Unit 6: Statistics Lesson 6.4

Coach's Corner – VI

1. Read the following excerpt.

World's Potential Migrants Are Often Young, Educated, Well-Off

But most likely to be underemployed

by Julie Ray and Neli Esipova

WASHINGTON, D.C. – Gallup finds that the world's roughly 630 million would-be migrants are most likely to be young, single, educated, and relatively financially well-off. But they are also most likely to be underemployed and may feel they need to move to another country.

Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?

	% who say they would like to migrate
Age	
15 – 24	**23%**
25 – 44	**15%**
45 – 64	**9%**
65+	**4%**
Education	
Secondary education	**19%**
Four years beyond high school or college degree	**19%**
Completed primary education or less	**9%**
Martial Status	
Single	**25%**
Married	**11%**
Divorced/Widowed/Separated	**10%**
Income	
Richest 20%	**17%**
Fourth 20%	**15%**
Middle 20%	**13%**
Second 20%	**12%**
Poorest 20%	**11%**

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Employment	
Underemployed	20%
Employed at capacity	13%
Not in workforce	12%

Based on 401,490 interviews in 146 countries between 2008 and 2010.

GALLUP

Gallup's latest findings on adults' desire to move to other countries are based on a rolling average of interviews with 401,490 adults in 146 countries between 2008 and 2010. The 146 countries represent more than 93% of the world's adult population.

Survey Methods

Results are based on aggregated telephone and face-to-face interviews with 401,490 adults, aged 15 and older, in 146 countries from 2008 to 2010. The 146 countries surveyed represent 93% of the world's adult population. One can say with 95% confidence that the margin of sampling error for the entire sample accounting for weighting and sample design is less than ±1 percentage point.

Source: *http://www.gallup.com*

a. What are the sample size, margin of error, and confidence level used in this study? Give an example of a confidence interval for this study.

sample size	401 490
margin of error	< ± 1 percentage point
confidence level	95%

An example of a confidence interval is that 22% to 24% of people aged 15 to 24 said they would like to migrate.

b. There were approximately 5.9 billion people over 15 in the world in 2009. Give an upper limit for the number of married people that wanted to migrate.

11% of married people expressed an interest in migrating and there is less than a 1 percentage point margin of error, so 12% should be an upper limit, 95% of the time.

$0.12 \times 5.9 = 0.708$, so 0.708 billion or 708 million is an upper limit for the number of married people wanting to migrate, 95% of the time.

c. Describe a person that you expect would be unlikely to want to migrate.

A person that is over 65, has little education, is divorced/widowed/separated, has a low income, and is not part of the workforce will be unlikely to want to migrate to a different country.

d. Do the values in a. suggest that the information in this study is trustworthy?

This study has an extremely high sample size, a very low margin of error and a high confidence interval. This suggests the data in the study is reliable.

2. A survey was conducted on 1024 people. It determined, with 95% confidence, that between 259 000 and 342 000 people, from a total population of 970 000, would vote yes on proposal 1.

a. Determine the predicted value and margin of error as percentages.

The predicted value will lie halfway between 259 000 and 342 000.

$$\text{predicted value} = \frac{259000 + 342000}{2}$$

$$\text{predicted value} = 300\,500$$

Convert 300 500 to a percent of the total population.

$$\frac{300500}{970000} \times 100\% = 31.0\%$$

The difference between the predicted value and the lower limit gives the size of the margin of error.

$$300500 - 259000 = 41\,500$$

Convert 41 500 to a percentage of the total population.

$$\frac{41500}{970000} \times 100\% = 4.3\%$$

So, the actual number of people that will vote yes on proposal 1 is expected to be $31.0\% \pm 4.3\%$, with 95% confidence.

b. Suppose the survey was conducted using 497 people instead of 1024. How do you expect the values of 259 000 and 342 000 from the total population would change?

A smaller sample typically results in a larger confidence interval. This means the lower bound of the 95% confidence interval would be below 259 000 and the upper limit would be above 342 000.

3. Find two examples in the media (newspaper, magazine, online, etc.) where margins of error and confidence levels are used to support a particular position or research finding. (If you have difficulty finding examples, enter "Canadian opinion polls" into a search engine.)

   a. Summarize the claims made in each article.

      Your summary should include the major claims of each article. Focus on the big picture and not on the fine details.

   b. State the sample size, the margin of error, and confidence level for each article.

      State one confidence interval that could be interpreted from each article. Values will vary with the articles used.

   c. Which of the two claims do you feel is better supported? Explain.

      Responses will vary. A well-supported result will have a large sample size, a low margin or error, and a high confidence level.

Please complete *Lesson 6.4 Game On!*, *Unit 6 Time Out*, *Final Review Assignment*, and *Check Point* located in *Workbook 6B*.