

Tableau

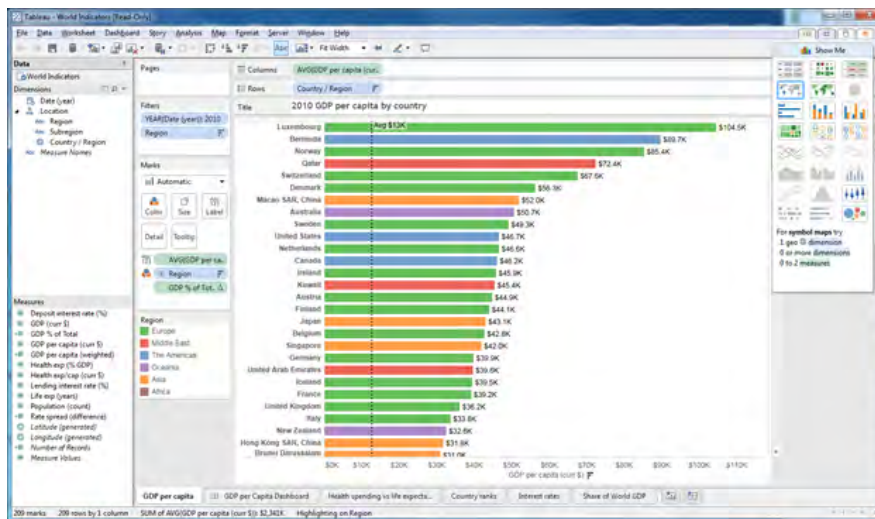
- Tableau is a commercial reporting package that can connect to various data sources.
 - Similar to PowerPivot, but also able to manage multiple tables and charts on a dashboard
- Tableau can use geolocations to display data, perform calculations, and filter data.

Tableau Data and Relationships

The screenshot shows the Tableau Desktop interface. At the top, the title bar reads 'Tableau - Book1'. Below it, the menu bar includes 'File', 'Data', 'Server', and 'Help'. The main window is titled 'Suppliers+ (Orders Database)' and shows a data model with four tables: 'Suppliers', 'Products', 'Categories', and 'Order Details'. The 'Suppliers' table is connected to 'Products', which is connected to 'Categories', which is connected to 'Order Details'. Below the data model, there is a 'Copy' button and a 'Show Hidden Fields' checkbox. The main data table is displayed with columns: 'CategoryID (Categories)', 'Category Name', 'Description', 'Picture', 'OrderID', 'ProductID (Order Details)', 'UnitPrice (Order Details)', 'Quantity', and 'Discount'. The table contains 13 rows of data, all for 'Beverages'.

CategoryID (Categories)	Category Name	Description	Picture	OrderID	ProductID (Order Details)	UnitPrice (Order Details)	Quantity	Discount
1	Beverages	Soft drinks, coffee...	D\...	10305	1	14.400	45	
1	Beverages	Soft drinks, coffee...	D\...	10306	1	14.400	18	
1	Beverages	Soft drinks, coffee...	D\...	10307	1	14.400	20	
1	Beverages	Soft drinks, coffee...	D\...	10308	1	14.400	15	
1	Beverages	Soft drinks, coffee...	D\...	10309	1	14.400	12	
1	Beverages	Soft drinks, coffee...	D\...	10310	1	14.400	15	
1	Beverages	Soft drinks, coffee...	D\...	10400	1	14.400	10	
1	Beverages	Soft drinks, coffee...	D\...	10413	1	14.400	24	
1	Beverages	Soft drinks, coffee...	D\...	10477	1	14.400	15	
1	Beverages	Soft drinks, coffee...	D\...	10522	1	18.000	40	
1	Beverages	Soft drinks, coffee...	D\...	10526	1	18.000	8	
1	Beverages	Soft drinks, coffee...	D\...	10576	1	18.000	10	

