

# Ch\_07\_Regression Analysis

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## Download data

**Downloading** data from the website. The download command downloads data in the working directory.

Data are downloaded, loaded, and names of fields are read from the file:

```
setInternet2(TRUE) # solution for https files

download.file("https://sites.google.com/site/econometriks/docs/housing88.RData", "housing88.RData")

load("housing88.RData")
setwd("C:/Users/Regionomics/Documents/Research_2/All_else_being_equal/Chapters/Ch07_Regression/Data/Regression_housing/Housing prices/88_units")

names(housing88)
```

```
## [1] "assess" "bdrms" "lotsize" "sqrft" "colonial" "lprice"
## [7] "lassess" "llotsize" "lsqrft" "bedsq" "lnrooms" "hprice"
```

**Loading** required packages and **attaching** the data set.

```
attach(housing88)
```

```
library(lattice)
lattice.options(default.theme = standard.theme(color = FALSE))
trellis.device(color = FALSE)
```

## Figure 7.3

```
options(scipen=10)
xyplot(hprice ~ sqrft, data = housing88,
       type = c("p", "g", "r"), pch=16, lwd=2, col.symbol = "black",
       xlab = "size of house in square feet",
       ylab= "housing price")
```

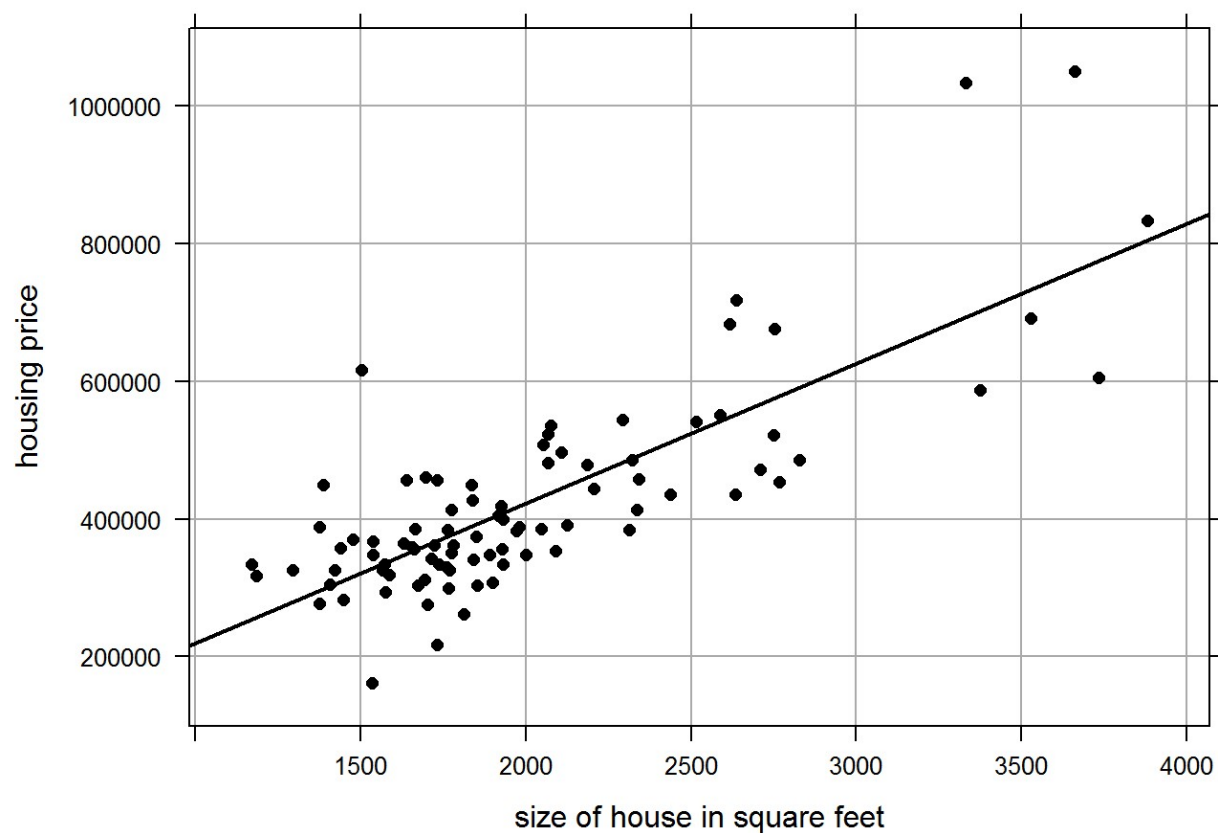


Table 7.5

```
library(stargazer)
```

```
##
## Please cite as:
##
## Hlavac, Marek (2014). stargazer: LaTeX code and ASCII text for well-formatt
ed regression and summary statistics tables.
## R package version 5.1. http://CRAN.R-project.org/package=stargazer
```

```
stargazer(housing88, type="html", digits=2)
```

