Week 4 – Homework

Text

Description automatically generated

1. This point does have high leverage, because it is an outlier it has the leverage to secure the graph and the data. This also makes it a very influential point, typically points with high leverage are very influential.

A picture containing text

Description automatically generated

1. The relationship between beer and BAC is, the more beer a student has had, the higher their blood alcohol content. This is a positive correlation
2. Y = -0.0127 + 0.018X
3. N/A
4. R^2 = 0.89^2 = 0.7921  
   This represents that 79% of the BAC is explained by the number of beers a student has had.
5. If we studied people at a bar, there would still be a positive correlation between beers and BAC, but it would not be as strong. If they are at a bar, this means they may have a different history with drinking, as they are not students who would not have as much of a history of drinking.

Table

Description automatically generated

1. Y = -80.41+(0.44\*genstation)+(-3.33\*parity)+(-0.01\*age)+(1.15\*hight)+(.05\*weight)+(-8.4\*smoke)
2. Gestation and baby weight have a positive correlation, for each day of gestation the baby is 0.44 unites heavier. Age and a baby’s weight have a negative correlation, for each year the mother is older, the weight of the baby is 0.01 units lighter.
3. Parity can now be measured more accurately now that there are more variables in the mix. This helps remove any unneeded “weight” the number had before.
4. 120.58 = -80.41+(0.44\*284)+(-3.33\*0)+(-0.01\*27)+(1.15\*62)+(.05\*100)+(-8.4\*0)  
   Residual = 120.58 – 120 = 0.58
5. R^2 = 1- (SSR)/(SST)  
   R^2 = 1 – 249.28/332.57 = 0.25  
   R^2 Adjusted = 1 - (SSR/(n-k-1))/(SST/(n-1))  
   R^2 Adjusted = 1 - (249.28/(1236-6-1))/(332.57/(1236-1)) = 0.24

Table

Description automatically generated

1. Y = 18.93 + (-9.11\*eth)+(3.10\*sex)+(2.15\*lrn)
2. If you are not an aboriginal you are less likely to miss school  
   if you are a male you are more likely to miss school  
   if you are a slow learner you are more likely to miss school
3. 18.93 + (-9.11\*0)+(3.10\*1)+(2.15\*1) = 24 days missed  
   Residual = 22
4. R^2 = 1- (SSR)/(SST)  
   R^2 = 1 - (240.57/264.17) = .089  
   R^2 Adjusted = 1 - (SSR/(n-k-1))/(SST/(n-1))  
   R^2 Adjusted = 1 - ((240.57)/(146-3-1))/((264.17)/(146-1)) = .07