

## Math 1025 – Survey Project / Research Paper – Overview

### Minimum Requirements of the Research Paper :

- 1) Title Page
- 2) Table of Contents ( All pages of the paper should be numbered and listed here )
- 3) Introduction ( Why this topic ? What's interesting about this topic ? What are you hoping to find out ? Any pre-conceived thoughts about what your results might be ? What's your Population ? Who was surveyed ? How many ? Sampling Procedure you used ? Any problems that you can see with your sample? What are you hoping to find, and why is this important ? The introduction should be at least one page. Spelling/Grammar will be checked throughout the entire paper. Do not draw any conclusions in your introduction.)
- 4) Clean copy of the survey that was given.
- 5) Collection of the data ; How was the data collected? How representative do you think it is of your population? ( List somewhere all raw data collected. )
- 6) Create Graphs ( At least 3 different kinds using software, including explanations ! ) and spread them appropriately throughout the paper. [ Include a histogram for question # 7 below. Is it normal ? ]
- 7) Frequency Distribution for one Important question on your survey.  
( Show class boundaries, freq, cum freq, rel freq, etc ; also compute basic descriptive statistics : mean, median, mode, variance, standard deviation, coefficient of variation worked out, quartiles, percentiles etc. ) What does this tell you ? Explain what any of these calculations might tell you about your topic.
- 8) Compute a confidence interval for your important question (see #7). Show all work and formulas used. Explain what your interval indicates. How large a sample ( n ) would you need to use to get the Error ( E ) to be even smaller ? How small would be appropriate for your situation ?
- 9) Perform a hypothesis test for your important number question (see #7 and #8). ( Define  $H_0$  ,  $H_a$  . Use z or t test as appropriate; show all work. Explain what this indicates about your chosen topic . )
- 10) Choose one important question to analyze as a Binomial situation. Find and explain  $\hat{p}$  ,  $\hat{q}$  , n, mean, standard deviation, draw a graph, is it normal ? Find a confidence interval for p ( the population proportion) or do a hypothesis test for the Binomial question.
- 11) Other. Do some other statistical tests that we have covered in the course. Additional analyses could include: Compute the difference between means, or difference between proportions, or compute/analyze correlation/linear regression of two variables, or do an appropriate chi-squared analysis....etc..
- 12) Conclusion : What did you learn about your chosen topic ? ( What might you do differently if you had to do it again ? Would you change your survey ? Would you change how you got your sample ? Any interesting or surprising results ? Etc.... ) Summarize what you have found out. At least one page.