

Sean Lai

Problem 3 & 4

formulas:

$$m = [n \cdot \sum(t_i \cdot v_i) - \sum(t_i) \cdot \sum(v_i)] / [n \cdot \sum((t_i)^2) - (\sum(t_i))^2]$$

$$b = [\sum(v_i) - m(\sum(t_i))] / n$$

$$R^2 = \sum((\hat{v}_i - \bar{v})^2) / \sum((v_i - \bar{v})^2)$$

t(s)	v(m/s)	t_i*v_i	t_i^2	vhat_i	(vhat_i-vbar)^2	(v_i-vbar)^2
10	22	220	100	36.86	1828.48	3320.64
25	52	1300	625	55.06	603.42	763.14
33	72	2376	1089	64.76	220.82	58.14
42	90	3780	1764	75.68	15.54	107.64
52	100	5200	2704	87.81	67.05	415.14
59	102	6018	3481	96.30	278.21	500.64
67	105	7035	4489	106.01	696.13	643.89
74	94	6956	5476	114.50	1216.32	206.64

sum(t_i)	362
sum(v_i)	637
sum(t_i * v_i)	32885
sum(t_i) * sum(v_i)	230594
(sum(t_i))^2	131044
sum((t_i)^2)	19728
n	8
sum((vhat_i-vbar)^2)	4925.97
sum((v_i-vbar)^2)	6015.88

$$\bar{v} = 79.6250$$

$$m = 1.2131$$

$$b = 24.7336$$

$$R^2 = 0.8188$$