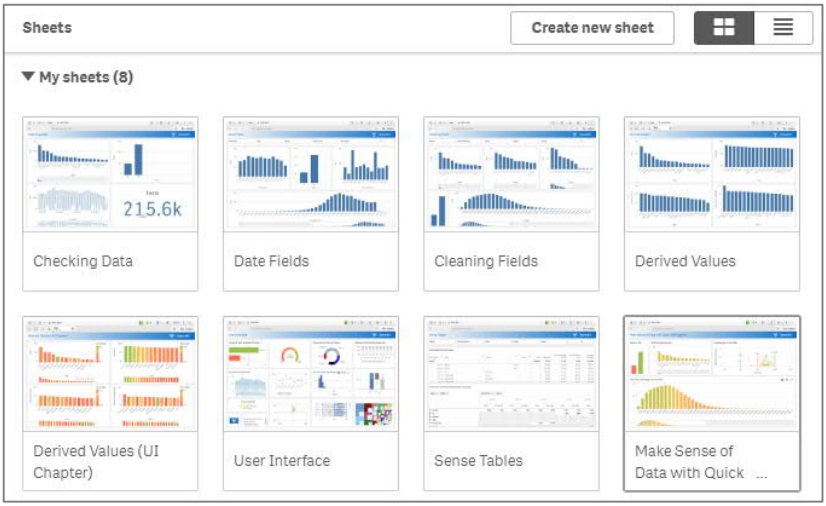
Quick Intelligence

Creating Qlik Sense Applications



Training Manual Preview

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Introduction

Welcome to this Qlik Sense course, thank you for choosing to learn with us.

This course is for anyone who wants to learn how to really get to grips with Sense and create their own rich visualisations which can be shared with colleagues and beyond. Rather than focussing on the drag-and-drop "self-service" features of Sense, we will look at how to understand what is going on so that applications can be optimised and scaled. On the way, we will be looking at best-practice techniques and drawing on real-world experiences, ensuring you have the tools required to build, test, and deploy robust and stable applications.

Sense comes in four different types and this course is designed to be used with any of them. We will look at these different types and throughout the material it will be pointed out where there are considerations specific to each of these. There is also a rapid release cadence for the product and the course will be updated to refer to the latest version with comments added where there are new features, which may not be in the version you are working with, or forthcoming features which are not yet released.

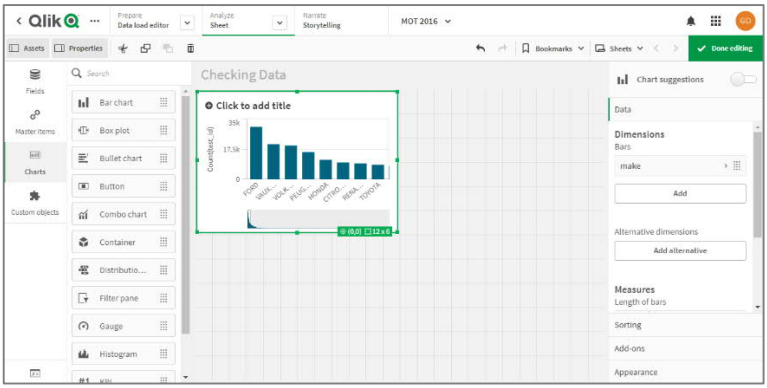
The course does not presume any specific prior skills, but a good grounding in data will be beneficial. You will be writing code, which may be daunting to non-developers, but trust me that it is nothing to be afraid of! We will be starting at the start, with a blank page, and by the end will be employing some more advanced techniques in our Sense application. For those who wish to dig a bit deeper there will be links to further reading on some of the topics covered.

As well as this book, you may find these resources useful for looking up information on specific topics or asking questions of the wider Qlik Community.

https://help.qlik.com/sense
https://community.qlik.com/community/qlik-sense/
https://www.quickintelligence.co.uk/blog/
https://askqv.com/
https://www.qlik.com/us/products/qlik-sense
https://www.youtube.com/user/qlikview/videos

So, that is it for introductions. Let's get stuck into learning Sense.

