

# Spending on credit cards decreases after the Christmas spending season

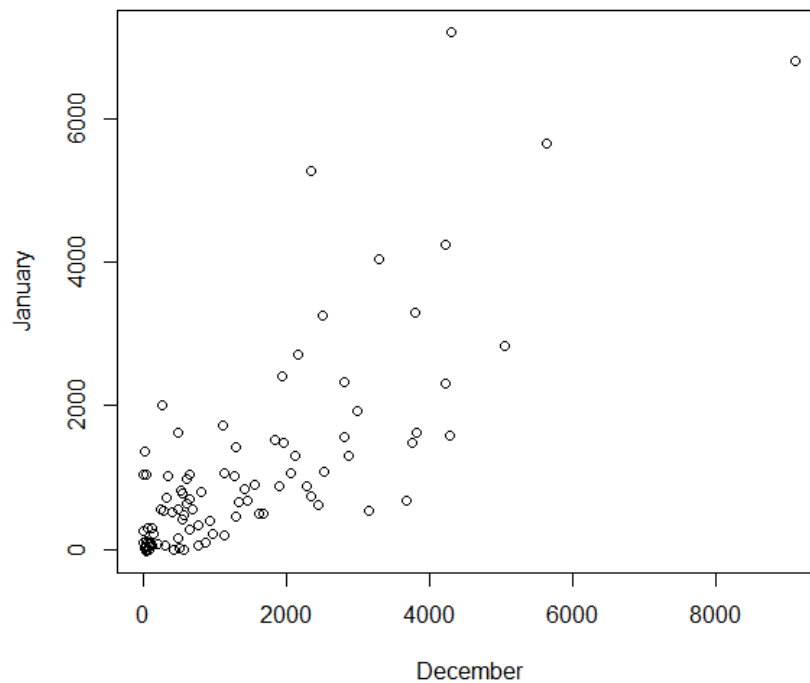
#(as measured by amount charged on a credit card in December).

#The accompanying data set contains the

#monthly credit card charges of a random sample of cardholders

```
> setwd("C:/Users/a.arslanov/Desktop")
> ccsales = read.csv("ccsales.csv")
> head(ccsales)
December January
1 1544.52 903.76
2 4303.48 7211.84
3 4225.64 4238.77
4 202.61 80.03
5 3298.87 4040.16
6 873.68 89.34
```

```
> #scatterplot
> plot(January~December, data = ccsales, xlab = "December", ylab = "January")
```



```

> #correlation coefficient
> cor_ccsales <- cor(ccsales$January, ccsales$December)
> cor_ccsales
[1] 0.7842724
> #correlation table
> cor(ccsales[,c(1,2)])
      December   January
December 1.0000000 0.7842724
January  0.7842724 1.0000000
> #LS line
> m <- lm(January~December, data = ccsales)
> summary(m)

Call:
lm(formula = January ~ December, data = ccsales)

Residuals:
    Min       1Q   Median       3Q      Max
-2013.2  -437.4  -107.9   233.7   4081.5

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) 120.99821   115.55839    1.047   0.298
December      0.69929    0.05617   12.450 <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 874.4 on 97 degrees of freedom
Multiple R-squared:  0.6151, Adjusted R-squared:  0.6111
F-statistic: 155 on 1 and 97 DF, p-value: < 2.2e-16

> # How much, on average, will
> #cardholders who charged $2000 in December charge in January?
> predict(m,data.frame(December = 2000))
1
1519.573
> # 95% Confidence Interval for the average January Charges of
> # cardholders who charged $2000 in December
> predict(m, data.frame(December=2000), level = 0.95, interval = 'confidence'
)
      fit      lwr      upr
1 1519.573 1330.097 1709.048

```

#The output results

# 1. The Nearly Normal Condition is not satisfied.

# 2. The Equal Spread Condition is not satisfied

# 3. Randomization Condition is satisfied

# 4. Linearity Condition is satisfied