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Tableau 10

Using Analytics to Analyze Data

What's In It For Me

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

- Add Reference Lines, Bands, and Distribution
- Describe forecasting
- Understand trend lines and trend models
- Perform drag and drop analytics
- Understand how to use the statistical summary card
- Explore instant analysis

Using Analytics to Analyze Data

Topic 1: Adding Reference Lines, Bands, and Distribution

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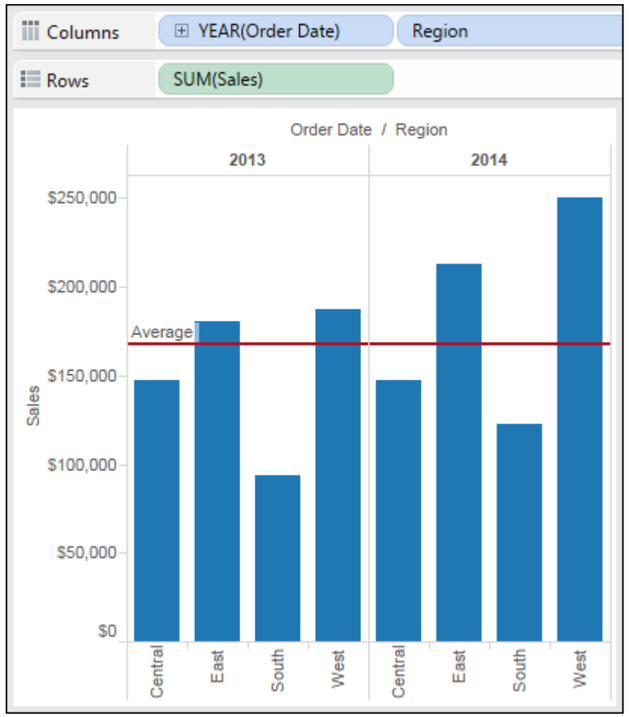
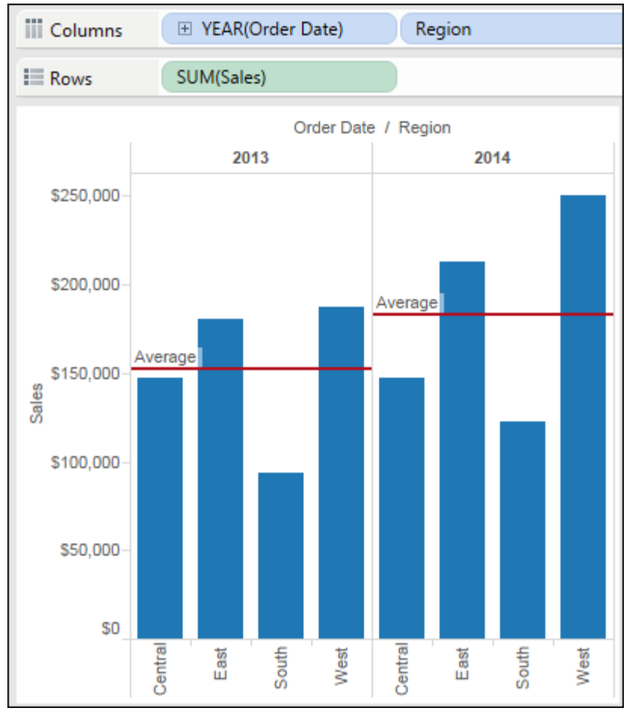
Adding Reference Lines

A Reference line highlights a specific value on a continuous axis in the view. A Reference line can be based on a constant or a computed value on the axis.

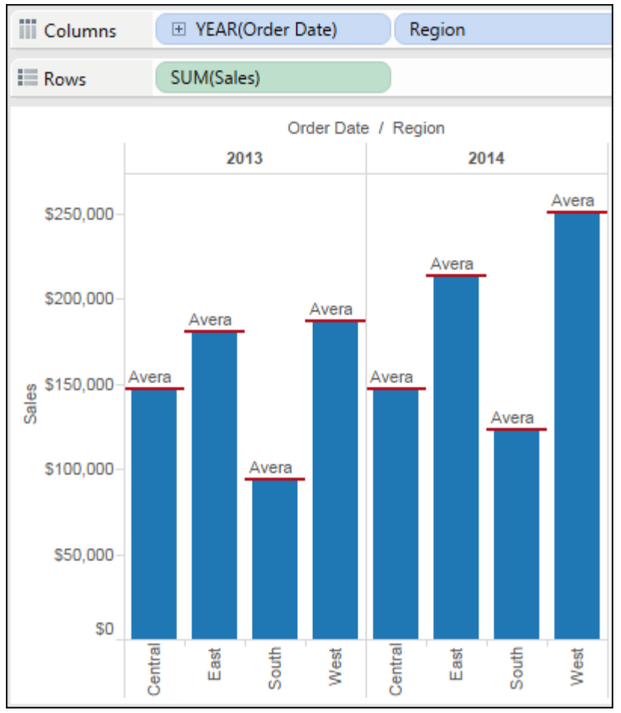
In these examples, it helps the user understand if the bars in the view are above or below average:



Entire Table



Per Pane



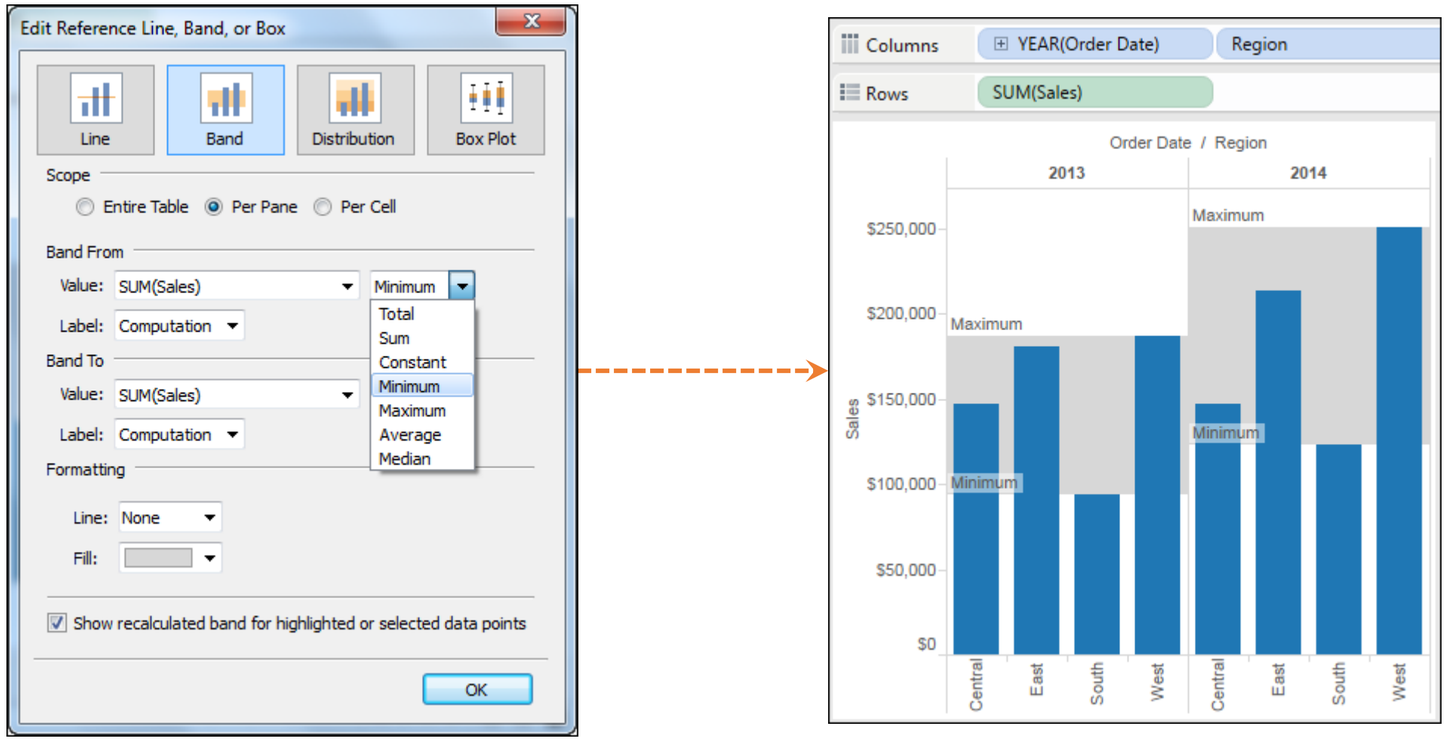
Per Cell

Adding Reference Bands

A Reference Band highlights a specific area on a continuous axis in the view.

- The start and end points can be based on constant or computed points on the axis.
- These points can be controlled dynamically by a parameter.

