

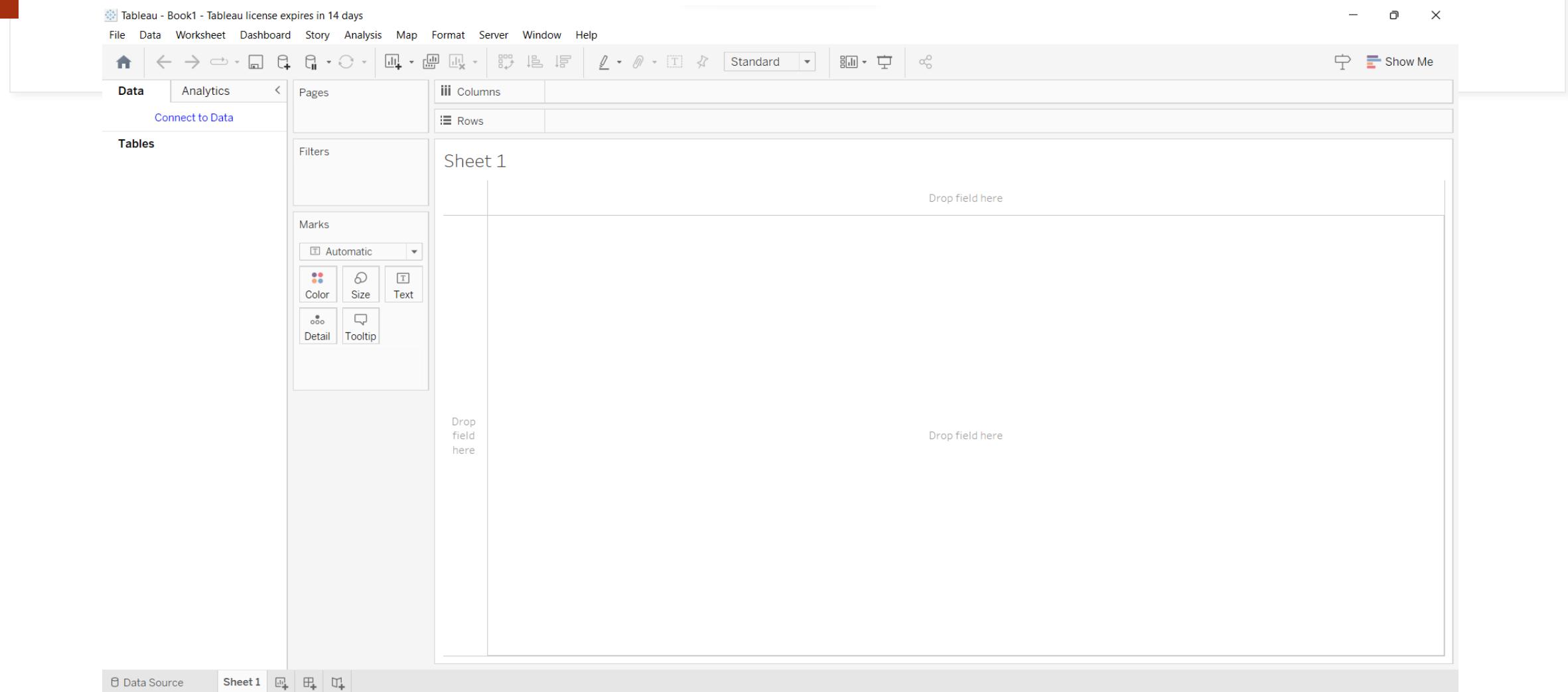
# Intro to Tableau

CS 459 Business Intelligence



	Power BI	Tableau	Qlik Sense	ThoughtSpot	Looker
Full-featured Free Version	Yes	Separate tool	Separate tool	No	No
Development Environment	Desktop	Desktop	Web Browser	Implementation	Cloud
R and Python Supported	Yes	Yes	Yes	R Only	Yes
Dynamic Cross-filtering	Yes	Yes	Yes	No	No
AI-enabled Analytics	Yes	Yes	Yes	Yes	No
Search Analytics with NLP	Yes	Yes	Yes	Yes	No
Data Prep Tools	Yes	Separate tool	Separate tool	Yes	No
Data Modeling Tools	Yes	Separate tool	Yes	Yes	Yes
Preferred Data Model	Star-schema	Flat	Snowflake	Star-schema	Flat
Database Independent	Yes	Yes	Yes	Yes	No
Built in Row Level Security	Yes	Yes	Yes	No	No
Mixed Model Types	Yes	No	No	Yes	No
Third-party Data Model Access	Yes	No	No	No	No
Commenting & Collaboration	Yes	Yes	Yes	Yes	No
Embedded Analytics	Yes	Yes	Yes	Yes	Yes
Open-source Custom Visualizations	Yes	No	Yes	No	Yes
Native Mobile App	Yes	Yes	Yes	Yes	No

# Create New



The screenshot shows the Tableau software interface. At the top, there is a navigation bar with links for File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Server, Window, and Help. Below the navigation bar is a toolbar with various icons for data preparation and visualization creation. On the left side, there is a sidebar with tabs for Data and Analytics, and sections for Pages, Columns, Rows, Filters, and Marks. The Marks section is currently selected and displays options for Automatic, Color, Size, Text, Detail, and Tooltip. The main workspace is titled "Sheet 1" and contains three empty drop zones labeled "Drop field here" in each row. At the bottom of the interface, there is a navigation bar with buttons for Data Source, Sheet 1, and other sheet options.

# Connect to Data Source - MS Excel

SC dataset - Power BI (SC.Dataset.Analyzed.Tableau)

Connection  Live  Extract

Filters 0 | Add

**SC dataset - Power BI**

Need more data?  
Drag tables here to relate them. [Learn more](#)

#	Abc	Abc	Abc	Abc	Abc	Abc
F1	SC dataset - Power BI					
2,754	PMO - US	Yes	100-BJ-T30	FPQ-7660	SCMS-109830	M
7,152	PMO - US	Yes	100-BJ-T30	FPQ-7658	SO-39790	S
7,606	PMO - US	Yes	100-BJ-T30	FPQ-7658	SO-39810	S
9,477	PMO - US	Yes	100-BJ-T30	FPQ-7658	SO-39780	S
8,084	PMO - US	Yes	100-BJ-T30	FPQ-7658	SO-39800	S
1,026	PMO - US	Yes	100-CI-T01	Pre-PQ Process	SO-283	S

# Move to Sheet

- One chart per worksheet
- Stories and Dashboard are created separately
- Notice some generated columns in Tableau

- # DD.Entry.Delay
- # Delivery.Delay
- # Delivery.Time
- # F1
- # Freight Cost (USD)
- # Line Item Insurance (USD)
- # Line Item Quantity
- # Pack Price
- # Sales
- # Unit of Measure (Per Pack)
- # Unit Price
- # Weight (Kilograms)
- # *Latitude (generated)*
- # *Longitude (generated)*
- # *SC dataset - Power BI (Count)*
- # *Measure Values*

Data Analytics

SC dataset - Power BI (SC.Dataset.A...)

Search

Tables

- Abc Brand
- Abc Delivered to Client Date
- Abc Delivery Recorded Date
- Abc Delivery.Country
- Abc Dosage
- Abc Dosage Form
- Abc First Line Designation
- Abc Fulfill Via
- Abc Item Description
- Abc Managed By
- Abc Manuf.Country
- Abc Molecule/Test Type
- Abc Po / So #
- Abc PO Sent to Vendor Date
- Abc Pq #
- Abc PQ First Sent to Client Date
- Abc Product Group
- Abc Project Code
- Abc Scheduled Delivery Date
- Abc Shipment Mode
- Abc Sub Classification
- Abc Vendor
- Abc Vendor INCO Term
- Abc Vendor(D)
- Abc Measure Names

# DD.Entry.Delay

# Delivery.Delay



# Show Me

- Different charts and required dimensions and measures



# Show Me

- Press Ctrl Key and select Delivered to Client Date Delivery Delay
- Tableau suggests some charts based on selected columns
- Blue - Dimensions
- Green - Measures / Facts
- Possible charts become visible, recommended is highlighted by orange outline

## Tables

- Delivered to Client Date
- Delivery Recorded Date
- Delivery.Country
- Dosage
- Dosage Form
- First Line Designation
- Fulfill Via
- Item Description
- Managed By
- Manuf.Country
- Molecule/Test Type
- Po / So #
- PO Sent to Vendor Date
- Pq #
- PQ First Sent to Client Date
- Product Group
- Project Code
- Scheduled Delivery Date
- Shipment Mode
- Sub Classification
- Vendor
- Vendor INCO Term
- Vendor(D)
- Measure Names
- # DD.Entry.Delay
- # Delivery.Delay
- # Delivery Time



For **lines** (discrete) try

1 date

0 or more **Dimensions**

1 or more **Measures**

Columns

YEAR(Delivered to..)

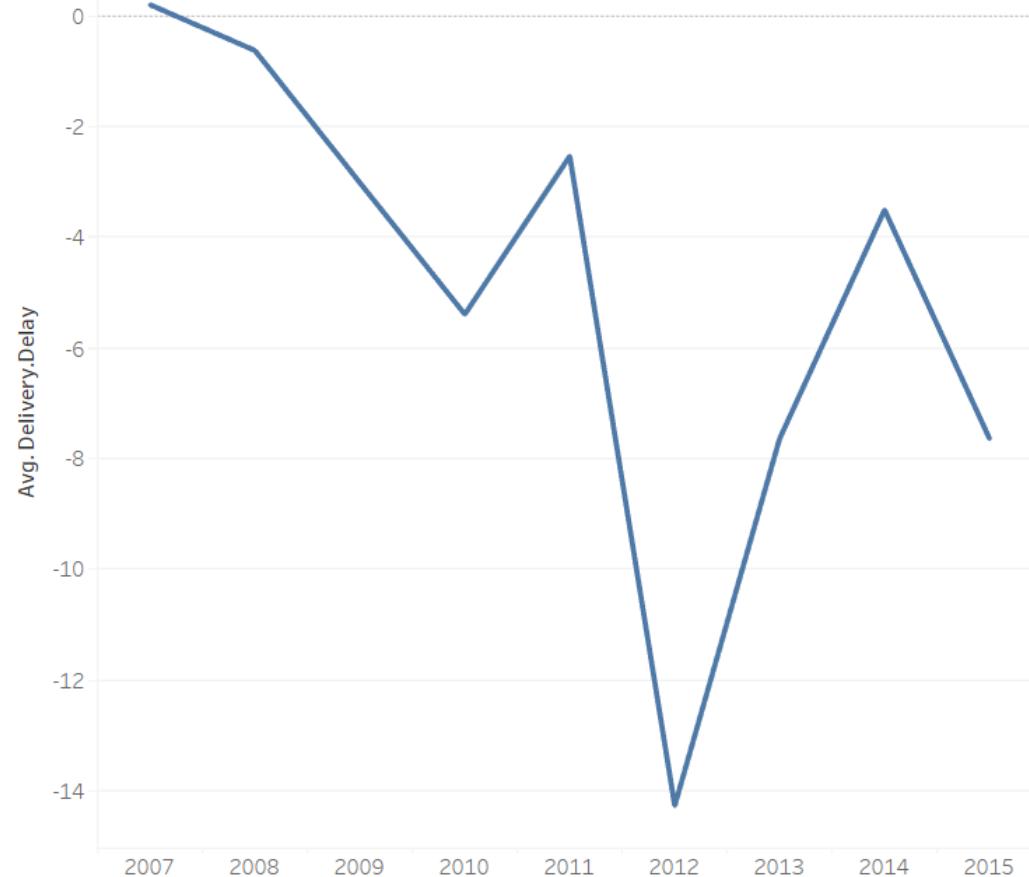
Rows

AVG(Delivery.Delay)



Sheet 1

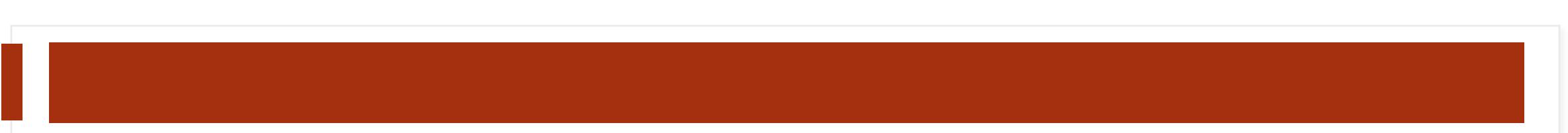
Delivered to Client Date



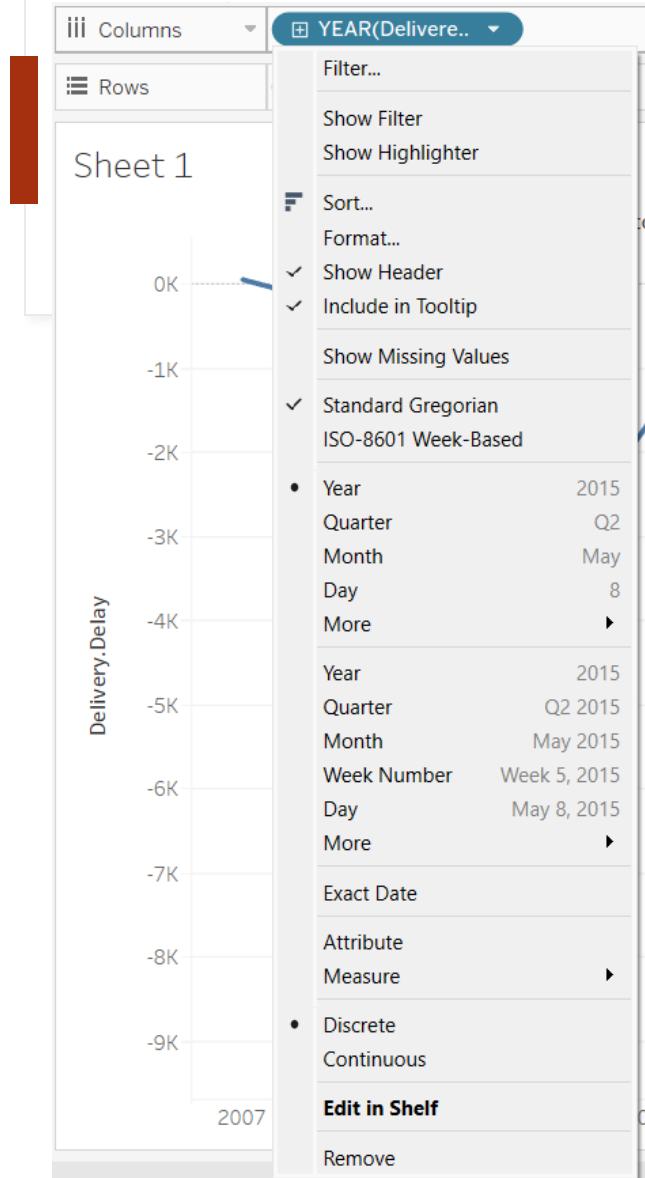
# Line Chart

**Switch Measure to  
Average of Delivery  
Delay**

# **Blue** Date Column VS **Green** Date Column



# Drop down menu in Date attribute



- First Date section → **BLUE** → Discrete
- Second Date section → **GREEN** → Continuous
- Try out both options and understand the difference
- Use the plus button to drill down

# Green Vs Blue

- If you know that you want to look at a trend over a continuous period of time → use a continuous date, which will be colored **green** on the view.
- If your analysis requires you to have discrete marks that can be sorted → use the field as discrete, which will be colored **blue** on the view.