You have now created your first chart in Qlik Sense.



You will notice that the properties pane has appeared to the right-hand side of the sheet. Here you can customise the chart to get it exactly how you want it – we will explore the options in here later.

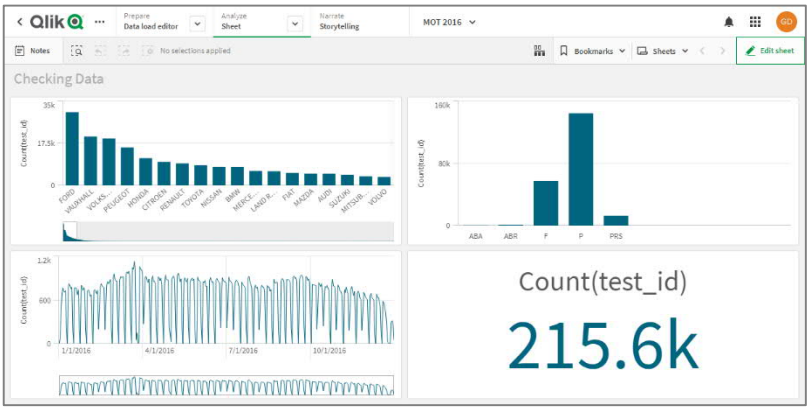
Double-click on the **Bar Chart** icon again. You will notice the first bar chart is moved to the left to make way for the new chart. On this chart, repeat the steps on the previous page, adding **test_result** as the dimension and **Count(test_id)** as the measure.

Now we can look at adding a different chart type. Double-click on the **Line Chart** icon. Our first chart is again moved out of the way, and the line chart is inserted to the bottom left of the sheet. Dimensions and measures on a line chart work the same way as a bar chart. Add a dimension of **test_date** and measure of **Count(test_id)**.

These charts are all well and good, but nothing yet is giving us a total count of rows. Double-click on the **KPI** chart type to add one of these. Again, the screen flexes to accommodate. A KPI object only needs a measure to be able to function, so this is all that is prompted for. Provide the same measure of **Count(test_id)**. We can now see the total count of rows. This is often ideal for reconciling back to your source data to check you have loaded every row you were intending to.

This is enough to give us a quick view of our data. Click the **Done Editing** or **Edit Sheet** (depending on Sense version) to come out of edit mode. The button is a toggle, which changes colour or text to show the current mode.

The edit components move out of the way, and the responsive design stretches the charts to fill the space. Here is your first Sense sheet.



There is a lot which is not quite as it should be on this sheet (the missing thousand-separator is a pet hate of mine) but in a relatively small number of clicks we have something that works and gives us accurate numbers.

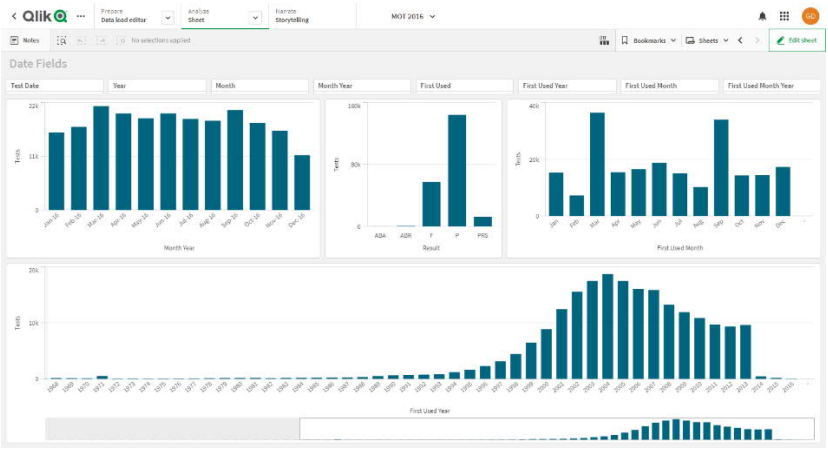
We can already see that:

- Fords are the most tested car in the Torquay area
- There are more than twice as many passes as fails
- We have data for the whole year
- There is a definite weekly pattern
- Number of tests tails off at the end of the year
- We have 216K rows of data loaded

You can now interact with this sheet in the same way that you did when you were exploring the Consumer Sales demo. Perhaps look at whether the weekly pattern is as pronounced for each manufacturer or try and work out why there are a few weekends where there are noticeably more tests done than others.

