

## **Final Project Task #2-4**

### **Task #2 – Due Wednesday, May 7 in class** (not in; automatic deduction 10% per day)

80% Confidence Intervals for each of the following:

- 1) Proportion of Males
- 2) Proportion in Age Group 1
- 3) Proportion in Ed. Lvl. 3

*Please make a nice display of these visuals in a Word document or by hand. Title and label each confidence interval appropriately so they can be easily referenced in your final paper. Each interval must give:*

- ✓ A diagram of sampling distribution for which critical values will be given
- ✓ The critical value(s) appropriately located on the diagram & labeled with their value
- ✓ The critical value stated using the “variable of the distribution”, with all appropriate subscripts (like I use in class constantly)
- ✓ The input into the margin of error formula labeled as “E” and simplified numerator and denominator values and finally the single numeric value of E with “=” in between.
- ✓ The sample statistic being used to form the confidence interval (should be the same as the value given in Task #4)  $\pm$  the margin of error value written in variables with  $\rightarrow$  to the input numeric values
- ✓ The confidence interval written with the appropriate population parameter in the middle and the left and right values as the endpoints in a correctly written compound inequality
- ✓ Round the values in the interval appropriately for the parameter being represented

*Make a title page to preface all visual displays labeled Appendix D. In the footer put your name in the left column of the footer on each page of the appendix, the middle column contains Appendix D, and the right column contains page numbers for Appendix D.*

*When you write your paper you may be interested in the following facts about the population so you can discuss the conformity of our sample to the population based upon the confidence intervals created from these samples:*

- 1) 50% of the population is assumed to be male
- 2) 40% of the population is assumed to be in Age Group 1
- 3) 20% of the population is assumed Education Level 3

### **Task #3 – Due Wednesday, May 14 in class** (not in; automatic deduction 10% per day)

#### **1-Sample Test of Proportions at a significance level of 5%**

Testing the claim that more than 51% of the population has a tattoo or may get a tattoo (use “NoTatGetTat” worksheet putting proportion with & may get together to form sample proportion)

#### **2-Sample Test of Proportions at a significance level of 10%**

Testing the claim that the proportion of young and old that have a tattoo are different. I have created another worksheet containing the summarized information for you.

## Chi-Squared Test of Independence at a significance level of 20%

Testing the claim that how a respondent “responds” to a tattoo is dependent upon whether it is viewed in public or professional setting.

Please make a nice display of these 3 hypothesis tests in a Word document or by hand. Title and label each of the 5 hypothesis tests appropriately so they can be easily referenced in your final paper. Make a title page Appendix E. Include the following for each test:

- ✓ The hypotheses test’s name
  - e.g. 1-sample t-test of means
- ✓ The correctly written hypotheses
  - e.g.  $H_0: \mu \leq 40 \text{ min.}$                        $H_A: \mu > 40 \text{ min}$
- ✓ A picture of the appropriate distribution with the correct placement of the numeric critical value(s)
  - e.g.
- ✓ The critical value stated using the “variable of the distribution”, with all appropriate subscripts (like I use in class constantly)
  - e.g.  $t_{347, 0.1} = 1.284$
- ✓ The computation of the test statistic labeling with the correct distribution variable, showing input into formula (with values appropriate from Task #4), intermediate calculation of the numerator and denominator, and the final numeric value
  - e.g.  $t = \frac{x\text{-bar} - \mu_0}{s/\sqrt{n}} = \#$
- ✓ The placement of the computed test statistic on the diagram of the distribution showing the critical value(s). This should appropriately show decision.
  - e.g.
- ✓ The decision
  - e.g. *Reject  $H_0$  and accept  $H_A$*
- ✓ The conclusion which will include the 3 “buzz-phrases” that I require
  - e.g. *At the 90% confidence level there is sufficient evidence to support the claim that the average “blah-blah” is greater than 40 minutes.*

*In the footer put your name in the left column of the footer on each page of the appendix, the middle column contains Appendix E, and the right column contains page numbers for Appendix E.*

## Task #4 – Final Paper Wednesday, May 21 due when you walk in the door

A 1-2 page paper containing the following points

- Introduction containing information on:
  - ✓ the study
  - ✓ your question(s)
  - ✓ the assumed population
  - ✓ methods of data collection

- ✓ a reference to my website to find the actual data and a reference to Appendix A where you will include a copy of the sample of the survey with annotations on the coding
- A paragraph discussing sample's conformity to the assumed population discussing
  - ✓ The visual statistics, summarizing what you see and how it shows conformity or lack of conformity to assumptions of the assumed population
  - ✓ Reference to the visual statistics & summary statistics (this in Appendices B&C)
- A paragraph referencing the confidence intervals (this being in your Appendix D) and a discussion of how the confidence intervals do or do not show that the proportion of males conform to the 50% expected in the population, that those in the Age group 1 are in the expected range of 40%, and that the Education Level 3 is within the expected range of 20%. (according to Census records for a Bay Area County).
  - ✓ One paragraph per hypothesis
  - ✓ Discussion of what the original claim (see the Project Task sheet)
  - ✓ Discussion of the type of test (naming it specifically) used to test your claim
  - ✓ Reference to the hypothesis test (this being in your Appendix E)
  - ✓ State the decision
  - ✓ Explain in "layman" terms what your decision "means"
    - e.g. If were able to uphold my claim I would explain that this means that the data collected shows that the population exhibits the characteristic claimed with the given confidence. I would then explain that the confidence means that we know that our sample data could be an "unusual" sample and have given us unrepeatable results but that they probability of that was set to the alpha level to avoid that type of problem.
- Conclusion paragraph discussing
  - ✓ Things you have learned
  - ✓ Your conformity to assumed population
  - ✓ The answer to your original question (whether Gay Marriage is supported)
  - ✓ What you might do differently in the future to avoid non-sampling error
    - Changes to questions (additions, deletions, revisions – be specific)
    - Changes to sampling techniques
    - Potential follow-up studies that may interest you
- Appendices A-E (Please note that appendices come last in a paper)
  - ✓ A contains the Sample Survey annotated with code key (find survey on website; annotate yourself)
  - ✓ B&C contains your summary statistics & visual descriptive that were handed in on 4/18
    - Contains any corrections that were noted
  - ✓ D contains your confidence intervals that were handed in on 5/9
    - Contains corrections noted
  - ✓ E contains your hypotheses tests handed in on 5/14
    - Contains corrections noted