Regression Analysis TA

Chapter 1 – Linear Regression with One Predictor Variable

Po-Wei Chen

Institute of Statistics, National Chengchi University

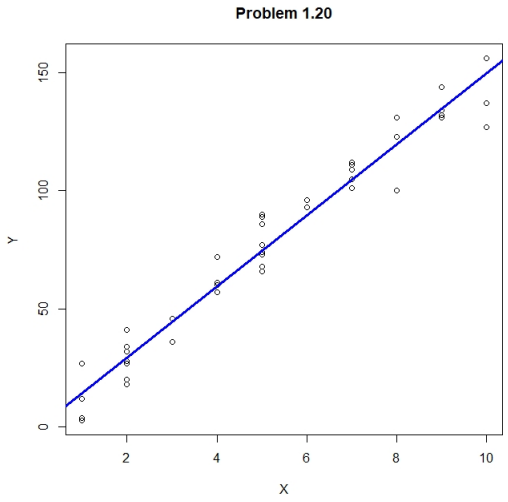
November 3, 2022

1 Problems

1.20.

(a) $\hat{Y} = -0.5802 + 15.0352X$

(b)



(d) $\hat{Y}_h = 74.59608$

1.24.

(a)

i :	1	2	...	44	45
e_i :	-9.4903	0.4392	...	1.4392	2.4039

$\sum e_i^2 = 3416.377$, Min $Q = \sum e_i^2$

(b) $MSE = 79.45063$, $\sqrt{MSE} = 8.913508$ minutes

1.27

(a) $\hat{Y} = 156.35 - 1.19X$

(b) (1) $b_1 = -1.19$, (2) $\hat{Y}_h = 84.95$, (3) $e_8 = 4.4433$, (4) $MSE = 66.8$

1.28

(a) $\hat{Y} = 20517.6 - 170.575X$

(b) (1) $b_1 = -170.575$, (2) $\hat{Y}_h = 6871.6$, (3) $e_{10} = 1401.566$, (4) $MSE = 5552112$

1.43

(a)

Total population: $\hat{Y} = -110.635 + 0.0027954X$

Number of hospital beds: $\hat{Y} = -95.9322 + 0.743116X$

Total personal income: $\hat{Y} = -48.3948 + .131701X$

(c)

Total population: $MSE = 372,203.5$

Number of hospital beds: $MSE = 310,191.9$

Total personal income: $MSE = 324,539.4$