

# Rapid Graphs with Tableau Software™ 6

Create Intuitive, Actionable Insights  
in Just 15 Days

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We have posted many examples of exciting analyses, data visualizations and dashboards that are possible with Tableau Software.

We also offer dynamic, live training in the techniques and tools needed to discover the value long hidden in your data. The ultimate goal of our training is to empower you to make informed decisions and achieve success in your daily work.

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If we can be of help, please contact either Eileen or Stephen at [Info@Freakalytics.com](mailto:Info@Freakalytics.com) or at (206) 588-1678 in the United States.

## **Acknowledgements**

We want to thank the many wonderful people at Tableau that have supported this book and our training- it takes a great company to make such a great product! We'd also like to thank our students- we've enjoyed helping you overcome your data challenges and we still learn something new in every class!

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# Chapter I

## Tableau Software – how it can change your world

### Power, speed, flexibility, simplicity and beauty

In today's world, we are all trying to make sense of the mountains of data that we encounter every day in our jobs, whether we work in business, IT, government, education, research, or for a non-profit organization. We would like to find a way to quickly and easily get answers from our data, so that we can increase our productivity and make informed decisions about what actions to take. The mission of Tableau is to create easy-to-use software that helps people find these answers and communicate them effectively, whether you are new to analysis or have been analyzing data for years.

Would you like to be able to...

- Quickly build tables and graphs to answer simple questions about your data?
- Answer complex questions about your data with little or no programming?
- Change your tables and graphs on the spot to look how you want, just by clicking on them?
- Give attractive and interactive presentations that not only inform your colleagues, but keep them interested and engaged in what you have to say?
- Do this all with user-friendly software that makes sense to you, and guides you in your analysis or hands you total control, depending on what you need?

Tableau can empower you to do all these things, so you can spend your time looking at your data, instead of trying to figure out your software. Even if you are new to data analysis, you can learn the basics, and possibly some advanced features, in just 15 days if you follow the exercises in this book.

If it seems like we are passionate about what Tableau can help you accomplish- we are! We were motivated to write this book because, at one point, we were just like you- frustrated by the limitations of our data analysis tools and astonished by what we could do so quickly, and so clearly, in Tableau!

We can summarize the strengths of Tableau Software in five words: power, speed, flexibility, simplicity and beauty. Take a look for yourself at the following examples to see what is possible with Tableau!

## Power

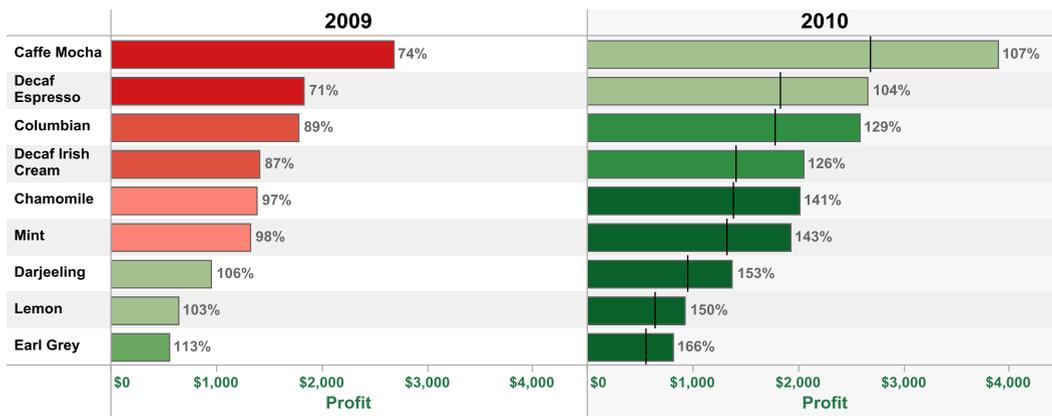
Whether you are exploring your data for new insights, answering specific questions or even deciding what questions to ask, Tableau gives you unprecedented control to investigate, communicate and take action with the valuable information hidden in your data! Tableau has it all - a wide variety of options to graph your data, the ability to adjust your data so that you are using the right data in the right form for the questions at hand, and a user-friendly interface that's designed around how people think about analysis, allowing you to follow your thoughts as you question and explore your data. You can work with every major data source, from Excel workbooks to the largest databases. You can even extract data from larger sources into a local "extract" file that will make your data exploration more efficient and allow offline analysis when you are away from the office.

### Profit and planned profit by product

Red is below plan, green is above

Percentage is actual versus plan

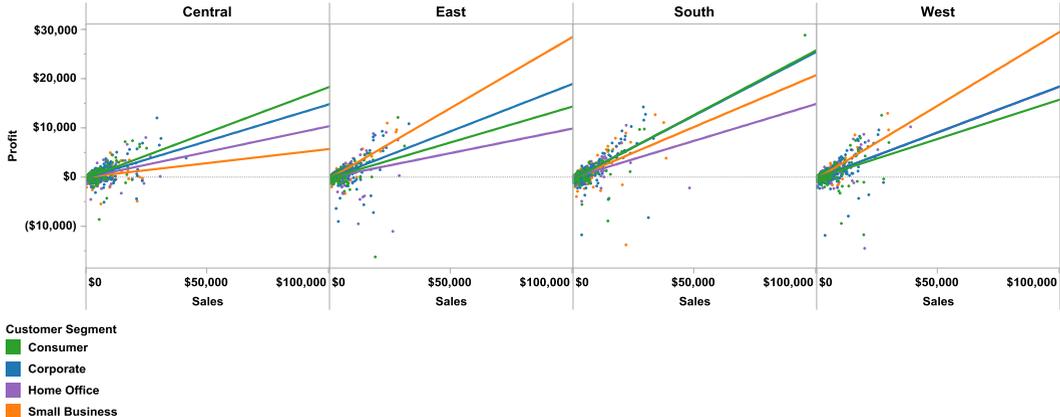
Black line in 2010 shows prior year profit amount



Displaying *profit versus sales* by region and customer segment  
 Average profit ratio = size of bubble;  
 Minimum and maximum percents labeled per region  
 Colors are customer segments



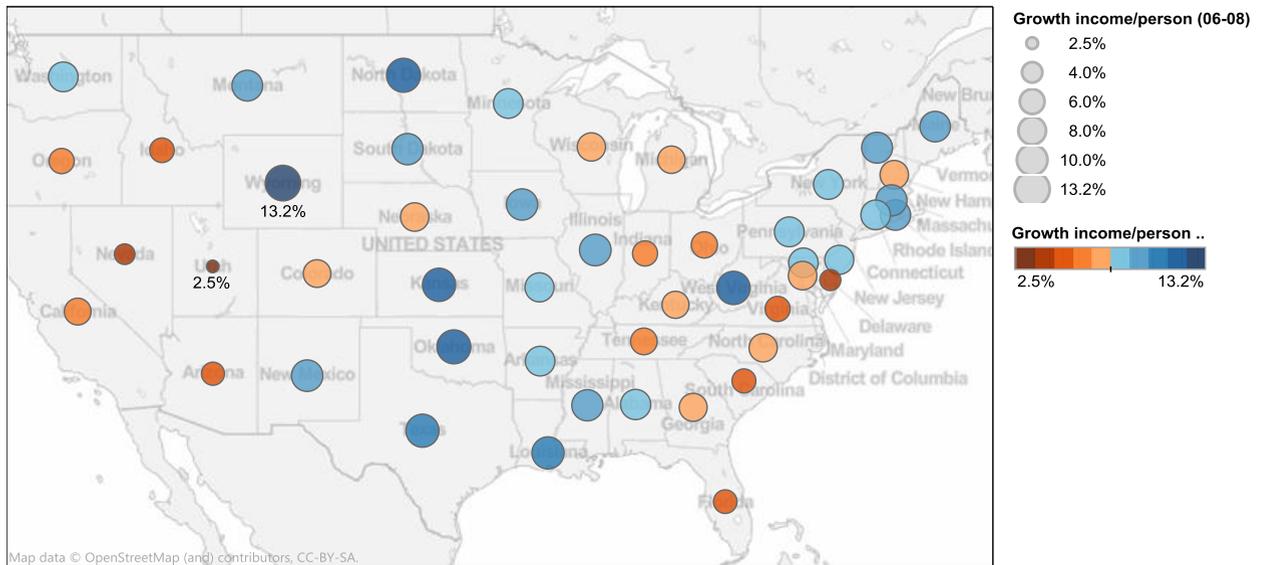
Exploring the relationship of sales to *profit* by region,  
 Each point in the graph is a customer order  
 Colors show the Customer Segment  
 A Trend line is displayed for each customer segment per region



## Map of per-capita income growth, 2006 to 2008

Color and size of bubble show growth rate

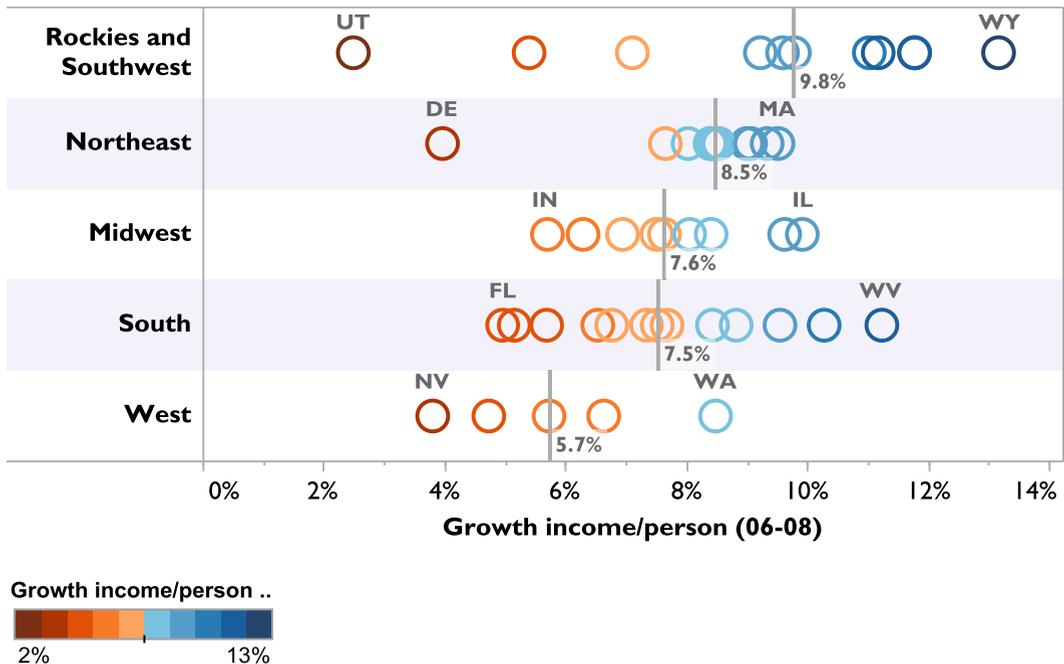
Labeled states show highest and lowest growth values for country



