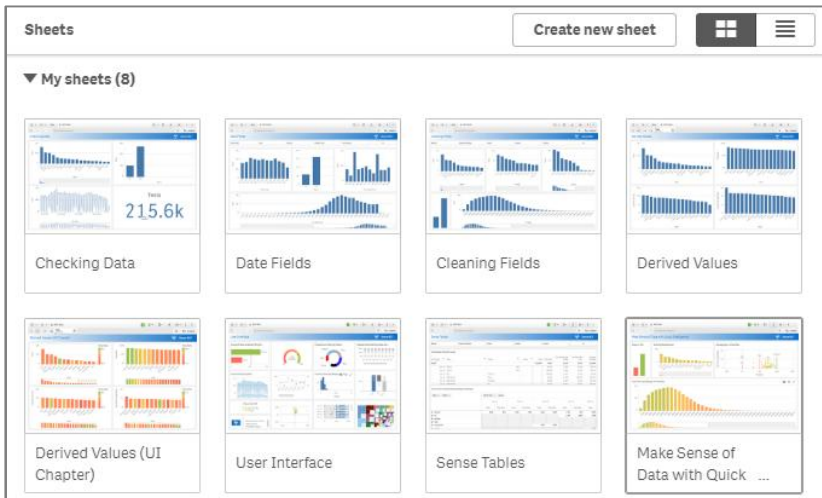


# Creating Qlik Sense Applications



## Twelve Page Preview Version

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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 (June 2018 at the time of writing) 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.

- <http://help.qlik.com/sense>
- <https://community.qlik.com/community/qlik-sense/>

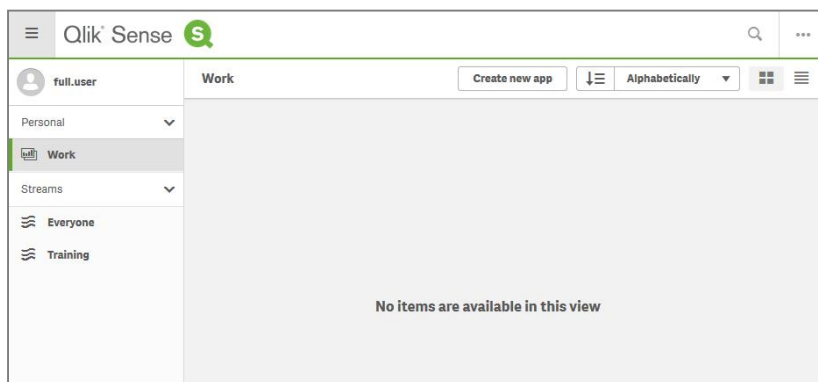
So, that is it for introductions. Let's get stuck into learning Sense.

## 2. Creating Your Application

### 2.1. The Sense Hub

Each version of Sense has a Hub from which applications are created and consumed. There are differences between each version, but the basic functionality is the same.

Go to the URL for your Sense Hub or start Desktop from the Start menu in Windows.



This screenshot shows you what you will see when you first log in to Sense Enterprise (provided you have edit rights). You can see that you have your own **Work** stream, where your apps appear. You may also have streams where you can view published applications. Sense Desktop does not have streams and the streams in Cloud look a bit different.

In all versions you can search for applications (the magnifying glass), change your view (grid and line icons), and sort order (the drop-down and arrow to the top right). There is also the ability to **Create New App**. We will be clicking this shortly, but first we need some data.

## 2.2. Data for Your Application

There are numerous sources of data over which you can build applications. Freedom of Information in many countries means that a wealth of information is available. These data may be useful in a business context (perhaps plotting your sales against population) but they are certainly good for building applications against to learn a product. You may want to look at these sources to find a data-set that interests you:

- <https://www.data.gov/>
- <https://data.gov.uk/>
- <https://www.gapminder.org/data/>

For this training we are going to be using a data set of UK MOT data from 2016. These data are simple in structure but have enough anomalies to require us to employ several good Sense techniques to work with them.