Statistic	N	Mean	St. Dev.	Min	Max
assess	88	315.74	95.31	198.70	708.60
bdrms	88	3.57	0.84	2	7
lotsize	88	9,019.86	10,174.15	1,000	92,681
sqrft	88	2,013.69	577.19	1,171	3,880
colonial	88	0.69	0.46	0	1
lprice	88	5.63	0.30	4.71	6.59

lassess	88	5.72	0.26	5.29	6.56
llotsize	88	8.91	0.54	6.91	11.44
lsqrft	88	7.57	0.26	7.07	8.26
bedsq	88	13.43	6.87	4	49
lnrooms	88	1.25	0.23	0.69	1.95
hprice	88	425,641.80	148,934.50	160,950.00	1,051,250.00

Figure 7.4

```
histogram(lotsize, nint=10,
          xlab="size of lot in square feet", col=c("dark grey"))
```

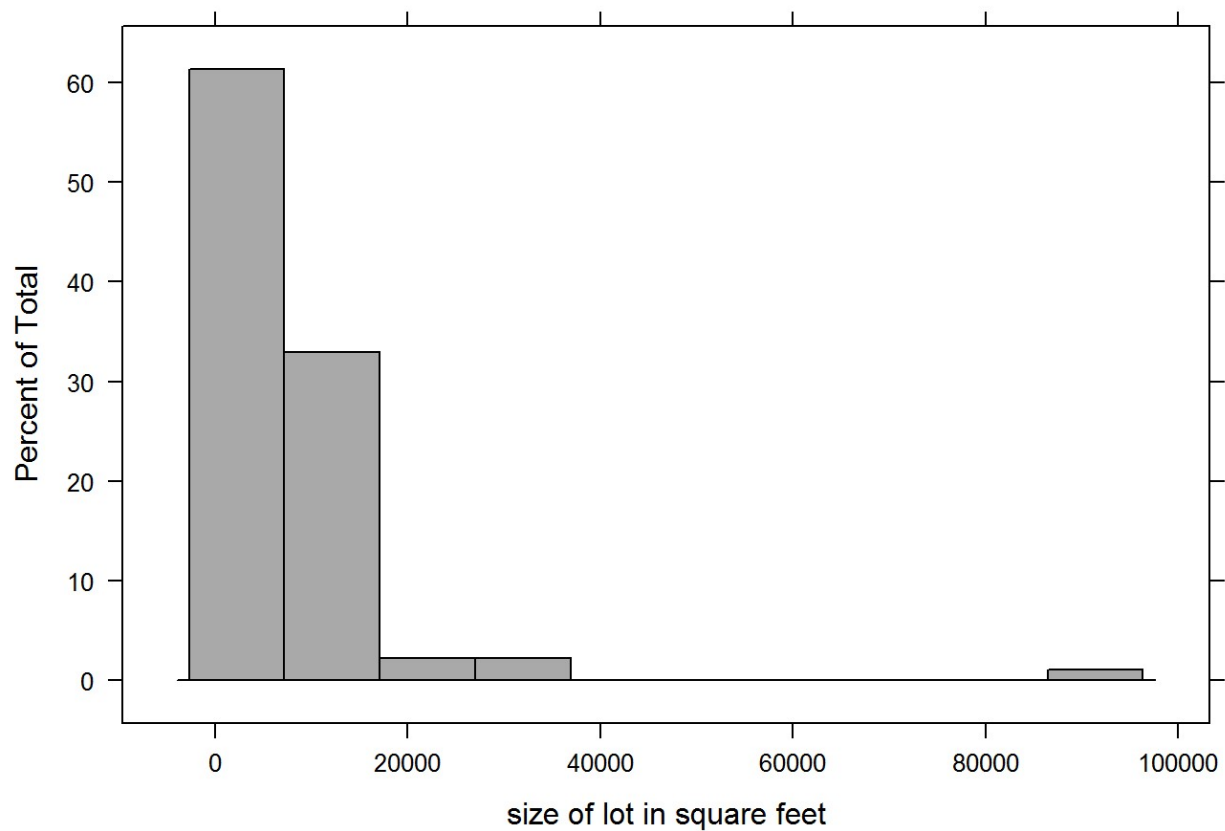


Figure 7.5

```
mod1<-(lm(hprice~bdrms+lotsize+sqrft+colonial))
summary(mod1)
```

```
##
## Call:
## lm(formula = hprice ~ bdrms + lotsize + sqrft + colonial)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -177288  -55492   -9490   40904  316158
##
## Coefficients:
##              Estimate Std. Error t value      Pr(>|t|)
## (Intercept) -34983.4667  42925.0090  -0.815      0.41741
## bdrms       15956.2241  13797.1276   1.156      0.25080
## lotsize      3.0100     0.9318   3.230      0.00177 **
## sqrft       180.1443    19.3405   9.314 0.00000000000000153 ***
## colonial    19887.5363  21224.0345   0.937      0.35146
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 86820 on 83 degrees of freedom
## Multiple R-squared:  0.6758, Adjusted R-squared:  0.6602
## F-statistic: 43.25 on 4 and 83 DF,  p-value: < 2.2e-16
```

