**Assignment**

Interpretation and Significance

The model:

*𝑒𝑥𝑝𝑒𝑛𝑑𝑖𝑡𝑢𝑟𝑒*=873+0.0012*𝑎𝑛𝑛𝑢𝑎𝑙*\_*𝑖𝑛𝑐𝑜𝑚𝑒*+0.00002*𝑎𝑛𝑛𝑢𝑎𝑙*\_*𝑖𝑛𝑐𝑜𝑚𝑒*2−223.57*ℎ𝑎𝑣𝑒*\_*𝑘𝑖𝑑𝑠*

Based on the model, each family in US with children spending on an average $223.57 less on recreation with respect to families without children annually.

Details such as (average)number of children in each family and (average) number of recreations per year can provide further details.

Actual Answer:

The necessary thing that is not given in the question is the statistical significance of the coefficients. Although the coefficients appear different from zero, if they are statistically insignificant, we should consider them as zero. So, t statistics or the associated p-values should be provided.

If all the estimated coefficients are statistically significant, we can interpret the model as follows: The bias term is 873. Interpreting it is difficult because of the reasons we mentioned in the checkpoint. So, we just say that it is the bias term. On average, the families with children spend $223.57 less than the families without a child. The relation between the recreation expenditure and the income is quadratic. An increase of $1000 in annual income not only increase the recreation expenditure by $1.2 but also an additional 0.02 X annual income. This second piece comes from the relation between the recreation expenditure and the square of the annual income. Notice that we expressed this second part as 0.02 X annual income. This is because the exact value depends on the level of income! Since the relationship is quadratic, the magnitude of the second term increases as the level of X increases. The graph below demonstrates the relation between the annual recreation expenditure and the annual income separately for the families with children and without children.