Cement Exmaple: Akaike Weights

This example is from Burnham and Anderson. A small set of data (n=13) with four predictor variables (X1, X2, X3, X4) thought to be related to the heat evolved during the hardening (Y) of Portland cement. Given the small sample size, AICC is appropriate here.

```
library(MuMIn)
data(Cement)
str(Cement)
```

```
## 'data.frame':    13 obs. of  5 variables:
##  $ y : num  78.5 74.3 104.3 87.6 95.9 ...
##  $ X1: int  7 1 11 11 7 11 3 1 2 21 ...
##  $ X2: int  26 29 56 31 52 55 71 31 54 47 ...
##  $ X3: int  6 15 8 8 6 9 17 22 18 4 ...
##  $ X4: int  60 52 20 47 33 22 6 44 22 26 ...
```

```
FullModel <- lm(y ~ X1 + X2 + X3 + X4, data = Cement)
options(na.action = "na.fail")
AllSubsets <- dredge(FullModel, rank = "AICc")
```

```
## Fixed term is "(Intercept)"
```

```
AllSubsets
```

```
## Global model call: lm(formula = y ~ X1 + X2 + X3 + X4, data = Cement)
## ---
## Model selection table
##    (Intrc)    X1      X2      X3      X4 df  logLik  AICc delta weight
## 4    52.58 1.468  0.6623                  4 -28.156  69.3  0.00  0.566
## 12   71.65 1.452  0.4161         -0.2365  5 -26.933  72.4  3.13  0.119
## 8    48.19 1.696  0.6569  0.2500          5 -26.952  72.5  3.16  0.116
## 10  103.10 1.440                 -0.6140  4 -29.817  72.6  3.32  0.107
## 14  111.70 1.052         -0.4100 -0.6428  5 -27.310  73.2  3.88  0.081
## 15  203.60       -0.9234 -1.4480 -1.5570  5 -29.734  78.0  8.73  0.007
## 16   62.41 1.551  0.5102  0.1019 -0.1441  6 -26.918  79.8 10.52  0.003
## 13  131.30                -1.2000 -0.7246  4 -35.372  83.7 14.43  0.000
## 7    72.07        0.7313 -1.0080          4 -40.965  94.9 25.62  0.000
## 9   117.60                         -0.7382  3 -45.872 100.4 31.10  0.000
## 3    57.42        0.7891                  3 -46.035 100.7 31.42  0.000
## 11   94.16        0.3109         -0.4569  4 -45.761 104.5 35.21  0.000
## 2    81.48 1.869                          3 -48.206 105.1 35.77  0.000
## 6    72.35 2.312          0.4945          4 -48.005 109.0 39.70  0.000
## 5   110.20                -1.2560          3 -50.980 110.6 41.31  0.000
## 1    95.42                                 2 -53.168 111.5 42.22  0.000
## Models ranked by AICc(x)
```

```
importance(AllSubsets)
```

```
##                      X1   X2   X4   X3
## Importance:          0.99 0.81 0.32 0.21
## N containing models:    8    8    8    8
```