Sample Workbook



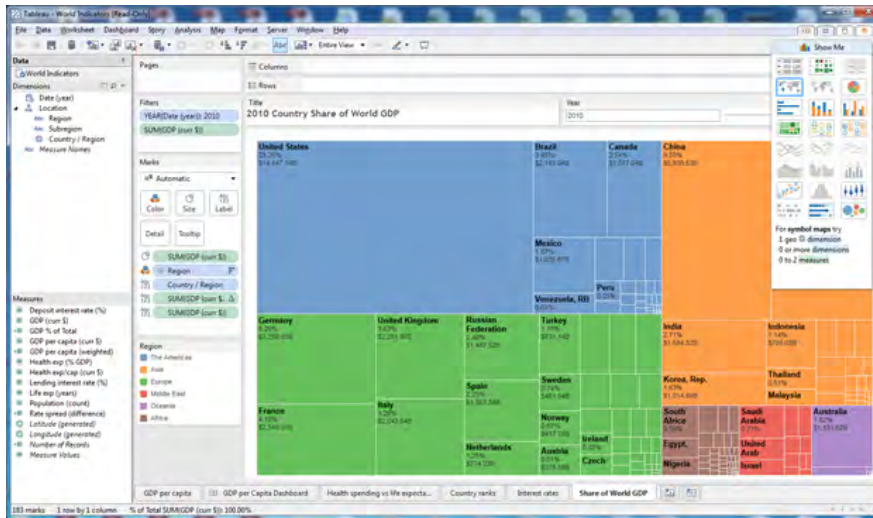
- Workbooks can represent data graphically.

Multiple Views



- Multiple views of the data can be presented simultaneously.
- In this example, trends appear at the top, and status appears at the bottom.

Variety of Representations



- Box sizes, colors, groupings, and other representation methods can also convey information.

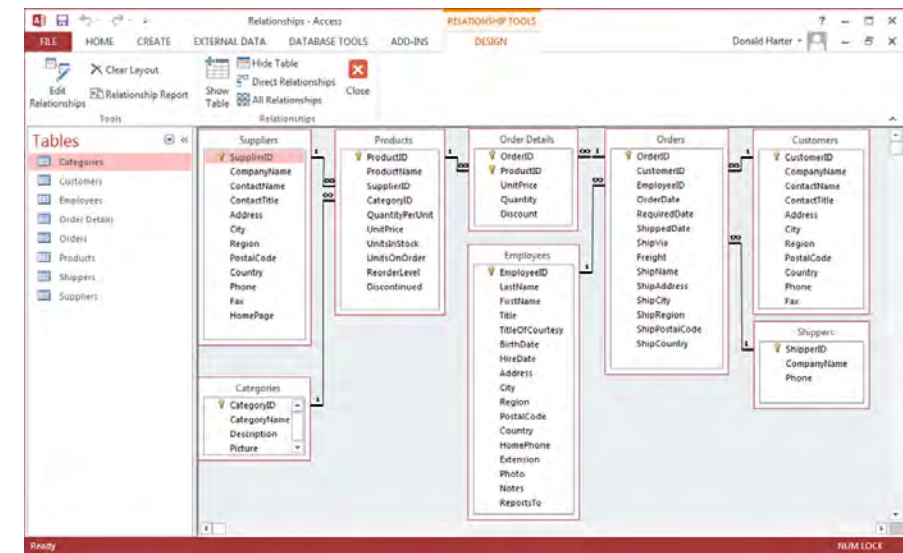
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Tableau Data Connections

- Like PowerPivot and Access, Tableau can connect to remote databases.
- Tableau can take data from database tables, spreadsheets, text files, and other media and bring it into its own dashboards.
 - Tableau can integrate data that would otherwise be difficult to pull together.
- Data is automatically refreshed from sources, as needed.

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Tableau Data Connections: Access Database



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Convert Data to Tableau

Supplier ID	Company Name	Contact Name	Contact Title	Address	City	Region	Postal Code	Country
1	Exotic Liquids	Charlotte Cooper	Purchasing Manager	49 Gilbert St.	London	UK	EC3 4JD	UK
2	New Orleans Cajun Del.	Shelley Burke	Order Administrator	P.O. Box 78984	New Orleans	LA	70117	USA
3	Grandma Kelly's Hom...	Rogers Murphy	Sales Representative	707 Oxford Rd.	Ann Arbor	MI	48104	USA
4	Tokyo Traders	Yoshi Nagase	Marketing Manager	5-2 Seiwai-cho	Tokyo	Japan	100	Japan
5	Cooperativa de Queros...	Antonio del Valle Sosa	Export Administrator	Calle del Rosal 4	Queretaro	Mexico	73007	Mexico
6	Marys's	Marys's Chen	Marketing Representative	52 Seneca Court	Orlando	FL	32807	USA
7	Pavlova, Ltd.	Ian Dring	Marketing Manager	74 Rose St	Melbourne	Victoria	3008	Australia
8	Specialty Biscuits, Ltd.	Peter Wilson	Sales Representative	29 King's Way	Manchester	UK	M14 5UD	UK
9	PB Kniskerned AB	Lars Peterson	Sales Agent	Kaloadagatan 13	Goteborg	Sweden	S-405 07	Sweden