## Scatter plot of per-capita income growth by region, 2006 to 2008

Median value for each region shown as reference line

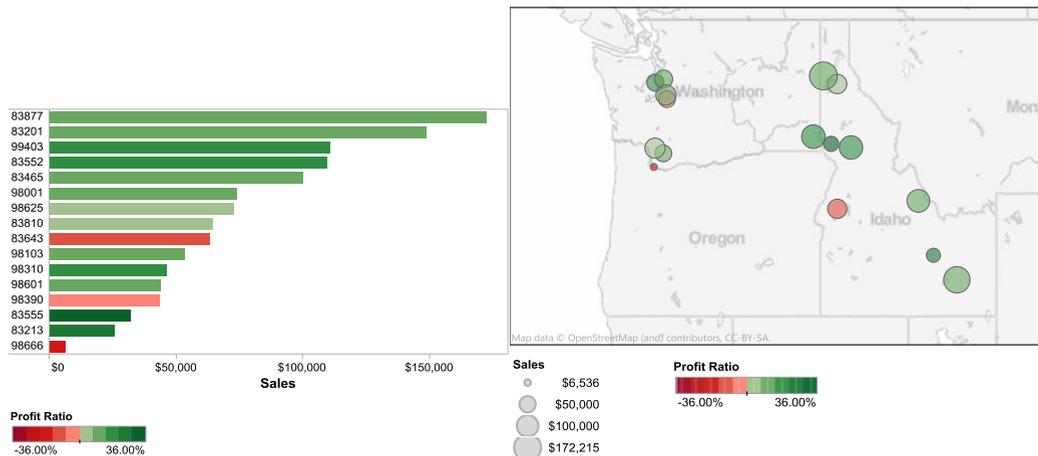
Top and bottom states in each region are labeled



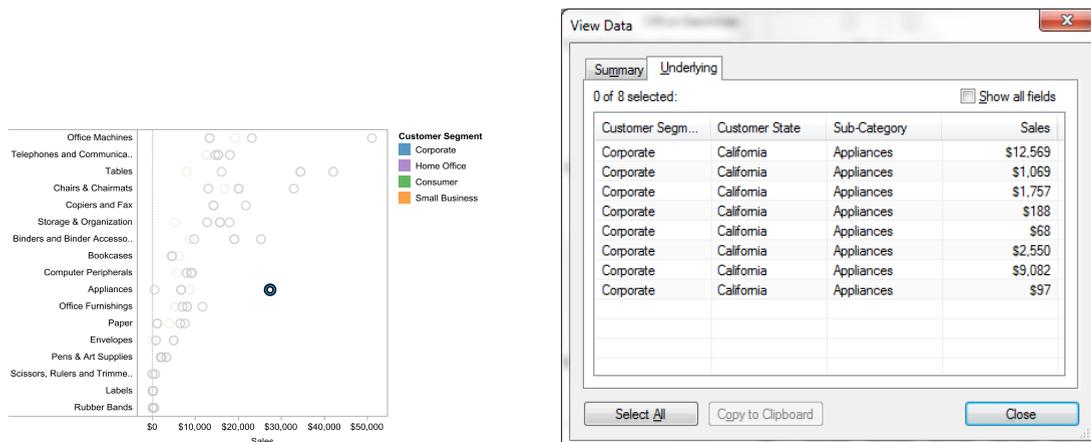
# Speed

Faster than you thought possible, you can build presentation quality graphs and tables in Tableau. You can have total control over creating the view or you can ask Tableau to generate the view based on the data that you select. From the view, you can rapidly sort, filter and group the displayed data- with just a few clicks of your mouse. **Each example demonstrates rapid changes made with Tableau in just a few seconds!**

## Sales and profit ratio by zip code- from bar chart to map with one click!



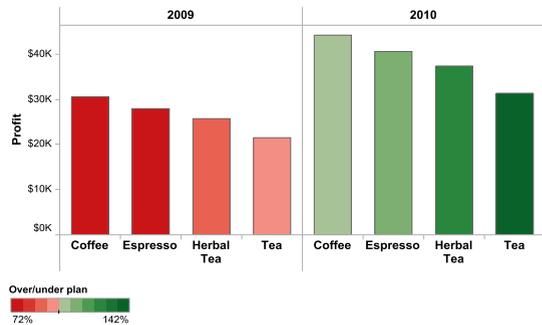
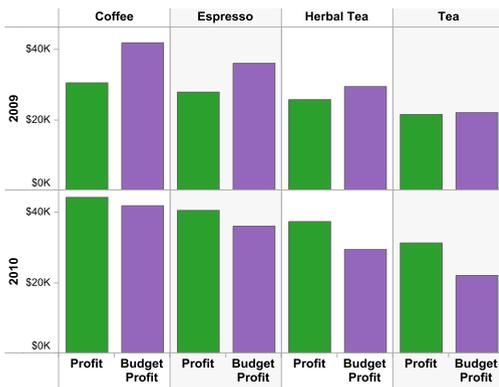
## Highlight a data point to quickly examine the values behind it



## Four views are better than one: From detailed table to color-highlighted table to side-by-side bar chart to color-encoded bar chart in a minute!

	Profit								Over/under plan								
	2009				2010				2009				2010				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Central	Coffee	\$2,208	\$2,473	\$2,560	\$2,249	\$3,330	\$3,492	\$3,611	\$3,341	78%	80%	80%	76%	118%	112%	113%	112%
	Espresso	\$2,369	\$2,457	\$2,481	\$2,271	\$3,570	\$3,477	\$3,506	\$3,370	72%	73%	71%	55%	108%	104%	101%	82%
	Herbal Tea	\$2,414	\$2,579	\$2,648	\$2,450	\$3,642	\$3,647	\$3,738	\$3,639	87%	88%	89%	91%	131%	124%	125%	135%
	Tea	\$2,118	\$2,317	\$2,423	\$2,245	\$3,195	\$3,272	\$3,424	\$3,336	104%	104%	105%	113%	157%	147%	149%	168%
East	Coffee	\$2,747	\$3,352	\$3,740	\$2,817	\$4,144	\$4,732	\$5,278	\$4,182	95%	96%	95%	99%	144%	136%	134%	147%
	Espresso	\$562	\$610	\$372	\$990	\$848	\$863	\$530	\$1,469	59%	57%	45%	66%	88%	81%	64%	98%
	Herbal Tea	\$591	\$922	\$522	\$592	\$889	\$1,306	\$725	\$876	77%	91%	79%	112%	115%	129%	110%	165%
	Tea	\$1,480	\$1,615	\$1,712	\$1,537	\$2,229	\$2,284	\$2,419	\$2,282	78%	81%	81%	80%	118%	115%	114%	119%
South	Coffee	\$1,051	\$1,198	\$1,312	\$1,212	\$1,585	\$1,692	\$1,851	\$1,801	61%	62%	64%	59%	92%	87%	90%	87%
	Espresso	\$1,465	\$1,540	\$1,612	\$1,498	\$2,209	\$2,178	\$2,279	\$2,224	89%	91%	94%	113%	135%	128%	133%	167%
	Herbal Tea	\$561	\$529	\$591	\$669	\$843	\$749	\$837	\$992	69%	69%	70%	72%	104%	97%	100%	107%
West	Coffee	\$1,042	\$849	\$899	\$759	\$1,574	\$1,201	\$1,277	\$1,124	44%	40%	40%	35%	67%	56%	57%	52%
	Espresso	\$2,325	\$2,423	\$2,540	\$2,439	\$3,506	\$3,429	\$3,589	\$3,619	90%	89%	90%	86%	136%	126%	127%	127%
	Herbal Tea	\$2,363	\$2,739	\$2,937	\$2,692	\$3,566	\$3,870	\$4,140	\$3,996	90%	92%	91%	94%	136%	130%	128%	140%
	Tea	\$1,479	\$1,585	\$1,630	\$1,464	\$2,228	\$2,237	\$2,299	\$2,176	104%	108%	103%	122%	157%	152%	146%	181%

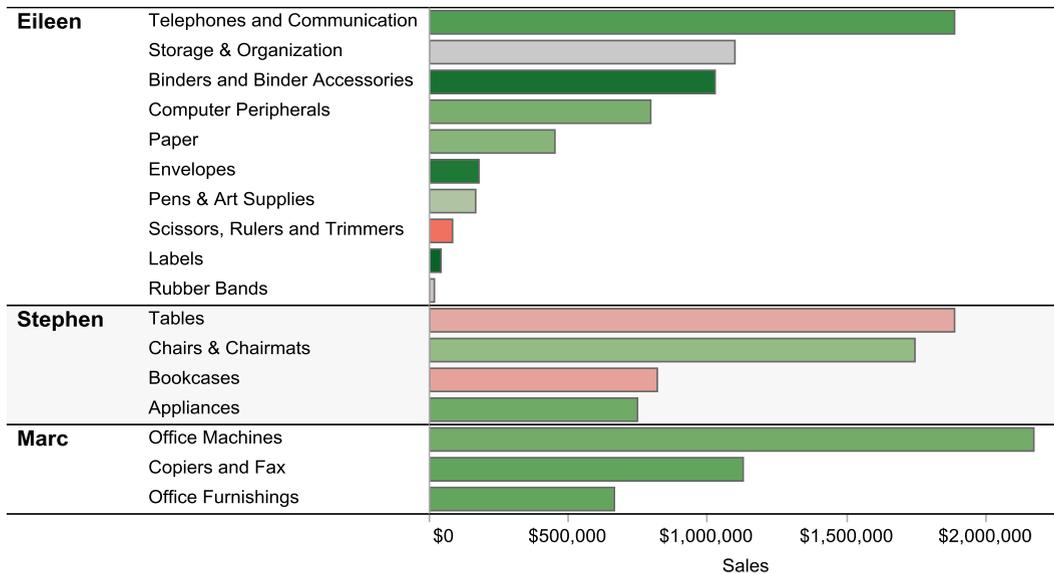
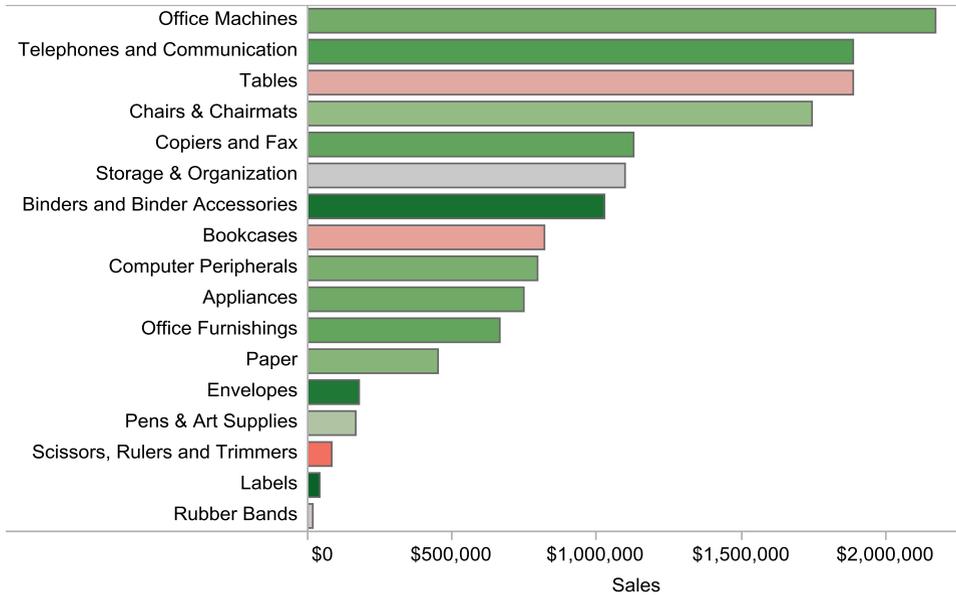
	2009				2010				Over/under plan
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Coffee	\$7,048	\$7,872	\$8,511	\$7,037	\$10,633	\$11,117	\$12,017	\$10,448	65%
Espresso	\$6,721	\$7,030	\$7,005	\$7,198	\$10,133	\$9,947	\$9,904	\$10,682	153%
Herbal Tea	\$5,929	\$6,769	\$6,698	\$6,403	\$8,940	\$9,572	\$9,440	\$9,503	
Tea	\$5,077	\$5,517	\$5,765	\$5,246	\$7,652	\$7,793	\$8,142	\$7,794	



