Outliers, High Leverage, and Influential Points

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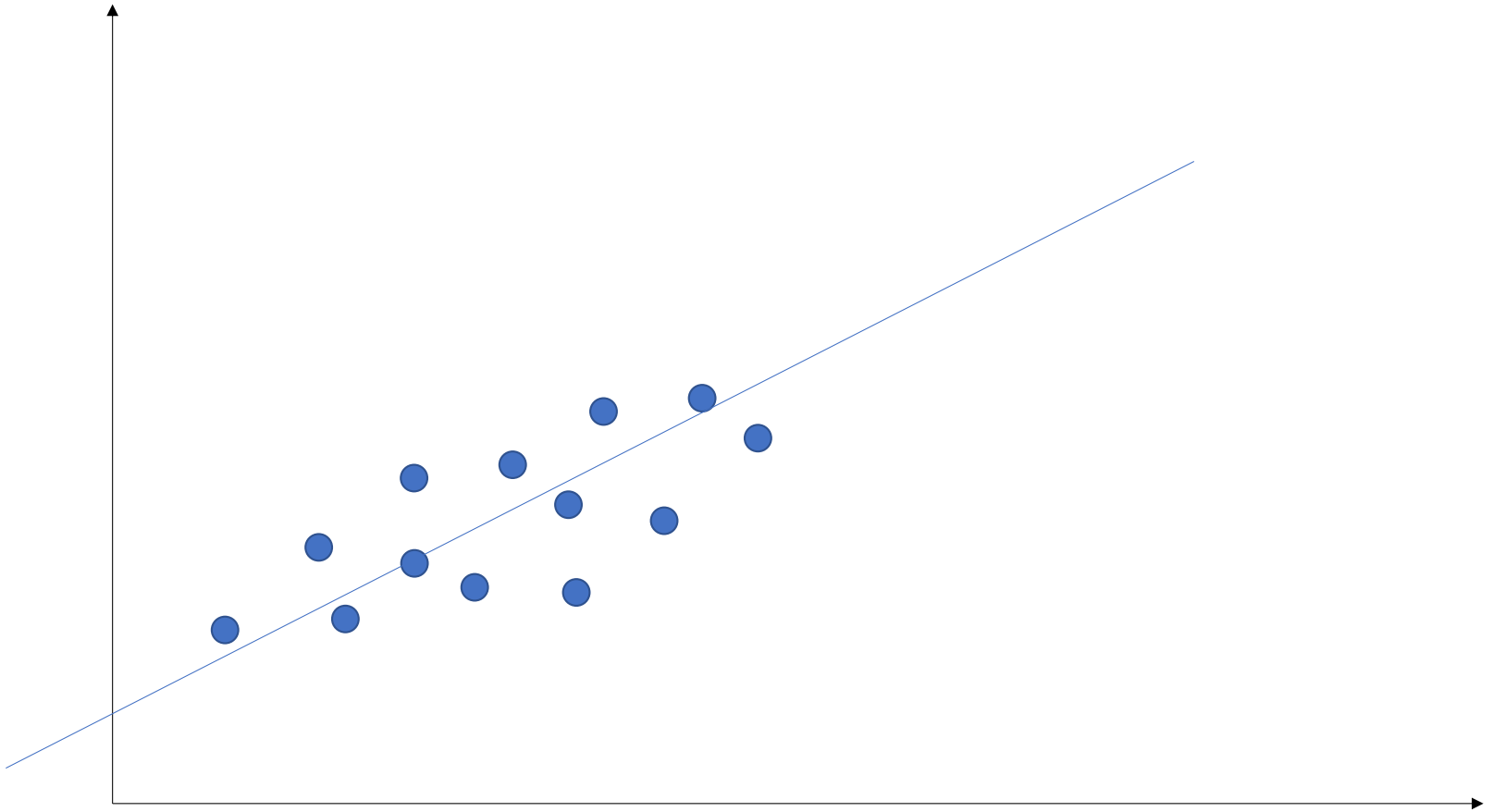
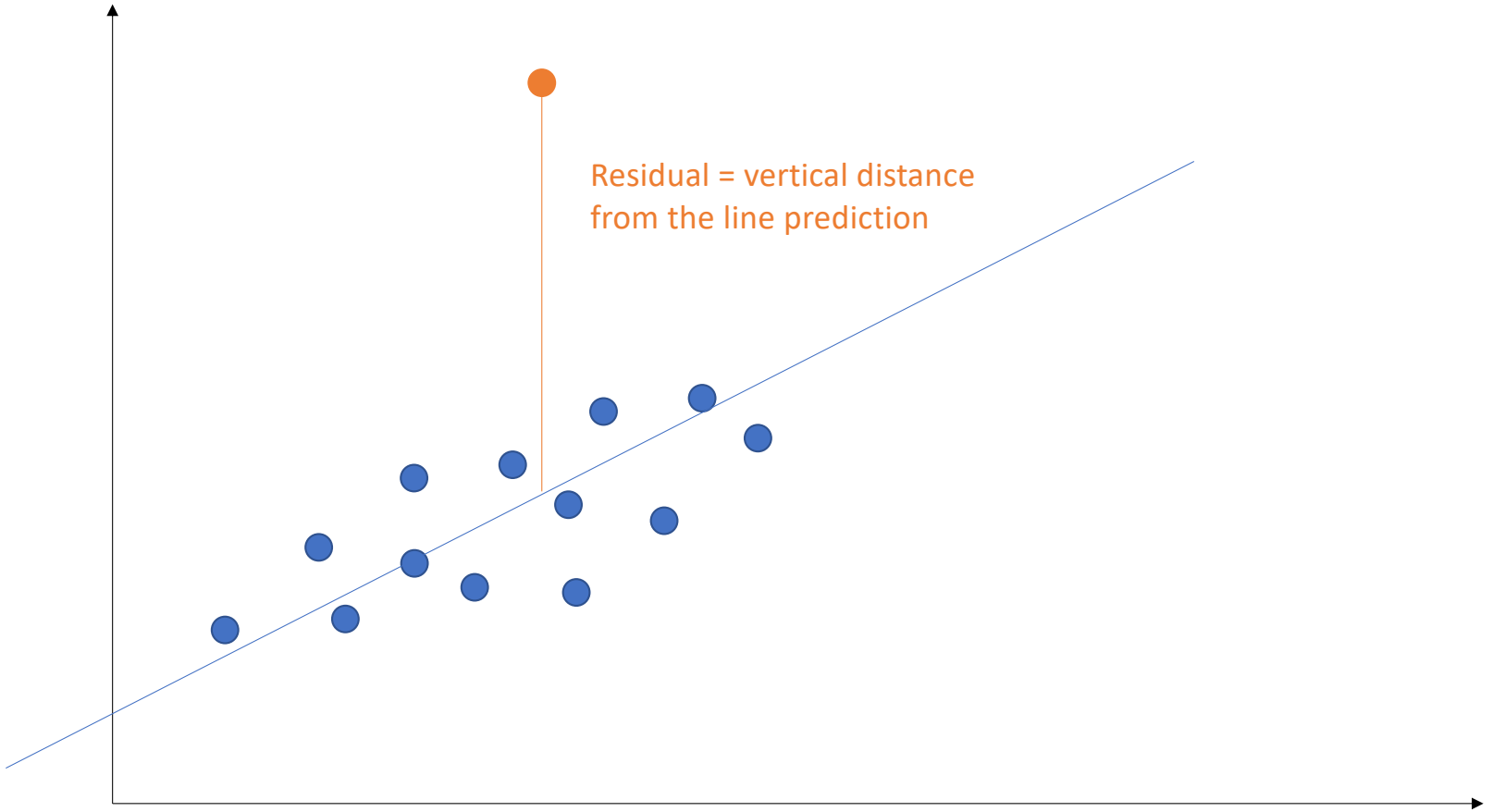
