Data-Driven Static Max in Charts

Default QlikView functionality

Normal functionality in QlikView is that a chart's maximum Y-value is completely dynamic and dependent on the current selections. Example of this behavior is shown in Figure 1 and Figure 2 below. Note how the Y-axis (oriented horizontally here) is dynamic, based on the current selections.

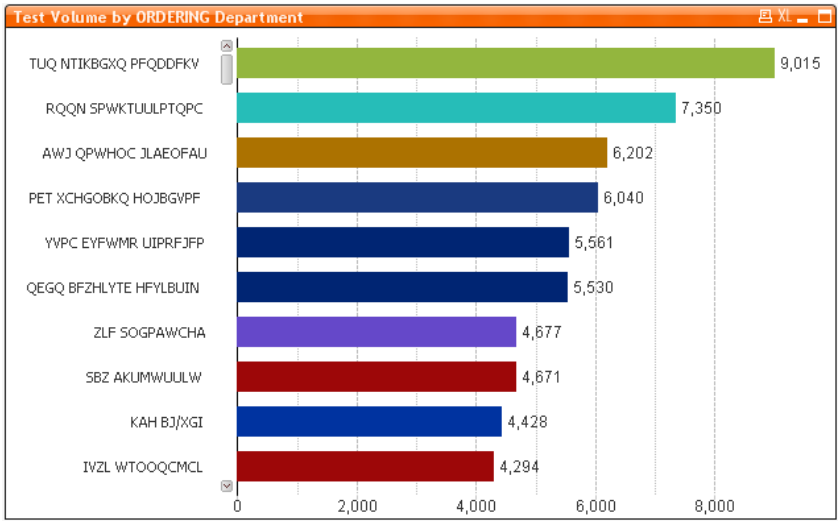

Figure 1 - Chart with No selections made

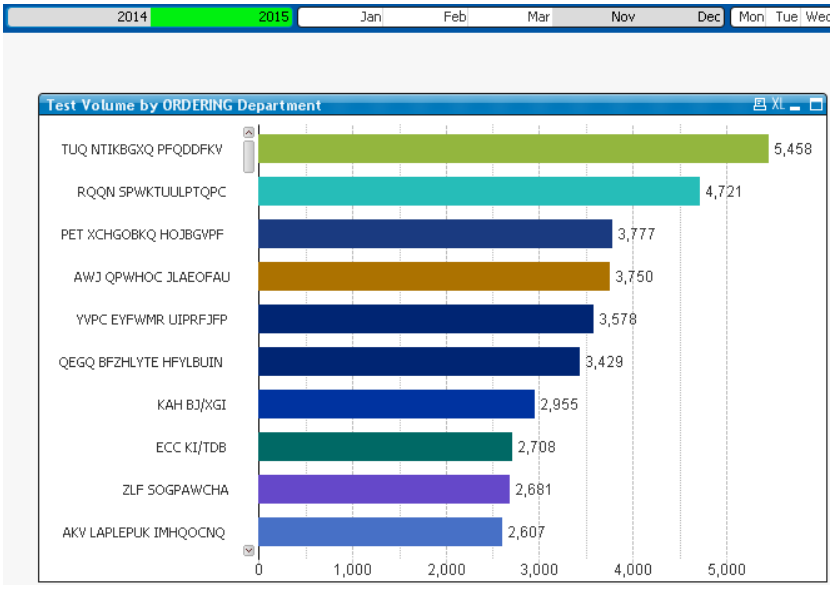

Figure 2 - Same chart with date selections made

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Basic Static Max Usage

There may be a time, however when you are asked to produce a chart where the Y-axis has a static max value set, and that value does not change. QlikView gives that ability by allowing you to specify what the static max value should be, as seen in Figure 3 below.

For example, I can set the Static Max to 7000 as shown in Figure 4 with results shown in Figure 5 and Figure 6. You can quickly see that the Static Max is too low when no selections are made with the result being the bars are off the graph in Figure 5.

