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EDG500 Educational Research and Statistics
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April 14, 2023

Video 13 Two-Way Tables

1. Give two (or more) examples of categorical variables.
 - An example of categorical variables is gender: male, female; Type of travel preference: car, bus, airplane, ship; Type of profession: Doctor, teacher, driver, etc.
2. What did Somerville include in its 2011 census that was unconventional?
 - Two unconventional questions were added, “How happy do you feel right now?” and “How satisfied are you with your life in general?”
3. In the two-way table used to organize the responses to rating personal happiness and Somerville’s physical beauty, which variable was the row variable and which was the column variable? Explain.
 - Happiness is the row variable. It describes how happy the citizens of Somerville are: Happy, So-so, or Unhappy. Physical Beauty is the column variable. It categorizes as Bad, Ok, or good the physical city construction.
4. As the level of happiness went up (from Unhappy to So-so to Happy), what happened to the percent of respondents who rated Somerville’s physical beauty as Bad?
 - They were Unhappy.

Video 29 Chi Square

1. What type of research is the host of this series, Dr. Pardis Sabeti, involved in?
 - She researches microorganisms.
2. Dr. Sabeti’s work is modeled off of work done on malaria. What genetic mutation is an important source of resistance to malaria?
 - Sickle cell Anemia
3. What were the null and alternative hypotheses for testing whether the sickle cell gene protects against malaria?
 - The null hypothesis is that there is no association between contracting malaria and having the HbS sickle cell gene. The alternative hypothesis is that there is an association between contracting malaria and having the protective HbS sickle cell gene.

4. What is the rule for calculating the expected counts under the null hypothesis?
 - By using the equation: The row total times the column total divided by the grand total. That is how it was determined there is not association

5. The p-value of the chi-square test statistic turned out to be approximately 0. What can you conclude based on this p-value?
 - P-value is 41.263 so there is a strong evidence. The null hypothesis can be rejected.