Linear Regression Models

Code

Load data Add Library

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```
dataset <- read.csv("dataset_mlm.csv")
library(lme4)
summary(dataset$Muncipality.ID)
```

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max. 
    1.0    82.5   164.0   164.0   245.5   327.0 
```

Scatterplot of data with ordinary least squares regression line

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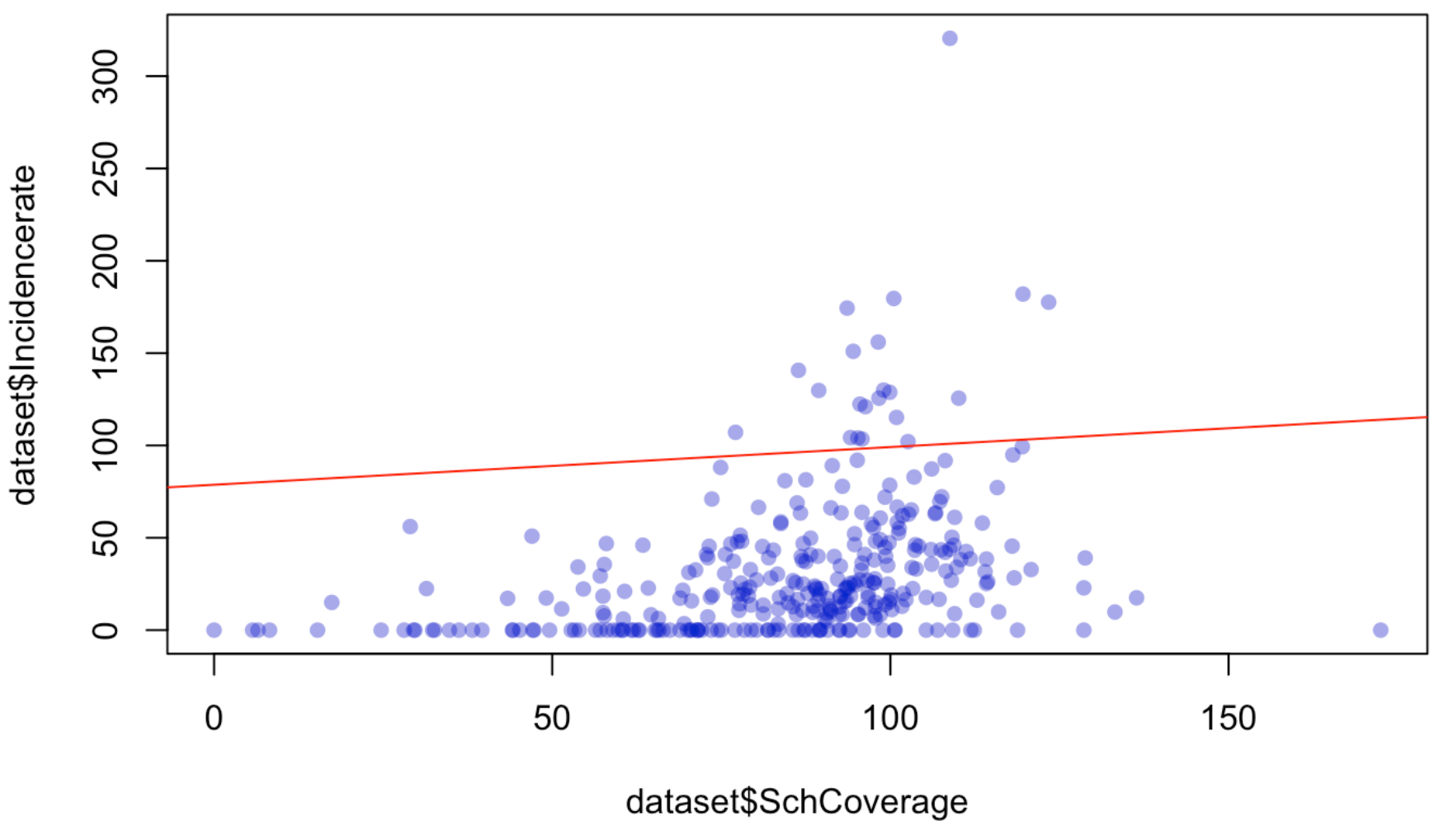
```
plot(dataset$SchCoverage,dataset$Incidencerate, pch=16, col=rgb(0,0,204,102,maxColorV
alue=255))
olsLine <- lm(dataset$SchCoverage ~ dataset$Incidencerate)
abline(olsLine, col="red")
```