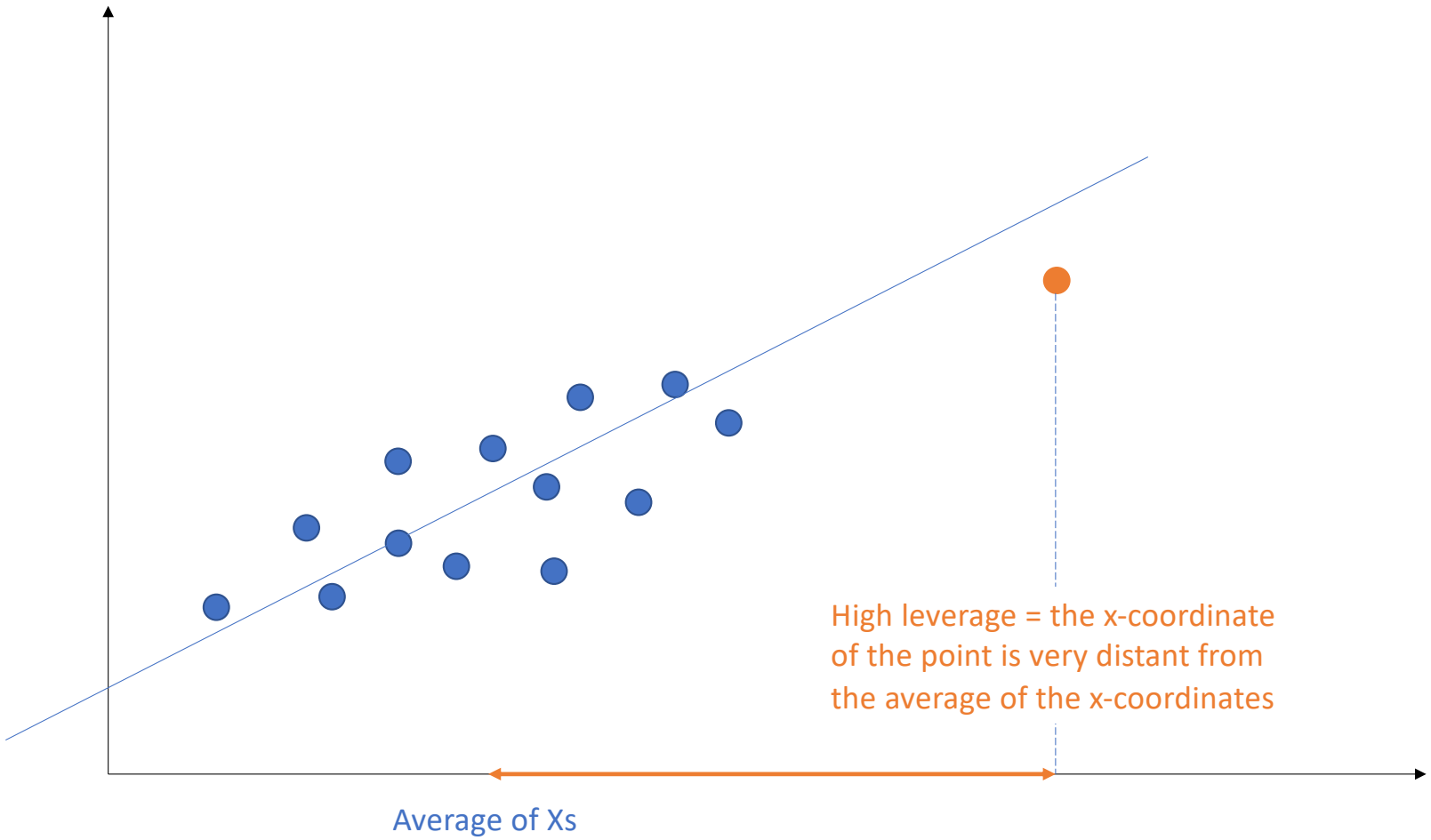
Regression line