Obviously, if I had set the Static Max to 10,000, there would not be a problem, because the maximum value for any dimension is 9,015 – today.

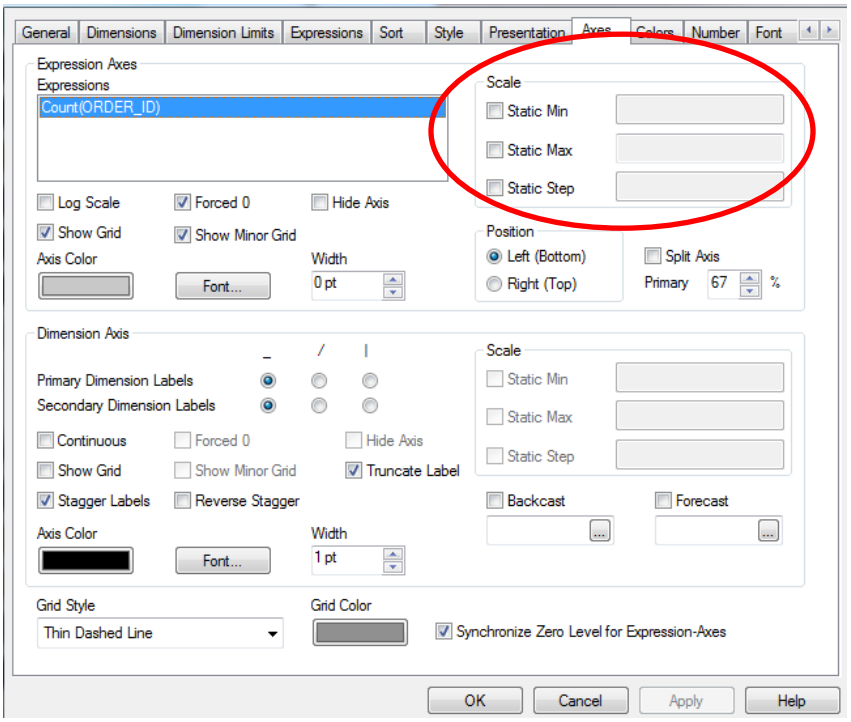

Figure 3 - The Axis tab is where Static Min and Max is set

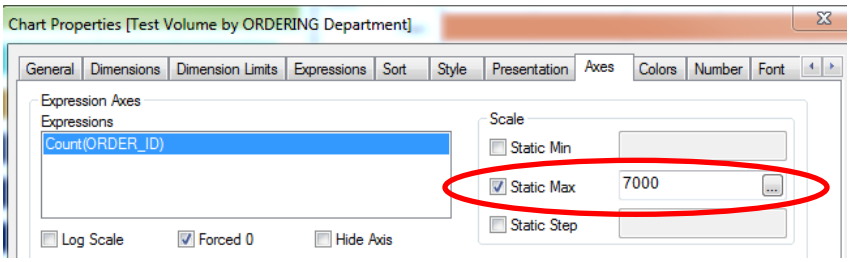

Figure 4 - Static Max set to a fixed value

Data-Driven Static Max in Charts

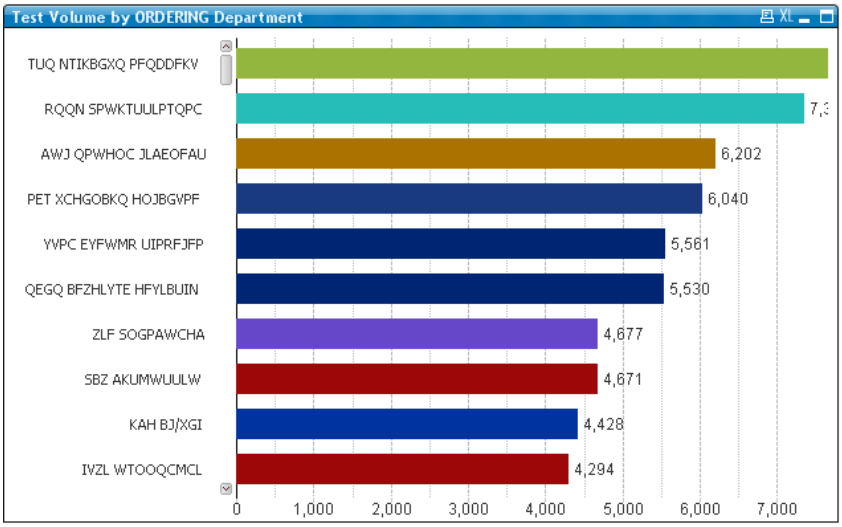

Figure 5 - Static Max set, no selections made

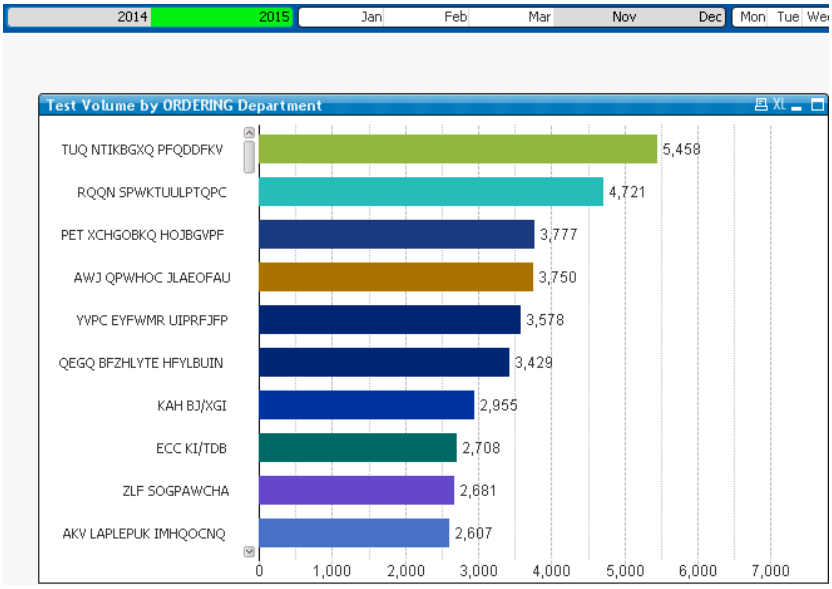

Figure 6 - Selections made with Static Max set

The problem with setting a Static Max

But what happens as the application data set grows? Soon even a 10,000 Static Max won't be adequate, so what we need is a Static Max that is smart enough to automatically change as the underlying data changes, and it turns out this is not all that difficult to do in QlikView.

Data-Driven Static Max in Charts

Defining a Data-Driven Static Max – The Basics

Building an expression in QlikView that will dynamically set the Static Max for you based on the underlying data set is not at all difficult, given the power of the Aggr() function.

The QlikView Reference Manual defines Aggr() as "[A function that] returns a set of values of *expression* calculated over *dimensions*".

What this means for us is that we can use Aggr() to determine what the maximum Y-value could ever be in our chart, regardless of what selections the user has made – and each time the application data grows, the value will change, so when the Aggr() function is used to set the Static Max value, that Static Max value will always be correct based on the underlying data.

To build the correct formula for the Static Max to work, we need two pieces of information: The field used for the primary dimension of the chart, and the "Definition" used for the Expression in the chart. In Figure 7 and Figure 8 we can see that the Dimension field is **ORDERING_DEPT_NAME** and the Definition of the Expression is **Count(ORDER_ID)**.

