Data Visualization Using Tableau

Harnessing Tableau for Dynamic Data Decisions

Quick Recap

- Filters in Tableau are utilized to control which data is presented in the visualizations.
- Tableau provides a diverse range of filters, including extract, data source, table, context, measure, and dimension filters.
- Groups in Tableau are employed to categorize data, while sets define subsets, and Measure Names and Measure Values represent numerical data within the platform.

Engage and Think

Imagine you are trying to choose the best smartphone based on its battery life. You collect data from various models released in recent years. Imagine if you could see not only the average battery life of these phones but also the range of battery performance across models. What if you could predict how battery life might improve in future models?

Can you recall a time when you wished to predict an outcome or understand a trend better in your daily life, such as the performance of a gadget or even the weather?

Learning Objectives

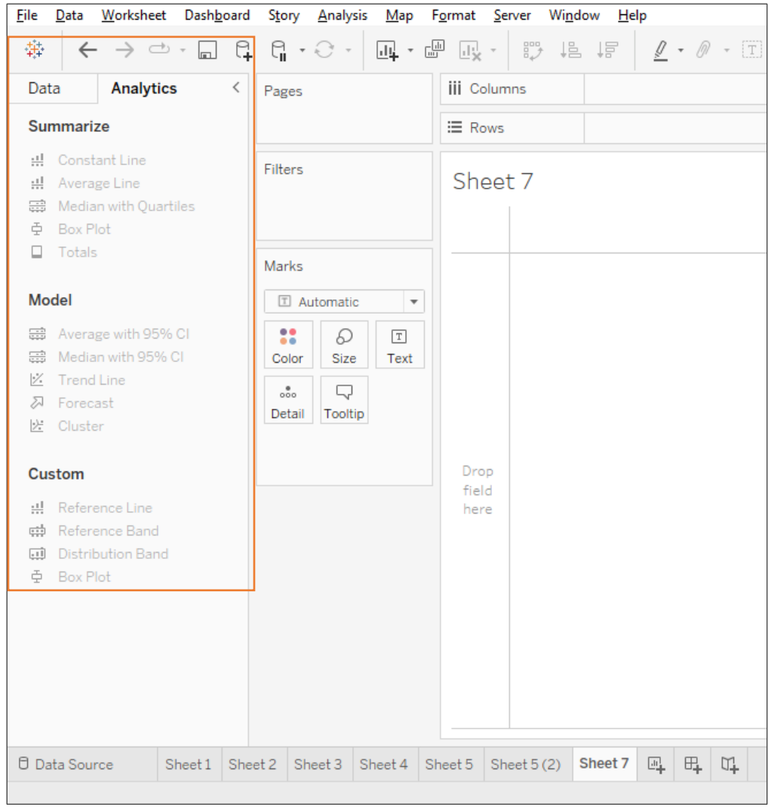
By the end of this lesson, you will be able to:

- Apply advanced analytics techniques like reference lines, distribution analysis, and box plots for insightful data interpretation
- Utilize features of Tableau such as adding totals, trend lines, and forecasting for trend identification and prediction
- Utilize the parameters of Tableau to dynamically adjust visualizations for thorough analysis and exploration of scenarios