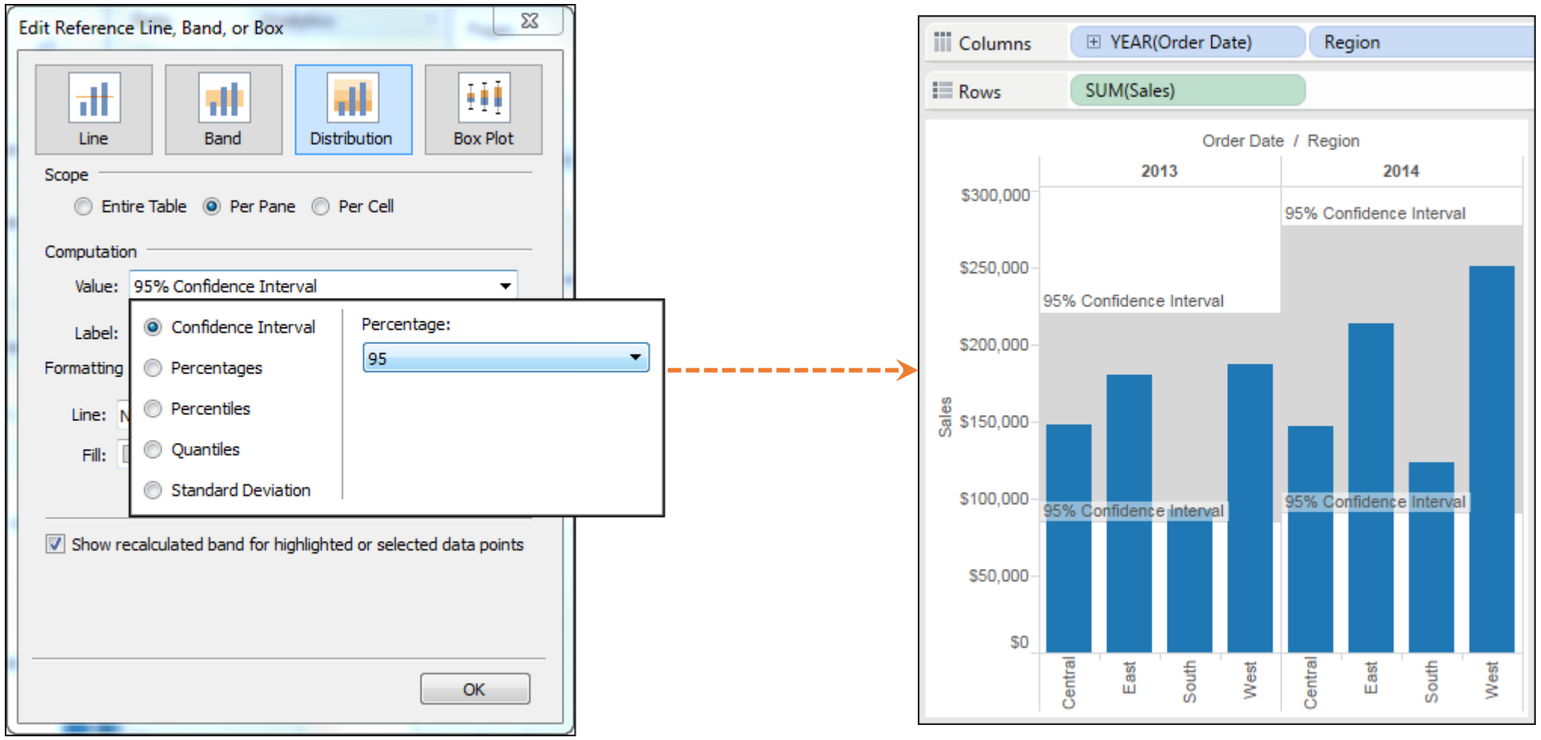
In this example, the reference band helps the user understand the range of the data:



Adding Reference Distribution

A Reference distribution adds a gradient of shading to visualize the distribution of values along the axis. Distributions can be defined by confidence interval, percentage, percentile, quantile, or standard deviation.

In this example, the reference distribution helps the user understand the distribution of the data:



Use Case 1

Genelia's company intends to launch new stores in selected high-performing regions.

For this, she needs a visualization depicting the category sales in each region.

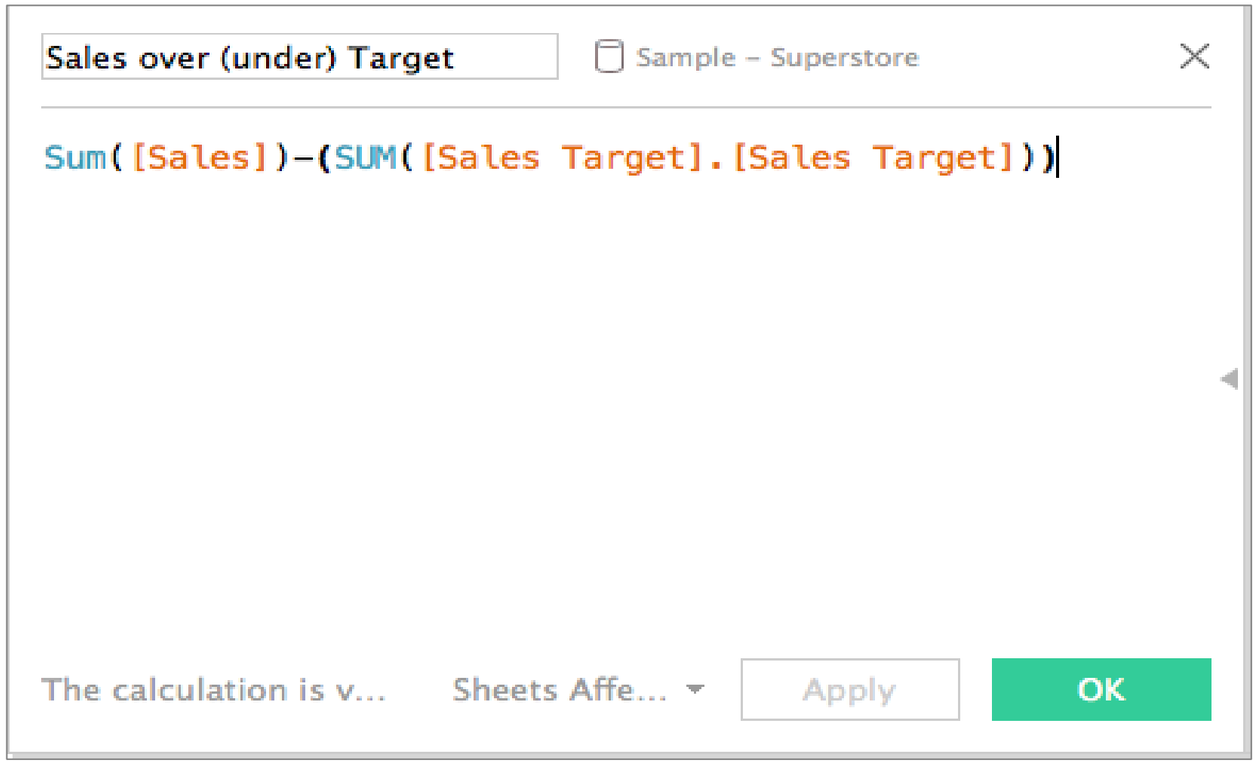
Based on this visualization, she can focus on the product categories meeting the average sales targets for their respective regions.

The monthly sales vs. forecast sales report is also needed to determine the right month in the forthcoming year to launch the store.

Use Case 1: Solution

Genelia's first step was to create a calculated field to show the difference between the sales and the sales target.

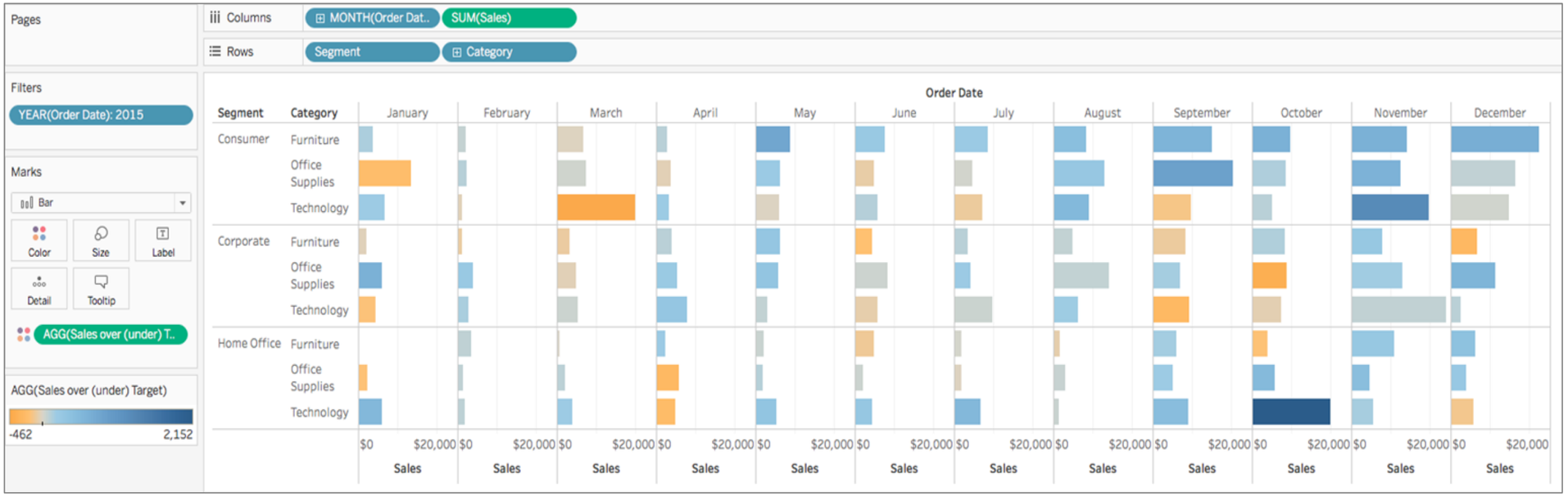
To do this, she blended the data from the Sample - Superstore data source and the Sales Target data source:



Use Case 1: Solution

She then created a bar chart that showed the sales by segment, category, and month, for 2015.

