Figure 3.9 House prices

MP

2015-06-04

```
> setwd("D:/Dropbox/R/2015-NUS/Session-2/(a) Data Modelling - Basics/Figure 3.9 House Prices with Confidence Intervals")
```

```
> Dataset <-
+
+   read.table("D:/Dropbox/R/2015-NUS/Session-2/(a) Data Modelling - Basics/Figure 3.9 House Prices with Confidence Intervals/Table
+
+    header=TRUE, sep=",", na.strings="NA", dec=".", strip.white=TRUE)
```

```
> library(relimp, pos=14)
```

```
> showData(Dataset, placement='-20+200', font=getRcmdr('logFont'),
+   maxwidth=80, maxheight=30)
```

```
> summary(Dataset)
```

```
     HomeID           Price             SqFt         Bedrooms
 Min.   :  1.00   Min.   : 69100   Min.   :1450   Min.   :2.000
 1st Qu.: 32.75   1st Qu.:111325   1st Qu.:1880   1st Qu.:3.000
 Median : 64.50   Median :125950   Median :2000   Median :3.000
 Mean   : 64.50   Mean   :130427   Mean   :2001   Mean   :3.023
 3rd Qu.: 96.25   3rd Qu.:148250   3rd Qu.:2140   3rd Qu.:3.000
 Max.   :128.00   Max.   :211200   Max.   :2590   Max.   :5.000
   Bathrooms         Offers      Brick    Neighborhood
 Min.   :2.000   Min.   :1.000   No :86   East :45
 1st Qu.:2.000   1st Qu.:2.000   Yes:42   North:44
 Median :2.000   Median :3.000            West :39
 Mean   :2.445   Mean   :2.578
 3rd Qu.:3.000   3rd Qu.:3.000
 Max.   :4.000   Max.   :6.000
```

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

```
> library(e1071, pos=16)
```

```
> numSummary(Dataset[,c("Bathrooms", "Bedrooms", "HomeID", "Offers", "Price",
+   "SqFt")], groups=Dataset$Brick, statistics=c("mean", "sd", "IQR",
+   "quantiles"), quantiles=c(0,.25,.5,.75,1))
```

```
Variable: Bathrooms
        mean        sd IQR 0% 25% 50% 75% 100%  n
No  2.383721 0.4891434   1  2   2   2   3    3 86
Yes 2.571429 0.5474044   1  2   2   3   3    4 42

Variable: Bedrooms
        mean        sd  IQR 0% 25% 50%  75% 100%  n
No  3.000000 0.6859943 0.00  2   3   3 3.00    4 86
Yes 3.071429 0.8082760 0.75  2   3   3 3.75    5 42

Variable: HomeID
        mean       sd   IQR 0%   25%  50%   75% 100%  n
No  63.53488 36.62616 56.50  1 36.25 63.5 92.75  128 86
Yes 66.47619 38.40810 68.25  7 31.25 68.5 99.50  125 42

Variable: Offers
        mean       sd  IQR 0%  25% 50% 75% 100%  n
No  2.686047 1.076614 1.00  1 2.00 3.0   3    6 86
Yes 2.357143 1.031727 1.75  1 1.25 2.5   3    5 42

Variable: Price
        mean       sd   IQR     0%    25%    50%    75%   100%  n
No  121958.1 22589.26 31150  69100 106675 117650 137825 180900 86
Yes 147769.0 26829.38 40800 106100 125850 147500 166650 211200 42

Variable: SqFt
        mean       sd   IQR   0%  25%  50%    75% 100%  n
No  1989.186 219.0580 280.0 1520 1845 1995 2125.0 2590 86
Yes 2025.000 195.6758 262.5 1450 1920 2015 2182.5 2440 42
```

```
> LinearModel.1 <- lm(Price ~ Bathrooms + Bedrooms + Brick + Neighborhood +
+   Offers + SqFt, data=Dataset)
```

```
> summary(LinearModel.1)
```

```
Call:
lm(formula = Price ~ Bathrooms + Bedrooms + Brick + Neighborhood +
    Offers + SqFt, data = Dataset)

Residuals:
     Min       1Q   Median       3Q      Max
-27337.3  -6549.5    -41.7   5803.4  27359.3

Coefficients:
                      Estimate Std. Error t value Pr(>|t|)
(Intercept)             598.919   9552.197   0.063  0.95011
Bathrooms              7883.278   2117.035   3.724  0.00030 ***
Bedrooms               4246.794   1597.911   2.658  0.00894 **
Brick[T.Yes]          17297.350   1981.616   8.729 1.78e-14 ***
Neighborhood[T.North]  1560.579   2396.765   0.651  0.51621
Neighborhood[T.West]  22241.616   2531.758   8.785 1.32e-14 ***
Offers                -8267.488   1084.777  -7.621 6.47e-12 ***
SqFt                     52.994      5.734   9.242 1.10e-15 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 10020 on 120 degrees of freedom
Multiple R-squared:  0.8686,    Adjusted R-squared:  0.861
F-statistic: 113.3 on 7 and 120 DF,  p-value: < 2.2e-16
```

```
> confint(LinearModel.1)
```

```
                           2.5 %      97.5 %
(Intercept)           -18313.76695 19511.60509
Bathrooms               3691.69572 12074.86126
Bedrooms                1083.04162  7410.54616
Brick[T.Yes]           13373.88702 21220.81203
Neighborhood[T.North]  -3184.84961  6306.00785
Neighborhood[T.West]   17228.91136 27254.32158
Offers                -10415.27089 -6119.70575
SqFt                     41.64034    64.34714
```