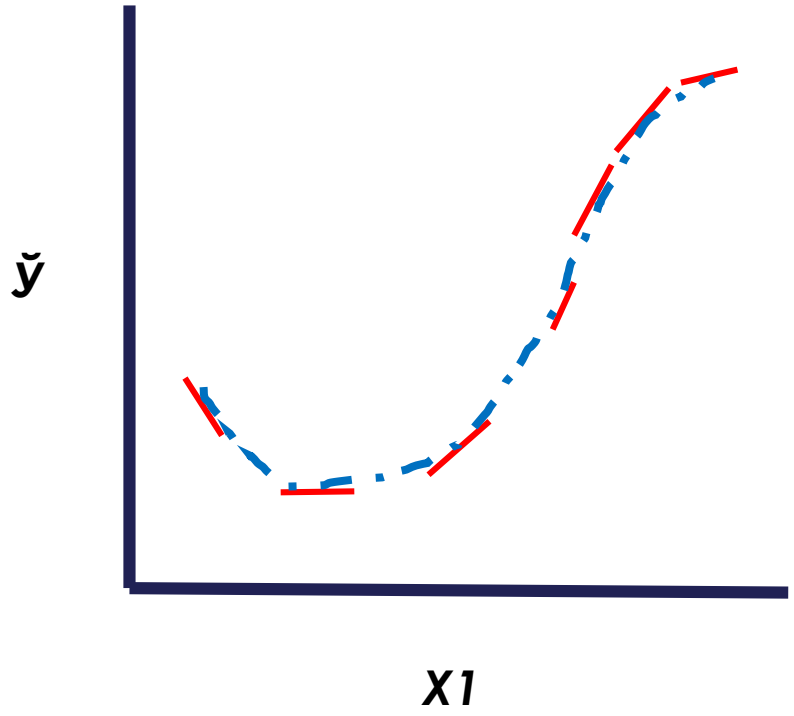
Accumulated local effects

Estimation

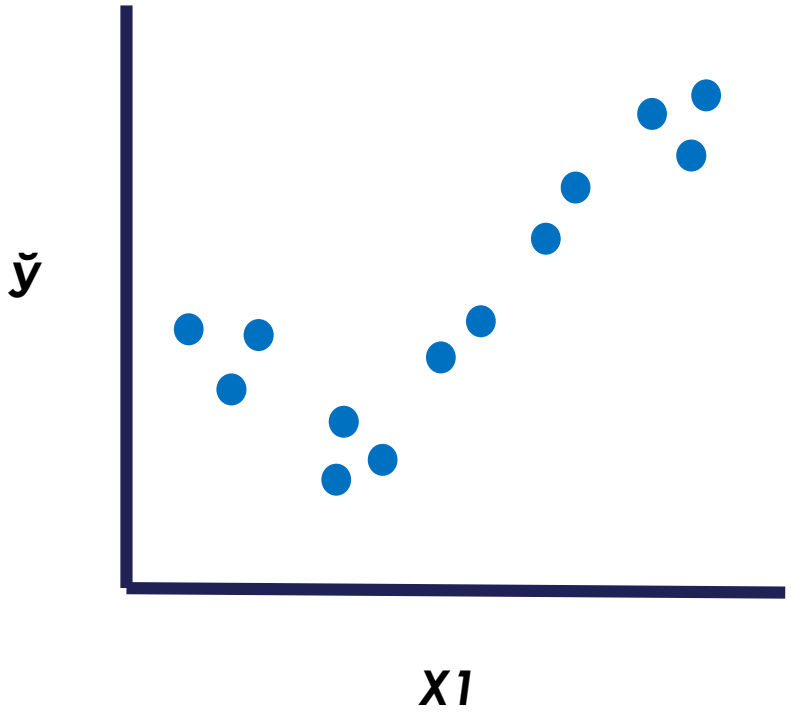
ALE - Formulation



Slopes: Partial derivative with respect of x1.

