# Tableau Desktop I: Fundamentals



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Version 2020.2

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# Class Agenda

## Day 1

Introduction to Desktop
Desktop Workflow
Setting Up Connections and Data Sources
Simplifying and Sorting Your Data
Organizing Your Data
Slicing Your Data by Date
Using Multiple Measures in a View
Viewing Specific Values
Showing the Relationship Between Numerical Values

## Day 2

Mapping Data Geographically
Customizing Your Data
Analyzing Data with Quick Table Calculations
Showing Breakdowns of the Whole
Highlighting Data with Reference Lines
Making Your Views Available





# How to Use the Class Materials

- Practices
  - High-level goals and image
  - Direction steps
  - Detailed solution steps in the back of the book
- Student Materials folder
  - **Data** folder, with data sources for reference
  - **Workbooks** folder, with starter and solution .twbx files (plus sample .twbx files)
  - **Workbooks_menu.htm** page, for easy access to starter and solution .twbx files

# For Mac Users: Keyboard and Mouse Differences

| Windows-based instruction | Difference on a Mac |
|---|---|
| CTRL + click | Press and hold the Command ⌘ key while you click. |
| Right-click | When using a mouse with no right-click button, press and hold the control key while you click. |
| Right-click and drag | Press the Option ⌥ (Alt) key, and hold it down while you click and drag. |
| Press CTRL | Press Command ⌘. |
| Press CTRL + Left Arrow | Press Command ⌘ + Control + Left Arrow |





# Introduction

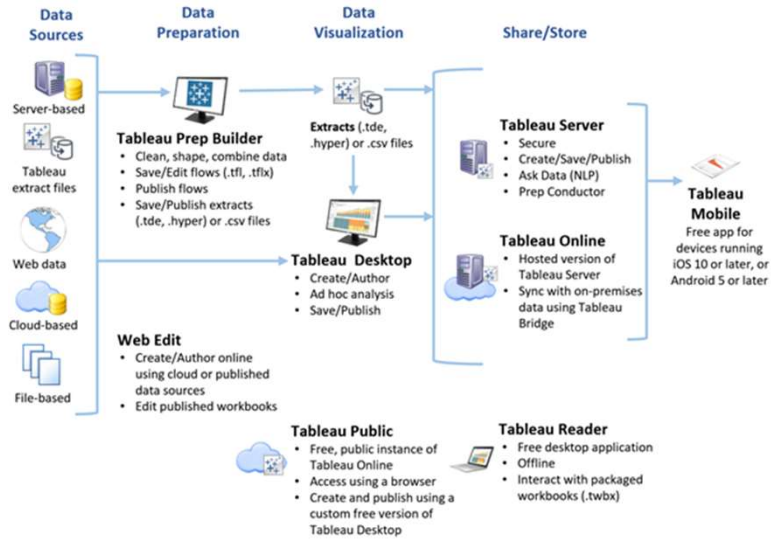
# Introduction to Tableau Desktop I: Fundamentals

- The Tableau Platform
- Application Terminology
- Visual Cues for Fields

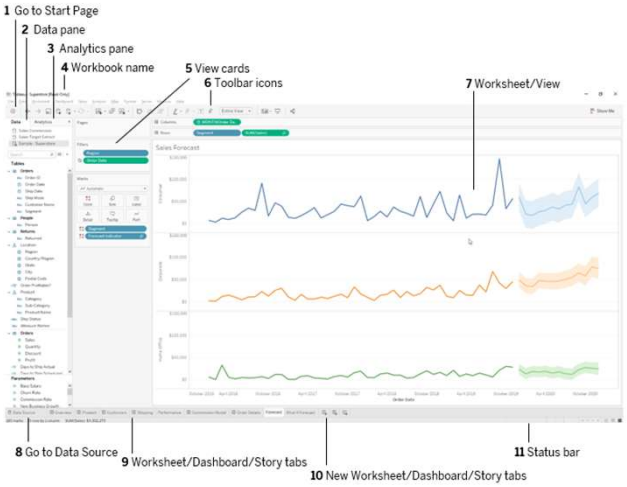




# The Tableau Platform



# Application Terminology








# Visual Cues for Fields

## Modifiers

| | |
|---|---|
| Abc | Blue icons indicate that the field is discrete. |
| # | Green icons indicate that the field is continuous. |
| =Abc | Icons preceded by the equal sign (=) indicate that the field is a user-defined calculation or a copy of another field. |
| Abc Market ! | Fields in the Data pane with an exclamation mark next to them indicate that the field is invalid. |

## Fields in the Data Pane

| Icon | Description |
|---|---|
| T\|F | Boolean (true/false) values |
| | Date and time values |
| | Date only values |
| | Geographic data |
| | Group |
| # | Numeric values |
| | Table |
| Abc | Text values |
| | User-defined set |

# Visual Cues for Fields

## Fields on Shelves

| Icon or Visual Cue | Description |
|---|---|
| Category | A blue field on a shelf indicates a discrete field. |
| SUM(Shipping Cost) | A green field on a shelf indicates a continuous field. |
| Market | A (SORT) icon indicates a sorted field. |
| SUM(Sales) Δ | The delta icon indicates that the field has a table calculation applied to it. |
| ⊟ Country<br>⊞ State | The plus and minus controls appear when the field is part of a hierarchy in which you can drill up or down. |





# Desktop Workflow

# Desktop Workflow

- Understanding the Desktop Workflow
- Elements of a Visualization
- Getting Started in Tableau Desktop
- Practice: Exploring Tableau and the Data



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# Understanding the Desktop Workflow

| Workflow step | Description |
|---|---|
| Connect | On the **Start** page, you can connect to nearly any database or text file available. |
| Analyze | Use dimension fields and measure fields to build the visualizations that allow you to see your data. |
| Share | Build a dashboard or a story you can share with others, or for your deeper data exploration. |

As you become an advanced user, your workflow becomes less linear and more iterative.



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# Elements of a Visualization

Use **Show Me** to get a recommendation for a view.

*—or—*

Drag fields to **Columns**, **Rows** and the **Marks** card to build your own.

- For most of the views in this course, you will build your own.





# Getting Started: Data Pane

| Component | Description |
|---|---|
| Dimensions | Fields that contain qualitative, categorical data such as text and dates.<br>Dimensions typically set the level of aggregation for numeric data, and create labels in a view. |
| Measures | Fields that contain numbers that can be aggregated.<br>Measures typically create numerical axes in a view. |
| Parameters | Dynamic variables that can replace constant values, and which allow view consumers to control the view in some way. |
| Sets | Subsets of data that you define. |

# Getting Started: Analytics Pane

| Component | Description |
|---|---|
| Summarize | Includes options to add pre-defined components such as constant and average lines, medians with quartiles, box plots, and totals. |
| Model | Adds modeling information to your view, such as trend lines, forecasting, and average distribution bands. |
| Custom | Add custom lines, bands, and box plots. |





# Getting Started: View Components

| Component | Description |
|---|---|
| Columns and Rows | Drag dimension and measure fields to these shelves to define how you want the data shown in the view. |
| Pages | Show data changes over time or across discrete dimensions. |
| Filter | Use filters to limit the data shown. Use on a dashboard to allow others to control how the data is displayed in the visualization. |
| Marks | Data as shown in the visualization. Bars, circles, pies, text, and lines are examples of marks. |
| Marks card | Use to change the appearance of "mark" types. |
| Worksheets | Tabs across the bottom of the view correspond to the worksheets contained within the workbook. |

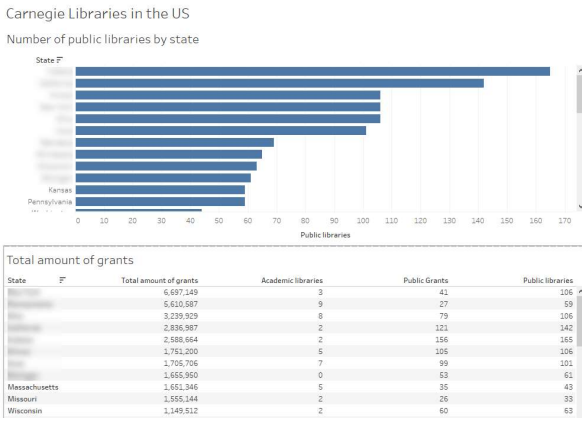
# Practice: Exploring Tableau and the Data

## libraries.xlsx

- Connect to the data.
- Analyze the data and build two views.
- Build a dashboard.

Questions:

- Which state has the most Carnegie public libraries?
- Which state was granted the most money for libraries overall?








# Setting Up Connections and Data Sources

# Tableau File Types and Extensions

| File Type and Extension | Description |
|---|---|
| Tableau Workbooks (.twb) | Contain one or more worksheets and dashboards and always refer to data outside of the workbook itself. |
| Tableau Packaged Workbooks (.twbx) | Contain a workbook along with any supporting local file data sources and background images. This format is the best way to package your work for sharing with others who don't have access to the data. |
| Tableau Bookmark (.tbm) files | Contain a single worksheet and are an easy way to quickly share work between workbooks. |
| Tableau Data Extract files (.hyper or legacy .tde) | Local copy of an entire data source or a subset that you can use to share data or work offline. |
| Tableau Data Connection (.tds) files | Shortcuts for data sources used often. Contain just the information you need to connect to the data sources such as data source type, location, and custom fields. |





# Setting up Connections and Data Sources

- Creating a Live Data Connection
- Saving and Editing a Data Source
- Sharing a Data Source
- Understanding Changes to Data
- Practice: Creating a Local Data Connection

# Creating a Live Data Connection

## Types of connections

- Connect to a file
- Connect to a server
- Connect to a saved data source






# Saving and Editing a Data Source

## Tableau Data Source (.tds) file contains:

- Modifications you've made to a data source, such as changing default properties or renaming a field (but not the data itself),
- Parameters, calculated fields, groups, hierarchies, bins, or sets you've created.

## Saving options:

Locally for personal use:

- Changes to data source are not inherited.

Exported to Tableau Server for work group sharing:

- Subsequent workbooks can inherit data source changes.

# Modifying Data Attributes

## Examples:

Organize dimensions and measures with folders.
Change a measure to a dimension, or a dimension to a measure.

## Set the default properties for a measure:

- Comment
- Color
- Number Format
- Aggregation
- Totals

## Set the default properties for a dimension:

- Comment
- Color
- Shape
- Sort





# Sharing a Data Source

## If you have Tableau Server, you can share a data source connection (.tds) file with other users.

- Save locally for personal use.
- Create a local copy for editing from a shared file on Tableau Server.
- Publish to Tableau Server for work group sharing.