# Data Guide

The screenshot shows the Tableau Data Guide interface. At the top, there's a ribbon with icons for 'Data Guide' (selected), 'Show Me', and 'Data Guide'. Below the ribbon, 'Sheet 1' is selected. On the left, the 'Viz Details' pane is open, containing a 'Viz description' field with the placeholder 'Enter a description that helps users understand this viz'. Underneath it, there's a section for 'Additional resources' with a '+ Add link' button. To the right of the main content area, there's a sidebar titled 'Applied Filters' with a '+' icon, 'Data in This Viz' with a '-' icon, and 'Data Summary' with a '+' icon.

## Applied Filters

### Data in This Viz

- SC dataset - Power BI (SC.Dataset.A...)
  - Year of Delivered to Client Date
  - Avg. Delivery.Delay

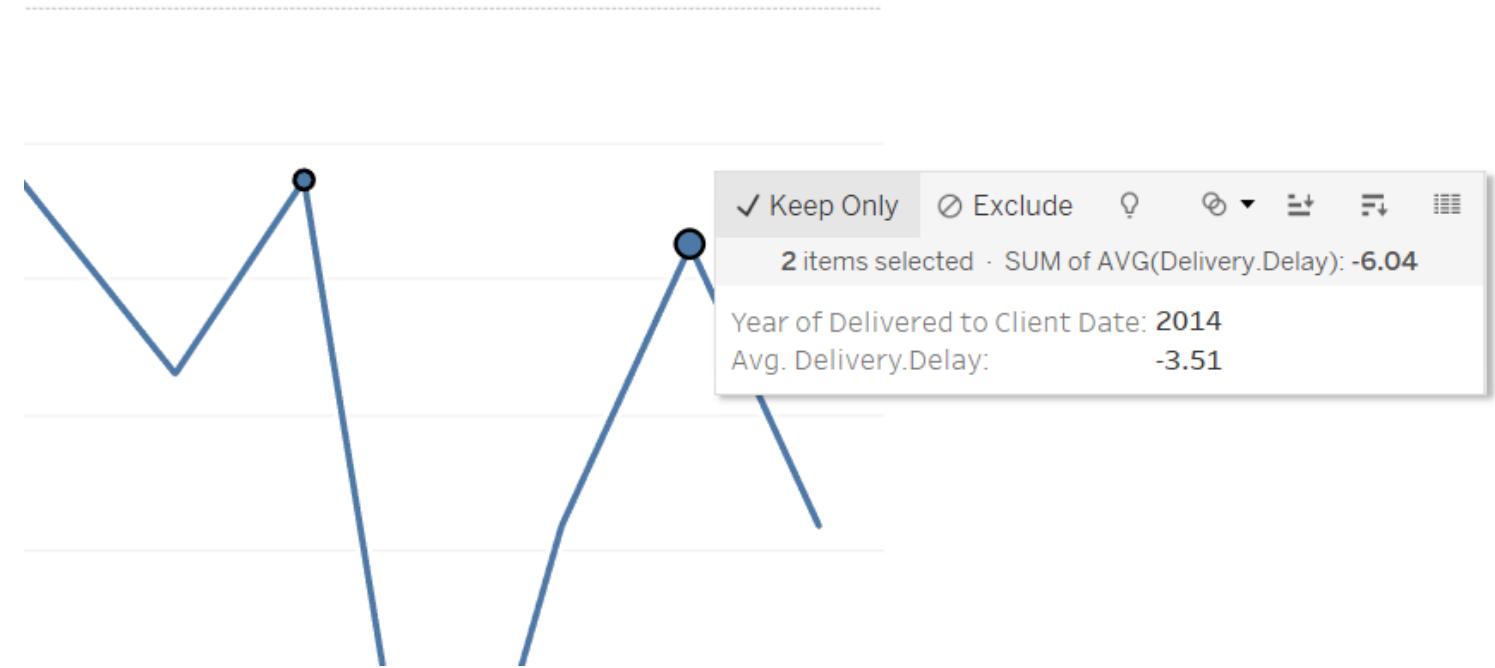
### Data Summary

#### Detected Outliers (3)

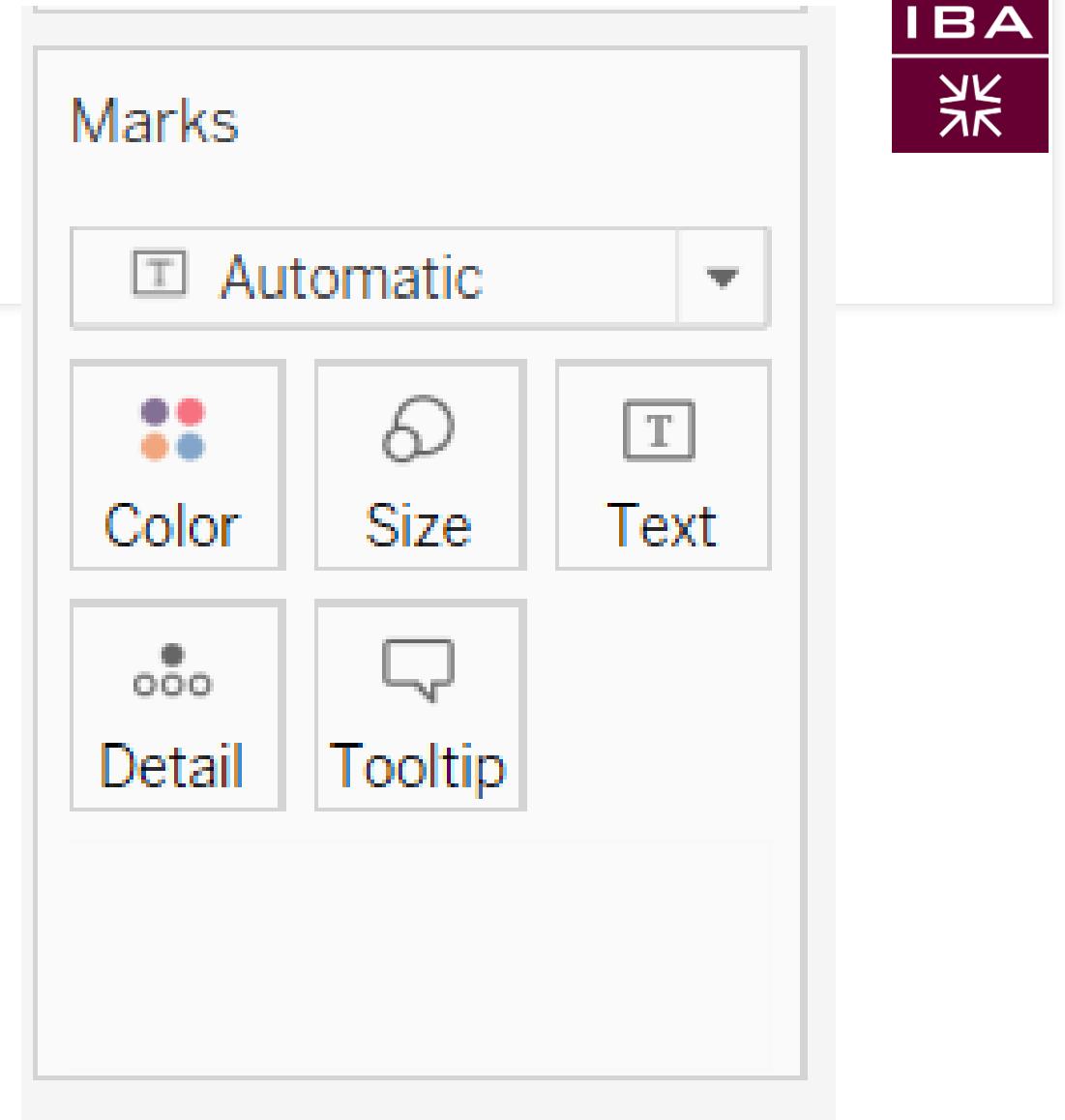
Tableau detected these marks as unusual compared to other marks in the selected viz.

Low 2012  
Average of Delivery.Delay: -14.28 >

# Flip, Sort, Keep Only



# Marks



# Modify the Chart

- Shipment mode to colors
- Filter out delivery delay (all values)  $> 0$
- Date as Green attribute (continuous)
- Avg Delivery Delay to Label

Filter Field [Delivery.Delay] X

How do you want to filter on [Delivery.Delay]?