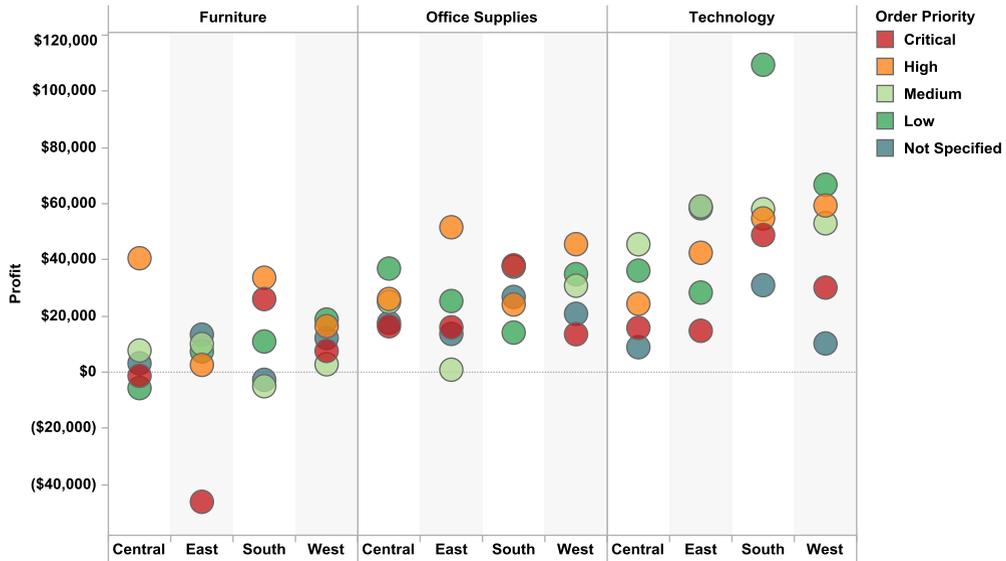
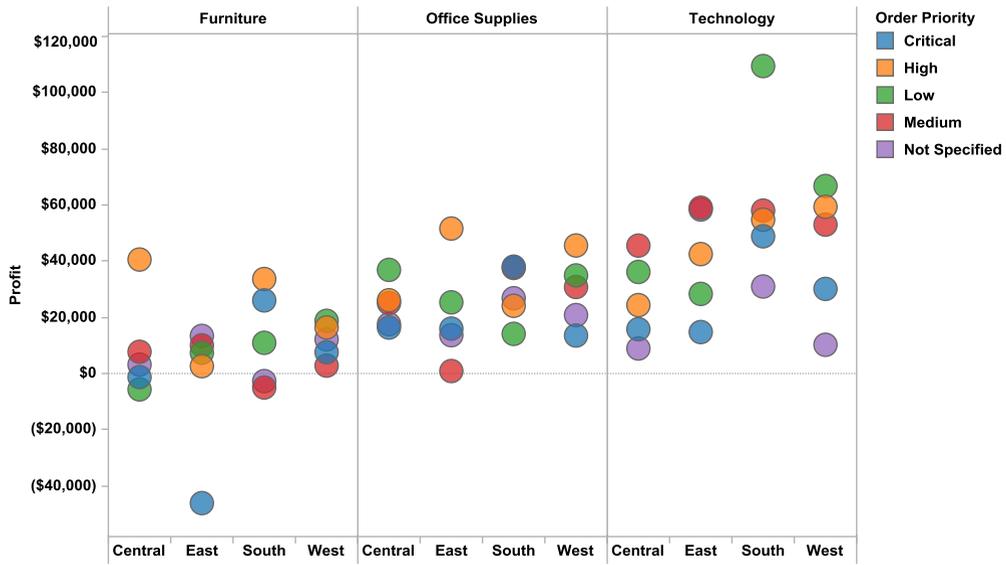
# Flexibility

You can easily change any part of your view to look exactly how you want, ranging from data, point shapes and colors to clear data labels to the way your metrics are calculated and compared. The days of thinking of your graphs as “good enough” are a relic of the past with Tableau!

## Grouping the data with just a few clicks, from the view!



## Color code view elements for effective communication



## Simplicity

Getting started in Tableau is easy. In the first few weeks, you can learn the basics and begin mastering the techniques of graphical data exploration. Soon you'll discover how to easily create more complex visualizations. You can now investigate those questions that you always wanted to, but thought were impossible!

### Areas of simplicity

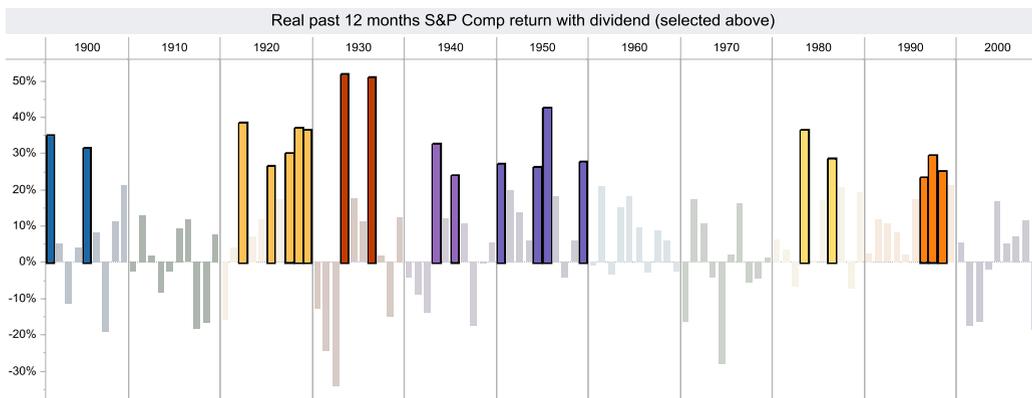
- Direct interaction with graph- **drag and drop** what you want to see
- **Sort** the data **automatically or manually** directly from the view
- **Simple and complex grouping** of data items categories from the view
- Easily **exclude irrelevant data or keep only** the items of interest from the view
- Quick access to **automated calculations** such as *running total*, *change over prior year* or *year over year growth* without complex formulas
- Powerful array of advanced **SQL calculations** for almost any need with any data source
- **Table calculations** allow advanced access to manipulate and calculate data items using the data returned from your data source
- Quickly add overall **subtotals**, specific-level subtotals and **grand totals**
- Readily explore the **data summarizing or underlying part of the view** with one click
- Shift from other views to **maps** of the data with one click
- Easily **export** your work to other applications such as **PowerPoint and Word**
- **Free Tableau Reader** allows interactive functionality for those outside your team
- **Publish your work to the web** for wide consumption of results in your company; no installation of any kind is required for web users to have a rich subset of the desktop application functionality

# Beauty

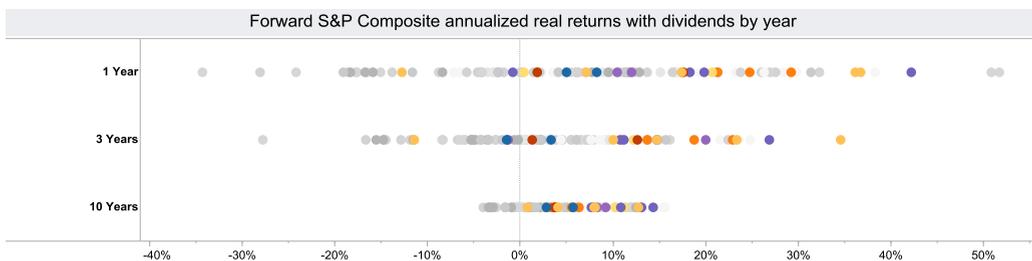
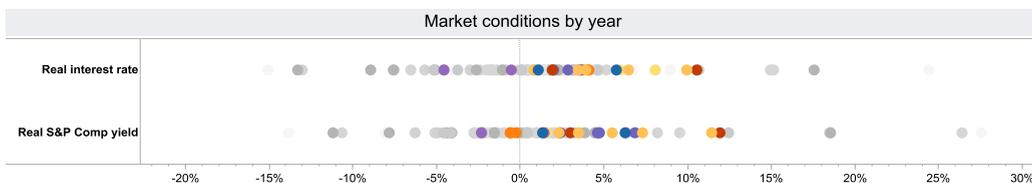
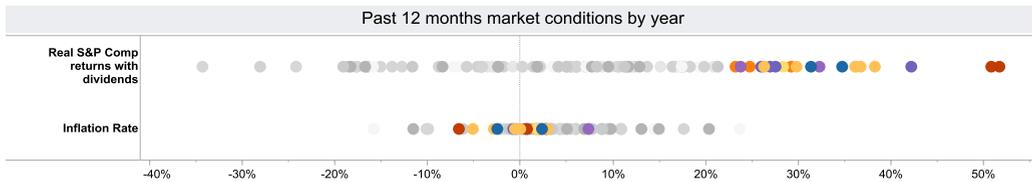
Create your own works of art while telling the story of your data in Tableau! Combining powerful insights with beautiful views all in one package will keep your audience engaged and informed during presentations. Tableau also encourages active use of good design principles, making it easy to impress others with effective, clear communications that lead to lively discussions and actionable results. The interactive version of the dashboard below is available at <http://www.Freakalytics.com/p/4>.

