

Name

Ecosystems and the Human Factor

FINAL REPORT – PART I

Question 1

On paper, summarize your data in a two-way frequency table, with rows corresponding to one category and columns corresponding to the other category.

Calculate the relative frequencies for your two-way frequency table. Write them as percentages in each cell of the table. If necessary, round to the nearest tenth of a percentage.

- a) What is the total number of observations (number of surveys completed)?

- b) Choose three relative frequencies from the table. What is the meaning of each value in the context of your survey? Does this value suggest an association between the two categorical values? Support your answer with appropriate calculations.

- c) Use your results to conclude whether the value of one of the variables in your survey indicates the likelihood of the different possible values of the second variable.

FINAL REPORT – PART II

Use Environmental Measurement Data Table for Question 2

ECOSYSTEMS

Environmental Measurement Data

Access to Safe Drinking Water and Average Life Expectancy for Various Countries in 2012		
Country	Percent of Urban Population with Access to Safe Drinking Water	Average Life Expectancy at Birth (years)
Algeria	86	72
Angola	68	51
Belize	98	75
Chad	72	51
Dominican Republic	83	77
France	100	82
Guatemala	99	72
Haiti	75	62
Japan	100	84
Kenya	82	61
Latvia	100	74
Liberia	87	62
Mauritania	52	63
Nepal	90	68
Oman	96	76
Peru	91	77
Qatar	100	79
Rwanda	81	65
Singapore	100	83
Spain	100	82
Thailand	97	75
United States	99	79
Vietnam	98	76
Yemen	72	64
Zambia	85	57

Question 2

The Environmental Measurement Data table lists bivariate measurement data for some countries. The table shows:

- the percent of the country's urban population that has access to safe drinking water; and
- average life expectancy at birth (in years).

Use the data table to perform the following task.

A client is interested in whether there is a relationship between access to safe drinking water for an urban population and the average life expectancy in that country.

Use graph paper to make a scatter plot of the data. Plot a point for every pair of values. Graph the percent of the urban population with access to safe drinking water on the horizontal axis, and the average life expectancy on the vertical axis.

Make sure to do the following:

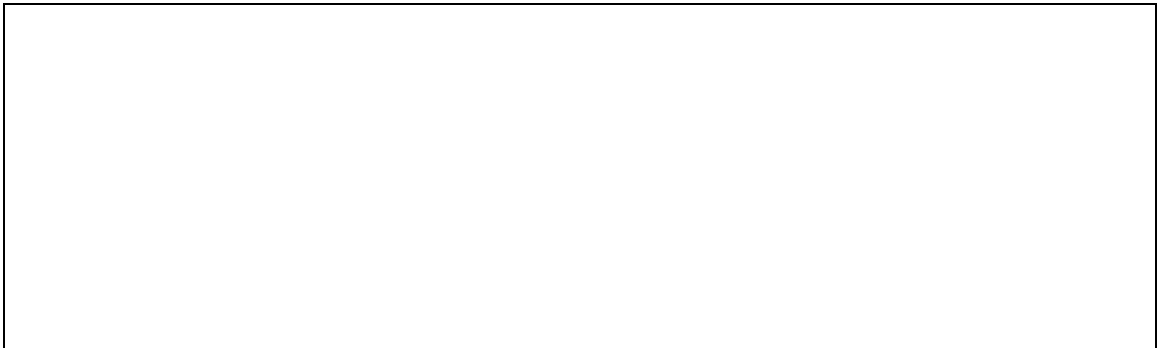
- give your graph a clear title that conveys what is plotted;
- label your axes; and
- use an appropriate scale for the axes.

Question 3

Describe the association between the data values as:

- linear or non-linear;
- positive or negative; and
- weak or strong.

Explain how you determined each association from your scatter plot.



Question 4

Describe any clustering in the scatter plot.

Question 5

Identify the country and the coordinates associated with any outlier(s) in the scatter plot.

Question 6

Answer the following questions to help the client understand the relationship between the quantities.

- a) Overall, what do the data indicate about the relationship between access to safe drinking water for an urban population and the average life expectancy in that country?

- b) What is a reasonable prediction of the average life expectancy for residents in a country where a low percentage of urban residents have access to safe drinking water?

- c) Describe what you could reasonably conclude about the urban population's access to safe drinking water if you know that country has a high average life expectancy.

- d) If there is an outlier in the scatter plot, then explain in context why the observation is unusual.

Question 7

Generate and interpret a trend line for your scatter plot.

- a) Draw a line on your scatter plot that models the relationship between the two variables.
- b) Write an equation that approximates your trend line, where x represents the average life expectancy in years and y represents the percent of the urban population that has access to safe drinking water.

- c) Explain the meaning of the slope of your trend line in context.

- d) Does interpreting the y-intercept of your trend line in the context of the data make sense? Explain why or why not.

Question 8

In 2012, about 78% of the urban population of the United Republic of Tanzania had access to safe drinking water.

- a) Use your trend line to predict the average life expectancy of someone who lives in the United Republic of Tanzania.

- b) The actual average life expectancy of someone who lives in the United Republic of Tanzania is 61 years. Was your prediction close? Explain your answer.