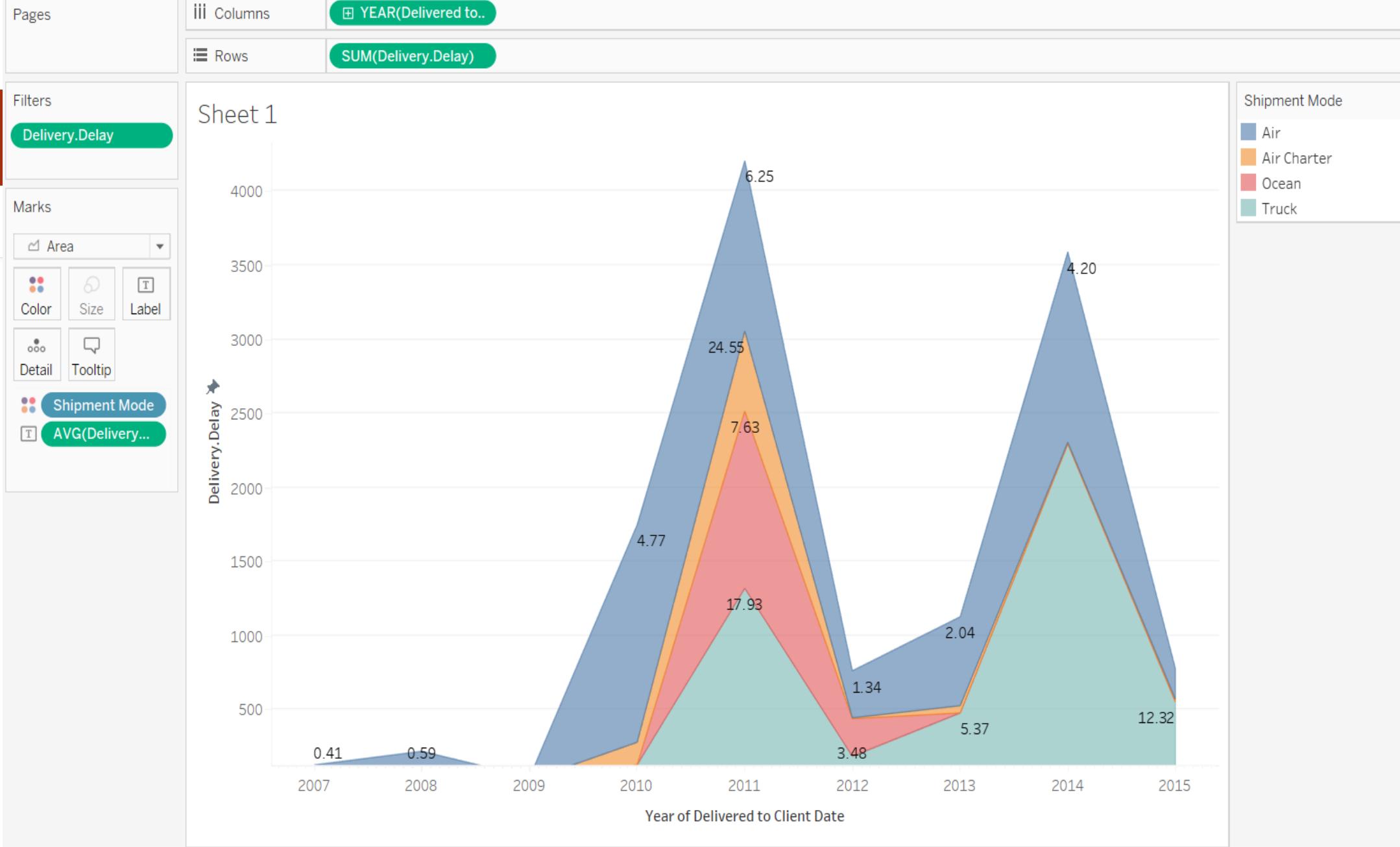
# All values

# Sum  
# Average  
# Median  
# Count  
# Count (Distinct)  
# Minimum  
# Maximum

# Standard deviation  
# Standard deviation (Population)  
# Variance  
# Variance (Population)

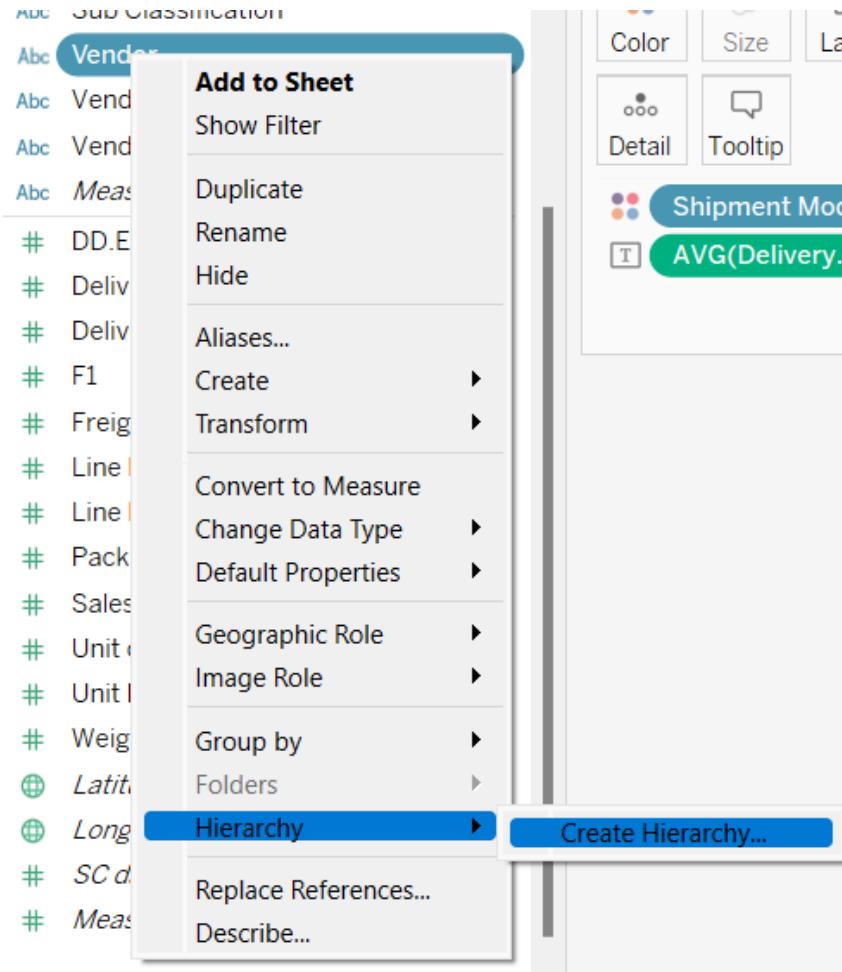
# Attribute

Next > Cancel



# Sheet 2

## Vendor Hierarchy with Avg (Delay)

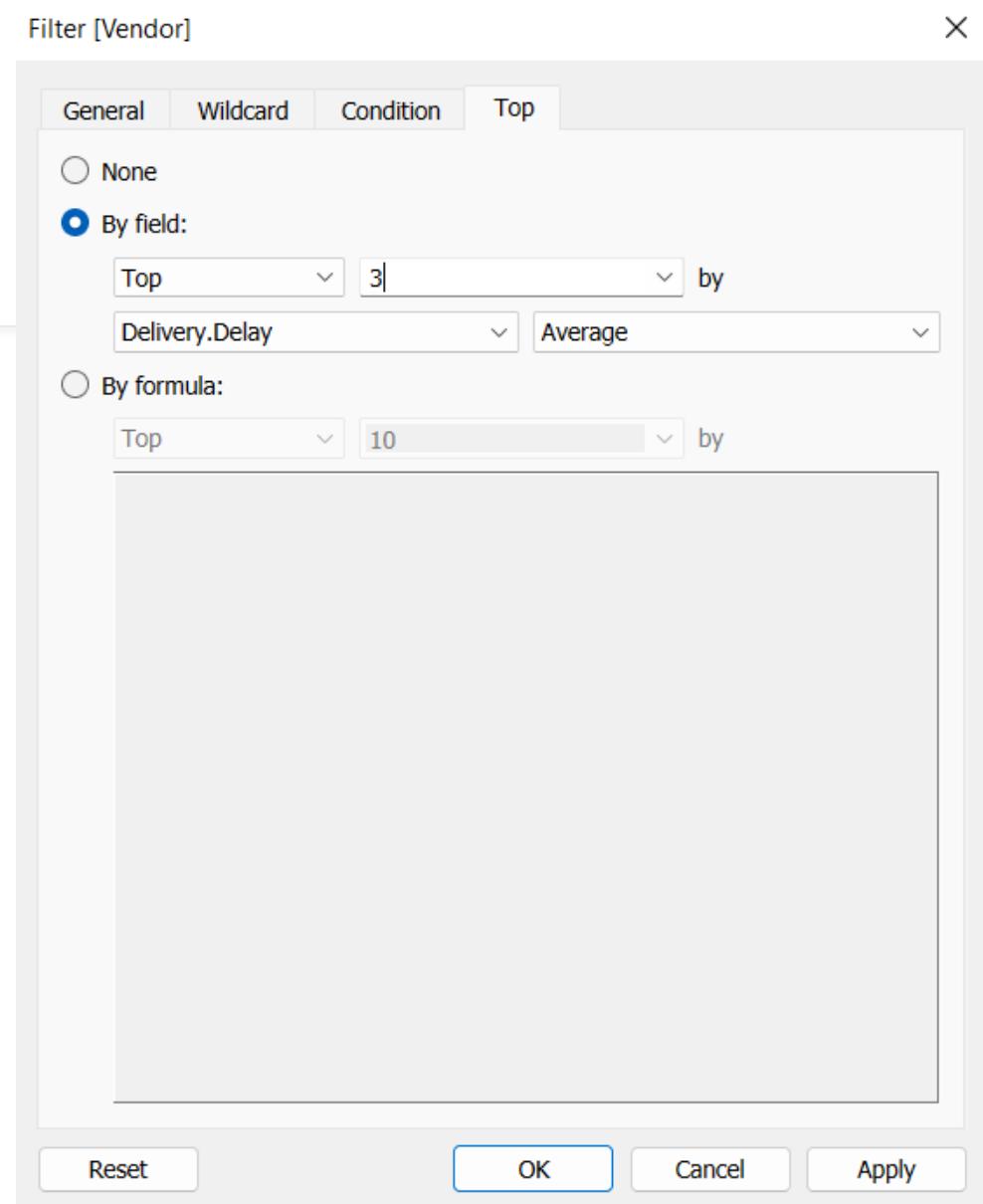


- Create Vendor Hierarchy
  - Vendor
  - Brand
  - (Only 2 levels for practice - you can add more as needed)
- Avg (Delay) to Column
- Vendor.H to Rows
- Filter Delay > 0
- Chart type: Bar

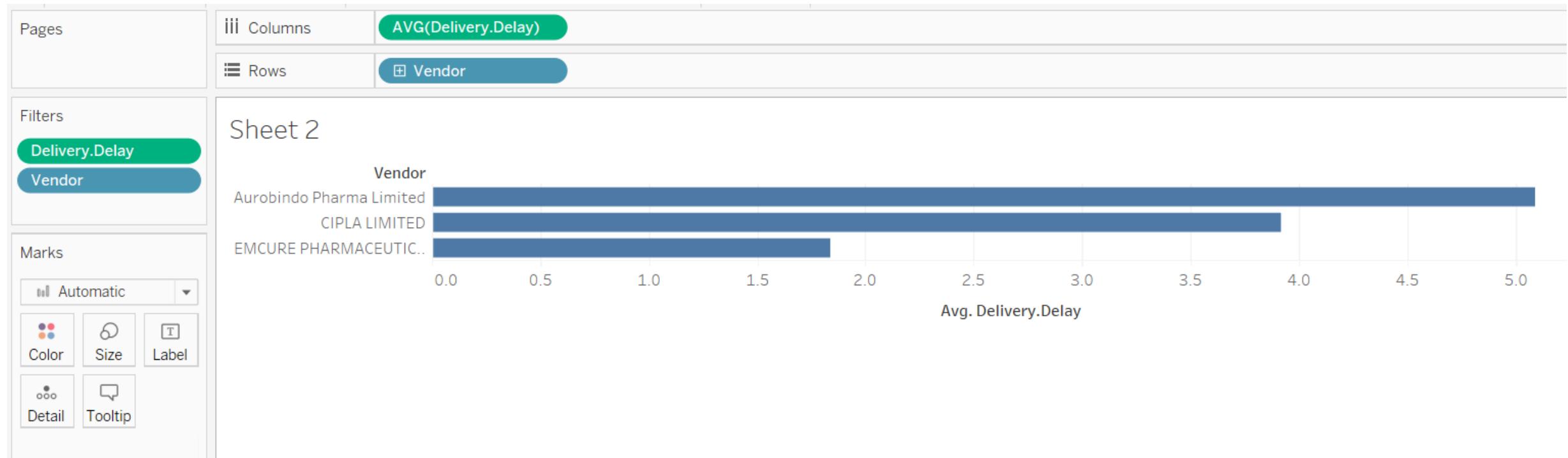
# Filter Vendor

## *Top 3 by Avg (Delay)*

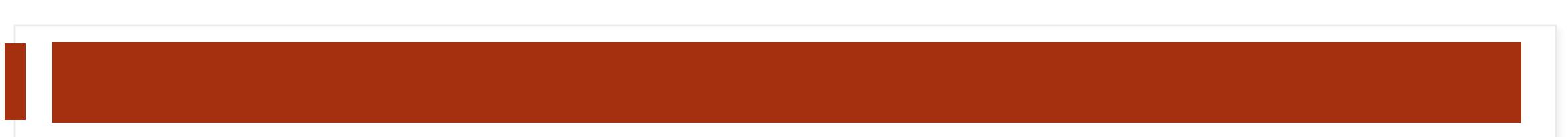
- Possible to also select vendors manually from the *General* tab



# Vendor Vs Avg (Delay) Bar Chart



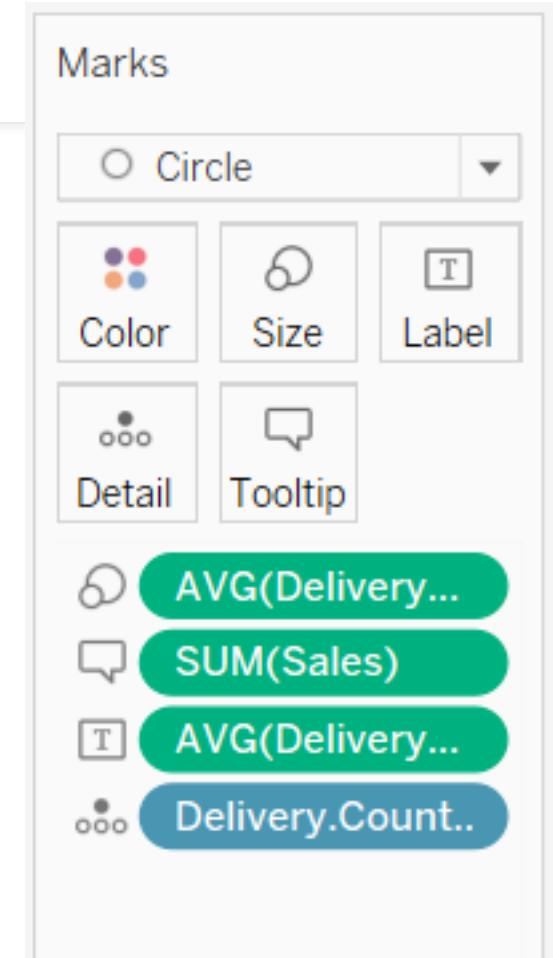
Add a column to **colors** to see the chart transform into a stacked bar chart