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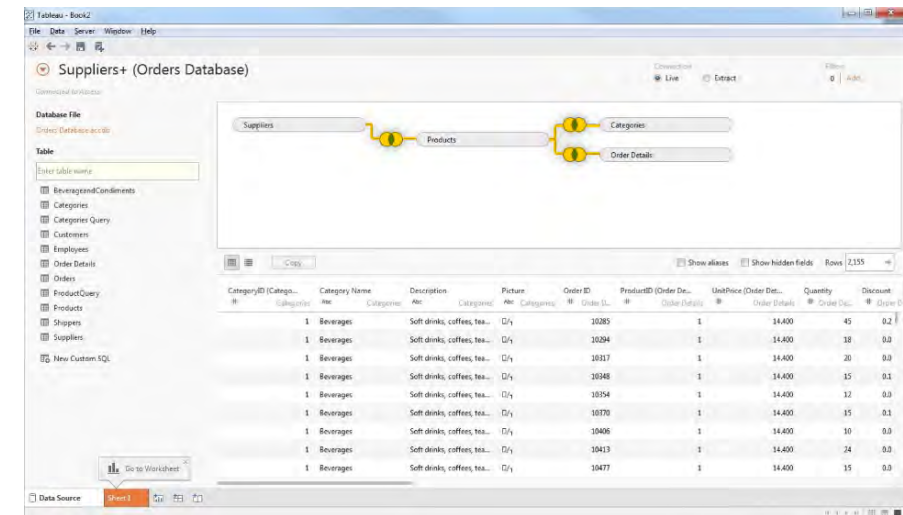
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Tableau Relationships

- Relationships can be automatically built from preexisting relationships in the source databases.
 - Relationships can also be constructed manually.
- Common fields between tables join the tables into a relationship.

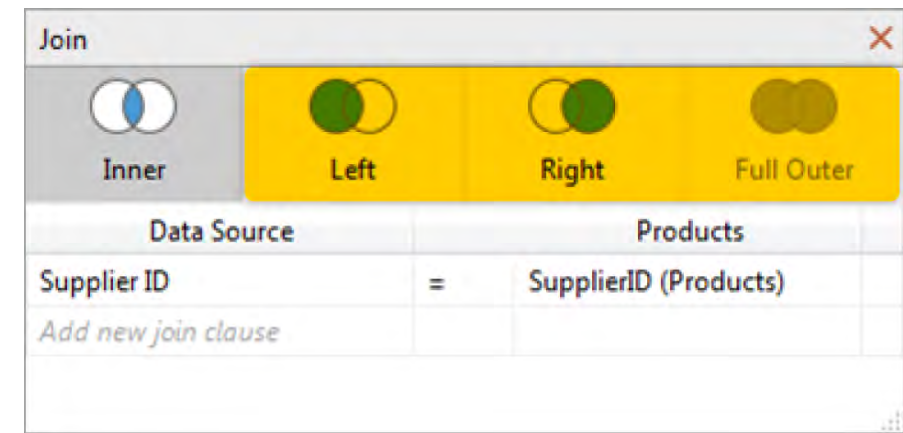
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Tableau Relationships (cont.)



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Option to Select Type of Join



- The inner join is the type we have used most frequently.
- The left join, right join, and outer join are other options.