There is much more we can do to explore these data, and many ways in which we can improve how we present it. We will look at this in subsequent chapters.

You should end up with something looking like this:



Just as we could from our first sheet, we can make some basic observations from here. The most significant (and not unexpected) thing is that there are spikes in first usage month in March and September (when new registrations are released in the UK). A small blip in tests done on vehicles first used in 1971 is also present (this is due to the DVLA putting all vehicles with an unknown first use date into 1971).

Clicking on the charts gives further insights. Try clicking around to see what you can see. Remember you can also make selections on your other sheet and come back here to see the results. Is there a change in the shape of the data if you look at only Passes or Fails?

There are many other date and time functions that can be used for manipulating dates and times. If you would like to see the syntax for more of these, you should look here:

https://help.qlik.com/en-US/qlikview/May2022/Subsystems/Client/Content/QV_QlikView/Scripting/DateAndTimeFunctions/date-time-functions.htm

Or Google “Qlik Date and Time Functions” which should find you this page.

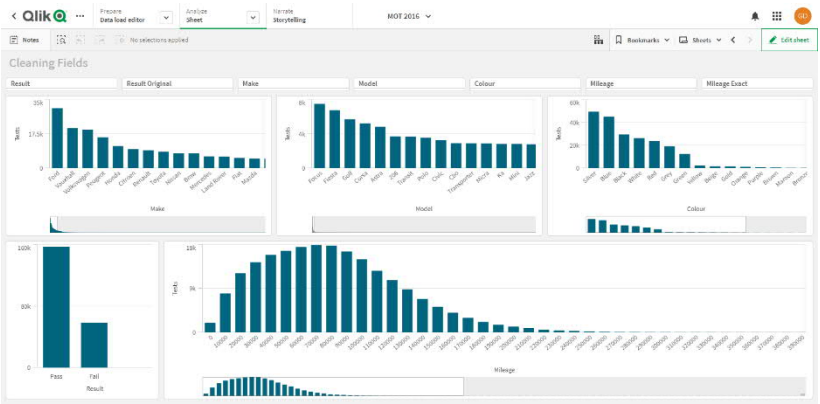
Dates and times are a crucial part of most analysis, and now you can do some transformations to improve the way dates are used in your apps.

Now go back to the **Cleaning Fields** sheet, using the **Analyze** button. Check that the values in the Filter Pane all look correct. You can now click **Edit Sheet** and select the Filter Pane, then click **Fields** and double-click **Mileage Exact** and **Result Original** to add them to the Filter Pane. Select **Data** from the right-hand properties pane and then drag **Result Original** so it is next to the modified **Result** field. Click **Done Editing** so you can make selections in the **Result** and **Mileage** fields to check things are working.

Result	Result Original	Make	Model	Colour	Mileage	Mileage Exact
Fail	ABA	Abarth	-	Beige	0	1
Pass	ABR	Ac	.	Black	10000	2
	F	Access	`E Type	Blue	20000	3
	P	Adly	1 Series M	Bronze	30000	4
	PRS	Aermacchi	1.5 Se	Brown	40000	5

Now, **Edit** your sheet, shrink your Filter to one line and add charts with count of **Tests** by all of the newly derived fields (Make, Model, Colour, Result and Mileage), as you did at the end of the **Date and Time** section. Note that the **Mileage** field will need sorting to look correct.

The resulting sheet should look a bit like this one.



Interesting, perhaps, to see here just how few tests were done on cars with colours outside the most popular seven.

These are just a few techniques to clean data during the load. Hopefully it is clear to you now though that a bit of time spent cleaning and manipulating data can make for a much better end-result.

6.15. Conclusion

We have now looked at just about all the objects available to us out of the box (as at Sense June 2018 release, there are a few more now). Maps have been skipped over, for now, as we don't have data that lends itself to maps yet, and the two table types we are looking at in the next chapter.

