

Part 6: Model Building

		AIC	BIC
<u>Q.E.1.</u> <u>P.1.a.</u>	X_1, X_2, X_3, X_4	27.8711	32.3230
	X_1, X_3, X_4, X_6	27.8711	32.3230
	X_3, X_4, X_6	25.9709	29.5324
<u>P.1.b.</u>	X_3, X_4, X_6		X_3, X_4, X_6

P.1.c. $1 - \frac{42.62}{TSS} = .9278 \Rightarrow \frac{42.62}{TSS} = .0722 \Rightarrow TSS = 590.30$

Q.E.2.

	p'	SSE	R^2	C_p	AIC	BIC
<u>P.2.a.</u> RFL	2	3439.9	0.35	—	—	531.55
RFB	2	4191.1	—	—	—	—
Age	2	5560.2	—	—	609.26	—
RFL, RFB	3	3285.2	—	2.86	—	—
RFL, RFB, AG	4	3267.9	—	—	—	—

RFL, RFB RFL, RFB RFL, RFB

TSS = 5834.3

P.2.b.

Q.E.3. P.3.a.

# vars	C_p	AIC	BIC
1	8.67	78.67	81.60
2	2.33	72.42	76.82
3	3.22	73.14	79.00
4	5.00	74.87	82.20

P.3.b. Model⁴ 2 2 2

Q.E.4. $S^2 = 30.4875$

Criteria	M1	M2	Best
C_p	8.95	8.00	M2
AIC	94.28	88.05	M2
BIC	98.99	97.47	M2

Q.E.5. P.5.a. $C_p(X_2, X_3) = 3.37$ $AIC(X_1, X_2, X_3, X_4) = 106.91$ $BIC(X_1, X_2, X_3) = 110.21$

P.5.b. $C_p, AIC \Rightarrow X_1, X_2, X_3$ $BIC \Rightarrow X_2, X_3$

P.5.c. $\hat{y}_i = 87.8 \Rightarrow e_i = 4.2$ P.5.d. $DW = 2.30$ Accept H_0

Q.E.7. P.7.a. $C_p(X_1) = 36.58$ $AIC(X_1, X_2) = 29.03$ $BIC(X_1, X_2, X_3) = 13.02$

P.7.b. $C_p, AIC \Rightarrow X_1, X_2, X_3$ $BIC \Rightarrow X_1, X_3$ P.7.c. $VIF_i = 1.63$, NO

NOTE: PROBLEMS 6 & 7 got marked

LR. E2

Q. 6.6. P. 6.a. $C_p(X_1) = 1.62$ $AIC(X_1, X_2) = 31.00$ $BIC(X_1, X_2, X_3) = 35.96$

P. 6.b. All choose model w/ only X_1 , N. 6.c. $VIF = 1.88$, No

Q. E. 8. False

Q. E. 9. P. 9.a. $C_p(X) = 116.56$ $AIC(X, X^2) = 19.26$ $BIC(X, \dots, X^4) = 14.64$

Q. E. 10. P. 10.a. $C_p(T) = \frac{39.86}{\cancel{45.278}}$ $AIC(T, A) = 4.84$ $BIC(T, A, H) = 2.28$

Full Model: $C_p = 6$ $AIC = -1.96$ $BIC = 3.39$

P. 10.b. (X, A, H, W, R) (T, A, H, W)

P. 10.c. 1 var: 0.44 5 var: 0.88

Q. E. 11. False

Q. E. 12. $R^2(fsv) = 0.967$ $C_p(\text{stretch}) = 840.297$ $AIC(\text{temp}, \text{stretch}) = 19.840$

$BIC(fsv, \text{stretch}) = -77.286$