

DIET AND LONGEVITY STUDY

1. Problem Formulation

The problem is based on the data from *Diet Restriction and Longevity* experiment discussed in your textbook, pages 109-111. These data are available in the Excel file Case0501.xls located on the FTP server.

A series of studies involving several species of animals found that restricting caloric intake can dramatically increase life expectancy. In one such study, female mice were randomly assigned to one of the following six treatment groups:

NUMBER	TREATMENT CODE	TREATMENT DESCRIPTION	GROUP SIZE
1	NP	Mice ate as much as they pleased of a nonpurified, standard diet.	49
2	N/N85	Mice fed normally before and after weaning. After weaning, the ration controlled at 85kcal/wk.	57
3	N/R50	Mice fed a normal diet before weaning and a reduced-calorie diet of 50 kcal/wk after weaning.	71
4	R/R50	Mice fed a reduced-calorie diet of 50 kcal/wk both before and after weaning.	56
5	N/R50 lopro	Mice fed a normal diet before weaning, a restricted diet of 50 kcal/wk after weaning, and had dietary protein content decreased with advancing age.	56
6	N/R40	Mice fed normally before weaning and were given a reduced diet of 40 kcal/wk after weaning.	60

The group N/N85 serves as the control group because caloric intake is held reasonably constant.

The following is a description of the variables in the data file:

<u>Column</u>	<u>Name of Variable</u>	<u>Description of Variable</u>
1	LIFETIME	Lifetime in months
2	TREATMT	Treatment Code

We will use SPSS to answer the following questions using the data:

1. Examine the effects of the reduced diet on lifetime of mice in this experiment. More precisely, answer the following questions:
 - 1.1 Does lifetime on the 50 kcal/wk diet exceed the lifetime on the 85 kcal/wk diet?
 - 1.2 Is lifetime affected by providing a reduced calorie diet before weaning, given that a 50 kcal/wk diet is provided after weaning?
 - 1.3 Does lifetime on the 40 kcal/wk diet exceed the lifetime on the 50 kcal/wk diet?
 - 1.4 Given a reduced calorie diet of 50 kcal/week, is there any additional effect on lifetime due to decreasing the protein intake?
 - 1.5 Is there an effect on lifetime due to restriction at 85 kcal/week?
2. Estimate the effects studied in the above questions using 95% confidence intervals.

The structure of planned comparisons among the treatment groups in the study is diagrammed in the following display.