## Tracking Economic Indicators and Stock Market Returns from 1901-2008; Relationships of Past, Present, and Future Values by Year

Select market metric to update bar chart:  
Real past 12 months return



Select a range of years (Click+drag), a decade, or specific years (<CTRL>-Click) to highlight data below.



Select values from any of the above distribution plots. Selected years show as blue and deselected as gray. You can Click+drag to select a continuous area or <CTRL>+Click to select multiple specific values. Values from only one metric can be selected at a time to highlight all of the other graphs. Deselect by clicking on the graph whitespace.

# Chapter 2

## Build the core: Tableau basics

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### Chapter Highlights

- Obtaining and setting up Tableau
  - Sample data and the Tableau interface
  - Your first view of Tableau
  - Categorical data never looked so good!
- 

To train for a marathon, you must first walk a mile. The good news is that learning Tableau is much easier than training for a marathon! In this chapter, you will walk through the first “few miles” of Tableau capabilities and even jog through the park a bit.

The first step in learning the basics of Tableau is to become acquainted with the incredibly intuitive application interface. Ironically, one of the greatest challenges as a new user of Tableau is the pleasant surprise at how straightforward it is to use compared to other data visualization applications. Tableau’s simplicity and elegance leads you forward with ease while being incredibly flexible and responsive- once you learn the basics.

In the next two chapters, you will cover a broad range of analyses easily available with Tableau. These chapters display a wide array of possibilities while requiring a minimum of detailed application knowledge. At the conclusion of the next chapter, you should be comfortable enough to begin using Tableau in your work.

In this chapter, you will use a sample data source provided by Tableau, the **Sample Coffee Chain** database.

## Download, install and open Tableau

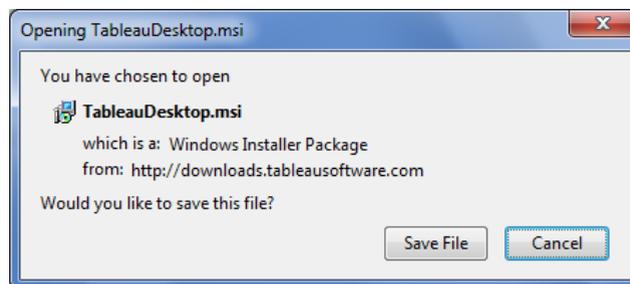
If you already have Tableau 6 installed on your PC, you can skip this section and go to the “Connect to sample data and review the Tableau interface” section.

Tableau offers a free software trial if you do not already own a license. The program requires a PC running Microsoft Windows 7, Vista or XP, and you must have administrative rights on your computer to install it. Tableau can also be installed on Windows Server 2000, 2003 or 2008, which is primarily for corporate use on a shared server.

To download a free trial copy of Tableau Professional, go to <http://www.Freakalytics.com/RapidGraphs>.

Before you begin the download, close all other applications. You should also pause or disable your anti-virus and spyware prevention software.

Once you click on the “Download Now” link on the Download Desktop page, you will be prompted to save the Tableau Desktop software. When choosing a directory location, save the install file in a directory that is accessible from a user account on your PC with administrative rights. If you are not logged onto your PC as an administrator, log in as a user with administrative rights.



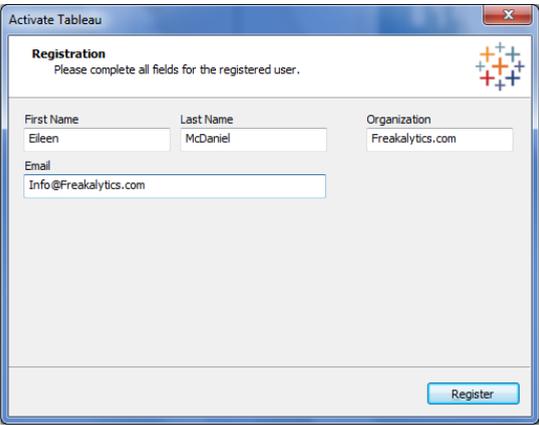
Navigate to the directory where you saved the installation file, and start the installer by double-clicking on it. The Tableau License Agreement dialog appears. You need to check the box to accept the license terms and then click Install.

# The Tableau Setup Welcome dialog



Then, the Activate Tableau dialog appears. **Select “Start trial now”, fill out the registration form that appears and click Register.**

# The Activate Tableau dialog



## Rapid Graphs with Tableau Software 6

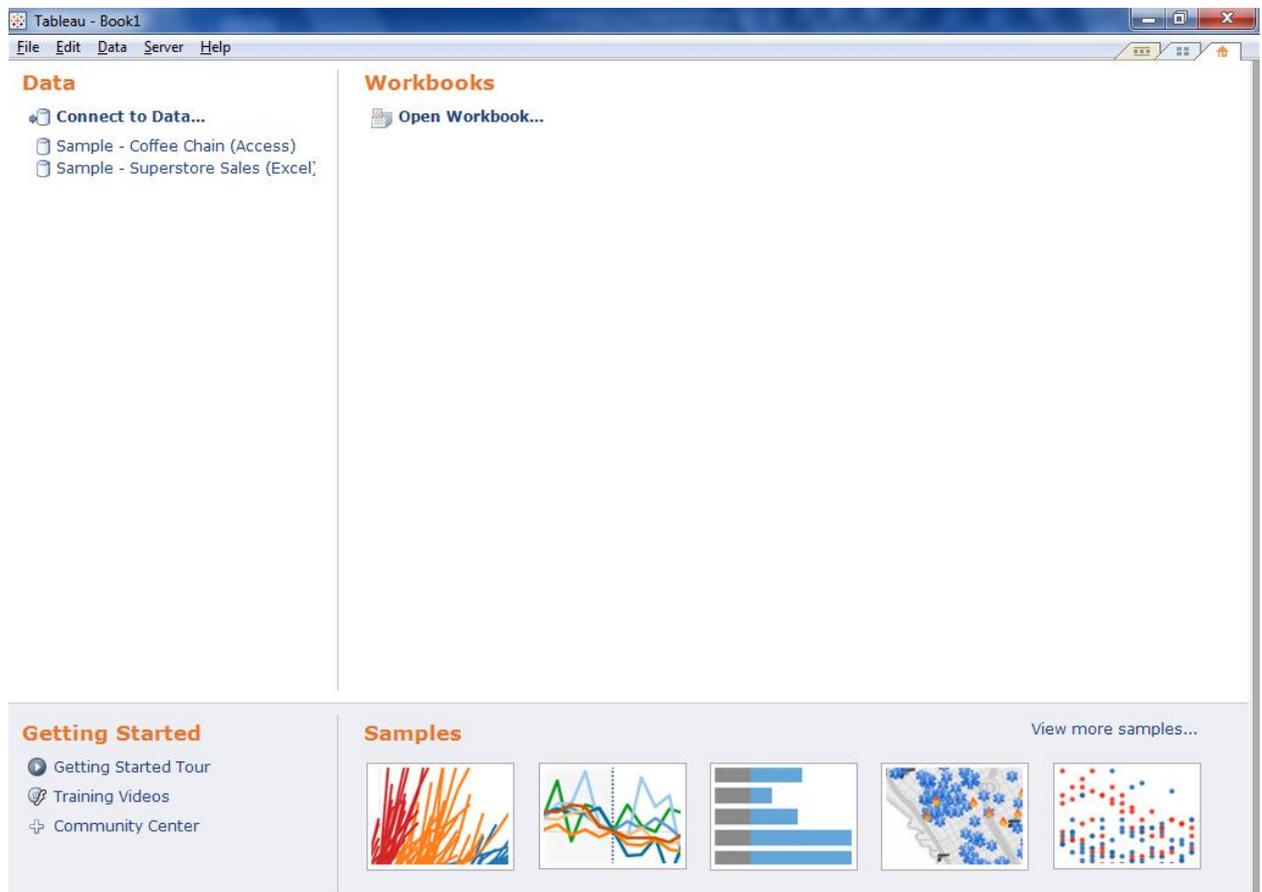
After a few minutes, the installation should be complete and Tableau will automatically start. If you switched accounts to install Tableau, log out as administrator and log back in with your regular user account. Then start Tableau from the Start menu of Windows, **Start → All Programs → Tableau 6**.

You are now ready to begin using Tableau. *Please note that your free trial will last 14 days from the first date you run the application.* If you experience installation problems, consult the Tableau web site at <http://www.tableausoftware.com/community/support>

## Connect to sample data and review the Tableau interface

Open Tableau from the Start menu of Windows, **Start → All Programs → Tableau**. By default, each time you open Tableau you will see the Start page.

