GRADIENTS AND ODDS RATIOS

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The Log-Odds Ratio (LOR) is usually associated with logistic regression because it is the inverses of the logistic dose response function (DRF) used as a model for a binary response. Thus the logit[P(Y=1—X)/P(Y=0)] becomes a linear model, and simple differences of Log-Odds (LO(X)) are historically interpreted as LOR(X+dX:X). In this brief note it will be shown that: 1. Regardless of whether the DRF is the logistic, the partial derivative with respect to any variable of the LO(X) is the LOR(X) for that variable and all of its values. 2. It is much easier to use survival functions (SF) in place of the DRF, and the. 3. The LOR(X) is replaced by the survival function log-odds ratio SLOR(X), and variable SLOR(X) is the difference between the hazard functions of the SF for cases and that of the non-cases, and 4. The SLOR(X) is Square-Additive. These are illustrated.