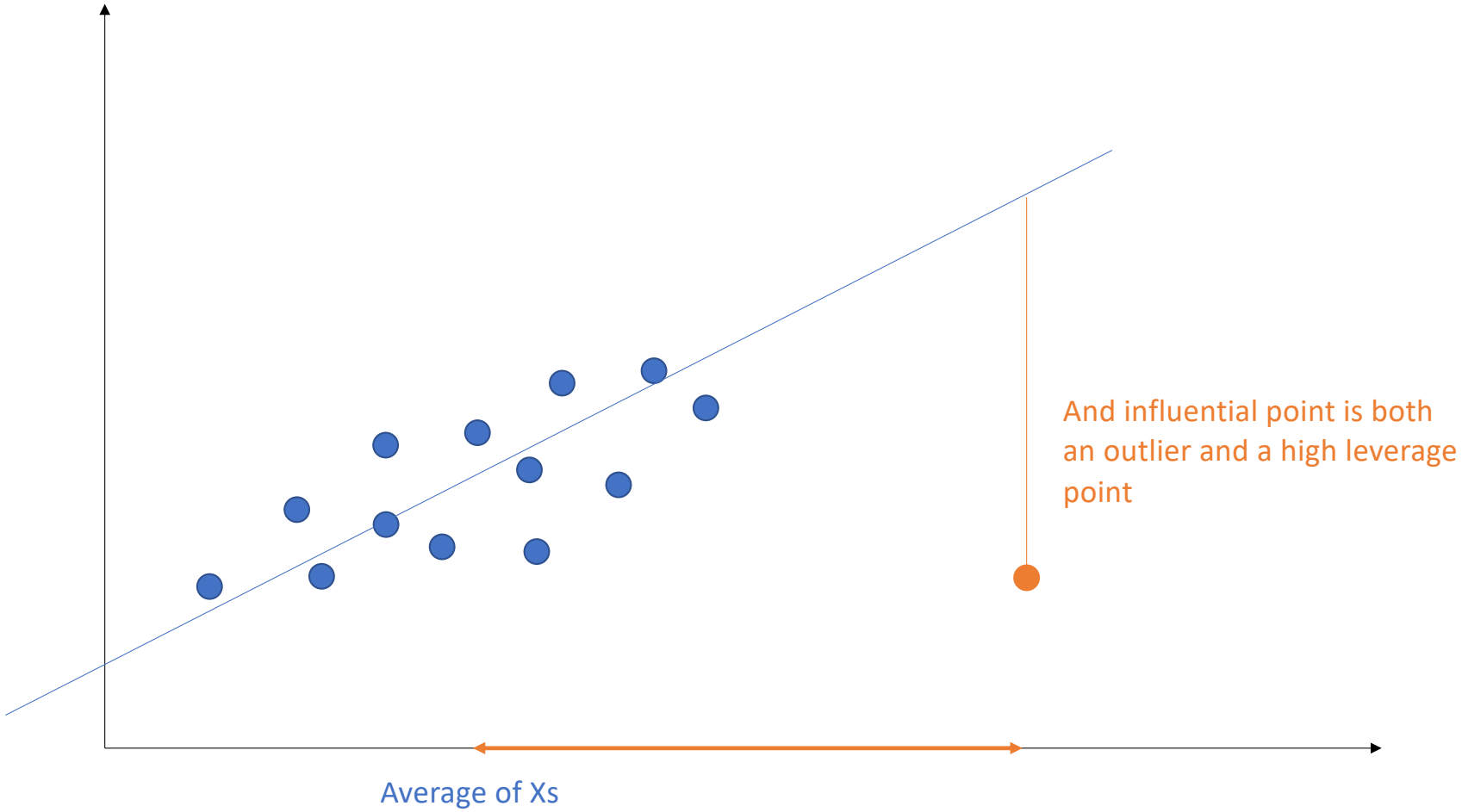
Outlier = point with large residual



