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Free Training Transcript:  
Reference Lines

Welcome to this video on Reference Lines. You can download the Exercise workbook to follow along in your own copy of Tableau.

Reference lines do exactly what it sounds like they'd do – they add a point of reference to a view. Reference bands or boxes can also be added to shade a specific area or distribution in the view, and multiple reference lines can be added to the same chart.

## Adding Reference Lines

Adding a reference line to a view is quite easy. Click on the Analytics tab for a list of drag-and-drop options. We'll choose Reference Line, and have it broken down by Table. If we select specific marks in the view, the reference line will temporarily update to indicate the reference for just those marks.

## Reference Line Options

Let's remove this line and redo it, this time using Pane. If we like what comes out automatically, we can dismiss this dialog. However, there's a lot we can control here. The Analytics pane gives us the same options at the top. We'll go over Reference Lines, then look at the differences for the other options.

First is Scope. Scope is set to per pane, but can also be across the entire table or per cell. If we click Entire Table, we can see that the average line switched from three different lines, per Category, to a single average across the entire table.

Next, we can adjust the line itself. We'll make this a Median Profit line. Value lets us select which measure we want the line to be in reference to. Here, we have both Sales and Profit in the view, so we can select either of them. Let's change it to Profit. The default aggregation for the line is average, but we can change that, and here we'll go with median. Next is Label. Here we can set what shows as the label on the line. None is fairly self-explanatory. Value displays whatever the value aggregation of the measure is, so the actual numerical median of profit. Computation displays what the aggregation of the measure represents, so here it would be the words "Median Profit". Custom gives us the option to type in whatever we want, and the arrow to the side offers fields that can be inserted. We'll use <Value>: <Computation> of <Field Name>.

Whoops, I clicked OK, but I wasn't done. Let's get back to that dialog box – we can right click on the reference line itself (it helps to not be over a mark) and select "Edit". If we clicked Format instead, we'd be able to control the format of the line and label. But here in the dialog, we can do some basic formatting of the line, and we'll make it dotted. A

constant line can be brought out directly from the analytics pane. Here we're prompted for the value, and here we'll make it 500,000.

## Formatting Reference Lines

Formatting options were available by right clicking the reference line, but we can also control them by going to Format > Reference Lines. As you can see, there are a lot of options here.

We can also right click on the axis to bring up the edit and remove options, add another reference, or, if the field in the reference line isn't the main measure in the view, we can swap the fields. This can be handy when modifying views built by Show Me.

## Lines, Bands, Distributions, and Boxes

On the Analytics pane, we have the option to select line, band, distribution, or box plot (if the view allows). Lines are constant or computed values at a single value per line. Bands shade the area behind the marks between two values, either constant or computed. Distributions add gradient shading, which is great for things like bullet charts. Box plots show the quartiles and whiskers

## Reference Bands

When setting up a Reference Band, we'll bring this to Pane, the only real distinction from a line is that two values need to be determined, the upper and lower cutoffs. The defaults are minimum and maximum, but we could set it to be Median to Average. And we'll take off the label for average. Now we can see which areas have these two measures of central tendency differing substantially, which could indicate skew in the data.

## Reference Distributions

Distributions, just like all references, can span the entire table or be per pane or per cell. The computation, however, is where distributions start to differ. For detailed information on the options and how to control the layout of the reference distributions, check out the online help article below. It's also worth noting that Reference Distributions are used in building bullet graphs. Bullet graphs are available in Show Me, and combine a reference line with a distribution.

## Box Plots

Box Plots are fairly straightforward – they're a common way to show statistical distribution. We can set the whiskers to be 1.5 times the interquartile range, or to the max

of the data. We can tweak the visual, hiding the data that would be under the box plot, and formatting the boxes and whiskers. Box plots are available in Show Me.

## Drop Lines

Another option in Tableau are drop lines. They are similar to reference lines in that they call out a value on the axis, but drop lines are tied to the mark in the view. Let's turn on drop lines by right clicking in the view and selecting Drop Lines > Show Drop Lines. Now when we select a point, the lines are dropped to both axes for the values of that mark. We can edit drop lines by again right clicking in the view, selecting Drop Lines > Edit Drop Lines. We can control if the line goes to one or both axes, if drop lines are always shown, or just when marks are selected, and if the value is labeled. Now when we click on a mark, we get a labeled drop line to the Y axis. Drop lines can also be used on other chart types, such as bar charts and line graphs, as seen here.

## Conclusion

Thank you for watching the Reference Lines training video. We invite you to continue with the Free Training videos to learn more about using Tableau Desktop.