# Understanding Changes to Data

## Impact of data connection type:

Live—changes reflected immediately

Extracts—changes require a refresh

## Impact of type of data change:

Changes to data values will be reflected

Structural changes (such as removing columns or changing the data type or name) may break the visualization

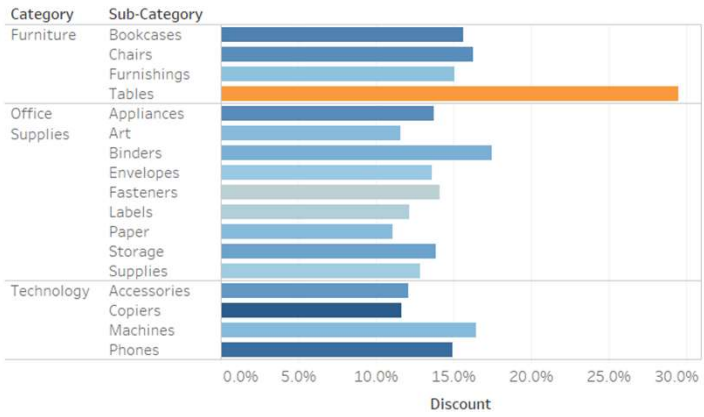




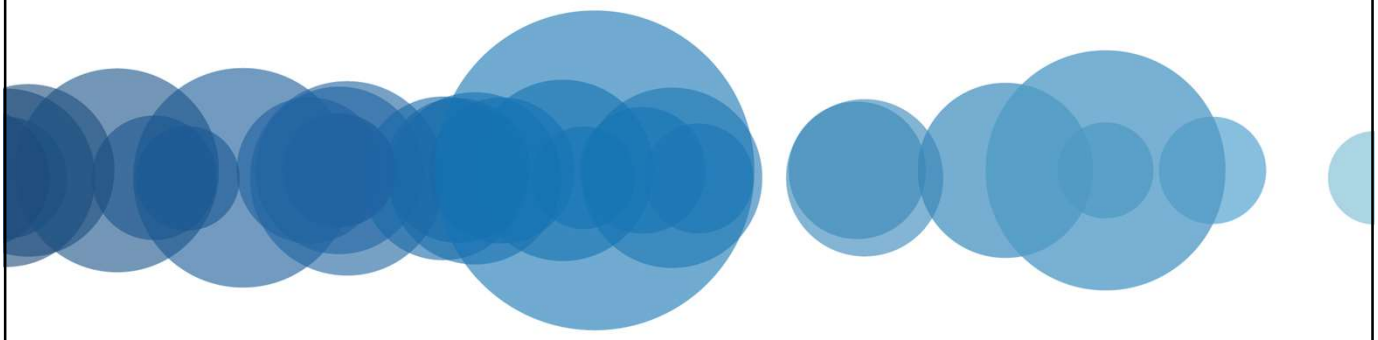
# Practice: Creating a Local Data Connection

**Global Superstore.xlsx**

- Connect to data source, edit attributes
- Save changes locally
- Create a visualization



# Simplifying and Sorting Your Data







# Simplifying and Sorting Your Data

- Data Filtering
- Practice: Filtering
- Creating Date Filters
- Sorting
- Practice: Sorting

# Data Filtering

Narrows the data shown in a view to focus on relevant information

Filters shelf shows which filters are in use

Options vary by field type (dimension, measure, date)

Filter appearance and behavior





# Filter on a Dimension

| Filter Option | Description |
|---|---|
| General | Shows members of the dimensions you can select for inclusion or exclusion. |
| Wildcard | Sets up a wildcard inclusion or exclusion of members matching the value entered. |
| Condition | Filters values based on specific conditions. Can be determined by fields, range of values, or formula. |
| Top | Filter by top (or bottom) "N" when N is determined by the value of specified fields or by formula (for example, Top 10 Cities by Profit). |

# Filter on a Measure

| Filter Option | Description |
|---|---|
| Range of Values | Include all values within the specified range |
| At Least | Include all values above a specified value |
| At Most | Include all values below a specified value |
| Special | Set filter for null or non-null values |

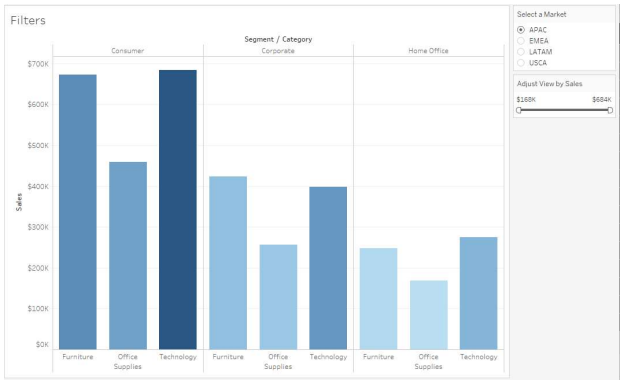




# Practice: Filtering

## Filtering_Starter.twbx

- Add a filter for Market, displayed as a single value list titled "Select a Market" with the option to choose "All" disabled.
- Add a filter on SUM(Sales), formatted as a slider.




Question:

- Which Segment / Category had the greatest sales for the EMEA Market when the SUM(Sales) was between $300K and $800K?

# Creating Date Filters

## Relative date filters

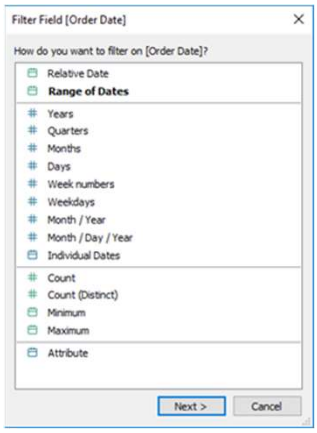
- Update data dynamically with time
- Example: 3 months before or after the current date

## Range of dates

- Specify a definite span of time
- Define starting or ending dates

## Specific date field values

- Examples: years, weekdays








# Computed Sorts

## Organize data by applying rules

- Examples: alphabetical, ascending/descending order

## Change dynamically as data changes

## Can be set as a default for a dimension

# Manual Sorts

Organize data in a fixed order

- Example: show a particular region first

Do not change dynamically (maintained even when data changes)

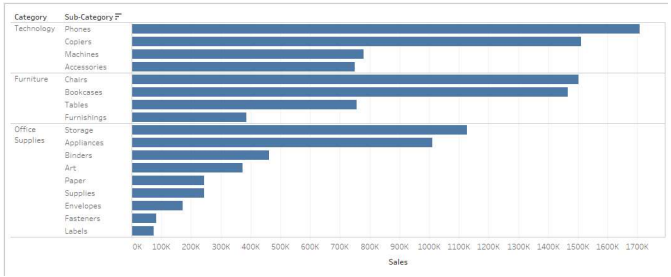
Can be set as a default for a dimension

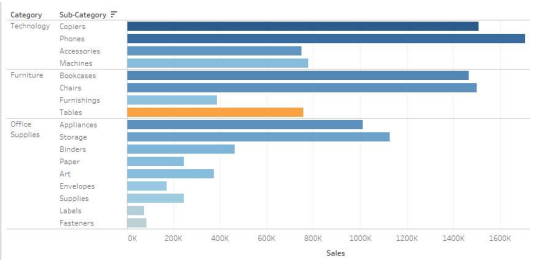




# Practice: Sorting

## Sorting_Starter.twbx



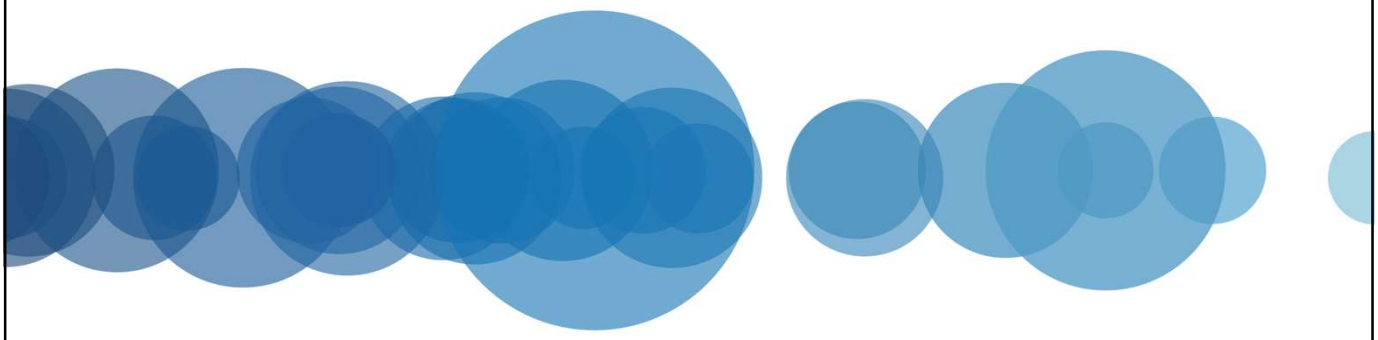

View One:

- Use a computed sort in the view to order Sub-Category by SUM(Sales) in descending order.
- Use a manual sort for Category in this order: Technology, Furniture, and Office Supplies.

View Two:

- Duplicate the first worksheet with bars color encoded by Profit.
- Use a computed sort on Sub-Category to sort the SUM(Profit) in descending order.

# Organizing Your Data







# Organizing Your Data

- Using Groups
- Creating and Using Hierarchies
- Practice: Creating Groups and Hierarchies

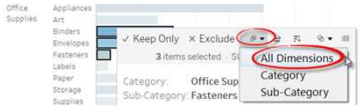
# Using Groups

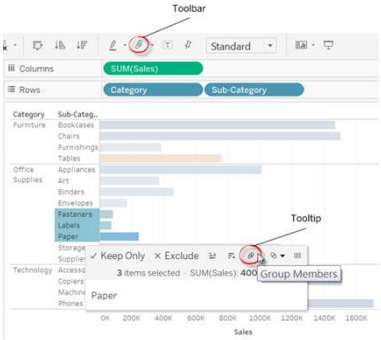
A group is a set of dimension members combined into higher level categories

- Example: states grouped as a region or similar products grouped as a category

Methods to create groups:

- From the view by selecting dimension labels and using the group icon or menu
- From the data pane
- Visually by selecting marks








# Creating and Using Hierarchies

Use hierarchies to organize data from general to specific

- Example: country > region > state > postal code

Use when data does not contain logical levels of aggregation.

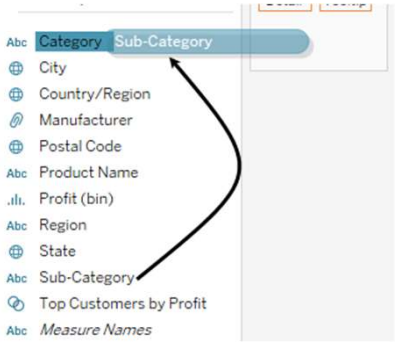
Click the plus (+) sign and drill into the data with the path defined by the hierarchy.

Reorder fields in the hierarchy by dragging and dropping.

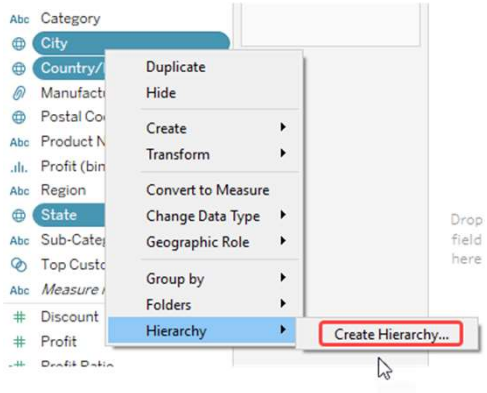
# Creating and Using Hierarchies (continued)

## Two Ways to Build

- Drag and drop




- Context (right-click) menu



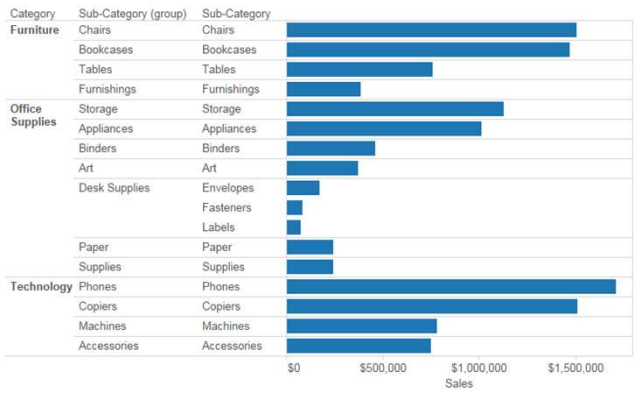





# Practice: Creating Groups and Hierarchies

**Creating_Groups_and_Hierarchies_Starter.twbx**

- Create a group to compare sales of desk supplies to other products in the same category
- Create a product hierarchy to quickly drill up and down for comparing sales



# DEMO: Creating Visual Groupings (time permitting / 8-10 min)

- Use color to create visual groups so that users can quickly see certain products in the view
- See steps below





# Slicing Your Data by Date

# Slicing Your Data by Date

- Working with Dates in Tableau
- Using Discrete Date Parts and Continuous Date Values
- Practice: Date Parts and Date Values
- Creating Custom Dates
- Practice: Custom Dates





# Working with Dates

Dates are automatically placed in the dimensions area of the data pane:

- Date/time fields are identified by the calendar icon.

Automatic hierarchy is created for dates:

- Begins at the highest level in the data, usually year.
- Right-click on the field to change the hierarchy.


Date hierarchies and attributes in OLAP (or cubes) are defined when the cube is created:

- They cannot be modified in Tableau.

