

**Economics 102 : Analysis of Economic Data Cameron U.C.-Davis**  
**EXTRA QUESTION FOR MIDTERM 2 PREPARATION**  
**MULTIPLE REGRESSION QUESTION**  
**From Final Exam Question 4 Fall 2022**

4.(a) A one standard deviation increase in mother's education is associated with a  $8.47 \times 3.60 = 30.5$  increase in food spending.

(b) Yes, the five regressors are jointly significant at 5% since the  $F$ -statistic of overall fit equals 32.39 with  $p = 0.0000 < 0.05$ .

(c) Yes, the two regressors are jointly statistically significant at 5% since `test metro rural` gives  $F = 5.84$  with  $p = 0.0030 < 0.05$ .

(d) Use  $\bar{R}^2$  (adjusted  $R^2$ ) as this penalizes larger models. Since  $0.1235 > 0.1019$  the larger model fits better.

Alternatively favor model with lower  $s_e^2$ . Since  $408.57 < 413.57$  the larger model fits better.