Analytics Pane

Analytics Pane

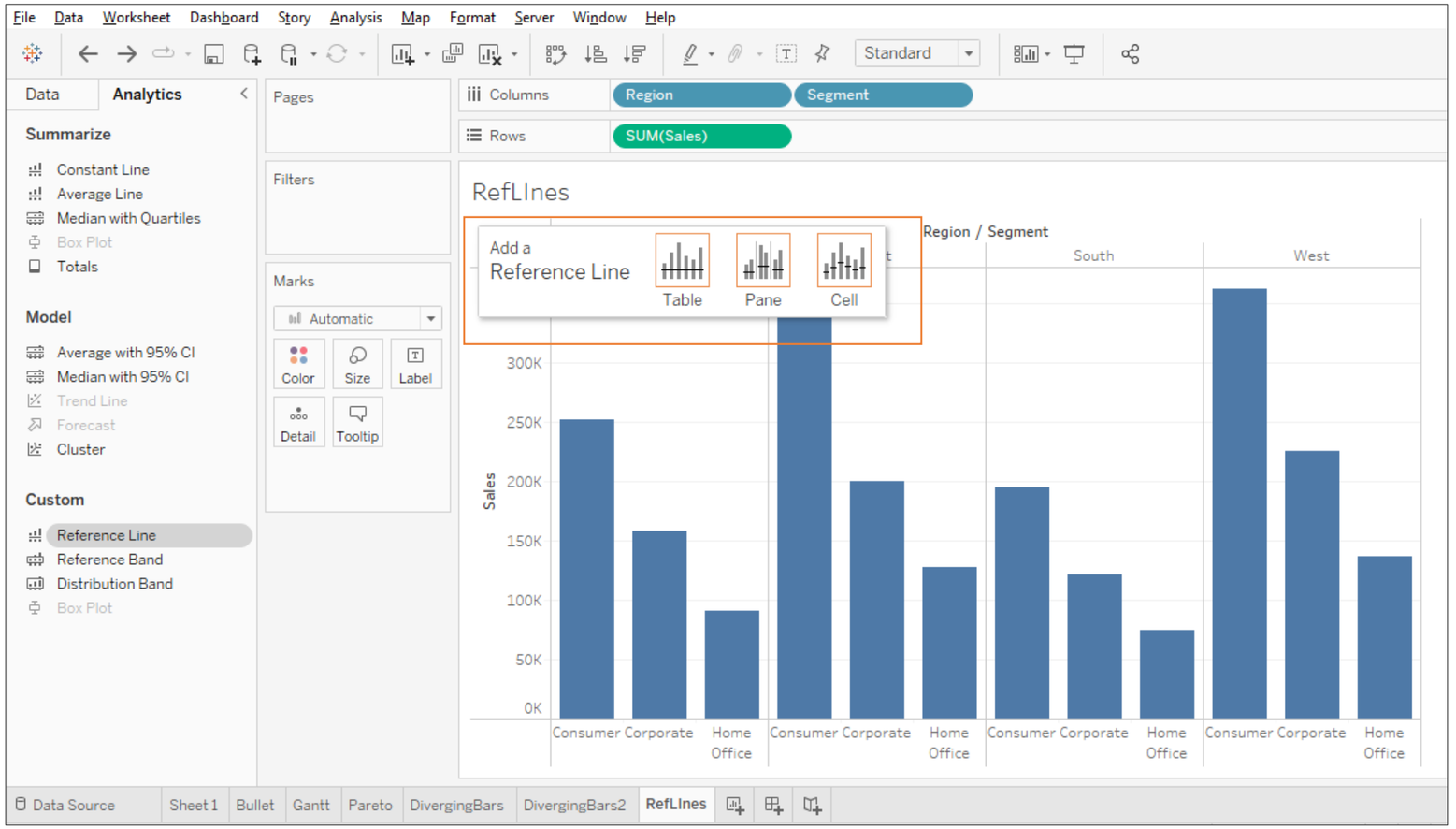
It provides a range of advanced analytical capabilities that can help gain deeper insights into the data and create more effective visualizations.



The Analytics pane in Tableau is located on the left side of the workspace, next to the Data Pane.

