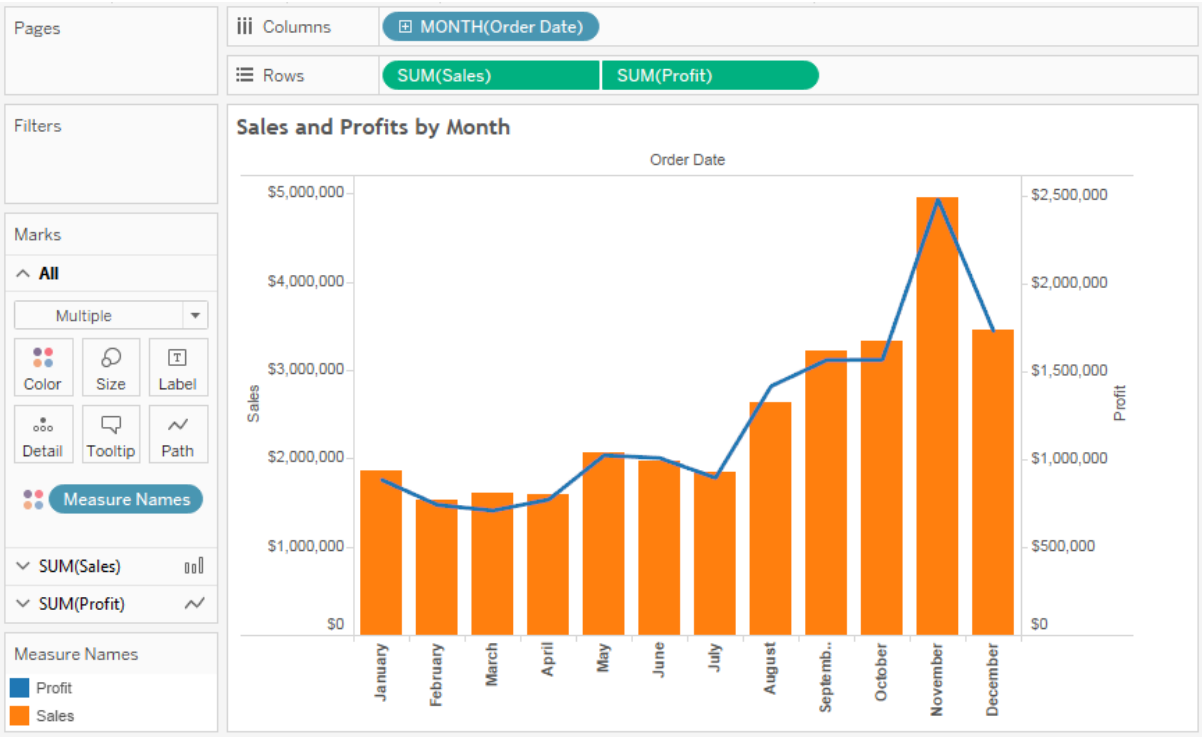


FIGURE 2: COMBO CHART WITH UNSYNCHRONISED AXES

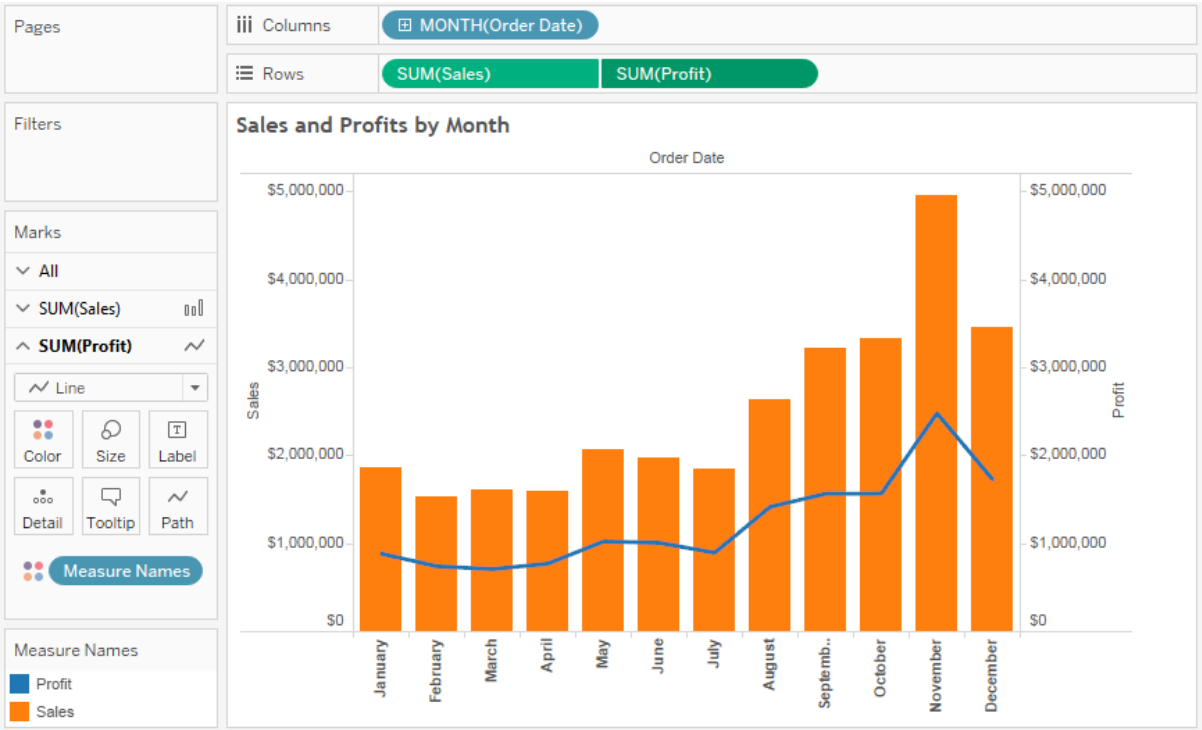


FIGURE 3: COMBO CHART WITH SYNCHRONISED AXES

Create a Combo Chart

1. Drag one measure to **Rows**.
2. Drag a second measure to **Rows**, next to the first measure.
3. Right-click on the second measure and select **Dual Axis**.
4. If you want to show the two measures on axes that have the same scale, right-click on the right-hand axis and select **Synchronize Axis**. This will change the right axis to the same scale as the left axis, as shown in Figure 3.

