

## Exercise 1

1. 24 animals were randomly assigned to 4 different diets to study the effect of diet on blood coagulation time.

Treatment								
A	62	60	63	59				
B	63	67	71	64	65	66		
C	68	66	71	67	68	68		
D	56	62	60	61	63	64	63	59

- a) Plot the data and compute overall mean and group means.
  - b) Compute the group sample variances  $s_i^2$  and the pooled estimate of variance  $MS_{res}$ .
  - c) Compute  $MS_{treat}$  and compare it with  $MS_{res}$  (without formal test).
  - d) Construct an analysis of variance table.
  - e) Does the diet have a significant effect on coagulation time?
2. The relationship between job satisfaction (score between 0 and 10) and duration of employment (less than one year, 1 to less than 5 years, 5 to 10 years, more than 10 years) was studied in an employee survey. Let the **expected** treatment means be 5.1, 6.3, 7.9 and 9.5, and  $\sigma = 2.8$ .
- a) Identify the parameters in a one-way analysis of variance model.
  - b) There are 25 randomly selected staff members for each group. What are  $E(MS_{res})$  and  $E(MS_{treat})$ ? What do you conclude?
3. The nitrogen contents of red clover plants inoculated with three strains of Rhizobium are given in the following table. Are there differences between strains?

3DOK1	3DOK5	3DOK7
19.4	18.2	20.7
32.6	24.6	21.0
27.0	25.5	20.5
32.1	19.4	18.8
33.0	21.7	18.6
	20.8	20.1
		21.3

- a) Plot the data.
- b) Carry out an analysis of variance.
- c) Check the model assumptions.