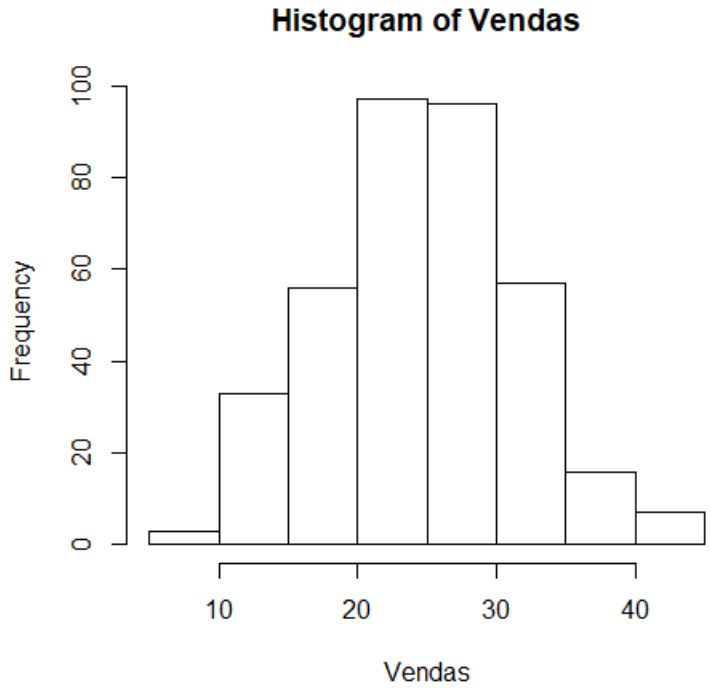
Aula 8 – Introdução ao R

Resultado da saída do software R

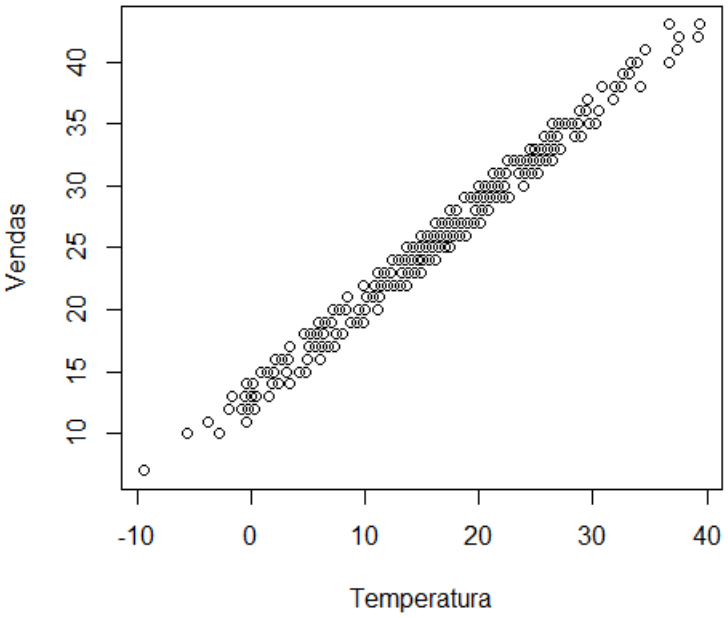
```
> # Introdução ao R
> # Lindomar Pegorini Daniel
>
> library(readxl)
> Limonada <- read_excel("C:/Users/lindo/Google Drive/Lindomar/UNEMAT/ENSINO/SE
MESTRES LETIVOS/SEMESTRE LETIVO 2020.3/Econometria I/Unidade 1 - Introdução ao
modelo de regressão linear/Tópico 1.2 Introdução à econometria/Aula 8 - Introdu
ção ao R/Limonada.xls")
> View(Limonada)
> attach(Limonada)
>
> # Listando as variáveis
> names(Limonada)
[1] "Data"        "Dia"         "Temperatura" "Chuva"       "Panfletos"   "Preç
o"        "Vendas"
>
> # Mostre as primeiras linhas dos dados
> head(Limonada)
# A tibble: 6 x 7
  Data                Dia     Temperatura Chuva Panfletos Preço Vendas
  <dttm>              <chr>         <dbl> <dbl>     <dbl> <dbl>  <dbl>
1 2017-01-01 00:00:00 Domingo       -2.78  20          15   1.2     10
2 2017-01-02 00:00:00 Segunda       -1.72  13.3        15   1.2     13
3 2017-01-03 00:00:00 Terça          1.39  13.3        27   1.2     15
4 2017-01-04 00:00:00 Quarta         6.72  10.5        28   1.2     17
5 2017-01-05 00:00:00 Quinta         5.78  10          33   1.2     18
6 2017-01-06 00:00:00 Sexta         -3.72  15.4        23   1.2     11
> Limonada[1:10,]
# A tibble: 10 x 7
   Data                Dia     Temperatura Chuva Panfletos Preço Vendas
   <dttm>              <chr>         <dbl> <dbl>     <dbl> <dbl>  <dbl>
 1 2017-01-01 00:00:00 Domingo       -2.78  20          15   1.2     10
 2 2017-01-02 00:00:00 Segunda       -1.72  13.3        15   1.2     13
 3 2017-01-03 00:00:00 Terça          1.39  13.3        27   1.2     15
 4 2017-01-04 00:00:00 Quarta         6.72  10.5        28   1.2     17
 5 2017-01-05 00:00:00 Quinta         5.78  10          33   1.2     18
 6 2017-01-06 00:00:00 Sexta         -3.72  15.4        23   1.2     11
 7 2017-01-07 00:00:00 Sábado         0.500 15.4        19   1.2     13
 8 2017-01-08 00:00:00 Domingo        3.06  11.8        28   1.2     15
 9 2017-01-09 00:00:00 Segunda        3.39  11.8        20   1.2     17
