MovieDemand-Feb_12.R

danny

2020-02-12

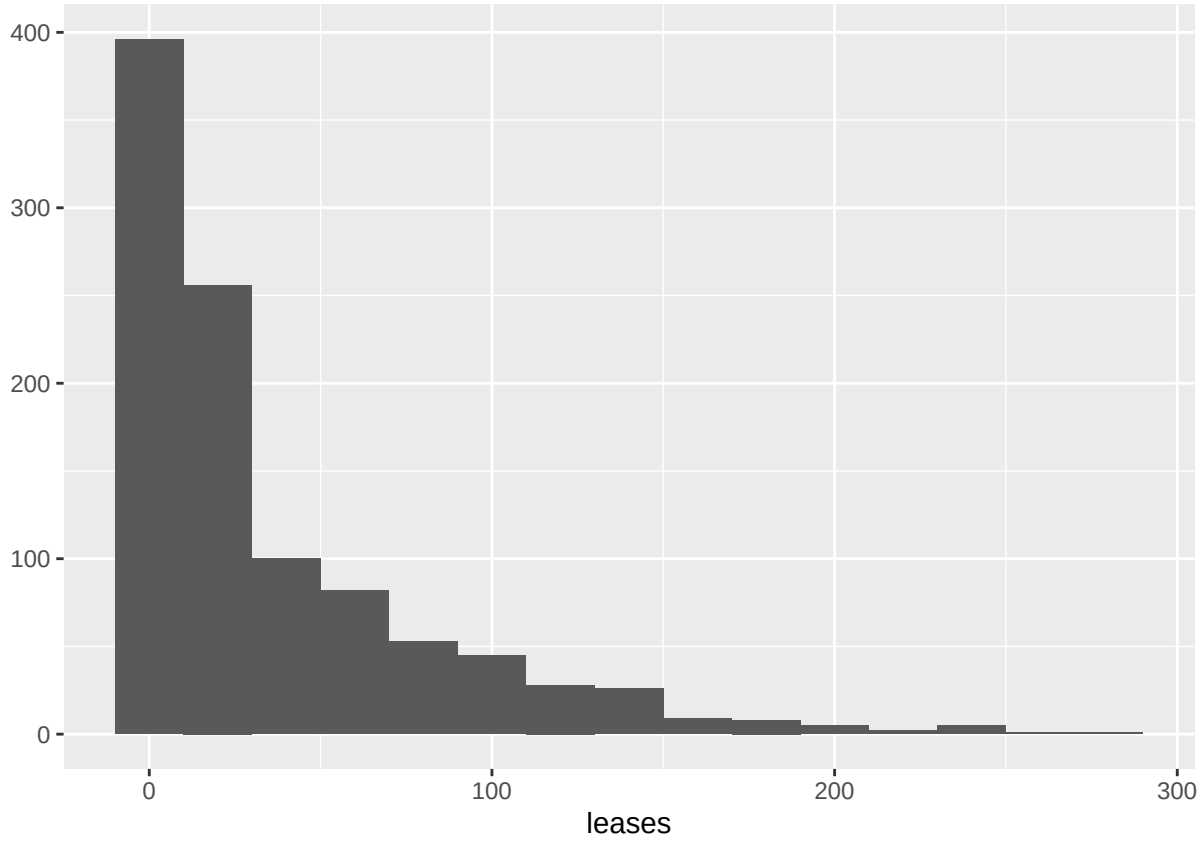
```
## install.packages("stargazer")

## Set working dir - for this example only
setwd("~/MSBA 2020 All Files/Spring 2020/MSBA 6440 - Inference via Ecnmtrcs Exprmnt/Week 2 - Design of E

## Pull in libraries
library(stargazer)
```

```
##
## Please cite as:

