Chapter 2.

1.) (i) u includes the other factors that impacts the number of kids rather than only educ. it can be age, career or income which are related to educ.

(ii) No, the regression will only show the total effect since u still impact the regression, $E(u_i|x_i) \neq 0$, SLR 4 fails

4.) (i) $\widehat{bwight} = 119.77 - 0.514(0) = 119.77$

$\widehat{bwight} = 119.77 - 0.514(20) = 109.49$

smoking 20 cigs will reduces the bwight by 10.28 ounce.

(ii) As the amount of cigs is independent and bwight is dependent it implies that there is a causal effect

(iii) $125 = 119.77 - 0.514$ cigs

cigs $= -10.\overline{A509728}$ → not possible, the maximum weight when we smoke no cigs is β_0 or intersection point which is 119.77

(iv) To get an more accurate sample, we should consider more smokers to get a more data point which will make our regression less limited and more accurate. More explantory variable is needed

Chapter 3

No.

Date :

1.) (i) it does make sense for the coefficient on hsperc to be negative, because when hsperc increases, it means that we move away from the top of the class to the bottom of the class (bad students) So, hsperc increase, colga should decrease, a larger percentile ; lower performance in school.

(ii) $\widehat{colga} = 1.392 - 0.0135(20) + 0.00148(1050)$

$= 2.676$

(iii) increasing 1 mark in SAT, $\widehat{colga}$ changes for 0.00148

So, A will have a higher GPA in college by $(140)(0.00148)$

$= 0.2072$

which is large relative to S.D.

(iv) $0.5 = 0.00148\ (SAT)$

$SAT = 337.83783783$

Chapter 3

2) (i) Yes, sibs has the expected effect because when you have more siblings your family may not be able to afford to pay for more of your educ.

$educ = -1 = -0.94\ sibs$

$sibs = 10.638297872$

(ii) → meduc's coefficient means that if the mother's years of schooling will increase by 1, there is an approximate/estimated increase of 0.131 year of schooling for the working man.

(iii) $\widehat{educ}_A = 10.36 - 0.094(0) + 0.131(12) + 0.210(12)$

$= 14.452$

$\widehat{educ}_B = 10.36 - 0.094(0) + 0.131(16) + 0.210(16)$

$= 15.816$

Man B will have a predicted $1.364\ (15.816 - 14.452)$ more years of schooling than Man A.