**Table 7.6**

```
stargazer(mod1,type='html', no.space=TRUE, align=TRUE,
          dep.var.labels=c("House price"),
          covariate.labels=c("number of bedrooms",
                             "size of lot in square feet",
                             "size of house in square feet",
                             "=1, if Colonial style"))
```

	<i>Dependent variable:</i>
	House price
number of bedrooms	15,956.220 (13,797.130)
size of lot in square feet	3.010*** (0.932)
size of house in square feet	180.144*** (19.340)
=1, if Colonial style	19,887.540 (21,224.030)
Constant	-34,983.470 (42,925.010)
Observations	88
R <sup>2</sup>	0.676

Adjusted R <sup>2</sup>	0.660
Residual Std. Error	86,821.600 (df = 83)
F Statistic	43.252*** (df = 4; 83)
Note:	$p < 0.1$ ; <b><math>p &lt; 0.05</math></b> ; $p < 0.01$

## Table 7.7

```
library(psych)
library(xtable)
library(htmlTable)
```

```
f <- function(x) c(obs=length(x), mean=mean(x), sd=sd(x))
tres<-as.matrix(aggregate(hprice ~ bdrms, FUN=c("f")))
colnames(tres)[2:4]<-c("n", "mean", "std. dev.")
htmlTable(txtRound(tres,0))
```

	<b>bdrms</b>	<b>n</b>	<b>mean</b>	<b>std. dev.</b>
2	4	364313	57641	
3	42379870	79965		
4	33413487	112656		
5	7	751105	234667	
6	1	449500		
7	1	692375		

## Table 7.8

```
mod2<-lm(hprice ~ factor(bdrms))
stargazer(mod2,type='html', no.space=TRUE, align=TRUE, digits=2,
          dep.var.labels=c("House price"))
```

	<i>Dependent variable:</i>
	House price
factor(bdrms)3	15,557.29 (58,035.40)
factor(bdrms)4	49,174.82 (58,719.53)
factor(bdrms)5	386,792.70*** (69,516.20)
factor(bdrms)6	85,187.50 (124,000.60)
factor(bdrms)7	328,062.50*** (124,000.60)
Constant	364,312.50*** (55,454.74)

Observations	88
R <sup>2</sup>	0.48
Adjusted R <sup>2</sup>	0.45
Residual Std. Error	110,909.50 (df = 82)
F Statistic	14.98*** (df = 5; 82)
Note:	$p < 0.1$ ; <b><math>p &lt; 0.05</math></b> ; $p < 0.01$

Table 7.9

```
mod3<-lm(hprice ~ bdrms)
mod4<-lm(hprice ~ bdrms + lotsize )
mod5<-lm(hprice ~ bdrms + sqrft )
mod6<-lm(hprice ~ bdrms + lotsize + sqrft )
mod7<-lm(hprice ~ bdrms + lotsize + sqrft + colonial)

stargazer(mod3, mod4, mod5, mod6, mod7, type="html", align=TRUE, no.space=TRUE,
          digits=2, dep.var.labels=c("house price"),
          covariate.labels=c("number of bedrooms",
                             "size of lot in square feet",
                             "size of house in square feet",
                             "=1, if Colonial style"))
```

	<i>Dependent variable:</i>				
	house price				
	(1)	(2)	(3)	(4)	(5)
number of bedrooms	89,935.62*** (16,440.15)	83,103.63*** (15,782.56)	22,037.38 (13,751.10)	20,086.16 (13,064.71)	15,956.22 (13,797.13)
size of lot in square feet		4.14*** (1.31)		3.00*** (0.93)	3.01*** (0.93)
size of house in square feet			186.23*** (20.05)	178.03*** (19.19)	180.14*** (19.34)
=1, if Colonial style					19,887.54 (21,224.03)
Constant	104,735.10* (60,252.24)	91,730.25 (57,448.37)	-28,006.74 (45,017.60)	-31,566.95 (42,738.81)	-34,983.47 (42,925.01)
Observations	88	88	88	88	88
R <sup>2</sup>	0.26	0.34	0.63	0.67	0.68
Adjusted R <sup>2</sup>	0.25	0.32	0.62	0.66	0.66
Residual Std. Error	129,022.10 (df = 86)	122,705.00 (df = 85)	91,415.01 (df = 85)	86,758.55 (df = 84)	86,821.61 (df = 83)
F Statistic	29.93*** (df = 1; 86)	21.58*** (df = 2; 85)	72.96*** (df = 2; 85)	57.46*** (df = 3; 84)	43.25*** (df = 4; 83)

