

## Fig. 3.8 Multiple Regression

MP

2015-06-04

```
> setwd("D:/Dropbox/R/2015-NUS/Session-2/(a) Data Modelling - Basics/Figure 3.8")
```

```
> Dataset <-
+ read.table("D:/Dropbox/R/2015-NUS/Session-2/(a) Data Modelling - Basics/Figure 3.8/Table 3.1 Sales-Advertising-Income.csv",
+ header=TRUE, sep=",", na.strings="NA", dec=".", strip.white=TRUE)
```

```
> library(rgl, pos=15)
```

```
> library(nlme, pos=16)
```

```
> library(mgcv, pos=16)
```

```
> summary(Dataset)
```

SALES		ADVT		INCOME	
Min.	: 88.5	Min.	: 8.40	Min.	:33.0
1st Qu.:	121.3	1st Qu.:	9.40	1st Qu.:	42.4
Median	:128.3	Median	:10.10	Median	:47.5
Mean	:128.3	Mean	:10.16	Mean	:49.4
3rd Qu.:	137.0	3rd Qu.:	11.20	3rd Qu.:	55.6
Max.	:159.3	Max.	:11.90	Max.	:68.1

```
> library(abind, pos=18)
```

```
> library(e1071, pos=19)
```

```
> numSummary(Dataset[,c("ADVT", "INCOME", "SALES")], statistics=c("mean",
+ "sd", "IQR", "quantiles"), quantiles=c(0,.25,.5,.75,1))
```

	mean	sd	IQR	0%	25%	50%	75%	100%	n
ADVT	10.156	1.08054	1.8	8.4	9.4	10.1	11.2	11.9	25
INCOME	49.400	9.74517	13.2	33.0	42.4	47.5	55.6	68.1	25
SALES	128.296	16.36886	15.7	88.5	121.3	128.3	137.0	159.3	25

```
> RegModel.1 <- lm(SALES~ADVT+INCOME, data=Dataset)
> summary(RegModel.1)
```

```
Call:
lm(formula = SALES ~ ADVT + INCOME, data = Dataset)

Residuals:
    Min       1Q   Median       3Q      Max
-22.6876  -6.0687   0.6043   7.0523  28.5334

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  36.8948    24.9629   1.478  0.1536
ADVT          5.0691     2.5397   1.996  0.0585 .
INCOME        0.8081     0.2816   2.870  0.0089 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 12.66 on 22 degrees of freedom
Multiple R-squared:  0.452, Adjusted R-squared:  0.4022
F-statistic: 9.074 on 2 and 22 DF,  p-value: 0.001338
```