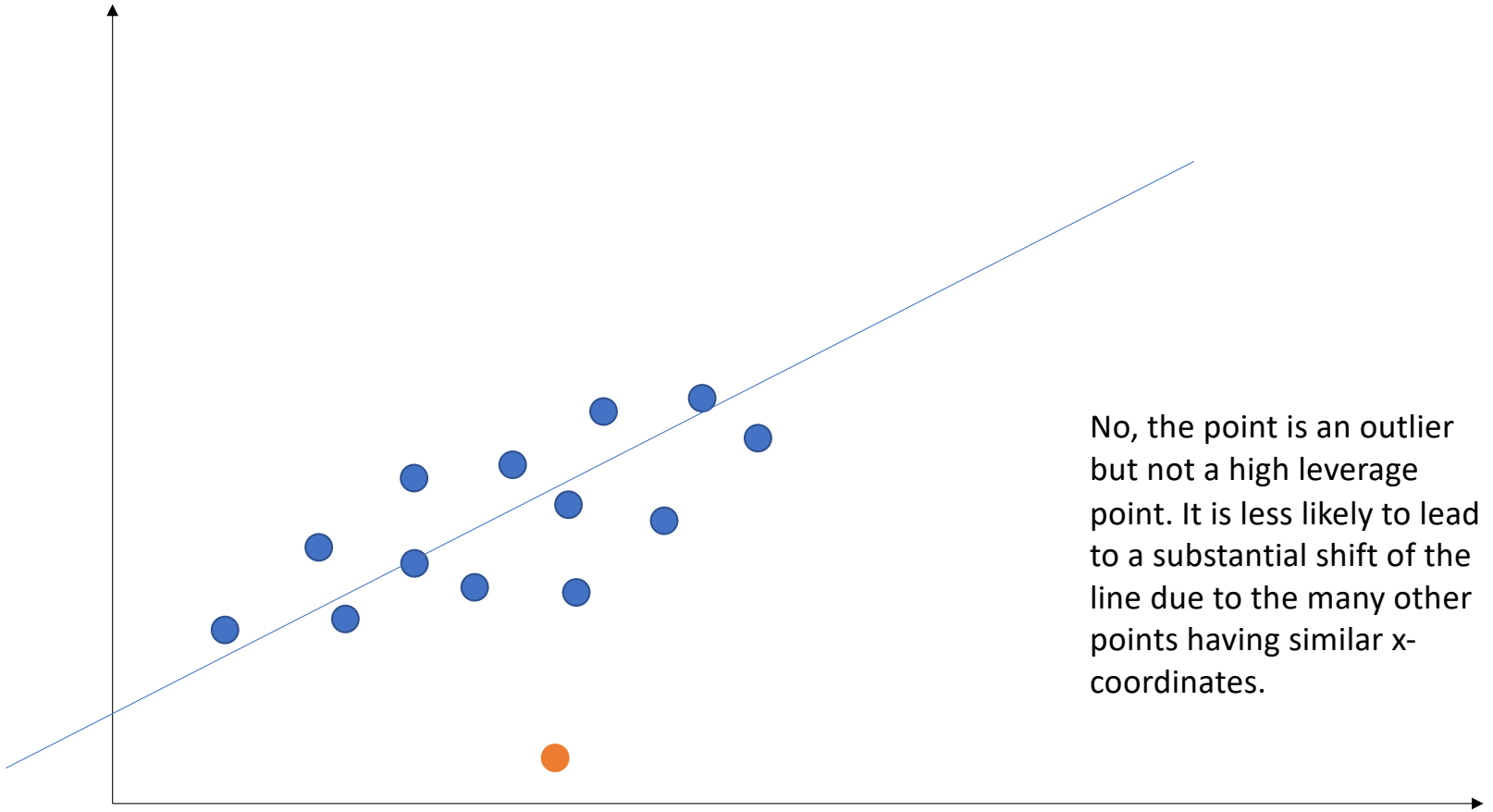
High leverage point



Influential point