### The Tableau Start page



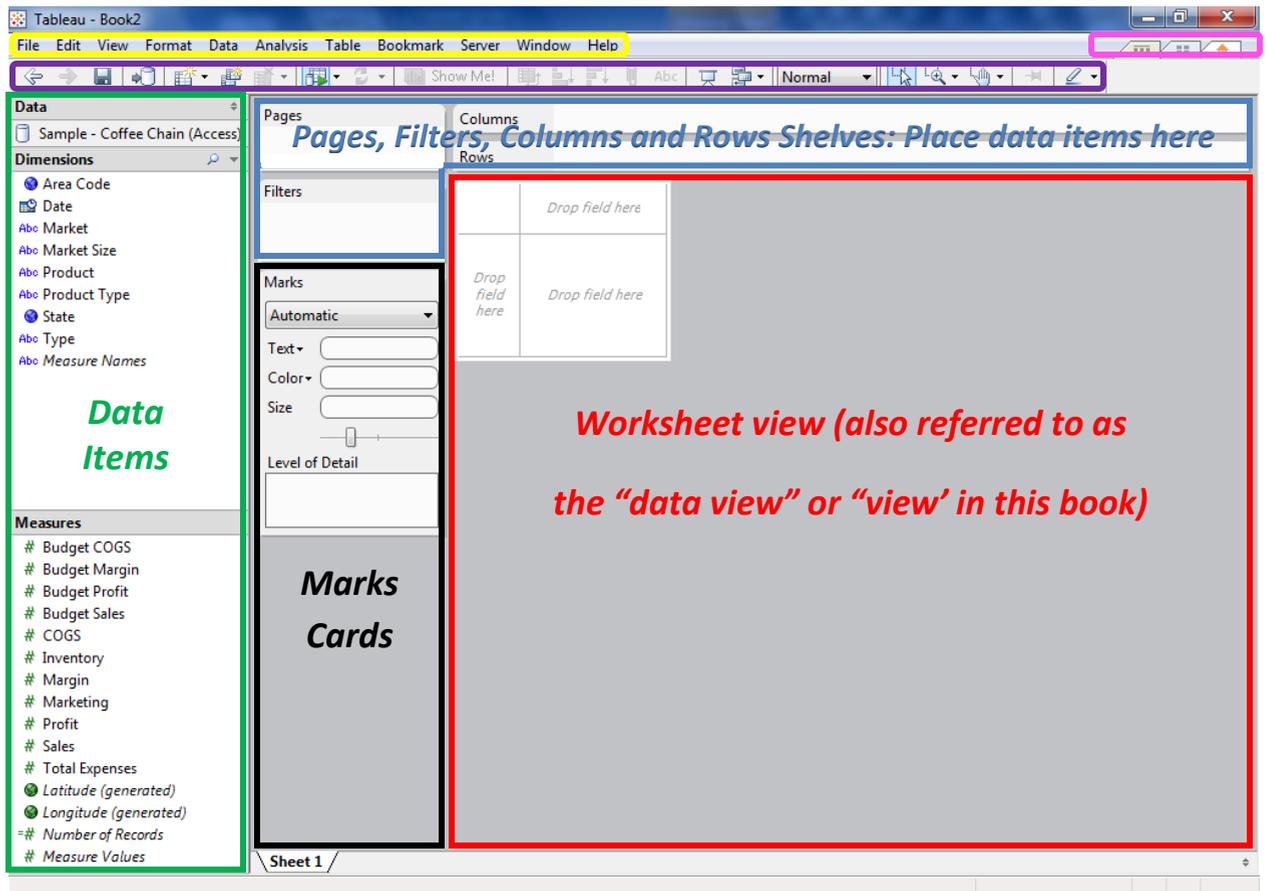
The Start page in Tableau is divided into 4 sections, in addition to the Windows-type menu at the top left. **Data** organizes your data sources, and at this point contains only sample datasets provided by Tableau. The **Workbooks** section usually contains recent workbooks, but currently is empty. **Getting Started** has support links. The **Samples** section has example workbooks provided by Tableau, and if you **click on View more samples** on the right, you can access a large gallery of downloadable workbooks on the web.

In this chapter, you will use a sample data source provided by Tableau, the **Sample Coffee Chain** database. The Sample Coffee Chain is a fictitious national coffee chain. The dataset includes detailed sales, profit, and financial planning data for a 24-month period from January 2009 through December 2010. In the remainder of this chapter, you will answer a number of questions of interest for the management of this company.

**Click on the Sample – Coffee Chain (Access)** data source from the Start page. The Tableau Workspace opens with the selected data source available for analysis. By default, the workbook is named Book 1.

**! Alternate Route:** All examples in this book use relational data sources, similar to Excel worksheets, Access tables or an Oracle database table. It is important to note that Tableau behaves differently in various parts of the application when using multi-dimensional data sources or “Cubes” (also called Microsoft Analysis Services, Essbase and other vendor names) as your data source. Although the vast majority of functionality is consistent across all databases, Tableau has specific features that are designed to leverage the benefits of each type of database while working within the constraints of each data source. If you are using one of these less common data sources and encounter different dialogs than those shown, **please consult the Tableau Online Help from Help → Help or by clicking F1.**

## The Tableau Workspace with key areas highlighted



The Tableau Workspace has two standard features common to all Windows applications, the **file menu**, outlined in yellow above, and a **toolbar** below it, outlined in purple. Both behave as they normally do in Windows. The functions found on the various dropdowns of the file menu will be covered as you progress throughout the book, and the toolbar is shown in detail in the next chapter. The **workspace controls**, the three tabs at the top right of the workspace in the pink box, are discussed below.

Specific to Tableau, there are **four key sections** of the interface:

**1. Data Items pane (outlined in green):** shows the data source in use, offers a search box for data items or fields called Find Field (just click on the magnifying glass icon), and divides the data items available in the data source into **Dimensions** and **Measures**. Dimensions can be thought of as data “organizers” or “categories”. Examples include location, date, product, and customer identifiers. Measures are measurements or calculations using your data. Examples include sales amount, profit, inventory on hand, cost of goods, and number of (data) records. In examples throughout the book, dimensions and measures are highlighted with green, bold, and italicized text, e.g., *Dimension* or *Measure*.

**2. Marks Card/s (black):** in Tableau, data are displayed by **marks**, where every mark, or data point, represents a row or group of rows found in the original data source. These cards allow you to control how the data items are presented in the Worksheet space. For example, for selected marks, you can specify shapes, whether or not to display text or labels, colors, and sizes such as the width of the mark.

**3. Pages/Filters/Columns and Rows Shelves (blue):** where data items of interest are placed to control the data summarized in the Worksheet view.

**4. Worksheet view, data view, or view (red):** where the summarized data are displayed in tables or graphs. This is where all of your requests come together for your review and analysis or for presentation to colleagues.

## Workspace Controls



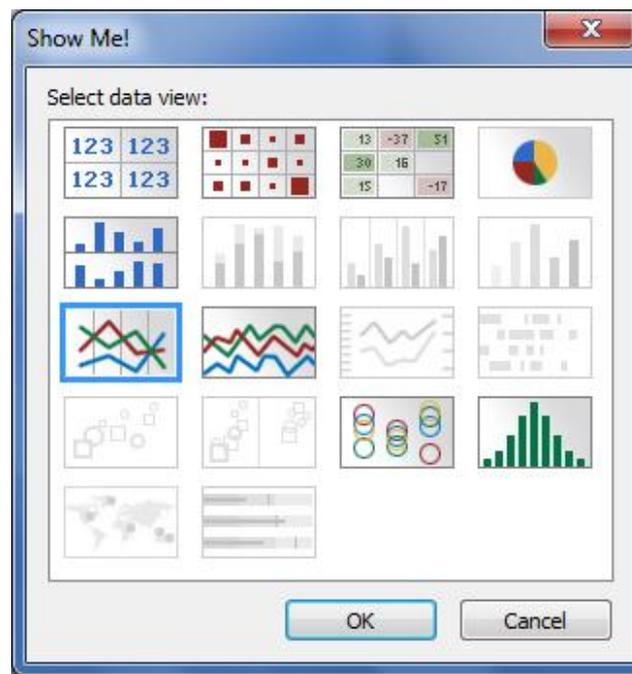
At the top right of your screen, underneath the minimize, maximize and exit buttons, there are three tabs- the **workspace controls** (outlined in pink on the workspace screenshot). You can use them to toggle between various screens in Tableau. The first one, with three squares sandwiched in between two lines, brings up the Tableau Workspace. The second one, with four squares, is a “worksheet sorter” that shows thumbnail pictures of the various worksheets you are working on, so you can select the one you want. The third one, the house, brings you back “home” to the Tableau Start Page.

## Show Me! Tableau in action

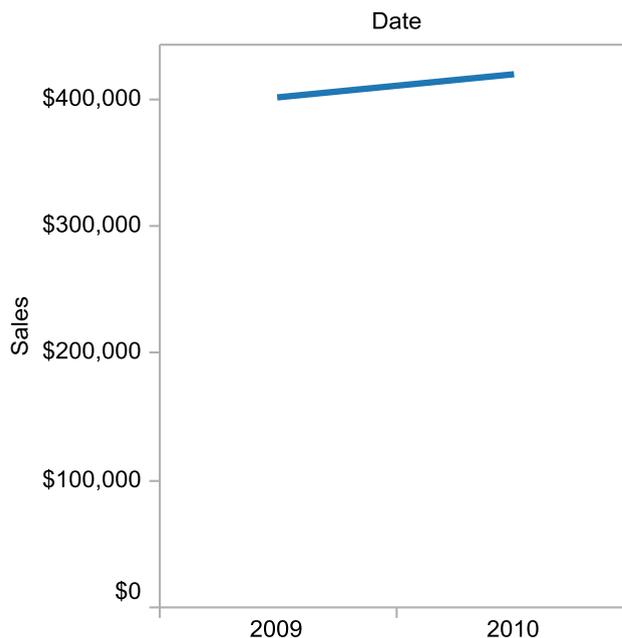
The CFO of the Sample Coffee Chain is interested in a simple two-year view of sales, profit, and profit versus planned profit by month. She would like this information on one page for her monthly team reviews so she can hand it out without wasting too much paper. Additionally, she wants it to be very easy to contrast the current year with the prior year. In this first example, you will create this view.

1. **While holding down the <Ctrl> key on your keyboard, move your mouse to the Data Items pane and click on *Date* in the Dimensions section and *Sales* in the Measures section.** The <Ctrl> key allows you to select multiple data items at one time. **Click Show Me!** on the toolbar. The Show Me! dialog will appear with the Line (Discrete) graph type automatically selected by Tableau (if you hover over the icons of the different data views the type will appear). **Click OK.**

### The Show Me! dialog defaults to the Line (Discrete) graph type



## The initial view- Sales by Year



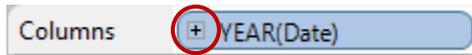
Note that even though **Date** is at the month level in the dataset, the data view automatically started at the year level. Dates in Tableau default to a hierarchical arrangement- Year, Quarter, Month and Day.

In addition, **Sales** became **Sum(Sales)** on the Rows shelf. In this case, the sales values displayed in the view are *sums* of individual sales values. This will make more sense as you learn Tableau, but how the data item is displayed on the shelves lets you know how Tableau *aggregates* the data shown in the view.

