**Video Script: Section 3 Video 2 using size and colour**

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| No. | Description | Action on screen | Narration |
| 1 | Introduction  (Outcome and why it is desirable)  This should give the viewer an idea of the outcome of the task at the beginning of the videos and set the stage and expectations of the viewer. | Refer to PPT | In this video, we are going to go through another example of using multiple aesthetics, this time the size and colour of points and lines.. |
| 2 | Context(Problem/Solution)  Present the viewer with a real-world solution and how the situation would pose as a challenge. It always helps to draw the viewer's attention using a use-case. Metadata template can be used here. |  | With ggplot, it’s easy to map the data to multiple graphical elements in order to visually convey more information about our dataset.  We are going to use size and colour to add 2 extra dimensions to our graph. |
| 3 | Guidance (How to do it and how it works): |  |  |
| 4 |  | Highlight and run  library(ggplot2)  ?mpg  On the screen: a description of the dataset appears. | Open activity\_03\_02.R.  Run the first 2 lines. |
| 5 |  |  | Mpg contains a few attributes (manufacturer, consumption etc.) about a number of cars. |
| 6 |  | Highlight and run:  ggplot(mpg, aes( x = cty, y = hwy)) +  geom\_point() +  ggtitle("city miles per gallon vs highway miles per gallon")  A description... | Let’s start with a simple plot: what is the consumption in miles per gallon in city versus on the highway for all the cars in the dataset?  Run the first ggplot command. |
| 7 |  |  | Let’s add information about each car’s manufacturer and the car’s engine displacement. |
| 8 |  |  | One way to achieve this is to map the manufacturer to the colour of each point and the engine displacement to its size. |
| 9 |  |  | The bigger the point, the bigger the engine displacement. |
| 10 |  | Highlight and run:  ggplot(mpg, aes( x = cty, y = hwy)) +  geom\_point( aes( size = displ, colour = manufacturer)) +  ggtitle("city miles per gallon vs hwy. highway miles per gallon\nwith extra information")  A description... | Run the second ggplot command. |
| 11 |  |  | We now have much more information than on our first graph: we can read a car’s consumption in the city and on the highway along with its manufacturer and its engine displacement in one single graph.  Both mappings automatically produce legends. The default colors are chosen so as to be as distinguishable as possible and of similar lightness, to avoid some colors to stand out.  However, as in this case with only 15 categories, colors are quickly difficult to differentiate. |
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| 16 | Conclusion:The video concludes by showing the viewer that the goal has been achieved, and reminding them why they should be happy about that. A PowerPoint summary slide with the key points emphasized would make it easier for the viewer to remember what was covered in the video | Back to PPT | We have covered how easy it is to add extra dimensions to your graph by mapping multiple aesthetics at once.  In the next video we’ll look at how to minimize overplotting, which happens when multiple data points fall on the same location on the graph. |