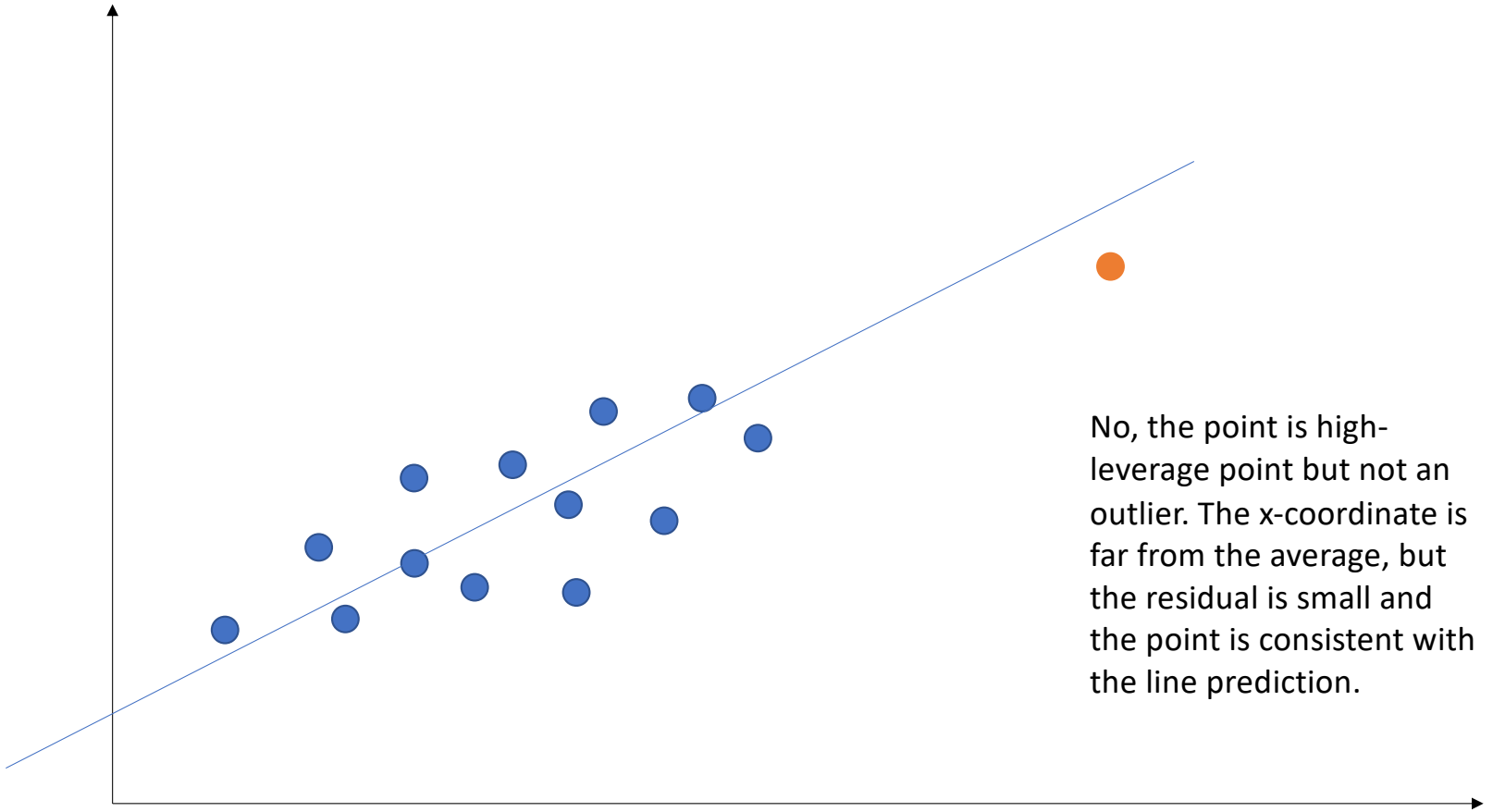


Checkpoint: Is this an influential point?



