Tableau Beginner Training Curriculum

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TABLEAU TERMINOLOGY

Tableau uses its own terminology to refer to the various sections you see on the screen. Some of these terms include Cards, Shelves, Filters, Pages, the Data Window, and Marks. See pages 5 & 6 for illustrations.

Shelves and Cards

Every worksheet in Tableau contains shelves and cards. By placing fields on shelves or cards, you can create the rows and columns of a view, exclude data from the view, create pages, and control mark properties. You can easily experiment by placing fields on different shelves and cards to find the optimal way to look at your data.

Shelves

A shelf is an area on the visualization screen where you can drop pieces of data so that Tableau can act on them. You build views of your data by placing fields onto the shelves on a worksheet. Some shelves are available only when certain mark types are selected. For example, the Shape shelf is available only with the Shape mark type.

Columns and Rows Shelves

The Columns shelf creates the columns of a table, while the Rows shelf creates the rows of a table. You can place any number of fields on these shelves.

When you place a dimension on the Rows or Columns shelves, headers for the members of that dimension are created. When you place a measure on the Rows or Columns shelf, quantitative axes for that measure are created. As you add more fields to the view, additional headers and axes are included in the table to create an increasingly detailed picture of your data.
Filters Shelf

The Filters shelf allows you to exclude data from a view. You can filter data using measures, dimensions, or both measures and dimensions at the same time. You can filter data based on the fields in the columns and rows of the table or using fields that are not in the table.

Pages Shelf

The page shelf lets you split a view into a sequence of pages based on the members and values in a discrete or continuous field. Adding a field to the page shelf is like adding a field to the Rows shelf except a new page is created for each new row. This is useful for visualizing a series of events or animating a dashboard.

Marks Card

The Marks card is where you drag fields to control mark properties such as type, color, size, shape, etc. The fields on the Marks card are listed at the bottom of the card. Each field has an icon next to it to identify the mark property. Marks visually represent one or more rows in a data source. Mark types can be a bar, line, square, etc. Tableau can automatically select a mark type, or you can manually select the mark type from the Mark menu.

Data Pane

The Data pane displays the fields of the data sources connected to Tableau. The fields are divided into dimensions and measures. The Data window also displays custom fields such as groups and calculations. You can build views of your data by dragging fields from the Data window onto the various shelves on a worksheet.
Dimension
Dimensions are independent fields. Dimensions typically hold discrete data such as hierarchies and members that cannot be aggregated. Examples of dimensions include dates, customer names, and customer segments.

Measure
Measures are fields that are dependent variables. They are typically quantitative fields or calculated fields like sales, temperature or frequency. Discrete measures can also be created in Tableau.

Field
Field is another name for a dimension or a measure. All databases contain fields. For relational data sources, fields are the columns of a table. For multidimensional (OLAP) data sources, fields are the dimensions of a cube. Each dimension or column contains a unique attribute of the data such as customer name, sales, product type, etc.
Pills

Pills are Tableau's name for how it displays and categorizes data fields. Blue indicates discrete and green indicates continuous. By default, dimensions are categorized as discrete variables and measures are continuous, but this can be changed by the user.

In order to understand the difference between discrete and continuous, it helps to remember that discrete data fields are headers and categories while continuous fields are numerical axes. Dates can be either discrete chunks (e.g. sales by month as a bar chart) or continuous (e.g. chronological sales over time as a line graph).

Hierarchy

Hierarchies allow users to drill down into data. Some hierarchies are created naturally such as Year>Quarter>Month>Day or State>County>Town>Zip, while others are created manually such as Academic Career. Tableau automatically creates date and geographical hierarchies.
Tableau offers many different ways to connect to data and continues to make more sources available. During this class we will use an Excel spreadsheet as the data source.

For this class, we’ll use the Shopping Data spreadsheet we sent out beforehand. Please launch Tableau, select Connect to Data, and then Microsoft Excel to open the spreadsheet.

You’ll notice that Tableau offers many different options to source your data.
**Importing Data**

You will now see the spreadsheet data in the Tableau Data Source window. You can pivot, filter, and parse the data here or have the Tableau Data Interpreter do it for you automatically. You can also edit the field names here or change data types if necessary.

This dataset is pretty straightforward, so you can click on the "Sheet 1" tab in the lower left-hand corner to start creating a worksheet.

Tableau will identify the dimension and measure fields for you. If it does so incorrectly, you can simply drag the fields to the correct section.
The Category, Item, Month, and Store fields appear in the Dimensions section. Price appears in the Measure section, along with Number of Records, which is an automatically added measure.
CREATING CROSSTABS TO VIEW THE DATA

Let’s start off by creating a crosstab. Crosstabs are like spreadsheets in Tableau. It’s a good idea to start off with a crosstab so that you know that your data looks right before you convert it to a chart.

