

DIET AND LONGEVITY STUDY

3. Data Collection

The detailed analysis of data collection in the experiment is beyond the scope of the study case. However, we will discuss the most important features of the data collection in the experiment.

First notice that the group sizes are relatively large, ranging from 49 for the NP group to 71 for the N/R50 group. This feature is important for the reliability of the conclusions drawn from the data. Indeed, you would not trust the results of an experiment that fed each diet to only one mouse. The role of chance would be too large if we used only six mice and rolled a balanced die to decide which is fed which diet. The more mice used, the more likely that the randomization will create groups that are alike on the average. When differences among the mice are averaged out, only the effects of the different treatments will remain.

The response is the life span, the number of months until a mouse dies. The nature of the experiment makes it very likely that the readings overestimate the true values. It is impossible to determine by how much the values provided overestimate the true values. We are not able to control this feature of the experiment. However, in order to make sure that our conclusions are reliable we have to know how our statistical conclusions might be affected by the feature. With the relatively large sample sizes, we expect that all the six treatment groups will be affected to approximately the same extent by the measurement factor, on the average. Thus we expect that true treatment means will be in fact a little bit smaller, all approximately by the same amount. As a consequence, the estimates of the treatment effect should be valid with the disturbed data.

The experiment is described in detail in the paper "The Retardation of Aging in Mice by Dietary Restriction: Longevity, Cancer, Immunity and Lifetime Energy Intake" published in *Journal of Nutrition* 116(4), 1986, pages 641-654.