The standard Gregorian calendar is used by default:

- The ISO-8601 week-based calendar can be selected for any data source.

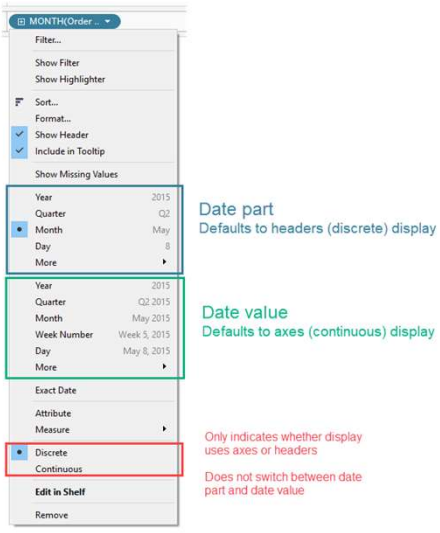
# Discrete Date Parts and Continuous Date Values

## Discrete dates are organized as discrete date parts, independent of linear time

- Organized by date units, such as aggregated data for all Novembers over several years.

## Continuous date values represent the chronological progression of time

- Create an axis as a timeline.



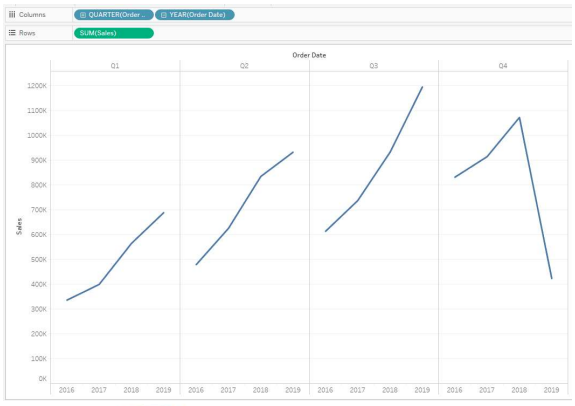





# Using Discrete Date Parts

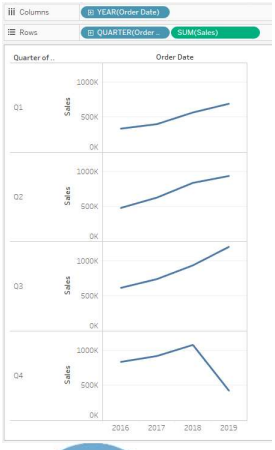
## Reorder date hierarchy:

- Place quarter before year




## Place date parts on different shelves:

- Year on columns
- Quarter on rows



# Practice: Date Parts and Date Values

## Global_Superstore_Recent_Dates.xlsx

- Create a bar chart to show seasonal trends by discrete month of over date
- Create a line chart to show sales for each month in a continuous timeline







# Creating Custom Dates

Custom dates are calculated date parts that you can save.

- Example: reuse the custom date part or value without having to override the default behavior for each use.

Can be used to "break" the automatic date hierarchy or to create elements to use in defining a new one.

- Example: new dimension for just the month of order data

Allow for each field to represent just itself.

Can be continuous date values or discrete date parts.

# Practice: Custom Dates

## Custom_Dates_Starter.twbx

- Create a bar chart that shows sales by order date using a custom discrete date in quarters.
- Create a bar chart that shows a Year to Quarter custom date hierarchy.

Discrete Quarters


Year to Quarter Custom Date Hierarchy






# Using Multiple Measures in a View

# Using Multiple Measures in a View

- Using Measure Values and Measure Names in a View
- Combined or Shared Axis Charts
- Practice: Combined Axis Chart
- Creating Dual Axis Charts
- Practice: Dual Axis Chart



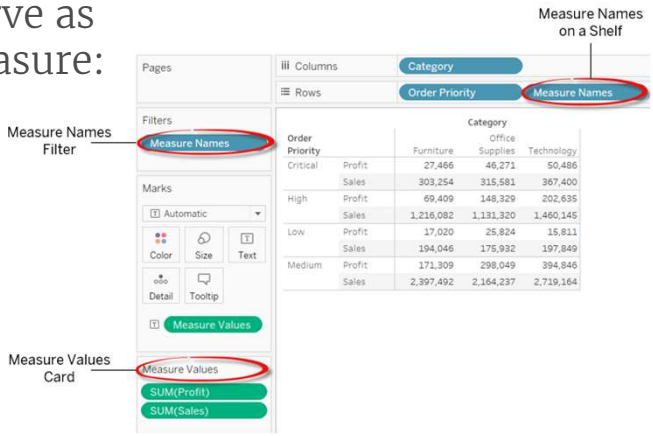


# Measure Values and Measure Names

Tableau-generated fields that serve as containers for more than one measure:

- Measure Names—at the bottom of the dimensions list
- Measure Values—at the bottom of the measures list

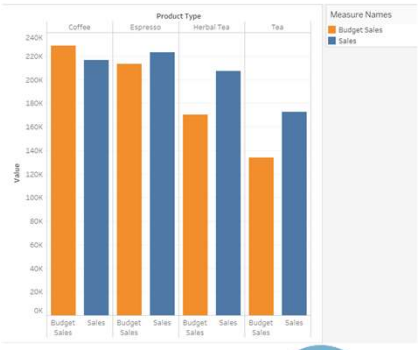
Appear automatically when you create a combined (shared) axis or dual axis chart.

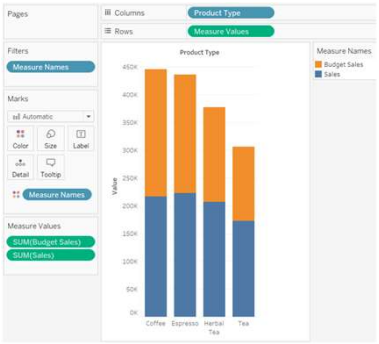


# Combined or Shared Axis Charts

## More than one measure on the same axis

- Use for comparing multiple measures in a single view.
- Highlight the relationship between the two measures.
- Drag the second measure to the existing axis.
- Show marks side-by-side or stacked.



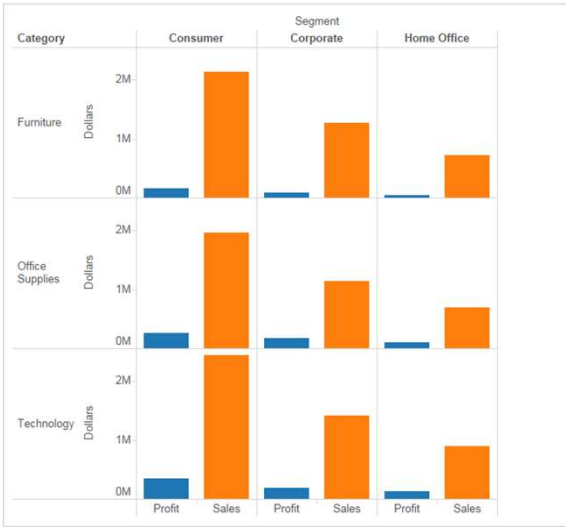





# Practice: Combined Axis Chart

## Global Superstore.xlsx

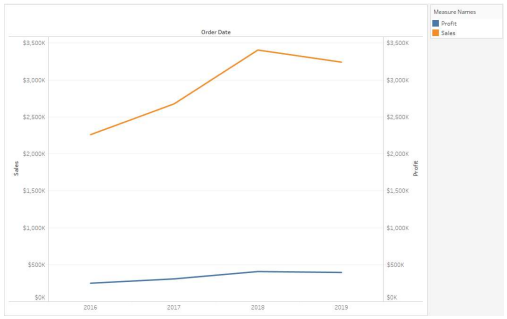
- Create a bar chart broken down by Segment and Category that shows Profit and Sales on the same axis.
- Use your chart to compare measures within dimensions.

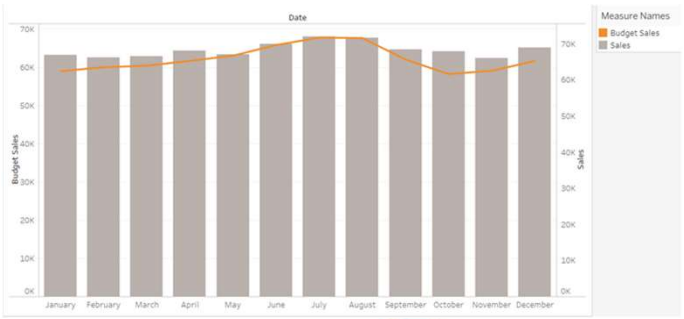


# Creating Dual Axis Charts

## Useful for showing how two different measures compare

- Different measurement units (for example, dollars and number of days)
- Same unit of measure, but on two different scales
- Can be shown with different mark types



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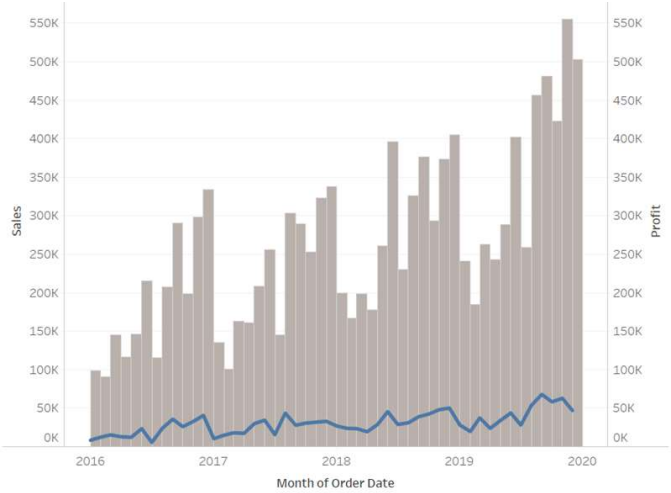
# Practice: Dual Axis Chart

## Global_Superstore_Recent_Dates.xlsx

- Show Sales as bars.
- Show Profit as a line by month.
- Synchronize axes.



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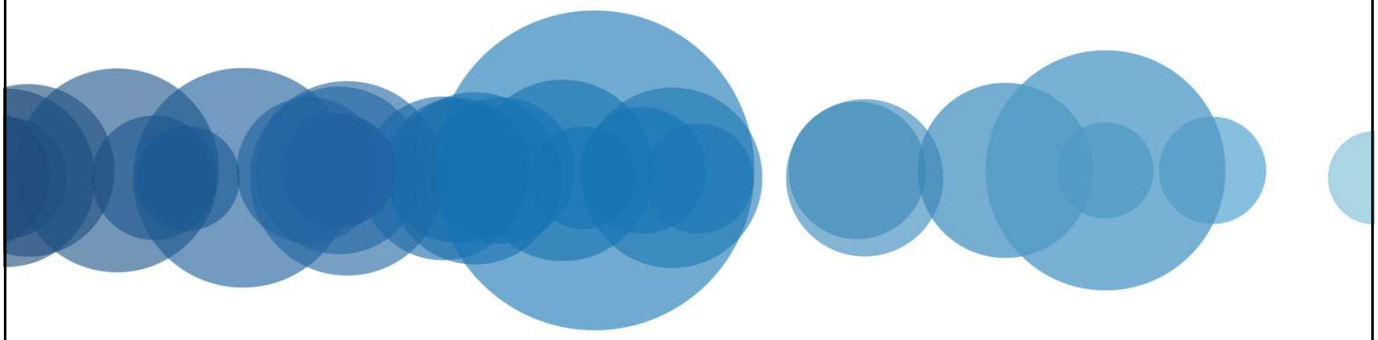
# Viewing Specific Values





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# Viewing Specific Values

- Creating Crosstabs
- Grand Totals, Subtotals, and Changing Aggregation
- Practice: Totals and Aggregation
- Creating Highlight Tables
- Practice: Highlight Table



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# Creating Crosstabs

Use when specific numeric values need to be represented in the view.

