

2.5 Sampling Techniques

What do we have to think about when conducting a survey (gather data/information)?

- ★ 1. What is the info for?
- ★ 2. Who do you want the info from?
- ★ 3. How can we get accurate results?



In order to make a survey fair we must consider:

- Population: all individuals or items in the group being studied → Who? ★
- Sample: group of individuals or items that represent the population → How many? ★
How chosen? ★
- Structure of survey → What data? ★
How collected? ★

Feb 24-8:48 AM

Identify the population about which information is being sought:

a) The management team at a shopping mall in Ottawa wants to know how to attract more people between the ages of 18 and 25 to the mall

👉 People from Ottawa between the ages of 18 and 25

b) A soft drink bottler wants to determine the actual volume of pop in 1 litre bottles.

👉 All 1 Litre bottles of pop bottled by this company

c) A polling company wishes to determine which political party is expected to win the next Federal election

👉 All Canadians aged 18 or over who are eligible to vote

Oct 5-1:51 PM

A **Census** is a survey of the ENTIRE population

Why would we only survey a sample of the population?

- time
- cost
- physical constraints

In each situation explain why you would collect data from a sample instead of the population:

- To find the average age when Canadian drivers got their licences
- To find number of hours a AAA battery from Duracel will last.

Oct 6-1:46 PM

Types of Sampling		Example
Simple Random Sample	Each member of the population has an equal chance of being selected	Pulling names from a hat
Stratified Random Sample	Population is divided into subgroups and a random sample from each is taken in proportion to its size in the population	Use each grade! gr. 9 - 40% gr. 11 - 20% gr. 10 - 30% gr. 12 - 10%
Cluster Sample	Population is divided into clusters and all members of a cluster participate	Asking gr. 11 math class: favourite store
Systematic Sample	Every 'n' th member of the population is selected	Every 10th person sampled
Voluntary-Response Sample	Sample has only members of the population who choose to respond	"Go to the website to fill in this form"
Convenience Sample	Sample is members who were easiest to sample	Standing @ the mall to ask

Examples:

Systematic
What time do you eat dinner?
 Every 6th student was chosen, after choosing a random starting place on the student roster

Cluster
Do Grade 10 students like West? Choose one class of Gr 10's from west to survey

Stratified
Do you eat the caf food? 24% of Gr 9's, 28% of Gr 10's, 22% of Gr 11's and 26% of Gr 12's were asked

Convenience
Does Dunrobin need another traffic light? Ask all of your friends who live in Dunrobin

Voluntary
Do red cars look cooler? Only people who replied by email were included

Simple Random
Which hockey team do you cheer for? Names of all participants drawn from a hat

Feb 24-9:25 AM

Choosing a Sampling Technique:

Open your text book to page 105
and lets read Example 2 together

Oct 5-2:17 PM

👉 A bias sample does not truly reflect the population

Causes:

- misrepresentative sample (size, location, demographics...)
- wording of the survey (leading question)
- interpretation or presentation(is the question clear and concise)

Example:

What is Canada's favourite hockey team?

Biased sample:

Only people who live in Ottawa
were surveyed



Unbiased sample:

Random sample of all Canadians who are
interested in Hockey were sampled

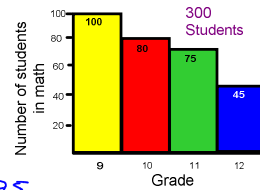


Feb 24-10:39 AM

Example 1

There are 300 students taking math at West
We want to survey 60 math students

1. Calculate the percent of the population that each grade represents



$$\text{Grade 9: } \frac{100}{300} = 33.3\%$$

$$\text{Grade 10: } \frac{80}{300} = 26.7\%$$

$$\text{Grade 11: } \frac{75}{300} = 25\%$$

$$\text{Grade 12: } \frac{45}{300} = 15\%$$

2. Calculate the number of students that should be chosen to represent each grade

$$\text{Grade 9: } 60(0.333) = 20$$

$$\text{Grade 11: } 60(0.25) = 15$$

$$\text{Grade 10: } 60(0.266) = 16$$

$$\text{Grade 12: } 60(0.15) = 9$$

Feb 24-10:45 AM

Practice:

pg 106-109 #2-4, 8, 9, 11

Feb 26-8:48 AM