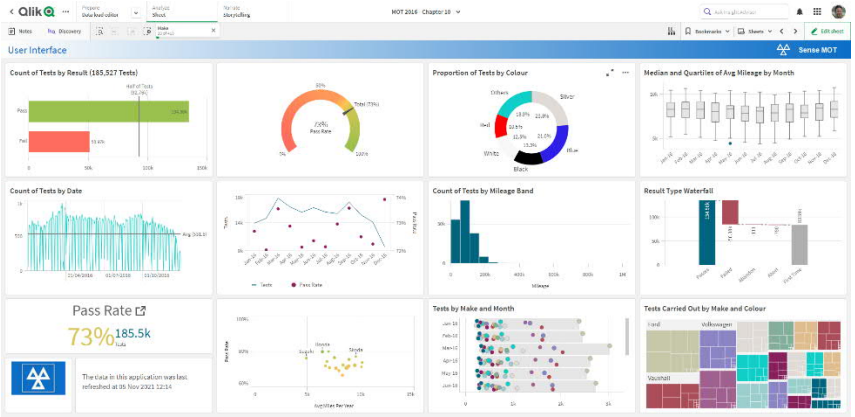
Further chart types can be brought in by using **Extensions**, but this is a whole other topic which is not covered in this course as they are not available at present in Qlik Sense Cloud.

As you will have noticed as we looked at each of the chart types throughout this chapter, there have been various caveats and warnings. Be careful when choosing chart types, ensure that you are using the right one, and have it set up correctly.

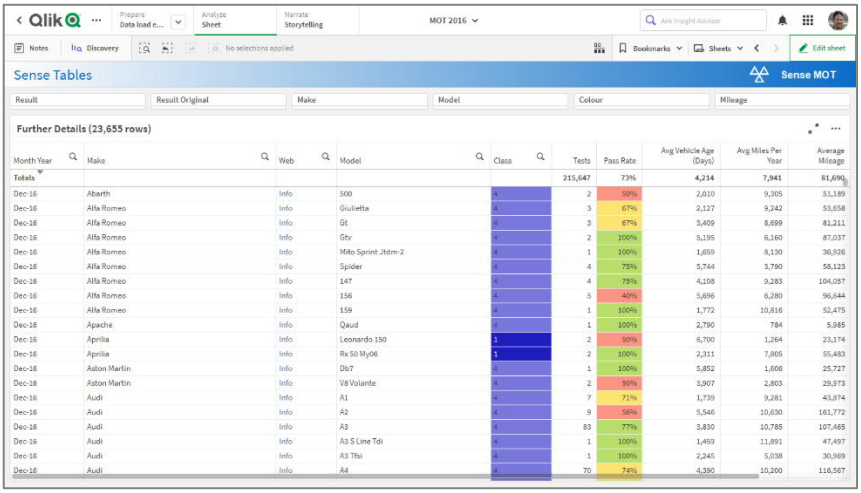
With charts you must think carefully about not only whether you are conveying the information you wish to, but also whether they are inferring something which you are not intending them to. The misuse of colour is one way in which this can occur.

You should now have a **User Interface** sheet that looks like this one, when our top twenty-three makes are selected.

Take a moment to tidy up and arrange this sheet, if required.



Inserting ASCII symbols into the table to show direction that values are moving in, or using colour to create a heatmap are two ways in which the humble table can be taken further.



7.2. Pivot Tables

The other tabular view of data available in Sense is the **Pivot Table**. These are similar to the standard tables with a few differences. Firstly, dimension values can be nested with expand and contract buttons. Dimension fields can appear down the left-hand side of the pivot table, or along the top. The developer has control over this initially and the user can change the layout of the table later.

To create the pivot table first make a clone of the straight table. In **Edit** mode, select the table and click **Ctrl+C** (or use the copy icon at the bottom of the page). Now drag the table up from the bottom, so it takes up only half the sheet. Click into the space at the bottom and paste by clicking **Ctrl+V** (or use the paste icon).