To create:

- One dimension on columns
- One dimension on rows
- One measure to text on the **Marks** card

Segment

| Region | Consumer | Corporate | Home Office |
|---|---|---|---|
| Africa | 423,767 | 204,939 | 155,067 |
| Canada | 35,719 | 19,314 | 11,895 |
| Caribbean | 162,349 | 104,538 | 57,394 |
| Central | 1,479,981 | 850,364 | 491,957 |
| Central Asia | 369,055 | 235,540 | 148,231 |
| East | 350,908 | 200,409 | 127,464 |
| EMEA | 406,745 | 250,571 | 148,845 |
| North | 643,955 | 394,226 | 209,984 |
| North Asia | 407,395 | 265,747 | 175,168 |
| Oceania | 579,550 | 322,827 | 197,807 |
| South | 824,890 | 496,015 | 280,002 |
| Southeast Asia | 460,753 | 254,352 | 169,319 |
| West | 362,881 | 225,855 | 136,722 |

From an existing view:

- Right-click the tab for the worksheet you want to use, and choose **Duplicate as Crosstab.**





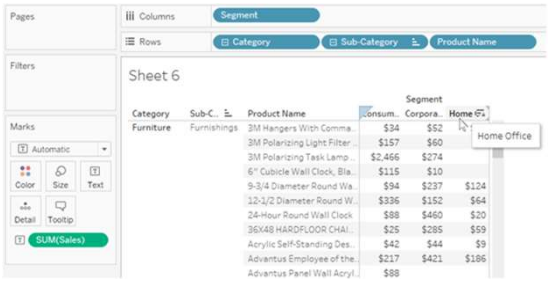
# Creating Crosstabs (cont'd)

Sort your table column:

**Nested** or **Field** sort columns containing a single value per pane, or columns having discrete measures.

To create:

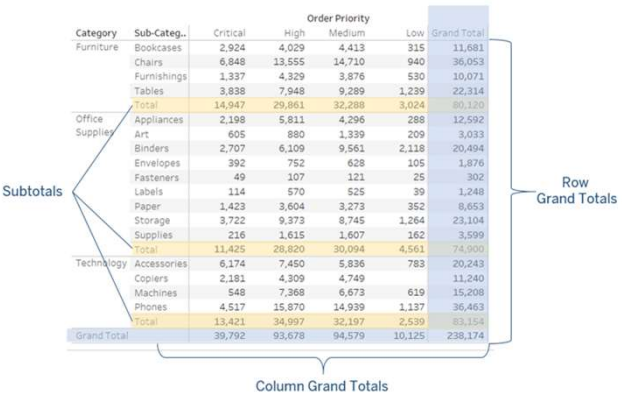
- One dimension to **Columns**
- Several dimensions to **Rows**
- One measure to text on the **Marks** card
- On **Rows**, right-click a dimension and choose **Sort**.
  - In the dialog box, choose **Field**, **Ascending**, **Field Name**, **Sales** and **Sum**.



# Grand Totals, Subtotals, and Changing Aggregations

## Add row and column grand totals and subtotals to help users interpret data.

- Change the display positions as needed.
- Use additional formatting for emphasis.
- Adjust the aggregation.








# Practice: Totals and Aggregation

## Global Superstore.xlsx

- 1 - Create a crosstab that shows <u>total</u> product sales broken down by category, sub-category, and market.

- 2 - Create a second crosstab for <u>maximum</u> product sales. Emphasize totals and grand totals.

| | | Market | | | | |
|---|---|---|---|---|---|---|
| Category | Sub-Categ.. | APAC | EMEA | LATAM | USCA | Grand Total |
| Furniture | Bookcases | 504,823 | 538,720 | 302,415 | 120,614 | 1,466,572 |
| | Chairs | 512,974 | 354,836 | 302,219 | 331,652 | 1,501,682 |
| | Furnishings | 101,038 | 129,571 | 62,456 | 92,514 | 385,578 |
| | Tables | 225,099 | 179,248 | 144,880 | 207,815 | 757,042 |
| | Total | 1,343,934 | 1,202,374 | 811,971 | 752,595 | 4,110,874 |
| Office Supplies | Appliances | 307,621 | 405,896 | 182,075 | 115,473 | 1,011,064 |
| | Art | 63,008 | 236,661 | 41,185 | 31,238 | 372,092 |
| | Binders | 63,527 | 148,743 | 43,140 | 206,502 | 461,912 |
| | Envelopes | 52,112 | 60,392 | 41,357 | 17,044 | 170,904 |
| | Fasteners | 28,097 | 32,497 | 19,145 | 3,504 | 83,242 |
| | Labels | 22,323 | 24,618 | 13,555 | 12,908 | 73,404 |
| | Paper | 59,901 | 66,202 | 38,190 | 79,999 | 244,292 |
| | Storage | 216,076 | 534,543 | 142,036 | 234,431 | 1,127,086 |
| | Supplies | 71,655 | 80,197 | 43,239 | 47,983 | 243,074 |
| | Total | 884,320 | 1,589,749 | 563,921 | 749,081 | 3,787,070 |
| Technology | Accessories | 186,235 | 249,410 | 141,739 | 171,854 | 749,237 |
| | Copiers | 494,594 | 541,527 | 316,322 | 156,994 | 1,509,436 |
| | Machines | 190,307 | 354,299 | 40,941 | 193,513 | 779,060 |
| | Phones | 486,354 | 590,665 | 289,711 | 340,093 | 1,706,824 |
| | Total | 1,357,490 | 1,735,901 | 788,714 | 862,453 | 4,744,557 |
| Grand Total | | 3,585,744 | 4,528,024 | 2,164,605 | 2,364,129 | 12,642,502 |

| | | Market | | | | |
|---|---|---|---|---|---|---|
| Category | Sub-Category | Grand Total | APAC | EMEA | LATAM | USCA |
| Grand Total | | 22,638 | 6,999 | 7,959 | 3,474 | 22,638 |
| Furniture | Total | 5,760 | 5,760 | 5,729 | 3,473 | 4,416 |
| | Bookcases | 5,668 | 5,668 | 3,499 | 2,751 | 4,405 |
| | Chairs | 5,760 | 5,760 | 5,729 | 3,473 | 4,416 |
| | Furnishings | 1,519 | 880 | 1,519 | 785 | 1,336 |
| | Tables | 5,451 | 5,451 | 5,451 | 3,117 | 4,298 |
| Office Supplies | Total | 9,893 | 4,864 | 7,959 | 3,243 | 9,893 |
| | Appliances | 7,959 | 4,864 | 7,959 | 3,243 | 2,625 |
| | Art | 1,113 | 513 | 769 | 479 | 1,113 |
| | Binders | 9,893 | 609 | 720 | 434 | 9,893 |
| | Envelopes | 605 | 486 | 570 | 435 | 605 |
| | Fasteners | 271 | 226 | 271 | 119 | 116 |
| | Labels | 786 | 160 | 158 | 104 | 786 |
| | Paper | 734 | 498 | 677 | 315 | 734 |
| | Storage | 2,963 | 1,981 | 2,963 | 1,455 | 2,934 |
| | Supplies | 8,188 | 540 | 667 | 431 | 8,188 |
| Technology | Total | 22,638 | 6,999 | 5,785 | 3,474 | 22,638 |
| | Accessories | 3,450 | 3,079 | 3,450 | 2,298 | 3,347 |
| | Copiers | 17,500 | 4,448 | 5,301 | 2,366 | 17,500 |
| | Machines | 22,638 | 2,195 | 2,910 | 1,601 | 22,638 |
| | Phones | 6,999 | 6,999 | 5,785 | 3,474 | 4,549 |

# Creating Highlight Tables

A color-encoded crosstab that calls attention to very high or low data values:

- Show detailed values in text.
- Emphasize outliers in color.
- Include totals, color-encoded or not, as desired.

| | | Ship Mode / Order Priority | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | First Class | | | Same Day | | | Second Class | | | Standard Class | | |
| Segment | Market | Critical | High | Medium | Critical | High | Medium | Critical | High | Medium | High | Low | Medium |
| Consumer | APAC | 9,399 | 18,412 | 5,884 | 2,796 | 6,541 | 1,929 | 5,348 | 15,516 | 15,419 | 34,558 | 5,111 | 101,905 |
| | EMEA | 8,827 | 9,074 | 12,244 | 2,766 | 8,856 | 8,403 | 12,579 | 18,997 | 27,065 | 43,272 | 16,536 | 93,373 |
| | LATAM | 2,477 | 7,964 | 6,935 | -371 | 936 | 2,022 | 2,765 | 10,262 | 13,729 | 14,025 | 5,818 | 54,070 |
| | USCA | 4,186 | 6,317 | 12,954 | 2,891 | 6,526 | 1,159 | 6,213 | 15,303 | 6,409 | 10,653 | -5,017 | 76,203 |
| Corporate | APAC | 8,369 | 3,594 | 3,291 | 1,788 | 2,866 | 1,480 | 7,667 | 6,945 | 12,738 | 18,117 | 3,997 | 58,885 |
| | EMEA | 9,159 | 7,050 | 6,515 | -487 | 2,372 | 4,874 | 3,526 | 6,961 | 22,633 | 17,255 | 12,276 | 64,448 |
| | LATAM | 2,625 | 6,534 | 3,566 | 1,554 | 3,006 | -359 | 1,056 | 1,910 | 3,499 | 7,151 | 4,908 | 22,424 |
| | USCA | 2,477 | 6,805 | 5,589 | 157 | -1,382 | 3,122 | 3,755 | 9,421 | 6,543 | 13,115 | 6,114 | 41,301 |
| Home Office | APAC | 2,414 | 1,077 | 6,471 | 932 | 3,098 | -2,712 | -122 | 4,602 | 9,438 | 14,202 | 2,056 | 41,989 |
| | EMEA | 1,248 | 3,180 | -906 | 3,529 | -702 | 1,660 | 3,050 | 7,178 | 9,998 | 8,136 | 3,782 | 46,873 |
| | LATAM | 1,397 | 6,698 | 2,865 | 2,097 | 5 | 577 | 1,289 | 1,553 | 2,983 | 6,338 | 1,686 | 15,646 |
| | USCA | 3,255 | 7,240 | 2,919 | 1,774 | 2,098 | 369 | 1,838 | 5,931 | 8,587 | 10,807 | 1,390 | 17,194 |