In this class, we’re going to create a number of charts so that we can compare the data and then we’ll create a dashboard to display the contrasting charts. Feel free to play around with changing colors and formats.

Create Summary Data Crosstab

- Drag the Month field from the Dimensions section to the Rows Shelf. This will bring up the Date Hierarchy. Drill down to the Month level.
- Add Category to the Rows shelf.
- Add Number of Records to the Rows shelf and change the format to make it discrete. Modifying the format changes it from a bar to a number.
- Add the Price field to the Rows shelf and change the format to make it Discrete and Currency.
- Rename the sheet "Summary Data".

The Show Me Popup in the right-hand corner gives examples of various charts. It grays-out options that won’t work with the current data displayed in the view.
Create Raw Data Crosstab

- Duplicate the Summary Data Crosstab.
- Rename the new sheet "Detail Tab".
- Add Store to the Rows shelf after Category.
- Add Item to the Rows shelf after Store.
- Remove Number of Records from the Rows shelf.
- Select "Analysis>Table Layout>Advanced" from the menu to change the row and column limitations to 16 (to remove the field name concatenations).
- You can sort fields by clicking in the right-hand corner of the field name or by right-clicking on the field on the shelf and selecting sort.

Let's make this a bit prettier now:

- Move Price to the "Text" box on the Marks card.
- Remove Quarter from the Rows shelf.
- Rename the sheet "Spending Details".
Create Total Items by Category and Month Chart

- Return to the first tab and duplicate the tab.
- Rename the new sheet "Total Items by Category and Month".
- Remove Price from the Marks card shelf.
- Move the # of Records field to the Column shelf and make it continuous.
- Drag Category to Color on the Marks card.
- Drag Month to the Filter card, choose "Years" and select 2013 and 2014.

We’ll return to this chart in the future after we create the Total Spending by Category and Month Chart to compare.
Create Stacked Total Items by Category and Month Chart

- Duplicate this chart.
- Rename the tab "Stacked Total Items by Category and Month".
- Remove Category from the Rows shelf.
- Select the stacked bars chart from the Show Me pop-up.
- Select "Analysis>Swap Rows & Columns" from the menu.

Compare this chart to the previous one. They tell the same story in different ways.

Advanced Example - Table Calculations

Table calculations are an easy way to transform your tables and charts. They are an advanced concept, so don't be disappointed if you do not fully grasp it at first. It will take time to know when and how to use the variety of table calculations provided in Tableau. There are a lot of great examples online.

- Duplicate the previous chart.
- Rename the tab "Stacked % Total Items".
- Use the drop down on the Number of Records pill on the Column shelf to add a table calculation with Calculation Type: "Percent of Total" and Compute Using: "Cell".
- Drag "Number of Records" to the Label card. Notice how this changes the data story. I've added some labels to the example below to make things clear.
Create Total Items by Month Chart

- Duplicate the "Stacked Total Items by Category and Month" chart.
- Rename the tab "Total Items by Month".
- Replace Category on the Marks card with Month and change the format to month.
Create Total Spending by Category and Month Chart

- Return to the "Total Items by Category and Month" tab and duplicate the sheet.
- Rename "Total Spending by Category and Month".
- Replace Number of Records on the Columns shelf with Price.

Compare these 2 charts. We’ll be putting them on the dashboard at the end of this session.
Create Average Books Chart

- Duplicate the current sheet & rename "Average Books".
- Remove Category from the Rows shelf.
- Remove Category from the Marks shelf.
- Drag Category to the Filters shelf and select books only.
- Change the chart type to Side-by-Side bars on the Show Me pop-up.
- Select the Analytics tab on the left-hand side of the screen and drag a constant reference line onto the chart. Set it to 100.
- Add an Average line, set it for the entire table, and change the color.

Adding an Average reference line by pane would show you two separate averages- one for 2013 and one for 2014.
**Quick Filters**

Quick Filters can be added to worksheets to make them more interactive. You can have multiple filters on your worksheets. You can also set filters in the data source tab.

**Add a Quick Filter on Category to the Summary Data Tab**

- Return to the "Summary Data" tab.
- Click on Category and select Show Filter.
- Click the arrow in the right-hand corner of the filter and notice the various formats (dropdown, slider, list...) and options.
- Category now appears on the Filter card.
CREATING DASHBOARD

Dashboards allow users to see multiple views of data on the same screen. For example, you may have a set of charts that you review every day. Rather than flipping through each worksheet, you can create a dashboard to display all the views at once.

In this example, we're going to compare "Total Items by Category and Month" to the "Total Spending by Category and Month". We’re also going to create some Dashboard Actions which will allow the user to filter the data to see specific information.

