

Math 263: Excel Assignment 3 on Probability

Due Thursday February 13, at the start of class. Hand in a paper print-out of your work.

Hand in a paper print-out of your work either to me in class or in my office (Gould Simpson 823) or to the Math Department Main Office (Room 108).

Please don't email me the assignment. Thanks!

You must do the computer work for this assignment yourself, although you may certainly talk to other people. Answers which appear to be copied will be treated as an integrity violation.

Special Excel Office Hours

If you aren't comfortable doing this in Excel, come to Adrian's or my office hours, with your laptop and we can do it together. Adrian's email is adrianc@email.arizona.edu; my office is Gould Simpson 829.

1. In October 2009, the results of a study on the nutrition and marketing of children's cereal was presented in Washington DC. The data used the study, "Cereal f.a.c.t.s. Food Advertising to Children and Teens Score," is in the file *CerealMarketing.xlsx*. (From www.cerealfacts.org.)

In the page called "Marketing", look at the headings in each column to see what kind of data is given.

You will calculate probabilities from this file. You can either count by hand or use Excel; both ways are fine.

If you want to learn the Excel commands, here are some instructions:

- To Sort the data, look under the Data menu. You need to select the *whole block* of data before sorting.
- To use the Filter Command, also look under the Data menu. There is a page with the Filter command added in so you can see how it works.
- To count with Excel, use the "COUNTIF command, which is demonstrated in the page called CountIf. This command takes an input like this:
= COUNTIF(range from which you want to count, what you want to count in quotes).

Questions to answer:

- (a) How many cereals are listed in this file?
- (b) How many cereals in this file are made by General Mills? By Kellogg? By Post?
- (c) How many cereals are heavily advertised in one of the three categories?

- (d) How many cereals have a Nutrition score of 50 or less? Of 40 or less?
- (e) If a random cereal is selected from this list, what is the probability that:
- The cereal is healthy? (Defined as having a nutritional score greater than 62.)
 - The cereal is heavily marketed to children in at least one of the three categories.
 - The cereal is heavily marketed to children in at least one of the three categories *given that* it has a Nutrition score of 50 or less.
 - The cereal is heavily marketed to children in at least one of the three categories *given that* it has a Nutrition score of 40 or less.
- (f) Explain in non-technical language what comparing your answers to part (e) parts (ii), (iii) and (iv) tells you about cereal marketing. (**One sentence.**)
- (g) Find the probability that a randomly selected cereal is
- Heavily advertised in at least one of the three categories *given that* it is made by Kellogg.
 - Made by Kellogg *given that* it is heavily advertised in at least one of the three categories.
- (h) Do you expect the answers to part (g), parts (i) and (ii), to be the same? Explain in non-technical language why you would expect them to be the same, or not to be the same. (**One sentence.**)

Note: You do not need to hand in your Excel sheet with the answers to your questions.