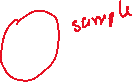
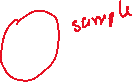
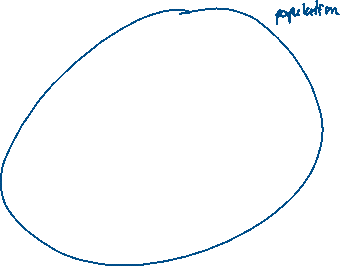
# Population Parameter vs. Sample Statistic



A calculation using sample data is called a statistic. For example: the sample average or sample mean is a statistic. Sample standard deviation is a statistic. The sample median is a statistic. The sample maximum is a statistic.

Imagine that we have the population data. A “calculation” using the population data is called a parameter. So the population mean is a parameter. The population standard deviation is also a parameter. The population median is a parameter.

**Example:** Determine whether each number describes a population parameter or a sample statistic.

1. College freshmen have an average SAT math score of 514.



1. In a random check of several hundred retail stores, the Food and Drug Administration found that 34% of the stores were not storing fish at the proper temperature.



**You Try:** Determine whether each number describes a population parameter or a sample statistic.

1. American median income is $40k



1. In the United States, a survey of a few thousand adults found that their median income is 60k



**You Try:** Determine whether each number describes a population parameter or a sample statistic.

1. In the United States, 40% adults with hearing loss have difficulty remembering conversations.



1. In the United States, a survey of a few thousand adults with hearing loss found that 43% have difficulty remembering conversations.



**You Try:** Determine whether each number describes a population parameter or a sample statistic.

1. In the United States, 43% adults with hearing loss have difficulty remembering conversations.

1. In the United States, a survey of a few thousand adults with hearing loss found that 43% have difficulty remembering conversations.

# Inferential Statistics

**Example:** A study of 300 Wall Street analysts found that the percentage who incorrectly forecasted high-tech earnings in a recent year was 44%.

1. Identify the population and the sample

Sample: the 300 Wall Street analysts in the study.

Population: All Wall Street analysts.

1. What conclusions might be drawn from the study using inferential statistics

* Wall Street Analysts are only correct about 50% of the time
* Wall Street Analysts are correct less than 56% about forecasting high-tech earnings.
* Wall Street Analysts are correct less than 60% about forecasting high-tech earnings.
* Wall Street Analysts are correct less than 70% about forecasting high-tech earnings.

**You Try:** A study of 1000 U.S. adults found that when they have a question about their medication, three out of four adults will consult their physician or pharmacist and only 8% visit a medication specific website.

1. Identify the population and the sample

Sample: 1000 US adults

Population: Americans with age more than 18 (US Adults).

1. What conclusions might be drawn from the study using inferential statistics

* Less than 20% of US adults will consult when they have a question about their medication.
* At least 75% of US adults will consult when they have a question about their medication.
* At least 95% of US adults will not visit a medication specific website when they have a question about their medication.

**You Try:** A study of 300 recent college graduates found that the median starting salary in their first job was $52,000.

1. Identify the population and the sample

1. What conclusions might be drawn from the study using inferential statistics

**You Try:** A study of 300 mutual funds found that the maximum annual return achieved in a recent year was 28%.

1. Identify the population and the sample

1. What conclusions might be drawn from the study using inferential statistics