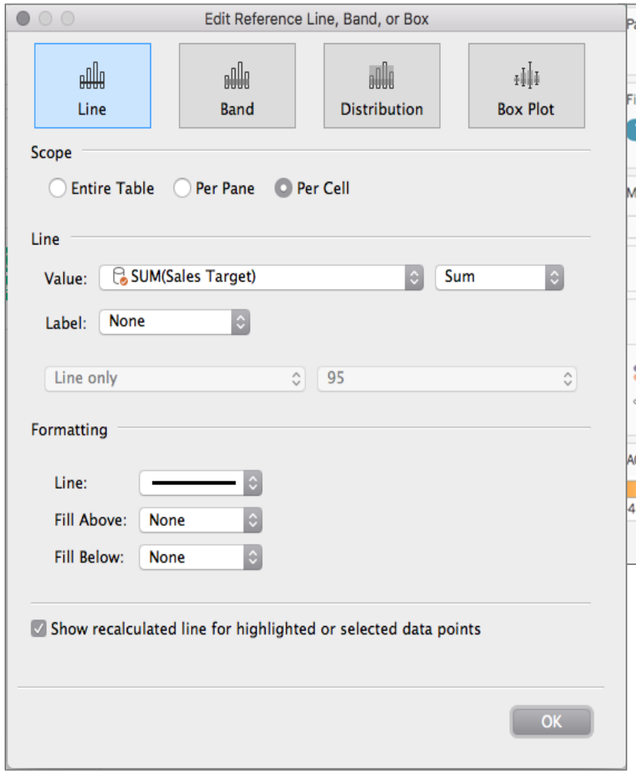
She used the calculated field to color the bars to indicate the amount above/below the target.



Use Case 1: Solution

She also added a Reference line for the sales target for each segment, category, and month.

Based on this visualization, Genelia might recommend the promotion of technology products over Home Office products in October, Technology products over Consumer products in November, and Office supply products over Customer products in September.



Using Analytics to Analyze Data

Topic 2: Forecasting

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Forecasting

USING FORECASTING

Tableau can forecast quantitative time-series data based on your historic data. Forecasting provides an estimate of what will happen in the future based on your historical data.

1. Forecasting is done using exponential smoothing models.

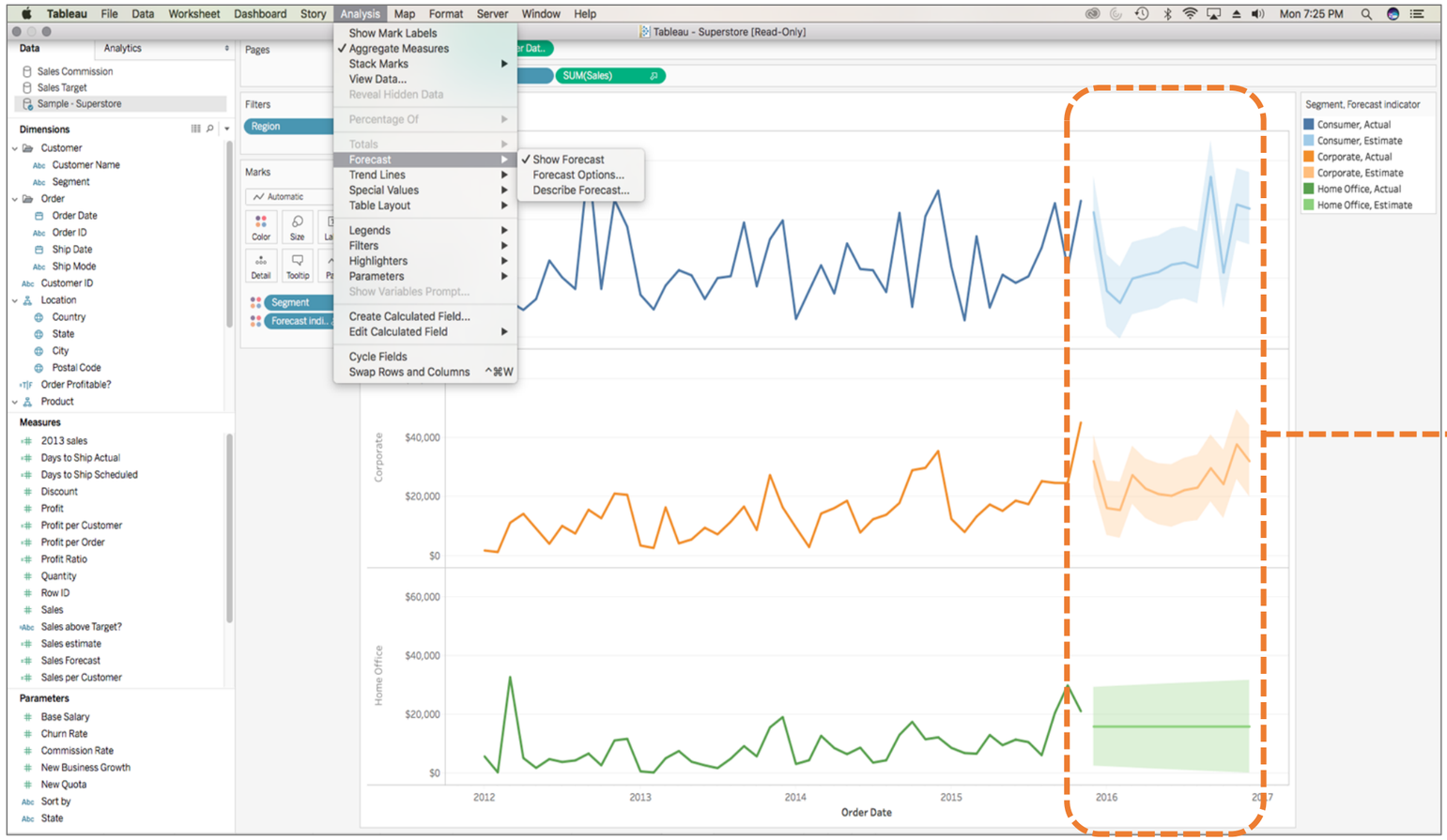
2. Smoothing models capture the evolving trend of your data and extrapolate them into the future.

3. To enable forecasting, you require at least one date field and one measure in your view.

Forecasting

EXAMPLE

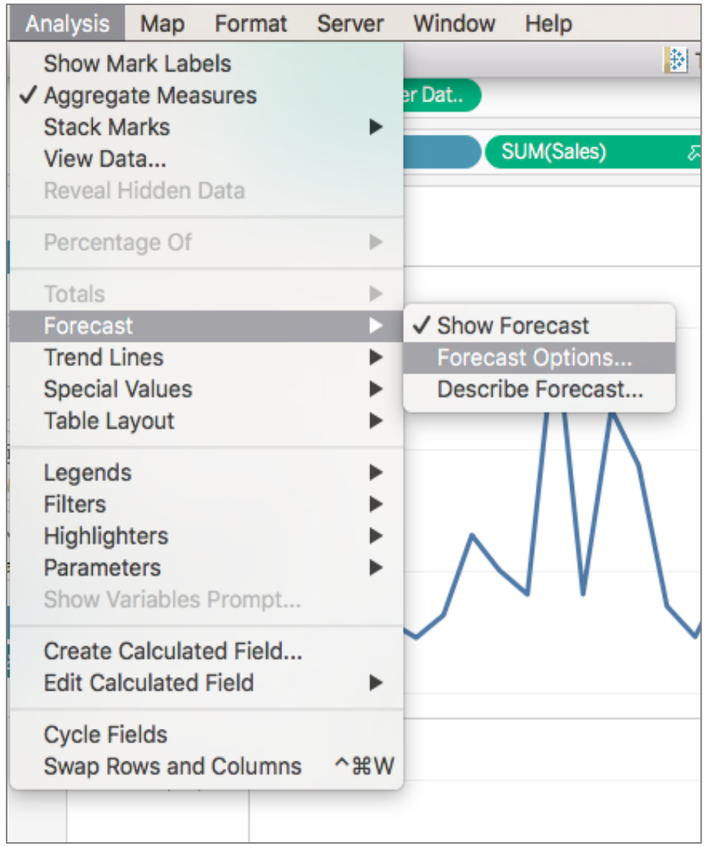
In this example, sale of consumer products (blue line) is forecasted to increase, while sale of Home Office products (green line) is expected to be flat:

