

Look at the **Students vs. Mystery Group Data** chart at the end of this document.

1. What do you notice?
2. What do you wonder?
3. Is there any categorical data?
4. How could we present quantitative data graphically?

Tools:

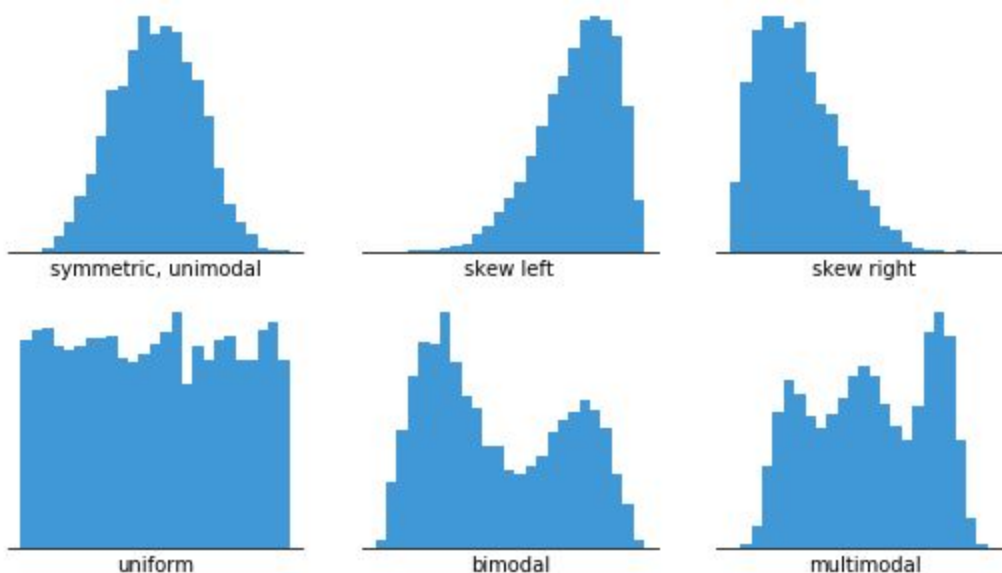
A histogram is like a bar graph but the horizontal axis is a number line. The bars are right next to each other with no space in between.

We often group data into class intervals or bins:

- intervals should be equal in size
 - we want between 5 and 20 classes (depends on data)
 - if data is continuous (includes decimals) then a data value that falls on a boundary should go into class to the right of the boundary (after the boundary).
5. Create 2 histograms to compare the students and the mystery group. Start with two similarly structured grouped frequency tables.
 6. What can you see now that you couldn't see before?

Google Image Search: histogram, age histogram, age distribution

What would each histogram below mean for a set of age data? for a set of income data?



Source: <https://chartio.com/learn/charts/histogram-complete-guide/>

In addition to a graphical display, we can summarize the differences between two sets of data with a numerical summary.

Two examples of numerical summaries are measures of center, and measures of variation, or spread.

In the age histograms we created,

- where is the center of each distribution?
- which set of data shows more variation in ages?

Measures of Center:

Mean - sum of data values divided by number of data values

Median - the middle value when values are ranked in order (or the average of two middle values)

Mode - the most frequently occurring value

Find the mean, median, and mode age for each group.

What percent of Students were below age 30? What percent of Mystery Group were below age 30?

For the students, what age is older than 50% of the students?

For the Mystery Group, what age is younger than 50% of the people?

How many people in the mystery group were between 50 and 60 years old?

Students vs. Mystery Group - 4 questions								
Fall 2019 Math 243					Mystery Group			
L1	L2	L3			L4	L5	L6	
age	height (inches)	number of siblings	Are you right or left handed?		age	height (inches)	number of siblings	Are you right or left handed?
16	63	1	Right		24	63	2	Right
17	64	1	Right		32	69	-4	Right
17	61	1	Left		35	59	3	Right
17	68	0	Right		35	59	2	Right
18	68	3	Right		43	58	3	Right
19	64	7	Right		47	66	2	Left
19	70	6	Right		47	76	1	Right
19	68	1	Left		47	63	3	Right
19	60	2	Right		49	65	1	Right
19	66	1	Right		50	64	2	Right
19	70	8	Right		53	69	2	Right
19	62	1	Right		53	72	1	Right
20	65	3	Left		54	68	3	Right
20	74	2	Right		54	67	1	Right
20	67	6	Right		56	69	2	Right
20	72	2	Right		57	66	8	Right
20	63	6	Right		57	67	1	Right
20	67	4	Right		65	70	0	Right
20	73	2	Right		65	66	3	Right
20	69	2	Right		67	66	7	Right
21	69	3	Right		67	66	2	Right
22	60	4	Right		68	67	2	Right
22	76	2	Right		72	70	1	Left
23	63	1	Right		80	71	4	Right
26	63	1	Right					
26	66	3	Right					
26	65	2	Right					
27	67	2	Right					
28	61	2	Right					
30	61	2	Right					
31	71	11	Right					
32	64	0	Right					
38	70	2	Right					
42	72	1	Left					