Randomization tests

The file sablefish.csv contains data from Kimura (1988) on the number of sablefish caught per unit effort (*catch*) in four Alaskan locations for each of the six years between 1978 and 1983.

```
sable <- read.csv("../donnees/sablefish.csv")
head(sable)
```

```
##   year location catch
## 1 1978 Shumagin 0.236
## 2 1978 Chirikof 0.204
## 3 1978   Kodiak 0.241
## 4 1978  Yakutat 0.232
## 5 1979 Shumagin 0.140
## 6 1979 Chirikof 0.202
```

a) Fit a linear model of catch as a function of location only. What is the interpretation of the `locationYakutat` coefficient of this model?

b) Perform a permutation test to calculate the p-value corresponding to the mean difference in catch between the Kodiak and Chirikof locations. Is this value consistent with the corresponding value in the linear model?

c) Using the *permuco* package, determine the p-value for the same difference, for a model including the additive effects of year and location. *Note*: We consider the year as a categorical variable here, so it must be converted to a factor. Does the p-value differ between the permutation test and the parametric model?