

Math 140 Project 2 Instructions

Spring 2020 / Teachout

Project 2

Create Confidence Intervals (Use collected data from project 1 and statistics software.)

Check assumptions for each confidence interval.

Write a sentence explaining each confidence interval.

For two-population confidence interval explain why there is or is not a significant difference.

Categorical Data Confidence Intervals Directions:

One Population Proportion: Use Statcato, StatKey or Statcrunch to create a one-population proportion confidence interval for each categorical variable. Convert the proportions into percentages. For each confidence interval, include the Statcato, StatKey or StatCrunch printout with the sample proportions and confidence interval. For each confidence interval, check the following assumptions and write a sentence to explain what the confidence interval tells us about the population proportion (or percentage).

Assumptions for 1 population proportion (%)

- *Data was collected randomly or represents the population*
- *Individuals are independent of each other*
- *At least 10 success*
- *At least 10 failures*

Two-population proportion: Also use Statcato, StatKey or Statcrunch to create one two-population proportion confidence interval to estimate the difference between the population proportions (percentages). For the two-population proportion confidence interval, check the following assumptions and write a sentence to explain the confidence interval. Include the Statcato, StatKey or StatCrunch printout with the sample percent difference and the two population confidence interval. Explain why the confidence indicates that there was or was not a significant difference between the two population proportions (percentages).

Assumptions for 2 population proportion (%)

- *Data was collected randomly or represents the population*
- *Individuals within and between the samples are independent of each other*
- *Both samples have at least 10 success*
- *Both samples have at least 10 failures*

Quantitative Data Confidence Intervals Directions:

Use Statcato, StatKey or Statcrunch to create a one-population mean confidence interval for each of your separated quantitative data. For each confidence interval, include the Statcato, StatKey or StatCrunch printout with the sample means and confidence interval. Also include a histogram of the data to check shape. For each confidence interval, check the following assumptions and write a sentence to explain what the confidence interval tells us about the population mean average.

Assumptions for 1 population mean

- *Data was collected randomly or represents the population*
- *Individuals are independent of each other*
- *Sample size at least 30 or nearly normal*

Also use Statcato, StatKey or Statcrunch to create one two-population mean confidence interval to estimate the difference between the population means. For the two-population mean confidence interval, check the following assumptions and write a sentence to explain the confidence interval. Include the Statcato, StatKey or StatCrunch printout with the difference between the sample means and the two-population confidence interval. Explain why the confidence indicates that there was or was not a significant difference between the two population means.

Assumptions for 2 population Mean

- *Data was collected randomly or represents the population*
- *Individuals within and between the samples are independent of each other*
- *Both sample sizes are at least 30 or nearly normal.*

Part 2 Grading Rubric

Population Proportion Categorical Variable 1

- Statistics software printout with sample counts, sample proportion and a 95% confidence interval. (5%)
- Sentence explaining what the confidence interval tells us about the population proportion (percentage). (3%)
- Explain why data does or does not meet random assumption. (2%)
- Explain why data does or does not meet independence assumption. (2%)
- Explain why data does or does not meet at least ten successes assumption. (2%)
- Explain why data does or does not meet the at least ten failures assumption. (2%)

Population Proportion Categorical Variable 2

- Statistics software printout with sample counts, sample proportion and a 95% confidence interval. (5%)
- Sentence explaining what the confidence interval tells us about the population proportion (percentage). (3%)
- Explain why data does or does not meet random assumption. (2%)
- Explain why data does or does not meet independence assumption. (2%)
- Explain why data does or does not meet at least ten successes assumption. (2%)
- Explain why data does or does not meet the at least ten failures assumption. (2%)

Two-Population Proportion Comparison

- Statistics software printout with sample counts, sample proportions and a 95% confidence interval of the difference between the proportions. (5%)
- Sentence explaining what the confidence interval tells us about the population proportions (percentages). (3%)
- Explain why the confidence interval indicates that the population proportions are or are not significantly different. (3%)
- Explain why both data sets do or do not meet random assumption. (2%)
- Explain why both data sets do or do not meet independence assumption. (2%)
- Explain why both samples do or do not meet at least ten successes assumption. (2%)
- Explain why both samples do or do not meet at least ten failures assumption. (2%)

Population Mean for Quantitative Data from group 1

- Statistics software printout with sample mean, sample standard deviation, sample size and a 95% confidence interval. (5%)
- Sentence explaining what the confidence interval tells us about the population mean. (3%)
- Explain why data does or does not meet random assumption. (2%)
- Explain why data does or does not meet independence assumption. (2%)
- Explain why data does or does not meet the at least 30 or nearly normal assumption. (2%)
- Histogram of sample data. (2%)

Population Mean for Quantitative Data from group 2

- Statistics software printout with sample mean, sample standard deviation, sample size and a 95% confidence interval. (5%)
- Sentence explaining what the confidence interval tells us about the population mean. (3%)
- Explain why data does or does not meet random assumption. (2%)
- Explain why data does or does not meet independence assumption. (2%)
- Explain why data does or does not meet the at least 30 or nearly normal assumption. (2%)
- Histogram of sample data. (2%)

Two-Population Mean Comparison

- Statistics software printout with sample means, sample standard deviations, sample sizes and a 95% confidence interval of the difference between the population means. (5%)
- Sentence explaining what the confidence interval tells us about the population means. (3%)
- Explain why the confidence interval indicates that the population means are or are not significantly different. (3%)
- Explain why both data sets do or do not meet random assumption. (2%)
- Explain why both data sets do or do not meet independence assumption. (2%)
- Explain why both samples do or do not meet sample size at least 30 or normal assumption. (2%)