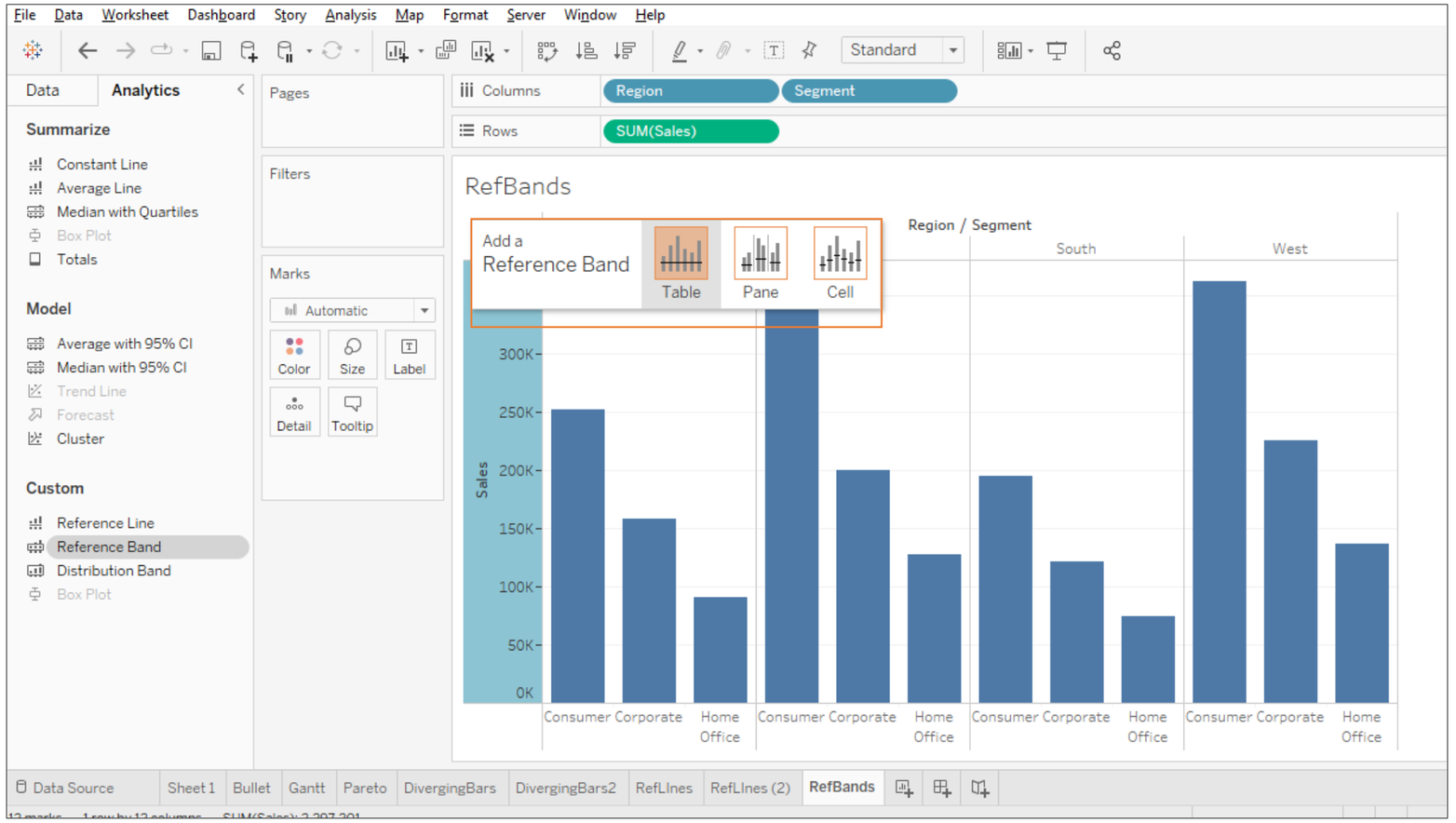
Reference Lines

It builds a benchmark value for the chart against which the value of the Marks can be compared.