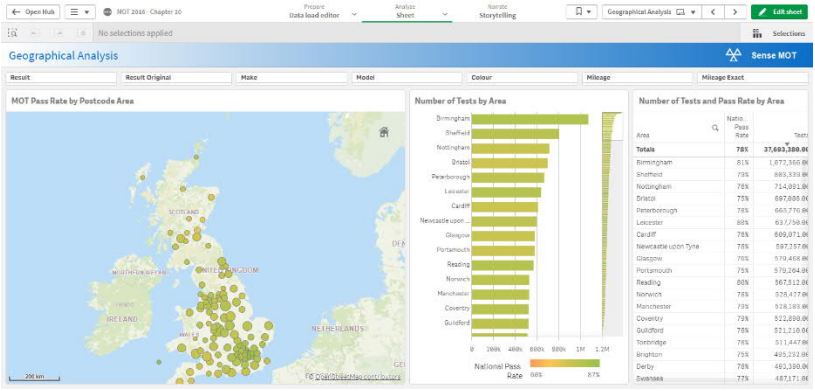
We can now re-purpose this table to be our pivot table. Before we do this, we want to remove some columns, as pivot tables work best when there are only one or two measures.

You will have noticed that there are a lot of other options in the properties section for maps. Some of these will be discussed in the next section, but you might just like to have a play with some of the options now anyway.

To give a bit of further context to our map, drag a bar chart onto the page to the right of the map. Make it full height and taking up half of the remaining space. Give the chart the title **Number of Tests by Area**. Select **Area** as the dimension and **National Tests** as the measure. Find **National Pass Rate** under master measures and drag this on as a **Colour By** measure. Tidy the chart up by changing it to **Horizontal** under **Appearance** and **Presentation**. Then change both axes to have **Labels Only** instead of Titles and Labels. On the **Y-Axis**, settings also change the **Scale** to **Narrow**.

In the remaining space to the right, drag a table object and give it the title **Number of Tests and Pass Rate by Area**. Include on this table **Area** as a dimension and both **National Tests** and **National Pass Rate** as measures. Set the number formats appropriately for both measures. Finally set the sort order to be by **Pass Rate**. You can now come out of **Edit** mode.

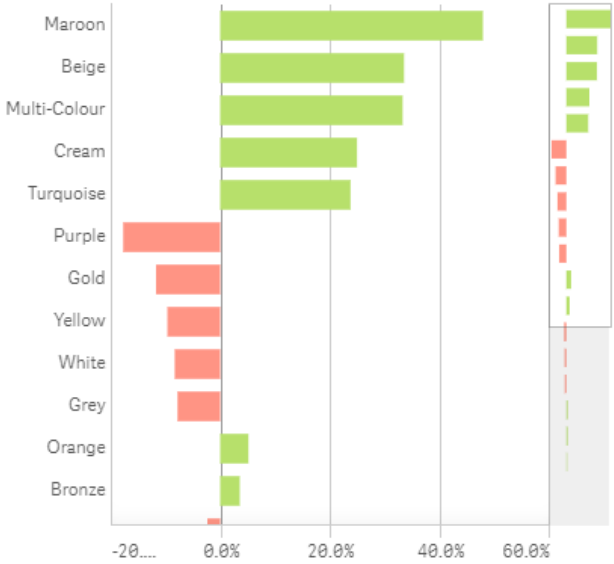
The final sheet should look like this:



As well as the map we have the ability to sort and select by area in the table. The table makes it easier to find the areas with higher and lower pass rates, in a way that the map alone is less capable of.

To make geographic selections click on the map and select either the free-hand or radial selection option. You can then click on the map to select the radial selection, allowing you to select a specified distance from a point.

Click the **Done Editing** button at the top of the screen. If you do not already have it selected, search for and select **Aug** in the **Month** field. Now you will be able to see some vehicle colours have more tests than in the prior month and others have less.



This type of bar chart, with positive and negative values spanning out from the middle is often referred to as a **Butterfly Chart**, as the bars can look like the wings of a butterfly.

