CAKE-BAKING EXPERIMENT

5.   Data Collection

Before the data is collected, it is important to make sure that the people who taste the cakes do not know the experimental conditions under which the cakes were prepared. In particular, they should have no idea about the time and temperature settings for the particular cake that they taste. A person who knows the experimental conditions can transmit clues to the taste tester that can seriously affect the results. The blinding of the conductor as well as the tester (double blinding) is essential for making the collected data reliable.

Our collected data is displayed in the table below:

		Time (in minutes)		
		55	**60**	**65**
Temperature	**325 F**	0 0 3	2 3 4	4 5 6
	350 F	0 2 4	3 6 6	1 3 5
	375 F	4 5 6	1 2 3	0 1 2

Notice that for each level of time, nine observations have been made, and likewise for each level of temperature. Also, for each of the nine combinations of levels of the two factors, three observations have been made. Despite the small number of observations (27), a large number of comparisons can be made. For example, the low level of time (-1) can be compared to the high level of time (+1), and the comparison is based on two means of nine observations. As another example, with time fixed at the center level (0), the low level of temperature (-1) can be compared to the high level of temperature (+1), and the comparison is based on two means of three observations.

We will store our data in an SPSS worksheet with the three variables: time, temperature, and rating. These data are available in the SPSS file *cake.sav* located on the FTP server in the Stat337 directory. The following is a description of the variables in the data file:

Column	Name of Variable	Description of Variable
1	**TIME**	Baking time level (-1 if 55 minutes, 0 if 60 minutes and +1 if 65 minutes)
2	**TEMP**	Baking temperature (-1 if 325° F, 0 if 350° F, and +1 if 375° F)
3	**RATING**	An integer from 0 to 6