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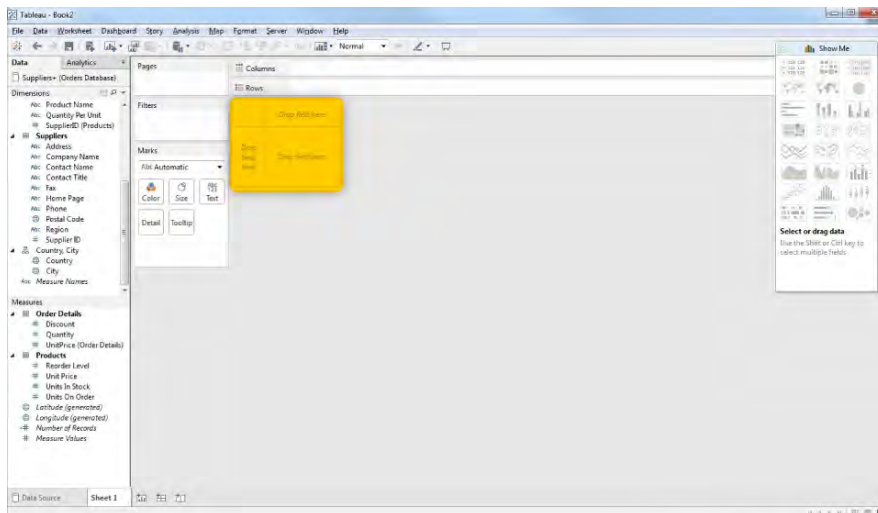
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Building Tableau Worksheets

- Worksheets are the basic unit of Tableau.
- Worksheets can include tabular data or graphical representations of data.
- Data can be drawn from any data source connected to Tableau.

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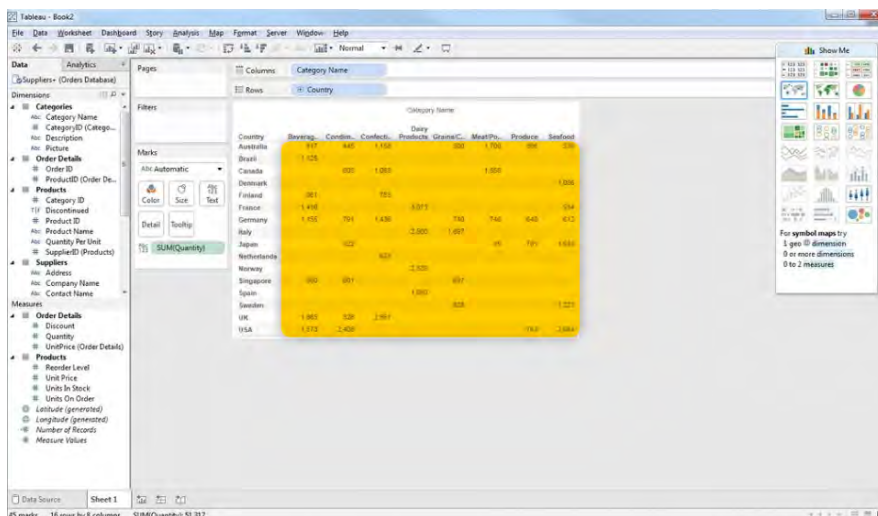
Tableau Worksheet



- Data sources are shown on the left, including in this example: the product category, order detail, product, and supplier databases.
- From the data sources on the left, we drag and drop items into the middle area to create the worksheet.

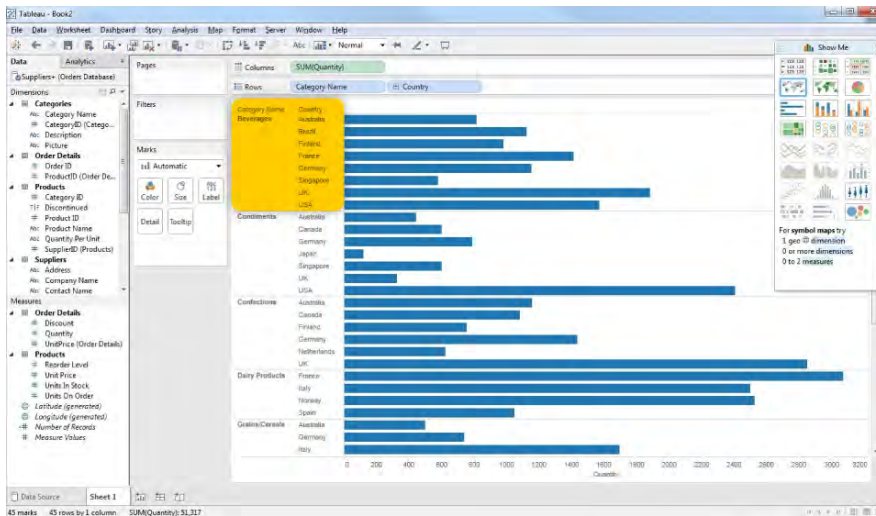
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Tabular Data Example