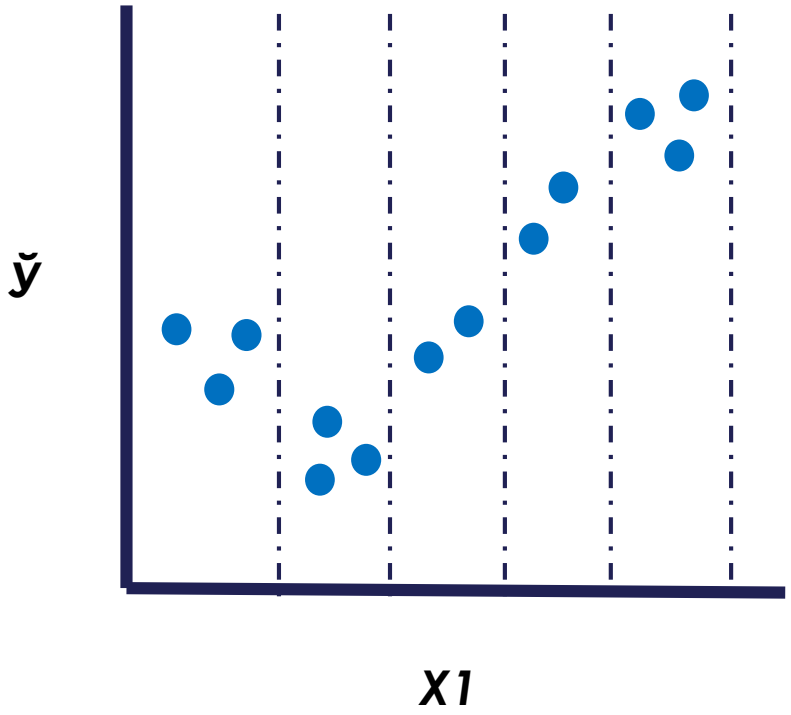
Aggregation: Integral of those partial derivatives.

ALE – Estimation



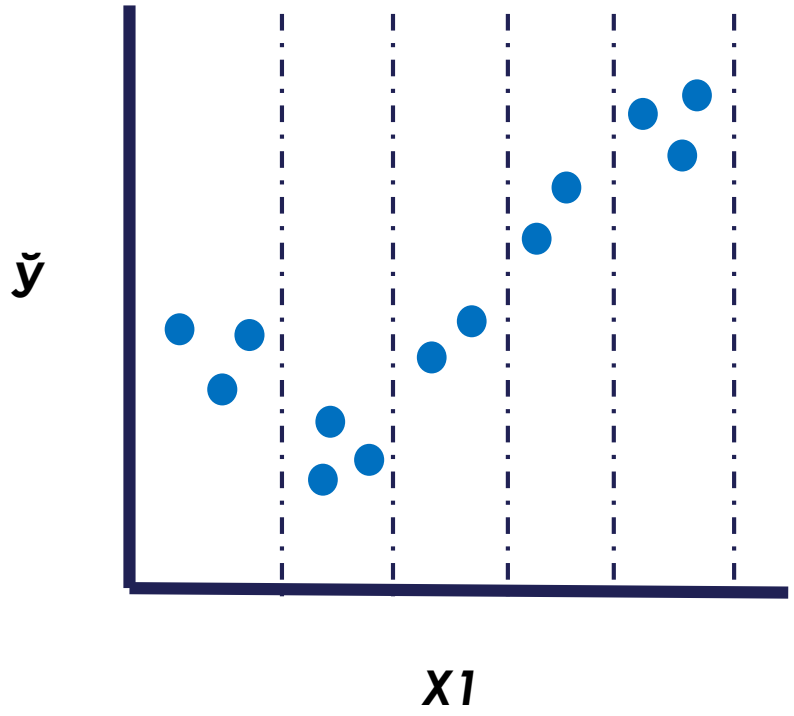
How can we calculate the ALE when we do not have / know y̌?

ALE – Estimation



Sort x1 into intervals.

