

Math 355 - Spring 2004 Assignment #4

Due: Thursday, Feb. 26

15 points

1. (5 points) Find an article in a newspaper, magazine or journal which uses statistics and refers to the relationship between at least two different variables.
 - In the context of section 2.5 (see page 179), describe in words, what x and y are.
 - Select the 'arrow representation' (like (a), (b) or (c) on the bottom of page 180) which best describes the association between x and y . If necessary, specify what z is.
 - In the context of chapter 3. Tell whether the information comes from an *experiment* or an *observational study*.

Write a paragraph to briefly summarize the article and the association. Your paragraph should not assume that the reader has read the article. Include the article when you hand in this assignment and circle the portion of the article to which you refer.

2. (10 points) We want to design a study of fast food. We have an imaginary client who has asked us to get answers to the following questions.
 - How many ounces are in the average McDonald's Large French Fry? Small French Fry?
 - How often does the average UWSP student eat fast food? Is there a difference between men and women?

If you have any questions for our client, Professor Wetzel will play the role of the client.

Describe a practical, reasonable, usable way for our class to get data that will help in our investigation. **DO NOT** collect any data. Your description should include:

- a restatement and clarification of the investigation.
- For the French fry part, what measurements(s) to make and how to make them. (we need a way to get the data which allows everyone to make some measurements - I agree that ideally, we would have the same person make all of the measurements, but I want everyone measuring.)
- For the fast food part what questions would you ask students? Include specifics on wording and format.
- at least one additional demographic question (like gender) for which we could compare fast food use.
- how to get random samples.
- any other data that we might want to collect.

We will have 50 students helping collect the data. We will distribute the work equally among these 50. Also, this data collection will cost us all a small amount of money. Arrange your data collection so that we use no more than 100 orders of French fries.

This problem requires thinking and possibly some research. A good answer will get 7 out of 10 points, in order to get full credit, you need to provide a **great** answer.

We will discuss your answers in class and later we will collect data using our consensus answer. An Example of a bad answer to this question: (this answer would get 2 points - minimal restatement, no specifics, lacks explanation, no extras)

"We are investigating French fries and fast food. I would have everyone go to McDonalds and buy a order of French fries. Then we would weigh it. We would also ask students how often they go to a fast food restaurant."

Rubric for grading Problem 2

(5 points) Basics: Does the description include all of the required parts including accurate and appropriate use of terminology?

- restatement
- measurements - including specifics
- questions to ask - including specifics
- extra demographic question
- how to get randomize - including specifics
- other data

(2 points) Organization: Is the description organized and neatly presented?

Great answers also include some pluses.

Pluses: Does the description include any significant extras?

- Significant improvements to a basic data collection design.
- Extra thought into the specifics of this context - recognizing potential problems and giving solutions.

Minuses:

- Does the description indicate that the student is mimicking a book answer and not considering the context?
- Does the description include a design that would be extremely impractical?
- Does the randomization described introduce a significant confounding variable that was not identified?

In the Fall of 2002, the main question was to compare the mail delivery times for campus and postal mail.

Examples of Pluses: An example of a plus was the response that indicated that we should consider the fact that campus mail is only delivered on weekdays and postal mail is delivered on Saturdays when measuring how long a letter took to reach its destination. Another plus involved finding out that selected Residence Halls are delivery and pickup points for campus mail.

Examples of Minuses: An example of a minus was a response that indicated that we should send letters to random people without considering the difficulty of having this random person tell us when the letter arrived. Another example of a minus was a response that said we shouldn't tell the person mailing the letter whether it was being mailed in campus mail or postal mail. The problem in this case is that the person mailing the letter must put the letter in the correct mail box and campus mail does not need a stamp.