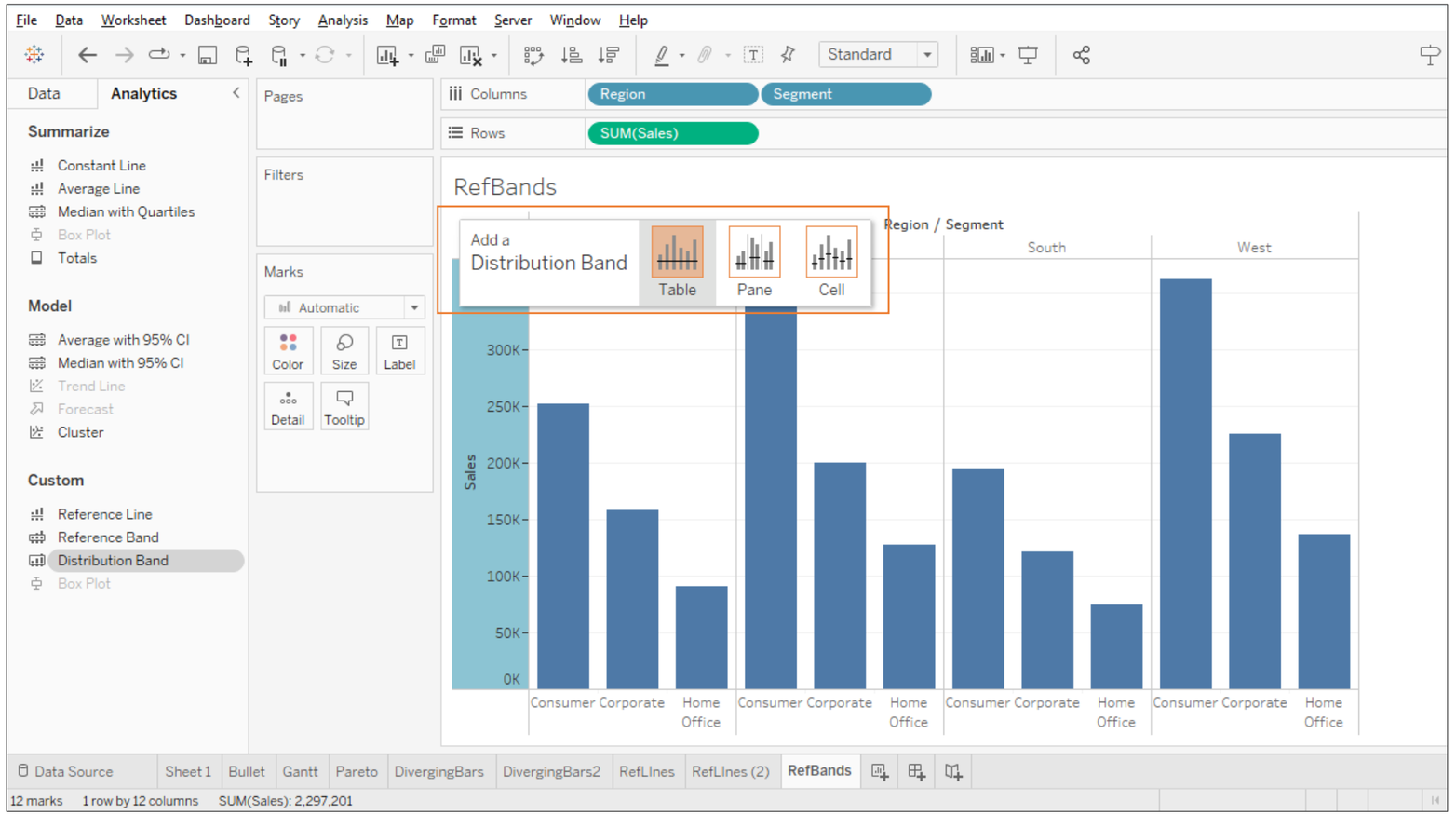
Reference Band

It builds a range to benchmark the chart against which the value of the Marks can be compared.



Distribution Band

It closely monitors and benchmarks the performance of a metric against customized benchmark levels.



With Distribution Bands, you can create the levels of distribution as per the requirements.

Demo: Reference Line, Reference Band, and Distribution Band

Duration: 15 minutes

Demonstrate how to use Reference Line , Reference Band, and Distribution Band.

DEMONSTRATION

Quick Check

What is the primary function of a distribution band in Tableau?

A. To create hierarchical structures in data visualization

B. To visualize trends over time within a dataset

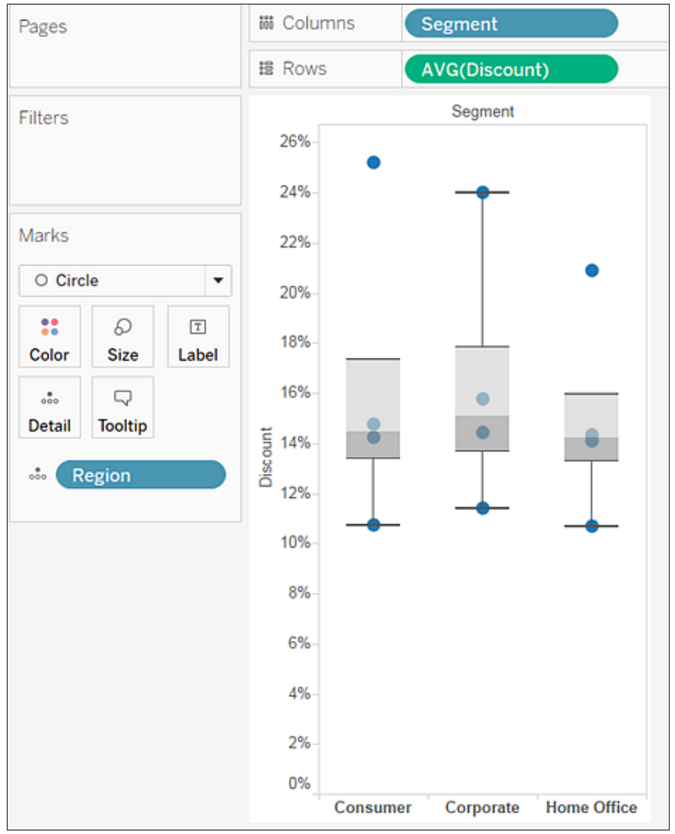
C. To closely monitor and benchmark the performance of a metric against customized benchmark levels

