

Bus 273: Statistical Analysis for Business

Fall 2011

PROBLEM SHEET # 6

Problem 1: Kinder Surprise is a chocolate egg containing a small toy. The toy often requires assembly. Some of the most popular toys include limited-edition collections of cartoon characters (figurines), which do not require assembly. These figurines are said to be found in every seventh egg.

Harun is an enthusiastic collector of Kinder Surprise figurines. He tests eggs by shaking them to find out whether they contain a figurine. In this way, if there is a figurine in an egg, Harun will discover it with probability 80%, while he will falsely decide that there is a figurine in the egg with probability 10% if there is actually none.

- Draw an event tree for Harun's situation, showing all relevant events and probabilities.
- Compute the probability that an egg will include a figurine, after it has passed Harun's test.
- Do you think it is really informative to see whether an egg passes Harun's test or not?

Problem 2: Researcher Tolga plans to assess overall student satisfaction with the SO campus cafeteria. He designed a questionnaire for interviews with selected students.

- What would be the target population for this research?
- A sample of 50 students is selected arbitrarily among those students Tolga finds sitting in the cafeteria one Tuesday. Will this sample be representative of the population in (a)? Do you have a better idea to select 50 students?
- One of the questions in the questionnaire is about the pricing. Tolga aims to understand whether students find the prices expensive or not. For that purpose Tolga asks them to rate their opinion about prices in SO on a Likert scale as follows:

I consider prices. . .

(1) too expensive / (2) expensive / (3) moderate / (4) cheap / (5) very cheap

What is the scaling of the variable that Tolga is analyzing here?

- For the variable in (c), what type of display would be adequate to obtain a first insight into the distribution of answers?
- Later Tolga decides to compare prices of SO with another student restaurant on a different campus. For this purpose, Tolga calculates the price differences for the same food items in these restaurants. For example, if rice is priced at 3 TL in SO and at 2 TL in the other restaurant, the difference is 1 TL. Tolga calculates price differences for 30 food items. The following is a histogram of the price differences. What can you conclude from the histogram in terms of prices of these two restaurants?