##  Hlavac, Marek (2018). stargazer: Well-Formatted Regression and Summary Statistics Tables.

##  R package version 5.2.2. https://CRAN.R-project.org/package=stargazer
```

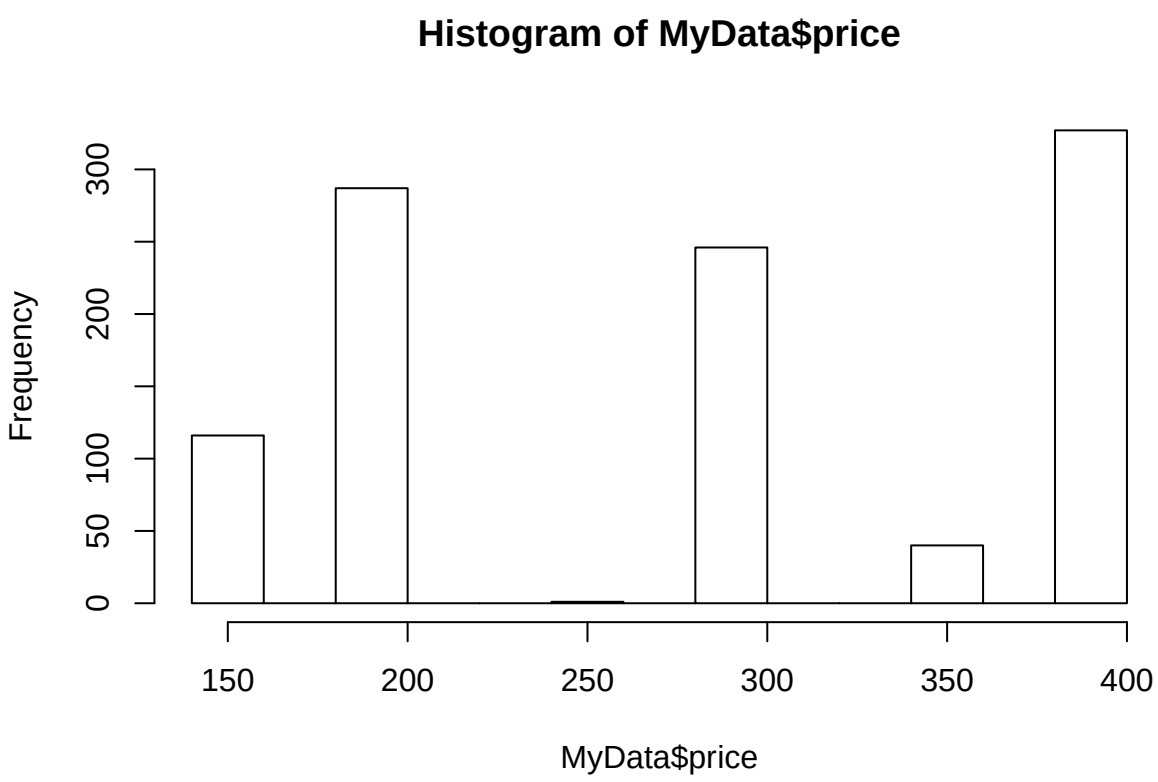
```
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 3.6.2
```

```
#*** MSBA 6440 ***#
#*** Gordon Burtch and Gautam Ray***#
#*** Code for Lecture 2 ***#

#*** Load Dataset ***#

MyData <- read.csv("MovieData_Obs.csv")

#*** Plot Leases over time ***#

qplot(leases, data = MyData, geom = "histogram", binwidth = 20)
```




```
hist(MyData$price)
```

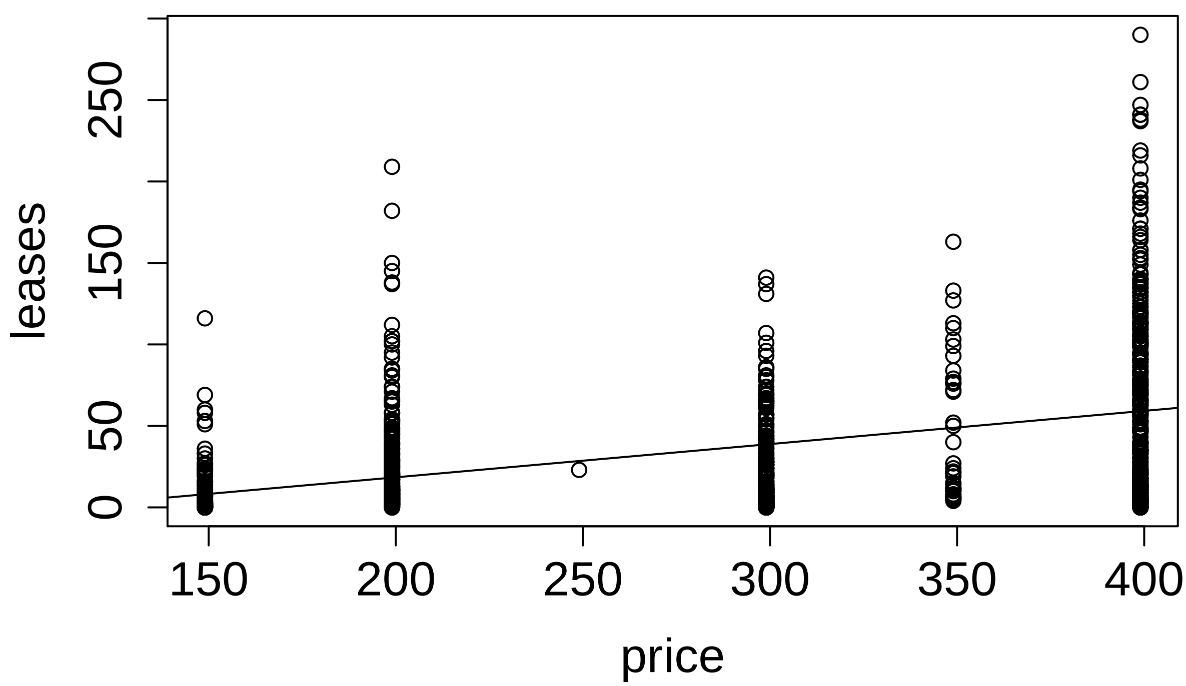



```
#*** Regress leases on price (using linear demand for sake of simplicity) ***#

ols <-lm(leases ~ price, data = MyData)
stargazer(ols,title="OLS leases on price",type="text",column.labels=c("price"))
```

```
##
## OLS leases on price
## ================================================
##                          Dependent variable:
##                      ---------------------------
##                                 leases
##                                  price
## ------------------------------------------------
## price                           0.204***
##                                  (0.014)
##
## Constant                       -22.317***
##                                  (4.271)
##
## ------------------------------------------------
## Observations                      1,017
## R2                                0.170
## Adjusted R2                       0.169
## Residual Std. Error      41.730 (df = 1015)
## F Statistic           208.179*** (df = 1; 1015)
```

```
## ================================================
## Note:               *p<0.1; **p<0.05; ***p<0.01
```

```r
#*** Plot estimated demand curve ***#

plot(y=MyData$leases, x=MyData$price, xlab="price", ylab="leases",cex.axis=1.5, cex.lab=1.5)
abline(lm(leases~price, data = MyData))
```

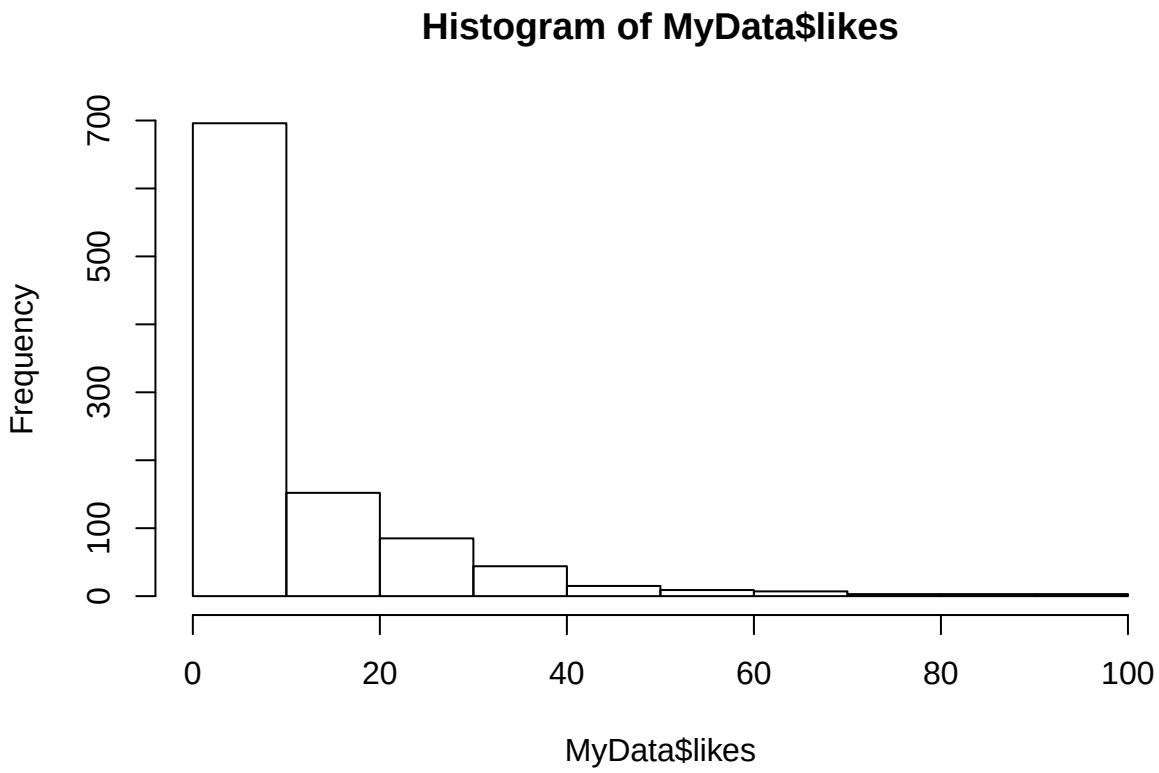



```r
#*** Regress leases on log price (now using log price) ***#

olslog <-lm(leases ~ log(price), data = MyData)
stargazer(ols,olslog,title="OLS leases on price",type="text",column.labels=c("price","log(price)"))
```

```
##
## OLS leases on price
## ============================================================
##                                     Dependent variable:
##                                 ----------------------------
##                                            leases
##                                     price        log(price)
##                                      (1)            (2)
## ------------------------------------------------------------
## price                              0.204***
##                                    (0.014)
##
```

```