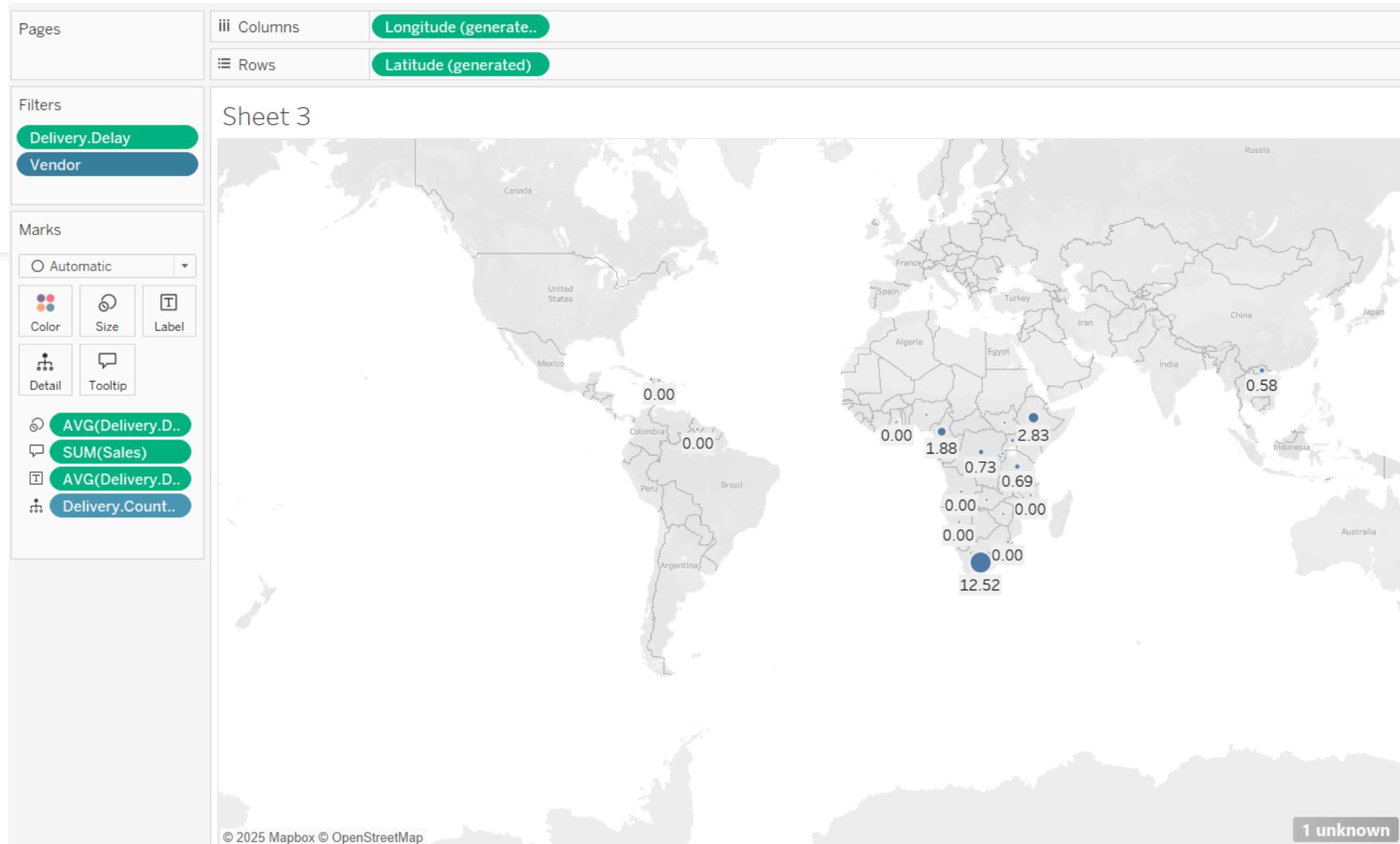


# Sheet 3

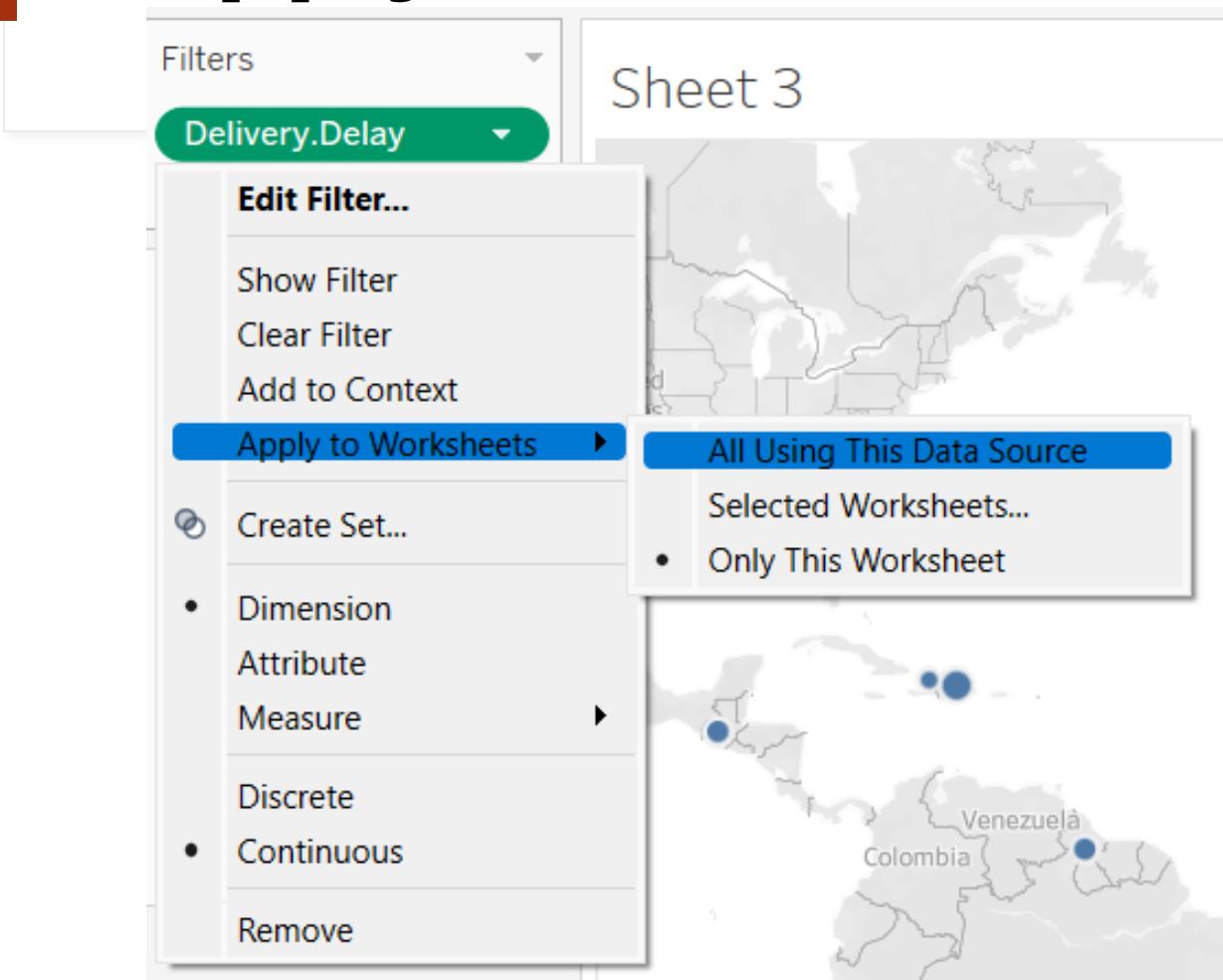
## Map for Delivery Country

- Double click on Delivery Country
- Auto-split into Lat and Long and map automatically created. Can also use *lat,long* attributes generated.
- Filter Delay >0
- Avg (Delay) to Size
- Avg (Delay) to Label
- Sum (Sales) to Tooltip
- Apply filter for selected 3 vendors





# Apply Filters to all Sheets

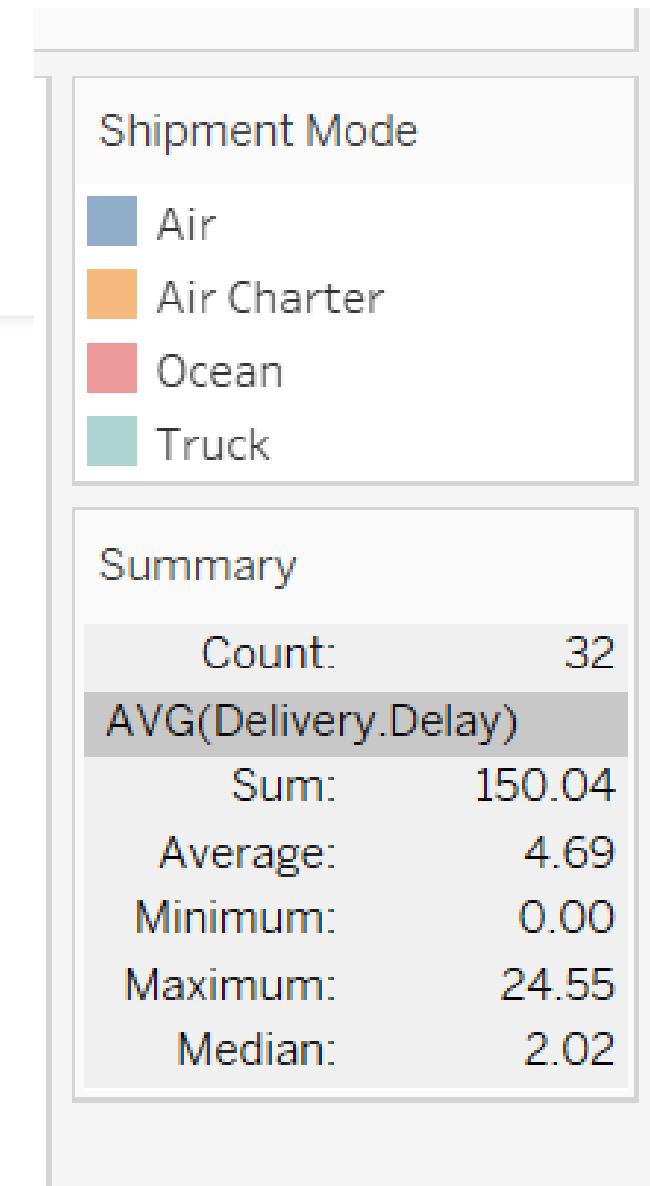
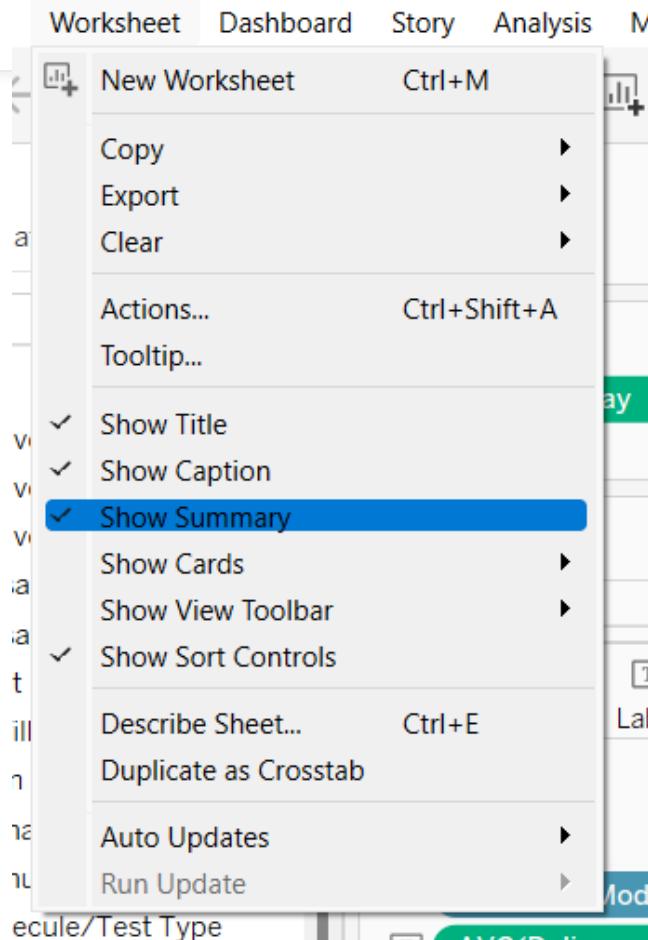


The screenshot shows a BI application interface. At the top left, there's a 'Filters' dropdown menu with 'Delivery.Delay' selected. Below it is a context menu for the 'Delivery.Delay' filter, which includes options like 'Edit Filter...', 'Show Filter', 'Clear Filter', 'Add to Context', 'Apply to Worksheets' (which is currently selected), 'Create Set...', and categories for 'Dimension', 'Attribute', 'Measure', 'Discrete', and 'Continuous'. Under 'Continuous', the 'Remove' option is visible. On the right side of the interface, there are two maps of South America. The top map shows a general outline of the continent with some internal borders. The bottom map is a more detailed version with country names labeled: 'Venezuela' and 'Colombia'. The 'Apply to Worksheets' option in the context menu is highlighted with a blue background, and its sub-options ('All Using This Data Source', 'Selected Worksheets...', and 'Only This Worksheet') are also highlighted.

