



1.1.2

Statway Mindset Activity and Populations and Samples

INTRODUCTION

Read the study below. This study was introduced in Lesson 1.1.1.

A group of researchers studied women who had visited a fertility clinic. The researchers wondered if fewer than half of the women who visit the clinic would want to choose the sex of their future child.¹

The researchers mailed a survey to women who had visited the clinic. The survey asked women if they would choose the sex of their future child, if they were able to do so. A total of 561 women responded to the survey. Of these 561 women, 229 said that they wanted to choose the sex of their future child.

The researchers did statistical analysis on the data. Based on their statistical analysis of these data, the researchers concluded that there is **convincing evidence** that *fewer than half* of the women who visit the clinic would choose the sex of a future child. This conclusion is based on the following observation:

If, in reality, at least half of women who visit a fertility clinic would like to choose the sex of a future child, it would be very unusual to observe a percentage as low as 41% in a sample of 561 women who visited the clinic ($229/561 \approx 0.41$).

TRY THESE

- 1 **Population** is a commonly used word in statistics. In the study above, find the conclusion highlighted in **bold**. What population does the conclusion refer to?
- 2 **Sample** is also a commonly used word in statistics. What is the sample in the study?

¹Tarun Jain et al., "Preimplantation Sex Selection Demand and Preferences in an Infertility Population," *Fertility and Sterility* 83, no. 3 (2005): 649-58.

- 3 Researchers asked the 229 women (who would want to choose the sex of a future child) another question. The researchers asked the women: “Which sex would you choose”?

The researchers wanted to know if the 229 women had a preference for male or female children. Among these 229 women, 140 women said they would choose a female child. Do you think this shows that among all women visiting the fertility clinic who would choose the sex of a future child, there is a preference for female children? Give a reason for your answer.

STUDENT NAME _____ DATE _____

TAKE IT HOME

In class, we discussed the following concepts:

- A **population** is the entire group of individuals or objects of interest to us.
- A **sample** is a subset of the population that we study to collect or gather data.

- 1 Read the study from the homework in the previous lesson.

The United States government recommends that to stay physically fit, middle-aged adults (ages 40 to 60) need to burn 150 to 400 calories per day doing exercise. Researchers at Minnesota State University, Mankato, wanted to learn whether middle-aged adults who used the Wii Fit video game exercised enough to meet the government’s fitness recommendations.² The Wii Fit is a video game that includes exercises.

The researchers taught 20 middle-aged adult volunteers how to use the Wii Fit video game. On the day after they were trained, the adults exercised for 20 minutes with the Wii Fit. Researchers measured the total amount of energy each of the adults in the study used in calories. They found that the average energy used was 116 calories for the 20 minute session.

Based on the results of the study, the researchers concluded the Wii Fit video game could be a helpful form of exercise for middle aged adults. But, for exercise with Wii Fit to meet the government’s recommendation, the researchers stated that the length of the exercise session should be increased from 20 minutes to 30 minutes.

- A What is the population for this study?
- B What is the sample for this study?
- C What is the question that researchers are trying to answer with this data?

²B. Guderian, “The Cardiovascular and Metabolic Responses to Wii Fit Video Game Playing in Middle-Aged and Older Adults,” *The Journal of Sports Medicine and Physical Fitness* 50, no. 4 (2010): 436-42. <http://www.ncbi.nlm.nih.gov/pubmed/21178930>.