## log(price)                                        51.833***
##                                                    (3.801)
##
## Constant                                 -22.317***    -254.168***
##                                           (4.271)       (21.346)
##
## ------------------------------------------------------------------
## Observations                               1,017          1,017
## R2                                         0.170          0.155
## Adjusted R2                                0.169          0.154
## Residual Std. Error (df = 1015)           41.730         42.115
## F Statistic (df = 1; 1015)              208.179***     185.926***
## ==================================================================
## Note:                                  *p<0.1; **p<0.05; ***p<0.01
```

```r
#*** Plot likes ***#

hist(MyData$likes)
```




```r
max(MyData$likes)
```

```
## [1] 98
```

```
#*** Regress leases on price and likes (linear and log) ***#

olslikes <-lm(leases ~ log(price) + likes, data = MyData)
olslikeslog <-lm(leases ~ log(price) + log(likes+1), data = MyData)
stargazer(olslog,olslikes,olslikeslog,title="OLS leases on price and likes",type="text",column.labels=c
```

```
##
## OLS leases on price and likes
## ================================================================================================
##                                                Dependent variable:
##                     ---------------------------------------------------------------------------
##                                                      leases
##                              log(price)                likes                 log(likes+1)
##                                  (1)                    (2)                       (3)
## ------------------------------------------------------------------------------------------------
## log(price)                     51.833***              13.673***                 11.337***
##                                 (3.801)                (2.574)                   (2.888)
##
## likes                                                 2.493***
##                                                       (0.063)
##
## log(likes + 1)                                                                  26.870***
##                                                                                  (0.803)
##
## Constant                      -254.168***            -64.172***                -70.131***
##                                 (21.346)               (14.234)                  (15.717)
##
## ------------------------------------------------------------------------------------------------
## Observations                     1,017                  1,017                     1,017
## R2                               0.155                  0.667                     0.598
## Adjusted R2                      0.154                  0.667                     0.598
## Residual Std. Error    42.115 (df = 1015)     26.433 (df = 1014)        29.047 (df = 1014)
## F Statistic         185.926*** (df = 1; 1015) 1,017.343*** (df = 2; 1014) 755.273*** (df = 2; 1014)
## ================================================================================================
## Note:                                                              *p<0.1; **p<0.05; ***p<0.01
```

```
