

Cement Exmample: 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
```