10 2017-01-10 00:00:00 Terça          6.33  10.5        33   1.2     18
>
> # Estatísiticas descritivas
> summary(Vendas)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
   7.00   20.00   25.00   25.32   30.00   43.00
> sd(Vendas)
[1] 6.893589
> length(Vendas)
[1] 365
> summary(Panfletos)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
   9.00   31.00   39.00   40.28   49.00   80.00
> sd(Panfletos)
[1] 13.17865
>
> # Tabelas de frequência
> table(Preço)
Preço
1.2   2
303  62
```

```
> table(Vendas, Preço)
      Preço
Vendas 1.2  2
    7    1  0
    10   2  0
    11   2  0
    12   4  0
    13   9  0
    14   8  0
    15  10  0
    16   6  0
    17  11  0
    18  12  0
    19  16  0
    20  11  0
    21  10  0
    22  10  0
    23  18  0
    24  24  0
    25  35  0
    26  22  0
    27  19  0
    28  14  0
    29  15  8
    30   7 11
    31  11  5
    32   4 10
    33   3  5
    34   1  5
    35   6  7
    36   3  1
    37   2  1
    38   2  2
    39   1  1
    40   1  2
    41   2  1
    42   1  1
    43   0  2
>
> # Histograma
> hist(Vendas)
```

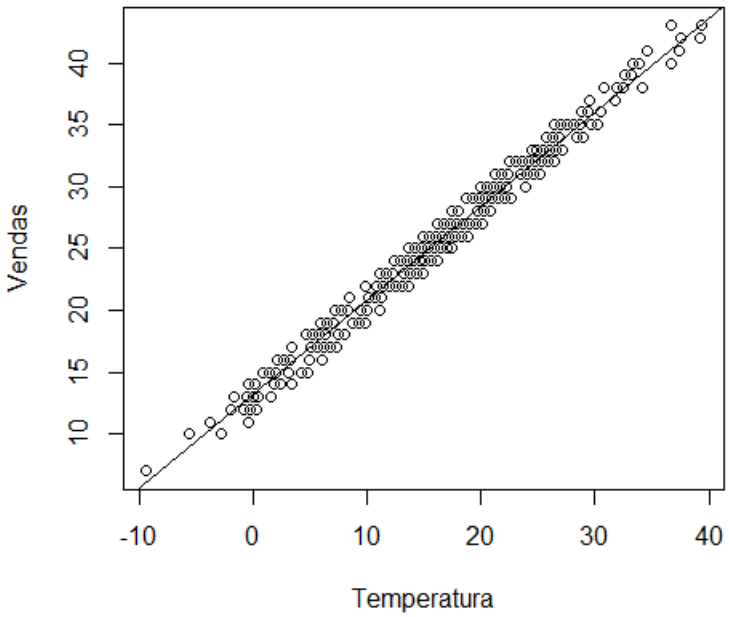


```
> # Correlação entre variáveis
> cor(Vendas, Panfletos)
[1] 0.8051826
>
> # Teste-t para teste de igualdade de média
> t.test(Vendas, mu=29.9)

        One Sample t-test

data:  Vendas
t = -12.684, df = 364, p-value < 2.2e-16
alternative hypothesis: true mean is not equal to 29.9
95 percent confidence interval:
 24.61372 26.03285
sample estimates:
mean of x
 25.32329

>
> # Teste  de igualdade de média entre grupos
> anova(lm(Vendas ~ factor(Preço)))
Analysis of Variance Table

Response: Vendas
               Df  Sum Sq Mean Sq F value    Pr(>F)
factor(Preço)   1  4550.6  4550.6  129.59 < 2.2e-16 ***
Residuals     363 12747.2    35.1
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
> anova(lm(Vendas ~ factor(Dia)))
Analysis of Variance Table

Response: Vendas
             Df  Sum Sq Mean Sq F value Pr(>F)
factor(Dia)   6    23.1   3.842  0.0796 0.9981
Residuals   358 17274.8  48.254
>
> # Regressão de MQO - Vendas (variável dependente) e Temperatura, Preço e Panf
