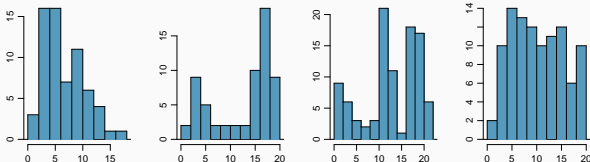# Shape of a distribution: modality

Does the histogram have a single prominent peak (*unimodal*), several prominent peaks (*bimodal/multimodal*), or no apparent peaks (*uniform*)?

_____

Note: In order to determine modality, step back and imagine a smooth curve over the histogram – imagine that the bars are wooden blocks and you drop a limp spaghetti over them, the shape the spaghetti would take could be viewed as a smooth curve.
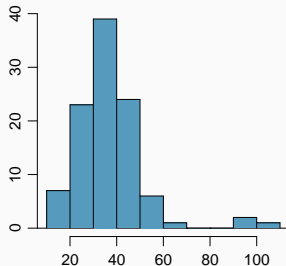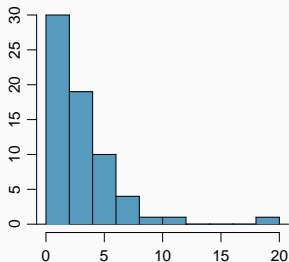
Is the histogram *right skewed*, *left skewed*, or *symmetric*?

_____
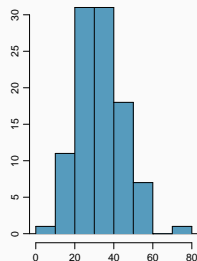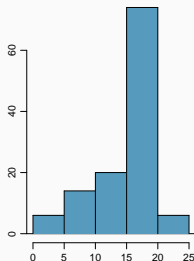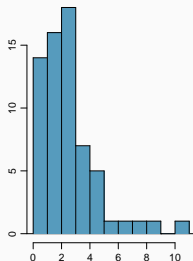
Note: Histograms are said to be skewed to the side of the long tail.
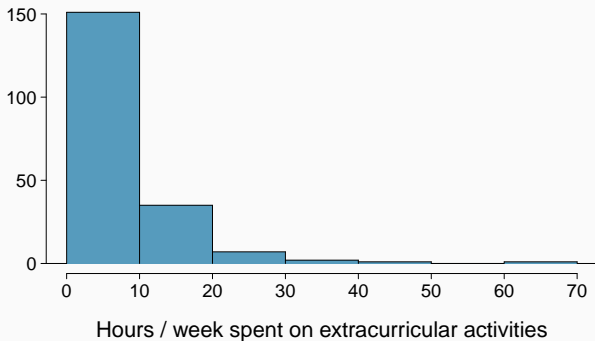
Shape of a distribution: unusual observations

Are there any unusual observations or potential *outliers*?

Extracurricular activities

How would you describe the shape of the distribution of hours per week students spend on extracurricular activities?
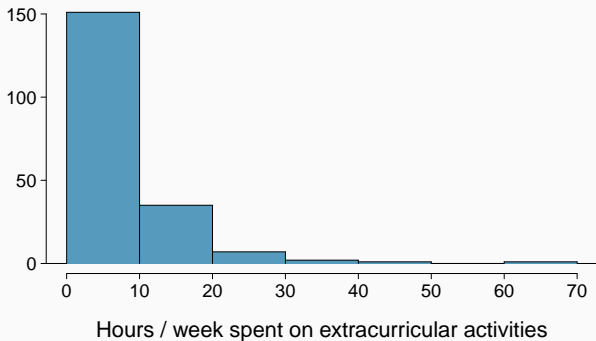

Hours / week spent on extracurricular activities

Extracurricular activities

How would you describe the shape of the distribution of hours per week students spend on extracurricular activities?

Hours / week spent on extracurricular activities

Unimodal and right skewed, with a potentially unusual observation at 60 hours/week.

Commonly observed shapes of distributions

- modality

Commonly observed shapes of distributions

- modality

unimodal

Commonly observed shapes of distributions

- modality

unimodal

bimodal

Commonly observed shapes of distributions

- modality

unimodal

bimodal

multimodal

Commonly observed shapes of distributions

- modality

unimodal

bimodal

multimodal

uniform

Commonly observed shapes of distributions

- modality

unimodal

bimodal

multimodal

uniform

- skewness

Commonly observed shapes of distributions

- modality

uniform

unimodal

bimodal

multimodal

- skewness

right skew

Commonly observed shapes of distributions

- modality

unimodal

bimodal

multimodal

uniform

- skewness

right skew

left skew

Commonly observed shapes of distributions

- modality

unimodal

bimodal

multimodal

uniform

- skewness

right skew

left skew

symmetric

Practice

Which of these variables do you expect to be uniformly distributed?

(a) weights of adult females
(b) salaries of a random sample of people from North Carolina
(c) house prices
(d) birthdays of classmates (day of the month)

Which of these variables do you expect to be uniformly distributed?

(a) weights of adult females

(b) salaries of a random sample of people from North Carolina

(c) house prices

(d) *birthdays of classmates (day of the month)*
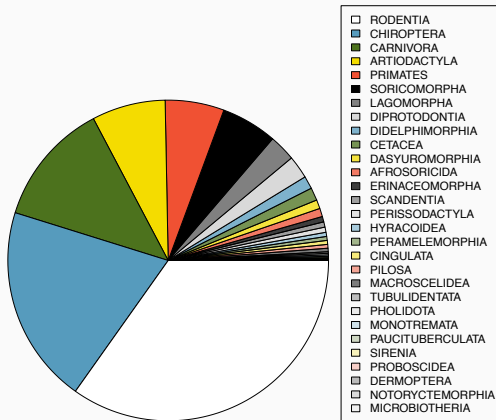
Considering categorical data

Segmented bar and mosaic plots

What are the differences between the three visualizations shown below?
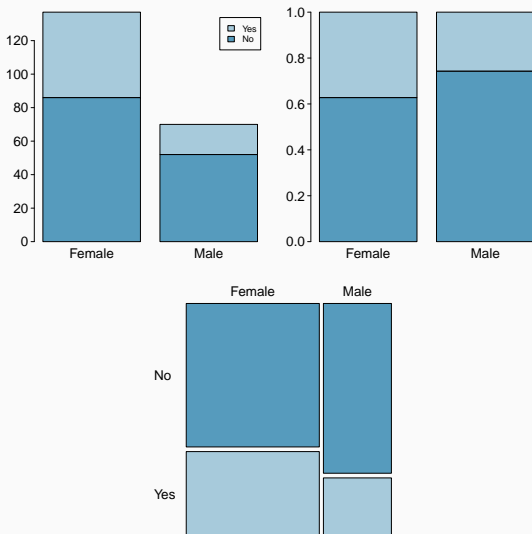
Pie charts

Can you tell which order encompasses the lowest percentage of mammal species?

Data from *http://www.bucknell.edu/msw3*.