5. Drag a dimension to **Columns**.
6. On the **Marks** card, change the mark types of the individual measures.

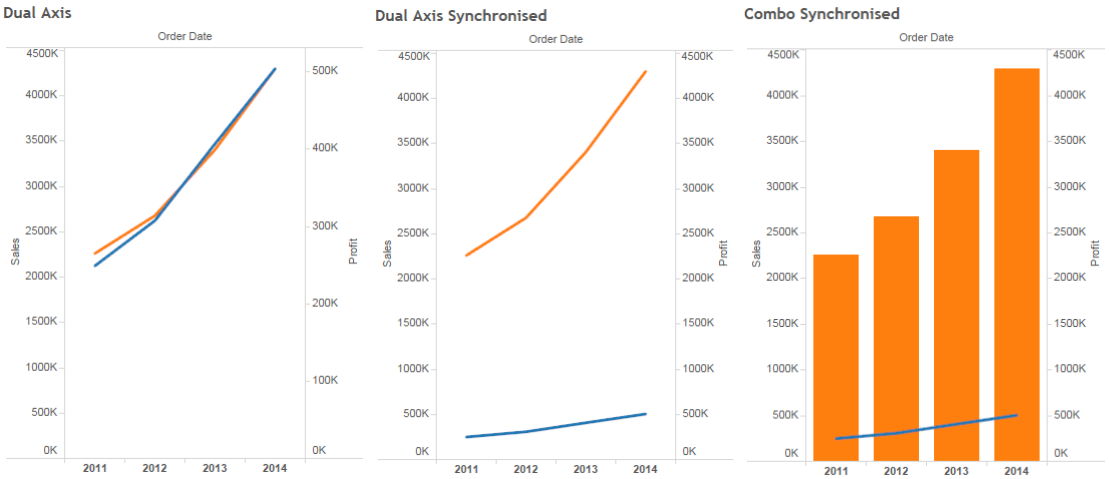
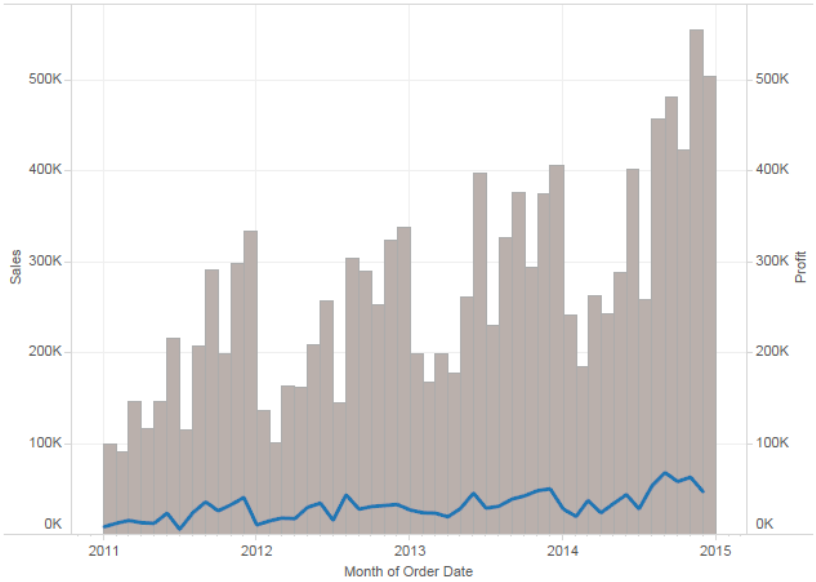


FIGURE 4: DUAL AXIS, DUAL AXIS SYNCHRONISED, AND COMBO SYNCHRONISED GRAPHS

Tasks

1. Open the packaged workbook **Workshop 6 – Dual Axis Starter.twbx**
2. Create a Dual Axis chart that shows the following:
   - Sales as bars and Profit as a line by month with synchronised axes.