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CAUTIONS WHEN NORMALIZING THE DEPENDENT VARIABLE IN A REGRESSION AS A Z-SCORE

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ABSTRACT

It is common in empirical analysis to facilitate inference by transforming the dependent variable to follow a standard normal distribution. In this paper, I show that using this transformation results in the estimated treatment effects being systematically attenuated toward zero and bounded in magnitude. The level of attenuation can be empirically relevant. I propose an alternative normalization wherein the dependent variable is divided by the square root of its within variation, which corrects these issues. I show that, in a simple linear regression, the method produces an estimated treatment effect that is numerically identical to Cohen's d.