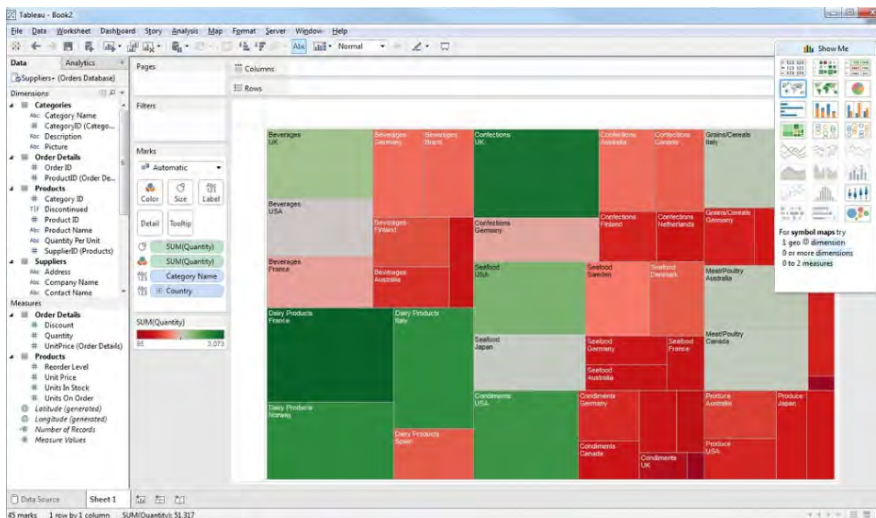
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Horizontal Bar Example



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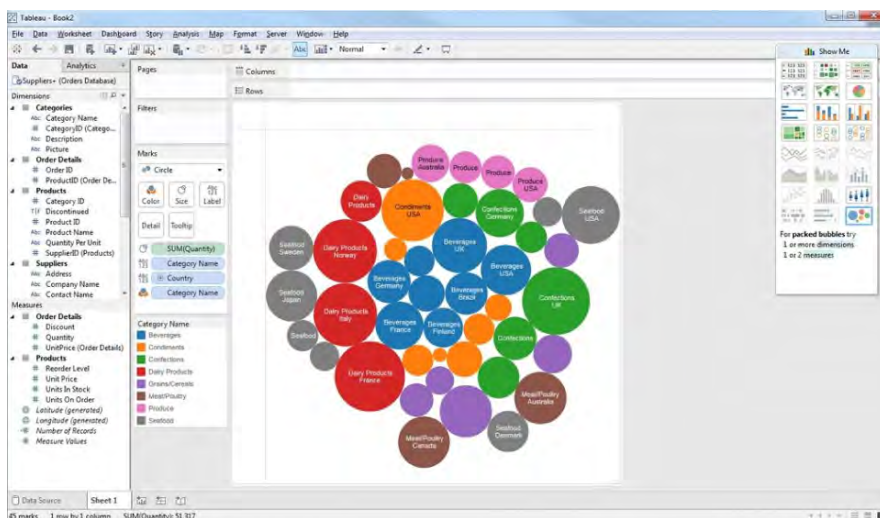
Treemap Example



- Size, color, and location represent different features.
- In this example, box size and color indicate quantity, and location indicates product category.

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Packed Bubble Example



- Circle sizes represent sales.
- Colors represent product categories.

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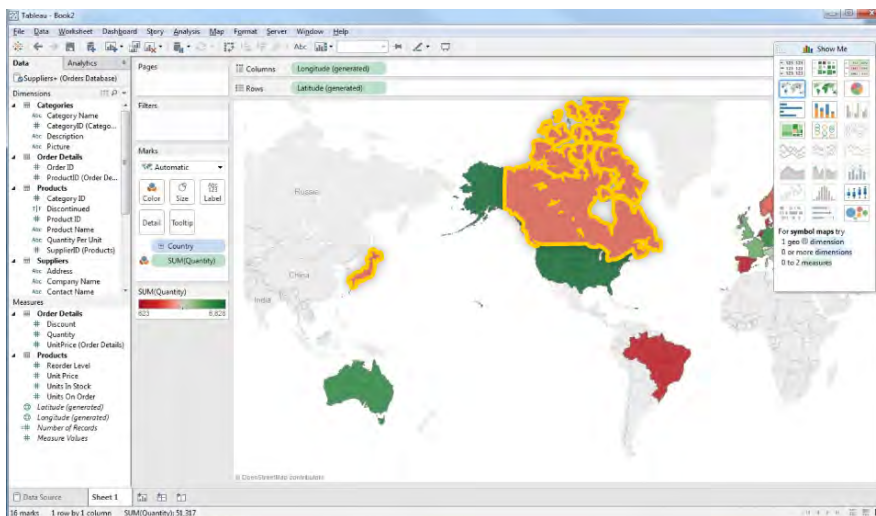
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Geolocations

