

## Demo: Creating Bubble Plots

In this video, we show how to create bubble plots using the Mobile Cellular data.

This is data about mobile cell phone subscriptions per 100 people, from 1990 to 2017.

A bubble plot is like a scatterplot, but you can add animations and extra dimensions. We are interested in exploring the increase in mobile cellular subscriptions over time, across the different countries and regions.

A bubble plot is ideal for this scenario. To start, we select Bubble Plot from the Graph menu. We select Mobile (per 100) as the Y variable, and Year as the X variable.

We have 217 countries, grouped into seven regions. So, for the ID variable, we select Region and then Country.

To animate the bubble plot over time, we select Year as the Time variable. We can size the bubbles based on the values of a variable.

The data set includes the population for each of the countries, so we'll size the bubbles by Population.

We can also color the bubbles by the values of a variable. Because we have seven regions, we'll select Region as the color variable. Bubbles for the year 1990 are displayed.

You can change the year by using the slider.

There is an Animate button at the bottom. When we click this button, you can see the changes in mobile phone subscriptions over time. You can speed up the animation and change the bubble size to better see the different bubbles.

There are many red triangle options. We discuss just a couple of these options here.

To show all of the available options in one window, we click the option (or Alt) key, and then click the red triangle. Now we can select multiple options at one time.

We'll turn off the legend and turn on the labels for all of the bubbles. To see the path that each of the bubbles follows over time, we select Trail Lines, All. We click OK to apply these options.

Now, when we go to, say, the year 2015, we can see the curves for each of the regions.

The labels overlap, so we'll drag some of the labels so we can see them better.

When we click one of the bubbles, the observations for this bubble are selected in the data table and in the bubble plot, enabling us to focus on the values for the particular bubble.

What if we want to show the countries? Because there are 217 countries, it would be difficult to see the bubbles for all of the countries at one time.

Instead, we can add a local data filter. Here, we select Local Data Filter under the top red triangle, and select Region as the filter variable.

When we select a region in the data filter, the bubble plot shows only this region.

Remember that we used both Region and Country as ID variables. These are hierarchical data: each country is in a particular region.

When we select the bubble for the region, and click the Split button, we see the curves for each of the countries within the Region.

We can see, for example, that in South Asia, there were very few cell phones until around the year 2000, and in 2015 some of the countries have far more cell phones than other countries.

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