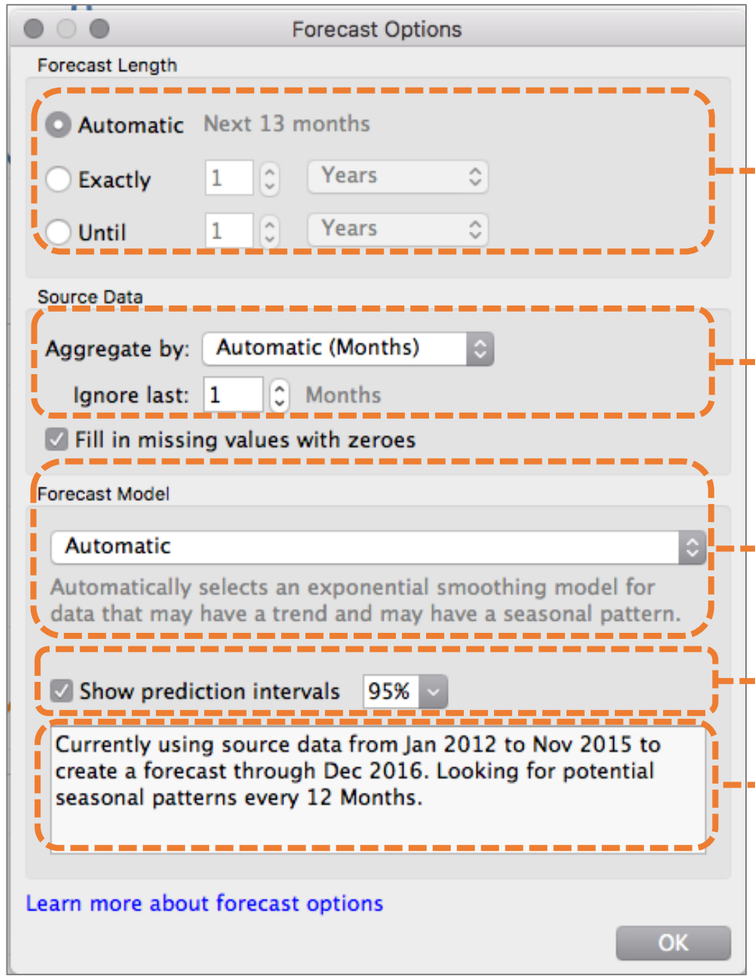


Forecasting

FORECAST OPTIONS

If the automatically generated forecast is not a good fit for the data, the user can modify the type of forecast by selecting “Forecast Options” from the Analysis menu:





How far in the future to forecast

How to aggregate data (years, days)

What kind of a forecast model to use

What confidence intervals to use

Description of forecast model options

Demo—Working with Reference Lines, Bands, and Forecasting

Demonstrate how to create a vertical bar chart with region, category and sales, add and edit a reference line, create a line chart, and enable forecasting.

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Using Analytics to Analyze Data

Topic 3: Trend Lines and Trend Models

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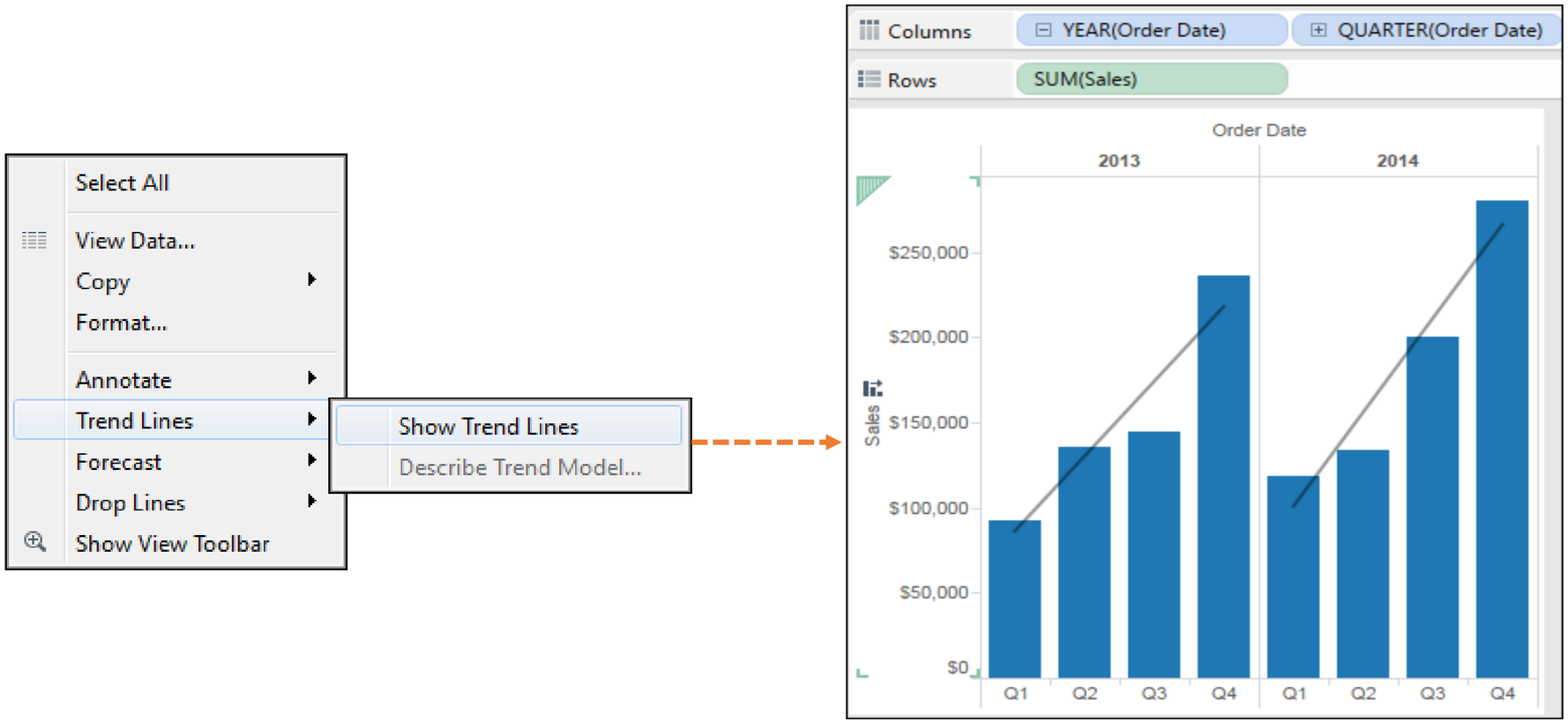
Trend Lines and Trend Models

TREND LINES

Trend Lines and Trend Models

ENABLING TREND LINES

A trend line can be enabled either by right-clicking the view or from the Analytics pane.



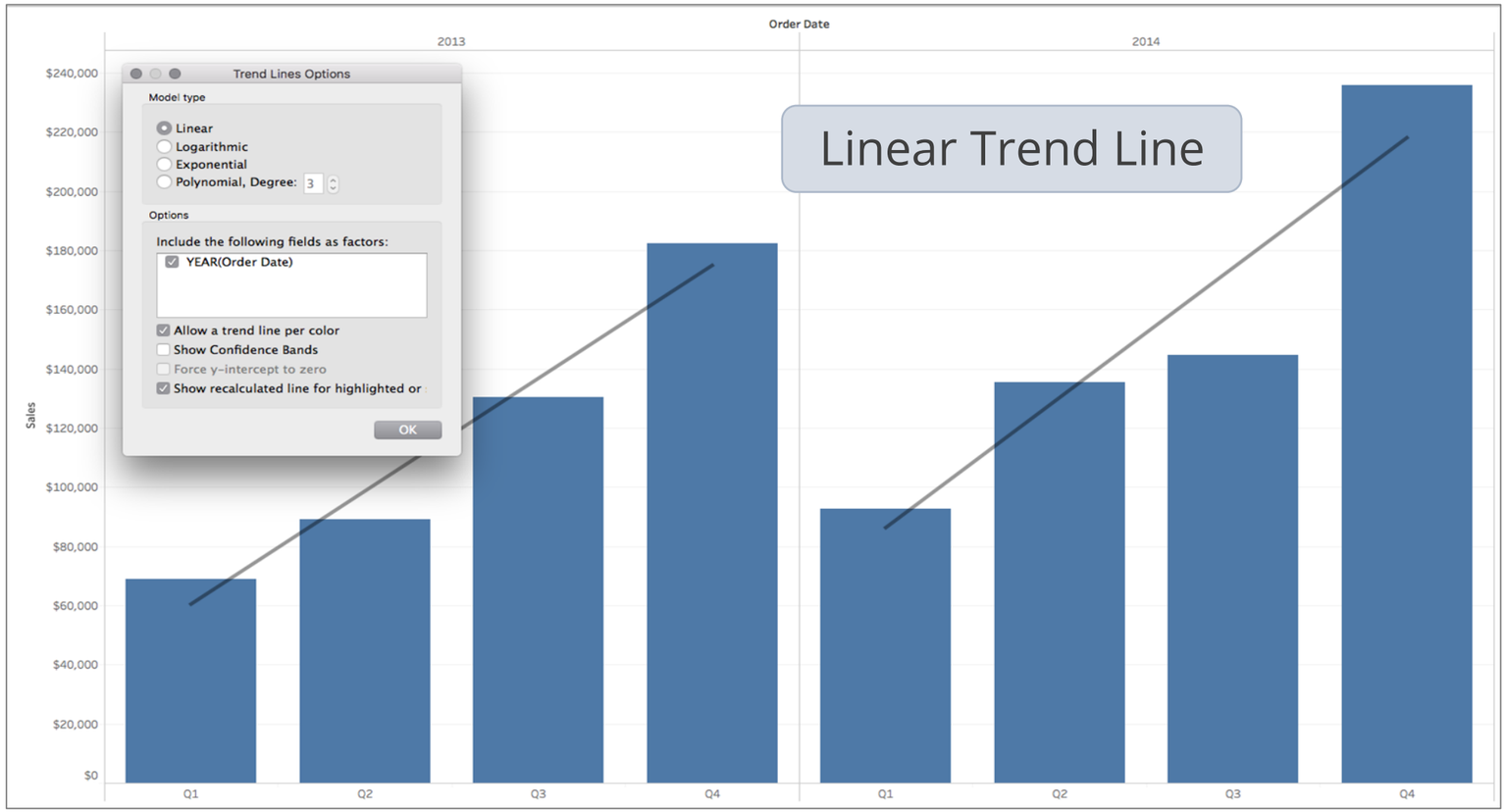
Trend Lines and Trend Models

TREND MODELS

Trend models depict how the trend lines are computed and plotted in the view.
The moment you add a trend line to your view, a statistical model is built.
Each trend line in the view visually represents a linear regression statistical model.

