

Unit 1 - Review

Population vs. Sample

Population: The entire population that would be involved in the survey

Sample: The selection of the population that you choose to survey.

Eg: You want to know how many grade 12 students have their licence in Canada.

Population: all grade 12 students in Canada

Sample: all grade 12 students in 3 specific high school in each capital city in Canada.

Sampling Techniques

Random Sampling

Systematic Random Sampling - you randomly pick the first person and after that you choose an interval (Eg: choose the 14th person to start survey and then ask every 5th person after that)

Stratified Random Sampling - Divide population into groups, ensure sample's population represents the population (eg: if population is 26% Catholic, your sample should be 26% Catholic)

Cluster Random Sampling - Divide into groups and then ask everybody in the group

Convenience Sample - ask whomever's convenient to complete the survey

Judgement Sample - you make a decision about who you want to be in my sample

Voluntary Survey - you sample only includes people who want to fill out survey

Destructive Sampling - you use something until it breaks to see how long it lasts. (Testing life span of products)

Surveys - Types of Questions

Open vs. Closes questions

Open - can answer whatever you like

Closed - have to choose answer from a list (Eg: Multiple choice)

What makes a good survey?

1. good questions - non biased
2. large enough sample
3. representative sample
4. good sampling method

What makes a bad survey:

- leading questions
- double barrel question (question asks 2 things and you don't know which one to apply answer to)
- irrelevant answer (asked fav. subject and response is vball practice)
- inconsistent answer (eg: different units in answers)
- non mutually exclusive responses (solution can go in more than category)
- non exhaustive responses - your answer to the question doesn't exist

Analyzing One Variable Data

Measures of Central Tendency

how to get to a mark in the centre that represents the results): man, median, mode

Measures of Spread: range, standard deviation, interquartile range (Q3-Q1)

Percentiles and Quartiles

Graphing One - Variable Data

bar graphs, histograms, pictograph, circle graph, pie chart, box and whisker plot (use quartiles), stem and leaf plot.

Statistics in the Media

Standard Deviation

7, 9, 12, 5, 6

1. Find the mean

$$\bar{x} = \frac{7+9+12+5+6}{5}$$

$$\bar{x} = 7.8$$

x	$x - \bar{x}$	$(x - \bar{x})^2$
7	$7 - 7.8 = -0.8$	0.64
9	$9 - 7.8 = 1.2$	1.44
12	$12 - 7.8 = 4.2$	17.64
5	$5 - 7.8 = -2.8$	7.84
6	$6 - 7.8 = -1.8$	3.24
TOTAL		30.8

Standard deviation = $\sqrt{\frac{30.8}{5}}$
 Standard deviation = 2.5

Percentiles mass in kg.

51 55 62 67 79
55 62 51 79 67

What percentile does someone whose mass is 62 fall into?

2 out of the 5 data members are less than 62

$$\frac{2}{5} = \frac{2 \div 5}{1} \times 100 = 40\%$$

The person with mass 62kg falls into the 40th percentile.

What mass is in the 80th percentile?

80% of 5 = $0.80 \times 5 = 4$. Their mass must be 79 kg.