rr2: An R package to calculate $R^2$s for regression models

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Summary

Reporting the variance explained by a model (an $R^2$) is common for many simple statistical tests. However, conceptual challenges exist in defining $R^2$s for models that include correlated data. Ives (2018) proposed three $R^2$s ($R^2_{\text{lik}}$, $R^2_{\text{resid}}$, and $R^2_{\text{pred}}$) for a variety of regression models that include correlation among data such as linear mixed models (LMMs), generalized linear mixed models (GLMMs), and phylogenetic regressions (Ives & Garland, 2014; PGLMMs, Ives & Helmus, 2011). These three $R^2$s can also be used as partial $R^2$s to compare the contributions of predictor variables (fixed effects) and/or correlation structures (random effects) to the fit of the models.

The \texttt{rr2} package provides R functions to implement the $R^2$s proposed by Ives (2018). The main function, \texttt{R2()}, calculates all three $R^2$s by default, with arguments available to select which $R^2$(s) to calculate by users. Alternatively, individual $R^2$s can be calculated with corresponding functions (\texttt{R2_lik()}, \texttt{R2_resid()}, and \texttt{R2_pred()}). Supported models include linear models (\texttt{lm}), generalized linear models (\texttt{glm}), linear mixed models (\texttt{lmerMod}), generalized linear mixed models (\texttt{glmerMod}), phylogenetic generalized least squares models (\texttt{phylolm}), phylogenetic logistic regression (\texttt{phyloglm}), and phylogenetic generalized linear mixed models (\texttt{binaryPGLMM} and \texttt{communityPGLMM}).

The R package \texttt{rr2} is available on Github, where issues can be opened.

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References

