# Topic 7f Pie Chart

We want to look at two types of pie plots. The first is used when we have data related to different categories. For example, looking at all registered Math 160 students at WCC as of 9:40 p.m. on Thursday, May 21, 2020 for the Spring/Summer session we find that we can group the students by the length of their first name. The table below shows that data.

(Same data used in Bar Plots)

First, we will draw the chart here.

Length of first name	count	Degrees	cummulative degrees
three	7	6	6
four	47	37	43
five	93	74	117
six	117	93	210
seven	95	76	286
eight	57	45	331
nine	24	19	350
ten	8	6	356
over ten	4	3	359
Total	452		
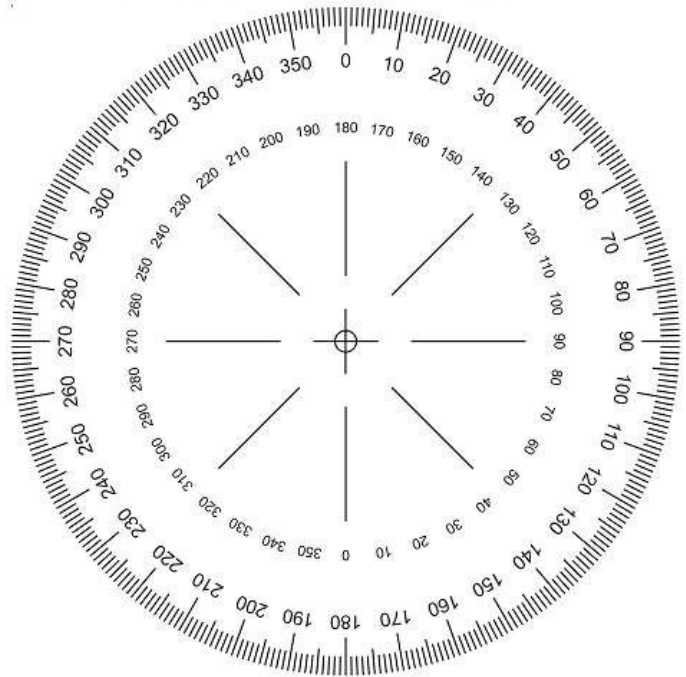
Then, we will do this in R, using RStudio.

Then we will look at these three pie charts of the same data, produced in Excel. The first is not much different from the two-dimensional pie chart that we generated in R.   In our discussion we should have covered the idea that pie charts are hard for humans to read and appreciate because the regions are sectors, not rectangles.

The second and third charts, shown below, demonstrate how easy it is to manufacture wrong impressions using 3-D charts. Notice how your impression of the magnitude of the yellow region changes between the two charts. Both charts are accurate. Both show the same values, but the rotation of the chart changes our impression!

Avoid using Pie Charts if at all possible.

Pie chart for Length of Student First Names

nine 5% · over ten 1% · four 10% · eight 13% · five 21% · seven 21% · six 26%

three · four · five · six · seven · eight · nine · ten · over ten

Pie chart for Length of Student First Names

three · four · five · six · seven · eight · nine · ten · over ten

Pie chart for Length of Student First Names

three · four · five · six · seven · eight · nine · ten · over ten

Here is part off a mental health test given to us "old people" when we are take to the emergency room. We are shown the following three figures and we are asked to identify the largest figure.

The supposed correct answer is the triangle. That is the answer that the medics want to hear to show that you, the patient, are mentally functioning. Unfortunately, the real correct answer is that the triangle and the rectangle are exactly the same size. It is our human inability to judge "slices" that leads the medics to think tht the triangle is larger.

The second type of pie plot is really no different, but we are given the data in a much more elementary format. For example, for the following data create a bar plot that shows the frequency of each different value in the table.

gnrnd4(745099103, 600031)

35	35	37	36	35	32	36	33	36	33	33	34	36	36	35
37	37	36	36	34	37	32	33	36	33	35	36	36	33	37
32	32	34	35	33	34	35	35	34	35	33	36	35	34	36
33	33	32	36	35	37	35	32	34	37	35	35	32	33	36
35	37	37	33	33	35	36	37	37	33	36	36	32	37	35
33	33	34	35	33	36	33	33	33	35	33	37	36	36	35
36	36													