sales = read.table("sales.dat", header = T)

# Data
> sales[1:5,]

<table>
<thead>
<tr>
<th>OwnPrice</th>
<th>OtherPrice</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.135670</td>
<td>5.204186</td>
<td>144.48788</td>
</tr>
<tr>
<td>3.495460</td>
<td>8.059732</td>
<td>637.24524</td>
</tr>
<tr>
<td>7.275341</td>
<td>11.675979</td>
<td>620.78693</td>
</tr>
<tr>
<td>4.662816</td>
<td>8.364421</td>
<td>549.00714</td>
</tr>
<tr>
<td>3.584537</td>
<td>2.150292</td>
<td>20.42542</td>
</tr>
</tbody>
</table>

> attach(sales)

# Plot data
> plot(OwnPrice, Sales)
# Regress Sales on OwnPrice

```r
> sales1.lm <- lm(Sales ~ OwnPrice)
> summary(sales1.lm)
```

Call:
```
 lm(formula = Sales ~ OwnPrice)
```

Residuals:

```
  Min 1Q Median 3Q Max
-513.912 -157.695 -1.425 155.195 650.196
```

Coefficients:

```
               Estimate Std. Error t value Pr(>|t|)  
(Intercept)  211.16      66.49   3.176  0.00200 **
OwnPrice    63.71       13.04   4.886 4.01e-06 ***
---
Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Residual standard error: 223.4 on 98 degrees of freedom
Multiple R-Squared: 0.1959, Adjusted R-squared: 0.1877
F-statistic: 23.87 on 1 and 98 degrees of freedom, p-value: 4.015e-06
# Other Plots
> par(mfrow = c(2,1))
> plot(OwnPrice, OtherPrice)
> plot(OtherPrice, Sales)

# Isolate entries with a roughly fixed value of competitor’s price
> length(OtherPrice)
[1] 100
> Competitor.Level = (1:100)[(OtherPrice > 4) & (OtherPrice < 6)]
> Competitor.Level
[1]  1  7 12 29 48 51 53 56 67 68 69 70 76 89

# Plot data again
> par(mfrow = c(1,1))
> plot(OwnPrice[-Competitor.Level], Sales[-Competitor.Level], col = "blue", main = "Sales vs. Own Price: Competitor Level Fixed")
> points(OwnPrice[Competitor.Level], Sales[Competitor.Level], col = "red")
Scatterplots

- Scatterplot of OwnPrice vs. OtherPrice
- Scatterplot of Sales vs. OtherPrice
Revealing what is happening

Sales vs. Own Price: Competitor Level Fixed

Sales[-Competitor.Level] vs. OwnPrice[-Competitor.Level]
# Regress Sales on Own Price and Competitor’s Price

```r
> Sales.lm <- lm(Sales ~ OwnPrice + OtherPrice)
> summary(Sales.lm)

Call:
lm(formula = Sales ~ OwnPrice + OtherPrice)

Residuals:
               Min       1Q   Median       3Q      Max
-66.9161 -15.6634  -0.5095  18.9038  63.3021

Coefficients:
                      Estimate  Std. Error   t value  Pr(>|t|)
(Intercept)            115.717     8.548  13.54   <2e-16 ***
OwnPrice               -97.657     2.669  -36.59   <2e-16 ***
OtherPrice             108.800     1.409  77.20   <2e-16 ***
---

Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 28.42 on 97 degrees of freedom
Multiple R-Squared: 0.9871,  Adjusted R-squared: 0.9869
F-statistic: 3717 on 2 and 97 degrees of freedom,  p-value: 0
```