So, that means our Static Max formula is basically:

```
Max(Aggr(Count({1} ORDER_ID), ORDERING_DEPT_NAME))
```

Let's break this formula down:

```
Max(Aggr(Count({1} ORDER_ID), ORDERING_DEPT_NAME))
```

The Count() portion counts the number of ORDER_IDs in the entire data set – the **{1}** part is a Set Analysis Expression that simply says "look at the entire data set – ignore all user selections".

```
Max(Aggr(Count({1} ORDER_ID), ORDERING_DEPT_NAME))
```

The Aggr() portion aggregates the count of ORDER_IDs across all of the ORDERING_DEPT_NAMEs – basically it produces a count for each department name.

```
Max(Aggr(Count({1} ORDER_ID), ORDERING_DEPT_NAME))
```

Finally the Max() portion returns the largest count from Aggr(), which becomes the Static Max as shown in Figure 9, Figure 10 and Figure 11.

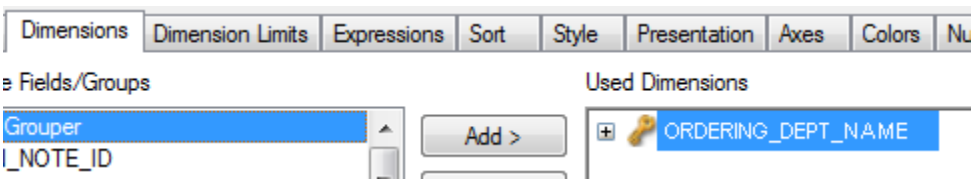

Figure 7 - Primary Dimension Field

Data-Driven Static Max in Charts

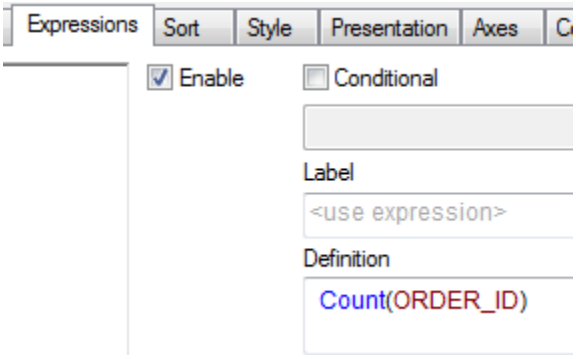

Figure 8 - Definition of the Expression

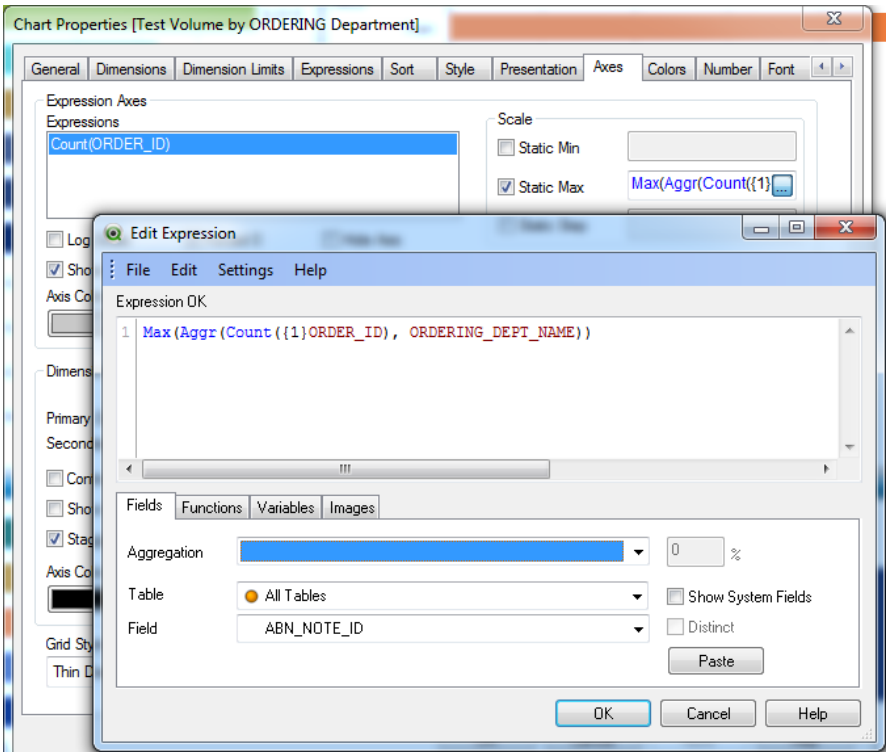

Figure 9 - Setting Static Max using Aggr()