Create Shopping Data Dashboard

- Click the Create Dashboard icon and rename the tab "Shopping Data".
- Change the format to Floating.
- Select Format>Dashboard from the top menu and change the color.
- Drag the "Total Items by Category and Month" worksheet to the upper left-hand corner.
- Drag "Total Spending by Category and Month" to the right-hand corner.
- Arrange and resize the charts. Remove one of the color legends.
- Click on each chart and adjust how is displayed in the allotted space by clicking the arrow on the upper right and choosing "Fit".
- Drag "Spending Details" to the bottom of the dashboard.
- Select Dashboard>Show Title from the menu bar. Double click on the title to format and edit.
CREATING DASHBOARD ACTIONS

Tableau allows you to add interactivity to your data using actions. Actions can link to web pages, files, and other Tableau worksheets directly from your dashboard.

There are 3 kinds of actions in Tableau: Highlight, Filter, and URL.

Actions can be initiated in customizable ways: Hover, Select, and Menu.

Hover
Rest the pointer over a mark in the view to run the action. This option works well for highlight and filter actions within a dashboard.

Select
Click on a mark in the view to run the action. This option works well for all types of actions.

Menu
Right-click a selected mark in the view and then select an option on the context menu. This option works well for filter and URL actions.
CREATING A FILTER ACTION IN THE DASHBOARD

Filter actions connect worksheets in an actionable way. Typically a filter action is used to send information from a selected mark to another sheet showing related information. For example, if you’re looking at the Shopping Data view, you might want to know exactly how many books were bought in January of 2013 and how much money was spent.

Filter actions work by sending the data values of the relevant source fields as filters to the destination sheets.

In this session, we’re going to create 2 filter actions, so that if you click on a record in either the "Total Items by Category and Month" or the "Total Spending by Category and Month" charts, the other parts of the dashboard will filter to that level.

Create Items Action

- Select Dashboard>Actions from the menu bar.
- Click the [Add Action] button and select the Filter option.
- Change the name of the filter to "Item Filter".
- Select "Total Items by Category and Month" as the Source Sheet.
- Click the [Select] button for "Run Action on".
- Select "Spending Details" and "Total Spending by Category and Month" as the target sheets.
- Change the radio button to "Show all values".
- Change the radio button to "Selected Fields" under Target Filter.
- Click the button marked [Add Filter].
• Add filters for MONTH(Month), Year(Month) and Category. *When selecting month, make sure to choose the option that does not include the year.*

Your screen should look like this:

Now click on something in the "Total Items by Category and Month" chart (I clicked on January 2013). You should see something similar to this:
To reset the dashboard filters, just click on the same spot in the chart a second time or click in an empty area in that same chart.
Create Spending Action

- Select Dashboard>Actions from the Menu bar.
- Click the [Add Action] button and select the Filter option.
- Change the name of the filter to "Spending".
- Select "Total Spending by Category and Month" as the source sheet.
- Click the [Select] button for the Run Action.
- Select "Spending Details" and "Total Items by Category and Month" as the target sheets.
- Change the radio button to Selected Fields under "Target Filter".
- Click the button marked [Add Filter].
- Add filters for MONTH(Month), Year(Month) and Category.

*When selecting month, make sure to choose the option that does not include the year.*
Your screen should look like this:

Now click in the "Total Spending by Category and Month" Chart on the right. You should see something similar to this:
**Use as Filter**

The above steps were fairly complicated, but we went through them so that we could see how filter actions work. However, there's a much easier way to filter views in a dashboard. This is via the **Use as Filter** functionality.

**Create New Dashboard**

- Duplicate the Shopping Dashboard.
- Rename it to whatever you want.
- Select Dashboard>Action from the menu and remove the two filters.
- Click on the down arrow on the "Total Spending by Category and Month" chart and select **Use as Filter**.
- Click on the down arrow on the "Total Items by Category and Month" chart and select **Use as Filter**.

The **Use as Filter** replicates the complex functionality involved in creating filter actions. With this option, you can't select specific fields for the dashboard to use as filters.

Note that you can add Quick filters to dashboards as well.

- Navigate back to the "Total Items by Category and Month" tab.
- Click on the right hand of the Year filter on the filter card and select **Apply to Worksheets> Selected Worksheets**.
- Select "Spending Details" and "Total Spending by Category and Month".
• Navigate back to the first dashboard you created.
• Click on the upper right hand corner of the "Total Items by Category and Month" Year filter on the filter Card and use the drop down to select Filters>Year. The year filter has appeared on the dashboard.
• Position and format the filter.

I've chosen to display the filter as a multiple value dropdown, and I've formatted the title. Below you can see what it looks like when all the sheets in the dashboard are filtered to 2015 only.