

Math 355 - Spring 2004 Assignment #9 - Part 2

Due: Friday, May 7, 2004 - 14 points

Soon you will receive two data files from me. These will also be available in the Math 355 subdirectory of my directory at the Download Course Data pick from the Network Menu OR at our web site www.uwsp.edu/math/wetzel/Math355/assignme.htm. The names of the files are `COR-FRIES.MTW`, `FASTFOOD.MTW`, and The prefix `COR` indicates that I have already deleted or corrected the information that we determined were in error.

`FASTFOOD.mtw` contains data for the surveys that we did. Each row corresponds to a survey. A `Y` in the columns titled with a restaurant name means the person checked that box. The `num` column give the number of visits to a fast food restaurant. The final column gives any comments or notes regarding that survey.

The problems in Part 2 below are specific instructions where you should include the relevant MINITAB output along with your written work. If the problem involves a hypothesis test, your written work should include the null and alternative hypotheses, the P -value and the conclusion in non-statistical language. Use $\alpha = .05$. Do not include irrelevant MINITAB output. I may take off points if there is too much irrelevant material or if it is too hard to find your answers. Further, although you should deal with outliers in Part 3, do not delete any outliers for Part 2.

- (3 points)* Using `COR-FRIES`, get the mass of the French fries for both the small and the large. Use Calc: Calculator to store the result of the expression '`sm-tmass`' - '`sm-bmass`' in variable `sm-diff`. Do a similar thing for the large fries.
Get a 95% confidence interval for the true mean mass of fries in a small order.
Get a 95% confidence interval for the true mean mass of fries in a large order.
McDonalds claims that the serving size for a small fry is 68g; do you believe them?
McDonalds claims that the serving size for a large fry is 176g; do you believe them?
 - (3 points)* Using `COR-FRIES` and a hypothesis test, test whether there is a difference between the fries purchased in the afternoon and the evening with respect to `sm-diff`.
Test whether there is a difference between the fries purchased in the afternoon and the evening with respect to `lg-diff`.
 - (2 points)* Using `COR-FRIES`, calculate the correlation between `lg-num` and `lg-diff`. Notice that this calculation gives a P -value. What are the null and alternative hypotheses for this p -value and what is your conclusion? Give your conclusion in non-statistical language.
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- (1 point)* Using `FASTFOOD`, calculate a 95% confidence interval for the mean number of fast food visit in a week for all UWSP students.
 - (3 points)* Using `FASTFOOD`, Use a hypothesis test to test whether there is a difference between males and females with respect to the number of visits.
Use a hypothesis test to test whether there is a difference between on and off-campus students with respect to the number of visits.
 - (2 points)* Using `FASTFOOD`, get a 95% confidence interval for the percentage of students who visit McDonalds in a week. Use the Wilson formulas. To get the raw numbers, use Stat: Tables: Tally and enter McDonalds as the variable. (MINITAB does not do the Wilson estimators)

Math 355 - Spring 2004 Assignment #9 - Part 3

Due: Friday, May 7, 2004

22 points

The main goal of this assignment is to completely analyze the data and to write a report to summarize our analysis.

1. (*22 points*) Analyze all interesting portions of the data and write a short report (at least 2 pages, double spaced, typed, not including graphs) to our client summarizing our data collection, your analysis and your interpretation. Write the report to a client who understands p-values, but is not interested in the details of the computations. Your client understands all of the graphical methods that we have looked at. In other words, don't include MINITAB hypothesis test output, but do include graphical summaries.

In addition, include a short letter that we could send to McDonalds.

Notice that this part is the main part of the assignment. 'Good' answers will receive 14 points, you must do a great job to receive full credit. In other words, I want YOU to ANALYZE the data. This part is open ended and in order to do a great job, you will need to look at MINITAB output that I did not explicitly tell you to get. You will also need to THINK AND CARE about the data. Answer the questions that the client should have asked or that you saw interesting results,

Copies of the original client's questions are in Assignment 4 at our course web site. Also, a copy of the datasheet can be found at Instructions and the survey link at our course web site.

I also have copies of good and great writeups for this last part from previous semesters at the Assignments page at our course web site.