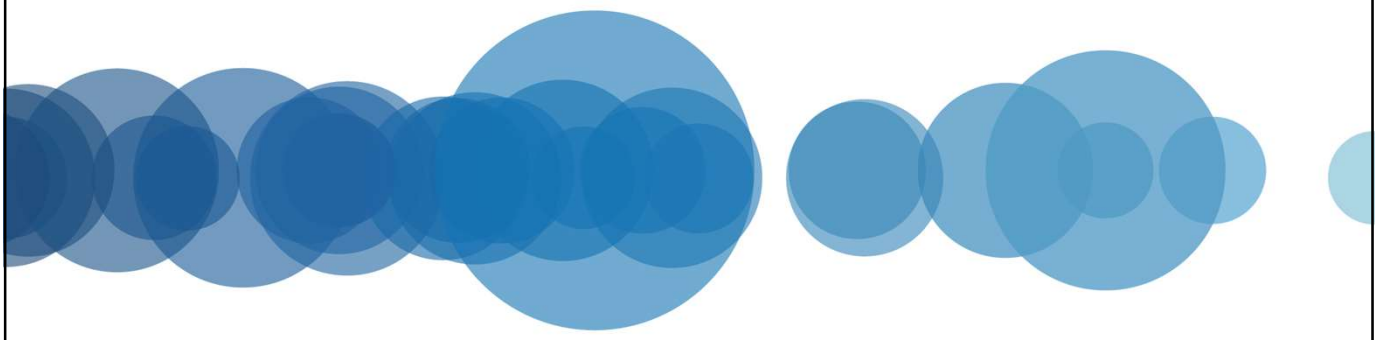
# Practice: Highlight Table

## Global Superstore.xlsx

| | | Market / Region | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | APAC | | | | EMEA | | | | | LATAM | | | | USCA | | | | | Grand Total |
| Category | Sub-Categ... | Central Asia | North Asia | Oceania | Southeast Asia | Africa | Central | EMEA | North | South | Caribbean | Central | North | South | Canada | Central | East | South | West | |
| Furniture | Bookcases | 21,044 | 25,657 | 13,389 | 6,667 | 7,165 | 20,290 | 7,938 | 15,289 | 20,829 | 1,949 | 11,167 | 4,977 | 6,794 | 1,343 | -1,998 | -1,168 | 1,339 | -1,647 | 161,924 |
| | Chairs | 17,435 | 26,509 | 15,028 | 3,230 | 2,784 | 22,218 | -610 | 4,754 | -7,181 | 5,416 | 8,278 | 5,215 | 9,872 | 857 | 6,593 | 9,358 | 6,612 | 4,028 | 140,396 |
| | Furnishings | 5,367 | 5,486 | 3,862 | 1,452 | 2,302 | 11,023 | 1,441 | -2,801 | 5,428 | -1,205 | 2,436 | -3,523 | 2,527 | 114 | -3,906 | 6,881 | 3,443 | 7,641 | 46,967 |
| | Tables | 4,190 | -5,471 | -230 | -18,618 | 4,011 | -15,321 | 2,764 | 3,296 | -8,974 | 63 | -2,670 | 3,716 | -13,415 | 300 | -3,560 | -11,025 | -4,623 | 1,483 | -64,083 |
| Office Supplies | Appliances | 6,269 | 12,859 | 12,444 | 10,557 | 3,670 | 18,184 | 3,024 | 7,785 | 20,369 | 5,597 | 4,136 | 12,189 | 4,226 | 2,234 | -2,639 | 8,391 | 4,124 | 8,261 | 141,681 |
| | Art | 2,172 | 4,101 | 2,255 | -1,190 | 3,977 | 19,464 | 1,452 | 4,016 | 7,314 | 964 | 1,722 | 3,675 | 590 | 913 | 1,196 | 1,900 | 1,059 | 2,374 | 57,954 |
| | Binders | 2,767 | 2,907 | 2,728 | 2,395 | 2,659 | 12,825 | 2,910 | 2,470 | 4,466 | 1,145 | 1,186 | 2,756 | 228 | 786 | -1,044 | 11,268 | 3,901 | 16,097 | 72,450 |
| | Envelopes | 2,182 | 3,421 | 1,262 | -1,641 | 1,518 | 4,732 | 811 | 1,704 | 2,205 | 994 | 1,647 | 3,286 | 346 | 171 | 1,778 | 1,812 | 1,465 | 1,909 | 29,601 |
| | Fasteners | 1,025 | 1,480 | 774 | -1,602 | 854 | 2,997 | 945 | 533 | 898 | 467 | 360 | 1,297 | 408 | 140 | 237 | 264 | 174 | 275 | 11,525 |
| | Labels | 896 | 1,300 | 1,158 | -870 | 786 | 2,006 | 391 | 480 | 802 | 366 | 659 | 946 | 415 | 129 | 1,073 | 1,129 | 1,041 | 2,303 | 15,011 |
| | Paper | 3,006 | 3,032 | 2,693 | -1,859 | 2,063 | 4,871 | 887 | 1,320 | 2,693 | 1,292 | 1,356 | 2,517 | 909 | 374 | 6,972 | 9,015 | 5,947 | 12,119 | 59,208 |
| | Storage | 6,138 | 8,482 | 7,706 | 2,418 | 11,915 | 24,845 | 3,453 | 6,484 | -3,379 | 2,616 | 3,649 | 8,687 | 1,256 | 2,912 | 1,970 | 8,389 | 2,274 | 8,645 | 108,461 |
| | Supplies | 2,649 | 3,344 | 2,286 | -4,034 | 1,038 | 6,484 | 997 | 933 | 2,208 | 1,378 | 1,311 | 3,326 | 1,556 | 297 | -662 | -1,155 | 2 | 626 | 22,583 |
| Technology | Accessories | 8,026 | 8,796 | 7,702 | -8,642 | 6,478 | 18,861 | 3,583 | 5,000 | 9,581 | 3,346 | 6,423 | 11,123 | 6,116 | 1,295 | 7,252 | 11,196 | 7,005 | 16,485 | 120,626 |
| | Copiers | 17,812 | 30,090 | 21,597 | 11,356 | 14,009 | 22,602 | 8,178 | 15,539 | 18,059 | 7,179 | 6,540 | 21,343 | 5,983 | 2,664 | 15,609 | 17,023 | 3,659 | 19,327 | 258,566 |
| | Machines | 7,494 | 10,308 | 3,958 | 4,783 | 5,948 | 11,930 | 2,742 | 9,559 | -4,201 | -2,604 | 441 | 3,680 | 839 | 608 | -1,486 | 6,929 | -1,439 | -619 | 58,868 |
| | Phones | 23,108 | 23,277 | 21,477 | 13,452 | 17,695 | 27,523 | 2,991 | 15,421 | -5,600 | 5,608 | 7,522 | 17,608 | -560 | 2,680 | 12,323 | 12,315 | 10,767 | 9,111 | 216,717 |

- Show profit for category and sub-category by market and region.
- Include row grand totals in the color encoding.

# Showing the Relationship Between Numerical Values





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# Showing the Relationship Between Numerical Values

- Showing Correlations and Outliers with Scatter Plots
- Create a Scatter Plot
- Analyze Using the Highlighter
- Analyze Using Explain Data
- Practice: Marketing Expenses Scatter Plot



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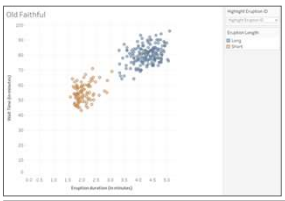
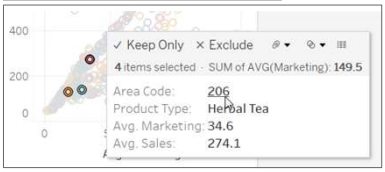
# Showing Correlations and Outliers with Scatter Plots

A graph of plotted points to compare two measures and to show patterns across data sets.



Scatter plots can:

- Answer questions about relationships between variables (correlations).
- Visualize data that deviates from the primary trend (outliers).




Highlighters and/or tooltip selections are useful for analysis. Explain Data can also be used.



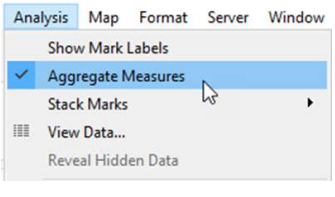


# Create a Scatter Plot

Compare two measures on opposite (x and y) axes, or on rows and columns.

Use dimensions to see how the measures compare when sliced differently.

Disaggregate the measures to see all records in the data set.




Click to disaggregate

# Analyze Using the Highlighter

## Use the highlighter to perform ad-hoc analysis of the data in scatter plots:

- Use a discrete field (dimension) that is included in the view and impacts the level of detail in the view.
- Right-click the field on the **Marks** card, and then click **Show Highlighter.**

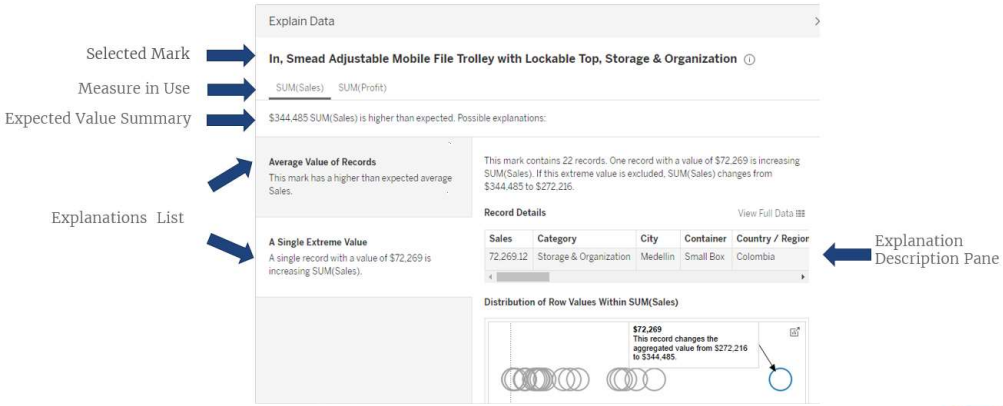





# Analyze Using Explain Data

## Select a mark and run Explain Data

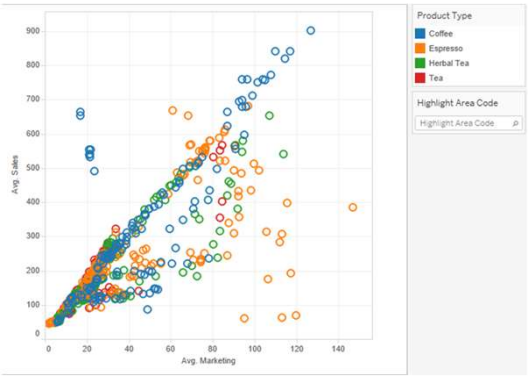
View results in the Explain Data Window:

# Practice: Marketing Expenses Scatter Plot

## CoffeeChain_Query.xlsx

- Create a scatter plot to compare average sales with average marketing expenses, broken down by area code and product type.
- Add a highlighter to analyze the data, and use it to examine outliers.
- Use Explain Data to examine outliers.








# Mapping Data Geographically

# Mapping Data Geographically

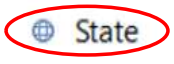
- Mapping in Tableau
- Navigation and Selection in Maps
- Practice: Airport Geographic Mapping
- Creating Geographic Groups
- Practice: Creating Geographic Groups





# Mapping in Tableau

Create views using maps to show data distributions by geographic locations.

Fields in your data with geographic information display in the data pane with a globe icon. For example: 


Latitude and longitude fields are automatically generated for many geographic information types.

# Navigation and Selection in Maps

Maps created in Tableau Desktop have several navigation, search, and selection options for user interaction:

Map Search

Zoom and Pan

Reset Axes

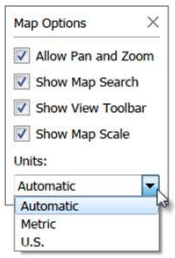
Zoom area

Pan

Rectangular selection

Radial selection

Lasso selection




Use Map Options to show or hide various options, or to choose map units.

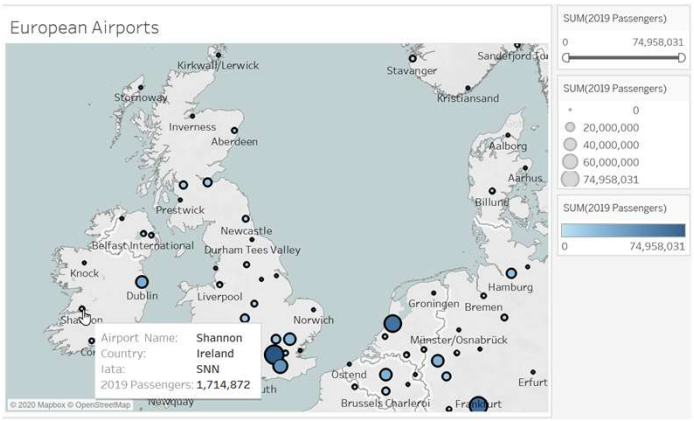




# Practice: Airport Geographic Mapping

## European Airports 2019.xlsx

- Use IATA codes to show European airports.
- Use size and color to compare number of passengers at each airport in 2019.
- Use a filter to determine which airports were the busiest.



# Creating Geographic Groups

Create geographic groups using fields.

- Examples: postal codes, counties, states

Use to show custom sales territories or to explore data regionally.

Create by visually grouping locations or by using the data pane.

Groups of groups (nested groups) can also be created.

