Odds ratio represents the constant effect that predictor X would have on Y, for all values of X.

ODDS vs PROBABILITY

Why not use probabilities?

- The problem is that probability and odds have different properties that give odds some advantages in statistics.
- Odds ratio represents the *constant effect* of a predictor X, on the likelihood that one outcome will occur.
- The key phrase here is *constant effect*. In regression models, we often want a measure of the unique effect of each X on Y. If we try to express the effect of X on the likelihood of a categorical Y having a specific value through probability, the effect is not constant.
  - This means there is no way to express *in one number* how X affects Y in terms of probability. The effect of X on the probability of Y has different values depending on the value of X while we would want to be able to say that X produces an effect of say 10% on likelihood of outcome Y occurring (for all values of X).

SUMMARY

Advantages:

- It offers insight on the relative power of each variable
- Is quick to train
- Makes no assumptions of distributions of classes in feature space