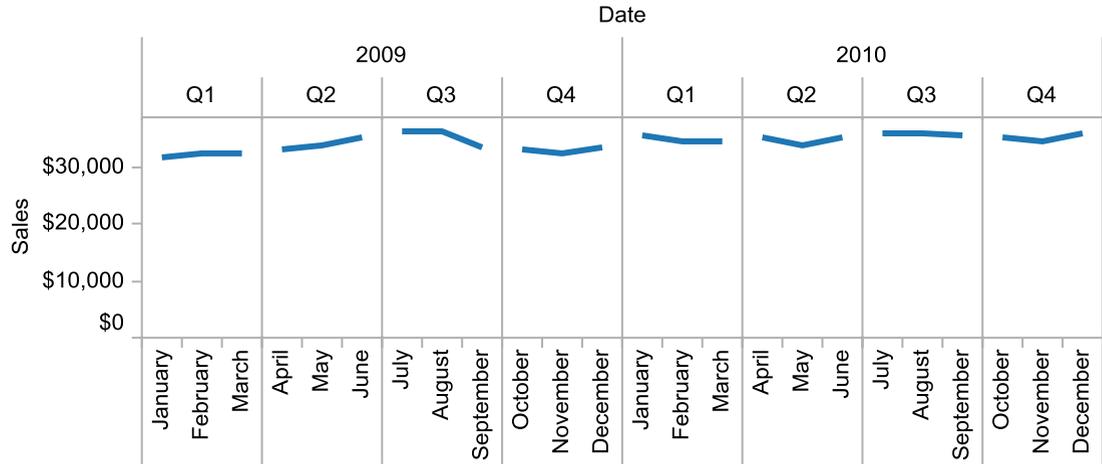
2. In data analysis software, to “drill down” means to move from a summarized data item to a more detailed view of the item (if more levels of detail exist). Drill down from an annual view to a quarterly and monthly view of the data. You can drill down on dates by **clicking the + (Plus) sign immediately before the Date variable in the Columns shelf** (near the center of the Workspace under the toolbar). **Click on the + sign for Year. Quarter** will appear to the right on the Columns shelf and visually in the Worksheet. **Click on the + sign for Quarter. Month** also will appear on the shelf and in the Worksheet view.

**! Alternate Route: To drill down, you can hover over the Date data labels directly in the view and click on the + sign that appears to the left of the axis.**

## Use the plus sign on drillable data items to drill down

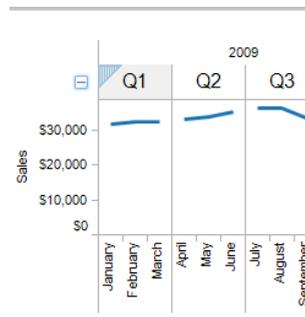


### The view after drill-down - Sales by Year, Quarter, and Month



- Since **Quarter** makes this view busy, remove it. **Click on Quarter(Date) in the Columns shelf and without releasing the click, drag Quarter(Date) to any spot on the screen except for the graph, shelves or Marks Card, and then release it** (this is called “drag and drop”). Notice how the view dynamically updates with each action.

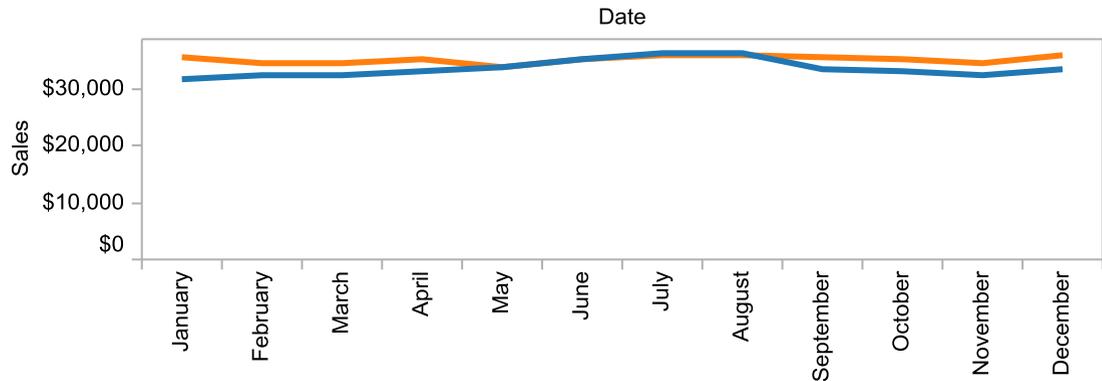
**! Alternate Route:** You can hover over the **Quarter(Date)** data labels (Q1, Q2, etc.) directly in the view, and when a triangle (the “drag handle”) appears to the left with a four-direction arrow, drag and drop it in Data Items pane.



**! Performance Tip:** When you drag and drop, you do not need to drop the item in any specific place – as soon as a little red X appears, when you drop the data item, it will be removed from the view.

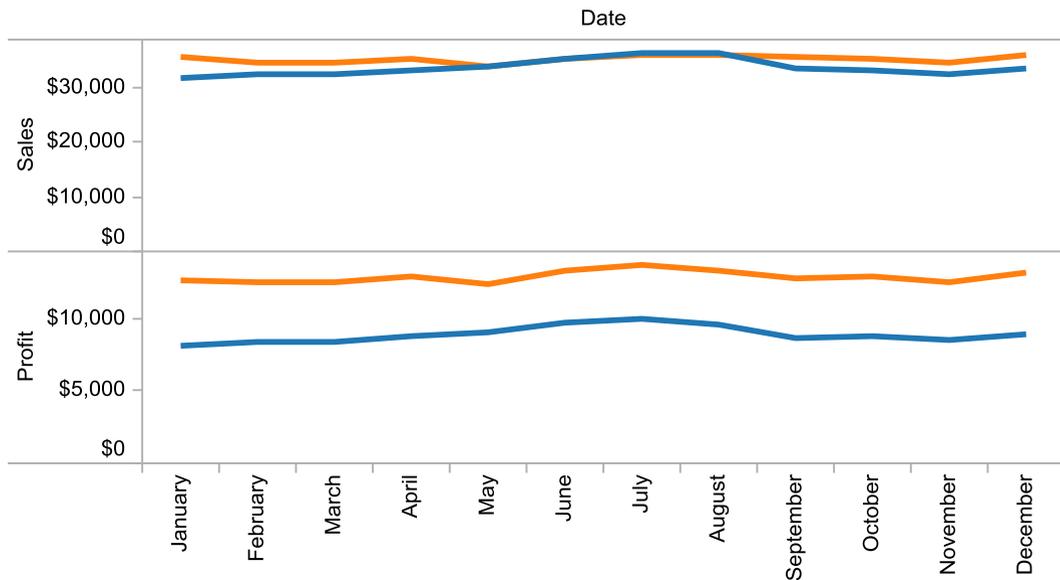
- Since we intend to contrast year over year changes, you can color code the different years by using the **Year** level of the **Date** data item. **Drag and drop Year from the Columns shelf, or the drag handle for Year in the view, onto the Color shelf on the Marks Card.** Looks good!

### The view with Year contrasted by color coding



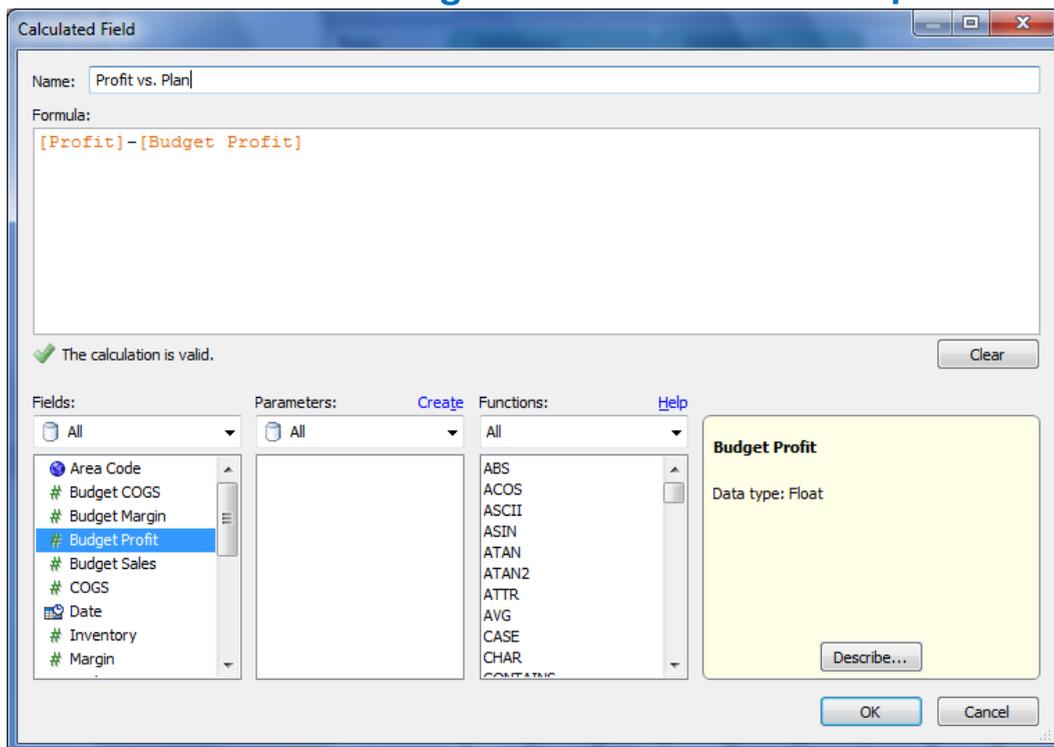
- Drag the Profit data item to the Rows shelf and drop it after the Sales data item.** This demonstrates how any view can be built using drag and drop in place of the Show Me! Button.