The full dataset can be downloaded from here:

<https://data.gov.uk/dataset/e3939ef8-30c7-4ca8-9c7c-ad9475cc9b2f/anonymised-mot-tests-and-results>

As this is a very large dataset (4.41GB in total) we have created a subset of this based on the TQ (Torquay) postcode area. You can download this cut-down data from here:

[https://www.quickintelligence.co.uk/mot\\_2016\\_tq.zip](https://www.quickintelligence.co.uk/mot_2016_tq.zip)

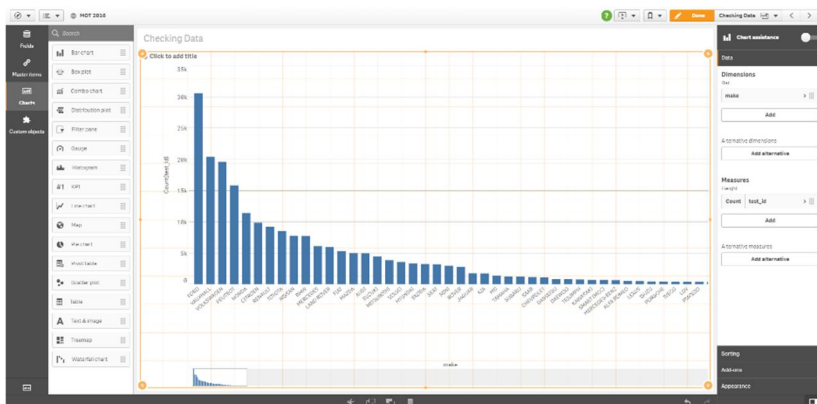
It is recommended you work with the subset but if you would like to use the full data set you will need to download the 2016 results, 2016 failure items, and the Zip file of Lookup tables direct from **data.gov.uk**.

Whichever version you go for, all files need to be downloaded and extracted. Once complete you should have the following data files:

- test\_result\_2016.txt
- test\_item\_2016.txt
- item\_detail.txt
- item\_group.txt
- mdr\_rfr\_location.txt

The next step depends on which version of Qlik Sense you are using.

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 **Edit** button again to come out of edit mode.

When loading from a text file, dates are stored as pieces of text (as are all values in the file). If Sense can interpret a value as a date it will, but if the format is ambiguous you need to prompt the load script to get it right. Although not strictly required we are going to make it clear how dates should be loaded.

Our current line of code to load the test date looks like this:

```
test_date           as [Test Date],
```

This needs to be amended to read like this:

```
Date(Date#(test_date,
  'YYYY-MM-DD' ),
  'DD MMM YYYY' )    as [Test Date],
```

This syntax can cause a lot of confusion, as we have a nested call to the date function. The fact is though that there are two very distinct functions here: **Date** and **Date#**. The expression is evaluated from the inside out and first the **Date#** function interprets the text value as a date (which is stored in Sense as an integer number) and then the **Date** function formats the date so it looks good on the page.

So, let's look at the two bits of syntax separately (don't type this it's just an example):

```
Date#('2018-06-20' , 'YYYY-MM-DD' )
```

This will take the item of text '2018-08-20' and turn it into a number – 43,271 to be precise. This is the number of whole days since the 1<sup>st</sup> Jan 1900.

This happens to our **test\_date** field first. We then issue the second Date function, effectively doing this:

```
Date(43271, 'DD MMM YYYY' )
```

This will return a **Dual** value which will appear on charts and list boxes as **20 Jun 2018**. The dual part of this simply means that it is still 43,271 under the bonnet, it just doesn't look like it now.

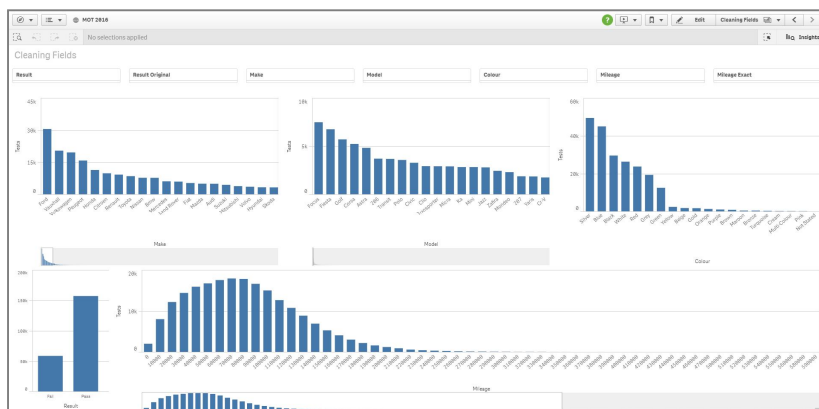
Please take a moment to ensure that you have understood the difference between **Date** and **Date#**, as it will trip you up later if you have not.



