Video 33

In this section, we will focus on how to format excel charts to make sure that the information contained is clear and easily understood. We format a chart in excel, it includes multiple elements, titles of the chart, the labels on the axis, the labels on the legend, the number/ values formatting, grid lines in the chart, plot area, chart area and so on.

Let's look at the different kinds of elements in an excel chart. Most commonly, what we format include all of these possible elements. The chart area, which is the total area in the chart, the plot area, which is focussed on the actual visualisation, not including the axis etc., the legends which is the key of what the colors are or what the lines are that you are displaying on the chart, the labels, the title of the chart, any axis titles, and of course, finally the colors. Let's look at this by taking a simple example. Let's say that I create a very simple chart that shows the difference in the GDP growth rates for India and China between the years 2011 and 2014. The easiest way to do this is to just take the data, go to insert and click on line chart because this is a change over time. Now, while this is a visualisation, it is not a very effective visualisation because when someone looks at it, they don't really know what is this representing. So we need to add information to these representations, so for

example we should add a chart title, this is GDP Growth Rates, and these are annual so we should specify that they are Annual and we can say, China and India. So this could be a chart title. Now what else can we do? We may want to look at the axis. Now if you look at the axis, the Y axis, the axis scale is actually from 0 to 10 but your minimum point is really 5, so this is all, these points from 0 to 4 are really unnecessary. So I am going to change this scale on the axis, I am going to click on format axis and I am going to make the minimum 4. I also need to add an axis title because this is in % and that is not very evident in the chart, so I can add an axis title, the easiest way to add a title is to go to add chart element, axis and I am going to say a primary vertical. So here is my axis title box and I am just going to say % Growth Rate. Now another thing that I could do is move these legends to a slightly more prominent place because there is free white space here and then maybe make the colours a little bit more relevant, so China has a red flag, so maybe we change this to red, format data series color and we choose red, and then India, we choose green because orange is very close to red and orange may not be appropriate here. India has a red.. has an orange, green and white flag so we will choose green. And I can also add labels, so people can see exactly what the growth rates were, let me add labels to India as well and then we could also change the position of the labels , right now they

are on the line which makes it hard to read, you may want to change them a little bit because then its easier for people to read these. Now, look at the difference that all of this formatting has made to the chart. This when somebody looks at it is very easy and instantaneously understandable what the information in the chart represents.

So some other changes we have included are title, axis titles, labels, colors etc. Again, every chart when you create, when you visualisation, you have to think about all of these things, generation of the visualisation via tool is fairly straightforward but you must make sure that When the visualisation is generated, that it is presented in a format which makes it easy for a viewer to understand what you are trying to convey with the visualisation. A tool like excel will allow you to make changes to almost every element of the visualisation itself. You can change colors, you can change line colors, background colors etc.. another thing that you could do is use some of these standard designs that are available in excel, for example, if you go to a chart and click on design option you can see that there are already some design options that make it very easy for you to change, so supposing I wanted a black background, I will do that, I wanted a more grid lines, I wanted less grid lines, I want no grid lines and also there are some standard templates that excel is already providing that you could choose from. There are also what are called quick

layouts where, there titles, the placement of the legends, the placement of you know, the axis titles, the chart titles etc. are automatically in template, so I could say that this is how I would like to present my information, you know. So this.. So there are some quick layouts that you could use where you don't have to manually change anything, there are standard templates that you could use.

So the tools make it very easy for us to format. Ah, tools like excel or other visualisation tools make it very easy for us to make sure that the information is presented correctly. But, it is up to the person generating the visualisation to ultimately decide what is the most effective way of formatting that visualisation to make the information stand out. This is a very critical piece that many people miss. They create the visualisation but a. They either use the wrong type of visualisation for the type of data or the analysis they have, or b. They don't spend enough time looking at the output and figuring out whether or not what they are trying to convey with that visualisation is effectively being conveyed and many times, it is because of bad formatting. There is no labels, the scales are wrong, its you know, the conclusions can be misleading or dangerous when the visualisation is not presented correctly.

So how do we make sure that we have effective charts? Once we make sure that we are using the

right type of chart, we should also make sure that there is readability in the chart which means that the font sizes, the numbers, the consistency, all of that is maintained; that there is easy identification of labels and legends and that they are placed in a way where they are easy to look at and read. What is the point that is to be made with the data, that may need to be included either as a summary line or in the title of the visualisation. Scale is very important. Many times, people reach wrong conclusions because the scale chosen for the axis is wrong. And finally, use colors that are appropriate, so for example, if you are showing growth versus decline, it makes sense to make sure that your growth is green and your red is for decline and so on. Remember, all the effort to create in the chart eventually is based on if you create what is called the junk chart where there is just too much information or too little information for people to make sense of. It is very important to spend time on the visual aspect of the visualisation to make sure that it is easy to look at, easy to understand and easy to grasp.

Just to drive home that point, here are some samples that can be improved. Let's look at this visualisation. It says 12 month head counts, Public Universities, Community Colleges and Private Institutions. When we look at this chart, it is sort of, it is very hard to figure out what the data is saying because

all the columns seem to be approximately the same, so across years they are not really changing every month, it is very hard to tell. B. The greys are all very similar. C. The axis on the X axis is in reverse order so the latest year 2000 is first going all the way back to 1995. So this is really not a good visualisation, it is very hard to sort of figure out what is the point, what is the conclusion that we are drawing form this chart. Here is an attempt at the same data presented differently. So you can see it says Fall Headcount Enrolment, Illinois Public University and Private Institutions: 1995-2000. And then we have Public universities and private institutions. So now you can see the difference   that A. There is growth from 1995-2000, private institutions are growing very rapidly, public institutions not as much. This is a much clearer visualisation, the point is made much better.

Let's take a look at another example. This says, working by choice and necessity among American women. This is a very hard to understand visualisation, as there are many columns, there are arrows in the columns and it's not really very clear what the chart is trying to say. How can we improve this chart? Here is an example. It says reasons women work or stay at home. Remember this is the same data. 1978 is light blue, 1999 is dark blue, so they are looking at changes over time and we are looking at whether the women are homemakers or

full time jobs. The homemaker say that the kids and the personal satisfaction are the two big reasons and personal satisfaction is more important in 1978 than it is in 1999. When it comes to fulltime job, money and personal satisfaction are the two reasons and money is clearly very very important in 1999 relative to 1978 and this is a much more easier to understand chart.

There are other examples when we have pie charts where there are lots of different slices of the pie, when you are comparing two different years but it is very hard to figure out what the changes are. Similarly, something like this where there is just the chart looks too busy, we don't understand what these things are and this is too much information that is hard to understand on the chart.

So it's very important remember that after you do your analysis and you want to present the results effectively, you use visualisations because they drive home the point very very quickly but the information has to be formatted in a manner that makes it easy for people to understand what you are trying to convey with that visualisation.