**Exercise 3: Clothing**

In the data set CLOTHING information is contained on sales, size and other characteristics of 400 Dutch men’s fashion stores. The goal is to explain sales per square metre (*sales*) from the characteristics of the shop:

* tsales : Annual sales in Dutch guilders
* sales : sales per square meter
* margin : Gross-profit-margin
* nown : Number of owners (managers)
* nfull : Number of full-timer workers
* npart : Number of part-time workers
* naux : Number of helpers (temporary workers)
* hoursw : Total number of hours worked
* hourspw : Number of hours worked per worker
* inv1 : Investment in shop-premises
* inv2 : Investment in automation.
* ssize : shop size in square metres (in m2).
* start : year start of business

**a.** Estimate a linear model (model A) that explains *sales* from total number of hours worked (*hoursw*), shop size in square metres (*ssize*) and a constant. Interpret the results.

**b.** Test whether the number of owners (*nown*) affects shop sales, conditional upon

*hoursw* and *ssize*.

**c.** Also test whether the inclusion of the number of part-time workers (*npart*) improves the model.

**d.** Estimate a linear model (model B) that explains *sales* from the number of owners,

full-time workers (*nfull*), part-time workers and shop size. Interpret the results.

**e.** Compare model A and model B on the basis of *R*2, *AIC* and *BIC*.