## 8.2a - Parameter vs. Statistic

1. *Identify the population and the sample:*

   a. A survey of 1353 American households found that 18% of the households own computer.

   *Pop: all Am. households     Samp: 1353 Am. households*

   b. A recent survey of 2625 elementary school children found that 28% of the children could be classified obese.

   *Pop: all elem sch kids     Samp: 2625 elem sch kids*

   c. The average weight of every sixth person entering the mall within 3 hour period was 146 lb.

   *Pop: all people entering mall in 3hr pd.     Samp: every 6th person.*

2. *Determine whether the numerical value is a parameter or a statistic:* which value? All?

   a. A recent survey by the alumni of a major university indicated that the average salary of 10,000 of its 300,000 graduates was 125,000.

   *pop · statistic     sample*

   b. The average salary of all assembly-line employees at a certain car manufacturer is $33,000. The average late fee for 360 credit card holders was found to be $56.75.

   *sample     statistic     parameter*

3. *For the studies described, identify the population, sample, population parameters, and sample statistics:*

   a. In a USA Today Internet poll, readers responded voluntarily to the question "Do you consume at least one caffeinated beverage every day?"

   *pop = all USA today poll readers*
   *Sample = USA today pollers who responded*
   *Param =*  ⎫
   *Statistic =* ⎭ *no numbers given*

   b. Astronomers typically determine the distance to galaxy (a galaxy is a huge collection of billions of stars) by measuring the distances to just a few stars within it and taking the mean (average) of these distance measurements.

   *pop = all stars in galaxy*
   *Sample = few stars chosen*
   *param = actual dist.*
   *statistic = avg. of few star dist.*

$$ME = \frac{1}{\sqrt{n}}$$

**8.2b - Margin of Error**
Find the margin of error for a survey that has the given sample size. Round your answer to the nearest tenth of a percent.

1. 200  .0707    2. 350  .0535    3. 1100  .0305    4. 2600  .0196

7.1%        5.4%        3.0%        2.0%

Find the sample size required to achieve the given margin of error. Round your answer to the nearest whole number.

5. ±2%        6. ±4%        7. ±9.5%        8. ±2.7%

2500        625        110.8        1371.74

111        1372

In a survey of 504 people in the United States, about 11% said that the influx of new technologies such as computers has left them feeling overwhelmed.

9. What is the margin of error for the survey? Round your answer to the nearest tenth of a percent.

$$ME = \frac{1}{\sqrt{504}} = .0445 \qquad 4.5\%$$

10. Give an interval that is likely to contain the exact percent of all people in the United States who feel overwhelmed by the influx of new technologies.

6.5% to 15.5%

A survey reported that 510 kids ages 8 to 18, or 68% of those surveyed, have a TV in their bedroom.

11. How many kids ages 8 to 18 were surveyed?

510

12. What is the margin of error for the survey? Round your answer to the nearest tenth of a percent.

$$ME = \frac{1}{\sqrt{510}} = .0443 \qquad 4.4\%$$

13. Give an interval that is likely to contain the exact percent of all kids ages 8 to 18 who have a TV in their bedroom.

63.6% to 72.4%

14. About how many kids ages 8 to 18 should be surveyed to have a margin of error of 2.5%?

$$.025 = \frac{1}{\sqrt{n}} \qquad n = 1600$$