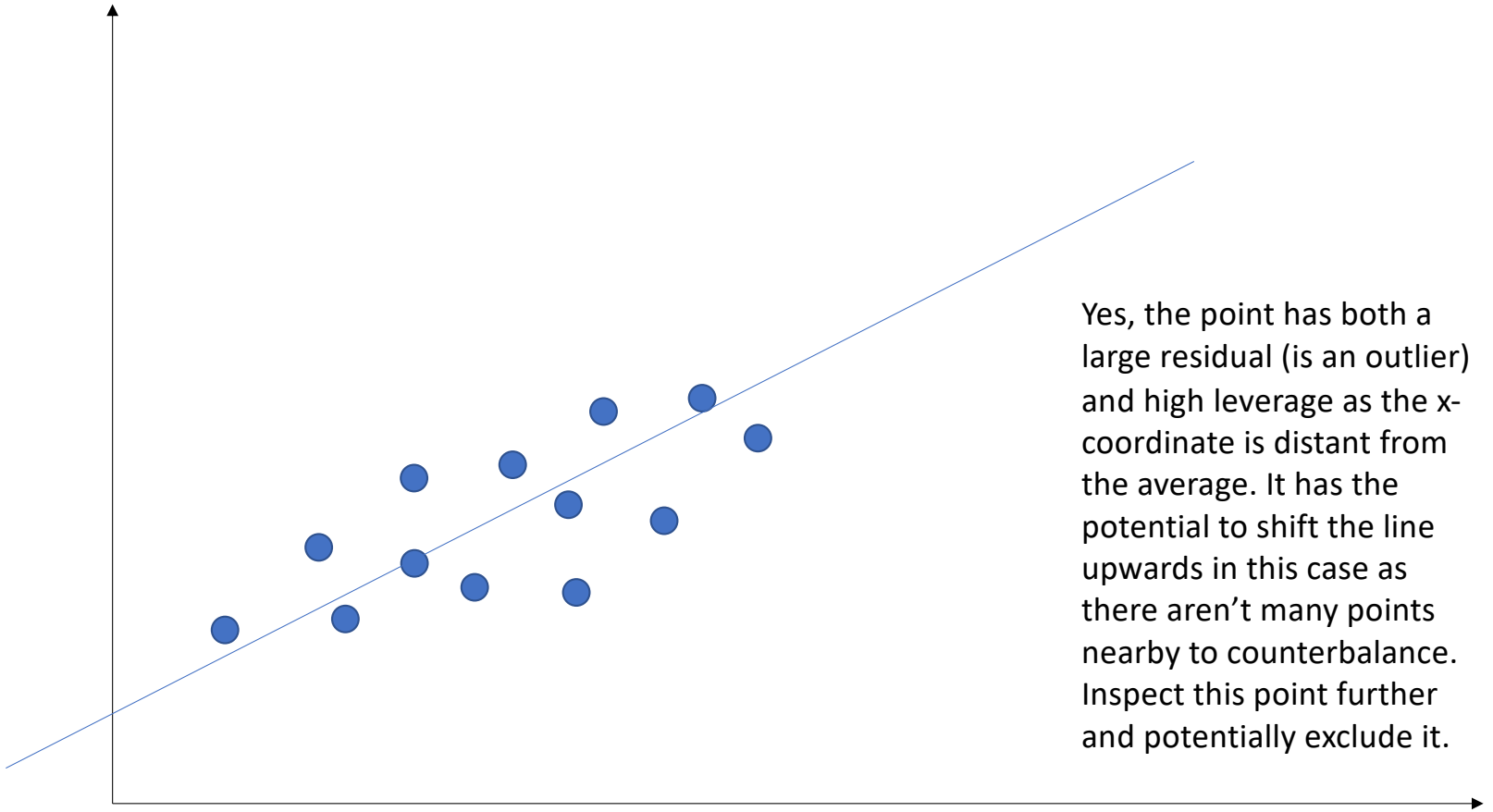
No, the point is an outlier but not a high leverage point. It is less likely to lead to a substantial shift of the line due to the many other points having similar x-coordinates.

Checkpoint: Is this an influential point?



No, the point is high-leverage point but not an outlier. The x-coordinate is far from the average, but the residual is small and the point is consistent with the line prediction.

Checkpoint: Is this an influential point?



Yes, the point has both a large residual (is an outlier) and high leverage as the x-coordinate is distant from the average. It has the potential to shift the line upwards in this case as there aren't many points nearby to counterbalance. Inspect this point further and potentially exclude it.