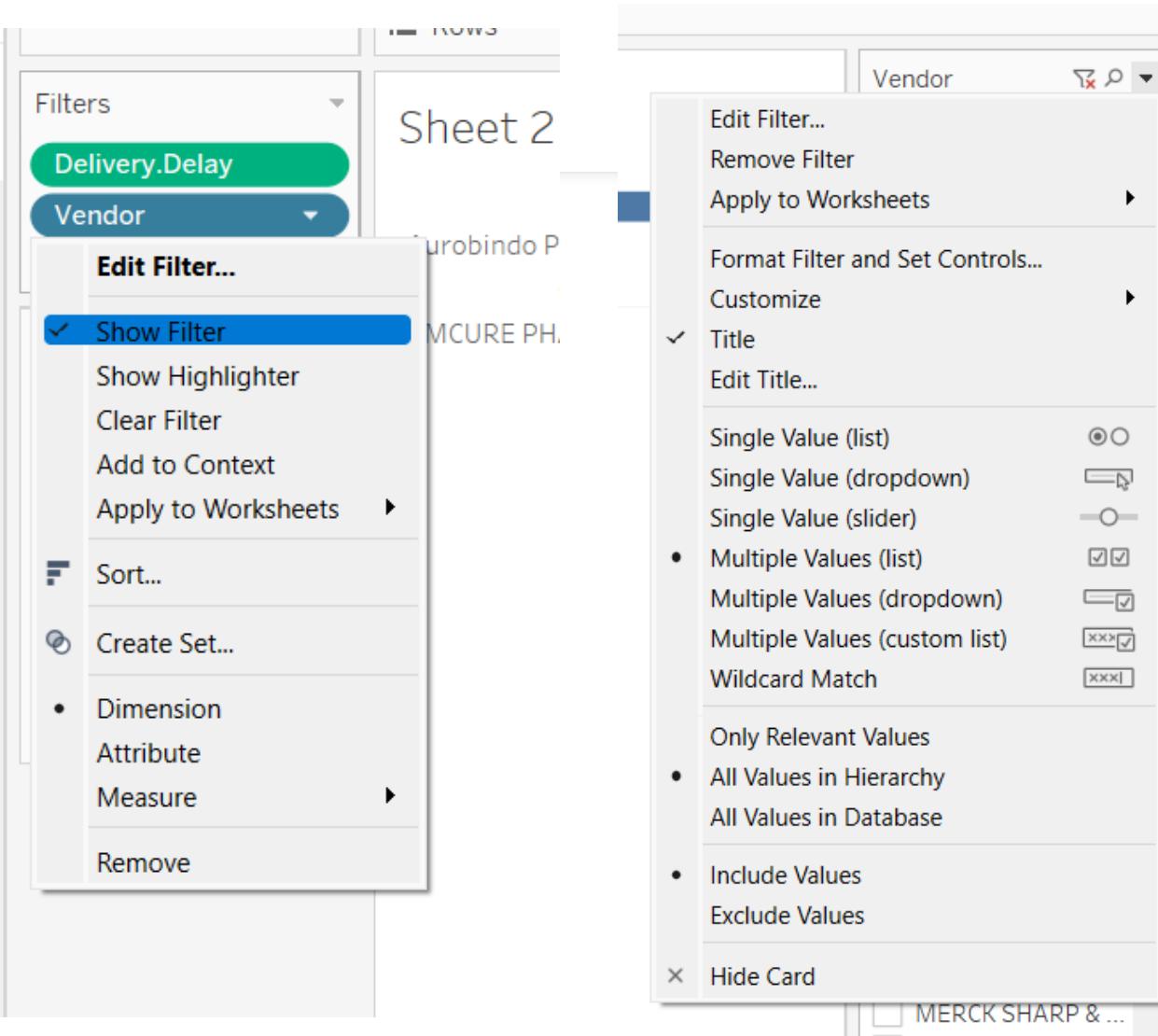
# Add Captions Area chart



# Add Summary Area chart

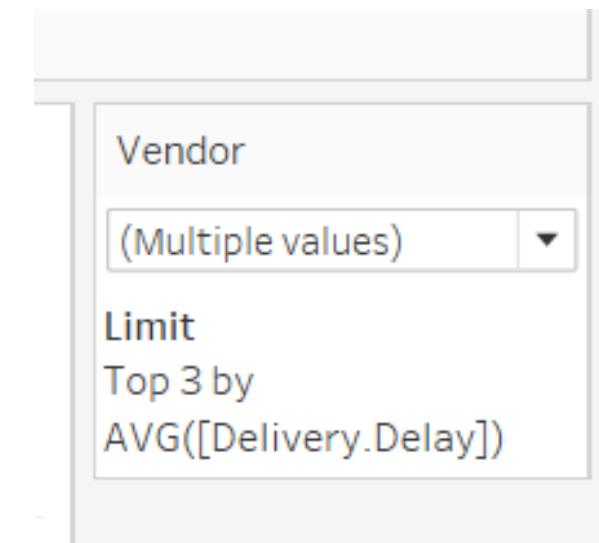


# Add slicers (Vendor.H Vs Avg Delay Bar chart)



The screenshot shows the Power BI desktop interface. On the left, the 'Filters' pane is open, displaying a green button for 'Delivery.Delay' and a blue dropdown for 'Vendor'. A context menu is open over the 'Vendor' dropdown, with 'Show Filter' highlighted in blue. Other options in the menu include 'Edit Filter...', 'Remove Filter', 'Apply to Worksheets', 'Format Filter and Set Controls...', 'Customize', 'Title', 'Edit Title...', 'Single Value (list)', 'Single Value (dropdown)', 'Single Value (slider)', 'Multiple Values (list)' (selected), 'Multiple Values (dropdown)', 'Multiple Values (custom list)', 'Wildcard Match', 'Only Relevant Values', 'All Values in Hierarchy', 'All Values in Database', 'Include Values', 'Exclude Values', and 'Hide Card'. The main workspace shows two sheets: 'Sheet 2' and 'Sheet 1'. In 'Sheet 2', there are some data rows.

- Show filter
- Switch to Multiple values (drop down)



This screenshot shows the 'Vendor' filter settings dialog. It includes fields for 'Limit' set to 'Top 3 by' and a formula 'AVG([Delivery.Delay])'.

# Create a slicer for Delivery Country

- Add Delivery Country to filters
- Select Use all
- Show filter
- From the side bar, switch the slicer to multiple values (drop down)

The screenshot shows the Tableau desktop interface. On the left, the 'Filters' shelf contains two items: 'Delivery.Delay' (highlighted in green) and 'Vendor'. Below it, the 'Marks' shelf includes 'Automatic' and several mark types: Color, Size, Label, Detail, and Tooltip. In the center, 'Sheet 2 (2)' displays three vendor names: 'Aurobindo Pharma Limited', 'CIPLA LIMITED', and 'EMCURE PHARMACEUTIC...'. A context menu is open over the first vendor name. On the right, a 'Filter [Manuf.Country]' dialog box is open, showing the 'General' tab selected. It has three radio button options: 'Select from list', 'Custom value list', and 'Use all' (which is selected). Below this is a large empty text input field. At the bottom of the dialog, there are buttons for 'All', 'None', and 'Exclude'. A summary section at the bottom lists the filter settings: Field: [Manuf.Country], Selection: All, Wildcard: All, Condition: None, and Limit: None. At the very bottom are 'Reset', 'OK', 'Cancel', and 'Apply' buttons.

# Create a Dashboard

**Dashboard**      Layout <

**Default**

Phone

**Device Preview**

**Size**

Desktop Browser (1000 x 800)

**Sheets**

- Sheet 1
- Sheet 2
- Sheet 3

**Objects**

- Horizontal Container
- Vertical Container
- Text
- Extension
- Ask Data
- Data Story**
- Image
- Blank
- Workflow
- Web Page

**Tiled**      Floating

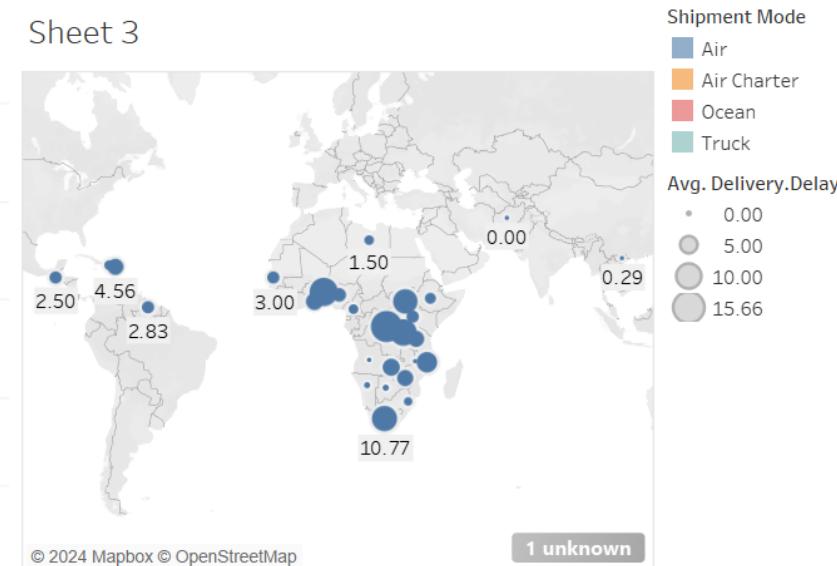
Show dashboard title

Dashboard 1

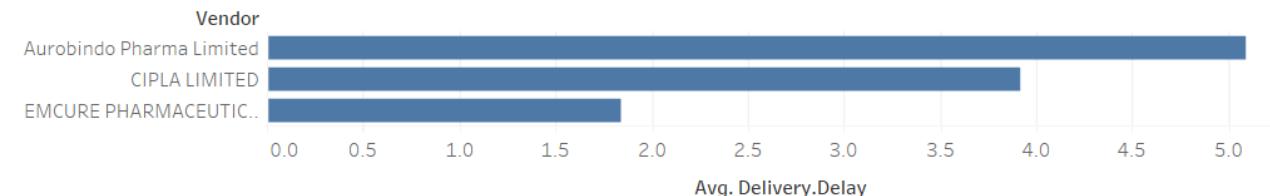
Sheet 1



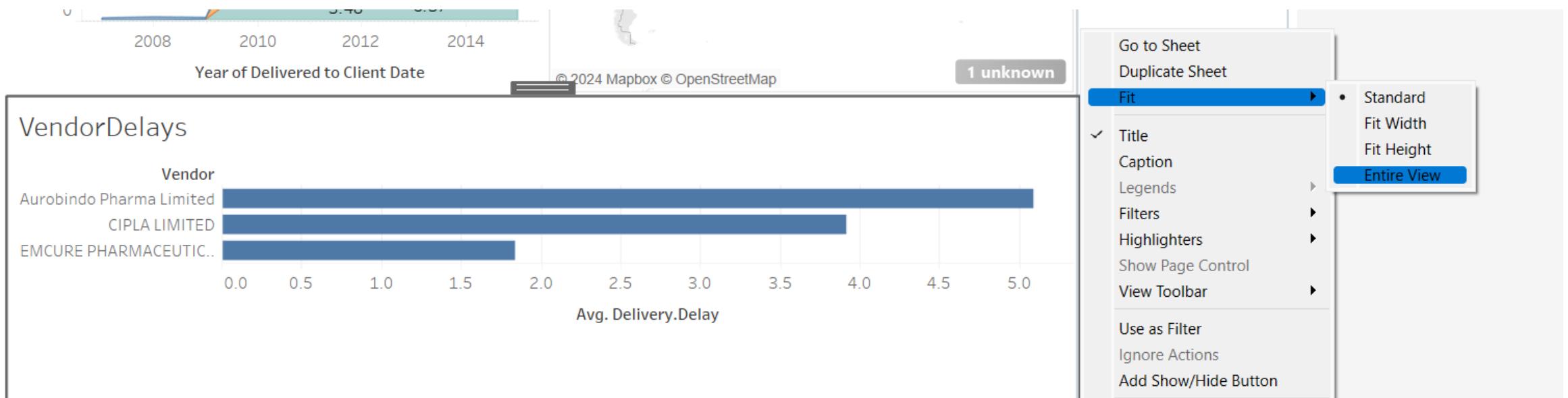
Sheet 3



Sheet 2

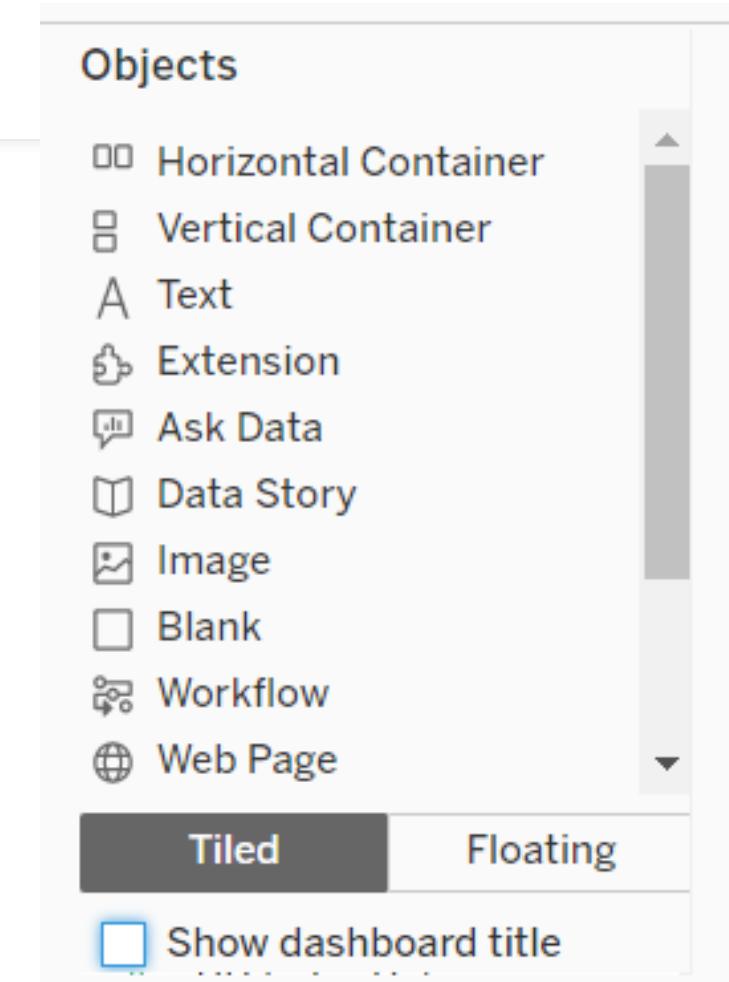


# Fit to Entire View



# Tiled to Floating

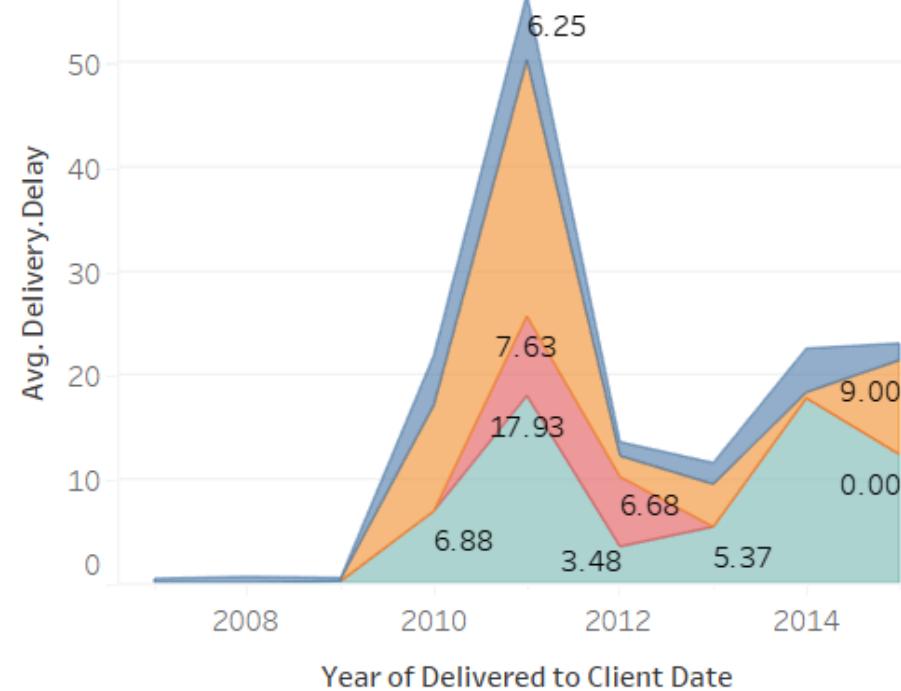
- Either switch before adding item so automatically object floats and lets you place wherever you like.
- If previously set to tiled, you can modify each chart on canvas to set as floating by choosing from the drop-down menu.



