

## Lesson 4.2 Surveys & Questionnaires



**Goal: Assess the validity of survey results based on bias and sampling technique**

### Terminology

**Representative Sample:** A sample that is typical of the \_\_\_\_\_. If the sample is not representative, it is \_\_\_\_\_ and the survey results are \_\_\_\_\_.

**Sample Size:** In a survey **sample size can affect its results.**

- If the sample is too \_\_\_\_\_, the survey results may not be \_\_\_\_\_
- If it's too \_\_\_\_\_, the survey may \_\_\_\_\_ a lot and be too difficult to conduct

### Sampling Techniques

**Random Techniques** – Each member of the population has an \_\_\_\_\_ chance of being selected

- 1) \_\_\_\_\_ **Sampling** - Picked randomly
- 2) \_\_\_\_\_ **Sampling** - Population is grouped and a **few** individuals are picked **from each group**
- 3) \_\_\_\_\_ **Sampling** - Population is organized into groups and **one group** is chosen
- 4) \_\_\_\_\_ **Sampling** - Every  $n^{\text{th}}$  individual is selected

**Non-Random Techniques** – Will not necessarily provide a \_\_\_\_\_

- 1) \_\_\_\_\_ **Sampling** - Individuals who are easy to sample are chosen
- 2) \_\_\_\_\_ **Sampling** - The person who is doing the sampling uses their judgement to create a representative sample
- 3) \_\_\_\_\_ **Sampling** - Participants Volunteer

**EXAMPLE 1** A town has a population of 20,000 people. The town council conducts a vote at a public meeting about constructing a new ice-hockey rink.

- 50 people attend the meeting
- 40 of the people at the meeting vote in favour of the hockey rink
- Council decides to build the hockey rink since 80% of the people support the data

- a) What percent of the people at the meeting voted for the rink?
- b) What percent of the people in the town attended the meeting?
- c) Is the sample representative? Justify your answer.



**Bias in Surveys**

**Bias:** occurs when the results of a \_\_\_\_\_ do not reflect the \_\_\_\_\_ population

**Biased Questions:** \_\_\_\_\_ people’s choices or use \_\_\_\_\_ that could influence people to answer in a certain way. For results to be valid, survey questions must be \_\_\_\_\_.

**Types of Bias:**

**Leading Questions:** Contain wording or information to \_\_\_\_\_ a specific response

**Loaded Questions:** Suggest a socially desirable answer or are emotionally charged.

**Response Bias:** When people intentionally \_\_\_\_\_ or give \_\_\_\_\_ information

**Non-Response Bias:** When people fail to \_\_\_\_\_ one or more questions

**Sampling Bias:** When you have a \_\_\_\_\_ sample

**EXAMPLE 2** People walking by in the mall were asked “*We harm the planet when we use pesticides on our lawns. Should the government ban all residential pesticide use?*”

- a) Will the survey results be valid? Justify your answer
  
- b) How could the survey be improved?

**EXAMPLE 3** About 4000 people visited a large sports equipment store during its annual sale. The store surveyed 100 customers after they paid for their purchases. An employee recorded their answers.

Why are the survey results invalid? How could they be improved?

**To assess the survey, ask yourself these questions.**

- a) Is the sample size large enough?
  
- b) Is the sample representative?
  
- c) Are the survey questions unbiased?
  
- d) Was the collection method appropriate?

1. Good sports equipment can greatly improve performance. How much do you spend on equipment each year?

<input type="checkbox"/> \$200 or less	<input type="checkbox"/> \$200–\$400
<input type="checkbox"/> \$400–\$600	<input type="checkbox"/> \$600–\$800
<input type="checkbox"/> \$800–\$1000	<input type="checkbox"/> More than \$1000

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2. How much do you earn per year?

<input type="checkbox"/> Less than \$10 000	<input type="checkbox"/> \$10 000–\$20 000
<input type="checkbox"/> \$20 000–\$40 000	<input type="checkbox"/> \$40 000–\$60 000
<input type="checkbox"/> \$60 000–\$80 000	<input type="checkbox"/> More than \$80 000