News

A new approach to relative risk regression

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Associate Professor Robert Clark and Dr Margo Barr have recently published a paper in *Statistical Methods in Medical Research* which introduces a blended link approach to relative risk regression.

A binary health outcome may be regressed on covariates using a log link, rather than more typical link functions such as the logit. This allows the exponentiated regression coefficient for each covariate to be interpreted as a relative risk conditional on the remaining covariates. Relative risks are simpler to interpret than the odds ratios which arise with a logit link. There are practical and conceptual challenges in log-link binary regression, mainly due to the requirement that probabilities are less than or equal to 1. Viable probabilities are now usually achieved by the imposition of a constraint on the parameter space, but the log link function is still more work to apply in practice. We propose instead a new smooth link function which is equal to the log up to a cutoff and a linearly scaled logit function above the cutoff. The new approach is conceptually clearer, simpler to implement and generally less biased, and it retains the relative risk interpretation for all but the highest risk individuals. Alternative binary regressions are compared using a simulation study and a diabetic retinopathy dataset.

Further details: journals.sagepub.com/doi/pdf/10.1177/0962280217698174

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