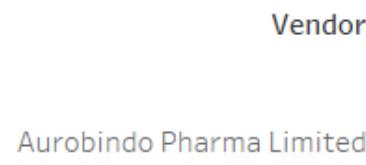
# Dashboard 1



TimeSeries



VendorDelays



DelayMap

- [X](#)
- [Y](#)
- [Filter](#)
- [▼](#)
- [Go to Sheet](#)
- [Duplicate Sheet](#)
- [Fit](#)
- [Title](#)
- [Caption](#)
- [Legends](#)
- [Filters](#)
- [Highlighters](#)
- [Show Page Control](#)
- [View Toolbar](#)
- [Use as Filter](#)
- [Ignore Actions](#)
- [Add Show/Hide Button](#)
- [Floating](#)
- [Select Container: Tiled](#)
- [Deselect](#)
- [Remove from Dashboard](#)
- [Rename Dashboard Item...](#)

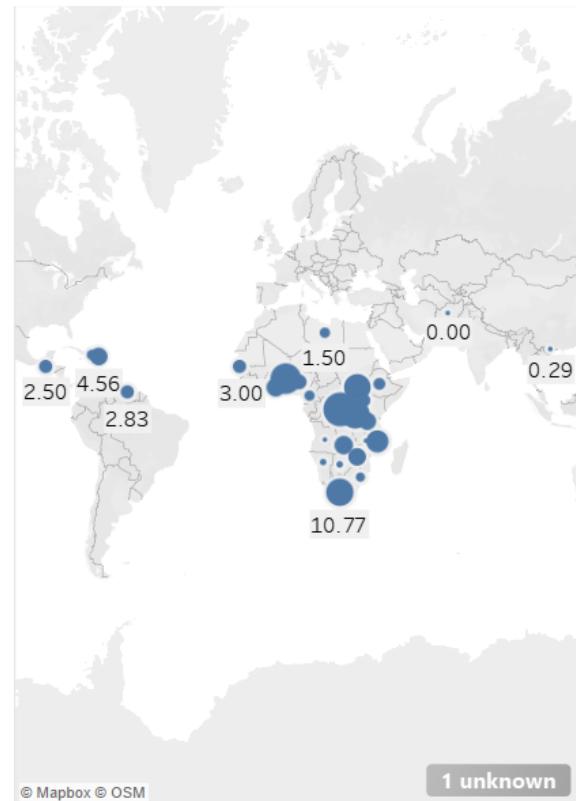
# Adjust the Charts

Formatted

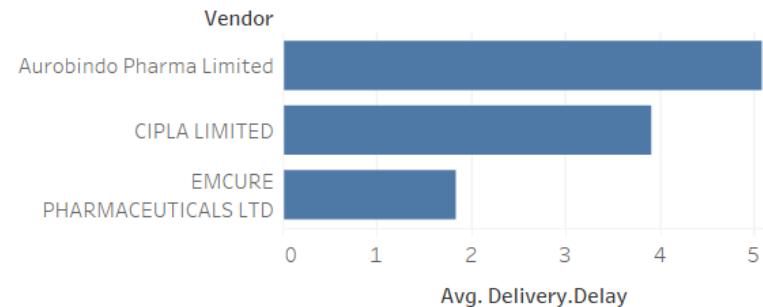
TimeSeries



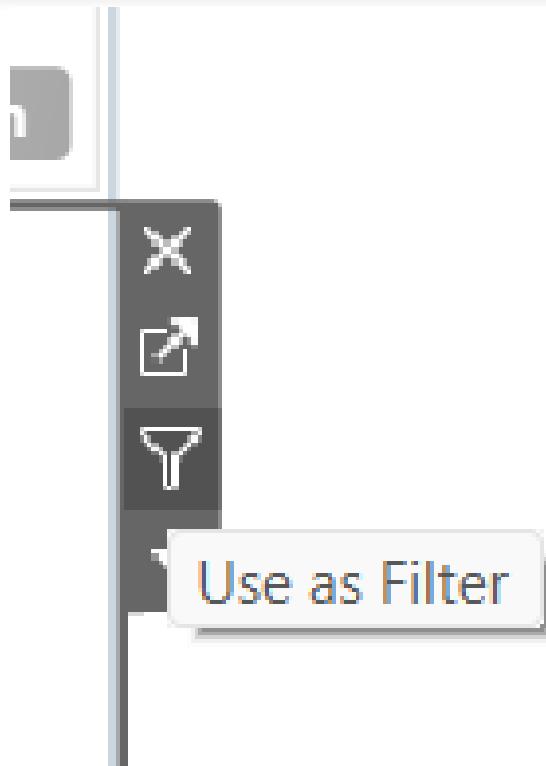
DelayMap



VendorDelays



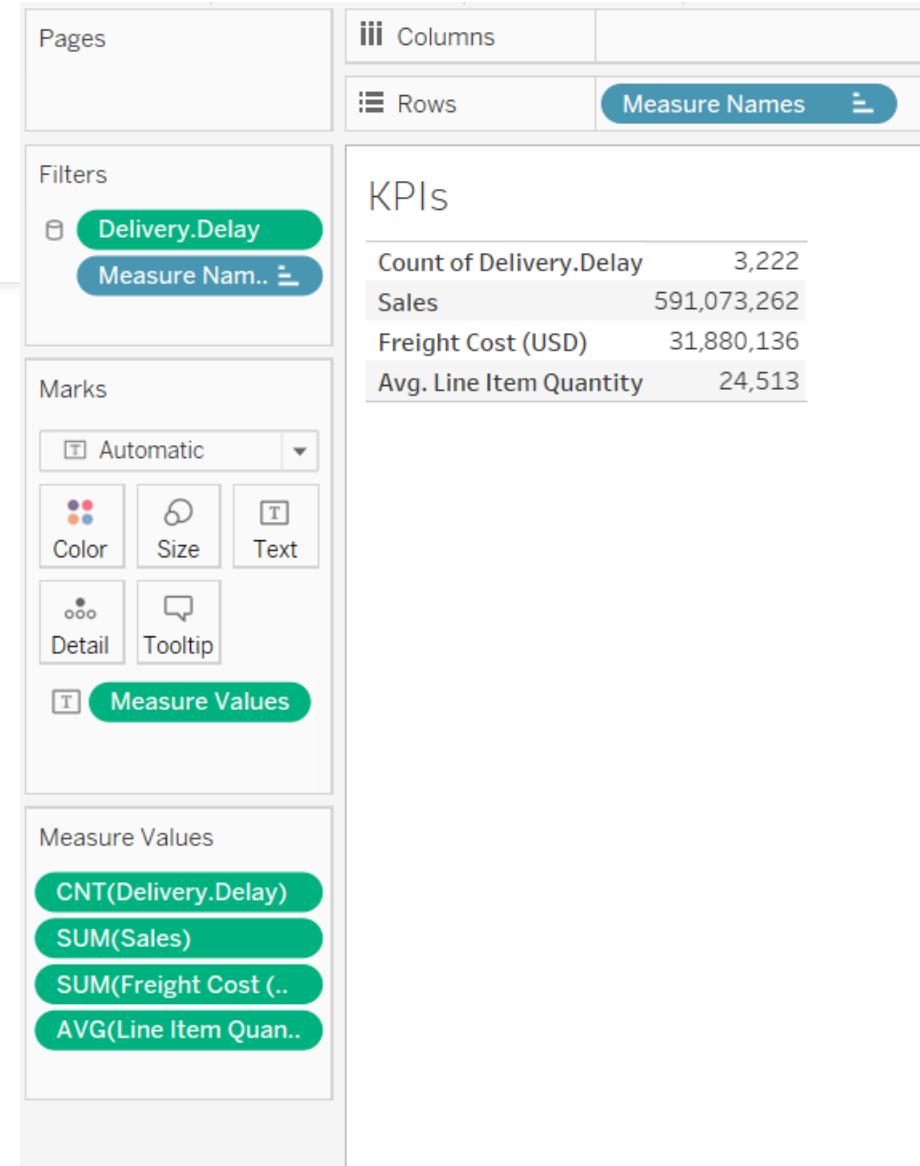
# Charts as Filters - Interactive



- The selections in this chart will show on the dashboard.
- Do this for all charts.

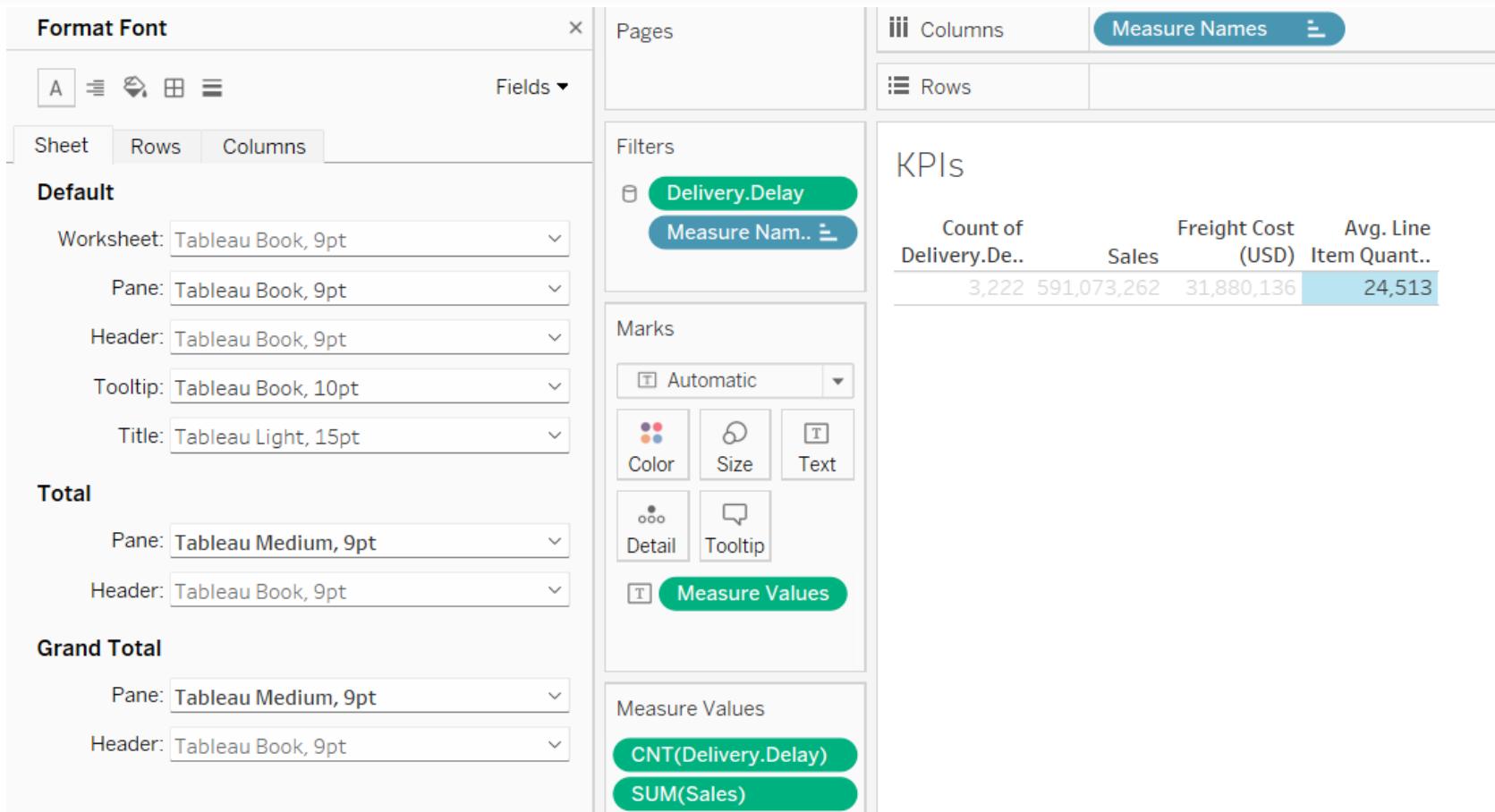
# Add KPIs

- New sheet - **Text table**
- Drag attributes to Rows
- Count of Delay
- Sum of Sales
- Sum of Freight
- Avg of Line Item Quantity



# Adjust as KPI cards

- Flip and Format



The screenshot shows the Tableau 'Format Font' dialog open on the left, with the 'Sheet' tab selected. It displays font settings for Default, Total, and Grand Total sections. To the right is a KPI card visualization.

