Solution for Exam 2008 Problem 4

ANYM, 20191111

We are asked:

a) Is there a difference in mean with respect to “Location”?
b) Is there a difference in mean content with respect to “type”.

We can further see from the data given, that we have three locations as well as three types. We are presented with a number of alternatives:

1) A one-sided multivariate analysis of variance with three observations in each group.

If we did this, we could test either “location” or “type” – but not both!

2) A two-sided multivariate analysis of variance with one observation per cell.

This would allow us to test the influence of both “location” and “type” and would be a sensible strategy. See page 304, section 4.3.2. By ‘one observation per cell, we understand a multivariate observation, i.e. it can be several numbers depending on the dimensionality of our data.

3) Four univariate one-sided analyses of variance, testing for differences in “Location” and “Type” for each of the variables “Salinity” and “Type”

Since we have *“for each of the variables “Salinity” and “Type” ”* this is wrong. It would – however - be sensible to run this type of analysis in conjunction with a two sided MANOVA.

4) Two Univariate two-sided analyses of variance, testing for differences in “Location” and “Type” for each of the variables “Salinity” and “Type”.

Since we have *“for each of the variables “Salinity” and “Type” ”* this is wrong. It would – however - be sensible to run this type of analysis in conjunction with a two sided MANOVA.

5) GLM with salinity as dependent variable…

Not sensible. We are then testing “Location”, “Type” and “Ph” influence on salinity.