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Suppression and enhancement in multiple linear regression: A viewpoint from the perspective of a semipartial correlation coefficient

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Abstract

For a linear regression model with two-predictor variables, the effects of the correlation between the two predictors on estimated standardized regression coefficients and R^2 have been well studied. However, the role the correlation plays may sometimes be overstated, such that confusion and misconceptions may arise. In this article, we revisit the issue from the perspective of a semipartial correlation coefficient. We find that by taking this perspective we are not only able to reach the same conclusions while avoiding those misunderstandings, we are also able to gain more insight. In addition, we also take a geometrical approach to illustrate how estimated standardized regression coefficients and R^2 behave as the correlation varies. Geometrical displays provide

readers with a way to visualize the behavior changes and to understand the reasons behind those changes more easily. Although we focus mainly on two predictors in this article, the conclusions can be easily extended to a general k-predictor case.

🔍 **Keywords:** Correlation   enhancement   geometry   semipartial correlation coefficient   suppression

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