- Examples: hierarchical territories or divisions



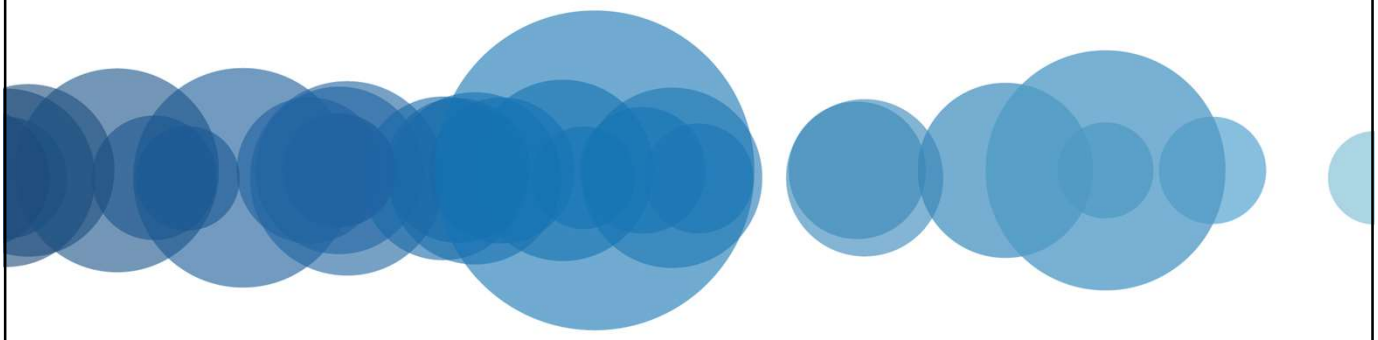


# Practice: Creating Geographic Groups

**school data.xlsx**

- Use geographic groups to show the total number of schools in custom sales territories.

# Customizing Your Data







# Customizing Your Data

- Using Calculations in Desktop
- Creating and Editing Calculated Fields
- Calculations and Aggregations
- Practice: Calculations and Aggregations in Profit Ratio
- String Functions
- Date Calculations
- Practice: Using Date Calculations

# Using Calculated Fields in Desktop

Use when your underlying data does not contain all of the values you need for your analysis.

A calculation can include some of all of these components:

| Component | Description |
|---|---|
| Fields | Contains all data source fields and calculated fields. |
| Functions | Functions you can use to create a formula, which are available from the drop-down menu, organized into categories. |
| Operators | Operators must be typed manually. Use standard operators, such as addition (+), subtraction (–), multiplication (*), modulo (%) and division (/) as well as comparisons (==,=,>,<,>=,<=,!=,<>), and logical (AND, OR, NOT). |
| Parameters | Placeholder variables that can be inserted into calculations to replace constant values. |
| Comments | Insert custom comments for your calculations as a means of annotation for later review. To add a comment to a calculation, type two forward slash characters (//) into the formula pane. |





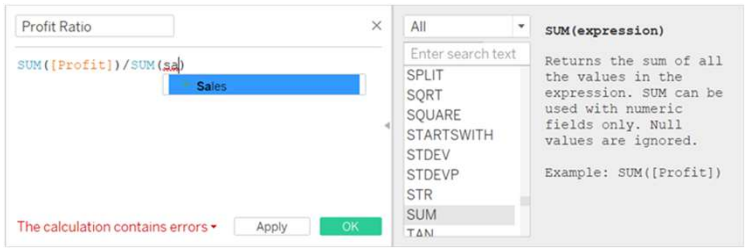
# Calculation Types

| Calculation | Description |
|---|---|
| Calculated Fields | Custom calculations created using the calculated field editor and computed in the underlying data source. |
| Table Calculations, including Quick Table Calculations | Calculations applied after data is returned (created locally in Tableau). Some predefined table calculations are available as quick table calculations, but you can also specify the components of the formula. |
| Row and Column Totals | Predefined calculations available on the **Analysis** menu, including subtotals and grand totals. These are a type of table calculation. |

# Creating and Editing Calculated Fields

Type directly on columns, rows, or the **Marks** card (ad-hoc calculations).

Use the Calculated Field editor (right-click in the data pane and choose **Create Calculated Field**).








# Formula Editor Conventions

| Color or Symbol | Description |
|---|---|
| Red squiggly line | Syntax error. Hover over the error to see directions to fix it. |
| `//Gray Text` | Comments. These are ignored by the calculation but are useful for documenting the calculation logic. |
| `[Orange Text]` | Field names. |
| `Blue Text ( )` | Functions. |
| `[Purple Text]` | Parameters. |
| **`Bold Text`** | Calculation is computed locally within Tableau on the aggregated results. |
| `Plain Text (not bold)` | Calculation is computed at the database level. |

- ENTER, RETURN, SPACE and UPPER/lowercase (except for field names) are ignored.
- Use " or ' for string fields

# Types of Calculated Fields – Examples

## Math operations across numbers
- Addition or subtraction

## Logic statements
- IF/ELSE or CASE

## Aggregating data
- Average or maximum

## Manipulating strings
- Putting strings together or breaking them down

## Date formulas
- Pulling out a date part or the difference between two dates





# Calculations and Aggregations

Aggregating in calculated fields can affect the formula's order of operations:
- Can therefore return different (and potentially incorrect) results.
- Calculations occur in the data source.
- Tableau will aggregate the results of individual transactions.
- For example, when computing averages, you should apply an overall aggregate before computing ratios.

**[Profit] / [Sales]** is not the same as **SUM([Profit]) / SUM([Sales])**

# Practice: Calculations and Aggregations in Profit Ratio

## Global_Superstore_Recent_Dates.xlsx

- Create a view showing the profit by year and department.
- Create an ad-hoc calculated field named "Profit Ratio" using the formula **[Profit]/[Sales]** with a format of Percentage.
- Does the Profit Ratio field seem to return the correct results?
- Edit the calculation to be **SUM([Profit])/SUM([Sales])** and re-examine the results.
- Use "Profit Ratio" in a Logic Calculation (optional).

| | Category | | |
|---|---|---|---|
| Year of Order Date | Furniture | Office Supplies | Technology |
| 2016 | 7.10% | 12.73% | 13.20% |
| 2017 | 6.77% | 12.99% | 14.26% |
| 2018 | 7.52% | 14.77% | 13.59% |
| 2019 | 6.48% | 13.78% | 14.54% |





# String Functions

When using string fields, the plus sign (+) is the concatenation operator.

Spaces and additional text can be included, but should be in quotes (" ").

Example:

```
"First Name" + " Last Name"
```

*(Note the extra space before the word* `Last`*.)*

# Type Conversions

In a formula, if a plus sign is used between a string and a numeric field, an error results:

- A plus concatenates strings, but a plus is also used to perform addition on numbers.
- The calculation engine isn't sure what to do.

Use a type conversion function to convert the number to a string:

```
"Customer Number " + STR([Customer Number]) + ", " + [Customer Name]
```

*Note the use of extra spaces.*

Resulting string output:

```
Customer Number 10, Bob Spencer
```





# Date Calculations - Examples

## DateDiff

- Calculate a difference between dates.

## DateAdd

- Add some amount of time to an existing date field.

```
DateAdd('month',3,[Order Date])
```

Date Part to add to | Amount to add | Field to add to

## Date part calculations

- Use year, month, day, hour, minute, or second.

## DateParse

- Change a string into a recognized date field.
- Sometimes unavailable depending on the type of data connection being used.

```
DATEPARSE("MMMM,dd,yy","September,4,12") = 9/4/2012
```

# Practice: Using Date Calculations

## Global_Superstore_Recent_Dates.xlsx

- Use the DATEDIFF function to calculate the days to ship.
- Create a crosstab chart to compare the average days to ship and the average shipping cost for customer segment and order priority.

| Order Priority | Segment | Avg. Days to Ship | Avg. Shipping Cost |
|---|---|---|---|
| Critical | Consumer | 1.8 | $58.25 |
| | Corporate | 1.9 | $62.07 |
| | Home Office | 1.6 | $60.10 |
| High | Consumer | 3.0 | $33.34 |
| | Corporate | 3.1 | $32.52 |
| | Home Office | 3.1 | $32.05 |
| Medium | Consumer | 4.5 | $18.02 |
| | Corporate | 4.5 | $19.02 |
| | Home Office | 4.5 | $18.67 |
| Low | Consumer | 6.5 | $26.26 |
| | Corporate | 6.5 | $27.41 |
| | Home Office | 6.5 | $28.47 |





# Split and Custom Split

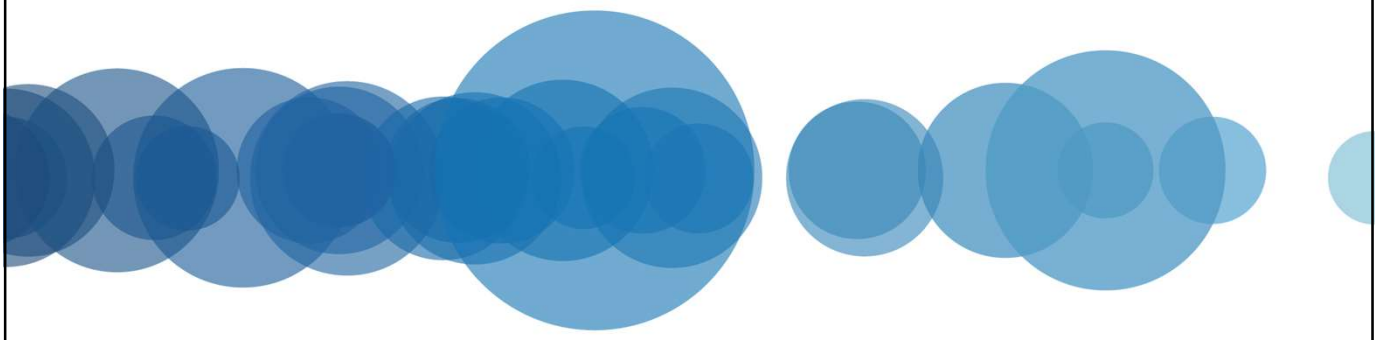
Split regularly separated (delimited) strings in a column to create new columns.

Custom Split offers more control to split a column into multiple columns and to specify the separator used.

Split dimensions are calculated fields and have the same characteristics and limitations:

- Are materialized in extracts,
- Can be used for blends, but not for joins,
- Not available for pivot/unpivot functionality.

# Analyzing Data with Quick Table Calculations







# Analyzing Data with Quick Table Calculations

- Table Calculation Overview
- Using Quick Table Calculations
- Practice: Running Total of Sales
- Practice: Year over Year Change

# Table Calculation Overview

Computations applied to the values for a measure in the view

Computed locally, after query results return, allowing for a second pass aggregation.

Table calculations have scope and direction:

- **Scope** defines the area where the calculation is performed or defines each group for which the calculation is computed.
- **Direction** specifies how the calculation moves through the area.





# Using Quick Table Calculations

Predefined computations for data in your view

Utilize default direction for operation, such as "Table (across)"

- A field used in a table calculation displays with an icon: 


Examples:

- Running total
- Difference
- Percent difference
- Percent of total
- Rank
- Percentile
- Moving average
- YTD Total
- Compound growth rate
- Year over year growth
- YTD Growth

# Practice: Running Total of Sales

## Running_Total_of_Sales_Starter.twbx

- Crosstab shows yearly sales by category and quarter.
- Add a running total by quarter.
- Restart the total for each category.