A trend line can be based on the following trend models:

- Linear Trend Line
- Logarithmic Trend Line
- Exponential Trend Line
- Polynomial Trend Line

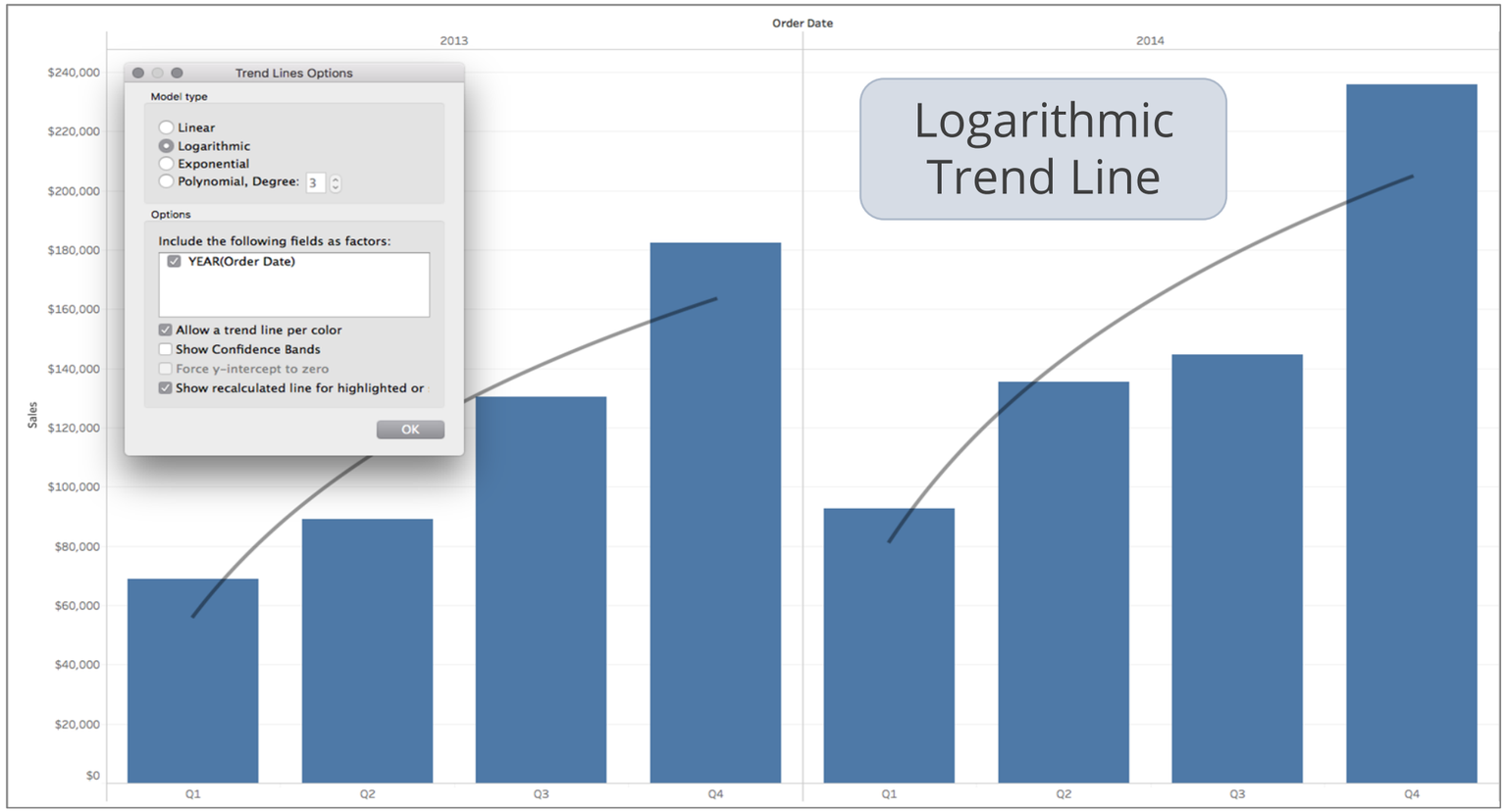


Trend Lines and Trend Models

TREND MODELS

A trend line can be based on the following trend models:

- Linear Trend Line
- Logarithmic Trend Line
- Exponential Trend Line
- Polynomial Trend Line

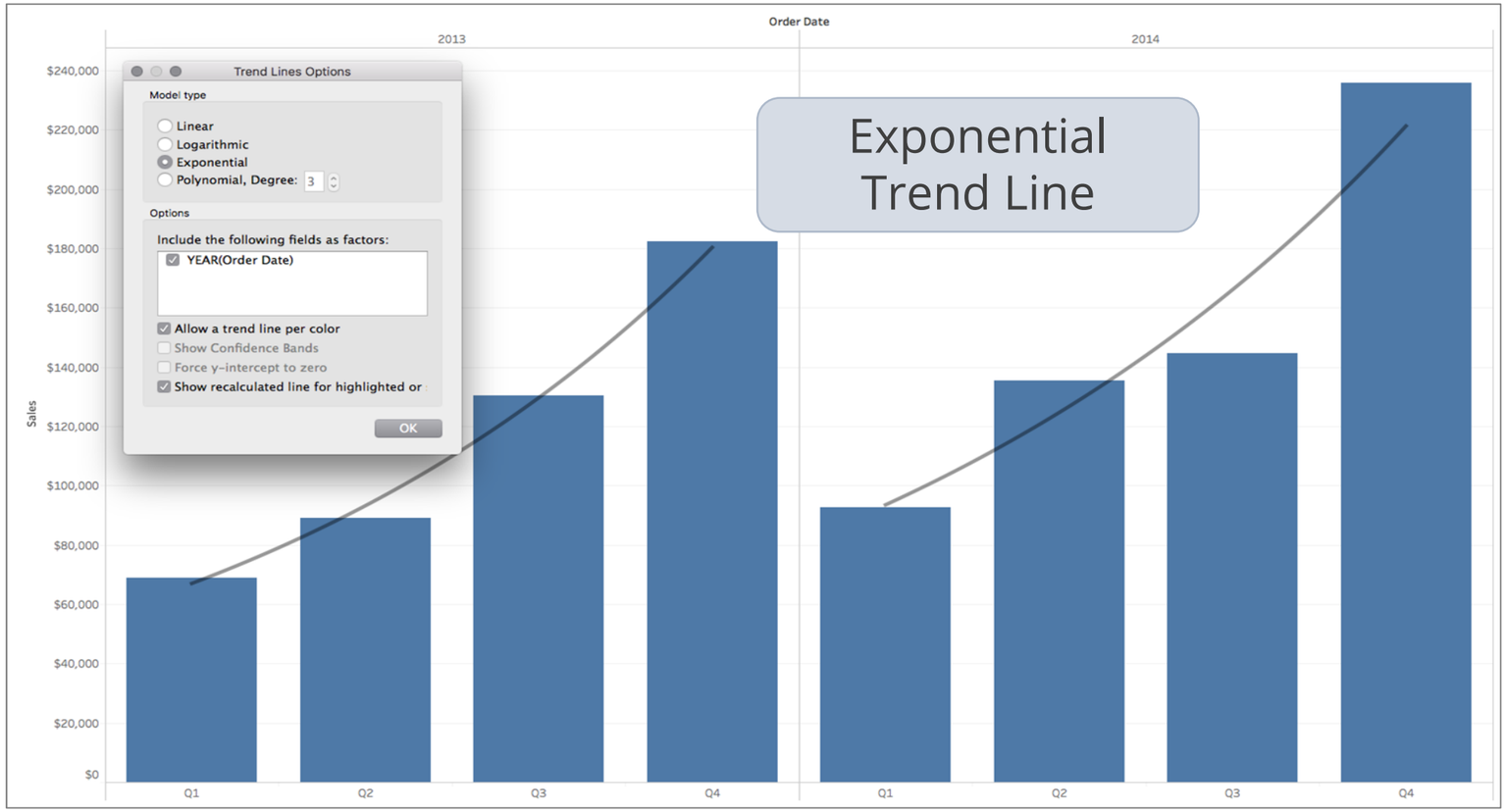


Trend Lines and Trend Models

TREND MODELS

A trend line can be based on the following trend models:

- Linear Trend Line
- Logarithmic Trend Line
- **Exponential Trend Line**
- Polynomial Trend Line

