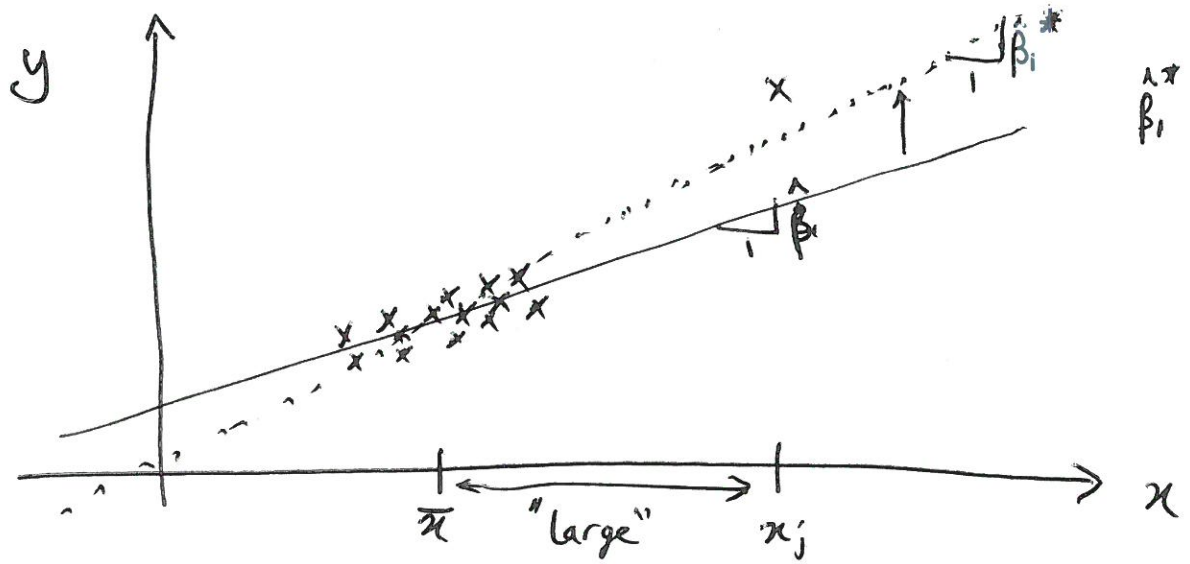
Leverage (Influence)

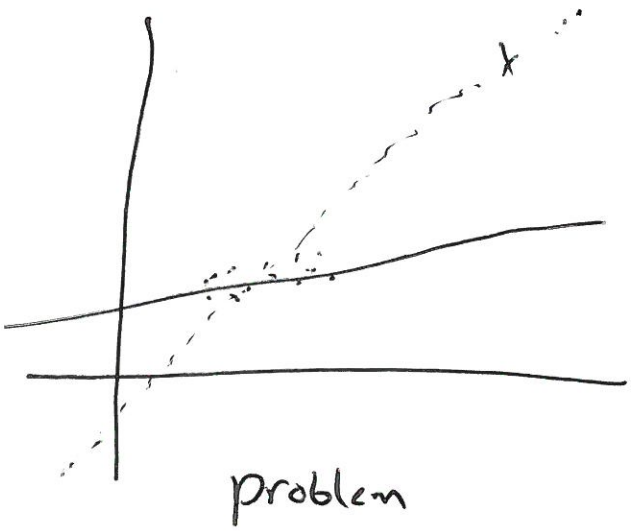


A point of large leverage (high influence) is one that has an x value that is a long way from $\bar{x}$ (ie it is remote from the bulk of the data - outlying in the x direction) $\Rightarrow$ h_{ii} will be large, close to 1

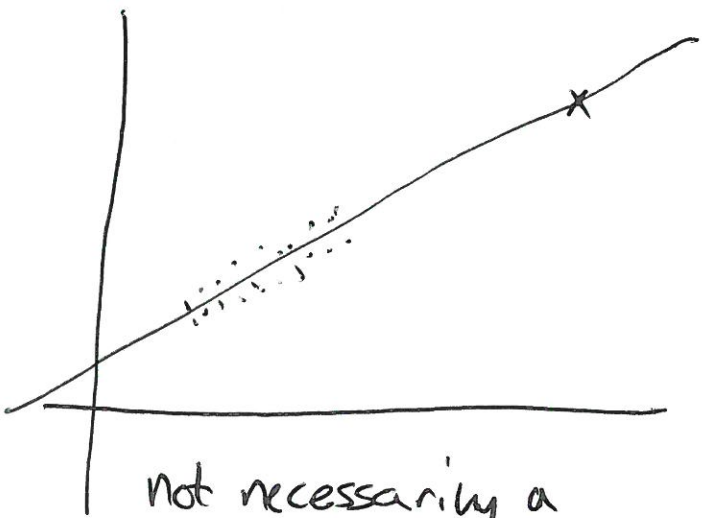
Note, in general, $\sum_{i=1}^{n} h_{ii} = p \leftarrow$ # parameters in model (mean)

(for SLR, $p = 2$: $\hat{\beta}_0, \hat{\beta}_1$)

Large leverage is not always a problem, compare:



problem



not necessarily a problem

large leverage is often defined as $> 2 * \frac{\sum h_{ii}}{n}$

ie more than twice average leverage!