Now navigate to the **Cleaning Fields** Sheet (via **App Overview**). Check that the values in the Filter Pane all look correct. You can now click **Edit** 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** so you can make selections in the **Result** and **Mileage** fields to check things are working correctly.

| Result | Result Original | Make      | Model      | Colour | Mileage | Mileage Exact |
|--------|-----------------|-----------|------------|--------|---------|---------------|
| Fail   | ABA             | Abarth    | -          | Beige  | 0       |               |
| Pass   | ABR             | Ac        | -          | Black  | 1000    | 1             |
|        | F               | Access    | 'E Type    | Blue   | 2000    | 2             |
|        | P               | Adly      | 1 Series M | Bronze | 3000    | 3             |
|        | PRS             | Aermacchi | 1.5 Se     | Brown  | 4000    | 4             |

You may want to **Edit** your sheet to shrink your Filter and add charts with count of **Tests** by all your new fields, as you did at the end of the Date and Time section. If you do this your screen might 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, we will look at more in a later chapter. 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. Chart Types

### 6.1. Introducing Qlik Sense Visualisations

There are many different ways of visualising data in Sense. You have used some of these already and this chapter looks through all of the other types of object that come included in Sense. There are many other visualisations available, through **Extensions**, which are third-party components written in JavaScript. Many of these Extensions are free to download and use, others require a licence to be purchased, we will look at extensions in a later chapter.

All of the objects that are included in Sense as standard are, perhaps a little confusingly, to be found under the **Charts** button. You will note that on the list of objects here you will also find **Tables**, **Text and Image** objects and **KPIs**. You may come across all of these things referred to as charts, due to the menu heading in Sense. Personally though, I prefer **Object** as a generic term for all of these items, or **Visualisation** as all of these objects are used to display data in one way or another.

Even though there are (at present) seventeen objects to choose from, make sure that you don't turn your applications into a mess by trying to shoehorn too many of them into each of your apps. In this chapter I will explain when each of the different objects should (and shouldn't) be used. Make sure that you employ common sense and take the time to look up some data visualisation best practice. This post by Patrik Lundblad at Qlik provides a good cheat sheet to get started on this:

<https://blog.qlik.com/dissecting-how-to-choose-the-right-chart>

Personally, I always start with the question “why not a bar chart” and go from there. If you have a sheet full of bar charts (like our Date and Cleaning sheets), don't go changing some of them to pie charts just to break up the look of the page – it may be that you already have the best way of showing your data right there.

If you are considering a page full of speed-dial gauges and doughnut charts, then you are probably giving more thought to creating a shiny dashboard than conveying the meaning in your numbers. Stop! The appeal of shiny dashboards will diminish, but the importance of the numbers will not.

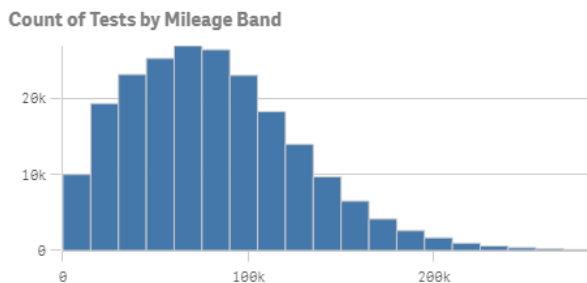
## 6.9. Histogram

The histogram gives frequency values for occurrences of numeric values within a dimension. It uses an algorithm to group these numeric values into buckets of appropriate equal sizes. You do not specify a measure for the chart, as it is always a frequency count, in our case though the value will always be the number of MOT tests carried out.

Create a **Histogram** and position it under the **Pie Chart**. Click the **Add Field** button and select the **Mileage Exact** field. This is all the information required by Sense to generate the chart. Click on the text **Click to Add Title** and enter a title of **Count of Tests by Mileage Band**.

There are very few properties that can be set on this chart type. We are going to change two of them. Select **Data** from the **Properties** pane and expand **Mileage Exact**. Enter a **Label** here of **Mileage**. Now go to **Appearance**, then **Y-Axis** and set **Labels and Title** to **Labels Only**.

Hover over, or click, bars to see the value pop-up. Note that the mileage is shown as a range, e.g. **55,000 <= 110,000**. The bands are always equally sized. Again, outliers are skewing our presentation though with some very high mileages. Select the first five bars on the chart. You will notice that the mileage bands flex to more precise bands.



Note from the selections bar that you have not selected specific mileages, rather an expression that defines the values that fall into the five bands that you selected. Take a moment to compare this functionality with the selections and display of the **Tests by Mileage** chart on the **Cleaning Values** sheet. Remember how we created the mileage bands in the load script, giving us more precise control over them. Where possible I would recommend this approach over using a histogram to achieve a similar result.

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