#*** Regress leases on price and likes and Age of the Movie ***#

min(MyData$year_release)
```

```
## [1] 1982
```

```
Age<-MyData$year_release - 1982
Age_Sq<-Age*Age

olsAge <-lm(leases ~ log(price) + log(likes+1) + Age, data = MyData)
olsAge2 <-lm(leases ~ log(price) + log(likes+1) + Age + Age_Sq, data = MyData)

stargazer(olslikeslog,olsAge,olsAge2,title="OLS leases on price, likes and age",type="text",column.label
```

```
##
## OLS leases on price, likes and age
```

```
## ===================================================================================================
##                                                   Dependent variable:
##                          --------------------------------------------------------------------------
##                                                          leases
##                            log(price) and likes           Age                    Age-Squared
##                                    (1)                    (2)                        (3)
## ---------------------------------------------------------------------------------------------------
## log(price)                      11.337***                3.489                     -4.488
##                                  (2.888)                (3.247)                   (3.816)
##
## log(likes + 1)                  26.870***              26.517***                 26.062***
##                                  (0.803)                (0.796)                   (0.799)
##
## Age                                                     1.269***                 -2.393**
##                                                         (0.251)                   (0.969)
##
## Age_Sq                                                                           0.099***
##                                                                                   (0.025)
##
## Constant                       -70.131***             -57.867***                  15.131
##                                 (15.717)               (15.717)                  (24.331)
##
## ---------------------------------------------------------------------------------------------------
## Observations                     1,017                  1,017                      1,017
## R2                               0.598                  0.608                      0.614
## Adjusted R2                      0.598                  0.607                      0.613
## Residual Std. Error    29.047 (df = 1014)      28.701 (df = 1013)        28.500 (df = 1012)
## F Statistic         755.273*** (df = 2; 1014) 524.289*** (df = 3; 1013) 402.589*** (df = 4; 1012)
## ===================================================================================================
## Note:                                                                *p<0.1; **p<0.05; ***p<0.01
```

```r
#*** Regress leases on price and likes and year release dummies ***#

olsyeardummies <-lm(leases ~ log(price) + log(likes+1) + factor(year_release), data = MyData)

stargazer(olsyeardummies,title="OLS leases on price, likes and year release dummies",type="text",column