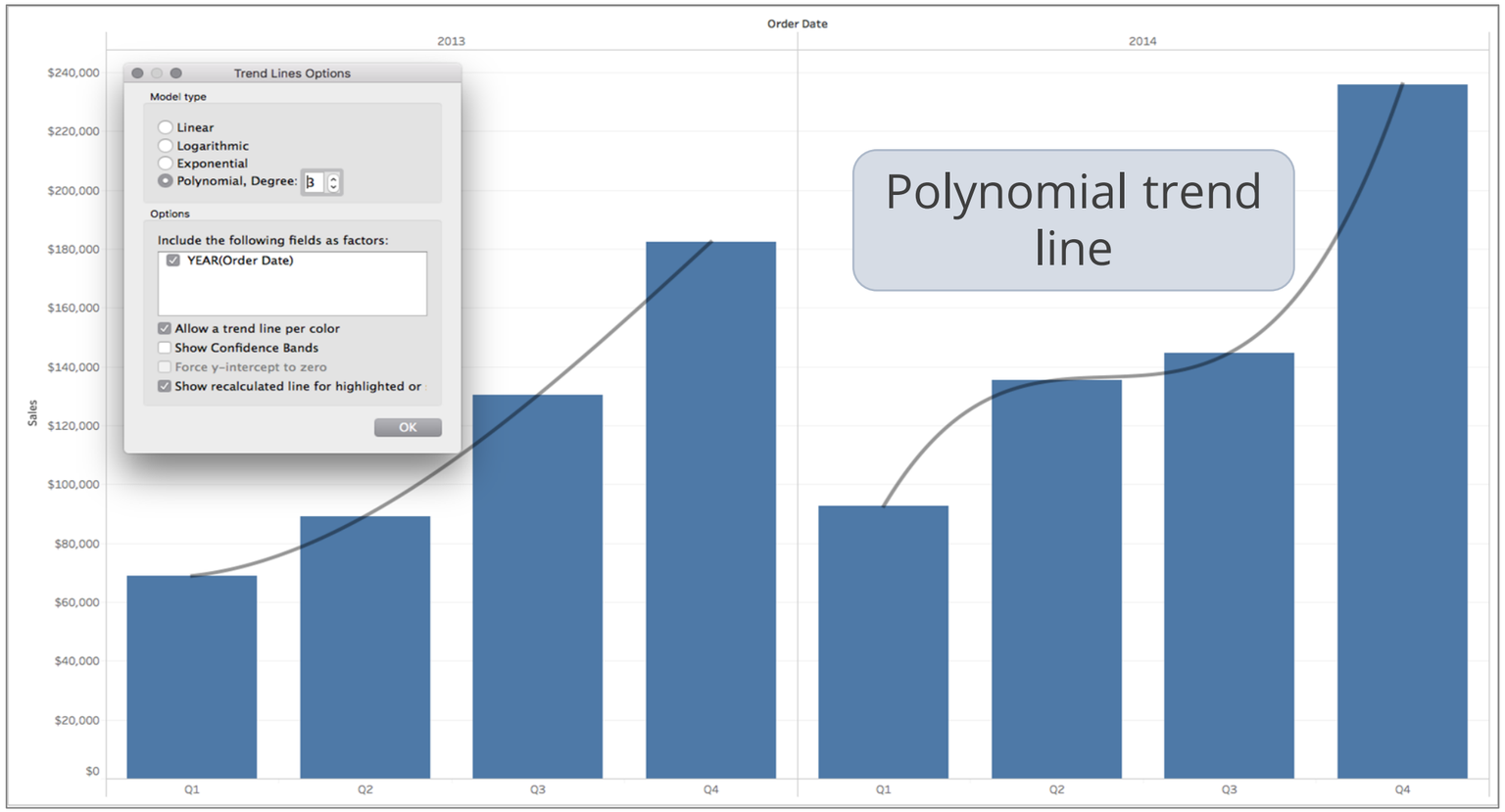


Trend Lines and Trend Models

TREND MODELS

A trend line can be based on the following trend models:

- Linear Trend Line
- Logarithmic Trend Line
- Exponential Trend Line
- **Polynomial Trend Line**

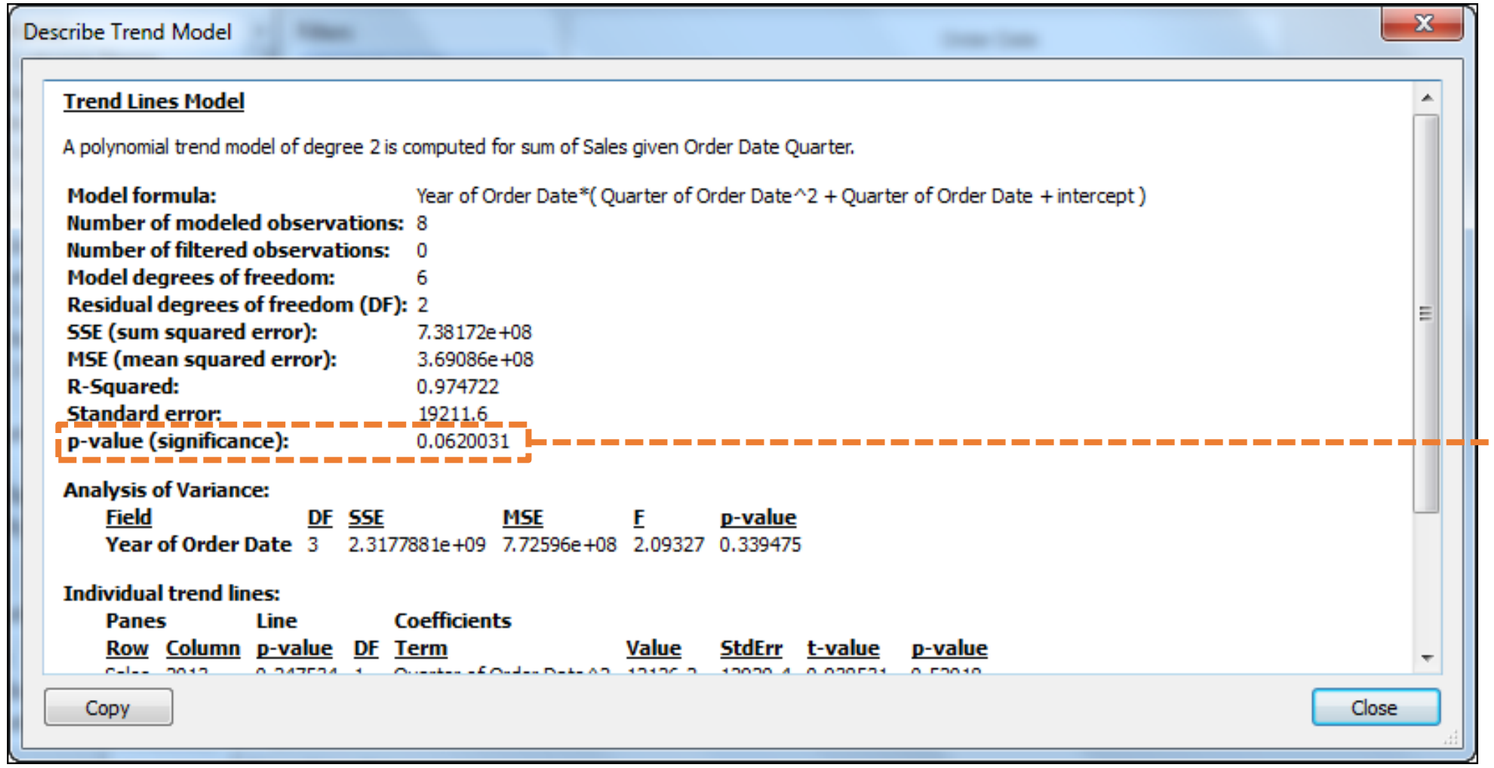


Trend Lines and Trend Models

DESCRIBE TREND MODEL WINDOW

The Describe Trend Model Window gives you the entire statistical summary about the trend model.

You can test the significance of a Trend Line Model through the Describe Trend Model Window.



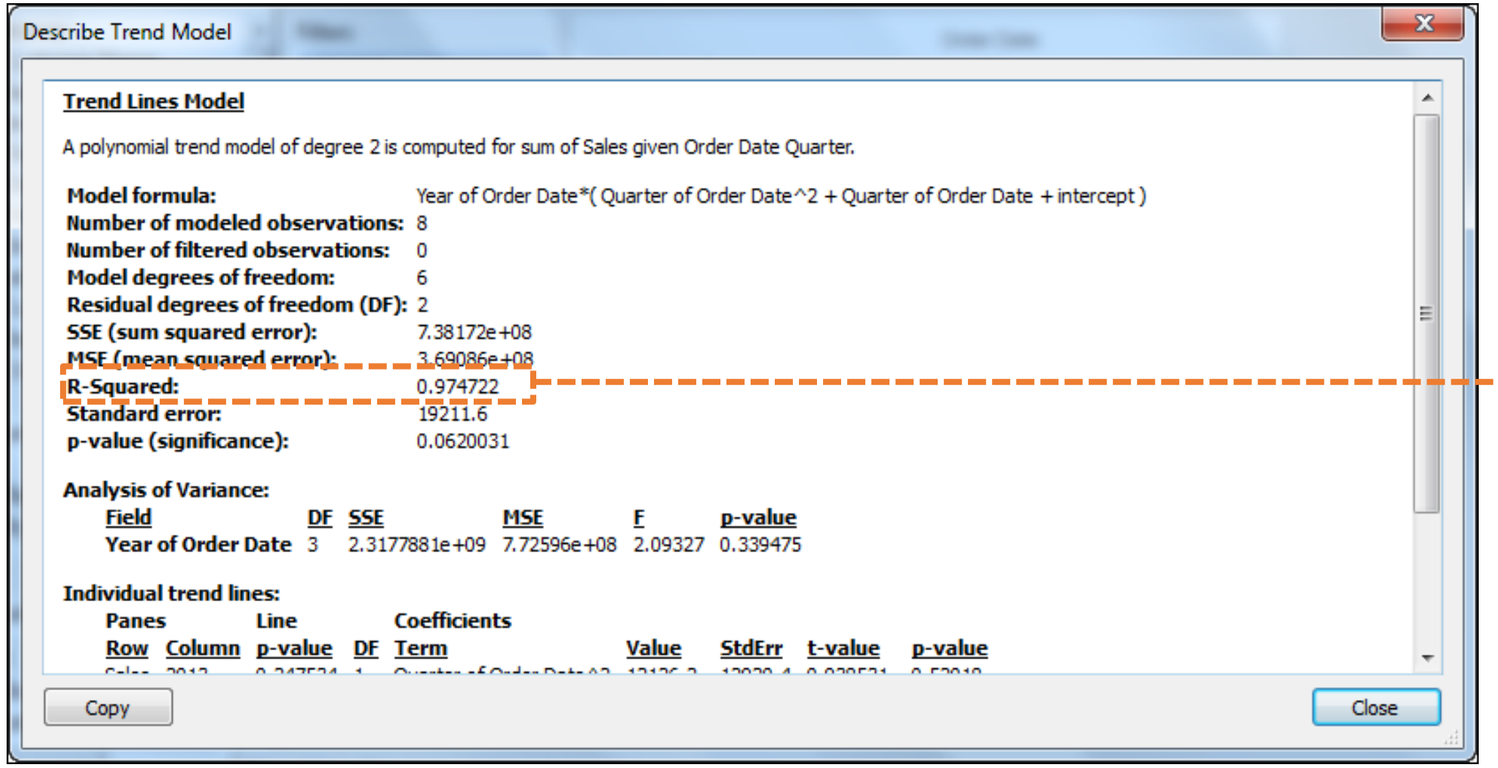
The smaller the value of p (significance), the more significant the model.