Note:

$p < 0.1$ ;  $p < 0.05$ ;  $p < 0.01$

## Table 7.11

names(housing88)

```
mod3<-lm(lprice ~ lsqrft)
mod4<-lm(lprice ~ colonial)
mod5<-lm(lprice ~ bdrms + bedsq )

stargazer(mod3, mod4, mod5, type="html", align=TRUE, no.space=TRUE,
  digits=2, dep.var.labels=c("log of house price"),
  covariate.labels=c("log of built area",
    "=1, if Colonial style",
    "number of bedrooms",
    "beds squared"))
```

	<i>Dependent variable:</i>		
	log of house price		
	(1)	(2)	(3)
log of built area	0.87*** (0.08)		
=1, if Colonial style		0.12* (0.07)	
number of bedrooms			-0.04 (0.19)
beds squared			0.03 (0.02)
Constant	-0.98 (0.64)	5.55*** (0.06)	5.42*** (0.37)
Observations	88	88	88
R <sup>2</sup>	0.55	0.03	0.23
Adjusted R <sup>2</sup>	0.55	0.02	0.21
Residual Std. Error	0.20 (df = 86)	0.30 (df = 86)	0.27 (df = 85)
F Statistic	106.39*** (df = 1; 86)	2.90* (df = 1; 86)	12.41*** (df = 2; 85)

Note:

$p < 0.1$ ;  $p < 0.05$ ;  $p < 0.01$

# Teaching Ratings

```
setInternet2(TRUE) # solution for https files
```

```
download.file("https://sites.google.com/site/statsr4us/intro/software/rcmdr-1/TeachingRatings.rda", "TeachingRatings.rda")
```

```
load("TeachingRatings.rda")
names(TeachingRatings)
```

```
## [1] "minority" "age" "gender" "credits" "beauty"
## [6] "eval" "division" "native" "tenure" "students"
## [11] "allstudents" "prof"
```

```
attach(TeachingRatings)
```

Table 7.13

```
mod3<-lm(eval ~ gender )
mod4<-lm(eval ~ gender + minority + native)
mod5<-lm(eval ~ gender + minority + native + tenure + division +credits)
mod6<-lm(eval ~ gender + minority + native + tenure + division +credits +
          beauty)

stargazer(mod3, mod4, mod5, mod6, type="html", align=TRUE, no.space=TRUE,
          digits=2, dep.var.labels=c("teaching evaluation score"),
          covariate.labels=c("female", "minority instructor",
                              "NON-native English speaker", "tenured professor",
                              "lower division", "single credit",
                              "normalized score of instructor's appearance",
                              "intercept"))
```

	<i>Dependent variable:</i>			
	teaching evaluation score			
	(1)	(2)	(3)	(4)
female	-0.17*** (0.05)	-0.16*** (0.05)	-0.15*** (0.05)	-0.18*** (0.05)
minority instructor		-0.03 (0.08)	-0.14* (0.08)	-0.16** (0.08)
NON-native English speaker		-0.31*** (0.11)	-0.23** (0.11)	-0.24** (0.11)
tenured professor			-0.07 (0.06)	-0.06 (0.06)



lower division			0.03 (0.06)	0.01 (0.05)
single credit			0.53*** (0.12)	0.60*** (0.12)
normalized score of instructor's appearance				0.16*** (0.03)
intercept	4.07*** (0.03)	4.09*** (0.03)	4.11*** (0.07)	4.11*** (0.06)
Observations	463	463	463	463
R <sup>2</sup>	0.02	0.04	0.10	0.16
Adjusted R <sup>2</sup>	0.02	0.04	0.09	0.14
Residual Std. Error	0.55 (df = 461)	0.54 (df = 459)	0.53 (df = 456)	0.51 (df = 455)
F Statistic	10.56*** (df = 1; 461)	6.81*** (df = 3; 459)	8.74*** (df = 6; 456)	12.03*** (df = 7; 455)
<i>Note:</i> <span style="float: right;"><math>p &lt; 0.1</math>; <math>p &lt; 0.05</math>; <math>p &lt; 0.01</math></span>				