D. To filter and sort data based on specific criteria

Box Plot

Box Plot

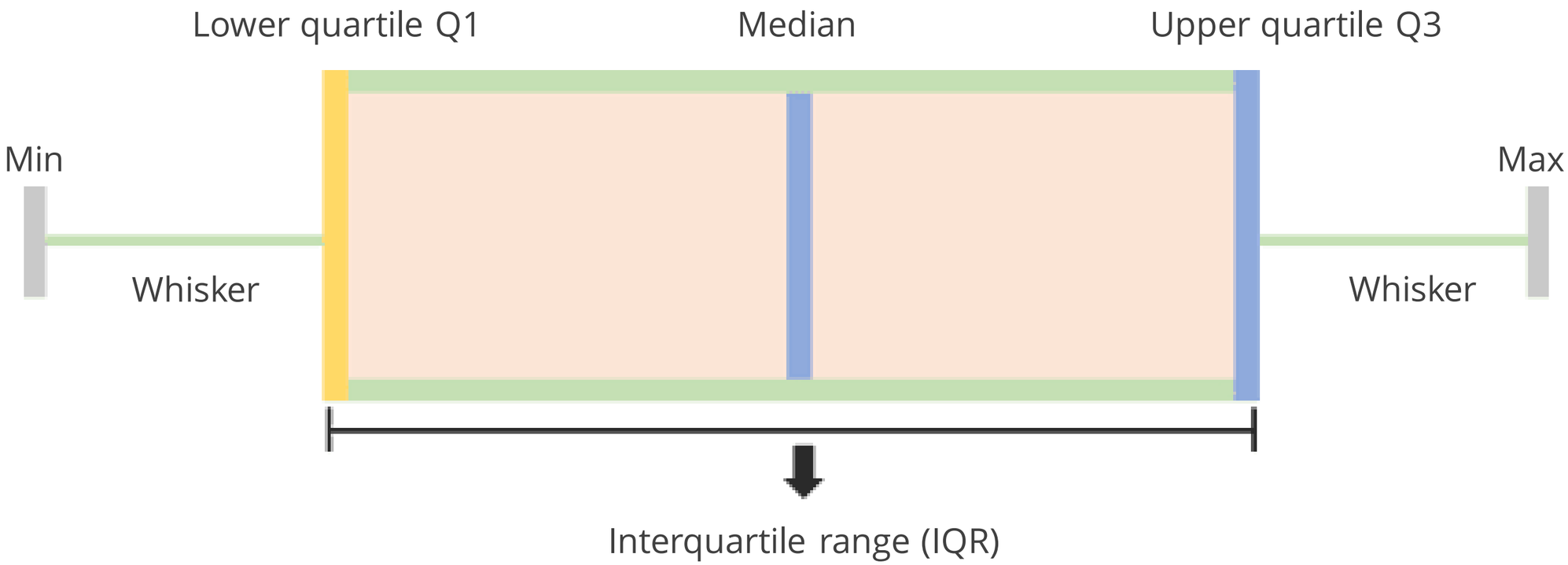
It is a graph that indicates how the values are spread in the dataset.



Box Plot is also known as box-and-whisker plot.

Box Plot

The box plot provides a clear visualization of data distribution, highlighting key statistical measures like the median, quartiles, and range.

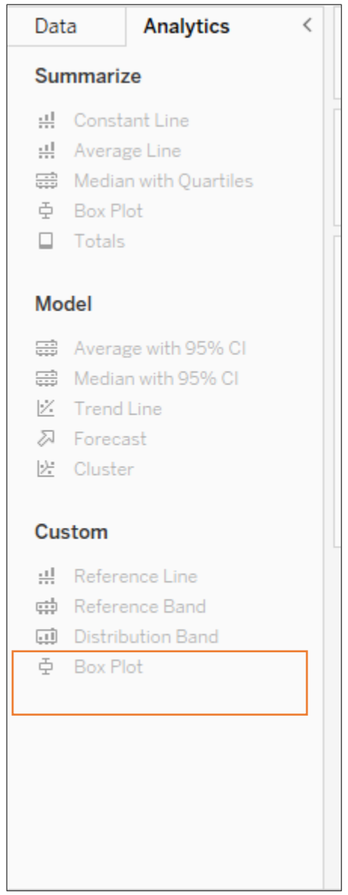


Box Plot

Box Plot in Tableau can be created using:

1. Analytics pane
2. Edit Reference Line Window
3. Show Me window (Box and Whiskers plot option)

1



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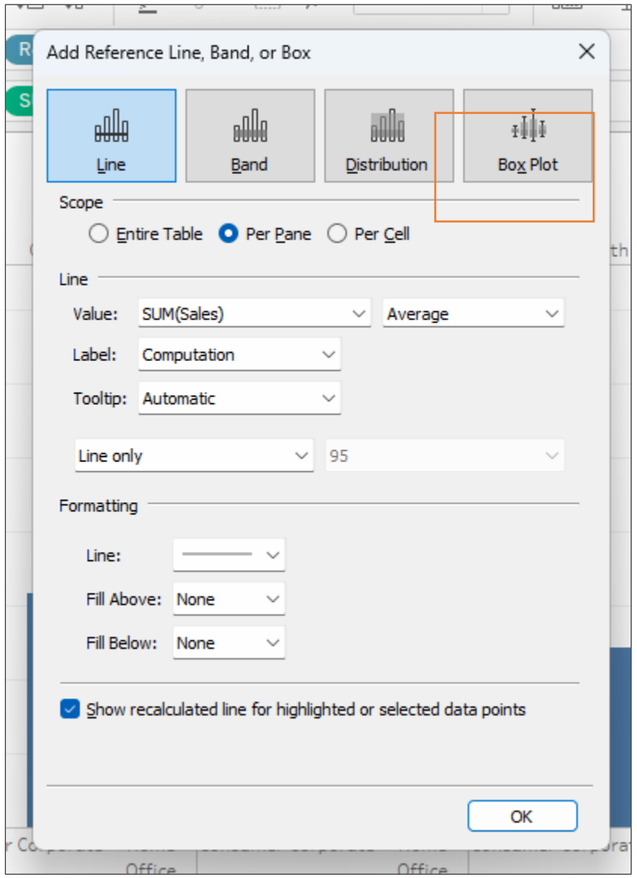