It is worth noting that, whilst **Maroon** vehicles had the biggest jump from one month to the next, as a variance, this does not mean that hundreds of tests were carried out on maroon vehicles in August. It is just a large shift, on a small number. Selecting **Maroon** and looking at the table shows this:

Number of Tests variance Aug-16 to Jul-16

Colour	Tests Aug-16	Tests Jul-16	Prior Month Difference	Prior Month Variance
Totals	**37**	**25**	**12**	**48.00%**
Maroon	37	25	12	48.00%

Whenever looking at variances it is always important to not be blindsided by

10.5. Possible & Excluded - Advanced Set Analysis

I often describe Sense as being like a box full of Lego bricks. Each brick is very simple but, put together in the correct way, amazing things can be created. Set Analysis syntax is just another set of bricks from which things can be constructed.

The syntax looked at so far in this chapter has been relatively straightforward, but we have built something useful with it. There are a few more parts of the syntax that I would like to look at before drawing a close to the chapter.

Just a reminder first, that all the syntax you have seen already can be expanded further. So, rather than just having sets attached to one or two fields, you can keep specifying sets for as many fields as you like. Combining sets and groups of sets is also possible. Variables can be used to nest and re-use code and these can be layered many levels deep.

There are two more bits of syntax that you can use in your Set Analysis, which we have not seen yet. Possible and Excluded, P() and E() respectively. These allow you to derive the values in your set using code, which can include using more Set Analysis.

To give a practical example. If you wanted to ignore all selections made by the user, except those that affected a part number, you could do this:

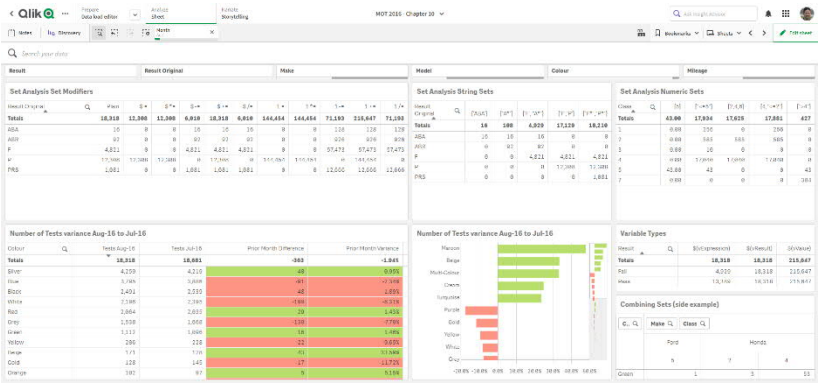
```
sum({1<[Part Number]=P({$}[Part Number]>}[Stock Movement])
```

What this expression is doing is using the **Set Identifier** of **1** to ignore all of the selections. It is then applying a selection on the **Part Number** field of any part numbers, which are in the current selection (using a Set Identifier of **$**). The movement of the included parts is then totalled.

The practical usage of this would be if you want to find stock on-hand for a part. In some systems this can only be done by adding up all historical transactions. Selections on dates or customers will mean that you don't get the full history for that part number. You may, however, want to pick a warehouse, product type, or some other field to only get the on-hand values for certain products. Listing all fields to ignore or include would be impractical (if you have a lot) and risky as, if the data-model changes, your expression may not reference all fields. The syntax above quite elegantly allows the required results to be obtained whilst only referencing one field.

10.6. Set Analysis Conclusion

When done, your set analysis sheet should look something like this:



Now you have learnt how to build your own set analysis, here is a handy trick so that you don't have to write it from scratch.

Set analysis basically applies a selection to an expression. Frequently that selection is relatively simple, and can be applied by making selections in the front end (this is not true when using P(), E(), or combining sets though).

Make selections on three or four fields in the dashboard, it doesn't matter which or what. Now click on the **Bookmarks** button:

Click the **Create New Bookmark** button and enter a name of **Copy Set Analysis**. Click the green tick to create the bookmark.

Now click on the small exclamation mark next to the new bookmark. This will open an information panel, and in the first box of this you will find the set analysis statement that defines your bookmark. This can then be copied and pasted into your own expressions. This provides a simple way to create sets without having to type, and match, lots of sets of squiggly brackets.

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