Data-Driven Static Max in Charts

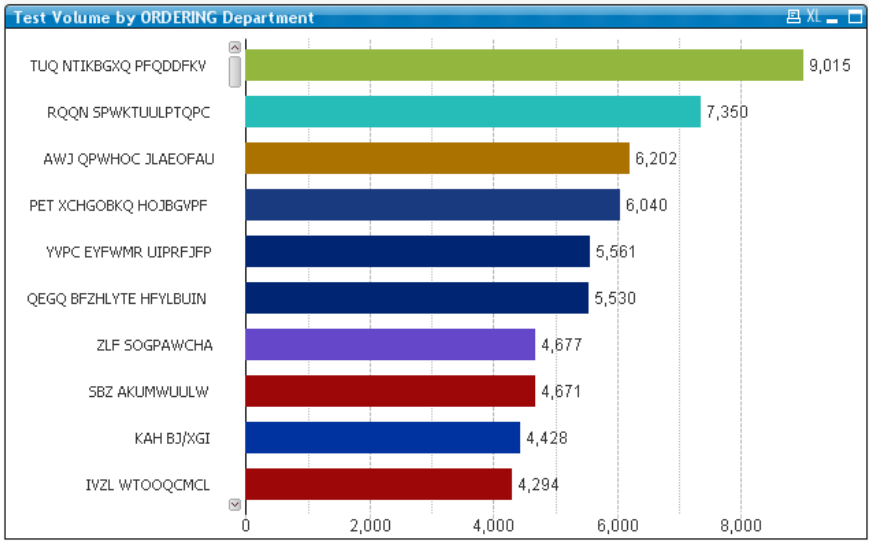

Figure 10 - Dynamic Static Max!

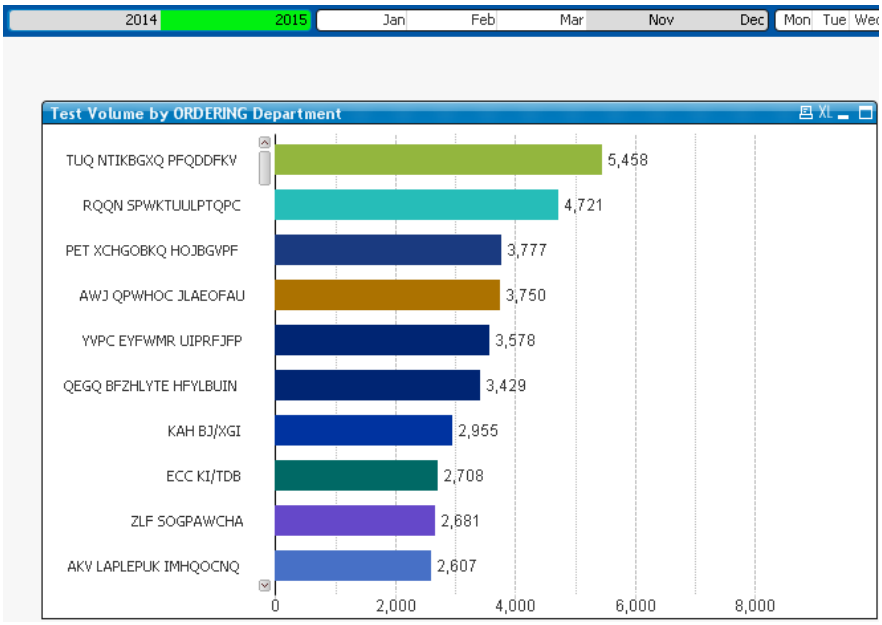

Figure 11 - Dynamic Static Max with Selections made

Data-Driven Static Max in Charts

Defining a Data-Driven Static Max – Fine Tuning

The formula described above works and will ensure the Static Max dynamically adjusts as the underlying data changes over time, but is not perfect. Note how in Figure 10 the maximum Y-axis value is 8000, when the highest Y-value in the chart is 9,015, and therefore the bar extends past the end of the chart slightly. This really isn't a problem in this case because the values can all be read, but if we modify the formula a bit, we can tell QlikView to automatically pad the Static Max value as it sets it.

