

Story Name: Eggs

Abstract: A single can of dried eggs was stirred well. Samples were drawn and a pair of samples (claimed to be of two "types"), was sent to each of six commercial laboratories to be analyzed for fat content. Each laboratory assigned two technicians, who each analyzed both "types". Since the data were all drawn from a single well-mixed can, the null hypothesis for ANOVA that the mean fat content of each sample is equal is true. The experiment is thus really a study of the laboratories.

The dependent variable is the fat contents measured by each technician for each sample. The factors in the design are laboratory, technician, and "type". The experiment is a hierarchical design. In each of the six laboratories, two technicians examined the fat content of the eggs, but the technicians in each lab were different, so "Technicians" are nested within "Lab". Each sample was analyzed by only one technician, so "Sample" is nested within "Technician" (and Lab). Hierarchical designs of this sort are often analyzed using Sequential Sums of Squares.

The ANOVA shows significant differences, but a dotplot of the residuals by laboratory reveals that the significant F-test for laboratory is due almost entirely to laboratory 1 where there was great variability, and where, in particular technician 2, obtained poor results.

El texto procede de: <http://lib.stat.cmu.edu/DASL/Stories/Eggs.html>