letos (variáveis independentes)
> reg_vendas <- lm(Vendas ~ Temperatura + Preço + Panfletos)
> summary(reg_vendas)

Call:
lm(formula = Vendas ~ Temperatura + Preço + Panfletos)

Residuals:
     Min       1Q   Median       3Q      Max
-1.88527 -0.76161 -0.01833  0.82325  1.86186

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept) 12.302413   0.268369  45.841  < 2e-16 ***
Temperatura  0.725396   0.009845  73.685  < 2e-16 ***
Preço        0.406197   0.194250   2.091  0.03722 *
Panfletos    0.022332   0.006348   3.518  0.00049 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9624 on 361 degrees of freedom
Multiple R-squared:  0.9807,   Adjusted R-squared:  0.9805
F-statistic:  6104 on 3 and 361 DF,  p-value: < 2.2e-16
```

```
>
> # Gráficos
> plot (Vendas ~ Temperatura)
```




```
> reg_vendas1 <- lm(Vendas ~ Temperatura)
> abline(reg_vendas1)
```




```
> # Redefinindo variáveis
> Y <- cbind(Vendas)
> X <- cbind(Temperatura, Preço, Panfletos)
> summary(Y)
     Vendas
 Min.   : 7.00
 1st Qu.:20.00
 Median :25.00
 Mean   :25.32
 3rd Qu.:30.00
 Max.   :43.00
```

```
> summary(X)
  Temperatura          Preço          Panfletos
 Min.   :-9.389   Min.   :1.200   Min.   : 9.00
 1st Qu.: 9.833   1st Qu.:1.200   1st Qu.:31.00
 Median :16.167   Median :1.200   Median :39.00
 Mean   :15.962   Mean   :1.336   Mean   :40.28
 3rd Qu.:21.833   3rd Qu.:1.200   3rd Qu.:49.00
 Max.   :39.389   Max.   :2.000   Max.   :80.00
> reg_vendas <- lm(Y ~ X)
> summary(reg_vendas)

Call:
lm(formula = Y ~ X)

Residuals:
     Min       1Q   Median       3Q      Max
-1.88527 -0.76161 -0.01833  0.82325  1.86186

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  12.302413   0.268369  45.841  < 2e-16 ***
XTemperatura  0.725396   0.009845  73.685  < 2e-16 ***
XPreço        0.406197   0.194250   2.091  0.03722 *
XPanfletos    0.022332   0.006348   3.518  0.00049 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.9624 on 361 degrees of freedom
Multiple R-squared:  0.9807,   Adjusted R-squared:  0.9805
F-statistic:  6104 on 3 and 361 DF,  p-value: < 2.2e-16
```