**KPIs**

Count of Delivery.De..	Sales	Freight Cost (USD)	Avg. Line Item Quant..
3,222	591,073,262	31,880,136	24,513

**Measure Names**

**Marks**

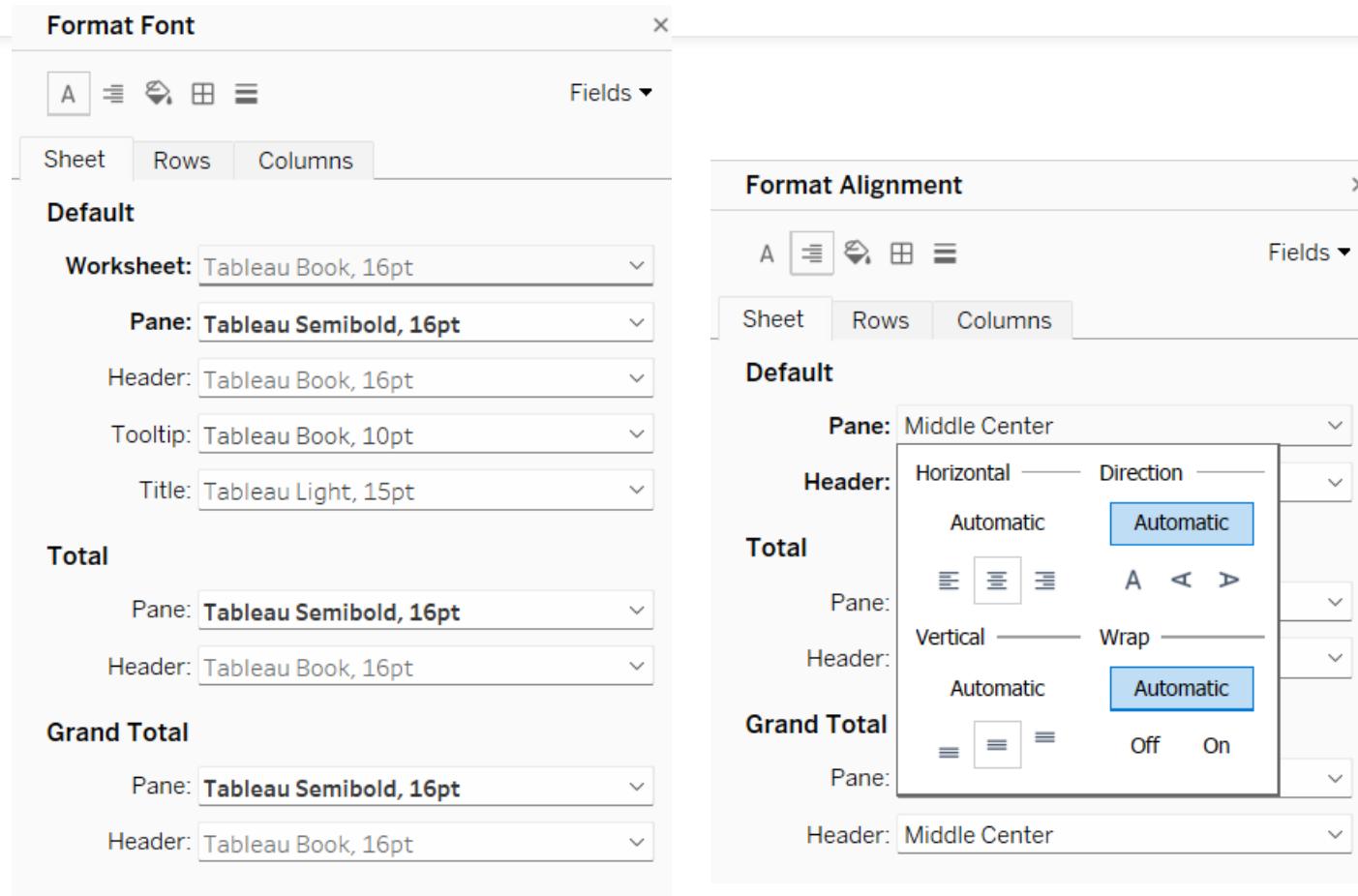
**Measure Values**

**Filters**

**Pages**

**Fields**

# Format the KPIs



The screenshot shows two Tableau dialog boxes: 'Format Font' and 'Format Alignment'.

**Format Font Dialog:**

- Sheet:** Worksheet: Tableau Book, 16pt; Pane: Tableau Semibold, 16pt
- Header:** Tableau Book, 16pt
- Tooltip:** Tableau Book, 10pt
- Title:** Tableau Light, 15pt
- Total:** Pane: Tableau Semibold, 16pt; Header: Tableau Book, 16pt
- Grand Total:** Pane: Tableau Semibold, 16pt; Header: Tableau Book, 16pt

**Format Alignment Dialog:**

- Default:** Pane: Middle Center
- Total:** Horizontal: Automatic, Direction: Automatic; Vertical: Automatic, Wrap: Automatic
- Grand Total:** Horizontal: Automatic, Direction: Automatic; Vertical: Automatic, Wrap: Automatic
- Header:** Middle Center

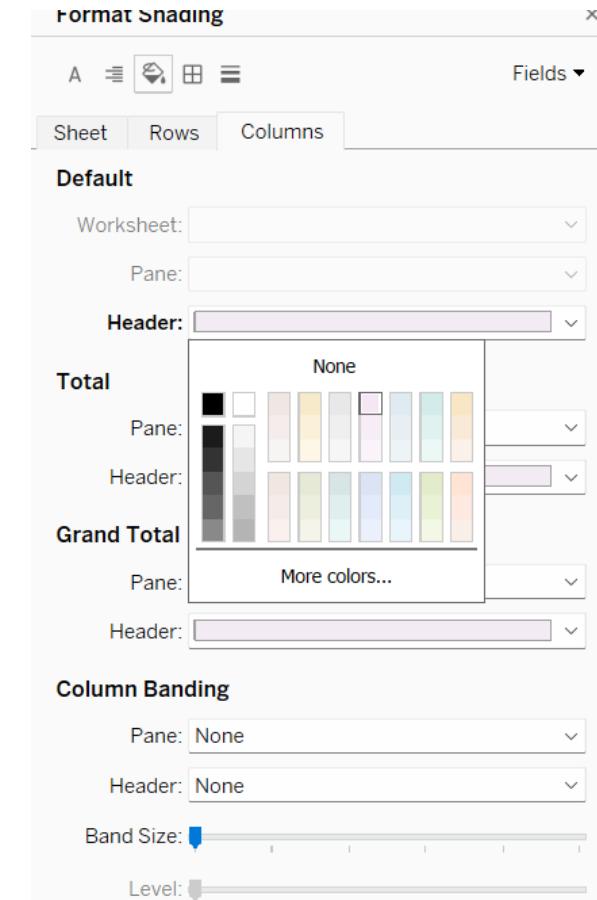
- Font size: 12
- Pane to Tableau Semi bold
- Middle center alignment

# Format Shading

KPIs

Count of Delivery.Delay	Sales	Freight Cost (USD)	Avg. Line Item Quantity
3,222	591,073,262	31,880,136	24,513

- Add to dashboard
- Fit to entire view
- Adjust on top of the dashboard.



# Data Story Telling in Tableau



# Create a Story

<Delivery Delays Analysis>



Time Series Analysis of  
Delivery Delays

Analysis of Delivery  
Delays by Top Vendors

Delivery Delays by  
country for identified  
vendors

A complete picture -  
dashboard



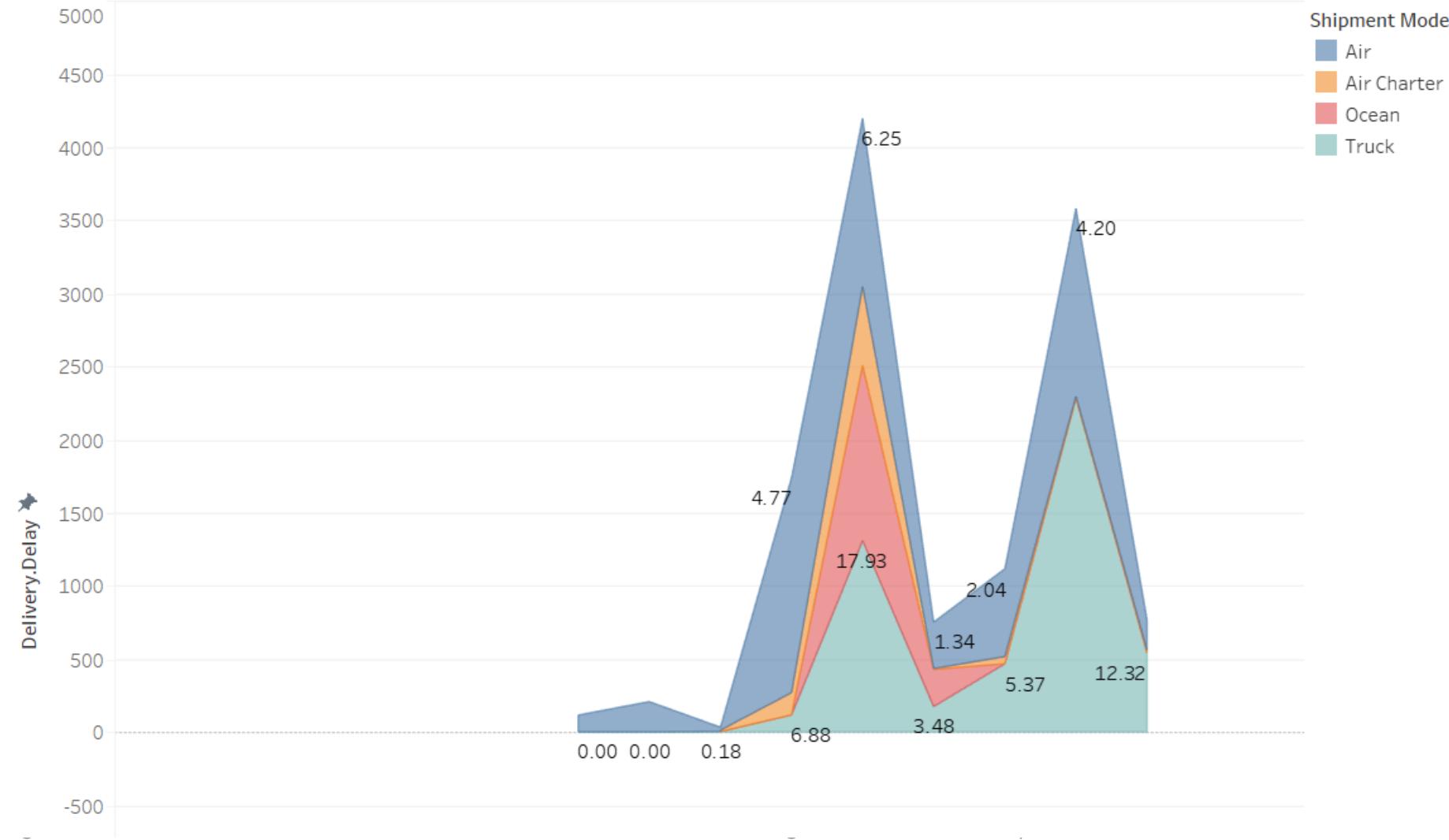
# <Delivery Delays Analysis>

Time Series Analysis of  
Delivery Delays

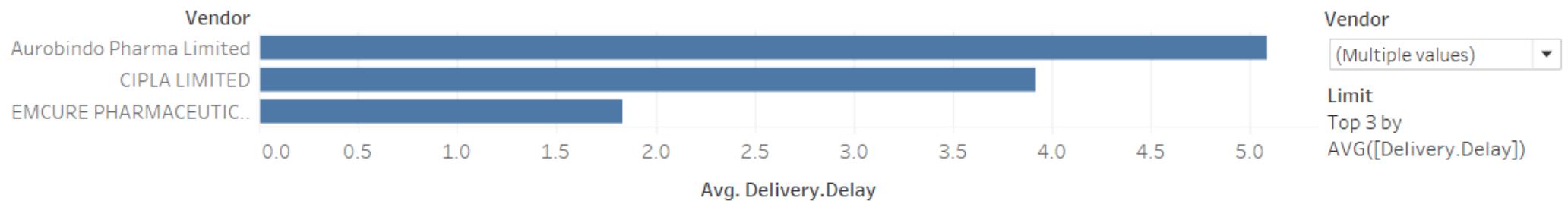
Analysis of Delivery  
Delays by Top Vendors

Delivery Delays by  
country for identified  
vendors

A complete picture -  
dashboard



## <Delivery Delays Analysis>



# <Delivery Delays Analysis>



Time Series Analysis of  
Delivery Delays

Analysis of Delivery  
Delays by Top Vendors

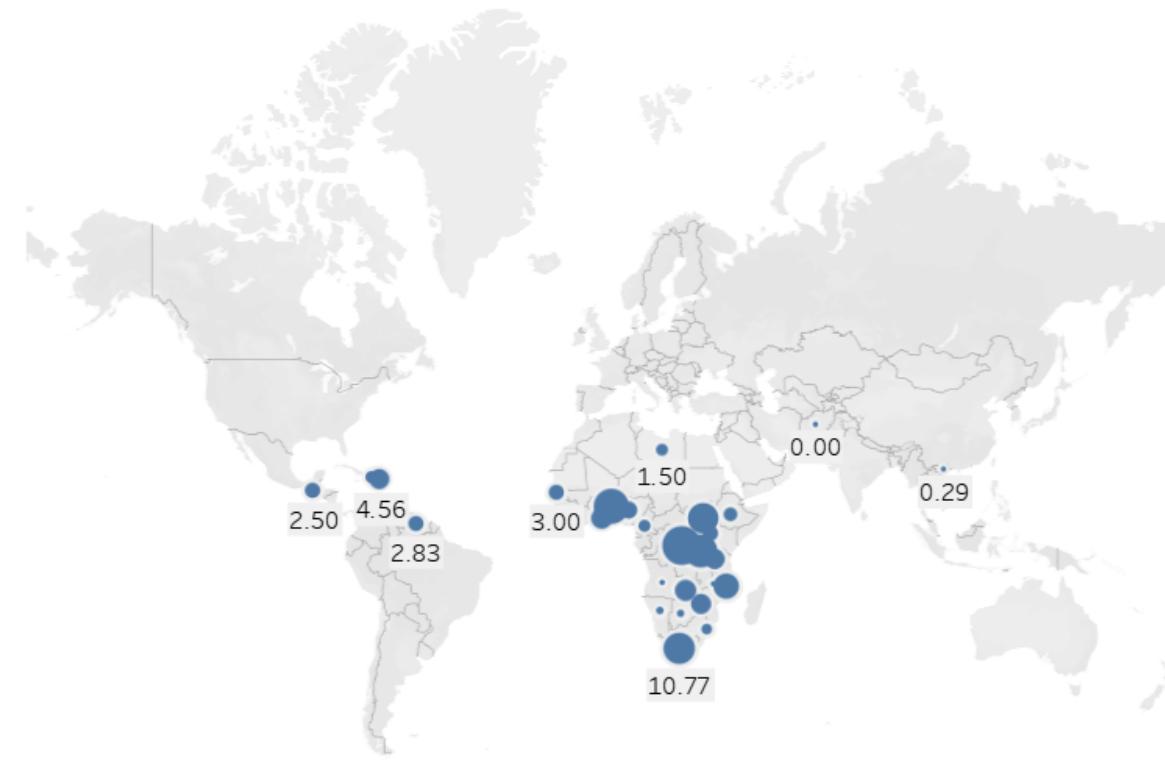
Delivery Delays by  
country for identified  
vendors