Table 7.14

```
## The following objects are masked from TeachingRatings (pos = 3):
##
##   age, allstudents, beauty, credits, division, eval, gender,
##   minority, native, prof, students, tenure
##
## Loading required package: zoo
##
## Attaching package: 'zoo'
##
## The following objects are masked from 'package:base':
##
##   as.Date, as.Date.numeric
```

```
## Warning: package 'multiwayvcov' was built under R version 3.2.3
```

```

modw1<-lm(eval ~ gender + minority + native + tenure + division +credits + beau
ty)
modw2<-lm(eval ~ gender + minority + native + tenure + division +credits +
    beauty, weight=weights)

vcov_prof <- cluster.vcov(modw2, TeachingRatings$prof)
# coeftest(modw2, vcov_prof)

robust.se <- sqrt(diag(vcov_prof))

stargazer(modw1, modw2, modw2, type="html", align=TRUE, no.space=TRUE,
    se=list(NULL, NULL, robust.se),
    digits=3, dep.var.labels=c("teaching evaluation score"),
    column.labels=c("un-weighted model","weighted model",
        "weighted model w/ clustered std. errors"),
    covariate.labels=c("female", "minority instructor",
        "NON-native English speaker", "tenured professor",
        "lower division", "single credit",
        "normalized beauty score",
        "intercept"))

```

	<i>Dependent variable:</i>		
	teaching evaluation score		
	un-weighted model (1)	weighted model (2)	weighted model w/ clustered std. errors (3)
female	-0.178*** (0.050)	-0.184*** (0.049)	-0.184** (0.080)
minority instructor	-0.158** (0.077)	-0.171** (0.075)	-0.171* (0.096)
NON-native English speaker	-0.236** (0.107)	-0.212** (0.107)	-0.212 (0.137)
tenured professor	-0.056 (0.062)	-0.051 (0.061)	-0.051 (0.098)
lower division	0.009 (0.055)	0.061 (0.055)	0.061 (0.086)
single credit	0.603*** (0.117)	0.539*** (0.113)	0.539*** (0.157)
normalized beauty score	0.165*** (0.031)	0.153*** (0.031)	0.153*** (0.045)
intercept	4.115*** (0.063)	4.124*** (0.063)	4.124*** (0.098)
Observations	463	463	463
R <sup>2</sup>	0.156	0.157	0.157
Adjusted R <sup>2</sup>	0.143	0.144	0.144

Residual Std. Error (df = 455)	0.514	0.443	0.443
F Statistic (df = 7; 455)	12.032***	12.088***	12.088***
Note: $p < 0.1$ ; <b><math>p &lt; 0.05</math></b> ; $p < 0.01$			

## Expenses

```
## [1] "adults" "alcoh" "food" "kids" "trport" "income" "hhld"
## [8] "nokids" "adult.f" "kids.f" "hhld.f"
```

```
## The following object is masked from package:psych:
##
## income
```

## Alcohol

Table 7.16

```
stargazer(Dataset, type="html", digits=2)
```

Statistic	N	Mean	St. Dev.	Min	Max
adults	1,000	1.95	0.59	1	3
alcoh	1,000	30.66	38.00	0.25	762.67
food	1,000	97.26	52.99	20.02	605.11
kids	1,000	0.82	1.06	0	4
trport	1,000	79.41	90.91	0.03	600.94
income	1,000	662.60	407.22	41	4,437
hhld	1,000	2.78	1.27	1	6
nokids	1,000	0.56	0.50	0	1

Table 7.17

```
f <- function(x) c( mean=mean(x), obs=length(x))
tres<-as.matrix(aggregate(alcoh ~ kids.f, FUN=c("f")))
colnames(tres)[1:3]<-c("children in hhld", "mean", "n")
htmlTable(txtRound(tres,1))
```

children in hhld	mean	n
0.0	32.3	560.0
1.0	28.7	158.0
2.0	30.7	192.0
3.0	23.7	80.0

children in hhld	mean	n
4.0	25.2	10.0

Table 7.18

```
lm.1 <- lm(alcoh ~ adults, data=Dataset)
lm.2 <- lm(alcoh ~ adults + income, data=Dataset)
lm.3 <- lm(alcoh ~ adults + income + kids, data=Dataset)
lm.4 <- lm(alcoh ~ adults + income + kids, subset= kids>0 ,
           data=Dataset)

stargazer(lm.1, lm.2, lm.3, lm.4, type="html", align=TRUE, no.space=TRUE,
          digits=2, dep.var.labels=c("spending on alcohol"),
          column.labels=c("alcohol", "alcohol, households with children"),
          column.separate = c(3,1),
          covariate.labels=c("adults in hhld", "weekly income",
                             "children in hhld"))
```

