

Factors Associated with Contracting Malaria

In this activity, students will produce descriptive and inferential statistics and write a report in order to understand the factors associated with contracting Malaria.

Length  2-3 hours+ (Long Problem)

Prerequisites Descriptive statistics, Frequency distribution, Crosstabulation, Graphs, Measures of dispersion, Measures of central tendency, Chi-square, Excel

Concepts Descriptive statistics, Frequency distribution, Crosstabulation, Graphs, Measures of dispersion, Measures of central tendency, Chi-square

Theme Social Health

Disciplines Sociology, Geography, Medicine



Scenario

You are in your second year of College, enrolled in the Double D.E.C. program, and when you graduate, you want to apply to a newly specialized undergraduate program offered at McGill University in Social Epidemiology. It is a very competitive program and you were informed by admissions that they will only accept 25 students into the program (out of approximately 250 applicants).

Since you have already taken Science and Social Science courses, you decide to ask your teachers for suggestions. One of your teachers specializes in Medical Sociology (an area that you find very interesting). Your teacher completed her PhD at McGill University but also collaborated with other researchers and PhD students at the Epidemiology of Emerging Diseases unit, at L’Institut Pasteur in France.

The Epidemiology of Emerging Diseases research team compiled a dataset on a sample of French citizens who travelled to resource-limited countries to understand how Malaria can be transmitted/contracted due to social factors. The data includes 289 French citizens who recently travelled to resource-limited countries. The data is quite extensive and includes information on Malaria contraction as well as demographic, cultural, social and behavioural variables.

What you need to produce and evaluation grid

Factors Associated with Contracting Malaria	
• The Problem (~400 words)	/6
• Identify Variables (~300 words)	/4
• The Project: <ul style="list-style-type: none"> ○ Methodology (~100 words) ○ Statistics ○ Interpretation (~350 words) 	/10
Total	/20



Breakdown of the problem

The Problem (~400 words)

1. Based on the scenario presented above, explain in your own words the scenario and what is being asked of you.
2. What do you know and what do you need to know (research information that you do not know or understand, and make sure to include the references of the source you consulted)?
3. What do you believe are the various tasks that you will need to accomplish?

Identify Variables (~300 words)

Your Sociology teacher sends you the list of variables in the Malaria dataset:

- If the respondent has Malaria (yes, no)
- Age
- Sex (male, female)
- Ethnic origin
- Country travelled to
- Region travelled to
- Risk level of the country for contracting Malaria (high risk, medium/low risk)
- Did they visit a rural/urban area
- Type of travel (visit family, vacation, business)
- Visited region with a prescribed Malaria medication (no, yes)
- Actually took the medication that was prescribed (no, yes)
- Duration of the stay in number of days
- Did the respondent contract Malaria before this trip (no, yes)
- How often respondent used bug repellent (never, occasionally, always)
- How often respondent used mosquito nets (never, occasionally, always)
- How often respondent wore long clothes (never, occasionally, always)
- Did respondent use air conditioning (no, yes)



1. Of the variables in this dataset, which do you think are the most important to consider when trying to understand why someone contracted Malaria? For each, explain why you selected them.
2. Can some variables be grouped together under a common theme? Which? Why?
3. What other variables, not in this dataset, would you have included to understand why someone may get Malaria. For each, explain why.

The Project

Now that you have given some thought about the variables in the dataset, your next step is to conduct the research.

Methodology (~100 words)

Write an outline of the process to guide you.

Guiding question

What are the steps needed to complete a research project that involves statistical analysis?

Statistics

Produce the statistics.

Guiding questions

Which descriptive statistics would you need to produce and why?

What is the level of measurement of the variables?

What is the appropriate inferential test based on the level of measurement of the variables?

Interpretation (~350 words)

Interpret the statistics and make conclusions.