```

```
##
## OLS leases on price, likes and year release dummies
## =======================================================
##                               Dependent variable:
##                           ---------------------------
##                                     leases
##                              year release dummies
## -------------------------------------------------------
## log(price)                        -12.126***
##                                     (4.158)
##
## log(likes + 1)                     25.414***
##                                     (0.806)
##
## factor(year_release)1983             7.531
##                                    (19.582)
##
```

```
## factor(year_release)1992          34.356*
##                                  (19.664)
##
## factor(year_release)1993          10.552
##                                  (16.998)
##
## factor(year_release)1994           5.152
##                                  (19.495)
##
## factor(year_release)1996          14.074
##                                  (19.491)
##
## factor(year_release)1999          10.421
##                                  (19.481)
##
## factor(year_release)2000          24.470
##                                  (16.016)
##
## factor(year_release)2001          25.945*
##                                  (14.829)
##
## factor(year_release)2002          18.111
##                                  (15.385)
##
## factor(year_release)2003          23.753
##                                  (14.792)
##
## factor(year_release)2004           9.829
##                                  (14.363)
##
## factor(year_release)2005          19.456
##                                  (14.119)
##
## factor(year_release)2006          19.235
##                                  (14.077)
##
## factor(year_release)2007          20.985
##                                  (14.217)
##
## factor(year_release)2008          23.129
##                                  (14.099)
##
## factor(year_release)2009          17.968
##                                  (14.120)
##
## factor(year_release)2010          22.977
##                                  (14.321)
##
## factor(year_release)2011         45.244***
##                                  (14.175)
##
## factor(year_release)2012         53.744***
##                                  (14.332)
##
```

```
## Constant                          35.861
##                                  (25.722)
##
## -----------------------------------------------------
## Observations                       1,017
## R2                                 0.647
## Adjusted R2                        0.639
## Residual Std. Error           27.501 (df = 995)
## F Statistic               86.737*** (df = 21; 995)
## =====================================================
## Note:                     *p<0.1; **p<0.05; ***p<0.01
```

```r
#*** All results together ***#

stargazer(olslikeslog,olsAge2,olsyeardummies,title="Choose what suits your... taste,boss,client?",type=
```

