

2.4 Interpret Information Involving Probability

A Statistics

Statistics is the collection and analysis of numerical information.

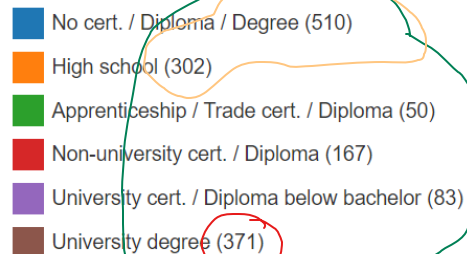
Statistics involve gathering data from real life events in order to make predictions about future events.

Example 1. In the diagram on the right is presented information about highest level of education from an accredited institution for a small area in the centre of Mississauga city.

a) Calculate the percentage of people having a university degree.

$$P(\text{university degree}) = \frac{371}{510 + 302 + 50 + 167 + 83 + 371}$$

$$= \frac{371}{1483} = 0.250 \therefore 25\% \text{ of people have a university degree}$$



b) Calculate the percentage of people having a high school degree or less.

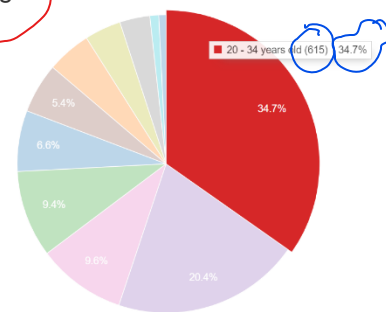
$$P(\text{high school or less}) = \frac{510 + 302}{1483} = 0.5475 = 54.75\%$$

Example 2. In the following pie chart is represented the population of a small village grouped according to age. Use the information given on this diagram to estimate the population of this village.

$$34.7\% = \frac{615}{\text{Total \# of people } T}$$

$$(1)(615) = (34.7\%) T$$

$$\frac{615}{34.7\%} = \frac{615}{34.7/100}$$



$$T = \frac{615}{34.7\%} = \frac{615}{34.7/100} \approx 1772.33$$

\therefore Population of the village is about 1772.

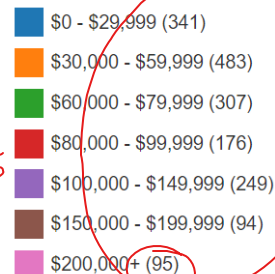
Example 3. In the following diagram is presented the combined gross income of all the members of a household who are 15 years old and older in an area close to the intersection of Hurontario and Eglington, Mississauga city.

What is the percentage of the households earning per year more than \$200,000?

Probability

$$P(\text{income} \geq 200,000) = \frac{95}{341 + 483 + 307 + 176 + 249 + 94 + 95}$$

$$= \frac{95}{1745} = 0.054 \approx 5.4\%$$



Example 4. A sport preference poll done in a high school showed the following data:

Gender	Favorite Sport				
	Baseball	Basketball	Football	Golf	Tennis
Male	24	17	30	18	22
Female	21	20	22	12	28

a) What is the probability than a female student to like football?

$$P(\text{a female student likes football}) = \frac{22}{21 + 20 + 22 + 12 + 28} = \frac{22}{103} \approx 0.213 \approx 21.3\%$$

b) What is the percentage of students who like baseball?

$$P(\text{student plays baseball}) = \frac{24 + 21}{24 + 21 + 17 + 20 + 30 + 22 + 18 + 12 + 22 + 28} = \frac{45}{214} \approx 0.21 \approx 21\%$$

c) What is the percentage of male students who like golf or tennis?

$$P(\text{male students playing either golf or tennis}) = \frac{18 + 22}{24 + 17 + 30 + 18 + 22} = \frac{40}{118} = 0.339 \approx 33.9\%$$

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Example 5. Research shows the average number of searches that search engines get during a day:

Google: 4,464,000,000

Bing: 873,964,000

Baidu: 583,520,803

Yahoo: 536,101,505

DuckDuckGo: 38,220,825

a) How many searches are done by Google search engine per second?

b) What percentage of all searches are done by Google search engine?