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```
lmodel1 <- lm(Incidencerate ~ PovPercent + SchCoverage, data = dataset)
summary(lmodel1)
```

```

Call:
lm(formula = Incidencerate ~ PovPercent + SchCoverage, data = dataset)

Residuals:
    Min      1Q  Median      3Q     Max 
-88.220 -20.970  -8.185  10.336 273.360 

Coefficients:
            Estimate Std. Error t value Pr(>|t|)    
(Intercept) 21.57893   13.77461   1.567   0.1182    
PovPercent  -0.38098    0.11572  -3.292   0.0011 ** 
SchCoverage  0.43558    0.09437   4.615 5.66e-06 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 36.18 on 324 degrees of freedom
Multiple R-squared:  0.1442,    Adjusted R-squared:  0.1389 
F-statistic:  27.3 on 2 and 324 DF,  p-value: 1.103e-11
```

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```
lmodel2 <- lm(Incidencerate ~ PovPercent + SchCoverage + as.factor(DivisionNew), data
=dataset)
summary(lmodel2)
```

```
Call:
lm(formula = Incidencerate ~ PovPercent + SchCoverage + as.factor(DivisionNew),
    data = dataset)

Residuals:
    Min      1Q  Median      3Q     Max
-75.569 -17.829  -4.861  12.641 247.834

Coefficients:
                          Estimate Std. Error t value Pr(>|t|)
(Intercept)                28.1550    18.6191   1.512 0.131534
PovPercent                 -0.3929     0.1251  -3.140 0.001853 **
SchCoverage                 0.3695     0.1040   3.552 0.000443 ***
as.factor(DivisionNew)2   -11.9309    16.2577  -0.734 0.463597
as.factor(DivisionNew)3     1.2406    12.6635   0.098 0.922022
as.factor(DivisionNew)4     7.9660    22.7733   0.350 0.726735
as.factor(DivisionNew)5    -4.3811    11.7782  -0.372 0.710174
as.factor(DivisionNew)6    26.8215    11.7876   2.275 0.023578 *
as.factor(DivisionNew)7   -12.2052    16.3428  -0.747 0.455748
as.factor(DivisionNew)8    -9.0552    13.3260  -0.680 0.497329
as.factor(DivisionNew)9   -12.0360    16.6568  -0.723 0.470489
as.factor(DivisionNew)10   -7.5614    12.8441  -0.589 0.556495
as.factor(DivisionNew)11  -10.5761    16.8030  -0.629 0.529549
as.factor(DivisionNew)12   -1.7829    17.9294  -0.099 0.920856
as.factor(DivisionNew)13   -3.8665    15.7954  -0.245 0.806786
as.factor(DivisionNew)14   -9.2366    12.4951  -0.739 0.460346
as.factor(DivisionNew)15  -32.5651    20.4855  -1.590 0.112950
as.factor(DivisionNew)16  -17.6788    17.8964  -0.988 0.324016
as.factor(DivisionNew)17    3.3144    11.9962   0.276 0.782516
as.factor(DivisionNew)18   -1.9636    17.0007  -0.115 0.908126
as.factor(DivisionNew)19   -3.2609    16.9280  -0.193 0.847376
as.factor(DivisionNew)20  -11.9987    20.5743  -0.583 0.560199
as.factor(DivisionNew)21   19.4372    17.1346   1.134 0.257527
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 34.95 on 304 degrees of freedom
Multiple R-squared:  0.2506,    Adjusted R-squared:  0.1963
F-statistic:  4.62 on 22 and 304 DF,  p-value: 2.842e-10
```