- Tableau uses geolocation information to merge data with a mapping representation.
- Tableau will automatically scan data to find geographic information such as postal codes, cities, countries, etc.

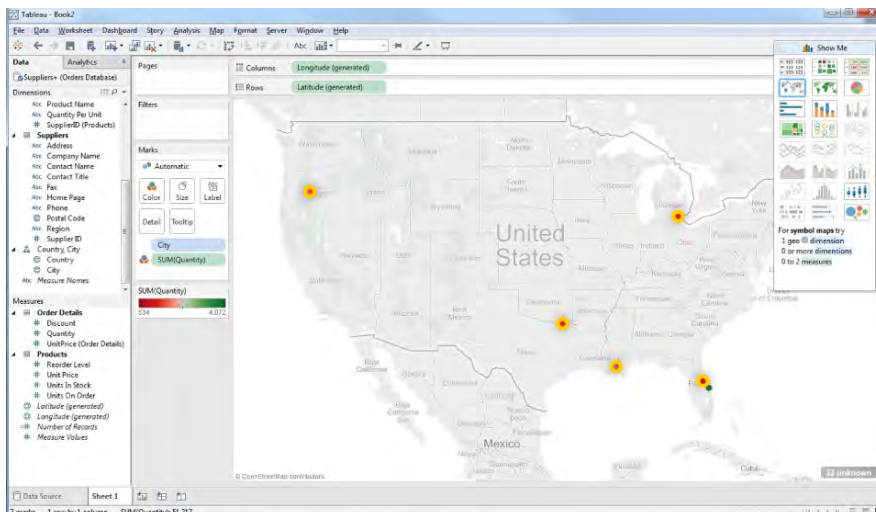
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World Map Example: Sales Data by Country



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Domestic Map Example: Sales by City



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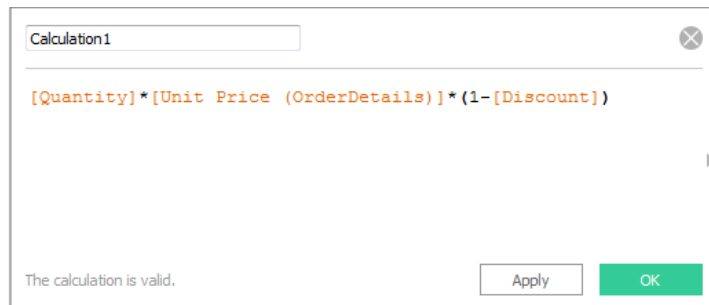
Calculations

- Calculations can be added when generating tabular or graphic data.
- All mathematical functions are available and can be combined for tailored calculations, such as sales revenue after accounting for discounts:

$$\text{Quantity} * \text{Price} * (1 - \text{Discount Rate})$$

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Example Calculation



Calculation1

`[Quantity]*[Unit Price (OrderDetails)]*(1-[Discount])`

The calculation is valid.

Apply OK

- Calculations are built via point-and-click.
- The results can then drive tabular and graphic data.