	<i>Dependent variable:</i>			
	spending on alcohol		alcohol, households with children	
	(1)	(2)	(3)	(4)
adults in hhld	7.77*** (2.01)	4.64** (2.20)	4.80** (2.19)	7.06 (4.54)
weekly income		0.01*** (0.003)	0.01*** (0.003)	0.01 (0.01)
children in hhld			-3.05*** (1.13)	-1.18 (2.65)
Constant	15.47*** (4.11)	14.24*** (4.10)	15.55*** (4.12)	11.68 (10.84)
Observations	1,000	1,000	1,000	440
R <sup>2</sup>	0.01	0.03	0.03	0.01
Adjusted R <sup>2</sup>	0.01	0.02	0.03	0.01
Residual Std. Error	37.74 (df = 998)	37.53 (df = 997)	37.42 (df = 996)	42.90 (df = 436)
F Statistic	14.93*** (df = 1; 998)	13.57*** (df = 2; 997)	11.52*** (df = 3; 996)	2.04 (df = 3; 436)
<i>Note:</i>				$p < 0.1$ ; $p < 0.05$ ; $p < 0.01$
tres				

Figure 7.7

```
barplot(tapply(alcoh,kids,mean), ylim =c(0,40),
        ylab="Weekly household spending on alcohol ($)",
        xlab = "No. of children",
        main="Weekly spending on alcohol (Canadian $)")
```

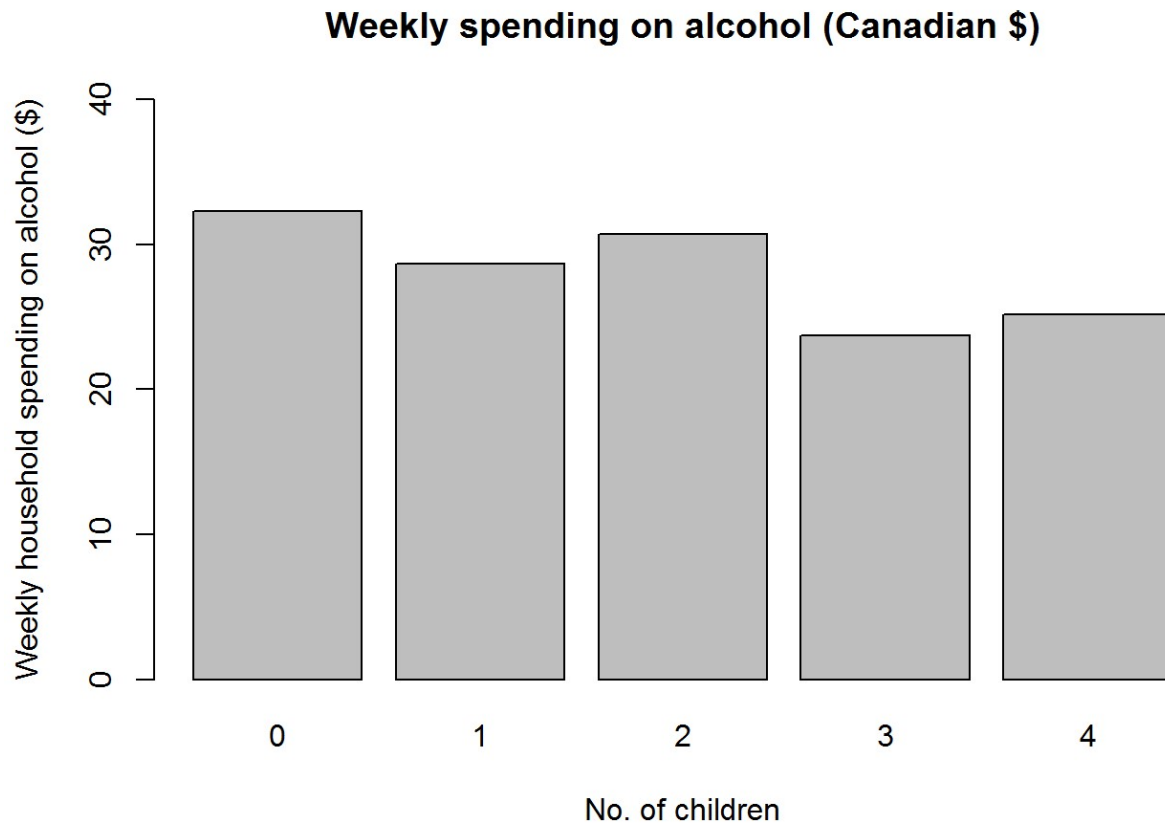


Table 7.19

```
lm.3 <- lm(alcoh ~ income + factor(adults) + factor(kids), data=Dataset)
stargazer(lm.3, type="html", align=TRUE, no.space=TRUE,
          digits=2, dep.var.labels=c("spending on alcohol"))
```

	<i>Dependent variable:</i>
	spending on alcohol
income	0.01*** (0.003)
factor(adults)2	3.97 (3.26)
factor(adults)3	10.29** (4.43)

factor(kids)1	-6.16*
	(3.42)
factor(kids)2	-5.02
	(3.28)
factor(kids)3	-10.29**
	(4.56)
factor(kids)4	-6.61
	(11.97)
Constant	21.19***
	(2.94)
Observations	1,000
R <sup>2</sup>	0.04
Adjusted R <sup>2</sup>	0.03
Residual Std. Error	37.46 (df = 992)
F Statistic	5.16*** (df = 7; 992)
Note:	$p < 0.1$ ; $p < 0.05$ ; $p < 0.01$

