

Topic 71: Frequency Tables for Grouped Data

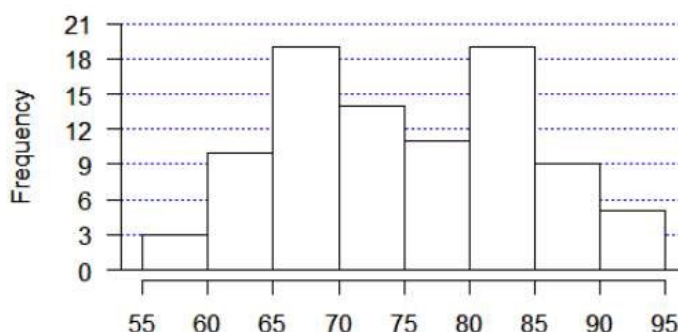
Consider the following data. `gnrnd4(1296288905, 4000666, 6000812)`

67.3	68.9	66.5	82.0	66.5	78.3	86.9	56.1	71.6	66.6	63.4	56.9	68.5	68.7	75.4
56.9	67.4	67.6	69.4	81.9	87.1	87.4	77.0	90.1	67.9	83.5	65.0	74.2	87.8	78.2
81.5	70.2	84.4	68.7	70.6	61.8	89.7	75.3	74.8	84.0	68.8	63.0	63.8	88.4	74.2
77.2	80.2	64.1	90.9	67.9	64.2	74.9	77.2	83.8	78.3	60.6	65.9	83.0	80.1	80.3
84.0	82.6	89.3	70.3	89.8	81.1	76.3	92.8	61.4	66.6	84.1	80.1	71.6	83.6	67.0
89.2	74.5	65.0	73.2	69.2	72.1	84.0	77.3	84.2	93.8	75.8	73.7	90.1	68.0	73.6

It would be useless to try to apply our techniques for building a frequency table for discrete values here. With just a quick glance it may well be the case that values are not repeated at all. However, we have already seen that a **histogram** of the data will give us a feeling for where values "bunch" up.

Here is such a histogram, spruced up to look nice and to help us read values from it.

Data for Topic 71



From the histogram we could build a table that has the frequency of values that fall into the intervals shown. Thus, for the interval (55,60] there are 3 values, for (60,65] there are 10 values, for (65,70] there are 19 values, and so on.

We could write out the start of a frequency table showing this as:

Interval	(55,60]	(60,65]	(65,70]	(70,75]	(75,80]	(80,85]	(85,90]	(90,95]
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Notice that the intervals are closed on the right. Thus, if the value 60.0 is in the data then it will be counted as being in (55,60] not in (60,65]. We could read the required frequency from the histogram or we could get a sorted list of the values and "cut" that apart.

[1]	56.1	56.9	56.9	60.6	61.4	61.8	63.0	63.4	63.8	64.1
[11]	64.2	65.0	65.0	65.9	66.5	66.5	66.6	66.6	67.0	67.3
[21]	67.4	67.6	67.9	67.9	68.0	68.5	68.7	68.7	68.8	68.9
[31]	69.2	69.4	70.2	70.3	70.6	71.6	71.6	72.1	73.2	73.6
[41]	73.7	74.2	74.2	74.5	74.8	74.9	75.3	75.4	75.8	76.3
[51]	77.0	77.2	77.2	77.3	78.2	78.3	78.3	80.1	80.1	80.2
[61]	80.3	81.1	81.5	81.9	82.0	82.6	83.0	83.5	83.6	83.8
[71]	84.0	84.0	84.0	84.1	84.2	84.4	86.9	87.1	87.4	87.8
[81]	88.4	89.2	89.3	89.7	89.8	90.1	90.1	90.9	92.8	93.8

However we do it, the frequencies are 3, 10, 19, 14, 11, 19, 9, and 5. Our frequency table becomes:

Interval	(55,60]	(60,65]	(65,70]	(70,75]	(75,80]	(80,85]	(85,90]	(90,95]
Frequency	3	10	19	14	11	19	9	5

Then, just as we did for the discrete case, we can add rows for the relative frequency, cumulative frequency, cumulative relative frequency, and the degrees to allocate in a pie chart.

Interval	(55,60]	(60,65]	(65,70]	(70,75]	(75,80]	(80,85]	(85,90]	(90,95]
Frequency	3	10	19	14	11	19	9	5
Relative Frequency	0.033	0.111	0.211	0.156	0.122	0.211	0.100	0.056
Cumulative Frequency	3	13	32	46	57	76	85	90
Cumulative Relative Frequency	0.033	0.144	0.356	0.511	0.633	0.844	0.944	1.000
Degrees in a Pie Chart	12	40	76	56	44	76	36	20

And, as we saw before, this same information can be organized in a vertical format so that the table would expand down rather than across if there are more intervals.

Interval	Frequency	Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency	Degrees in a Pie Chart
(55,60]	3	0.033	3	0.033	12
(60,65]	10	0.111	13	0.144	40
(65,70]	19	0.211	32	0.356	76
(70,75]	14	0.156	46	0.511	56
(75,80]	11	0.122	57	0.633	44
(80,85]	19	0.211	76	0.844	76
(85,90]	9	0.100	85	0.944	36
(90,95]	5	0.056	90	1.000	20