### Sales contrasted with Profit



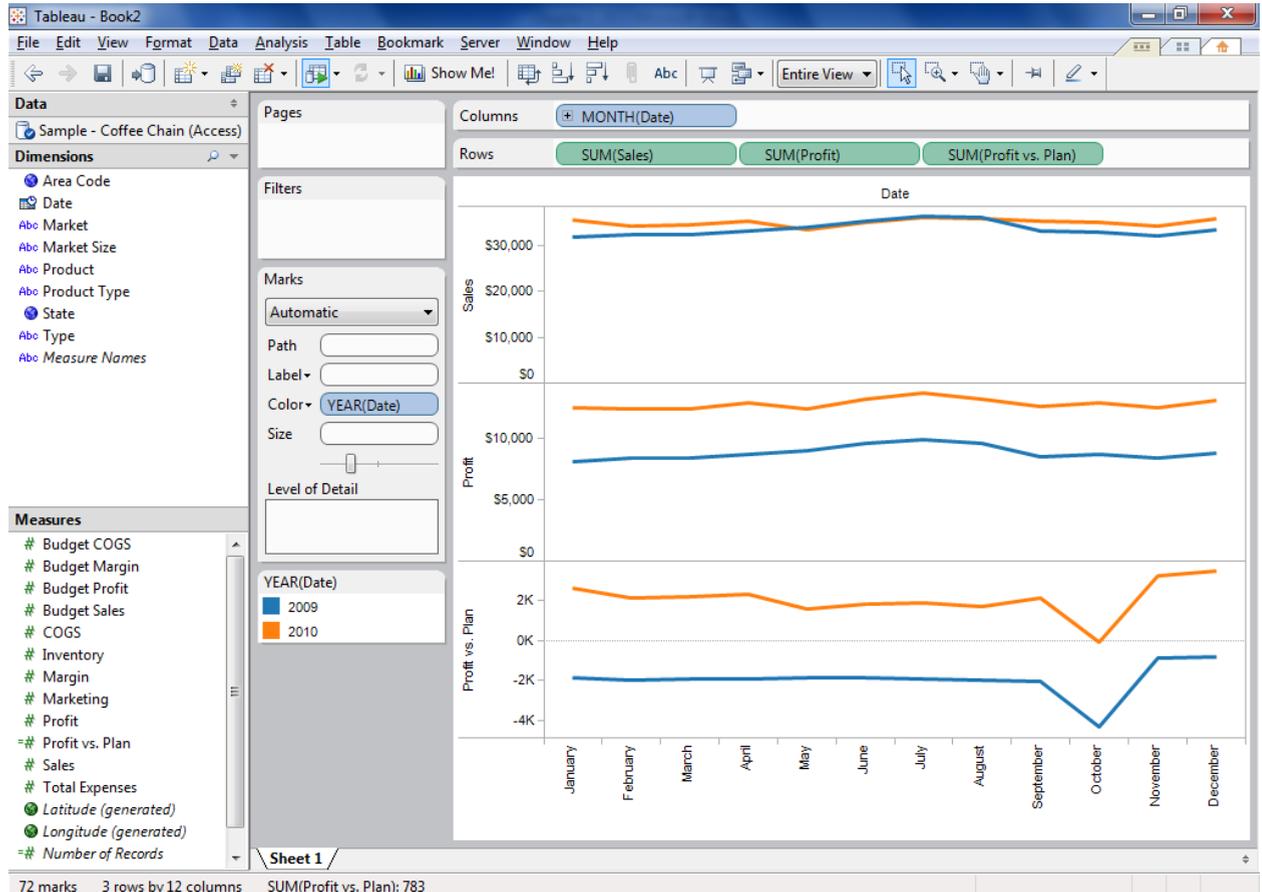
6. Finally, notice there is no data item that compares profit and planned profit. There are **Profit** and **Budget Profit** data items. You can use these two data items to create a calculated data item, **Profit vs. Plan**. **Right-click on Profit in the Data Items pane and a context menu appears. Select Create Calculated Field from the menu.** The Calculated Field dialog appears.

### The Calculated Field dialog with the formula for Profit vs. Plan



7. In the Formula pane of the Calculated Field, the data item **Profit** is preselected for the formula. After **[Profit]**, **add a – (minus) sign and then double-click on Budget Profit** in the Fields section of the dialog. The formula should now read, “[Profit] - [Budget Profit]”. Tableau automatically checks the formula for validity- since this formula is valid, a green check appears next to the statement “The calculation is valid.” In the **Name section at the top of the dialog, change the name to “Profit vs. Plan”**. **Click OK**. The new calculated field appears in the Measures section of the Data Items pane, with an equals sign, **=**, to the left of the name, to signify that it is a calculated data item.
8. **Add the calculated data item Profit vs. Plan to the Rows shelf after the Profit data item.** The worksheet is now complete! Note the **status bar** at the far bottom left of the workspace, which describes what you have in the current view. There are 72 marks in 3 rows (**Sales**, **Profit**, and **Profit vs. Plan**) by 12 columns (12 months) and **Sum of Profit vs. Plan** across the 24 marks (2 years, one year below and one year above overall) is \$783.

## The analysis requested by Sample Coffee Chain's CFO



A very informative view:

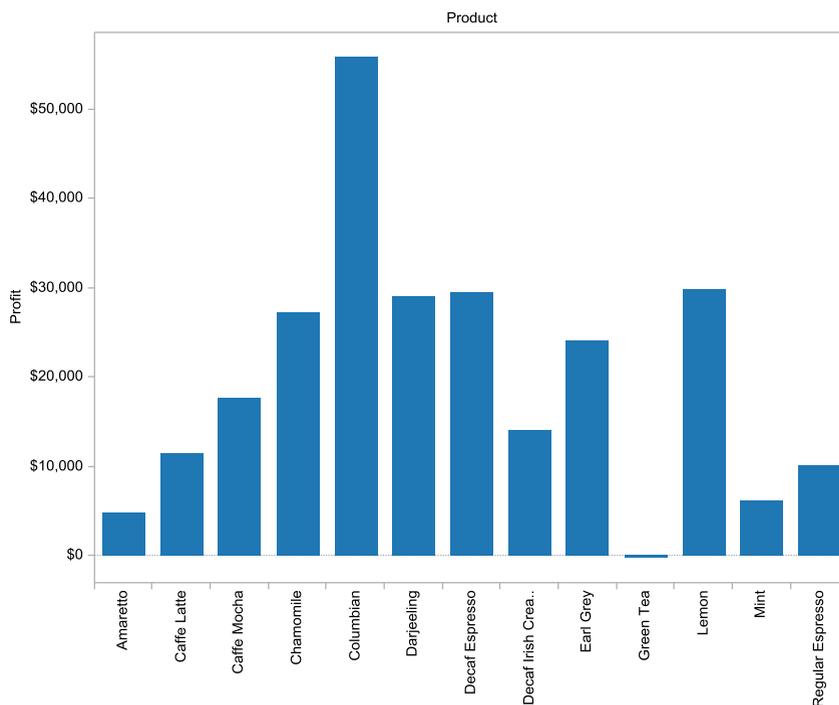
- The “Sales” graph shows that sales are barely higher in 2010 than in 2009, with the summer being flat year over year.
- However, if you look at the “Profit” graph, 2010 has much higher profit levels than 2009. Apparently, in 2010, the company either controlled expenses better or increased prices or sales volume enough to boost profits 40-50%.
- Finally, the “Profit vs. Plan” graph suggests that the company has some quirks in budget planning because the projected profits were inaccurate. There is usually a difference between actual and planned profits (except in October 2010). The good news is that the company is significantly above planned 2010 profits, a welcome improvement from 2009 where it was always below planned profits. Unfortunately, a spike in profitability was planned for both years, something that should be adjusted or removed in the plan for 2011.

To make it easy for the CFO to use this analysis, you have four options. The CFO could use Tableau (the best choice!) or the free Tableau Reader downloadable from the Tableau website. You could export the view to a PDF by **selecting the File → Print to PDF menu item**. You could also copy the view as an image, by **right-clicking on the Worksheet view and selecting Copy Image**. If you want the view in PowerPoint, the Copy Image feature is the best route. When you select this option, you will be prompted for details about what parts of the view to export and details about legend usage in the copied image.

## Categorically clear views

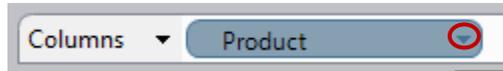
The regional sales managers of Sample Coffee Chain are interested in an analysis of profit by product. They will use these data to discuss growth opportunities for new products and possible pricing changes or product cancellation ideas. Here you will create a simple view to show profitability by product.

1. **Click on the Edit menu and select New Worksheet.** A new worksheet is added to the project, named Sheet 2 by default.
2. **While holding down the <Ctrl> key on your keyboard, move your mouse to the Data Items pane and click on *Product* in the Dimensions section and *Profit* in the Measures section. Click Show Me!** on the toolbar. The Show Me! dialog will appear with the Aligned Bar graph type automatically selected by Tableau. **Click OK.** A bar chart with profit by product is generated in the Worksheet view.

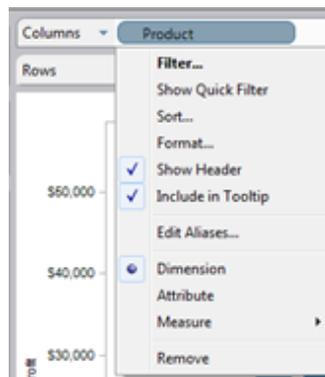


3. To highlight the highest profit products, sort the bars by profit. If you hover with your mouse over the **Product** oval on the Columns Shelf, a down caret appears. **Click on the down caret and select Sort from the drop down context menu.** The Sort dialog opens.

## The down caret for accessing the context menu

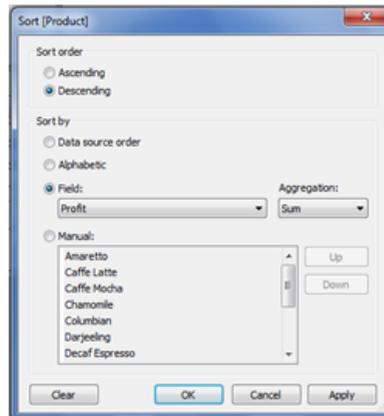


## The context menu available from dimensions placed on the shelf



- The Sort dialog has the default settings of Sort Order: Ascending for Sort by field Data Source Order. **Change the Sort Order to Descending and the Sort by to Field. Profit is already selected in the drop down. Click OK.** The bar graph is now sorted in descending profit order by each product.