A complete picture -  
dashboard



Avg. Delivery.Delay

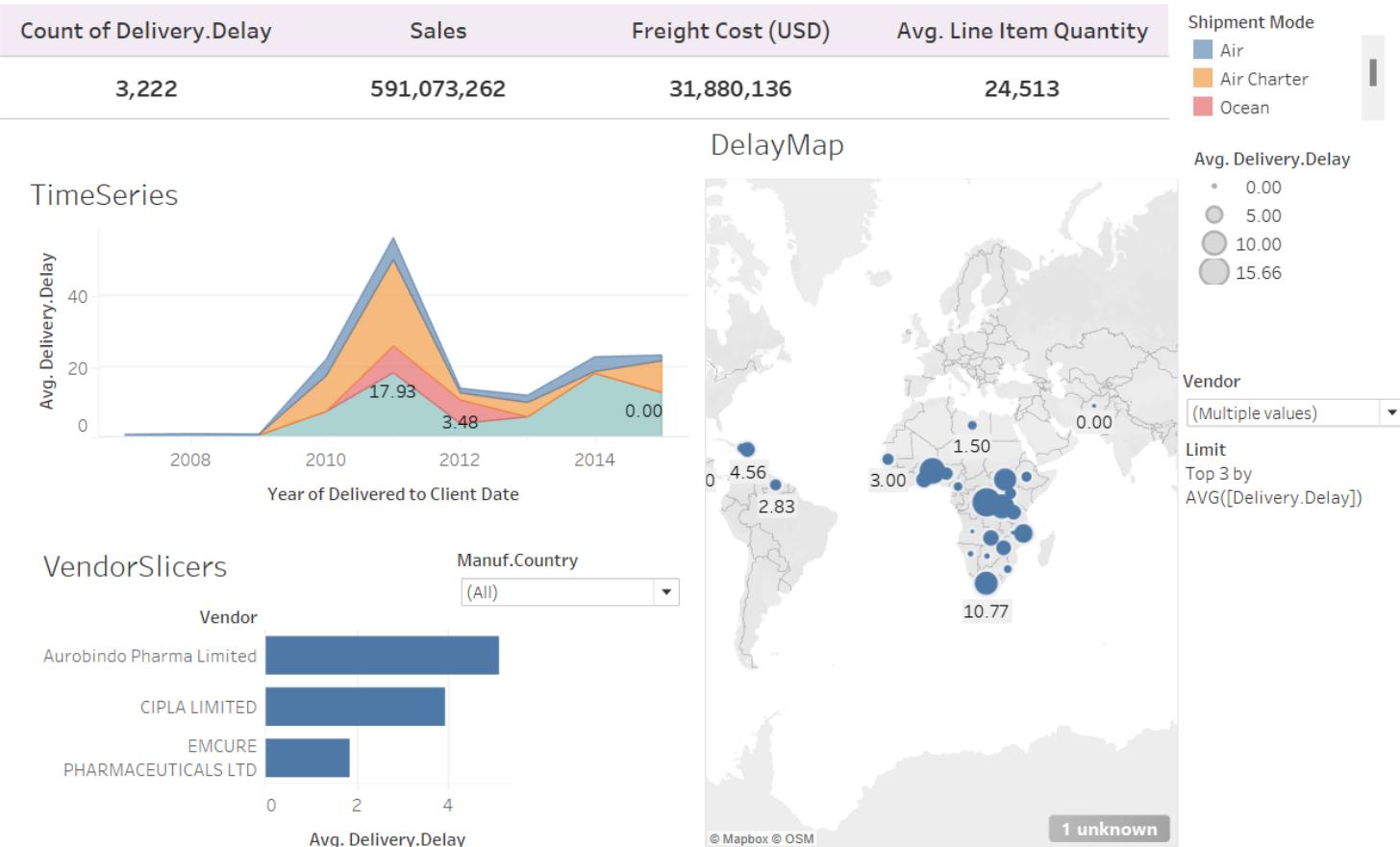
- 0.00
- 5.00
- 10.00
- 15.66



## <Delivery Delays Analysis>

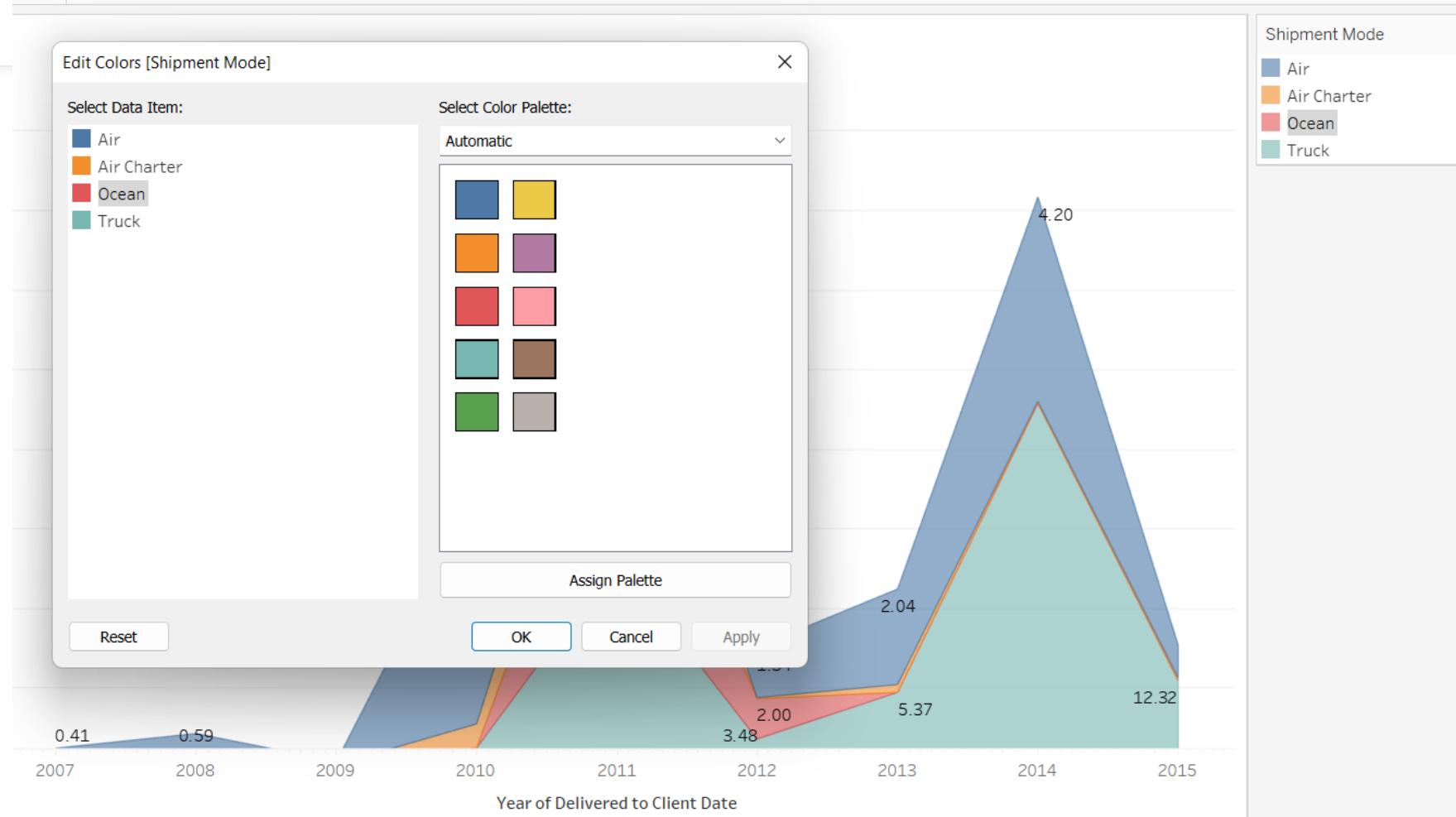
Time Series Analysis of Delivery Delays      Analysis of Delivery Delays by Top Vendors      Delivery Delays by country for identified vendors      A complete picture - dashboard

### Dashboard\_with\_KPIs

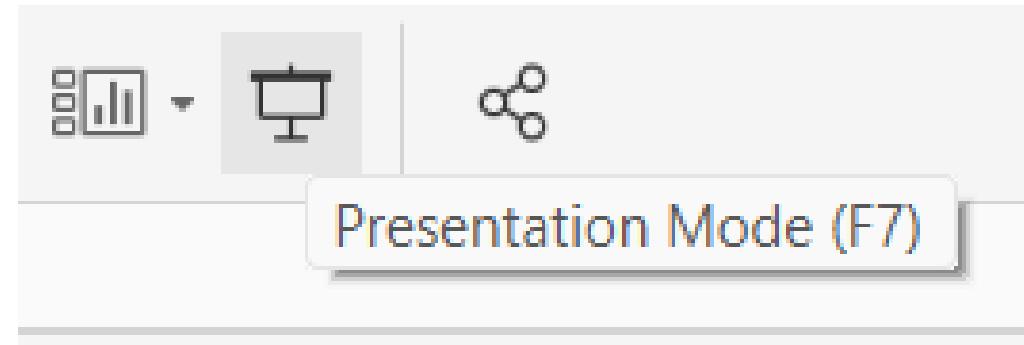


# Modify Colors

- Double click legend colors to modify the color palette.



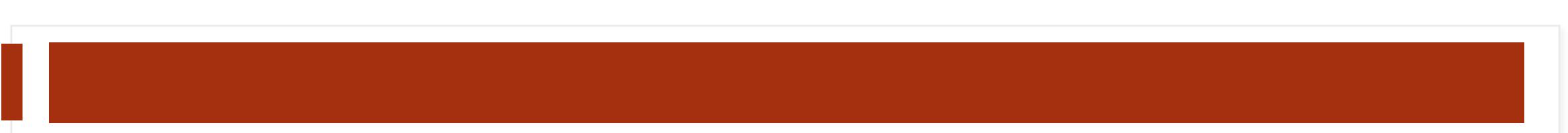
# Presentation Mode to Present



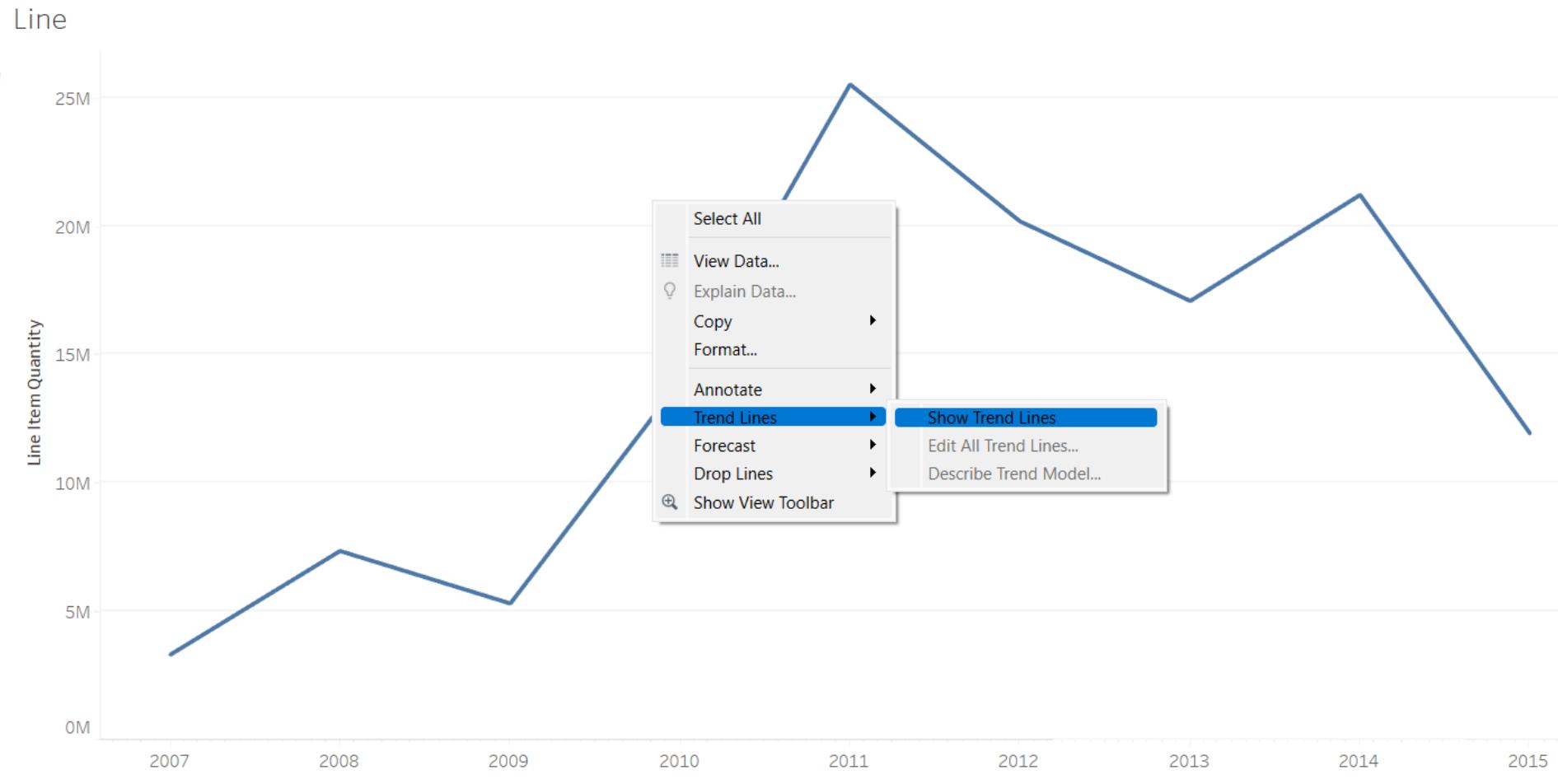
# Tableau Charts

# Follow the Tableau workbook for Charts Tutorial.

Instructions mentioned as captions.



# Trend Lines on the Line chart



# Analytics

- Add Average Line to the Line Chart

The screenshot shows a software interface with a sidebar on the right containing various analytical tools. The sidebar has three main sections: 'Summarize', 'Model', and 'Custom'. Each section contains several items with icons next to them.

- Summarize**
  - Constant Line
  - Average Line
  - Median with Quartiles
  - Box Plot
  - Totals
- Model**
  - Average with 95% CI
  - Median with 95% CI
  - Trend Line
  - Forecast
  - Cluster
- Custom**
  - Reference Line
  - Reference Band
  - Distribution Band
  - Box Plot