# Food

Table 7.20

```
f <- function(x) c( mean=mean(x), obs=length(x))
tres<-as.matrix(aggregate(food ~ kids.f, FUN=c("f")))
colnames(tres)[1:3]<-c("children in hhld", "mean", "n")
htmlTable(txtRound(tres,1))
```

children in hhld	mean	n
0.0	82.7	560.0
1.0	107.1	158.0
2.0	120.9	192.0
3.0	120.6	80.0
4.0	118.5	10.0

Table 7.21

```
lm.1 <- lm(food ~ adults, data=Dataset)
lm.2 <- lm(food ~ adults + income, data=Dataset)
lm.3 <- lm(food ~ adults + income + kids, data=Dataset)
lm.4 <- lm(food ~ adults + income + kids, subset= kids>0 ,
           data=Dataset)

stargazer(lm.1, lm.2, lm.3, lm.4, type="html", align=TRUE, no.space=TRUE,
          digits=2, dep.var.labels=c("spending on food"),
          column.labels=c("food", "food, households with children"),
          column.separate = c(3,1),
          covariate.labels=c("adults in hhld", "weekly income",
                             "children in hhld"))
```

	<i>Dependent variable:</i>			
	spending on food			
		food		food, households with children
	(1)	(2)	(3)	(4)
adults in hhld	34.73*** (2.60)	20.33*** (2.64)	19.76*** (2.55)	18.18*** (5.10)
weekly income		0.05*** (0.004)	0.05*** (0.004)	0.04*** (0.01)
children in hhld			10.86*** (1.32)	7.82*** (2.98)
Constant	29.41*** (5.32)	23.76*** (4.92)	19.09*** (4.80)	31.25** (12.19)
Observations	1,000	1,000	1,000	440
R <sup>2</sup>	0.15	0.28	0.32	0.19
Adjusted R <sup>2</sup>	0.15	0.28	0.32	0.18
Residual Std. Error	48.85 (df = 998)	45.05 (df = 997)	43.62 (df = 996)	48.24 (df = 436)
F Statistic	177.85*** (df = 1; 998)	192.58*** (df = 2; 997)	159.58*** (df = 3; 996)	33.01*** (df = 3; 436)
<i>Note:</i>				$p<0.1$ ; $p<0.05$ ; $p<0.01$

Table 7.22

```
lm.3 <- lm(food ~ income + factor(adults) + factor(kids), data=Dataset)
stargazer(lm.3, type="html", align=TRUE, no.space=TRUE,
          digits=2, dep.var.labels=c("spending on food"))
```

<i>Dependent variable:</i>
spending on food

income	0.05*** (0.004)
factor(adults)2	19.84*** (3.80)
factor(adults)3	38.67*** (5.17)
factor(kids)1	14.61*** (3.98)
factor(kids)2	23.99*** (3.82)
factor(kids)3	30.13*** (5.31)
factor(kids)4	37.00*** (13.95)
Constant	38.35*** (3.43)
Observations	1,000
R <sup>2</sup>	0.33
Adjusted R <sup>2</sup>	0.32
Residual Std. Error	43.66 (df = 992)
F Statistic	68.50*** (df = 7; 992)
Note:	$p < 0.1$ ; $p < 0.05$ ; $p < 0.01$

Table 7.23

```
mod1<-lm(hprice~ lotsize+sqrft+bdrms)

res1 <- resid(mod1)
res2<-res1^2

mod2 <- lm(res2 ~ lotsize+sqrft+bdrms)

stargazer(mod1, mod2, type="html", align=TRUE, no.space=TRUE,
           digits=2, dep.var.labels=c("housing price", "residuals squared"),
           column.labels=c("BP Test, original model",
                           "BP Test, Residual Squared model"),
           covariate.labels=c("size of lot in sqr. ft.", "house size in sqr. f
t.",
                           "number of bedrooms"))
```

	<i>Dependent variable:</i>	
	housing price BP Test, original model (1)	residuals squared BP Test, Residual Squared model (2)
size of lot in sqr. ft.	3.00***	423,697.70***



	(0.93)	(149,296.60)
house size in sqr. ft.	178.03***	3,555,405.00
	(19.19)	(3,077,745.00)
number of bedrooms	20,086.16	2,190,300,824.00
	(13,064.71)	(2,094,891,149.00)
Constant	-31,566.95	-11,611,676,039.00*
	(42,738.81)	(6,853,053,027.00)
Observations	88	88
R <sup>2</sup>	0.67	0.16
Adjusted R <sup>2</sup>	0.66	0.13
Residual Std. Error (df = 84)	86,758.55	13,911,498,783.00
F Statistic (df = 3; 84)	57.46***	5.34***
Note:		$p < 0.1$ ; $p < 0.05$ ; $p < 0.01$