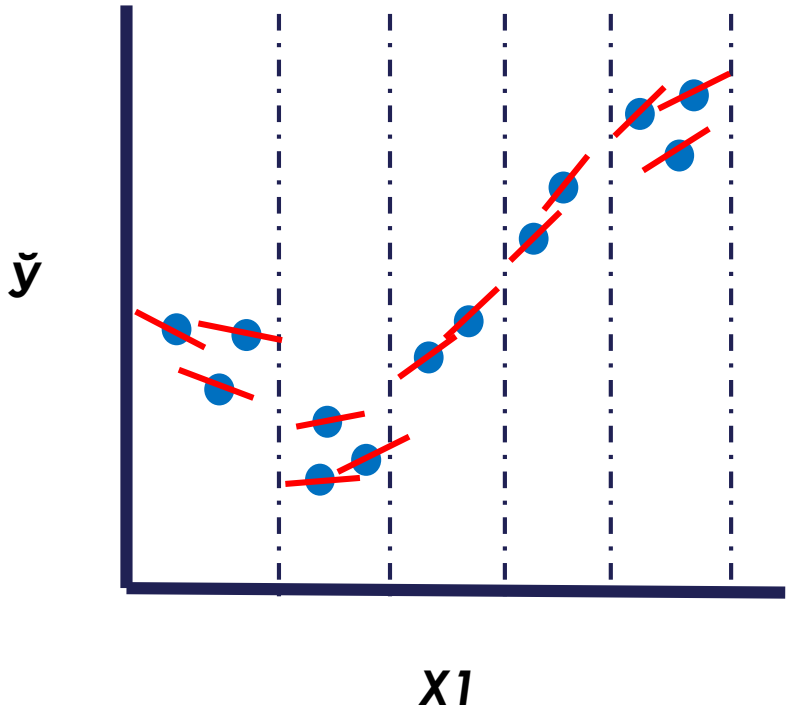
ALE – Estimation



For each observation within the interval:

1. set it to the interval's maximum an obtain a prediction.
2. set it to the interval's minimum an obtain a prediction.
3. Obtain the difference between predictions.

ALE – Estimation



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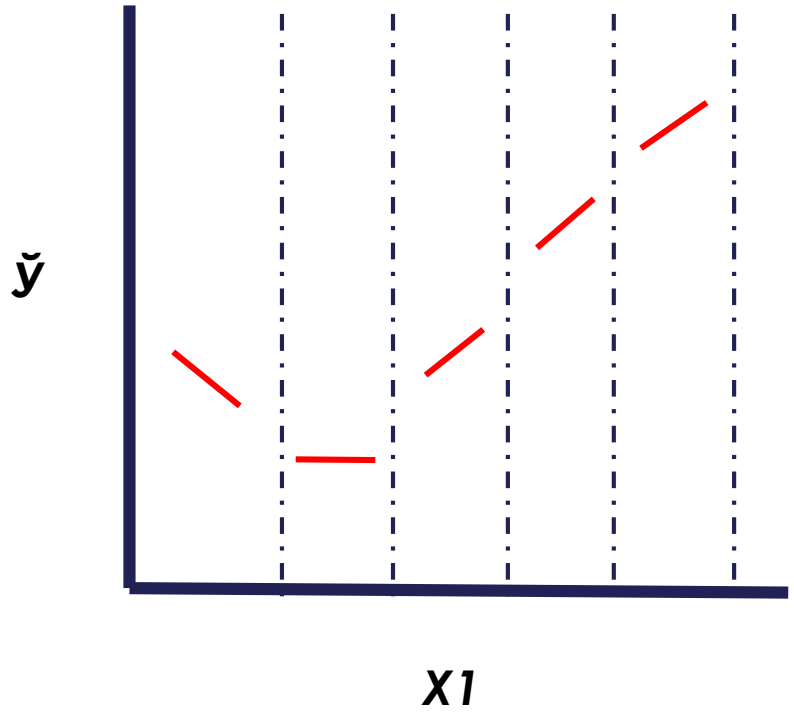
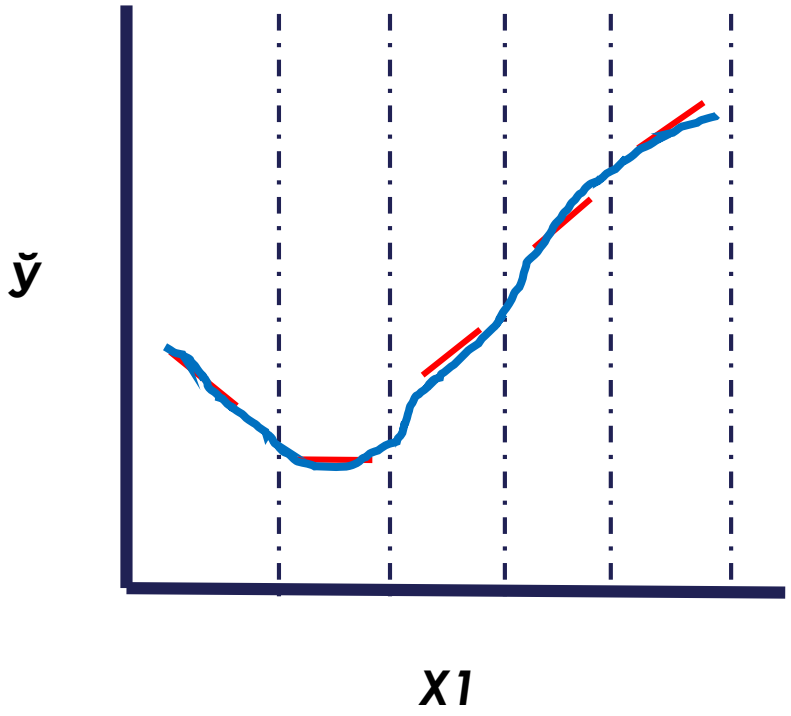
ALE – Estimation