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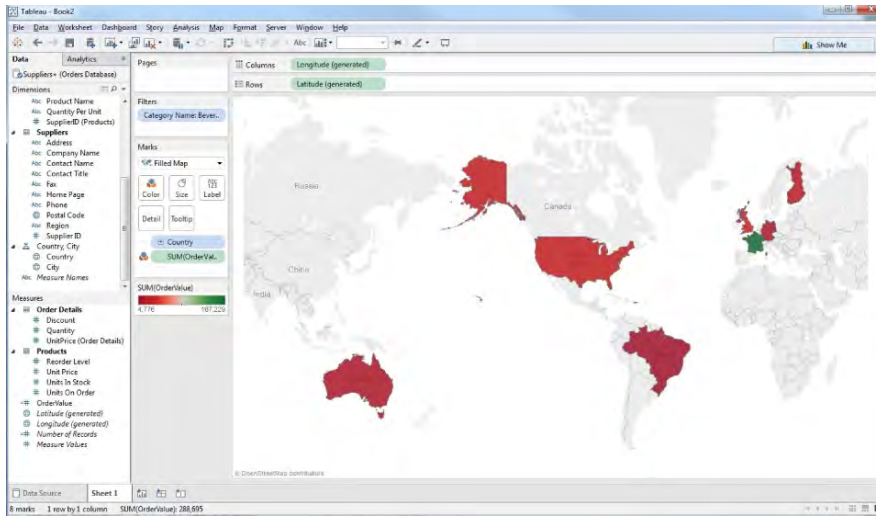
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Filters

- Tableau filters work similarly to filters in Excel and Access.
- Filters allow you to select data based on specific characteristics.
- Filters can be used in both tables and graphs.

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Example Filter



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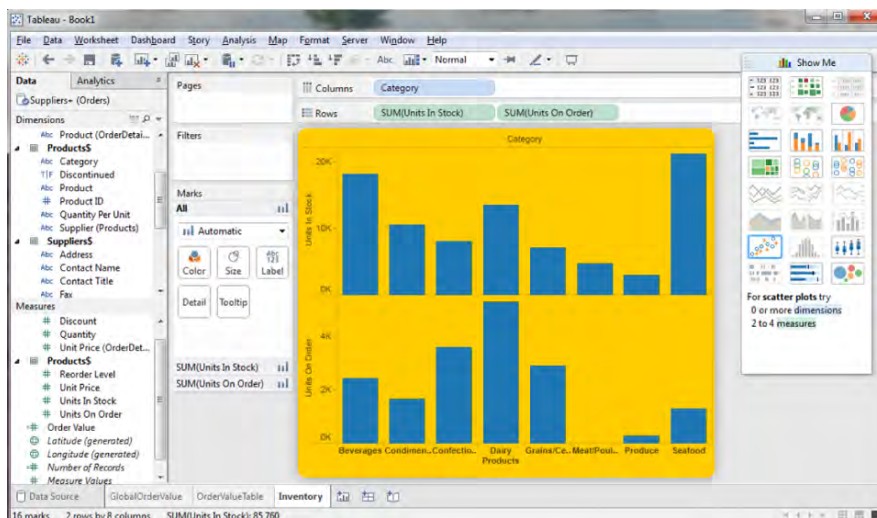
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Building a Dashboard

- A dashboard is a collection of worksheets.
- The first step in building a dashboard is to build all the worksheets to be used in the dashboard.
 - These can include tables, charts, geographical representations, etc.
- The second step is to drag and drop the worksheets into the desktop (after activating Dashboard mode).

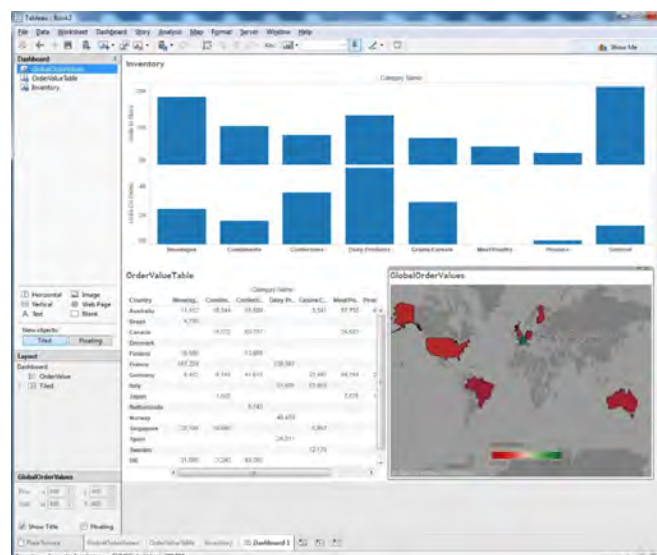
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Drag and Drop First Worksheet



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Drag and Drop Additional Worksheets



- As you position each item, Tableau will automatically reallocate space on the screen.
- The chart, table, and geographical representation will automatically update whenever the data are refreshed.

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