## The Sort dialog for Product

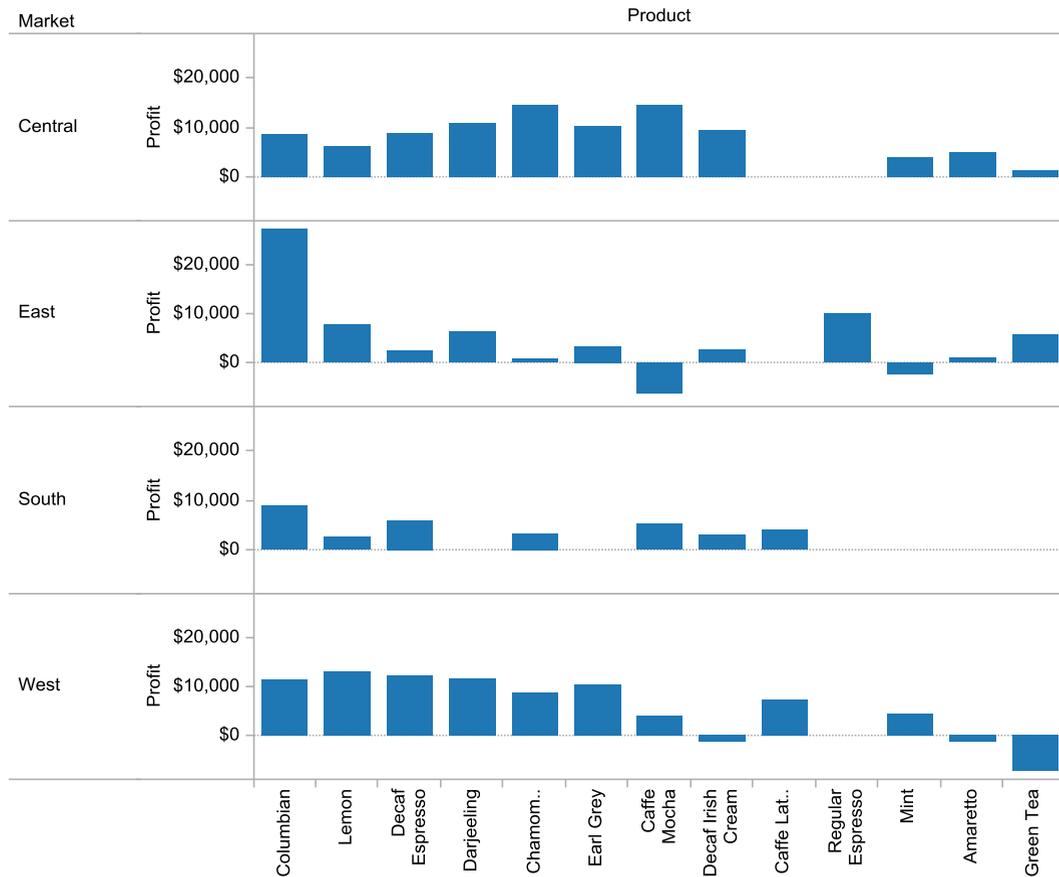


**! Alternate Route:** You will learn more about sorting your data in a later chapter, but a quick shortcut to sorting measures that are currently in use is to use the Sort Ascending and Sort Descending buttons on the toolbar, which look like this:



- Since the regional managers will be interested in the performance of their respective markets, you should add **Market** to the Rows Shelf to the left of the **Profit** data item already in place. **Drag and drop Market just to the left of Profit.** Tableau indicates where the item will drop by displaying a tiny blue inverted caret behind the **Market** field. Note that the sorting is based on the overall profit across all four regions, not any particular region!

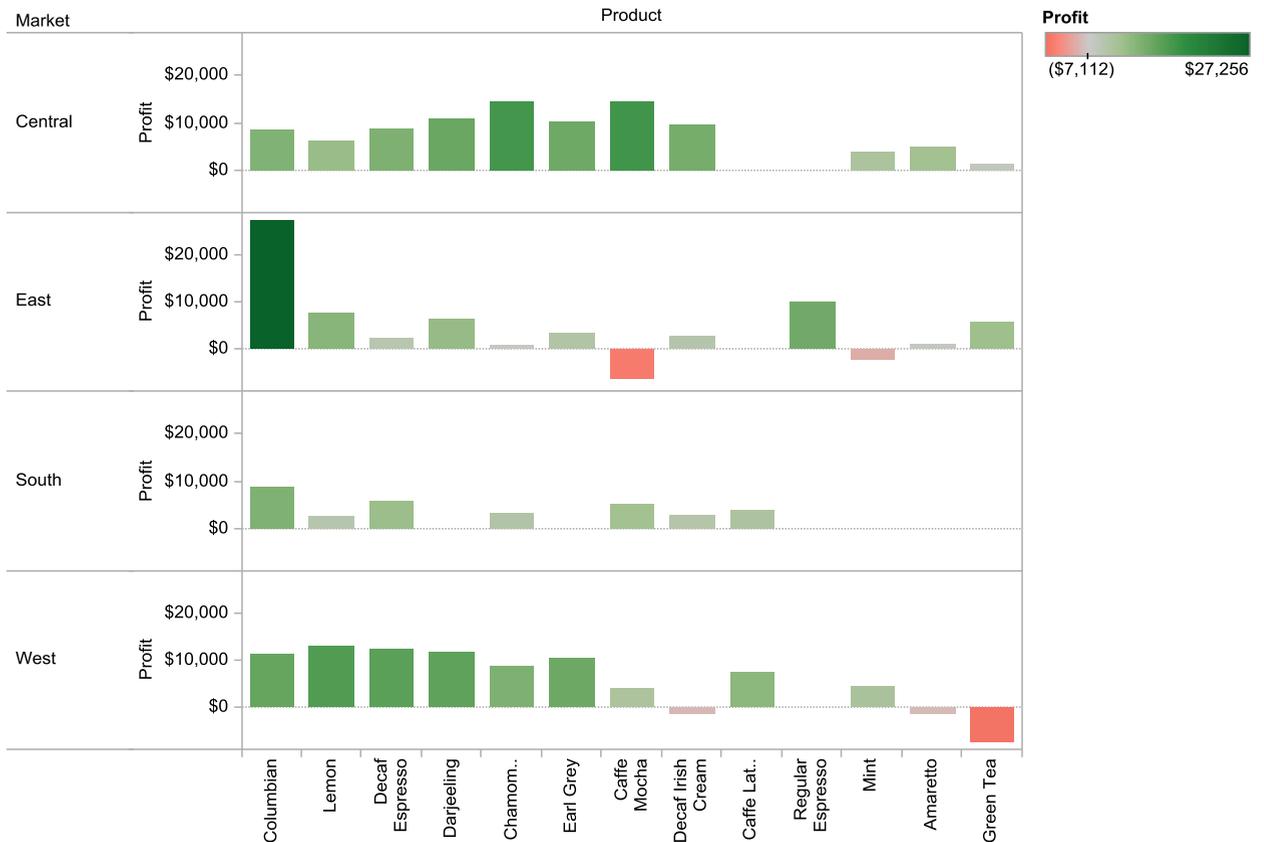
## Profit by Product and Market/Region



- To highlight profitability levels, add **Profit** directly from Data Items to the Color shelf of the Marks Card (do not drag it from the Rows Shelf because your bar chart will be converted to a table). Tableau automatically uses a red-green contrast to show negative profitability as red and positive profitability as green. Tableau also uses the intensity of the two colors to show lower or higher values. The result is that lower and higher values stand in great contrast.

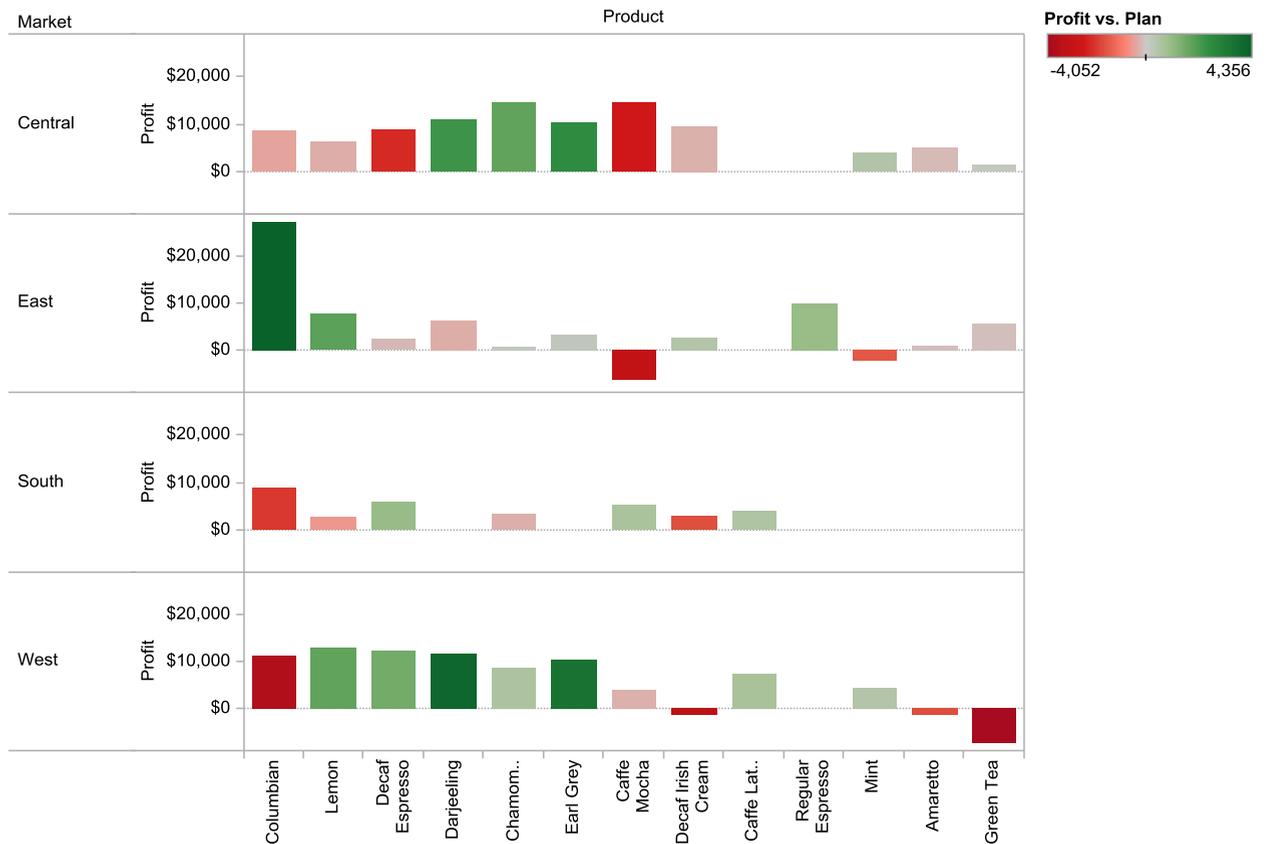
**! Alternate Route:** Drag Profit to the center of the view and Tableau will automatically add it to the Color shelf, because dragging a field to the center will “add it” to the sheet using Show Me! Rules.

### Profit by Product and Market/Region with Profit color-encoded



- Finally, since the regional managers are interested in understanding profitability of various products in their own regions, the distribution shape of each region is informative. However, it is likely even more informative to color encode the value by the profit results versus the planned profit results. Why? This is because pricing may not result in the high profits that are expected for certain products. To enable this view, one simple change is required- **on the Color shelf, replace Profit by dragging and dropping Profit vs. Plan** on top of it.

## Profit by Product and Market with Profit vs. Plan color-encoded



This final view reveals a great amount of information. The overall shape of profitability varies across the four regions with no clear pattern. Additionally, some of the highest profit items in the regions are often the worst performing products relative to plan (for instance, Café Mocha in the Central Region). This information would likely lead to widely varying regional opinions about future product directions. This might inform the team that product line strategy should be managed at the regional level.

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