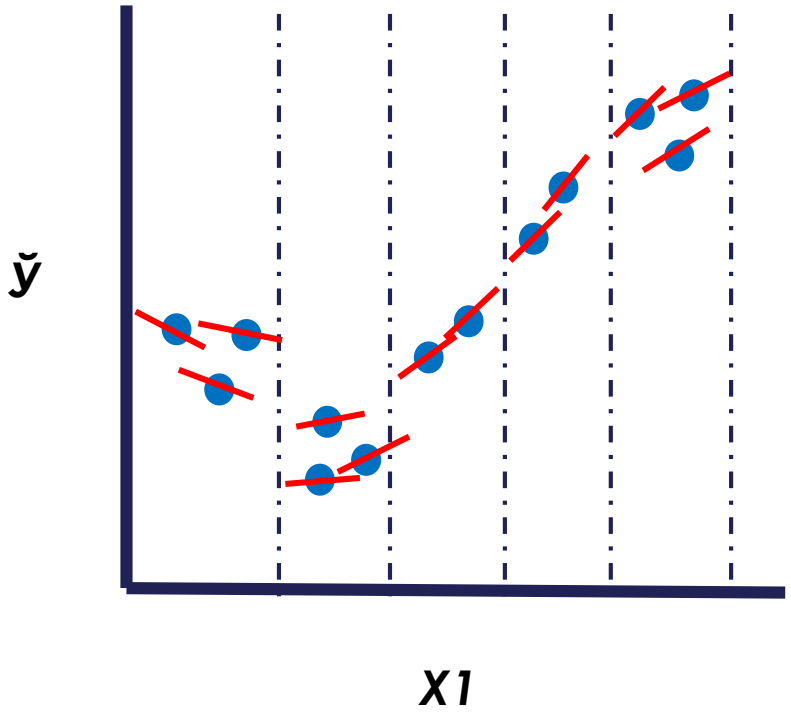
4. Average the differences within interval.

ALE – Estimation



4. Average the differences within interval.
5. Obtain cumulative distribution of the averaged differences.

ALE – Estimation

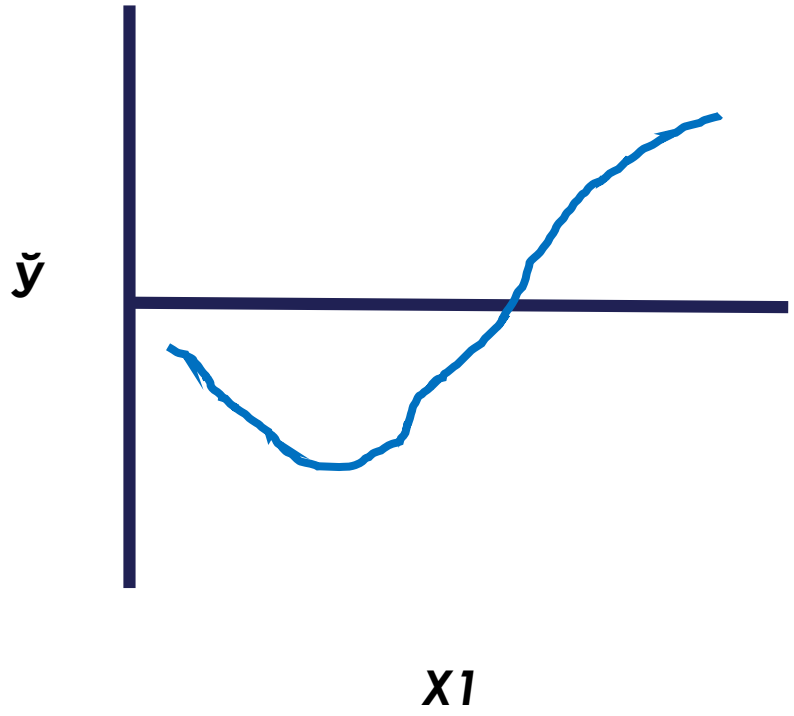


The estimation should be ideally done over small intervals.

The covariance / correlation of x1 with other features is taken into account, as only "realistic" data points are simulated.

We shift observations to values that are very similar to the original value.

ALE – Estimation



6. Centre the plot so that the mean ALE is zero.