

Regresi Linear Sederhana

Wanda Desi R

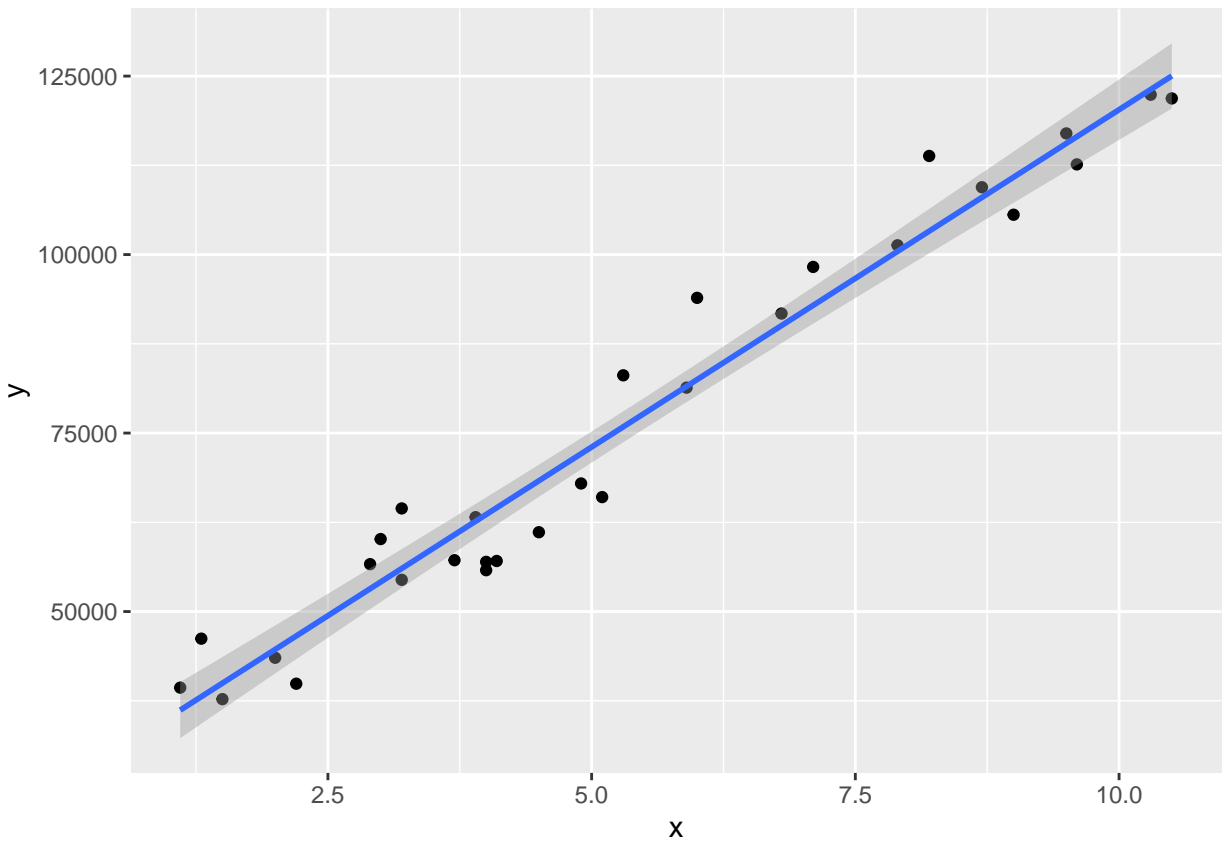
2024-04-17

```
# Load Data
library(readr)
Salary_Data <- read_csv("D:/kuliah/asprak things/tm 8/Salary Data.csv")
head(Salary_Data)
```

```
## # A tibble: 6 x 2
##   YearsExperience Salary
##           <dbl>   <dbl>
## 1             1.1  39343
## 2             1.3  46205
## 3             1.5  37731
## 4             2    43525
## 5             2.2  39891
## 6             2.9  56642
```

```
# Subset Data
x = Salary_Data$YearsExperience
y = Salary_Data$Salary
```

```
library(ggplot2)
ggplot(Salary_Data, aes(x, y)) +
  geom_point() +
  geom_smooth(method = "lm")
```



```
#regresi manual
```

```
slope <- function(x, y){
  mean_x <- mean(x)
  mean_y <- mean(y)
  sxy <- sum((x - mean_x)*(y-mean_y))
  sxx <- sum((x - mean_x)^2)
  b1 <- sxy / sxx
  return(b1)
}
```

```
intercept <- function(x, y, b1){
  b0 <- mean(y) - (b1 * mean(x))
  return(b0)
}
```

```
print('b1')
```

```
## [1] "b1"
```

```
slope(x,y)
```

```
## [1] 9449.962
```

```
print('b0')
```

```
## [1] "b0"
```

```
intercept(x,y,slope(x,y))
```

```
## [1] 25792.2
```

```
#regresi
```

```
model = lm(y~x, data=Salary_Data)
```

```
summary(model)
```

```
##
```

```
## Call:
```

```
## lm(formula = y ~ x, data = Salary_Data)
```

```
##
```

```
## Residuals:
```

```
##      Min       1Q   Median       3Q      Max  
## -7958.0 -4088.5  -459.9   3372.6 11448.0
```

```
##
```

```
## Coefficients:
```

```
##              Estimate Std. Error t value Pr(>|t|)  
## (Intercept)  25792.2     2273.1    11.35 5.51e-12 ***  
## x            9450.0       378.8    24.95 < 2e-16 ***
```

```
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
```

```
## Residual standard error: 5788 on 28 degrees of freedom
```

```
## Multiple R-squared:  0.957, Adjusted R-squared:  0.9554
```

```
## F-statistic: 622.5 on 1 and 28 DF, p-value: < 2.2e-16
```

```
model$coefficients
```

```
## (Intercept)          x  
##  25792.200    9449.962
```

```
summary(model)$r.squared
```

```
## [1] 0.9569567
```

```
resid(model)
```

```
##      1      2      3      4      5      6      7  
## 3155.8412 8127.8488 -2236.1437 -1167.1248 -6691.1173 3444.9091 6007.9128  
##      8      9     10     11     12     13     14  
## -1587.0796 8412.9204 -3568.0608  570.9467 -7798.0495 -6635.0495 -7456.0457  
##     15     16     17     18     19     20     21  
## -7206.0306 -4159.0156 -7958.0080 7210.9995 -183.9779 11448.0259 1686.0560  
##     22     23     24     25     26     27     28  
##  5386.0673  855.0975 10530.1088 1424.1276 -5259.8611 1402.1577 -3876.8385  
##     29     30  
## -735.8121 -3144.8046
```