Quarterly Sales by Category

| | | Order Date | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2016 | | 2017 | | 2018 | | 2019 | |
| Category1 | Quarter of Order Date | Sales | Running Sum of Sal.. | Sales | Running Sum of Sal.. | Sales | Running Sum of Sal.. | Sales | Running Sum of Sal.. |
| Furniture | Q1 | 109,885 | 109,885 | 135,479 | 135,479 | 206,246 | 206,246 | 217,208 | 217,208 |
| | Q2 | 154,694 | 264,579 | 199,144 | 334,623 | 244,284 | 450,530 | 305,043 | 522,250 |
| | Q3 | 196,399 | 460,978 | 222,301 | 556,924 | 311,870 | 762,399 | 384,429 | 906,679 |
| | Q4 | 295,214 | 756,192 | 301,978 | 858,903 | 355,324 | 1,117,724 | 471,377 | 1,378,056 |
| Office Supplies | Q1 | 90,199 | 90,199 | 125,283 | 125,283 | 178,544 | 178,544 | 209,414 | 209,414 |
| | Q2 | 157,863 | 248,062 | 180,773 | 306,056 | 241,935 | 420,479 | 299,630 | 509,044 |
| | Q3 | 200,995 | 449,057 | 222,450 | 528,506 | 274,183 | 694,663 | 366,765 | 875,809 |
| | Q4 | 226,550 | 675,606 | 266,589 | 795,095 | 316,055 | 1,010,718 | 429,842 | 1,305,652 |
| Technology | Q1 | 135,696 | 135,696 | 138,606 | 138,606 | 180,229 | 180,229 | 262,585 | 262,585 |
| | Q2 | 166,313 | 302,009 | 245,676 | 384,282 | 348,621 | 528,850 | 328,314 | 590,899 |
| | Q3 | 215,913 | 517,922 | 293,017 | 677,299 | 346,984 | 875,834 | 445,289 | 1,036,188 |
| | Q4 | 309,730 | 827,652 | 346,143 | 1,023,442 | 401,471 | 1,277,305 | 579,970 | 1,616,159 |

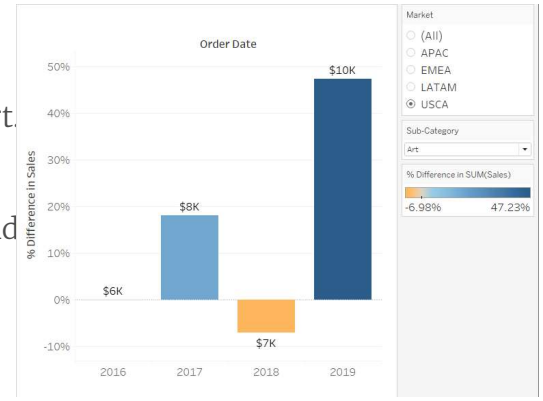




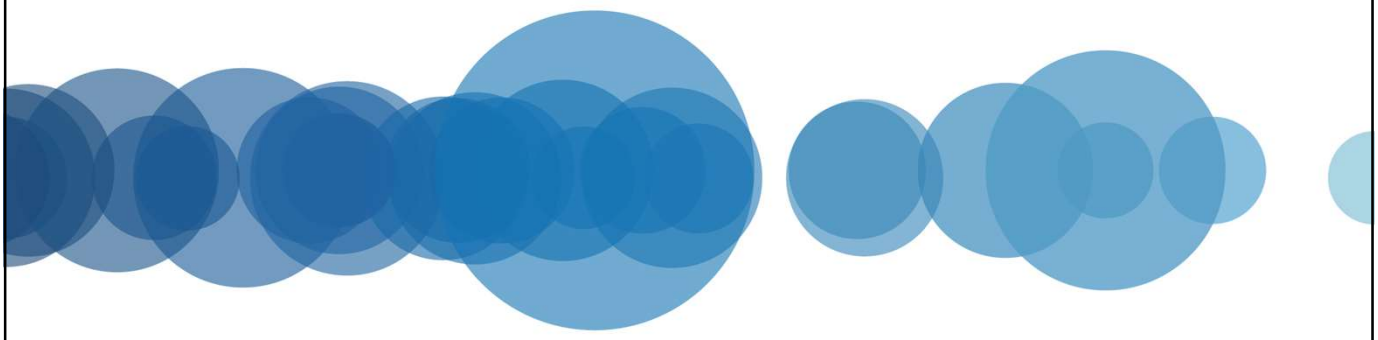
# Practice: Year over Year Change

## Global_Superstore_Recent_Dates.xlsx

- Show year over year growth of sales as a bar chart.
- Use color to show % difference.
- Filter the view to show only the results for Art and USCA market.
- Show nulls at the default position.



# Showing Breakdowns of the Whole







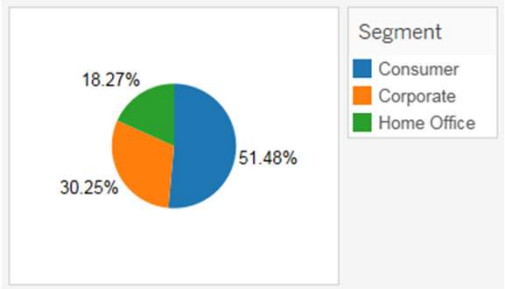
# Showing Breakdowns of the Whole

- Pie Charts and Parts of the Whole
- Practice: Percent of Total Sales
- Creating Tree Maps
- Practice: Tree Map

# Pie Charts and Parts of the Whole

## Helpful under the right circumstances:

- Be aware of the limitations of our perceptual system; our perceptual system does not compare areas or angles accurately.
- Limit the number of members and add labels to help your audience.




## Pie charts are useful for:

- Filtering or highlighting sections of a dashboard.
- Showing high-level breakdown of a measure with a small number of members.

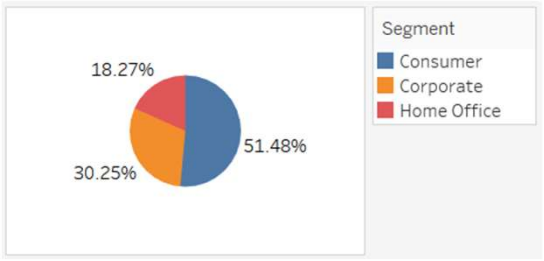




# Practice: Percent of Total Sales

## Global Superstore.xlsx

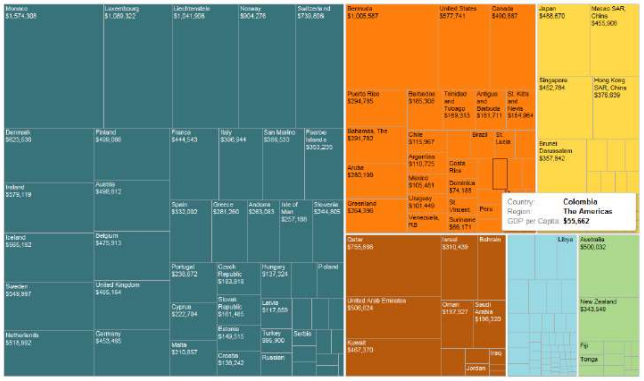
- Create a pie chart to show how sales for each segment compare as a percentage of total sales.



# Creating Tree Maps

Use to show part-to-whole relationships at a glance:

- Read from top left to bottom right.
- Use color to differentiate categories.
- Add labels to show number value.
- Good for data sets with long tails.
- Especially good for hierarchical, categorical data.
- Can use a highlighter to search and compare data.



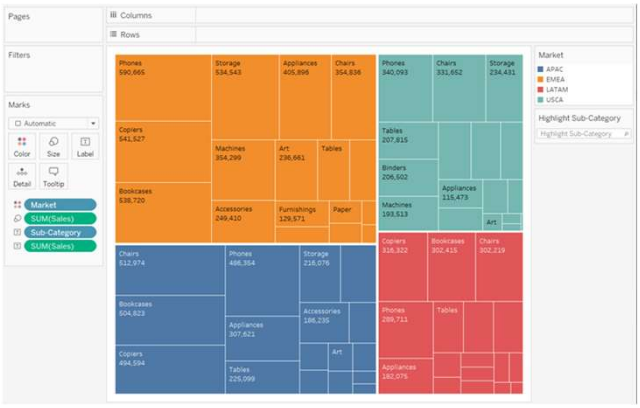





# Practice: Tree Map

## Global Superstore.xlsx

- Create a tree map that uses color for each market and size to visualize sales.
- Add a highlighter to compare sales for specific sub-categories.



# DEMO (time permitting)

- Show that if you change a tree map's mark type to **Text** you get a word cloud; and if you change it to a **Circle**, you get Packed bubbles.






# Highlighting Data with Reference Lines

# Highlighting Data with Reference Lines

- Using Reference Lines
- Reference Bands
- Practice: Reference Lines



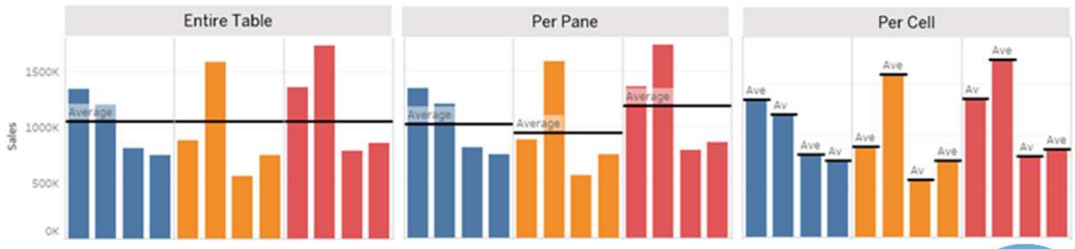


# Using Reference Lines

Add reference lines to mark specific values or regions on an axis:

- Example: average sales for a quarter or year
- Based on constant or computed values.

Reference line scope can be the entire table, per pane, or per cell.



# Reference Line Options

Values you can use as a reference line:

- Average
- Constant
- Maximum/Minimum
- Median
- Sum
- Total

Labels you can use:

- None
- Value
- Computation
- Custom

Tooltips you can use:

- None
- Value
- Computation
- Custom

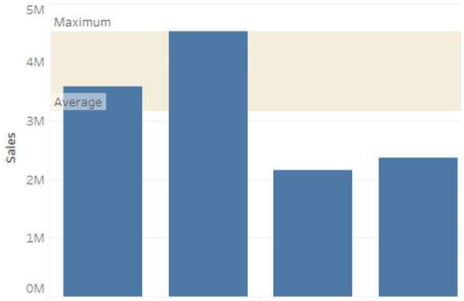




# Reference Bands

Reference bands show data that falls within a certain window value:

- Shown as shaded areas behind the marks on the axis.
- Band between two constant or computed values.

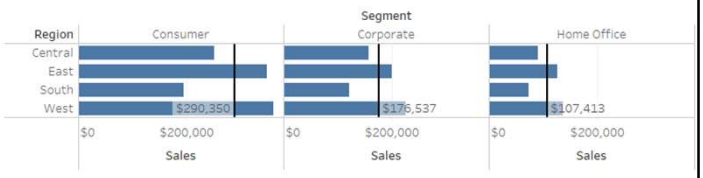


# Practice: Reference Lines

**Reference_Line_Starter.twbx**

- Add a constant reference line to the bar chart for sales quota, so you can easily see where sales have been slow.


- Duplicate the first worksheet, and delete the quota reference line.
  - Change the view to show sales for each region by segment.
  - Add a new reference line to compare average sales for each segment.








# Making Your Views Available

# Making Your Views Available

- Dashboards
- Practice: Building a Dashboard
- Dashboard Actions
- Practice: Creating an Interactive Dashboard
- Publish Your Dashboard Online

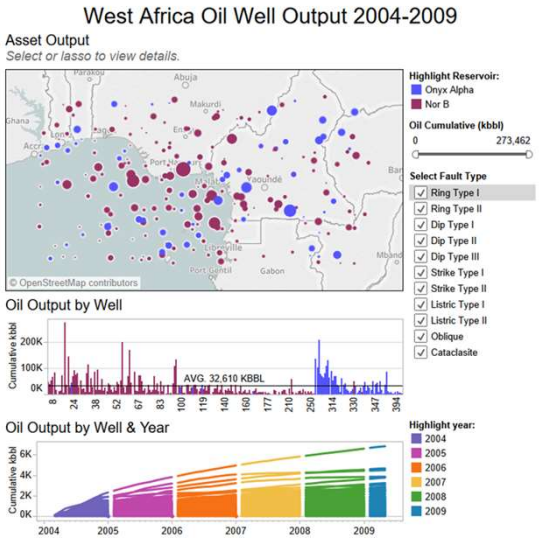




# Dashboards

Show a collection of worksheets and supporting information in a single window.

Use to compare and monitor a variety of data simultaneously.



# Relation between Dashboards and Worksheets

Views in a dashboard are connected to the worksheets they represent:

- Changes to the worksheet update the dashboard.
- Changes to the dashboard affect the worksheet.

From the dashboard, you can:

- Go to a sheet.
- Hide a sheet.

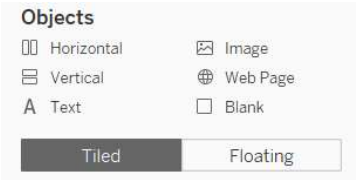




# Tiled or Floating Objects

Tiled objects:

- Arranged in a grid.
- Can change how positioned or distributed within layout container.