Our improved formula is shown here:

```
Ceil(Max(Aggr(Count({1}ORDER_ID), ORDERING_DEPT_NAME)) + (Max(Aggr(Count({1}ORDER_ID),
ORDERING_DEPT_NAME)) * .1), 1000)
```

This improved formula contains the same elements of the original formula, but here we calculate the Max() of the Aggr() a second time and multiple by .1, which results in a padding value of 10% being added to the result of the first Aggr() calculation.

Further, this formula uses the Ceil() function to round the result up to the nearest 1000. The end result is the bar chart now has a Static Max calculated that is A) consistent with the underlying data, and B) ensures the bars will be fully contained within the chart at all times.

See Figure 12, Figure 13 and Figure 14 for examples.

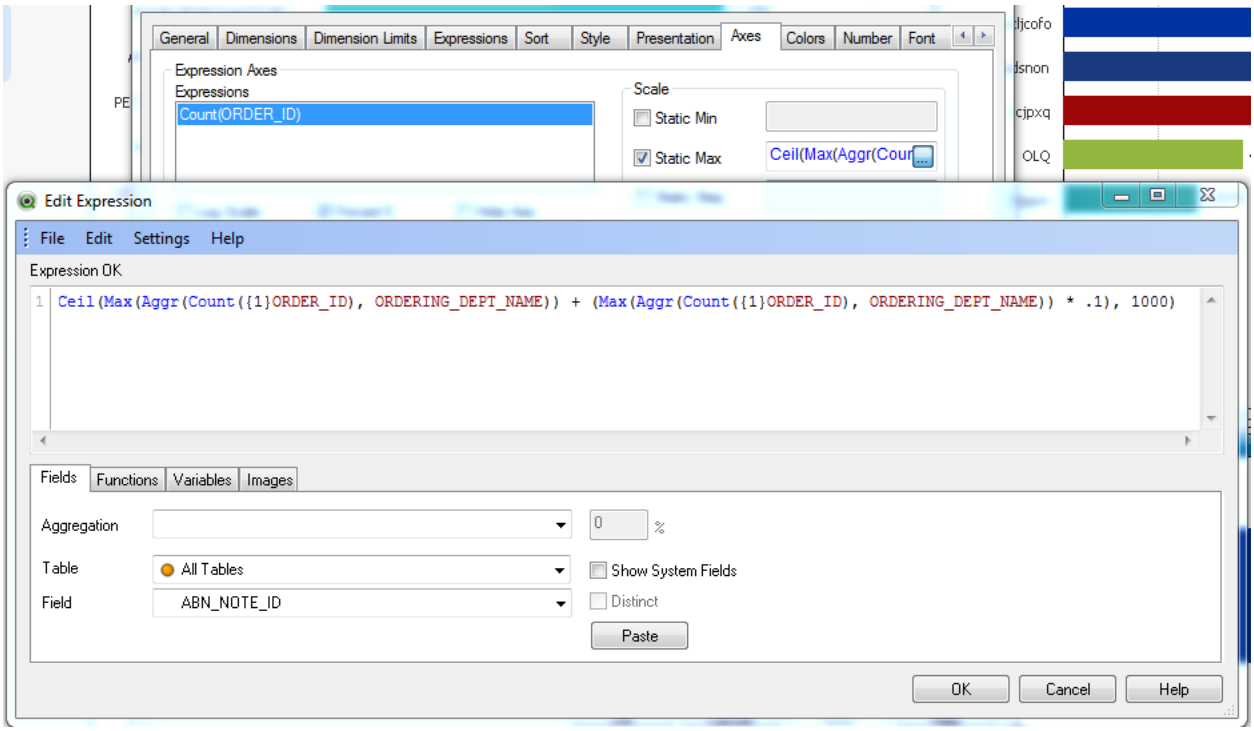

Figure 12 - Dynamic Static Max that adds padding

Data-Driven Static Max in Charts

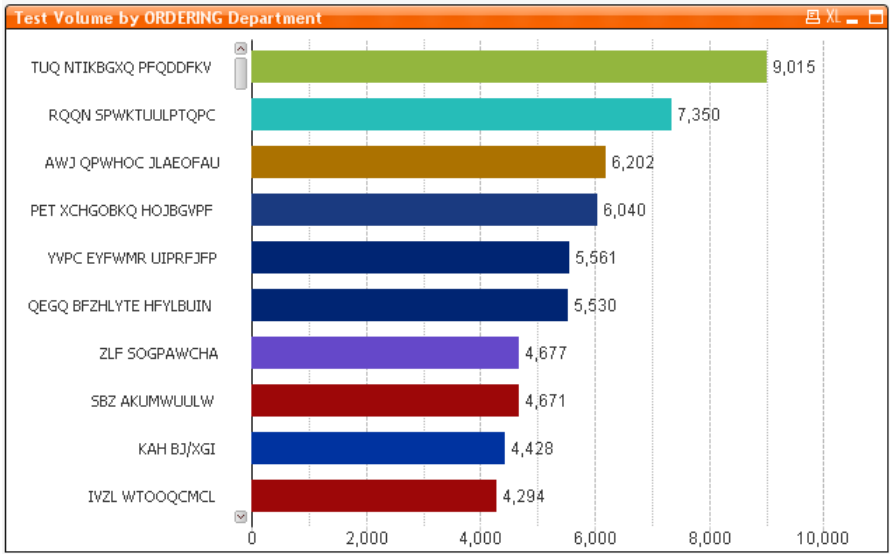

Figure 13 - Dynamic Static Max - no selections - bars fully contained

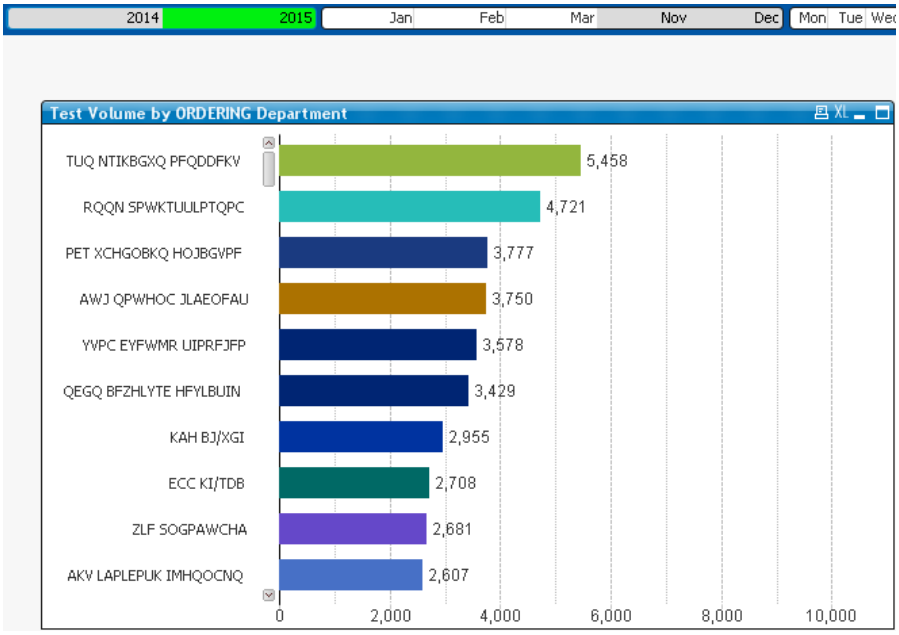

Figure 14 - Dynamic Static Max Final Version