Table 7.24

```
mod1<-lm(lprice~ llotsize+lsqrft+lnrooms)

res1 <- resid(mod1)
res2<-res1^2

mod2 <- lm(res2 ~ llotsize+lsqrft+lnrooms)

stargazer(mod1, mod2, type="html", align=TRUE, no.space=TRUE,
          digits=2, dep.var.labels=c("log of housing price", "residuals square
d"),
          column.labels=c("BP Test, original model",
"BP Test, Residual Squared model"),
          covariate.labels=c("size of lot in sqr. ft.", "house size in sqr. f
t.",
"number of bedrooms"))
```

	<i>Dependent variable:</i>	
	log of housing price BP Test, original model	residuals squared BP Test, Residual Squared model
	(1)	(2)
size of lot in sqr. ft.	0.17*** (0.04)	-0.01 (0.01)
house size in sqr. ft.	0.72*** (0.09)	-0.07* (0.04)
number of bedrooms	0.10 (0.10)	0.07* (0.04)
Constant	-1.43** (0.64)	0.50** (0.25)
Observations	88	88
R <sup>2</sup>	0.64	0.06

Adjusted R <sup>2</sup>	0.63	0.02
Residual Std. Error (df = 84)	0.19	0.07
F Statistic (df = 3; 84)	49.64***	1.65
<i>Note:</i>		$p < 0.1$ ; <b><math>p &lt; 0.05</math></b> ; $p < 0.01$

**Table 7.25**

```
mod1<-lm(hprice~ lotsize+sqrft+bdrms)

library(sandwich)
cov <- vcovHC(mod1, type = "HC1")
robust.se <- sqrt(diag(cov))

stargazer(mod1, mod1, type="html", align=TRUE, no.space=TRUE,
           se=list(NULL, robust.se),
           digits=2, column.labels=c("Default SE", "Robust SE"),
           covariate.labels=c("size of lot in sqr. ft.", "house size in sqr. f
t.",
                               "number of bedrooms"))
```

	<i>Dependent variable:</i>	
	hprice	
	Default SE	Robust SE
	(1)	(2)
size of lot in sqr. ft.	3.00*** (0.93)	3.00* (1.81)
house size in sqr. ft.	178.03*** (19.19)	178.03*** (25.70)
number of bedrooms	20,086.16 (13,064.71)	20,086.16 (12,294.01)
Constant	-31,566.95 (42,738.81)	-31,566.95 (53,850.41)
Observations	88	88
R <sup>2</sup>	0.67	0.67
Adjusted R <sup>2</sup>	0.66	0.66
Residual Std. Error (df = 84)	86,758.55	86,758.55
F Statistic (df = 3; 84)	57.46***	57.46***
<i>Note:</i>	$p < 0.1$ ; <b><math>p &lt; 0.05</math></b> ; $p < 0.01$	

## Table 7.26

```
mod1<-lm(hprice~ bdrms)
mod2<-lm(hprice~ bdrms +sqrft)
mod3<-lm(hprice~ bdrms +sqrft+lotsize)

stargazer(mod1, mod2, mod3, type="html", align=TRUE, no.space=TRUE,
          digits=2, column.labels=c("beds", "beds+sqrft", "beds+sqrft+lotsize"),
          covariate.labels=c("number of bedrooms",
                             "house size in sqr. ft.", "size of lot in sqr. ft."))
```

	<i>Dependent variable:</i>		
	beds	hprice beds+sqrft	beds+sqrft+lotsize
	(1)	(2)	(3)
number of bedrooms	89,935.62*** (16,440.15)	22,037.38 (13,751.10)	20,086.16 (13,064.71)
house size in sqr. ft.		186.23*** (20.05)	178.03*** (19.19)
size of lot in sqr. ft.			3.00*** (0.93)
Constant	104,735.10* (60,252.24)	-28,006.74 (45,017.60)	-31,566.95 (42,738.81)
Observations	88	88	88
R <sup>2</sup>	0.26	0.63	0.67
Adjusted R <sup>2</sup>	0.25	0.62	0.66
Residual Std. Error	129,022.10 (df = 86)	91,415.01 (df = 85)	86,758.55 (df = 84)
F Statistic	29.93*** (df = 1; 86)	72.96*** (df = 2; 85)	57.46*** (df = 3; 84)
<i>Note:</i>	<i>p</i> <0.1; <b><i>p</i></b> <0.05; <i>p</i> <0.01		