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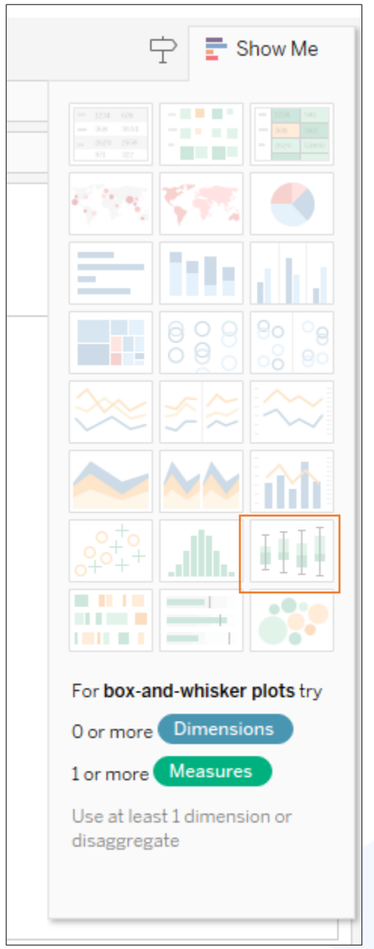


Demo: Box Plot

Duration: 15 minutes

Demonstrate how to use Box Plot.

DEMONSTRATION

Quick Check

Which option in Tableau creates a boxplot?

A. Analytics pane

B. Edit Reference Line window

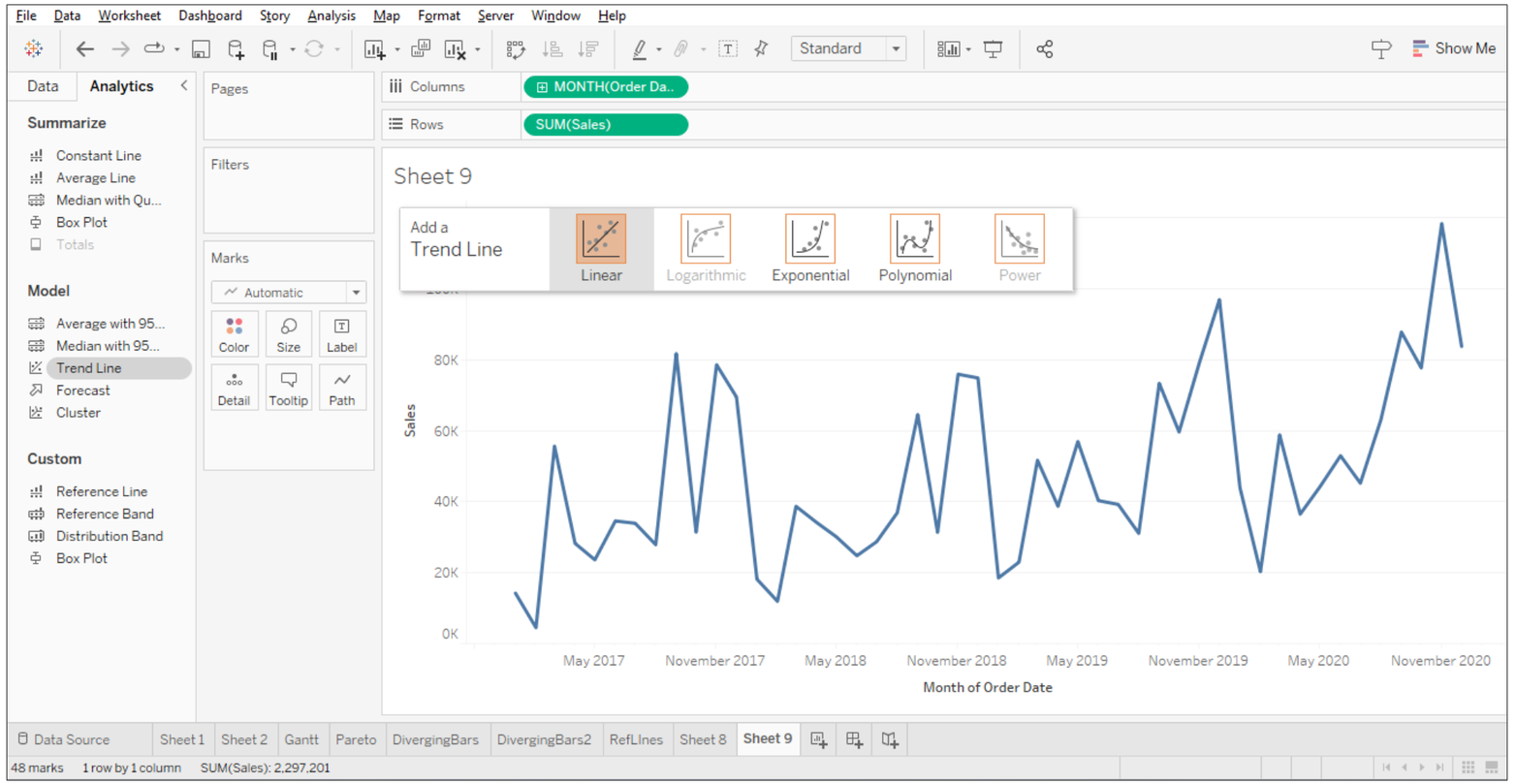
C. Show Me window (Box and Whiskers plot option)