Floating objects

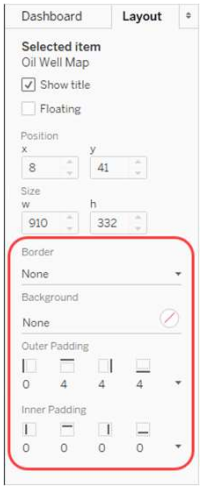
- Can be layered on top of other objects.
- Make the selection in the dashboard window before the sheet is selected.
- Floating objects can be reordered and resized.

Shift+drag to change an object from tiled to floating.

# Formatting Components

Objects on a dashboard can be formatted in the following ways:

- Adding a border
- Adding a background color
- Setting the inner and outer padding








# Dashboard Device Layouts

Create layouts specific to particular device types, and optionally different models:

- Desktop
- Tablet
- Phone

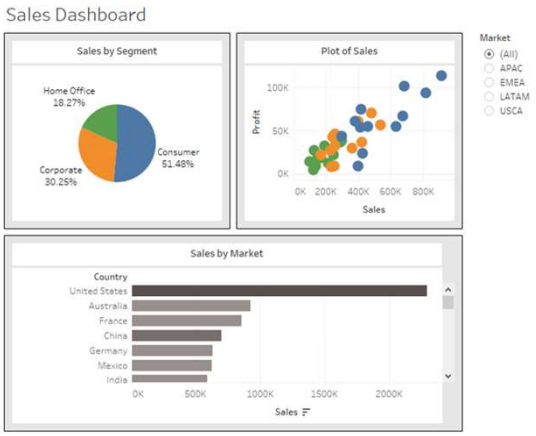
Hierarchical relationship—default dashboard is parent and device specific layouts are children:

- Tailor composition and contents according to different browser window sizes.
- Allow users to experience a dashboard expressly designed for their screen display.
- Create and maintain only a single parent dashboard.

# Practice: Building a Dashboard

## Building_a_Dashboard_Starter.twbx

- Make the worksheets in the starter workbook display together in a single dashboard.
- Use the market filter as a global filter.
- Use the pie chart worksheet as a filter by segment.







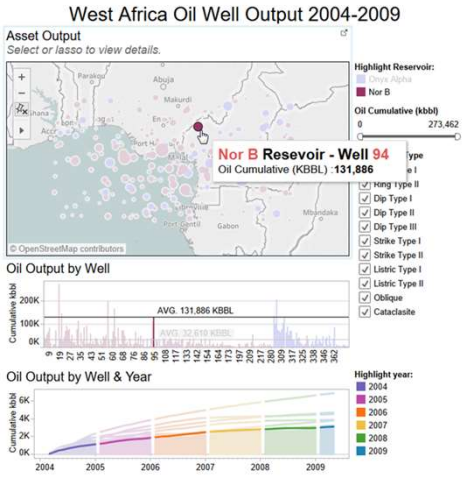

# Dashboard Actions: Highlight

Actions add context and interactivity to your data.

Use highlights to call attention to marks of interest.

Use color to highlight select marks and to dim all others.

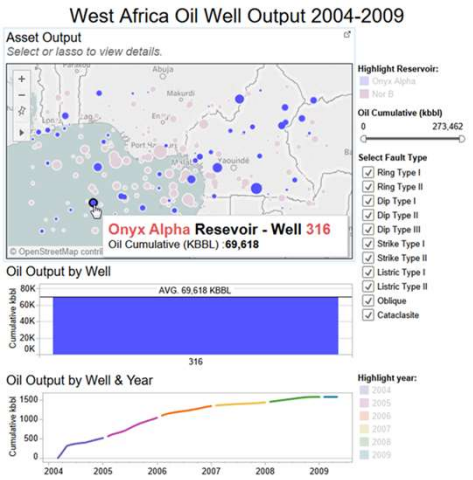
Allow user to select marks in the view or to click on the legend.



# Dashboard Actions: Filter

Use to send information between worksheets:

- Example: selecting a mark on one worksheet filters data on related worksheets to show only data related to the selected item.








# Dashboard Actions: URL

Include a hyperlink that points to a webpage, file, or other web-based resource outside of Tableau.

To make the link relevant to your data, add field values of a selection into the URL as parameters.

# Additional Dashboard Actions

| Action | Used to |
|---|---|
| Go to Sheet | Navigate from one sheet or dashboard to another. |
| Change Set Values | Change the values in a set when a user interacts with marks in a view. |
| Change Parameter | Change the values in a parameter when a user interacts with marks in a view. |





# Options for Running Dashboard Actions

| For this field | Action | Works well for |
|---|---|---|
| Hover | Rest the pointer over a mark in the view to run the action. | Highlighting and filtering actions within a dashboard |
| Select | Click on a mark in the view to run the action. | All types of actions |
| Menu | Click a mark in the view and then select an option on the tooltip context menu. | Filter and URL actions |

# Publish Your Dashboard Online

Publish Your Work to Share with Others:

- Tableau Online
- Tableau Server
- Tableau Public

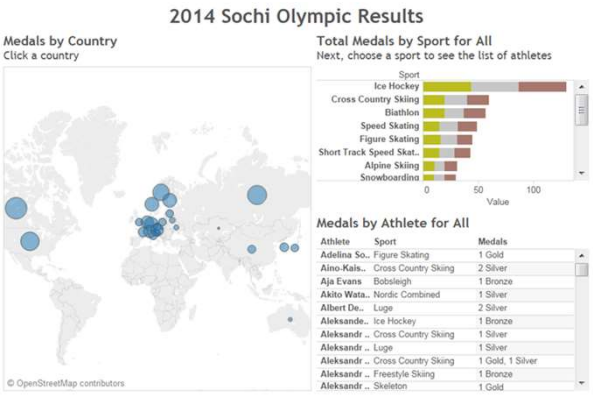




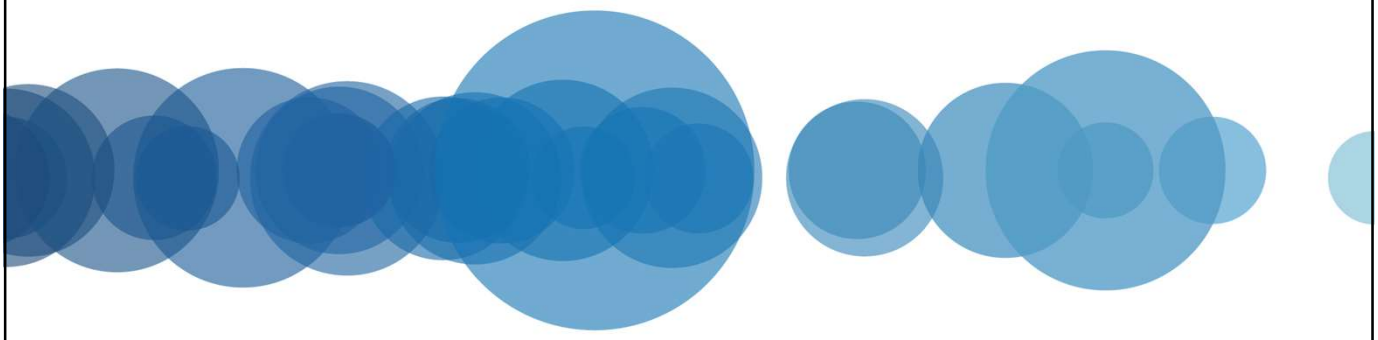
# Practice: Creating an Interactive Dashboard

## Creating_an_Interactive_Dashboard_Starter.twbx

- Add worksheets to create a dashboard similar to the one shown in the book.
- Add dashboard filters to:
  - Filter all other worksheets when you select a mark on the map.
  - Filter the text table when you select a mark on the bar chart.
  - Show a web page with information about individual Olympic sports and athletes.



# Reference







# Resources

## Support

- Desktop - tableau.com/products/desktop
- Learning Paths – tableau.com/learn/learning-paths
- Classroom – tableau.com/learn/classroom
- Whitepapers – tableau.com/learn/whitepapers
- Blueprint – tableau.com/blueprint
- Visual Gallery – tableau.com/solutions/gallery
- Tableau Public – public.tableau.com/s/
- Online Help – tableau.com/support/consulting, tableau.com/support/help, tableau.com/support/knowledgebase

## Community

- community.tableau.com/welcome

# Additional Classes

| Class | For |
|---|---|
| Desktop II: Intermediate | Users with solid working Tableau Desktop experience who want to take their skills further |
| Desktop III: Advanced | Experienced Tableau Desktop users who want to learn advanced uses for calculations, chart techniques, and other technical features |
| Visual Analytics | Experienced users who want to improve and deepen their understanding of analytics and visual best practices |
| Prep I | Users who want to learn how to combine, shape, and clean data with Tableau Prep Builder for analysis in Tableau Desktop. |
| Server Administration | Users implementing, architecting, or administering a basic deployment of Tableau Server |
| Server Architecture | Those architecting and administering a large deployment of Tableau Server, or a consultant who will be involved in many deployments of Tableau Server |

For more information, go to tableau.com/learn/classroom





# Ready to take the next step?

Continuing your Tableau journey through instructor-led training helps you get up-to-speed quicker!

Use code **LEVELUP-20** to receive a 20% discount on your next class through **October 31, 2020**

Be a data ROCK STAR

Search for a course at:
https://www.tableau.com/learn/classroom/virtual

# Become a Certified Tableau Expert!

Build your resume, advance your career, and showcase your Tableau skills through the Tableau Product Certification Program.

Certification is an excellent way to validate your hard-earned Tableau knowledge and experience. The program offers levels of certification for both Desktop and Server.

For more information or to register for an exam, go to tableau.com/learn/certification.





# Desktop Certifications

| Exam | Exam Focus |
|---|---|
| Tableau Desktop Specialist | Foundational functionality and product comprehension |
| Tableau Desktop Certified Associate | Comprehensive functionality and product expertise |
| Tableau Desktop Certified Professional | Advanced functionality and application of visual best practices |

# Server Certifications

| Exam | Exam Focus |
|---|---|
| Tableau Server Certified Associate | Administrative functionality and platform knowledge |
| Tableau Server Certified Professional | Architectural knowledge and platform integration expertise |





# Three months access to Tableau eLearning

Attending this course gives you three months access to Tableau eLearning to reinforce the skills you learned in the classroom.

- Create a login via Tableau.com (TableauID)
- Go to https://elearning.tableau.com/
- Enter the trial code (provided via email)
- Explore Learning Paths and earn Role Badges!

Questions? Contact globalservices@tableau.com

# Use eLearning to continue your journey to Tableau Desktop Specialist Certification!

You have just completed step 1! Desktop I provides the foundational knowledge necessary for Tableau Desktop Specialist Certification.

Use Tableau eLearning to reinforce the skills you learned in the classroom and add some of the other skills covered in the exam. Access the "Certification: What to Expect" course to learn more about the testing experience and review a checklist to guide your learning.

Find out more about the journey to Tableau Desktop Specialist Certification: https://www.tableau.com/learn/classroom/desktop-one





# Use eLearning to continue your Learning Path and earn a digital badge!

Role-based Learning Paths are designed to boost your productivity and help along the journey to becoming a data-driven organization.

When ready, take the skills assessment to help determine whether you have the necessary skills for your Tableau role.

Users in every Tableau role in your organization can pass one of these low-stakes assessments and earn a Role Badge to build confidence in their skills.

Find out more about Learning Paths at https://www.tableau.com/learn/learning-paths

# Use eLearning to stay current on Tableau releases!

The **New Feature Spotlight Webinar** highlights new features and functions that make our Tableau life easier. Using eLearning, you can view past webinars and register for future sessions.

These live webinars cover the latest features, best practices around them and allow you to ask questions to an expert instructor.

Can't attend a New Feature Spotlight session live? Don't worry—the are recorded and then posted to the eLearning course list.






# Wrap Up

Introduction to Tableau Desktop I: Fundamentals

Desktop Workflow

Setting Up Connections and Data Sources

Simplifying and Sorting Your Data

Organizing Your Data

Slicing Your Data by Date

Using Multiple Measures in a View

Viewing Specific Values

Showing the Relationship Between Numerical Values

Mapping Data Geographically

Customizing Your Data

Analyzing Data with Quick Table Calculations

Showing Breakdowns of the Whole

Highlighting Data with Reference Lines

Making Your Views Available