Trend Lines and Trend Models

DESCRIBE TREND MODEL WINDOW

The Describe Trend Model Window gives you the entire statistical summary about the trend model.

You can test the significance of a Trend Line Model through the Describe Trend Model Window.



The value of R-Squared should be closest to one.

Use Case 2

Genelia wants to analyze the overall performance of her enterprise.

For this, she needs to modify the previously created Monthly Sales vs. Forecast Sales view and add a trend line to depict the behavior of the data.

Let’s understand this through a demonstration!

Demo—Working with Trend Lines

Demonstrate how to open workbook, modify sheets, hide forecasting, add a trend line, change the trend model, and disable the confidence bands

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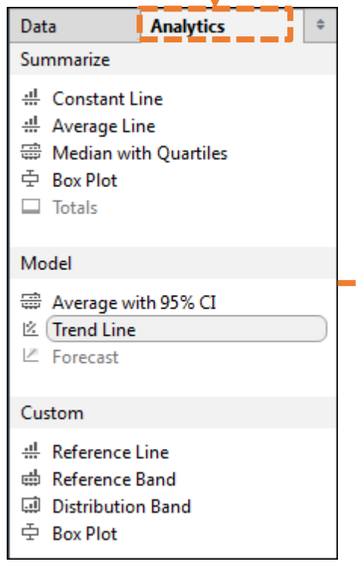
Using Analytics to Analyze Data

Topic 4: Performing Drag and Drop Analytics

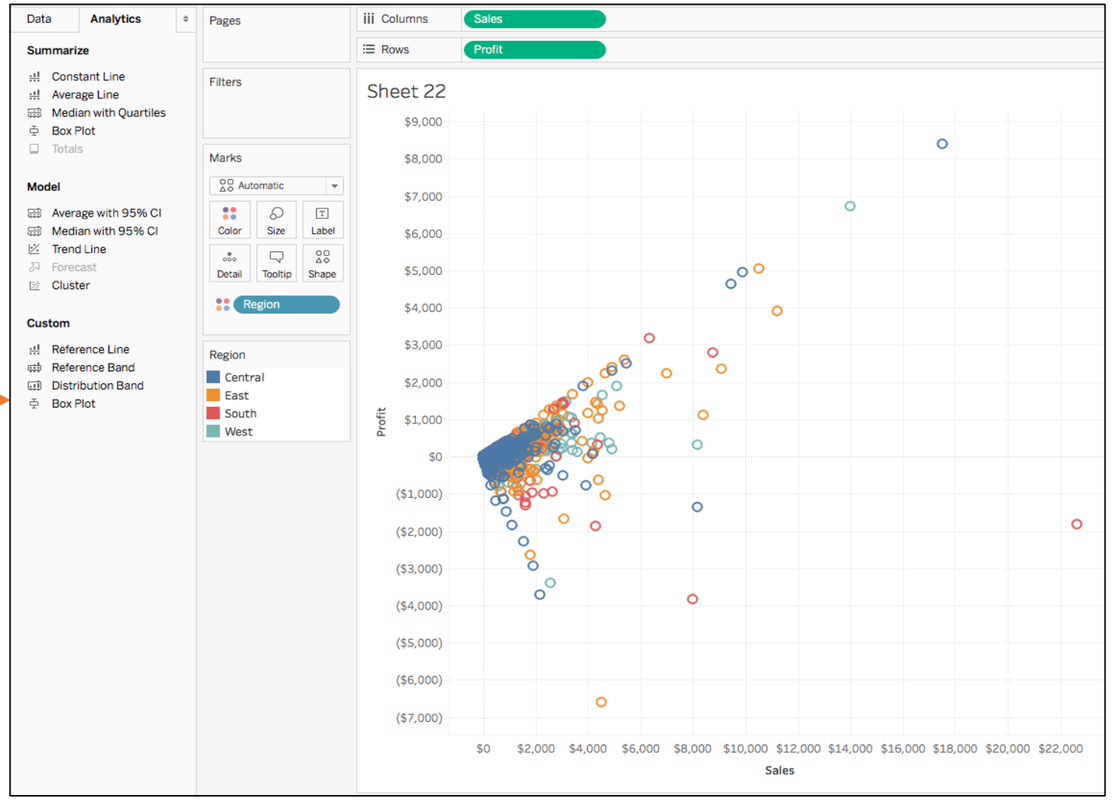
Perform Drag and Drop Analytics

The Analytics Pane enables you to drag any analytical feature to the view.

In Tableau 9.0 and above, the analytics pane is an added feature that appears to the left of the Tableau workspace.



To add any analytics, you need to drag the item from the analytics tab to the view.



Using Analytics to Analyze Data

Topic 5: Define Statistical Summary Card

Working with Statistical Summary Card

The Summary Card can be enabled from the Worksheet menu in the Tableau workspace.

Defining Statistical Summary Card

The Summary Card has some default statistics

- Sum
- Average
- Maximum
- Minimum
- Median

The Summary Card is used to view information about a selection or all of the data in a view.

The Summary Card shows some additional statistics

- Standard Deviation
- First Quartile
- Third Quartile
- Skewness
- Excess Kurtosis

Using Analytics to Analyze Data

Topic 6: Explore Instant Analysis

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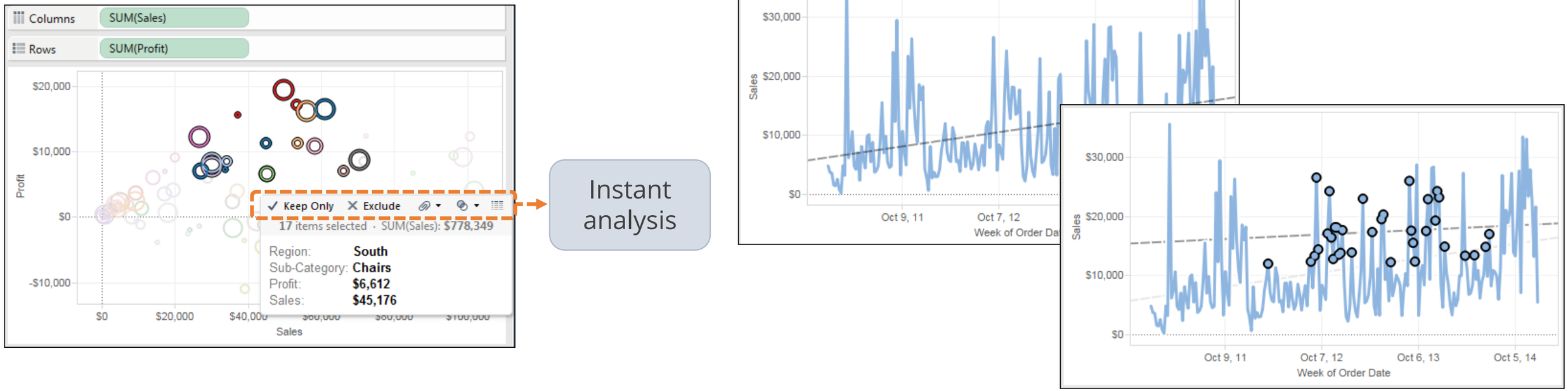
Instant Analysis

While the Summary Card presents statistics about some (or all) of the marks in a view, you can also instantly analyze a specific mark or a set of marks in a view through Instant Analysis.

When you select marks in a view, the Tooltip window helps you with a set of options to perform further detailed analysis with your data.

On selecting a mark or a set of marks, Tableau instantly reflect the statistics used in the view.



Quiz

TABLEAU DESKTOP 10

QUIZ
1

_____ enable shades behind the marks in the view.

a. Reference Bands

b. Reference Lines

c. Reference Distributions

d. Box Plots

QUIZ
1

_____ enable shades behind the marks in the view.

a. Reference Bands

b. Reference Lines

c. Reference Distributions

d. Box Plots

The correct answer is **a.**

Reference Bands enable Shades behind the marks in the view.

QUIZ
2

_____ depict the behavior of the data in the view.

a. Forecasts

b. Reference Lines

c. Reference Bands

d. Trend Lines

QUIZ
2

_____ depict the behavior of the data in the view.

a. Forecasts

b. Reference Lines

c. Reference Bands

d. Trend Lines

The correct answer is **d.**

Trend Lines depict the behavior of the data in the view.

