

# UNIT 5 – AUTOMOBILE OWNERSHIP

Buy or sell a car



# HOW CAN STATISTICS HELP YOU NEGOTIATE THE SALE OR PURCHASE OF A CAR?

- When shopping for a car, you can determine a reasonable price for a particular car by examining the prices of those and similar cars listed in the classified ads.
- Two great resources are the *Kelley Blue Book* and *Edmunds* websites.
- Once you have a list of advertised prices, you can use statistics to help analyze the data you collected.
- Measures of central tendency are single numbers designed to represent a “typical” value for the data.
  - Examples: mean, median, & mode



# EXAMPLE 1:

Jason wants to sell his Ford SUV. He compiles these prices from the Internet for cars similar to his: \$11,000, \$9,900, \$12,100, \$10,500, and \$9,000. Find the average of these prices to determine a reasonable price for his SUV.

Average:

- also called: mean or arithmetic mean
- add everything up and divide by how many there are

$$\frac{11,000 + 9,900 + 12,100 + 10,500 + 9,000}{5} = 10,500$$



## EXAMPLE 2:

Jenny is looking for a classic 1967 Firebird. She finds these prices on the Internet: \$18,000, \$77,000, \$22,000, \$21,200, \$19,000, \$17,500, and \$22,500.

a) Compute the mean of these prices.

$$\frac{18,000 + 77,000 + 22,000 + 21,200 + 19,000 + 17,500 + 22,500}{7} = 28,171.43$$

b) Jenny doesn't think this number is a good representative of the data. What could she use as a better representation?

- If there is a number way off from the rest of numbers, that is called an **outlier**. This can throw off the average.
- When there is an outlier, the median is the better number to represent the data.



## EXAMPLE 2:

To find the median: put the numbers in order, then find the middle number.

- ❖ If there is no exact middle number, take the average of the two that are in the middle.

\$18,000, \$77,000, \$22,000, \$21,200, \$19,000, \$17,500, and \$22,500

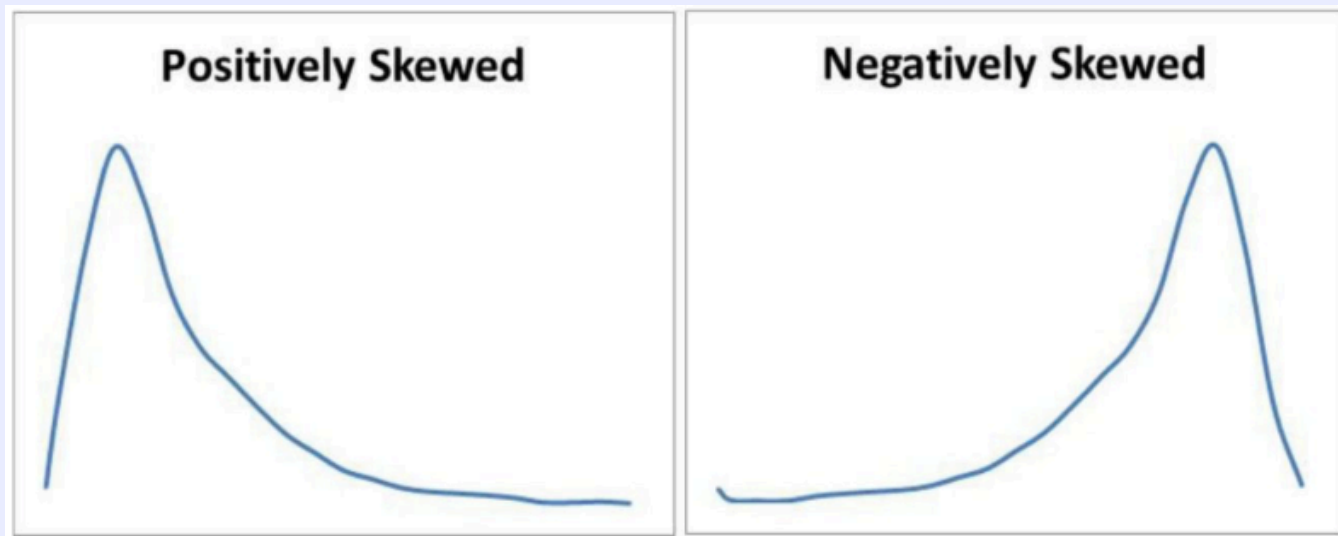
\$17,500, \$18,000, \$19,000, **\$21,200**, \$22,000, \$22,500, \$77,000

\$21,200 is the median of the data set. This is a better representation of the data.



# THE MEDIAN

- Because the median is not affected by the outlier, it is said to be resistant to extreme numbers.
- When extreme numbers throw off the average, the data set is said to be skewed.



## EXAMPLE 3:

Find the median of the used car prices: \$6700, \$5800, \$9100, \$8650, \$7700, and \$7800.

\$5800, \$6700, **\$7700, \$7800**, \$8650, \$9100

$$\frac{7700 + 7800}{2}$$

**\$7750**

\$7,750 is the median of the data set. There are the same number of prices below the median as there are above it.



# EXAMPLE 4:

Find the range of those same used car prices: \$6700, \$5800, \$9100, \$8650, \$7700, and \$7800.

$$\$9100 - 5800 = 3300$$





# EXAMPLE 5:

Find the quartiles for the tire pressures of cars at an auto clinic: 15, 17, 21, 25, 31, 32, 32, 32, 34.

15, 17, 21, 25, 31, 32, 32, 32, 34

15, 17, 21, 25, **31**, 32, 32, 32, 34

15, **17**, **21**, 25, **31**, 32, **32**, **32**, 34

$$Q2 = 31$$

$$Q1 = \frac{17 + 21}{2}$$

$$Q3 = \frac{32 + 32}{2}$$

$$Q1 = 19$$

$$Q3 = 32$$