D. All of the above

Trend Line and Forecast Line

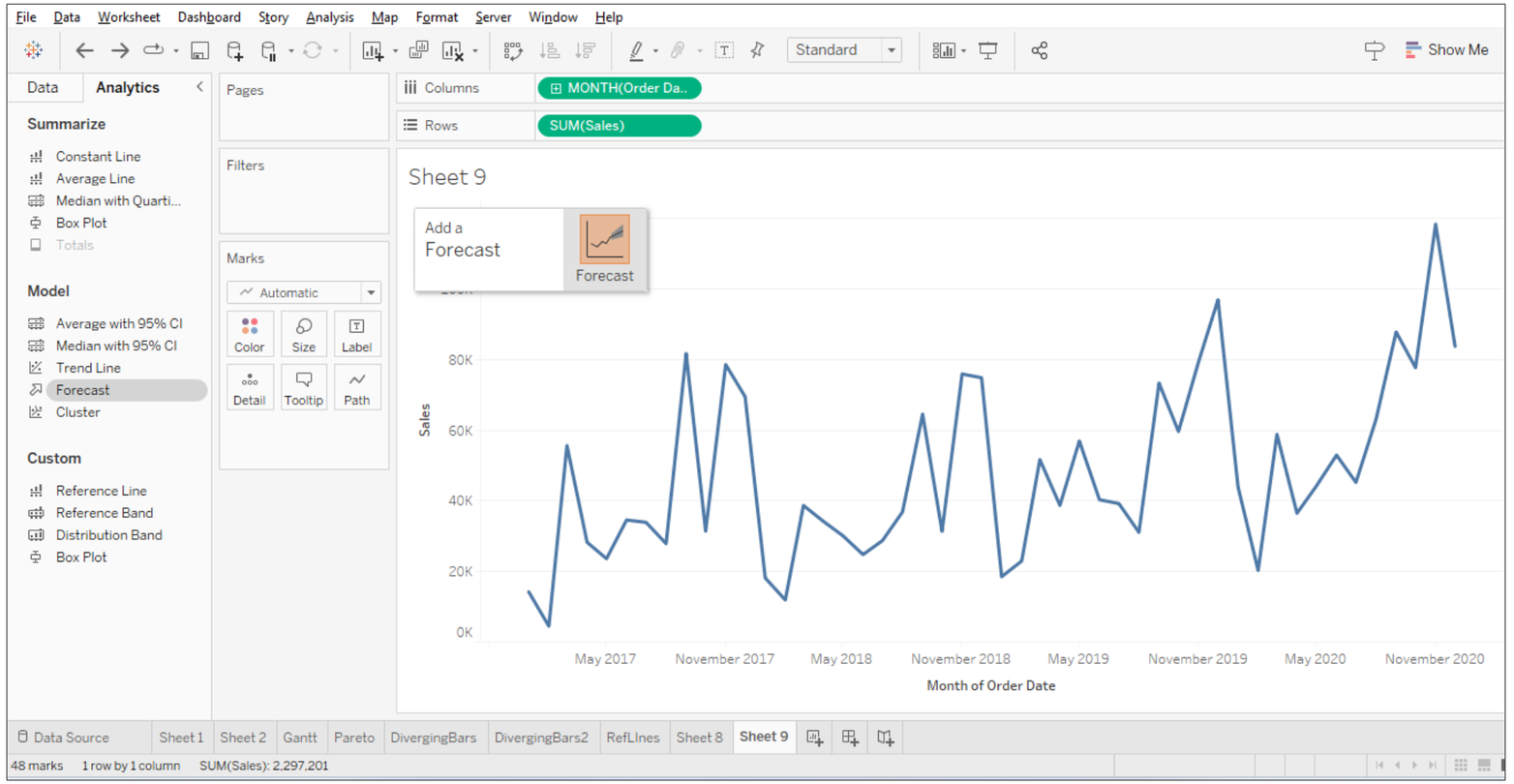
Trend Line

It is a visual representation of the general direction or pattern of data points within a chart or graph.



Forecast Line

It refers to the process of predicting future values or trends based on historical data.