QUIZ
3

The _____ is used to view information about a selection or the entire data source.

a. Marks Card

b. Data Source Page

c. Summary Card

d. Analytics Pane

QUIZ
3

The _____ is used to view information about a selection or the entire data source.

a. Marks Card

b. Data Source Page

c. Summary Card

d. Analytics Pane

The correct answer is **c.**

The Summary Card is used to view information about a selection or the entire data source.

QUIZ
4

_____ can be used to predict future data based on the evolving trend of your data.

a. reference distribution

b. trend models

c. forecasting

d. instant analysis

QUIZ
4

_____ can be used to predict future data based on the evolving trend of your data.

a. reference distribution

b. trend models

c. forecasting

d. instant analysis

The correct answer is **c.**

For predicting future data based on evolving trend of your data, you will use forecasting.

QUIZ
5

The summary card, by default, includes the following statistics about the data within the view:

a. Sum

b. Average

c. Maximum

d. All of the above

QUIZ
5

The summary card, by default, includes the following statistics about the data within the view:

a. Sum

b. Average

c. Maximum

d. All of the above

The correct answer is **d.**

All of the statistics listed above are included in the Summary Card by default. Other statistics can be added to the card, such as Standard Deviation, Skewness, etc.

Guided Exercises

Tableau DESKTOP 10

Guided Exercise 1—Problem Statement

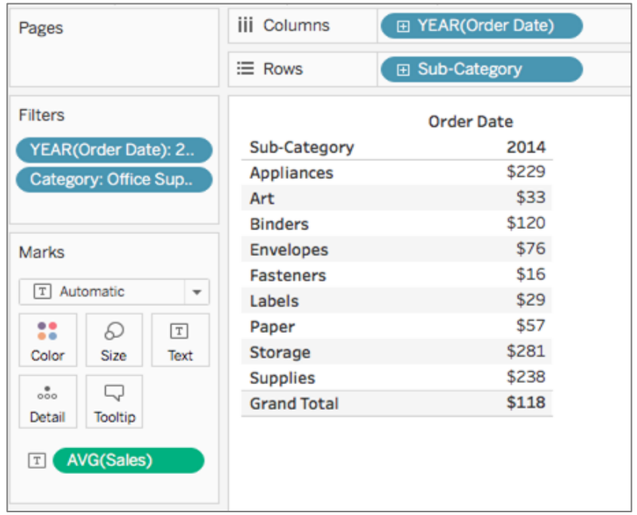
Customer loyalty programs are effective at improving customer retention. Michael James, the production manager of a well-known retail store, needs to devise a loyalty program to increase customer retention and improve profitability. For this, he needs to analyze the sales of each subcategory so that he can focus on subcategories not meeting the average sales for each category.

- What is the average sales for Office Supplies category in 2014?
  (Hint-Add a filter for Year 2014.)

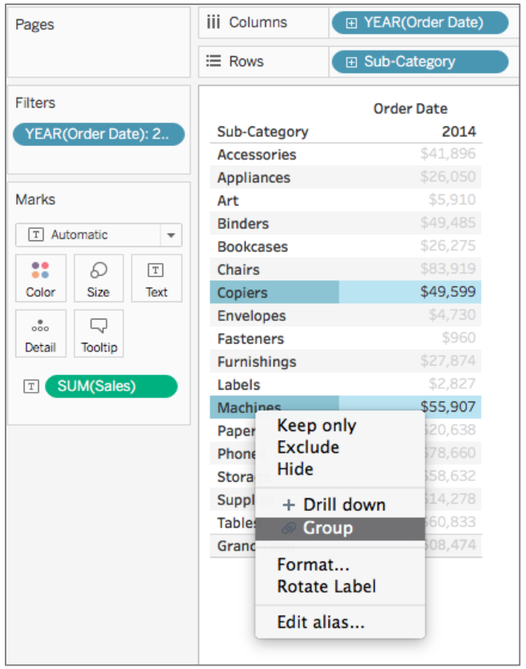
- What is the combined sales for Copiers and Machines? Is it greater than the average sales of the Technology category?
  (Hint-Create a group for Copier and Machines.)

Guided Exercise 1—Solution

To find the average sales for Office Supplies, create a view showing sales for 2014. Then, filter the view to include Office Supplies only. Then, change the aggregation of the sales measure from sum to average. The answer is $118.



To find the combined sales of Copiers and Machines, create a view showing sales for 2014. Then select Copiers and Machines and right-click to group these two members together. The combined sales is $105,506.



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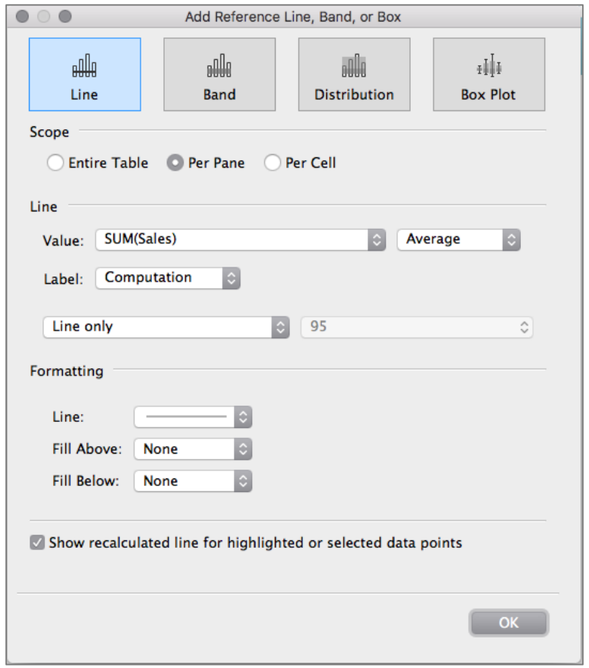
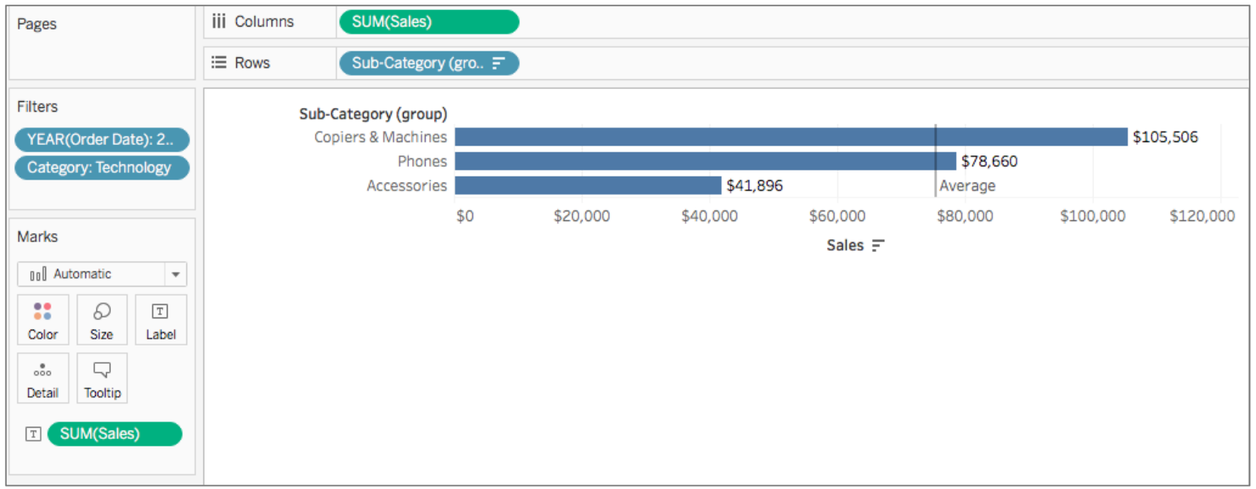
Guided Exercise 1—Solution

Finally, add a reference line to the axis to show the average sales for Technology:



The answer is yes - the combined sales of Copiers and Machines is higher than the average sales of Technology products:



Guided Exercise 2—Problem Statement

George Kelton, the CEO of a pharmaceutical company, wants to analyze the historical trends of his company's products and develop a forecast of future sales. He will then share the forecast with the Manufacturing division to ensure sufficient inventory will be available to fulfil the forecasted sales volume.

- What factors should George consider when developing his forecast model?
- What should George evaluate to determine the quality of the forecast model?

Guided Exercise 2—Solution

- What factors should George consider when developing his forecast model?

George should consider if there is seasonality in his sales data. For example, pharmaceutical sales may be higher in colder seasons when people are more likely to get sick. If there does not seem to be a seasonal impact on sales, George should consider modifying the forecast to not include seasonality.

George should also consider how much historical data to use for the forecast. If an event occurred that significantly changed the sales volume (such as an acquisition of another company or expansion into new markets), George should only include data from after that event, as the earlier data may impact the accuracy of the forecast.

- What should George evaluate to determine the quality of the forecast model?

George should back-test the forecast model to see if sales would have been predicted with a higher degree of accuracy if he had run the forecast the previous year. George should also review the forecast summary within Tableau to understand how Tableau rated the quality of the forecast. Then, George should change the options of the model and see if his changes increase the quality rating of the forecast in the forecast summary.

Key Takeaways

- A Reference Line, Band, or Distribution is used to mark a specific value, or region on an axis.
- Forecasting captures the evolving trends of your data and extrapolates them into the future.
- Trend Lines depict the behavior of the data in the view.
- The Analytics pane provides instant access to common analytic features like reference lines, trend lines, and forecasts.
- The Summary card is used to view information about a selection or the entire data source.

This concludes “Using Analytics to Analyze Data.”