Consider the diagram below which shows a Naïve Bayes model and a tree augmented Naïve Bayes model. A naïve Bayes model is naïve in the sense that it makes the simplifying assumption that the effect variables are all conditionally independent given the cause.

A tree-augmented Naive Bayes model (TAN) is identical to a Naive Bayes model, except the effects are no longer assumed conditionally independent given the cause. Specifically, if (E1, E2; … ,En) are the observable features, a TAN allows E1, E2; … ,En to be in a tree-structured Bayes net in addition to having C as a parent. Both Naïve Bayes and TAN model are used for classification purposes.

A Naïve Bayes model in which a single cause C directly influences a number of effects E1, E2, E3, … all of which are conditionally independent, given the cause.