Demo: Trend Line and Forecast Line

Duration: 15 minutes

Demonstrate how to use Trend Line and Forecast Line.

DEMONSTRATION

Quick Check

What does a trend line in a graph generally represent?

A. The precise future values of data points

B. The variability of the data

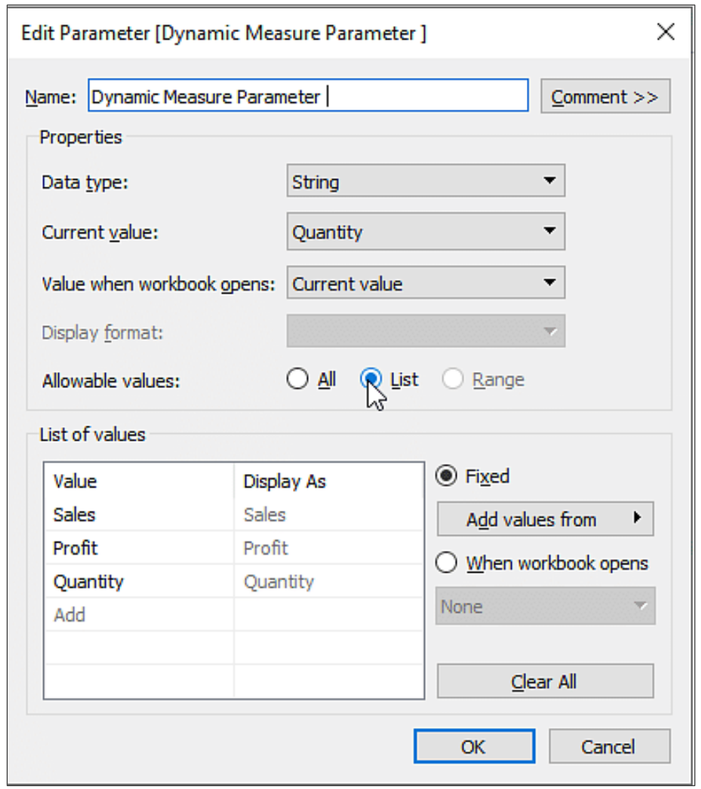
C. The underlying direction of the data over time

D. The highest and lowest values of the dataset

Parameters

Parameters

In Tableau, parameters are dynamic placeholders that act like global variables and can replace constant values in calculations, filters, and reference lines.



They allow users to input and adjust the values, thereby changing the view or calculations within the visualization interactively.

Demo: Parameters with Filters (Including Dynamic Headers)

Duration: 10 minutes

Demonstrate how to use Parameters with filters (including dynamic headers).

DEMONSTRATION

Demo: Parameters with Dimensions

Duration: 10 minutes

Demonstrate how to use Parameters with Dimensions.

DEMONSTRATION

Quick Check

In Tableau, how do parameters interact with dimensions?

A. Parameters allow users to directly modify dimension values for data analysis.

B. Parameters serve as placeholders for dynamic dimension filtering and data selection.

C. Parameters determine the hierarchy of dimensions in the visualization.

D. Parameters provide formatting options for dimension labels and text.

Demo: Parameters with Measure and Calculation

Duration: 10 minutes

Demonstrate how to use Parameters with Measure and Calculation.

DEMONSTRATION

Demo: Parameters with Histogram

Duration: 10 minutes

Demonstrate how to use Parameters with Histogram.

DEMONSTRATION

Guided Practice

Overview **Duration: 20 minutes**

In this exercise, you will learn to use the box plot and trend lines. Using real-world scenarios, the lesson emphasizes practical application. You will explore how join box plots and trend lines can effectively summarize data. The hands-on approach aims to develop proficiency in using them for efficient decision-making.

Key Takeaways

- Tableau's Analytics Pane adds dynamic statistical analyses, trends, and forecasts to visualizations effortlessly.
- Reference Lines and Bands highlight specific points or ranges in Tableau visualizations for insightful analysis and decision-making.
- Tableau's Distribution and Box Plot features visualize data spread, central tendency, and key statistics like median and quartiles.
- Parameters in Tableau dynamically alter values within visualizations, promoting interactivity and deep data analysis without creating multiple static views.

Practice Project

Exploring Sales Trends and Forecasts with Tableau

In this project, you will delve into the Analytics Pane and Parameters functionality in Tableau using the Superstore dataset. Through hands-on exploration, you will gain valuable experience in utilizing features such as reference lines, reference bands, distribution analysis, box plots, trend lines, forecasting, and parameter controls with various data dimensions and measures. By completing this project, you will develop a deeper understanding of how to analyze and visualize sales data effectively using Tableau.

PRACTICE PROJECT

Additional Resources

- Find Clusters in Data
- How Forecasting Works in Tableau

Q&A