```
##
## Choose what suits your... taste,boss,client?
## ==============================================================================================
##                                                  Dependent variable:
##                             ------------------------------------------------------------------
##                                                        leases
##                                  log(price)             Age2                  yr dummies
##                                     (1)                  (2)                     (3)
## ----------------------------------------------------------------------------------------------
## log(price)                       11.337***             -4.488                 -12.126***
##                                   (2.888)              (3.816)                 (4.158)
##
## log(likes + 1)                   26.870***            26.062***               25.414***
##                                   (0.803)              (0.799)                 (0.806)
##
## Age                                                   -2.393**
##                                                        (0.969)
##
## Age_Sq                                                0.099***
##                                                        (0.025)
##
## factor(year_release)1983                                                        7.531
##                                                                                (19.582)
##
## factor(year_release)1992                                                        34.356*
##                                                                                (19.664)
##
## factor(year_release)1993                                                        10.552
##                                                                                (16.998)
##
## factor(year_release)1994                                                        5.152
##                                                                                (19.495)
##
## factor(year_release)1996                                                        14.074
##                                                                                (19.491)
##
## factor(year_release)1999                                                        10.421
##                                                                                (19.481)
```

```
##
## factor(year_release)2000                                                                  24.470
##                                                                                          (16.016)
##
## factor(year_release)2001                                                                 25.945*
##                                                                                          (14.829)
##
## factor(year_release)2002                                                                  18.111
##                                                                                          (15.385)
##
## factor(year_release)2003                                                                  23.753
##                                                                                          (14.792)
##
## factor(year_release)2004                                                                  9.829
##                                                                                          (14.363)
##
## factor(year_release)2005                                                                  19.456
##                                                                                          (14.119)
##
## factor(year_release)2006                                                                  19.235
##                                                                                          (14.077)
##
## factor(year_release)2007                                                                  20.985
##                                                                                          (14.217)
##
## factor(year_release)2008                                                                  23.129
##                                                                                          (14.099)
##
## factor(year_release)2009                                                                  17.968
##                                                                                          (14.120)
##
## factor(year_release)2010                                                                  22.977
##                                                                                          (14.321)
##
## factor(year_release)2011                                                                 45.244***
##                                                                                          (14.175)
##
## factor(year_release)2012                                                                 53.744***
##                                                                                          (14.332)
##
## Constant                              -70.131***                 15.131                  35.861
##                                        (15.717)                 (24.331)                 (25.722)
##
## ------------------------------------------------------------------------------------------------
## Observations                             1,017                     1,017                    1,017
## R2                                       0.598                     0.614                    0.647
## Adjusted R2                              0.598                     0.613                    0.639
## Residual Std. Error            29.047 (df = 1014)        28.500 (df = 1012)        27.501 (df = 995)
## F Statistic                 755.273*** (df = 2; 1014) 402.589*** (df = 4; 1012) 86.737*** (df = 21; 995)
## ================================================================================================
## Note:                                                                  *p<0.1; **p<0.05; ***p<0.01
```