

## Lab 5.5 for Math 17: Data Analysis Process

### 1 Data Analysis Process

A consultant for a non-profit organization is trying to help the organization decide if they should expand to a neighboring county. He has data from the current county about past activity of the non-profit, but has no data on the possible new county.

Guidance: You may consider whatever variables you like, etc. However, the non-profit has decided (at a minimum) it would be useful to estimate the percentage of county residents who would make use of the non-profits services, as well as the percentage who might make a minimum donation to cover costs. At present, your methods of estimation include point estimates and confidence intervals.

Trace this problem through the data analysis process with your group. Be sure to discuss the steps you are taking/graphs you are picking/methods you are choosing. As you progress through the steps (see next sheet) into data collection, formal analysis, and interpretation of results, check for updated information on the next page. The space below is for your notes tracing through the process. You should try the process as a group with the handout as guidance.

What is your recommendation to the non-profit? Should they expand to the new county? (Very subjective)

Updated information:

Moving INTO Data Collection: The consultant has the following values pertaining to the current county and the activities of the non-profit: number of volunteers during the year - 337, number of fundraisers held - 3, number of major events held - 3, percentage of county residents participating in a major event - 20 percent, percentage of county residents participating in some service of the non-profit - 35 percent, percentage of county residents pledging a minimum amount in at least one fundraiser - 30 percent.

He has obtained a random sample of registered voters in the neighboring county and has asked them each if they would participate in any services sponsored by the non-profit as well as whether or not they would support the non-profit with a minimum donation.

For the sample of 200 registered voters, only 150 agreed to answer BOTH survey questions. Of the 150 answering both, 40 percent said they would be willing to support the non-profit with a minimum donation, but only 15 percent said they would participate in any services sponsored by the non-profit.

Be sure to discuss any inadequacies with the data collected with your group. However, the consultant does not have funding to take a second sample, so this is what you have to work with.

Moving INTO Formal Analysis: You could make a frequency table of the percentages replying yes/no to each question (no percentage = 100-percentages yes), or a bar/pie chart of similar percentages. These two variables are not quantitative so no quantitative graphs are appropriate. You would need to address the 25 percent no response rate in any formal writeup and give possible reasons for it. Finally, you can give point estimates of the relevant percentages as .4 and .15 compared to .30 and .35 in the current county.

Moving INTO Interpretation of Results: For formal analysis, you probably computed confidence intervals for each population proportion. With 150 voters in the sample that responded, so using  $n=150$ , there are enough successes and failures in the sample for each proportion to form the confidence intervals. Assuming you choose 95 percent as your confidence level, your two intervals would be:  $.4 \pm .0784 \Rightarrow (.3216, .4784)$  for the percentage that would support with a minimum donation and  $.15 \pm .05714 \Rightarrow (.09286, .20714)$  for the percentage that would participate in any services sponsored by the non-profit.