

Probability and Statistics

Semester Project

Task:

Your task on this project is to hypothesize and validate the average (mean) from the topic of your choice. You will use the statistical procedure for this experiment: Generate a hypothesis to be tested, collecting data, organizing, analyzing and interpreting data.

Hypothesis:

We believe that the population mean of the _____ (topic) is (more than, less than, or equal to) _____ (value).

Collecting Data:

Describe your data collection process and record the raw data below (quantitative data only, at least 40 data points).

Organizing Data :

1) Construct a Frequency Distribution Table (with relative frequency)

Class	Frequency	Relative Frequency	Cumulative Frequency
	Total:	Total:	Total:

- 2) Bar or Histogram Graph
- 3) Pie Chart
- 4) Ogive

Analyzing Data:

(Calculation)

- 1) Find sample mean, standard deviation.
- 2) Find 5 number summary and check for outliers.
- 3) Construct a 95% confidence interval
- 4) Perform a hypothesis test using rejection region, with $\alpha = 0.5$.
- 5) Perform a hypothesis test using p -value, with $\alpha = 0.5$.

Interpreting Data:

Conclusion and findings from previous calculations.

Grading:

This project will be worth 60 points. The point distribution will be as follows:

Collecting Data <ul style="list-style-type: none">• Raw data	5 points
Organizing Data <ul style="list-style-type: none">• Frequency Distribution Table (5 pts.)• Bar or Histogram Graph (5 pts.)• Pie Chart (5 pts.)• Ogive (5 pts.)	20 points
Analyzing Data <ul style="list-style-type: none">• Mean, standard deviation and five number summary (5 pts.)• Confidence Interval (5 pts.)• Hypothesis test with rejection region (5 pts.)• Hypothesis test with P-value (5 pts.)• Using Math Equation (5 pts.)	25 points
Interpreting Data <ul style="list-style-type: none">• Conclusion, including statistics, confidence interval and hypothesis testing results and interpretation.	10 points